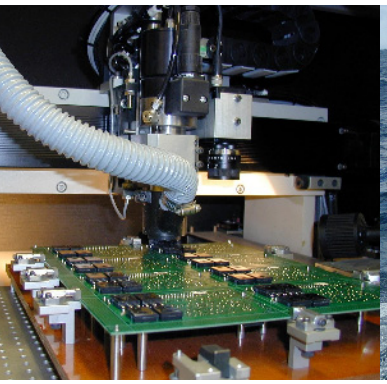
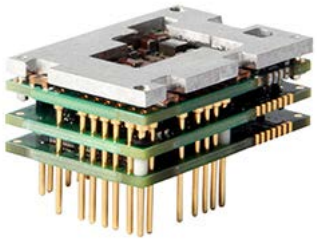
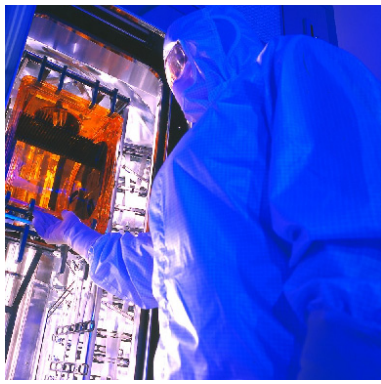
ADVANCED MOTION CONTROLS



Everything's possible.

Ethernet IP Communication

Reference Manual

FlexPro™ Servo Drives

Preface

ADVANCED Motion Controls constantly strives to improve all of its products. We review the information in this document regularly and we welcome any suggestions for improvement. We reserve the right to modify equipment and documentation without prior notice.

For the most recent software, the latest revisions of this manual, and copies of compliance and declarations of conformity, visit the company's website at *www.a-m-c.com*. Otherwise, contact the company directly at:

ADVANCED Motion Controls • 3805 Calle Tecate Camarillo, CA • 93012-5068 USA

Agency Compliances

The company holds original documents for the following:

- UL 508c, file number E140173
- Electromagnetic Compatibility, EMC Directive - 2014/30/EU
  EN61000-6-2:2005
  EN61000-6-4:2007/A1:2011
- Electrical Safety, Low Voltage Directive - 2014/35/EU
  EN 60204-1:2006/A1:2009
- Reduction of Hazardous Substances (RoHS III), 2015/863/EU

Trademarks

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Related Documentation

- Product datasheet specific for your drive, available for download at www.a-m-c.com.
- Installation manual specific for your drive, available for download at www.a-m-c.com

Revision History

Document ID	Revision #	Date	Changes
MNCMENRF-01	1.2019.3	10/2019	First Release
MNCMENRF-02	1.2021.4	11/24/2021	Added Section 1.1.1 and 1.1.2
MNCMENRF-03	1.2022.4	04/22/2022	Removed Cyclic Synchronous Modes section

Attention Symbols

The following symbols are used throughout this document to draw attention to important operating information, special instructions, and cautionary warnings. The section below outlines the overall directive of each symbol and what type of information the accompanying text is relaying.

Note - Pertinent information that clarifies a process, operation, or ease-of-use preparations regarding the product.

Notice - Required instruction necessary to ensure successful completion of a task or procedure.

Caution - Instructs and directs you to avoid damaging equipment.

Warning - Instructs and directs you to avoid harming yourself.

Danger - Presents information you must heed to avoid serious injury or death.

Contents

1 Serial Communication Protocol

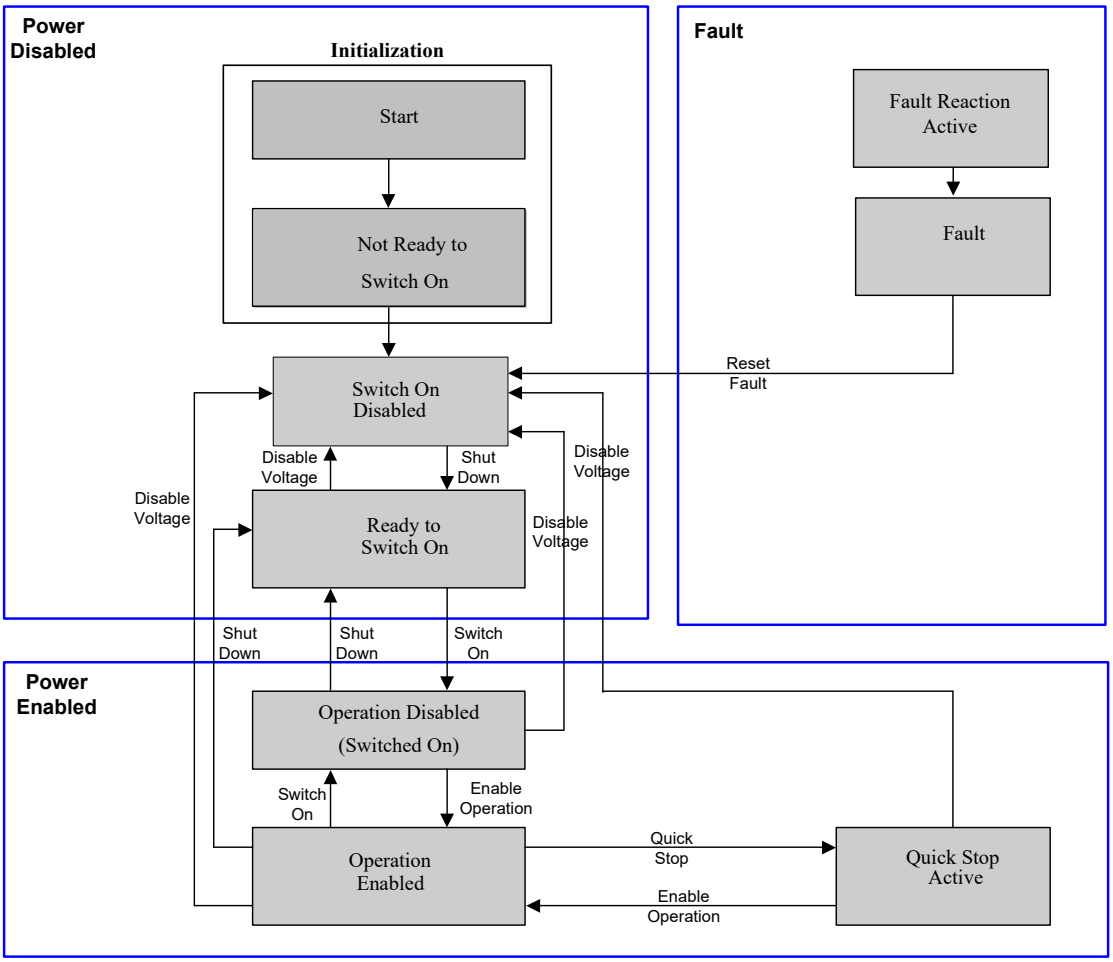
1.1 Control State Machine

1.1.1 State Machine Overview

ADVANCED Motion Controls' Ethernet IP drives operate based on a control state machine as defined by CANopen standards, where each state has a defined behavior. The drive can be controlled to transition from one state to another in a particular order using the ControlWord command instance (911). This is a write only object used specifically to transition the drive's control state machine between states. Below is a graphical overview of the state machine. The grey boxes represent the states. The arrows represent the one-way path between states. The small text along the path of the arrow represents the command necessary to make each transition.

Other drive functionalities are also based on the motion control profile defined by CANopen standards. More advanced Ethernet/IP functionalities such as CIP Motion and CIP Sync are not currently supported.

FIGURE 1.1 ControlWord State Machine Block Diagram



Upon power-up, the drive will automatically step through the 'Start' and 'Not Ready to Switch On' states, arriving at the 'Switch On Disabled' state. Further advancement to other states is accomplished by setting the ControlWord (instance 911) to the proper value. The commands that cause the state transitions in the state machine correspond to certain bit settings within the ControlWord. For example, to transfer from the 'Ready to Switch On' state to the 'Switched On State', one would use the Switch On command, by setting the ControlWord to the appropriate value (and hence bit pattern). The drive state may be queried by using StatusWord (instance 912). If the drive senses a fault (any internal drive event which causes the bridge to be disabled), it will automatically move into the Fault Reaction Active state, then transition to the Fault state. The ControlWord can once again be used to move from the Fault state to the Switch On Disabled state.

1.1.2 Drive States

The following tables provide details on each of the states supported by *ADVANCED* Motion Controls' drives.

TABLE 1.1

Not Ready to Switch On	
Function	Part of drive initialization
Status	Logic Supply has been applied to the drive. The drive is being initialized. Drive functionality is disabled during this time.
Transitions	Transition to 'Switch On Disabled' is automatic when initialization complete.

TABLE 1.2

Switch On Disabled	
Function	Drive initialization is complete. If a fatal error exists, the processor executes a Reset Fault command automatically. The drive is still disabled.
Status	Drive parameters have been set up. Only logic supply voltage is necessary at this time. Drive process monitoring may begin.
Transitions	Transition to the **Ready to Switch On** state is possible by a *Shut Down* command.

TABLE 1.3

Ready to Switch On	
Function	Last state before Bridge enabled
Status	No energy is supplied to the motor. Control loops do not work. The drive function is still disabled. Bus power may be applied.
Transitions	Transition to **Operation Disabled (Switched ON)** state is possible via the *Switch On* command. Transition back to the **Switch On Disabled** state is possible via the *Disable Voltage* command, or by a *Quick Stop* command.

TABLE 1.4

Operation Disabled (Switched On)	
Function	The bridge is turned on and a mode-dependent zero command is issued.
Status	The control loops are operational. Bus power is applied. The power section is switched on (if not already on). The target signal is not processed. The drive function is disabled.
Transitions	Transition to the **Operation Enabled** state is possible via the *Enable Operation* command. Transition back to the **Ready to Switch On** state is equally possible via the *Shut Down* command. Transition back to the **Switch On Disabled** state is possible via the *Disable Voltage* command or via a *Quick Stop* command.

TABLE 1.5

Operation Enabled	
Function	This is the normal operation state of the drive.
Status	Power is supplied to the motor. Control loops are operational and target signals are processed.
Transitions	A *Quick Stop* command transfers the drive to the **Quick Stop Active** state. Transition back to the **Ready to Switch On** state is possible via the *Shut Down* command. Transition back to the **Switch On Disabled** state is possible via the *Disable Voltage* command or the *Drive Enable Input*. Transition back to the **Operation Disabled** state is possible via the S*witch On* command.

TABLE 1.6

Quick Stop Active	
Function	The motor (shaft) is brought to a stop using the Stop Deceleration Limit.
Status	Control loops are operational. Power is applied to the motor. The motor shaft is held in position in position mode or zero velocity in velocity mode.
Transitions	Transition back to the Operation Enabled state is possible via the *Enable Operation (7)* command. Transition back to the Switch On Disabled state is possible via *the Disable Voltage (4)* command, or via the *Drive Enable Input (2)* (both include the "Power Disable Delay" process).

TABLE 1.7

Fault Reaction Active	
Function	The event reaction for the incident fault state will occur.
Status	Power is supplied to the motor. Control loops are operational and target signals are processed.
Transitions	Fault Reaction Active will automatically transition to the Fault state. Time in Fault Reaction Active state is dependent on background tasks, but could be anywhere between 100µs and 2ms.

TABLE 1.8

Fault	
Function	A fault has occurred and has not yet been reset
Status	The power output stage is disabled; no energy is supplied to the motor.
Transitions	Transition to the Switch On Disabled state is possible via the *Reset Fault* command.

1.1.3 ControlWord (911)

The following table shows the values used with ControlWord instance 911 to cause transitions shown in Figure 1.1 above. An example hexadecimal value is provided on the right.

TABLE 1.9 ControlWord values

State Transition Command	Bit 7	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	Example Value
Reset Fault	0→1	X	X	X	X	X	XX 80
Disable Voltage	0	X	X	X	0	X	XX 00
Shutdown	0	X	X	1	1	0	XX 06
Switch On	0	X	0	1	1	1	XX 07
Enable Operation	0	X	1	1	1	1	XX 0F
Quick Stop	0	X	X	0	1	X	XX 02
Begin Homing (Homing mode only)	0	1	1	1	1	1	XX 1F
End Homing (Homing mode only)	0	0	1	1	1	1	XX 0F
0 = OFF, 1 = ON, X = don't care							

TABLE 1.10 Additional ControlWord values

State Transition Command	Bit 13	Bit 12	Description
Inhibit Negative Motion	X	1	enable *commanded* * [*negative stop* OR *negative torque inhibit*]
Inhibit Positive Motion	1	X	enable *commanded* * [*positive stop* OR *positive torque inhibit*]
0 = disable, 1 = enable, X = don't care,			* see "Event Action Parameters" on page 108

For additional information on instance 911, see "ControlWord" on page 159.

1.1.4 StatusWord (912)

The StatusWord reports exactly which state the drive is in. Table 1.11 defines each bit in the StatusWord and Table 1.12 shows how to interpret what state the drive is in via the combination of bits 0-3, 5 and 6. Each drive state is described in detail in "Drive States" on page 2.

TABLE 1.11 StatusWord bit descriptions

Bits	Name	Descriptions
0	Ready to Switch On	See Table 1.12 to see how this bit relates to the control state machine.
1	Switched On	See Table 1.12 to see how this bit relates to the control state machine
2	Operation Enabled	See Table 1.12 to see how this bit relates to the control state machine
3	Fault	See Table 1.12 to see how this bit relates to the control state machine
4	Voltage Enabled	1 when power is applied to the motor
5	Quick Stop	See Table 1.12 to see how this bit relates to the control state machine
6	Switch On disabled	See Table 1.12 to see how this bit relates to the control state machine
7	Warning	Commands in "Programmable Status Parameters" on page 138 can be used to configure which internal drive events will set this bit.
8	Manufacture specific	Commands in "Programmable Status Parameters" on page 138 can be used to configure which internal drive events will set this bit.
9	Remote	0 when read/write access has been seized by the service channel (i.e. configuration software). 1 when control over the network is allowed.
10	Target Reached	1 Under the following conditions: - Home reached if the Can operational-mode is homing. - Home reached if the Can operational-mode is custom and homing is active. - At command for all other conditions.
11	Internal Limit Active	Commands in "Programmable Status Parameters" on page 138 can be used to configure which internal drive events will set this bit.
12	Homing complete	1 when Homing completes, otherwise 0.
13	-	-
14	-	-
15	-	-

TABLE 1.12 StatusWord drive states

Drive State	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	StatusWord
Not Ready to Switch On	0	X	X	0	0	0	0	xxxx xxxx x0xx 0000
Switch On Disabled	1	X	X	0	0	0	0	xxxx xxxx x1xx 0000
Ready to Switch On	0	1	X	0	0	0	1	xxxx xxxx x01x 0001
Switched On	0	1	X	0	0	1	1	xxxx xxxx x01x 0011
Operation Enabled	0	1	X	0	1	1	1	xxxx xxxx x01x 0111
Fault Reaction Active	0	X	X	1	1	1	1	xxxx xxxx x0xx 1111
Fault	0	X	X	1	0	0	0	xxxx xxxx x0xx 1000
Quick Stop Active	0	0	X	0	1	1	1	xxxx xxxx x00x 0111
0 = OFF, 1 = ON, X = don't care								

1.2 Modes of Operation

ADVANCED Motion Controls' Ethernet IP drives close position, velocity, and torque (current) loops. There are 8 modes of operation available with instance 913. Other modes of operation are achievable using the setup software. When changing loop configurations using instance 913, velocity and position loop feedback sources are not touched. This means changing loop configurations assumes the feedback wiring and project parameters are configured properly for both the present loop and the one the drive is moving to.

More information on instance 913 is found in the "Modes Of Operation" on page 163.

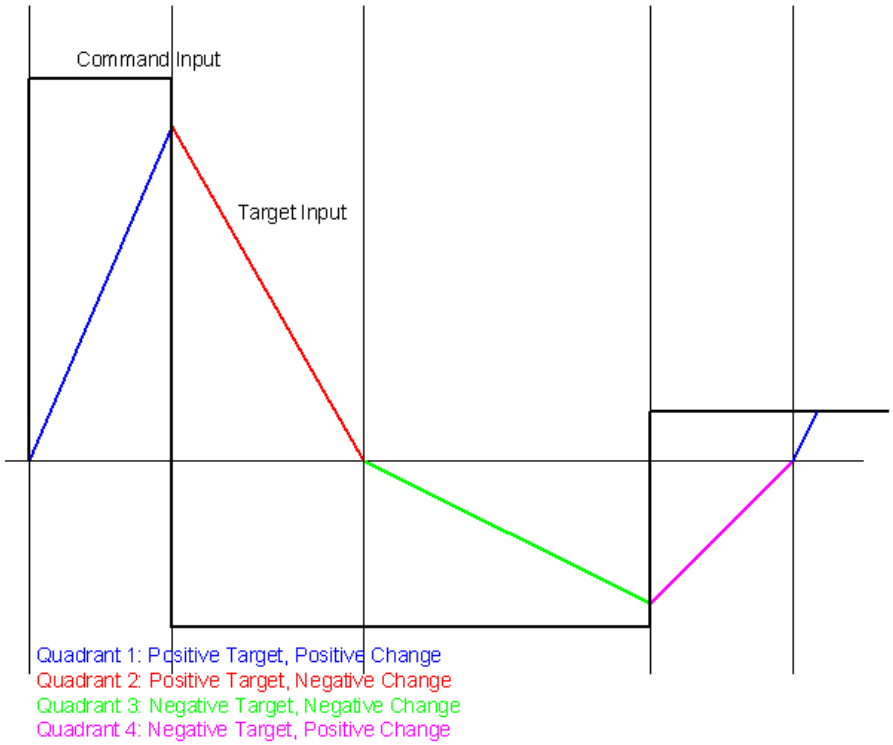
TABLE 1.13 Modes of Operation

Modes of Operation
Profile Position Mode
Profile Velocity Mode
Profile Torque Mode (current mode)
Homing Mode
Custom Configured Modes

1.2.1 Profile Modes

In a profile mode of operation, the trajectory is limited by the drive. Profile modes use the command limiter values ("Command Limiter Parameters" on page 54) to limit the maximum command rate. If the host sends a large command step, the drive spreads the demand over some period of time to stay equal to or below the maximum defined rate. The command limiter is configurable to supply up to 4 different slopes depending on the input, as shown in Figure 1.2 below.

FIGURE 1.2



Profile Position Mode The position control loop is a fully de-coupled PID with velocity and acceleration feedforward terms. In Profile Position Mode, the drive closes three control loops, position, velocity, and current. The velocity loop provides additional "stiffness," keeping the dynamic position errors minimal because the drive now reacts not only to position errors, but also to velocity errors (which can be interpreted as position error changes). The Command Limiter is enabled in this mode. The Profiler sets limits on the rate of change of the target position command, otherwise called velocity. When commanding point-to-point moves, the velocity between points is limited to the maximum value set in the profiler. When tuning the position loop for profile position mode, proportional gain is typically all that is needed. It is important, however, to start with a stable, yet responsive velocity loop. Feedforward gain can be added to improve tracking performance, if needed. More information on tuning is found in the setup software application help files.

The following commands define how the drive will behave in Position mode.

TABLE 1.14

Command Name	Description
Modes Of Operation	Sends a request to change the drive's mode of operation.
Modes Of Operation Display	Displays the actual mode of operation.
Command Limiter Parameters	Sets the values used by the command limiter to limit the target command.
Motion Profile Type	Sets profiling to linear ramp. Currently this is fixed and read only.
Position Loop Control Parameters	Sets the tuning values associated with the position loop
Position Limits	Sets the trip points for various position events such as Max Measured Position Limit.
Position Values	Read instantaneous values such as Position demand and Position Target. This object is read only.
Actual Position	Reads measured position value.
Target Position	Sets the target position command.

Profile Velocity Mode The velocity control loop is a fully de-coupled PID with an acceleration feedforward term, and a low speed estimator. In Profile Velocity Mode, the drive closes two control loops, velocity, and current. Velocity feedback may be derived from a motor mounted encoder or analog source with a 10V maximum. The low speed estimator is most useful when necessarily tight velocity loops can cause audible noise during low speed moves (less than 1 count per velocity update).

The Command Limiter is enabled in this mode. The Limiter sets limits on the rate of change of the velocity command. When commanding large velocity transients, the resulting acceleration between points is limited to the maximum value set in the profiler.

When tuning the velocity loop it is important to start with a stable, yet responsive current loop. Feedforward gain can be added to improve tracking performance, if needed. More information on tuning is found in the setup software help files.

TABLE 1.15

Command Name	Description
Modes Of Operation	Sends a request to change the drive's mode of operation.
Modes Of Operation Display	Displays the actual mode of operation.
Command Limiter Parameters	Sets the values used by the command limiter to limit the target command.
Motion Profile Type	Sets profiling to linear ramp. Currently this is fixed and read only.
Velocity Limits	Sets the trip points for various velocity events such as Over Speed.
Velocity Loop Control Parameters	Sets the tuning values associated with the velocity loop
Velocity Values	Read instantaneous values such as Velocity demand and Velocity Target. This object is read only.
Velocity Sensor Actual Value	Reads pre-filtered measured velocity value.
Velocity Demand	Reads Velocity Demand value.
Actual Velocity	Reads post-filtered measured velocity value.
Target Velocity	Sets the target velocity command.

Profile Current Mode Profile Current Mode, also referred to as Profile Torque Mode, configures the drive to respond to target current commands. The drive's current loop consists of a PI loop.

Because torque is merely a constant Kt multiplied by a magnitude of current, it is the programmer's responsibility to convert current values into torque values in the software environment.

The Command Limiter is enabled in this mode and sets limits on the rate of change of the current command. During a step acceleration command, the change in commanded torque, known as Jerk, is limited to the maximum value set in the profiler.

Tune this loop according to "current loop tuning" instructions in the setup software manual. The following objects are used to setup and operate the Current Mode:

TABLE 1.16

Command Name	Description
Modes Of Operation	Sends a request to change the drive's mode of operation.
Modes Of Operation Display	Displays the actual mode of operation
Command Limiter Parameters	Sets the values used by the command limiter to limit the target command.
Motion Profile Type	Sets profiling to linear ramp. Currently this is fixed and read only.
Current Values	Read instantaneous values such as Current Demand and Current Target. This object is read only.
Current Loop / Commutation Values	Sets the tuning and commutation values associated with the current loop.
Target Current	Sets the target current command.
Actual Current	Reads the actual motor current (in case of 3-phase motors, this is a composite, equivalent single phase current).

1.2.2 Homing Mode

See "Homing" on page 212 for detailed information about methods and hardware involved in homing.

1.2.3 Custom Defined Modes Of Operation

ADVANCED Motion Controls FlexPro servo drives provide flexibility beyond the defined standard modes of operation. For a case where a drive configuration is desired that is not available via the defined modes, contact *ADVANCED* Motion Controls directly for technical support.

1.3 Implicit Messaging

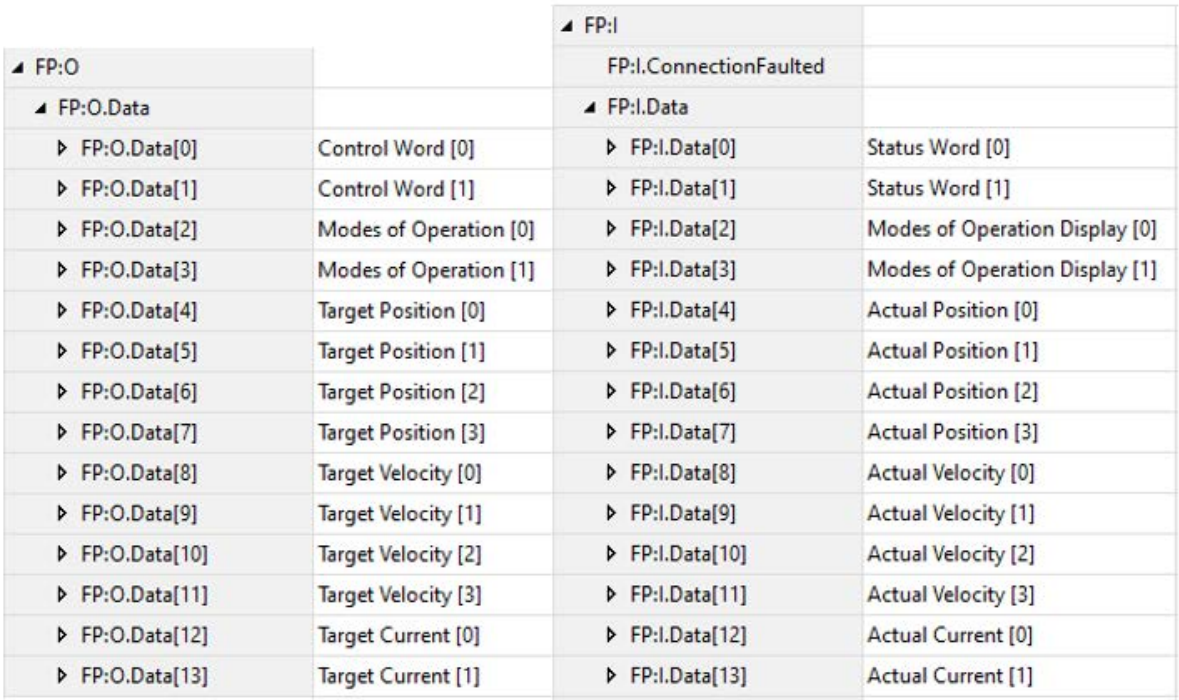
Implicit messages are sent via UDP and are used for time critical information. This is also commonly referred to as I/O messaging. *ADVANCED* Motion Controls' Ethernet IP drives support the following parameters for I/O messaging.

TABLE 1.17 I/O Parameters

Inputs		Outputs	
Parameter	**Instance**	**Parameter**	**Instance**
Status Word	912	Control Word	911
Modes of Operation Display	914	Modes of Operation	913
Actual Position	915	Target Position	925
Actual Velocity	920	Target Velocity	938
Actual Current	924	Target Current	923

The figure below shows an example of implicit message tags. The tag descriptions (the white columns) are not populated automatically. If necessary, the user can manually enter the tag descriptions.

FIGURE 1.3 Implicit Message Tags



FP:O		FP:I	
		FP:I.ConnectionFaulted	
FP:O.Data		FP:I.Data	
FP:O.Data[0]	Control Word [0]	FP:I.Data[0]	Status Word [0]
FP:O.Data[1]	Control Word [1]	FP:I.Data[1]	Status Word [1]
FP:O.Data[2]	Modes of Operation [0]	FP:I.Data[2]	Modes of Operation Display [0]
FP:O.Data[3]	Modes of Operation [1]	FP:I.Data[3]	Modes of Operation Display [1]
FP:O.Data[4]	Target Position [0]	FP:I.Data[4]	Actual Position [0]
FP:O.Data[5]	Target Position [1]	FP:I.Data[5]	Actual Position [1]
FP:O.Data[6]	Target Position [2]	FP:I.Data[6]	Actual Position [2]
FP:O.Data[7]	Target Position [3]	FP:I.Data[7]	Actual Position [3]
FP:O.Data[8]	Target Velocity [0]	FP:I.Data[8]	Actual Velocity [0]
FP:O.Data[9]	Target Velocity [1]	FP:I.Data[9]	Actual Velocity [1]
FP:O.Data[10]	Target Velocity [2]	FP:I.Data[10]	Actual Velocity [2]
FP:O.Data[11]	Target Velocity [3]	FP:I.Data[11]	Actual Velocity [3]
FP:O.Data[12]	Target Current [0]	FP:I.Data[12]	Actual Current [0]
FP:O.Data[13]	Target Current [1]	FP:I.Data[13]	Actual Current [1]

I/O messaging requires no further configuration and these parameters are available when an *ADVANCED* Motion Controls' Ethernet IP drive is added as a module to a PLC controller.

Note

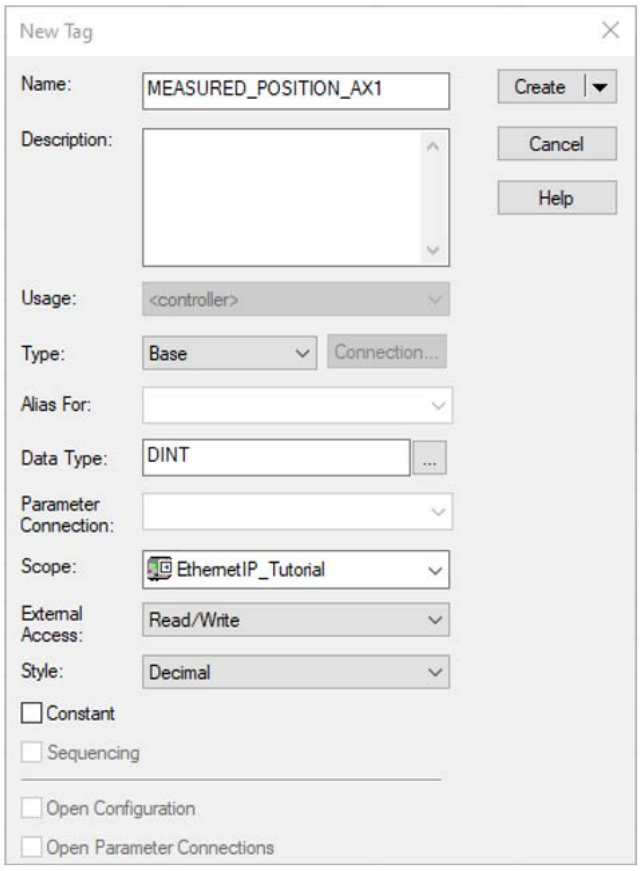
The parameters available for I/O messaging are not currently user configurable. This functionality is planned to be added in a future release.

1.3.1 Read Example

The following example shows how to configure a CompactLogix 1769-L24ER-QBFC1B using RSLogix 5000 to read the Actual Position tags with an implicit message.

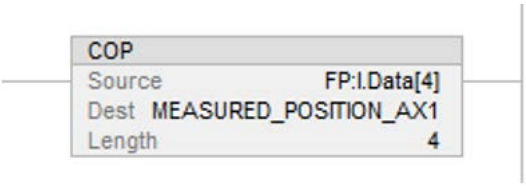
1. Create a new tag to hold the Actual Position data. This tag will be used to hold data from all 4 SINT Actual Position tags. The data type is DINT in this case, since there are 4 SINT tags that will need to be mapped to the new Actual Position (Integer-32) tag.

FIGURE 1.4 Actual Position DINT Tag



2. Create the following rung with the COP element shown below.

FIGURE 1.5 COP Rung Creation - Read



Triggering this rung will map each byte from FP:IData[4] through FP:I:Data[7] to the DINT Actual Position tag created. Figure 1.4 illustrates how each byte is arranged and mapped to the new tag:

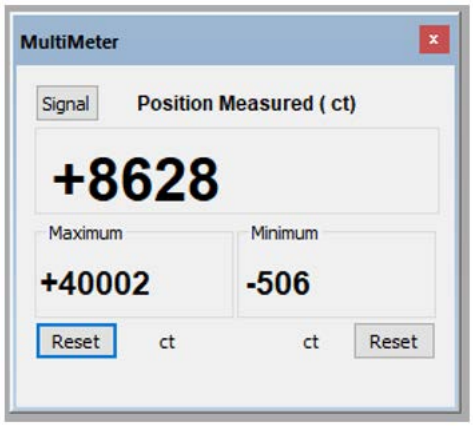
FIGURE 1.6 COP Rung Creation - Read

◢ FP:I.Data[4]	-76	Actual Position [0]
FP:I.Data[4].0	0	Actual Position [0]
FP:I.Data[4].1	0	Actual Position [0]
FP:I.Data[4].2	1	Actual Position [0]
FP:I.Data[4].3	0	Actual Position [0]
FP:I.Data[4].4	1	Actual Position [0]
FP:I.Data[4].5	1	Actual Position [0]
FP:I.Data[4].6	0	Actual Position [0]
FP:I.Data[4].7	1	Actual Position [0]
◢ FP:I.Data[5]	33	Actual Position [1]
FP:I.Data[5].0	1	Actual Position [1]
FP:I.Data[5].1	0	Actual Position [1]
FP:I.Data[5].2	0	Actual Position [1]
FP:I.Data[5].3	0	Actual Position [1]
FP:I.Data[5].4	0	Actual Position [1]
FP:I.Data[5].5	1	Actual Position [1]
FP:I.Data[5].6	0	Actual Position [1]
FP:I.Data[5].7	0	Actual Position [1]
◢ FP:I.Data[6]	0	Actual Position [2]
FP:I.Data[6].0	0	Actual Position [2]

◢ MEASURED_POSITION_AX1
MEASURED_POSITION_AX1.0
MEASURED_POSITION_AX1.1
MEASURED_POSITION_AX1.2
MEASURED_POSITION_AX1.3
MEASURED_POSITION_AX1.4
MEASURED_POSITION_AX1.5
MEASURED_POSITION_AX1.6
MEASURED_POSITION_AX1.7
MEASURED_POSITION_AX1.8
MEASURED_POSITION_AX1.9
MEASURED_POSITION_AX1.10
MEASURED_POSITION_AX1.11
MEASURED_POSITION_AX1.12
MEASURED_POSITION_AX1.13
MEASURED_POSITION_AX1.14
MEASURED_POSITION_AX1.15
MEASURED_POSITION_AX1.16

Users can monitor the position in ACE when connected "Read-Only" to ensure that the position is read correctly. Navigate to Tools > Multimeter, then click Signal and select Position > Position Measured.

FIGURE 1.7 Position Measured

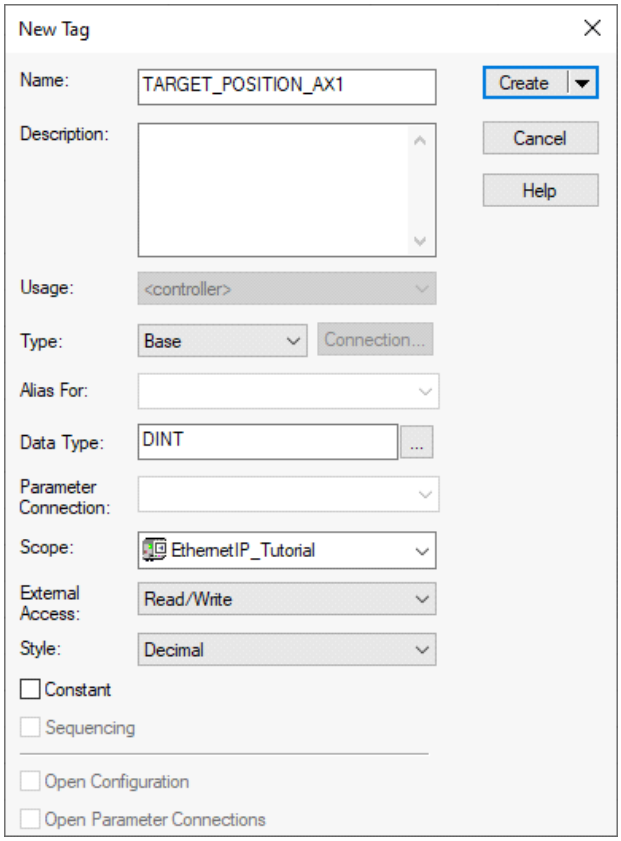


1.3.2 Write Example

This example shows how to configure a CompactLogix 1769-L24ER-QBFC1B using RSLogix 5000 to write an implicit message to the Target Position tags.

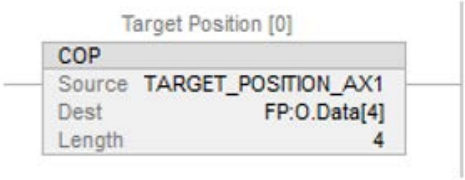
1. Create a new tag for a Target Position value. The following tag will hold the Target Position value. The data type is DINT in this case.

FIGURE 1.8 Target Position DINT Tag



2. The following rung element will map the 32-bit Target Position tag to the 4 SINT Target Position registers.

FIGURE 1.9 Rung Creation - Read



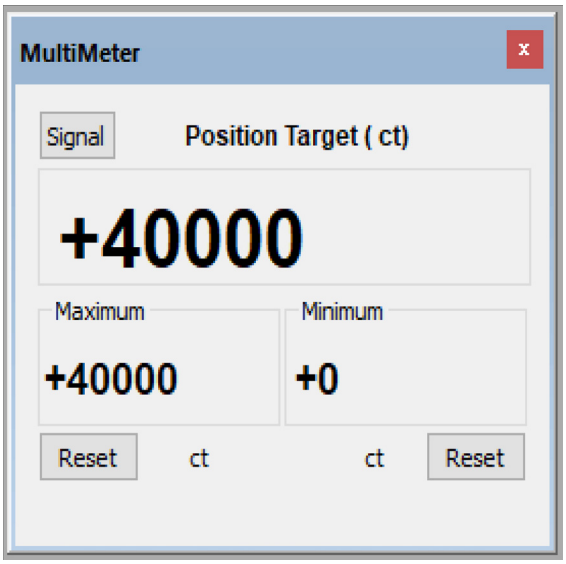
3. Enter a position value in the Target Position tag and initiate the rung.

FIGURE 1.10 Target Position Tag

TARGET_POSITION_AX1	40000	Decimal	DINT

Users can monitor the target position received by the drive when connected with ACE in "Read-Only" mode. Navigate to Tools > Multimeter, then click Signal and select Position > Position Target.

FIGURE 1.11 Position Measured



1.4 Explicit Messaging

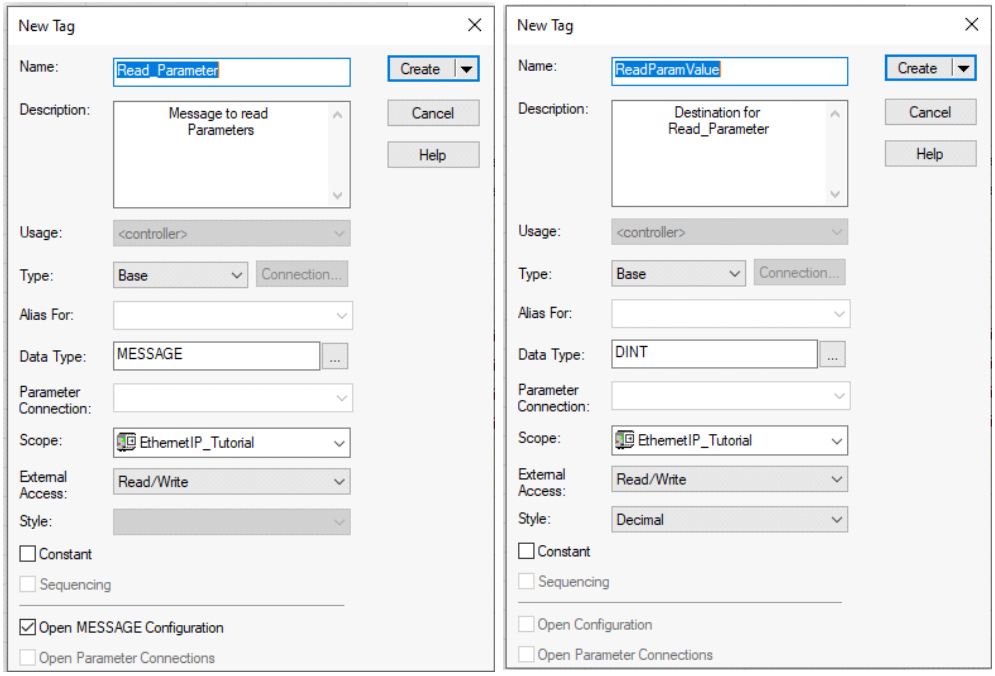
Explicit messages are sent via TCP/IP and are used for information that is not time critical. Explicit messages require additional configuration on the user's part in the PLC.

1.4.1 Read Example

This example shows how to configure a CompactLogix 1769-L24ER-QBFC1B using RSLogix 5000 to read the At Velocity Window Parameter.

1. Create two new tags: one message tag and one variable tag.

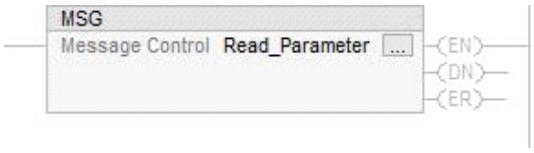
FIGURE 1.12 New Tag Creation



The message tag will be used to read the parameter and the variable tag will be used to store the value of the read parameter. In this case, the Data Type for the variable tag was a DINT, but this can change depending on the parameter of interest.

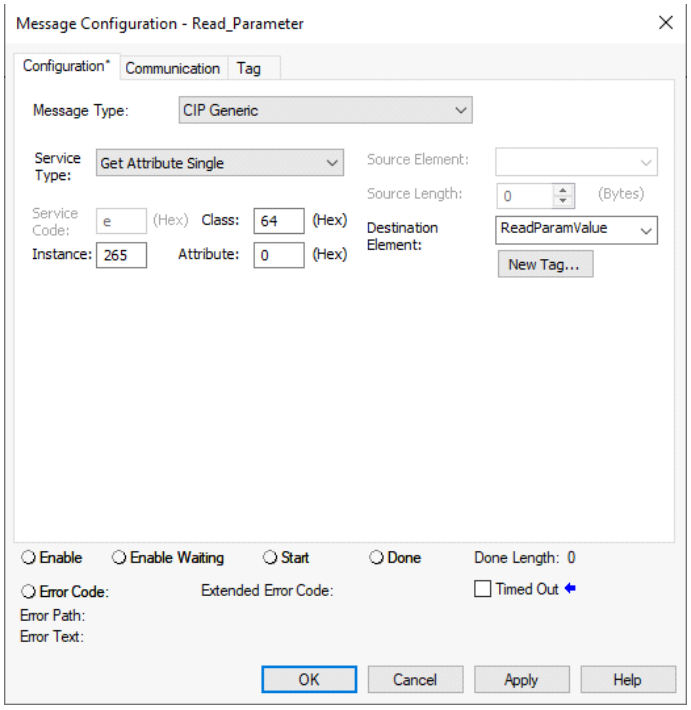
2. Create a rung on the ladder logic diagram of the Main Routine to read the parameter.

FIGURE 1.13 Read Message Rung Creation



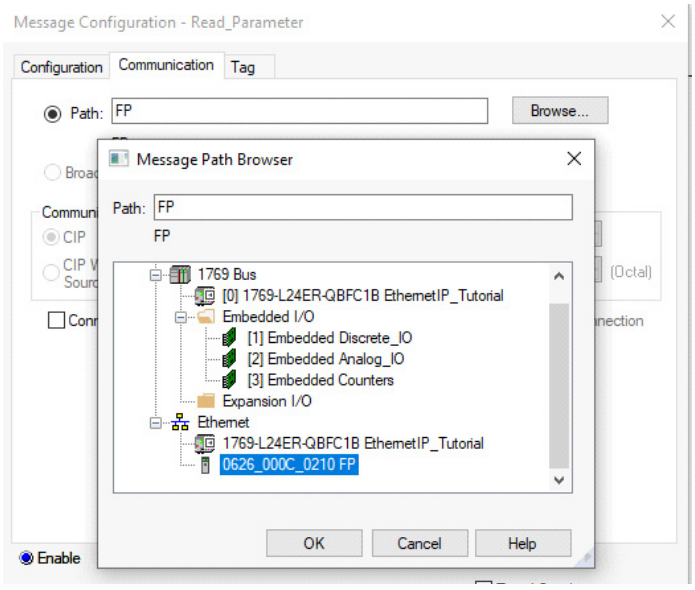
3. Configure the message with the information about the parameter to be read.

FIGURE 1.14 Read Message Configuration



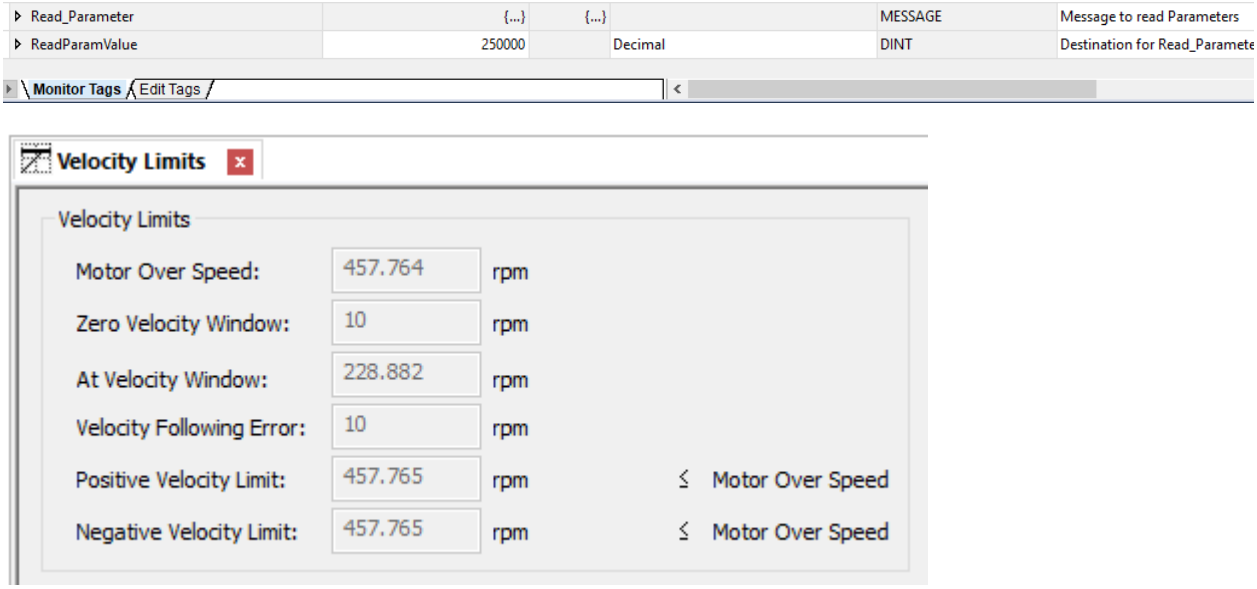
4. Set the Communication Path to the *ADVANCED* Motion Controls' Ethernet IP drive.

FIGURE 1.15 Communication Path Configuration



5. Downloading the project and going online will populate the variable tag with the value of the parameter of interest. Depending on the parameter of interest, ACE can be used to verify the value. Additional unit conversion may be required.

FIGURE 1.16 Results and Verification

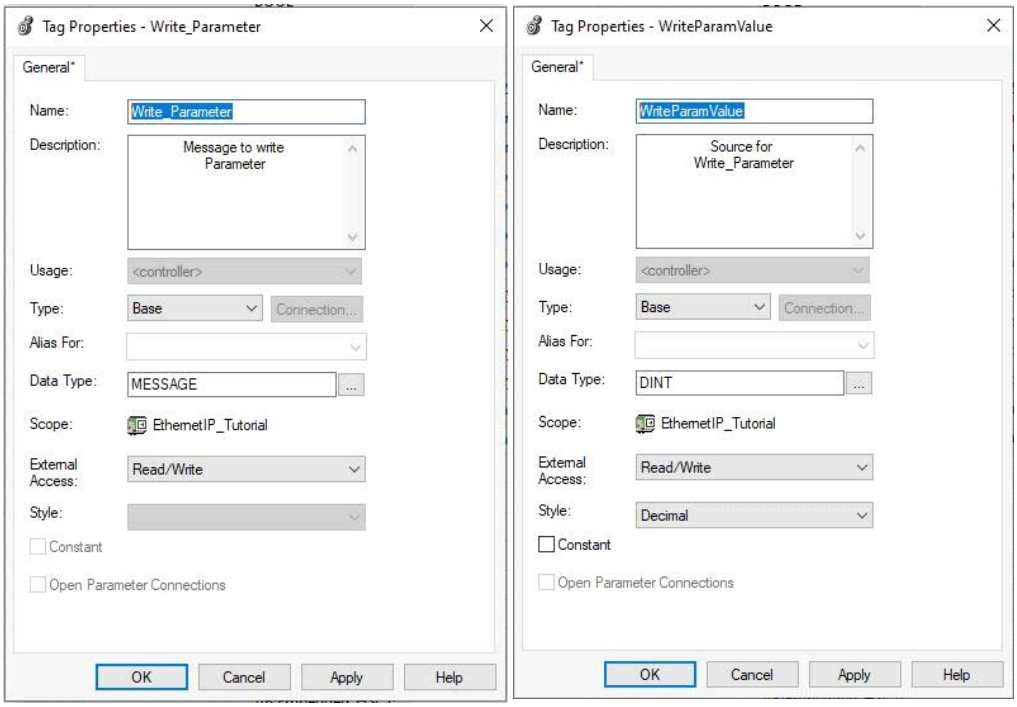


1.4.2 Write Example

This example shows how to configure a CompactLogix 1769-L24ER-QBFC1B using RSLogix 5000 to write to the At Velocity Window Parameter.

1. Create two new tags: one message tag and one variable tab.

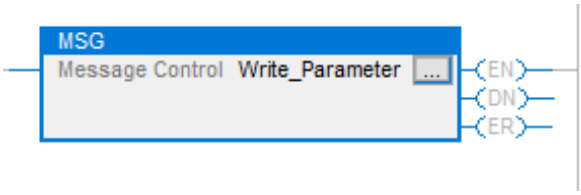
FIGURE 1.17 New Tag Creation



The message tag will be used to write to the parameter and the variable tag will be used to store the value to be written. In this case, the Data Type for the variable tag was a DINT, but this can change depending on the variable of interest.

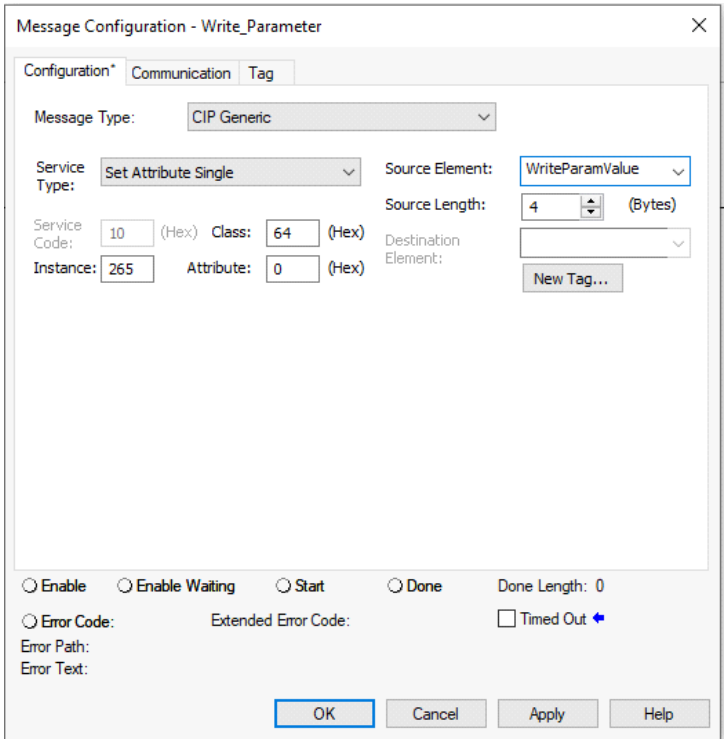
2. Create a rung on the ladder logic diagram of the Main Routine to write to the parameter.

FIGURE 1.18 Write Message Rung Creation



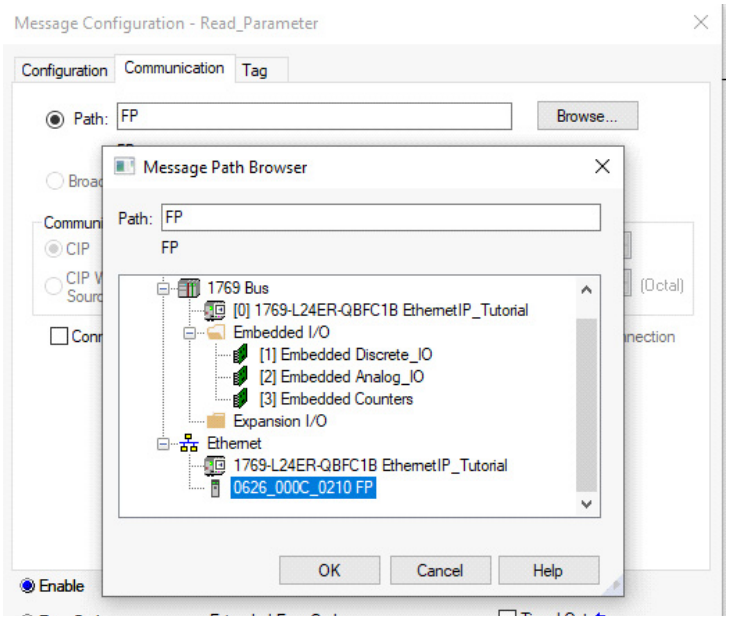
3. Configure the message with the information about the parameter to be written to.

FIGURE 1.19 Write Message Configuration



4. Set the Communication path to the *ADVANCED* Motion Controls' Ethernet IP drive.

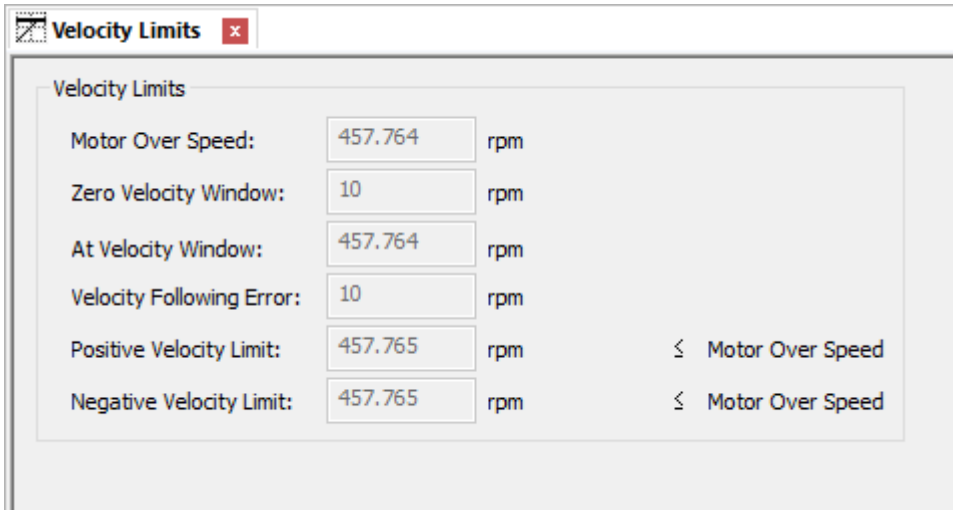
FIGURE 1.20 Communication Path Configuration



5. Downloading the project and going online will write the value entered into the variable tag to the parameter. Depending on the parameter of interest, ACE can be used to verify the value. Additional unit conversion may be required.

FIGURE 1.21 Results and Verification

WriteParamValue	500000		Decimal	DINT
Write_Parameter	{...}	{...}		MESSAGE



1.5 Connecting to the Drive

Connecting to an *ADVANCED* Motion Controls' Ethernet IP drive is possible via two communication interfaces on the drive. One interface is the ethernet communication interface, which is used after the drive is configured for proper operation. The other interface is an USB serial communication interface. This is used when first configuring a drive project file according to the application needs and storing it to the drive's Non Volatile Memory.

1.5.1 USB Interface Setup

All that is needed is a USB cable connected from the drive USB port to a computer. Refer to the hardware manual and software configuration manual for more information about connecting to the USB interface.

1.5.2 Ethernet Interface Setup

IP Address Refer to the hardware manual and software configuration manual for more information on setting the IP Address of the drive.

2 Command Dictionary

2.1 Dictionary Table Format

The command dictionary provides one entry for each existing command. Since commands may or may not have parameters, the following convention is used for each entry:

TABLE 2.1 Command Table Example.

Instance #	Instance Name			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	N/A	Read / Write*	No
Description: Detailed description of what this command does and how to use it. * This indicates a note about conditions.				

For *ADVANCED* Motion Controls' Ethernet IP communication, the Class for each command will always be 100 (64h), and the Attribute will always be 0.

Furthermore, each entry has the following attributes:

- Data Type: This field specifies the data type of the command. Data types can be 8-bit, 16-bit, 32-bit, or string.
- Range: This field specifies the usable range of the values this command can contain.
- Units: This field specifies the units that apply to the value stored in this command. If the value contained in this command has no units, the field will contain "N/A." The appropriate physical unit is only supplied if there is a one-to-one relationship between the physical unit and the drive data type. For units which require scaling between a physical unit and the drive data type, an abbreviation for a drive unit is supplied. All drive units are described in "Appendix A" on page 210.
- Accessibility: This field specifies whether the command can be read or written to. If there is a * in this box, then the command may only be accessible in certain modes. See the Description box for more information about mode dependencies.
- Stored to NVM: This field specifies whether or not the command can be stored to Non Volatile Memory such that it is recalled on power up.
- Description: This field contains detailed information on the command and what it is used for.

2.2 Configuration Commands

Although the following commands are used predominately during drive setup and initialization, they are not restricted to use only during setup. Configuration commands can be divided into the following three categories.

- Administrative Commands: these commands are used for administrative operations such as loading or restoring parameters from non-volatile memory.
- Communication Commands: these commands determine the communication settings of the drive. They can only be set via the communication channel interface.
- Drive Commands: these commands define the drive configuration and are largely determined by the setup and configuration software. Commands which contain general drive information are also available.

2.2.1 Administrative Commands

Restore Drive Parameters

22	Restore Drive Parameters Key			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	See Table	N/A	Write Only	No

Description:

Defines which parameters will be restored from the drive's non-volatile memory to the current project file.

Key (Hex)	Description
165B	Restore Ethernet communication parameters
1CAE	Restore RS232 communication parameters
7405	Restore non-axis parameters
8137	Restore axis parameters

Store Drive Parameters

23	Store Drive Parameters Key			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	See Table	N/A	Write Only	Yes

Description:

Defines which parameters will be stored to the drive's non-volatile memory.

Key (Hex)	Description
1CAE	Store Ethernet communication parameters
165B	Store RS232 communication parameters
7405	Store non-axis parameters
8137	Store axis parameters

2.2.2 Communication Commands

Network Configuration

17	IP Address			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – (2^{31}-1)	N/A	Read/Write	Yes
Description: Contains the IP address. Each byte represents one octet of the IP address. **Example:** C0 A8 64 01 = 192.168.100.1				

18	Subnet Mask			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – (2^{31}-1)	N/A	Read/Write	Yes
Description: Contains the Subnet Mask. Each byte represents one octet of the subnet mask. **Example:** FF FF FF 00 = 255.255.255.0				

19	Default Gateway			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – (2^{31}-1)	N/A	Read/Write	Yes
Description: Contains the default gateway. Each byte represents one octet of the gateway. **Example:** C0 A8 64 64 = 192.168.100.100				

2.2.3 Drive Configuration

2.2.3.1 Motion Control Profile

Feedback Sensor Parameters

219	Encoder Wiring Polarity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Contains a value corresponding to the encoder wiring polarity.				

220	Maximum Phase Detection Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$-1]	DC2	Read / Write	Yes
Description: Contains a value corresponding to the maximum phase detection current that is allowed during a phase detect. See "Appendix A" on page 210 for units conversion.				

221	Phase Detect Settling Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(31)}$ –1]	N/A	Read / Write	Yes

Description:
Contains the delay after a phase detect, before the commutation angle value is assigned. This delay should be set greater than the time it takes for the load to settle after phase detection. The value to be written to the drive is calculated as follows:
(desired phase detect settling time in milliseconds) x f
where f = the switching frequency of the drive in kHz.
Examples:
For a drive with a switching frequency of 20 kHz, to achieve a phase detect settling time of 500ms, the value written to the drive is:
500 x 20 = 10000
For a drive with a switching frequency of 14 kHz, to achieve a phase detect settling time of 500ms, the value written to the drive is:
500 x 14 = 7000

222	Maximum Phase Detection Brake Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – [$2^{(32)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: Contains a value corresponding to the maximum phase detection brake time.				

223	Maximum Phase Detection Motion			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	DG1	Read / Write	Yes

Description:

Contains a value corresponding to the maximum phase detection motion that is allowed during a phase detect. See "Appendix A" on page 210 for unit conversion details.

224	Resolver Resolution			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 1	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the resolver resolution.

Value	Resolver Resolution*
0	Low (12 bit = 4096 counts/resolver cycle standard)
1	High (14 bit = 16384 counts/resolver cycle standard)

*Refer to the drive datasheet for the specific resolution values supported by the drive.

225	Serial Encoder Type			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$-1]	N/A	Read/Write	Yes

Description:

Contains a value corresponding to the serial encoder type.

Value	Serial Encoder Type
0	Not Assigned
1	Hiperface
2	Endat 2.1
3	BiSS
4	Endat 2.2

226	Position Interpolation / Velocity Divider			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	N/A	Read / Write	Yes

Description:

For Sin/Cos encoder interpolation, contains a value corresponding to the position interpolation. The number of position counts per Sin/Cos cycle is equal to 4 multiplied by the interpolation value. This only applies to position. The measured velocity is unaffected by the interpolation. For digital encoder feedback (BiSS, EnDat 2.2) contains a value corresponding to the Velocity Divider parameter. The Velocity Divider is used to scale down the feedback going to the velocity gains when very high resolution encoders are used. This prevents saturation of the velocity loop. For incremental encoder feedback, the Interpolation Value is 1.

	Sin/Cos Encoder	Digital Encoder
Value	Interpolation	Velocity Divider
0	1x	1
1	2x	2
2	4x	4
3	8x	8
4	16x	16
5	32x	32
6	64x	64
7	128x	128
8	256x	256
9	512x	512

227	Encoder Steps Per Encoder Sine Period			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the encoder steps per encoder sine period.

Incremental Encoder #1 Motor Feedback

792	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

793	Incremental Encoder #1 - Commutation Counts per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – [2^{(30)}-1]$	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of quadrature counts per unit length.				

794	Incremental Encoder #1 - Pole Pairs per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	1-64	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of pole pairs per unit length.				

795	Incremental Encoder #1 - Motor Phase Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	ohms	Read / Write	Yes
Description: Contains a value corresponding to the resistance of each phase of the motor.				

796	Incremental Encoder #1 - Motor Phase Inductance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	Henrys	Read / Write	Yes
Description: Contains a value corresponding to the inductance of each phase of the motor.				

797	Incremental Encoder #1 - Null Torque Sync Angle #1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the Null Torque Angle of the first of the two synchronization edges.				

798	Incremental Encoder #1 - Null Torque Sync Angle #2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the Null Torque Angle of the second of the two synchronization edges.				

799	Incremental Encoder #1 - Commutation Angle Error Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the error angle that will be tolerated before a commutation sync error is reported.				

800	Incremental Encoder #1 - Maximum Commutation Angle Error Adjustment			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the maximum amount of phase angle correction that may be applied per each synchronization event.				

801	Incremental Encoder #1 - Hall State Table			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes

Description:
Contains an array listing the optimum torque angle for each valid Hall state.

	Torque Angle Default Values	
Hall State Value	Hex	Degrees
0	0x0000	0
1	0x4000	90
2	0XEAAB	330
3	0x1555	30
4	0x9555	210
5	0x6AAB	150
6	0xC000	290
7	0x000	0

802	Incremental Encoder #1 - Low Speed Estimator Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – [2^{(32)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the K_t/J value used by the Low Speed Estimator when the encoder is used as a velocity feedback source.				

803	Incremental Encoder #1 - NTAD Selection Enum			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	0-2	N/A	Read / Write	Yes

Description:
Selects from one of the three Null Torque Angle Determination methods.

Null Torque Angle Determination Method	
Description	Value
Wake and Shake	0
Slam and Go	1
Sweep the Leg	2

804	Incremental Encoder #1 - Maximum Amount of NTAD Movement Allowed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes

Description:
Contains a value corresponding to the amount of movement allowed (per unit length) during the execution of certain Null Torque Angle Determination methods.

805	Incremental Encoder #1 - Maximum Torque Current Allowed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	DC1	Read / Write	Yes

Description:
Contains a value corresponding to the maximum amount of torque producing current to be used during any of the Null Torque Angle Determination methods. See "Appendix A" on page 210 for unit conversion.

806	Incremental Encoder #1 - Lock Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	ms	Read / Write	Yes

Description:
Contains a value corresponding to the number of milliseconds to lock the rotor in a null torque position at the end of a successful Null Torque Angle Determination.

807	Incremental Encoder #1 - Internal Retry Brake Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	ms	Read / Write	Yes
Description: Contains a value corresponding to the number of milliseconds to apply the dynamic brake to stop any motion between consecutive Null Torque Angle Determinaton retry attempts.				

Incremental Encoder #2 Motor Feedback

808	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

809	Incremental Encoder #2 - Commutation Counts per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – [$2^{(32)}$-1]	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of quadrature counts per unit length.				

810	Incremental Encoder #2 - Pole Pairs per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	1-64	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of pole pairs per unit length.				

811	Incremental Encoder #2 - Motor Phase Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	ohms	Read / Write	Yes
Description: Contains a value corresponding to the resistance of each phase of the motor.				

812	Incremental Encoder #2 - Motor Phase Inductance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	Henrys	Read / Write	Yes
Description: Contains a value corresponding to the inductance of each phase of the motor.				

813	Incremental Encoder #2 - Null Torque Sync Angle #1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the Null Torque Angle of the first of the two synchronization edges.				

814	Incremental Encoder #2 - Null Torque Sync Angle #2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the Null Torque Angle of the second of the two synchronization edges.				

815	Incremental Encoder #2 - Commutation Angle Error Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the error angle that will be tolerated before a commutation sync error is reported.				

816	Incremental Encoder #2 - Maximum Commutation Angle Error Adjustment			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the maximum amount of phase angle correction that may be applied per each synchronization event.				

817	Incremental Encoder #2 - Hall State Table			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	$0 – [2^{(16)}-1]$	N/A	Read / Write	Yes

Description:
Contains an array listing the optimum torque angle for each valid Hall state.

	Torque Angle Default Values	
Hall State Value	Hex	Degrees
0	0x0000	0
1	0x4000	90
2	0XEAAB	330
3	0x1555	30
4	0x9555	210
5	0x6AAB	150
6	0xC000	290
7	0x000	0

818	Incremental Encoder #2 - Low Speed Estimator Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – [2^{(32)}-1]$	N/A	Read / Write	Yes

Description:
Contains a value corresponding to the K_t/J value used by the Low Speed Estimator when the encoder is used as a velocity feedback source.

819	Incremental Encoder #2 - NTAD Selection Enum			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	0-2	N/A	Read / Write	Yes

Description:
Selects from one of the three Null Torque Angle Determination methods.

Null Torque Angle Determination Method	
Description	Value
Wake and Shake	0
Slam and Go	1
Sweep the Leg	2

820	Incremental Encoder #2 - Maximum Amount of NTAD Movement Allowed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	N/A	Read / Write	Yes
Description: Contains a value corresponding to the amount of movement allowed (per unit length) during the execution of certain Null Torque Angle Determination methods.				

821	Incremental Encoder #2 - Maximum Torque Current Allowed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	DC1	Read / Write	Yes
Description: Contains a value corresponding to the maximum amount of torque producing current to be used during any of the Null Torque Angle Determination methods. See "Appendix A" on page 210 for unit conversion.				

822	Incremental Encoder #2 - Lock Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	ms	Read / Write	Yes
Description: Contains a value corresponding to the number of milliseconds to lock the rotor in a null torque position at the end of a successful Null Torque Angle Determination.				

823	Incremental Encoder #2 - Internal Retry Brake Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	ms	Read / Write	Yes
Description: Contains a value corresponding to the number of milliseconds to apply the dynamic brake to stop any motion between consecutive Null Torque Angle Determinaton retry attempts.				

BiSS-C Encoder Motor Feedback

824	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

825	BiSS-C Encoder - Commutation Counts per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – $[2^{(32)}-1]$	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of quadrature counts per unit length.				

826	BiSS-C Encoder - Pole Pairs per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	1-64	counts	Read / Write	Yes
Description: Contains a value corresponding to the number of pole pairs per unit length.				

827	BiSS-C Encoder - Motor Phase Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – $[2^{(16)}-1]$	ohms	Read / Write	Yes
Description: Contains a value corresponding to the resistance of each phase of the motor.				

828	BiSS-C Encoder - Motor Phase Inductance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – $[2^{(16)}-1]$	Henrys	Read / Write	Yes
Description: Contains a value corresponding to the inductance of each phase of the motor.				

829	BiSS-C Encoder - Null Torque Angle at Encoder Zero Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – $[2^{(16)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the null torque angle of the motor when the position of the absolute encoder is 0 counts.				

830	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

831	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

832	BiSS-C Encoder - Monitored Encoder Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – [2^{(32)}-1]$	counts	Read / Write	Yes
Description: Contains a value corresponding to the offset that is added to the absolute position value that is read from the encoder.				

833	BiSS-C Encoder - Monitored Encoder Range			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – [2^{(32)}-1]$	counts	Read / Write	Yes
Description: Contains a value corresponding to the range in which the monitored encoder position will be restricted to.				

Auxiliary Input Parameters

353	Auxiliary Input - Input Counts: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$1 - [2^{(16)} –1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the number of input counts in the input/output ratio used for Encoder following and Step and Direction modes in Configuration 0.				

354	Auxiliary Input - Output Counts: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$-[2^{(16)} –1] - [2^{(16)} –1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the output in the input/output ratio used for Encoder following and Step and Direction modes in Configuration 0. Encoder following mode can be used only when the position loop is closed. However, Step and Direction can be used to control position, velocity or current. Therefore, the scaling value used is mode dependent.				

355	Auxiliary Input - Input Counts: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	1 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Contains a value corresponding to the number of input counts in the input/output ratio used for Encoder following and Step and Direction modes in Configuration 1.				

356	Auxiliary Input - Output Counts: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	-[$2^{(16)}$ –1] - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Contains a value corresponding to the output in the input/output ratio used for Encoder following and Step and Direction modes in Configuration 1. Encoder following mode can be used only when the position loop is closed. However, Step and Direction can be used to control position, velocity or current. Therefore, the scaling value used is mode dependent.				

Current Loop & Commutation Control Parameters

235	Torque Current Loop Proportional Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$-1]	N/A	Read / Write	Yes
Description: Contains the value of proportional gain for the current loop. This value is calculated from the gain value as follows: $Gain \times 2^9 = Value\ to\ the\ drive$				

236	Torque Current Loop Integral Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$-1]	N/A	Read / Write	Yes
Description: Contains the value of integral gain for the current loop. This value is calculated from the gain value as follows: $Gain \times 2^9 = Value\ to\ the\ drive$				

237	Torque Current Target Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	[$-2^{(15)}$] – [$2^{(15)}$-1]	DC1	Read / Write	Yes
Description: Contains a value corresponding to the torque current target offset				

238	Peak Current Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$-1]	DC1	Read / Write	Yes
Description: Contains a value corresponding to the peak current limit set in the drive. See "Appendix A" on page 210 for unit conversion.				

239	Peak Current Hold Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: Contains a value corresponding to the peak current time set in the drive.				

240	Continuous Current Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$-1]	DC1	Read / Write	Yes
Description: Contains a value corresponding to the continuous current limit set in the drive. See "Appendix A" on page 210 for unit conversion.				

241	Peak to Continuous Current Transition Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: Contains a value corresponding to the peak to continuous current transition time set in the drive.				

242	Flux Current Reference Loop Proportional Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] – [$2^{(31)}$-1]	N/A	Read / Write	Yes
Description: Contains a value corresponding to the flex current reference loop proportional gain. The flux current loop is only used for AC induction motors. This value can be calculated from the gain value as follows: (Flux Current Reference Loop Proportional Gain) x 10000h, where ($0 \leq$ Gain ≤ 32767)				

243	Flux Current Reference Loop Integral Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] – [$2^{(31)}$-1]	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the flex current reference loop integral gain. The flux current loop is only used for AC induction motors. This value can be calculated from the gain value as follows:

(Flux Current Reference Loop Integral Gain) x 400000h, where ($0 \leq Gain \leq 512$)

244	Rated Peak Line Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the rated peak line current allowed when using an AC induction motor.				

245	No Load Peak Magnetization Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the no-load peak magnetization current allowed when using an AC induction motor.				

246	Rated Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the rated frequency.				

247	Rated Rotor No Load Base Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	RPM	Read / Write	Yes
Description: Contains a value corresponding to the rated rotor no-load base speed. This parameter is only used with an AC induction motor.				

248	FW Threshold Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	N/A	Read / Write	Yes
Description: Contains a value corresponding to the field weakening threshold speed. This parameter is used for AC induction motors only.				

249	Motor Type			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	-	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the type of motor connected to the drive.

250	Auxiliary Commutation Mode			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	-	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the auxiliary commutation mode. Auxiliary commutation only occurs if the drive is connected to a ***brushed*** motor. Brushed motors commutate the motor internally and therefore do not require the drive to commutate the motor. The drive supplies current over two phases. This remains fixed for a brushed drive.

251	Encoder Direction			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - 3	N/A	Read/Write	Yes

Description:

Contains a value corresponding to the direction of the encoder feedback.

Data Value	Rotation Direction	Primary Feedback Polarity
0	Inverted	Inverted
1	Inverted	Standard
2	Standard	Inverted
3	Standard	Standard

Velocity Loop Control Parameters

252	Velocity Feedback Direction			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	-	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the feedback polarity of an auxiliary encoder used for velocity feedback.

253	Velocity Feedback Filter Coefficient			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(30)}$]	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the velocity feedback filter coefficient. To convert between the value entered into ACE and the value sent to the drive, use the following functions.

ACE to the drive:

$$2^{30}(-e^{a}+1) = P$$

where a = [value entered into ACE] x (-6.283185307x10^{-4}) and P = [value sent to drive]

Drive to ACE:

$$\frac{\ln\left(1-\frac{P}{2^{30}}\right)}{-6.283185307\times10^{-4}} = [\text{value seen in ACE (Hz)}]$$

where P = [value in drive]

254	Velocity Loop Proportional Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$-1]	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the proportional loop gain of the velocity loop for Gain Set 0. This value can be calculated from the gain value as follows:

(Velocity Loop Proportional Gain) x ((2^{16} * V_{vel} * R_{ppv}) / (2 * C_{pk})), where:

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

255	Velocity Loop Integral Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the integral loop gain of the velocity loop for Gain Set 0. This value can be calculated from the gain value as follows:

(Velocity Loop Integral Gain) x $(2^{32} * R_{ppv}) / (2 * C_{pk})$, where

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

256	Velocity Loop Derivative Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the derivative loop gain of the velocity loop for Gain Set 0. This value can be calculated from the gain value as follows:

(Velocity Loop Derivative Gain) x $((2^{16} * (V_{vel})^2 * R_{ppv}) / (2 * C_{pk}))$, where

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

257	Velocity Loop Acceleration Feed Forward Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the velocity loop acceleration feed forward gain for Gain Set 0. This value can be calculated from the gain value as follows:

(Velocity Loop Acceleration Feed Forward Gain) x $((2^{16} * (V_{vel})^2 * R_{ppv}) / (2 * C_{pk}))$, where

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

258	Velocity Loop Integrator Decay Rate			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$-1]	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to a percentage of the velocity loop integrator decay rate. The value can be calculated from the velocity loop integrator decay rate as follows:

(% of Integrator Gain) * (2^{16} / 100)

259	Velocity Loop Proportional Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$-1]	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the proportional loop gain of the velocity loop for Gain Set 1. This value can be calculated from the gain value as follows:

(Velocity Loop Proportional Gain) x ((2^{16} * V_{vel} * R_{ppv}) / (2 * C_{pk})), where:

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

260	Velocity Loop Integral Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$-1]	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the integral loop gain of the velocity loop for Gain Set 1. This value can be calculated from the gain value as follows:

(Velocity Loop Integral Gain) x (2^{32} * R_{ppv}) / (2 * C_{pk}), where

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

261	Velocity Loop Derivative Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the derivative loop gain of the velocity loop for Gain Set 1. This value can be calculated from the gain value as follows:

(Velocity Loop Derivative Gain) x $((2^{16} * (V_{vel})^2 * R_{ppv}) / (2 * C_{pk}))$, where

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

262	Velocity Loop Acceleration Feed Forward Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value that corresponds to the velocity loop acceleration feed forward gain for Gain Set 1. This value can be calculated from the gain value as follows:

(Velocity Loop Acceleration Feed Forward Gain) x $((2^{16} * (V_{vel})^2 * R_{ppv}) / (2 * C_{pk}))$, where

V_{vel} = (Switching Frequency / 2)

R_{ppv} = Interpolation Value (see instance 226 for a reference table to locate the actual interpolation value using the stored enum)

C_{pk} = Peak Current

Velocity Limits

263	Motor Over Speed Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the motor over speed limit set in the drive. When the velocity of the motor meets or exceeds this value, the drive will indicate a motor over speed condition is present. See "Appendix A" on page 210 for unit conversion.

264	Zero Speed Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the motor zero speed limit set in the drive. When the velocity of the motor reaches this value or LOWER, the drive will indicate that it has reached a zero speed condition. See "Appendix A" on page 210 for unit conversion.

265	Velocity At Speed Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the velocity at speed limit set in the drive. When the velocity of the motor reaches this value or LOWER, the drive will indicate that it has reached its target velocity. See "Appendix A" on page 210 for unit conversion.

266	Velocity Loop Following Error Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the velocity at speed limit set in the drive. If the measured velocity meets or exceeds this value, the drive will perceive this as a velocity following error. See "Appendix A" on page 210 for unit conversion.

267	Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the positive velocity limit set in the drive. When the speed set by this value is met or exceeded, the drive will indicate that the positive limit was reached. See "Appendix A" on page 210 for unit conversion.

268	Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	DS1	Read / Write	Yes

Description:

Contains a value corresponding to the negative velocity limit set in the drive. When the speed set by this value is met or exceeded, the drive will indicate that the negative limit was reached. See "Appendix A" on page 210 for unit conversion.

269	Velocity Loop Integrator Decay Active Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes
Description: Contains a value that corresponds to the velocity loop integrator decay active window.				

Position Loop Control Parameters

270	Position Loop Proportional Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop proportional gain for Gain Set 0. This value can be calculated from the gain value using the following formula:

(Position Loop Proportional Gain) x 2^{32}, where

271	Position Loop Integral Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop integral gain for Gain Set 0. This value can be calculated from the gain value using the following formula:

(Position Loop Integral Gain) x (2^{41} / V_{pos}), where

V_{pos} = (Switching Frequency / 2)

272	Position Loop Derivative Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop derivative gain for Gain Set 0. This value can be calculated from the gain value using the following formula:

(Position Loop Derivative Gain) x (2^{28} * V_{pos}), where

V_{pos} = (Switching Frequency / 2)

273	Position Loop Velocity Feed Forward Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop velocity feed forward gain for Gain Set 0. This value can be calculated from the gain value using the following formula:

(Position Loop Velocity Feed Forward Gain) x $(2^{28} * V_{pos})$, where

V_{pos} = (Switching Frequency / 2)

274	Position Loop Acceleration Feed Forward Gain: Set 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop acceleration feed forward gain for Gain Set 0. This value can be calculated from the gain value using the following formula:

(Position Loop Acceleration Feed Forward Gain) x $(2^{28} * (V_{pos})^2)$, where

V_{pos} = (Switching Frequency / 2)

275	Position Feedback Direction			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	-	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the feedback polarity of an auxiliary encoder used for position feedback.

276	Position Loop Integrator Decay Rate			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	%	Read / Write	Yes

Description:

Contains a value that corresponds to the position loop integrator decay rate. The value is in percentage of the position loop Integrator Gain.

277	Position Loop Proportional Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop proportional gain for Gain Set 1. This value can be calculated from the gain value using the following formula:

(Position Loop Proportional Gain) x 2^{32}, where

278	Position Loop Integral Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop integral gain for Gain Set 1. This value can be calculated from the gain value using the following formula:

(Position Loop Integral Gain) x (2^{41} / V_{pos}), where

V_{pos} = (Switching Frequency / 2)

279	Position Loop Derivative Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop derivative gain for Gain Set 1. This value can be calculated from the gain value using the following formula:

(Position Loop Derivative Gain) x (2^{28} * V_{pos}), where

V_{pos} = (Switching Frequency / 2)

280	Position Loop Velocity Feed Forward Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the position loop velocity feed forward gain for Gain Set 1. This value can be calculated from the gain value using the following formula:

(Position Loop Velocity Feed Forward Gain) x (2^{28} * V_{pos}), where

V_{pos} = (Switching Frequency / 2)

281	Position Loop Acceleration Feed Forward Gain: Set 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	N/A	Read / Write	Yes
Description:				
Contains a value corresponding to the position loop acceleration feed forward gain for Gain Set 1. This value can be calculated from the gain value using the following formula: (Position Loop Acceleration Feed Forward Gain) x $(2^{28} * (V_{pos})^2)$, where V_{pos} = (Switching Frequency / 2)				

Position Limits

282	Measured Position Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} –1]$	counts	Read / Write	Yes
Description:				
Replacement value for the measured position when the Set Position event is triggered. This allows you to redefine the current measured position (e.g. reset to zero).				

283	Home Position Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} –1]$	counts	Read / Write	Yes
Description:				
Position value of the home position. When the measured position reaches this position, within the In-Home Position Window, the At-Home event becomes active.				

284	Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} –1]$	counts	Read / Write	Yes
Description:				
Maximum allowed measured position. The Max Measured Position event will become active if the measured position exceeds this value.				

285	Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} –1]$	counts	Read / Write	Yes
Description:				
Minimum allowed measured position. The Min Measured Position event will become active if the measured position exceeds this value.				

286	At Home Position Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read / Write	Yes
Description: Defines a window around the Home Position Value, such that when the measured position is within this window, the At-Home event will be active.				

287	In Position Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 - [2^{(32)} - 1]$	counts	Read / Write	Yes
Description: Defines a window around the target position, such that when the measured position is within this window, the At Command event will be active.				

288	Position Following Error Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 - [2^{(32)} - 1]$	counts	Read / Write	Yes
Description: The maximum allowed position error (difference between target position and measured position), prior to setting the “Position Following Error” event (active in position mode only).				

289	Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read / Write	Yes
Description: Maximum allowed target position. The Max Target Position event will become active if the target position exceeds this value.				

290	Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read / Write	Yes
Description: Minimum allowed target position. The Min Target Position event will become active if the target position exceeds this value.				

291	Position Limits Control			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	-	N/A	Read / Write	Yes
Description: Defines if the position limits are enabled or not. 3 = Enable Limits, 0 = Disable Limits.				

292	Position Loop Integrator Decay Active Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	Counts	Read / Write	Yes
Description: Contains a value that corresponds to the position loop integrator decay active window.				

Position Following Error Window

916	Position Following Error Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 - [2^{(32)} –1]$	counts	Read / Write	Yes
Description: The maximum allowed position error (difference between target and measured position), prior to setting the “Position Following Error” event (active in position mode only).				

Position Following Error Time Out

917	Position Following Error Time Out			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$2 - [2^{(15)}-1]$	ms	Read / Write	Yes
Description: The time delay after the occurrence of Position Following Error before its Event Action is executed. The functionality of this object is identical to that of the manufacturer-specific instance Event Response Time: Position Following Error.				

Position Following Error Actual Value

937	Position Following Error Actual Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{32}] - [2^{(32)} –1]$	counts	Read Only	Yes
Description: Provides the actual value of the position following error, defined as the difference between target and measured position.				

Home Offset

926	Home Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	counts	Read / Write	Yes

Description:
When the homing routine is complete, the zero position found by the drive is given an offset equal to the value stored in this object. All moves are interpreted relative to this new zero position. When homing completes, the equation for the drive's current position is "Current position = 0 – Home Offset value".

Motion Profile Type

927	Motion Profile Type			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 2	N/A	Read / Write	No

Description:
Specifies the type of profile to be used for profiled position mode (see instance 913 - Modes of Operation for setting modes). The default profile type is linear (trapezoidal), but accel/decel may be selected. This value is not stored to NVM. Specific values for either profile can be configured using instances 293 - 306.

Value	Input Method
0 (default)	Linear Ramp (trapezoidal profile)
2	Accel/Decel (jerk-free ramp)

Torque Profile Type

928	Torque Profile Type			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0	N/A	Read Only	No

Description:
Specifies the type of profile to be used for profiled torque mode (see instance 913 - Modes of Operation for setting modes). The value is fixed equal to 0 which specifies a linear (trapezoidal) profile.

Homing Method

929	Homing Method			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer8	1 – 35	N/A	Read / Write	Yes

Description:
There are almost 35 homing methods supported by AMC servo drives. See "Homing" on page 212 for details on each homing method.

Homing Speeds

930	Speed During Search For Switch			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – (2^{32}-1)	DS4	Read / Write	Yes
Description: Sets the speed during the first stage of Homing algorithms. See "Appendix A" on page 210 for unit conversion.				

931	Speed During Search For Zero			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – (2^{32}-1)	DS4	Read / Write	Yes
Description: Sets the speed during the search for zero. This is usually after the search for switch has completed and is set much slower for accuracy. See "Appendix A" on page 210 for unit conversion.				

Homing Acceleration

932	Homing Acceleration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – (2^{32}-1)	DA1	Read / Write	Yes
Description: Sets the accelerations and decelerations used by the drive's homing routine. See "Appendix A" on page 210 for unit conversion details.				

Command Limiter Parameters

The command limiter limits the slope of the target command in any mode. It is broken into four components, where each component is assigned to one parameter. To remove any effects of the command limiter, maximize all limiter parameters. Some limiter parameters have units that change with the operating mode of the drive. For these parameters, refer to Table 2.2 to make the correct unit selection.

TABLE 2.2 Command Limiter Units

Drive Operation Mode	Units
Current (Torque)	DJ1
Velocity	DA2
Position (Around Velocity Or Current)	DS2

293	Linear Ramp Positive Target Positive Change: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum positive change in positive command used with the command limiter for Configuration 0. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

294	Linear Ramp Positive Target Negative Change: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum negative change in positive command used with the command limiter for Configuration 0. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

295	Linear Ramp Negative Target Negative Change: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum negative change in negative command used with the command limiter for Configuration 0. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

296	Linear Ramp Negative Target Positive Change: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum positive change in negative command used with the command limiter for Configuration 0. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

297	Linear Ramp Positive Target Positive Change: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum positive change in positive command used with the command limiter for Configuration 1. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

298	Linear Ramp Positive Target Negative Change: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum negative change in positive command used with the command limiter for Configuration 1. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

299	Linear Ramp Negative Target Negative Change: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum negative change in negative command used with the command limiter for Configuration 1. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

300	Linear Ramp Negative Target Positive Change: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	0 - [$2^{(48)}$ –1]	See Table 2.2	Read / Write	Yes
Description:				
Defines the maximum positive change in negative command used with the command limiter for Configuration 1. Units are mode dependent. See "Appendix A" on page 210 for unit conversions.				

301	Controlled Accel/Decel Maximum Speed: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer64	0 - [$2^{(64)}$ –1]	DS3	Read / Write	Yes
Description:				
Sets the maximum speed for a profile in Configuration 0. See "Appendix A" on page 210 for unit conversions.				

302	Controlled Accel/Decel Maximum Acceleration: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Interger32	0 - [$2^{(32)}$ –1]	DA3	Read / Write	Yes
Description:				
Defines the maximum acceleration used with the command limiter in Configuration 0. See "Appendix A" on page 210 for unit conversions.				

303	Controlled Accel/Decel Maximum Deceleration: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 - [$2^{(32)}$ –1]	DA3	Read / Write	Yes
Description: Defines the maximum deceleration used with the command limiter in Configuration 0. See "Appendix A" on page 210 for unit conversions.				

304	Controlled Accel/Decel Maximum Speed: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer64	0 - [$2^{(64)}$ –1]	DS3	Read / Write	Yes
Description: Sets the maximum speed for a profile in Configuration 1. See "Appendix A" on page 210 for unit conversions.				

305	Controlled Accel/Decel Maximum Acceleration: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Interger32	0 - [$2^{(32)}$ –1]	DA3	Read / Write	Yes
Description: Defines the maximum acceleration used with the command limiter in Configuration 1. See "Appendix A" on page 210 for unit conversions.				

306	Controlled Accel/Decel Maximum Deceleration: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 - [$2^{(32)}$ –1]	DA3	Read / Write	Yes
Description: Defines the maximum deceleration used with the command limiter in Configuration 1. See "Appendix A" on page 210 for unit conversions.				

Open Loop Stepper Parameters

198	Microsteps per Unit Length			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(32)}$-1]	counts	Read Only	No
Description: Contains a value corresponding to the microsteps per unit length.				

199	Initial Step Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains a value corresponding to the initial step position.				

200	Moving Torque Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	counts	Read Only	No
Description: Contains a value corresponding to the position measured at moving torque level.				

201	Resting Torque Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	counts	Read Only	No
Description: Contains a value corresponding to the position measured at resting torque level.				

202	Time to Switch to Rest Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(16)}-1]$	ms	Read Only	No
Description: Contains a value corresponding to the time required to switch to rest current.				

203	Wave Shaping Phase Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	counts	Read Only	No
Description: Contains a value corresponding to the wave shaping phase offset.				

204	Wave Shaping Magnitude			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(16)}-1]$	counts	Read Only	No
Description: Contains a value corresponding to the wave shaping magnitude.				

205	Wave Shaping Cutoff Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(16)}-1]$	Hz	Read Only	No
Description: Contains a value corresponding to the wave shaping cutoff frequency.				

206	Dead Time Compensation			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(16)}-1]$	ms	Read Only	No
Description: Contains a value corresponding to the dead time compensation.				

207	Active Damping Cutoff Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(16)}-1]$	Hz	Read Only	No
Description: Contains a value corresponding to the active damping cutoff frequency.				

208	Active Damping Filter Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter gain.				

209	Active Damping Filter Coefficient B0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter coefficient B0.				

210	Active Damping Filter Coefficient B1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter coefficient B1.				

211	Active Damping Filter Coefficient B2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter coefficient B2.				

212	Active Damping Filter Coefficient A1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter coefficient A1.				

213	Active Damping Filter Coefficient A2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	number	Read Only	No
Description: Contains a value corresponding to the active damping filter coefficient A2.				

214	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

2.2.3.2 Hardware Profile

Drive Initialization Parameters

20	Start-Up Sequence Control			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)}-1]$	N/A	Read/Write	Yes

Description:

Defines how the drive will behave when power is first applied..

Bit	Drive Initialization Parameters
0	Disable Bridge
1	Load Config 1
2	Phase Detect
3	Set Position
4	Enable Motion Engine After Startup Sequence
5-15	Reserved

21	Start-Up Phase Detect Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)}-1]$	N/A	Read/Write	Yes

Description:

Defines how the Phase Detect feature will behave when power is first applied.

Value	Description
0	Phase Detect immediately upon power-up
1	Phase Detect after the first bridge enable upon power-up

Motion Engine Configuration

834	Motion Engine Startup Motion			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)}-1]$	N/A	Read/Write	Yes

Description:

Defines the startup behavior when running a motion engine index upon power-up. The bit values are broken up as defined below.

Bits 0:2

0: Indexer Mode

1-7: Reserved

Bits 3:4

0: Motion initiated via digital inputs

1: Motion initiated via Network commands

Bits 5:8

Defines the index number to load on power-up

Bits 9:15

0: Motion will not immediately start.

1: Motion will automatically start if the Motion Engine is configured to be enabled on power-up.

2-7: Reserved

User Voltage Protection Parameters

228	Over-Voltage Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read/Write	Yes

Description:

Contains the over voltage limit specified for the drive. It must be set lower than the drive over-voltage hardware shutdown point and greater than the Nominal DC Bus Voltage. See "Appendix A" on page 210 for unit conversion.

229	Under-Voltage Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read/Write	Yes

Description:

Contains the under voltage limit specified for the drive. It must be set above the drive under-voltage hardware shutdown point and less than the Nominal DC Bus Voltage. See "Appendix A" on page 210 for unit conversion.

230	Shunt Regulator Enable Threshold			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(15)}-1]$	DV1	Read/Write	Yes

Description:

Contains a value corresponding to the shunt regulator enable threshold voltage. When the bus reaches this voltage, built in shut regulator will turn on allow excess energy to be dissipated across an external shunt resistor. Not all drives have built in shunt regulators. See "Appendix A" on page 210 for unit conversion.

231	Shunt Regulator Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	See table below	N/A	Read/Write	Yes

Description:

Contains a value corresponding to the current state of the shunt regulator.

Value (Hex)	Description
00	Enable Shunt Regulator
02	Disable Shunt Regulator

232	External Shunt Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} –1]$	ohms (Ω)	Read / Write	Yes

Description:

Contains a value corresponding to the resistance of the external shunt resistor.

233	External Shunt Power			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} –1]$	watts (W)	Read / Write	Yes

Description:

Contains a value corresponding to the amount of power the external shunt resistor is allowed to dissipate.

234	External Shunt Inductance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	microhenrys (µH)	Read / Write	Yes
Description: Contains a value corresponding to the inductance of the external shunt resistor.				

Drive Temperature Parameters

386	External Analog Temperature Disable Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] - [$2^{(31)}$ –1]	DT1	Read / Write	Yes
Description: Contains a value corresponding to the temperature disable level for an analog over temperature event. See "Appendix A" on page 210 for unit conversion.				

387	External Analog Temperature Enable Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] - [$2^{(31)}$ –1]	DT1	Read / Write	Yes
Description: Contains a value corresponding to the temperature re-enable level after the analog over temperature event has been activated. See "Appendix A" on page 210 for unit conversion.				

388	Thermistor Disable Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	Ohms	Read / Write	Yes
Description: If supported by the hardware, this value represents the value of the thermistor resistance (ohms) in which the Motor Over Temperature Event is to trip. For a Positive Thermal Coefficient (PTC), the disable resistance will be greater than or equal to the enable value. For a Negative Thermal Coefficient (NTC), the disable resistance will be less than the enable value.				

389	Thermistor Enable Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	Ohms	Read / Write	Yes
Description: If supported by the hardware, this value represents the value of the thermistor resistance (ohms) in which the Motor Over Temperature Event is to release. For a Positive Thermal Coefficient (PTC), the disable resistance will be greater than or equal to the enable value. For a Negative Thermal Coefficient (NTC), the disable resistance will be less than the enable value.				

390	Thermal Monitor Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	N/A	N/A	Read / Write	Yes

Description:

If supported by the hardware, configures the operation of the thermistor/thermal cutoff switch.

Valid Values	
0	Disabled
1	Thermistor Active
2	Thermal Cutoff Switch Active Closed
3	Thermal Cutoff Switch Active High

Capture Configuration Parameters The following tables are used by the parameters of this command.

TABLE 2.3 Capture Edge Configuration

Value	Description
0	None / Off
1	Rising Edge
2	Falling Edge
3	Both Rising and Falling Edges

TABLE 2.4 Capture Trigger Type

Value	Description
0	Single Trigger: Captures one value at a time. Need to reset Capture before capturing another.
1	Continuous Trigger: Captures a new value each time Capture input is triggered without having to reset.

TABLE 2.5 Capture Source High/Low Values

Signal Source	Low Value	High Value
Velocity Feedback	16	17
Velocity Measured	18	19
Velocity Target	20	21
Velocity Demand	22	23
Velocity Error	24	25
Position Measured	26	27
Position Target	28	29
Position Demand	30	31
Position Error	32	33
Auxiliary Position Input	34	35
Phase Angle	15	87
Stator Angle	86	87

321	Capture 'A' Edge Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 3	N/A	Read / Write	Yes
Description: Selects the edge(s) that will trigger Capture A to capture the pre-selected signal source. See Table 2.3 for a list of allowable values.				

322	Capture 'A' Trigger			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 1	N/A	Read / Write	Yes
Description: Selects whether a value should be captured only once, upon the first applicable edge that is encountered, or every time an edge is encountered. See Table 2.4 for a list of allowable values.				

323	Capture 'A' Source – Low Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the next to select the signal source to capture. See Table 2.5 for a list of allowable values.				

324	Capture 'A' Source – High Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the previous to select the signal source to capture. See Table 2.5 for a list of allowable values.				

325	Capture 'B' Edge Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 3	N/A	Read / Write	Yes
Description: Selects the edge(s) that will trigger Capture B to capture the pre-selected signal source. See Table 2.3 for a list of allowable values.				

326	Capture 'B' Trigger			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 1	N/A	Read / Write	Yes
Description: Selects whether a value should be captured only once, upon the first applicable edge that is encountered, or every time an edge is encountered. See Table 2.4 for a list of allowable values.				

327	Capture 'B' Source – Low Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the next to select the signal source to capture. See Table 2.5 for a list of allowable values.				

328	Capture 'B' Source – High Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the previous to select the signal source to capture. See Table 2.5 for a list of allowable values.				

329	Capture 'C' Edge Configuration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 3	N/A	Read / Write	Yes
Description: Selects the edge(s) that will trigger Capture C to capture the pre-selected signal source. See Table 2.3 for a list of allowable values.				

330	Capture 'C' Trigger			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 1	N/A	Read / Write	Yes
Description: Selects whether a value should be captured only once, upon the first applicable edge that is encountered, or every time an edge is encountered. See Table 2.4 for a list of allowable values.				

331	Capture 'C' Source – Low Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the next to select the signal source to capture. See Table 2.5 for a list of allowable values.				

332	Capture 'C' Source – High Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	See Table 2.5	N/A	Read / Write	Yes
Description: This parameter is used together with the previous to select the signal source to capture. See Table 2.5 for a list of allowable values.				

Digital Input Parameters

TABLE 2.6 Command Mapping

Bit	Digital Input Mask
0	Digital Input 1
1	Digital Input 2
2	Digital Input 3
3	Digital Input 4
4	Digital Input 5
5	Digital Input 6
6	Digital Input 7
7	Digital Input 8
8…15	Reserved

Note: Number of actual inputs depends on drive model

391	Digital Input Mask: Active Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	N/A	Read / Write	Yes
Description: Determines which digital inputs are active high and which are active low. See Table 2.6 above for mapping structure.				

392	Digital Input Mask: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to User Disable. See Table 2.6 above for mapping structure.				

393	Digital Input Mask: Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the positive limit. See Table 2.6 above for mapping structure.				

394	Digital Input Mask: Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to negative limit. See Table 2.6 above for mapping structure.				

395	Digital Input Mask: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to activate Motor Over Temperature. See Table 2.6 above for mapping structure.				

396	Digital Input Mask: Phase Detection			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to activate Phase Detection. See Table 2.6 above for mapping structure.				

397	Digital Input Mask: Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to activate the Auxiliary Disable. See Table 2.6 above for mapping structure.				

398	Digital Input Mask: Set Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to activate the Set Position event. See Table 2.6 above for mapping structure.				

399	Digital Input Mask: Start Homing			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to activate the Start Homing event. See Table 2.6 above for mapping structure.				

400	Digital Input Mask: Home Switch			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Home Switch. See Table 2.6 above for mapping structure.				

401	Digital Input Mask: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the User Stop event. See Table 2.6 above for mapping structure.				

402	Digital Input Mask: Set / Reset Capture A			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Set / Reset Capture A event. See Table 2.6 above for mapping structure.				

403	Digital Input Mask: Set / Reset Capture B			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Set / Reset Capture B event. See Table 2.6 above for mapping structure.				

404	Digital Input Mask: Set / Reset Capture C			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Set / Reset Capture C event. See Table 2.6 above for mapping structure.				

405	Digital Input Mask: Reset Event History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Reset Event History event. See Table 2.6 above for mapping structure.				

406	Digital Input Mask: Configuration Select			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Configuration Select event. See Table 2.6 above for mapping structure.				

407	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read / Write	Yes

408	Digital Input Mask: Gain Select			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Gain Select event. See Table 2.6 above for mapping structure.				

409	Digital Input Mask: Zero Position Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Zero Position Error event. See Table 2.6 above for mapping structure.				

410	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read / Write	Yes

411	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read / Write	Yes

412	Digital Input Mask: Motion Engine Mode			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	N/A	Read / Write	Yes
Description:				
Defines which digital inputs, if any, are assigned to the Motion Engine Mode event. See Table 2.6 above for mapping structure.				

413	Digital Input Mask: Motion Engine Enable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	N/A	Read / Write	Yes
Description:				
Defines which digital inputs, if any, are assigned to the Motion Engine Enable event. See Table 2.6 above for mapping structure.				

414	Digital Input Mask: Motion Execute			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	N/A	Read / Write	Yes
Description:				
Defines which digital inputs, if any, are assigned to the Motion Execute event. See Table 2.6 above for mapping structure.				

415	Digital Input Mask: Motion Select 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	N/A	Read / Write	Yes
Description:				
Defines which digital inputs, if any, are assigned to the Motion Select 0 event. See Table 2.6 above for mapping structure.				

416	Digital Input Mask: Motion Select 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Motion Select 1 event. See Table 2.6 above for mapping structure.				

417	Digital Input Mask: Motion Select 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Motion Select 2 event. See Table 2.6 above for mapping structure.				

418	Digital Input Mask: Motion Select 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Motion Select 3 event. See Table 2.6 above for mapping structure.				

419	Digital Input Mask: Motion Engine Abort			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Motion Engine Abort event. See Table 2.6 above for mapping structure.				

420	Digital Input Mask: Jog Plus			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Jog Plus event. See Table 2.6 above for mapping structure.				

421	Digital Input Mask: Jog Minus			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Jog Minus event. See Table 2.6 above for mapping structure.				

422	Digital Input Mask: Jog 0 Select			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Jog 0 Select event. See Table 2.6 above for mapping structure.				

423	Digital Input Mask: Jog 1 Select			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital inputs, if any, are assigned to the Jog 1 Select event. See Table 2.6 above for mapping structure.				

Digital Output Parameters

TABLE 2.7 Command Mapping

Bit	Digital Output Mask
0	Digital Output 1
1	Digital Output 2
2	Digital Output 3
3	Digital Output 4
4…15	Reserved

424	Digital Output Mask: Active Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs are active high and which are active low. See Table 2.7 above for mapping structure.				

425	Digital Output Mask: Drive Reset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Drive Reset event. See Table 2.7 above for mapping structure.				

426	Digital Output Mask: Drive Internal Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Drive Internal Error event. See Table 2.7 above for mapping structure.				

427	Digital Output Mask: Short Circuit Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Short Circuit Fault event. See Table 2.7 above for mapping structure.				

428	Digital Output Mask: Over-Current Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Over-Current event. See Table 2.7 above for mapping structure.				

429	Digital Output Mask: Hardware Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Hardware Under Voltage event. See Table 2.7 above for mapping structure.				

430	Digital Output Mask: Hardware Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Hardware Over Voltage event. See Table 2.7 above for mapping structure.				

431	Digital Output Mask: Drive Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Drive Over Temperature event. See Table 2.7 above for mapping structure.				

432	Digital Output Mask: Parameter Restore Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Parameter Restore Error event. See Table 2.7 above for mapping structure.				

433	Digital Output Mask: Parameter Store Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Parameter Store Error event. See Table 2.7 above for mapping structure.				

434	Digital Output Mask: Invalid Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Invalid Hall State event. See Table 2.7 above for mapping structure.				

435	Digital Output Mask: Phase Synchronization Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Phase Synchronization Error event. See Table 2.7 above for mapping structure.				

436	Digital Output Mask: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Motor Over Temperature event. See Table 2.7 above for mapping structure.				

437	Digital Output Mask: Phase Detection Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Phase Detection Fault event. See Table 2.7 above for mapping structure.				

438	Digital Output Mask: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Feedback Sensor Error event. See Table 2.7 above for mapping structure.				

439	Digital Output Mask: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Log Entry Missed event. See Table 2.7 above for mapping structure.				

440	Digital Output Mask: Software Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Software Disable event. See Table 2.7 above for mapping structure.				

441	Digital Output Mask: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the User Disable event. See Table 2.7 above for mapping structure.				

442	Digital Output Mask: User Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Positive Limit event. See Table 2.7 above for mapping structure.				

443	Digital Output Mask: User Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Negative Limit event. See Table 2.7 above for mapping structure.				

444	Digital Output Mask: Current Limiting (Foldback)			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Current Limiting event. See Table 2.7 above for mapping structure.				

445	Digital Output Mask: Continuous Current Limit Reached			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Continuous Current Limit Reached event. See Table 2.7 above for mapping structure.				

446	Digital Output Mask: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Current Loop Saturated event. See Table 2.7 above for mapping structure.				

447	Digital Output Mask: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the User Under Voltage event. See Table 2.7 above for mapping structure.				

448	Digital Output Mask: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the User Over Voltage event. See Table 2.7 above for mapping structure.				

449	Digital Output Mask: Non-Sinusoidal Commutation			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Non-Sinusoidal Commutation. See Table 2.7 above for mapping structure.				

450	Digital Output Mask: Phase Detection			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Phase Detection event. See Table 2.7 above for mapping structure.				

451	Digital Output Mask: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the User Auxiliary Disable event. See Table 2.7 above for mapping structure.				

452	Digital Output Mask: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Shunt Regulator event. See Table 2.7 above for mapping structure.				

453	Digital Output Mask: Phase Detection Complete			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Phase Detection Complete event. See Table 2.7 above for mapping structure.				

454	Digital Output Mask: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Command Limiter Active event. See Table 2.7 above for mapping structure.				

455	Digital Output Mask: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Motor Over Speed event. See Table 2.7 above for mapping structure.				

456	Digital Output Mask: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the At Command event. See Table 2.7 above for mapping structure.				

457	Digital Output Mask: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Zero Velocity event. See Table 2.7 above for mapping structure.				

458	Digital Output Mask: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Velocity Following Error event. See Table 2.7 above for mapping structure.				

459	Digital Output Mask: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Positive Velocity Limit event. See Table 2.7 above for mapping structure.				

460	Digital Output Mask: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Negative Velocity Limit event. See Table 2.7 above for mapping structure.				

461	Digital Output Mask: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Max Measured Position event. See Table 2.7 above for mapping structure.				

462	Digital Output Mask: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Min Measured Position event. See Table 2.7 above for mapping structure.				

463	Digital Output Mask: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the At Home Position event. See Table 2.7 above for mapping structure.				

464	Digital Output Mask: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Position Following Error event. See Table 2.7 above for mapping structure.				

465	Digital Output Mask: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Max Target Position Limit event. See Table 2.7 above for mapping structure.				

466	Digital Output Mask: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Min Target Position Limit event. See Table 2.7 above for mapping structure.				

467	Digital Output Mask: Set Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Set Position event. See Table 2.7 above for mapping structure.				

468	Digital Output Mask: Homing Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Homing Active event. See Table 2.7 above for mapping structure.				

469	Digital Output Mask: Apply Brake			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Apply Brake event. See Table 2.7 above for mapping structure.				

470	Digital Output Mask: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Communication Error event. See Table 2.7 above for mapping structure.				

471	Digital Output Mask: Homing Complete			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Homing Complete event. See Table 2.7 above for mapping structure.				

472	Digital Output Mask: Commanded Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Commanded Stop event. See Table 2.7 above for mapping structure.				

473	Digital Output Mask: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the User Stop event. See Table 2.7 above for mapping structure.				

474	Digital Output Mask: Bridge Enabled			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Bridge Enabled status. See Table 2.7 above for mapping structure.				

475	Digital Output Mask: Dynamic Brake Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Dynamic Brake Active event. See Table 2.7 above for mapping structure.				

476	Digital Output Mask: Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Stop Active event. See Table 2.7 above for mapping structure.				

477	Digital Output Mask: Positive Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Positive Stop Active event. See Table 2.7 above for mapping structure.				

478	Digital Output Mask: Negative Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Negative Stop Active event. See Table 2.7 above for mapping structure.				

479	Digital Output Mask: Positive Inhibit Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Positive Inhibit Active event. See Table 2.7 above for mapping structure.				

480	Digital Output Mask: Negative Inhibit Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to the Negative Inhibit Active event. See Table 2.7 above for mapping structure.				

481	Digital Output Mask: User Bit 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 0. See Table 2.7 above for mapping structure.				

482	Digital Output Mask: User Bit 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 1. See Table 2.7 above for mapping structure.				

483	Digital Output Mask: User Bit 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 2. See Table 2.7 above for mapping structure.				

484	Digital Output Mask: User Bit 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 3. See Table 2.7 above for mapping structure.				

485	Digital Output Mask: User Bit 4			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 4. See Table 2.7 above for mapping structure.				

486	Digital Output Mask: User Bit 5			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 5. See Table 2.7 above for mapping structure.				

487	Digital Output Mask: User Bit 6			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 6. See Table 2.7 above for mapping structure.				

488	Digital Output Mask: User Bit 7			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 7. See Table 2.7 above for mapping structure.				

489	Digital Output Mask: User Bit 8			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 8. See Table 2.7 above for mapping structure.				

490	Digital Output Mask: User Bit 9			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 9. See Table 2.7 above for mapping structure.				

491	Digital Output Mask: User Bit 10			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 10. See Table 2.7 above for mapping structure.				

492	Digital Output Mask: User Bit 11			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 11. See Table 2.7 above for mapping structure.				

493	Digital Output Mask: User Bit 12			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 12. See Table 2.7 above for mapping structure.				

494	Digital Output Mask: User Bit 13			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 13. See Table 2.7 above for mapping structure.				

495	Digital Output Mask: User Bit 14			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 14. See Table 2.7 above for mapping structure.				

496	Digital Output Mask: User Bit 15			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to User Bit 15. See Table 2.7 above for mapping structure.				

497	Digital Output Mask: Capture A			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Capture A. See Table 2.7 above for mapping structure.				

498	Digital Output Mask: Capture B			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Capture B. See Table 2.7 above for mapping structure.				

499	Digital Output Mask: Capture C			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Capture C. See Table 2.7 above for mapping structure.				

500	Digital Output Mask: Commanded Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Commanded Positive Limit. See Table 2.7 above for mapping structure.				

501	Digital Output Mask: Commanded Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Commanded Negative Limit. See Table 2.7 above for mapping structure.				

502	Digital Output Mask: Safe Torque Off Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Safe Torque Off Active. See Table 2.7 above for mapping structure.				

503	Digital Output Mask: Zero Position Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Zero Position Error. See Table 2.7 above for mapping structure.				

504	Digital Output Mask: Motion Engine Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Engine Error. See Table 2.7 above for mapping structure.				

505	Digital Output Mask: Motion Engine Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Engine Active. See Table 2.7 above for mapping structure.				

506	Digital Output Mask: Motion Busy			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Busy. See Table 2.7 above for mapping structure.				

507	Digital Output Mask: Motion Done			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Done. See Table 2.7 above for mapping structure.				

508	Digital Output Mask: Motion Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Error. See Table 2.7 above for mapping structure.				

509	Digital Output Mask: Motion Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Active. See Table 2.7 above for mapping structure.				

510	Digital Output Mask: Motion Aborted			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Aborted. See Table 2.7 above for mapping structure.				

511	Digital Output Mask: Motion Execute			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Execute. See Table 2.7 above for mapping structure.				

512	Digital Output Mask: Motion MotionDone			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion MotionDone. See Table 2.7 above for mapping structure.				

513	Digital Output Mask: Motion SequenceDone			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion SequenceDone. See Table 2.7 above for mapping structure.				

514	Digital Output Mask: Absolute Position Valid			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Absolute Position Valid. See Table 2.7 above for mapping structure.				

515	Digital Output Mask: Jog Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Jog Active See Table 2.7 above for mapping structure.				

516	Digital Output Mask: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to PWM and Direction Broken Wire See Table 2.7 above for mapping structure.				

517	Digital Output Mask: PLS 1 Post Active Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to PLS 1 Post Active Level. See Table 2.7 above for mapping structure.				

518	Digital Output Mask: PLS 2 Post Active Level			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to PLS 2 Post Active Level. See Table 2.7 above for mapping structure.				

519	Digital Output Mask: Motion Engine Abort			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Defines which digital outputs, if any, are assigned to Motion Engine Abort. See Table 2.7 above for mapping structure.				

Analog Input Parameters

333	Analog Input 1 Offset: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	[$-2^{(15)}$] - [$2^{(15)}$ –1]	DAI	Read / Write	Yes
Description: Contains a value corresponding to the Analog Input 1 Offset in Configuration 0. To convert the desired Offset Voltage to the appropriate do the following: Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.				

334	Analog Input 1 Scale Factor: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 1 in Configuration 0. The values contained are mode dependent and require a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

335	Analog Input 2 Offset: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 2 Offset in Configuration 0.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

336	Analog Input 2 Scale Factor: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 2 in Configuration 0. This value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

337	Analog Input 3 Offset: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 3 Offset in Configuration 0.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

338	Analog Input 3 Scale Factor: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 3 in Configuration 0. The value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

339	Analog Input 4 Offset: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 4 Offset in Configuration 0.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

340	Analog Input 4 Scale Factor: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 4 in Configuration 0. The value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

341	Analog Input 1 Offset: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 1 Offset in Configuration 1.

To convert the desired Offset Voltage to the appropriate do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

342	Analog Input 1 Scale Factor: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 1 in Configuration 1. The values contained are mode dependent and require a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

343	Analog Input 2 Offset: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 2 Offset in Configuration 1.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

344	Analog Input 2 Scale Factor: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 2 in Configuration 1. This value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

345	Analog Input 3 Offset: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 3 Offset in Configuration 1.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

346	Analog Input 3 Scale Factor: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 3 in Configuration 1. The value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

347	Analog Input 4 Offset: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	DAI	Read / Write	Yes

Description:

Contains a value corresponding to the Analog Input 4 Offset in Configuration 1.

To convert the desired Offset Voltage to the appropriate value do the following:

Multiply Voltage (in decimal) by 819.2 and ignore any resulting fractional part. Now convert this decimal value to hexadecimal.

348	Analog Input 4 Scale Factor: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes

Description:

Contains a value corresponding to the scale factor for analog input 4 in Configuration 1. The value is mode dependent and requires a different algorithm to calculate for each mode.

Assigned to Current Loop Example: Desired scale factor = (X Amps / 1 Volt)

(X Amps * 10 * 2^18) / Drive Peak Current = Value in decimal; convert to hex.

Assigned to Velocity Loop Example: Desired Scale factor = (X cnts/sec / 1 Volt)

Convert X cnts/sec → Y cnts/100us by dividing by 10000.

Now multiply: Ycnts * 20 * 2^18 = Value in Decimal; convert to hex.

Assigned to Position Loop Example: Desired Scale Factor = (X cnts / 1 Volt)

Now Multiply: X cnts * 80 = Value in Decimal; convert to hex.

Assigned to Current Limit Example: Desired Scale Factor = (X % of drive peak / 1 Volt)

Cannot achieve a value higher than 20% / 1 Volt.

Now Multiply X * 2^18 / 5 = Value in Decimal; convert to hex.

Assigned to External Temperature: Desired Scale Factor = (X degrees C / 1 Volt)

Now multiply X *20 *2^18 = Value in Decimal; convert to hex

Analog Output Parameters

611	Analog Output 1 Signal Select A			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes

Description:

Together with Signal Select B determines which internal drive parameter is assigned to analog output 1.

612	Analog Output 1 Signal Select B			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes

Description:

Together with Signal Select A determines which internal drive parameter is assigned to analog output 1.

613	Analog Output 1 Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 1 offset.				

614	Analog Output 1 Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 1 gain.				

615	Analog Output 1 Operator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 1 operator.				

616	Analog Output 2 Signal Select A			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes
Description: Together with Signal Select B determines which internal drive parameter is assigned to analog output 2.				

617	Analog Output 2 Signal Select B			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes
Description: Together with Signal Select B determines which internal drive parameter is assigned to analog output 2.				

618	Analog Output 2 Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 2 offset.				

619	Analog Output 2 Gain			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 2 gain.				

620	Analog Output 2 Operator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 - [2^{(16)} - 1]$	N/A	Read / Write	Yes
Description: Analog output 2 operator.				

Deadband Parameters Some deadband parameters have units that vary with the operating mode of the drive. For these parameters, refer to Table 2.8 for the correct unit selection.

TABLE 2.8 Deadband Units

Drive Operation Mode	Units
Current (Torque)	DC2
Velocity	DS1
Position (Around Velocity Or Current)	counts

309	Deadband Type: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 1	N/A	Read / Write	Yes

Description:
Deadband Type for Configuration 0.

Value (Hex)	Description
0	Non-linear (starts smoothly after reaching end of deadband)
1	Linear (jumps to command after reaching end of deadband)

310	Deadband Width: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 - [2^{(31)}-1]$	See Table 2.8	Read / Write	Yes
Description: The width from the midpoint to one end of the deadband for Configuration 0. Therefore, the total width is 2X this value.				

311	Deadband Set Point: Config 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	See Table 2.8	Read / Write	Yes
Description: Midpoint of the deadband for Configuration 0.				

312	Deadband Type: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 - 1	N/A	Read / Write	Yes

Description:

Deadband Type for Configuration 1.

Value (Hex)	Description
0	Non-linear (starts smoothly after reaching end of deadband)
1	Linear (jumps to command after reaching end of deadband)

313	Deadband Width: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$0 – [2^{(31)}-1]$	See Table 2.8	Read / Write	Yes
Description: The width from the midpoint to one end of the deadband for Configuration 1. Therefore, the total width is 2X this value.				

314	Deadband Set Point: Config 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	See Table 2.8	Read / Write	Yes
Description: Midpoint of the deadband for Configuration 1.				

Jog Parameters

315	Maximum Jog Acceleration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DA4	Read / Write	Yes
Description: Sets the maximum acceleration for the selected Jog.				

316	Maximum Jog Deceleration			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DA4	Read / Write	Yes
Description: Sets the maximum deceleration for the selected jog.				

317	Jog Speed 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DS1	Read / Write	Yes
Description: Sets the target speed for Jog 0.				

318	Jog Speed 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DS1	Read / Write	Yes
Description: Sets the target speed for Jog 1.				

319	Jog Speed 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DS1	Read / Write	Yes
Description: Sets the target speed for Jog 2.				

320	Jog Speed 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$1 – [2^{(31)}-1]$	DS1	Read / Write	Yes
Description: Sets the target speed for Jog 3.				

Braking/Stop General Properties

621	Braking: Delay After Applying Brake			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: Specifies the delay, in milliseconds, after applying the external brake before disabling the power bridge or dynamic braking.				

622	Braking: Delay Before Disengaging Brake			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: Specifies the delay, in milliseconds, before releasing the external brake after enabling the power bridge or discontinuing dynamic braking.				

623	Stop Deceleration Limit Position Mode			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	1 - [$2^{(31)}$ –1]	DA1	Read / Write	Yes
Description: Specifies the maximum position mode deceleration during a controlled stop event (Stop). See "Appendix A" on page 210 for unit conversion details.				

624	Stop Deceleration Limit Velocity Mode			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	1 - [$2^{(31)}$ –1]	DA1	Read / Write	Yes
Description: Specifies the maximum velocity mode deceleration during a controlled stop event (Stop). See "Appendix A" on page 210 for unit conversion details.				

625	Stop Jerk Limit Current Mode			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	1 - [$2^{(31)}$ –1]	DJ1	Read / Write	Yes
Description: Sets the rate at which the target current ramps down during a stop event. Only valid for current mode. See "Appendix A" on page 210 for unit conversion details.				

Event Response Time Parameters

626	Event Response Time: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Motor Over Temperature before its Event Action is executed. The last bit (bit 15) is reserved for disabling/enabling the drive, making this an Unsigned15 in actual practice.				

627	Event Response Time: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a Feedback Sensor Error before its Event Action is executed.				

628	Event Response Time: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a Log Entry Missed before its Event Action is executed.				

629	Event Response Time: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a User Disable before the power bridge is disabled.				

630	Event Response Time: Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a Positive Limit input before its Event Action is executed.				

631	Event Response Time: Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a Negative Limit input before its Event Action is executed.				

632	Event Response Time: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds	Read / Write	Yes
Description: The time delay after the occurrence of Current Limiting before its Event Action is executed.				

633	Event Response Time: Continuous Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of reaching the Continuous Current setting before its Event Action is executed.				

634	Event Response Time: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Current Loop Saturated before its Event Action is executed.				

635	Event Response Time: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of User Under Voltage before its Event Action is executed.				

636	Event Response Time: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a user-specified Over Voltage level before its Event Action is executed.				

637	Event Response Time: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of Motor Over Speed before its Event Action is executed.				

638	Event Response Time: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of a User Auxiliary Disable input before the bridge is disabled.				

639	Event Response Time: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of Shunt Regulator activity before its Event Action is executed.				

640	Event Response Time: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of Command Limiter Active before its Event Action is executed.				

641	Event Response Time: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of At Command before its Event Action is executed.				

642	Event Response Time: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time delay after the occurrence of Zero Velocity before its Event Action is executed.				

643	Event Response Time: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Velocity Following Error before its Event Action is executed.				

644	Event Response Time: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Positive Velocity Limit before its Event Action is executed.				

645	Event Response Time: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Negative Velocity Limit before its Event Action is executed.				

646	Event Response Time: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of At Home Position before its Event Action is executed.				

647	Event Response Time: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Position Following Error before its Event Action is executed.				

648	Event Response Time: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Max Target Position Limit before its Event Action is executed.				

649	Event Response Time: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Min Target Position Limit before its Event Action is executed.				

650	Event Response Time: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Maximum Measured Position Limit before its Event Action is executed.				

651	Event Response Time: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Minimum Measured Position Limit before its Event Action is executed.				

652	Event Response Time: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of Communication Error before its Event Action is executed.				

653	Event Response Time: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of a User Stop command before stopping the motor.				

654	Event Response Time: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(15)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time delay after the occurrence of PWM and Direction Broken Wire before its Event Action is executed.				

Event Action Parameters

655	Event Action: Parameter Restore Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Parameter Restore Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

656	Event Action: Parameter Store Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Parameter Store Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

657	Event Action: Invalid Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after an Invalid Hall State. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

658	Event Action: Phase Synch Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Phase Synch Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

659	Event Action: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Motor Over Temperature. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

660	Event Action: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Feedback Sensor Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

661	Event Action: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Log Entry Missed. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

662	Event Action: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Current Limiting. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

663	Event Action: Continuous Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Continuous Current. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

664	Event Action: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after Current Loop Saturated. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

665	Event Action: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Under Voltage. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

666	Event Action: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Over Voltage. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

667	Event Action: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after Shunt Regulator active. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

668	Event Action: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after Command Limiter Active. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

669	Event Action: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Motor Over Speed. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

670	Event Action: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after an At Command state. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

671	Event Action: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Zero Velocity state. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

672	Event Action: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Velocity Following Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

673	Event Action: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Positive Velocity Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

674	Event Action: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Negative Velocity Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

675	Event Action: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Max Measured Position Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

676	Event Action: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Min Measured Position Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

677	Event Action: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after an At Home Position state. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

678	Event Action: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Position Following Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

679	Event Action: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Max Target Position Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

680	Event Action: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Min Target Position Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

681	Event Action: Comm Channel Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Comm Channel Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

682	Event Action: User Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Positive Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

683	Event Action: User Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Negative Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

684	Event Action: Drive Reset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Drive Reset. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

685	Event Action: Drive Internal Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Drive Internal Error. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

686	Event Action: Short Circuit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Short Circuit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

687	Event Action: Current Overshoot			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Current Overshoot. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

688	Event Action: Hardware Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Hardware Under Voltage. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

689	Event Action: Hardware Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Hardware Over Voltage. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

690	Event Action: Drive Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Drive Over Temperature. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

691	Event Action: Software Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Software Disable. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

692	Event Action: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Disable. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

693	Event Action: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a User Auxiliary Disable. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

694	Event Action: Phase Detection Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Phase Detection Fault. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

695	Event Action: Commanded Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Commanded Positive Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

696	Event Action: Commanded Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a Commanded Negative Limit. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

697	Event Action: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 15	N/A	Read / Write	Yes
Description: The action of the drive immediately after a PWM and Direction Broken Wire. Refer to the table below (Table 2.10) for the valid event actions and their respective values.				

TABLE 2.9 Event Action Values Definition

Event Action Values	Hex Values	Event Actions
0	00h	No Action
1	01h	Disable Power Bridge
2	02h	Disable Positive Direction
3	03h	Disable Negative Direction
4	04h	Dynamic Brake
5	05h	Positive Stop
6	06h	Negative Stop
7	07h	Stop
8	08h	Apply Brake **then** Disable Bridge
9	09h	Apply Brake **then** Dynamic Brake
10	0Ah	Apply Brake **and** Disable Bridge
11	0Bh	Apply Brake **and** Dynamic Brake

TABLE 2.10 Event Action Options

Instance	Event	Valid Event Action Values (refer to Table 2.9 for value definitions)											
655	Parameter Restore Error	-	1	-	-	4	-	-	-	8	9	10	11
656	Parameter Store Error	-	1	-	-	4	-	-	-	8	9	10	11
657	Invalid Hall State	-	1	-	-	4	-	-	-	8	9	10	11
658	Phase Synch Error	0	1	-	-	4	-	-	-	8	9	10	11
659	Motor Over Temperature	0	1	2	3	4	5	6	7	8	9	10	11
660	Feedback Sensor Error	0	1	2	3	4	5	6	7	8	9	10	11
661	Log Entry Missed	0	1	2	3	4	5	6	7	8	9	10	11
662	Current Limiting	0	1	2	3	4	5	6	7	8	9	10	11
663	Continuous Current	0	1	2	3	4	5	6	7	8	9	10	11
664	Current Loop Saturated	0	1	2	3	4	5	6	7	8	9	10	11
665	User Under Voltage	0	1	2	3	4	5	6	7	8	9	10	11
666	User Over Voltage	0	1	2	3	4	5	6	7	8	9	10	11
667	Shunt Regulator	0	1	-	-	4	-	-	-	8	9	10	11
668	Command Limiter Active	0	-	-	-	-	-	-	-	-	-	-	-
669	Motor Over Speed	0	1	2	3	4	5	6	7	8	9	10	11
670	At Command	0	1	2	3	4	5	6	7	8	9	10	11
671	Zero Velocity	0	-	-	-	-	-	-	-	-	-	-	-
672	Velocity Following Error	0	1	2	3	4	5	6	7	8	9	10	11
673	Positive Velocity Limit	0	1	2	3	4	5	6	7	8	9	10	11
674	Negative Velocity Limit	0	1	2	3	4	5	6	7	8	9	10	11
675	Max Measured Position Limit	0	1	2	3	4	5	6	7	8	9	10	11
676	Min Measured Position Limit	0	1	2	3	4	5	6	7	8	9	10	11
677	At Home Position	0	-	-	-	-	-	-	-	-	-	-	-
678	Position Following Error	0	1	2	3	4	5	6	7	8	9	10	11
679	Max Target Position Limit	0	1	2	3	4	5	6	7	8	9	10	11
680	Min Target Position Limit	0	1	2	3	4	5	6	7	8	9	10	11
681	Comm Channel Error	0	1	2	3	4	5	6	7	8	9	10	11
682	User Positive Limit	-	-	2	-	-	5	-	-	-	-	-	-
683	User Negative Limit	-	-	-	3	-	-	6	-	-	-	-	-
684	Drive Reset	-	1	-	-	-	-	-	-	-	-	10	-
685	Drive Internal Error	-	1	-	-	-	-	-	-	-	-	10	-
686	Short Circuit	-	1	-	-	-	-	-	-	-	-	10	-
687	Current Overshoot	-	1	-	-	-	-	-	-	-	-	10	-
688	Hardware Under Voltage	-	1	-	-	4	-	-	-	-	-	10	-
689	Hardware Over Voltage	-	1	-	-	-	-	-	-	-	-	10	-
690	Drive Over Temperature	-	1	-	-	-	-	-	-	-	-	10	-
691	Software Disable	-	1	-	-	-	-	-	-	8	-	10	-
692	User Disable	-	1	-	-	-	-	-	-	8	-	10	-
693	User Auxiliary Disable	-	2	-	-	4	-	-	-	8	9	10	11
694	Phase Detection Fault	-	1	-	-	-	-	-	-	8	-	10	-
695	Commanded Positive Limit	-	-	2	-	-	5	-	-	-	-	-	-
696	Commanded Negative Limit	-	-	-	3	-	-	6	-	-	-	-	-
697	PWM and Dir Broken Wire	0	1	2	3	4	5	6	7	-	-	-	-

Event Recovery Time Parameters

698	Event Recovery Time: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Motor Over Temperature is no longer true before its Event Action is removed.				

699	Event Recovery Time: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Feedback Sensor Error is no longer true before its Event Action is removed.				

700	Event Recovery Time: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Log Entry Missed is no longer true before its Event Action is removed.				

701	Event Recovery Time: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after User Disable is no longer true before its Event Action is removed.				

702	Event Recovery Time: Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Positive Limit is no longer true before its Event Action is removed.				

703	Event Recovery Time: Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Negative Limit is no longer true before its Event Action is removed.				

704	Event Recovery Time: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Current Limiting is no longer true before its Event Action is removed.				

705	Event Recovery Time: Continuous Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Continuous Current Limiting is no longer true before its Event Action is removed.				

706	Event Recovery Time: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Current Loop Saturated status is no longer true before its Event Action is removed.				

707	Event Recovery Time: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after User Under Voltage is no longer true before its Event Action is removed.				

708	Event Recovery Time: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after User Over Voltage is no longer true before its Event Action is removed.				

709	Event Recovery Time: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after User Auxiliary Disable is no longer true before its Event Action is removed.				

710	Event Recovery Time: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Shunt Regulator active is no longer true before its Event Action is removed.				

711	Event Recovery Time: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Command Limiter Active is no longer true before its Event Action is removed.				

712	Event Recovery Time: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Motor Over Speed is no longer true before its Event Action is removed.				

713	Event Recovery Time: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after At Command is no longer true before its Event Action is removed.				

714	Event Recovery Time: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Zero Velocity is no longer true before its Event Action is removed.				

715	Event Recovery Time: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Velocity Following Error is no longer true before its Event Action is removed.				

716	Event Recovery Time: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Positive Velocity Limit is no longer true before its Event Action is removed.				

717	Event Recovery Time: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Negative Velocity Limit is no longer true before its Event Action is removed.				

718	Event Recovery Time: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Max Measured Position Limit status is no longer true before its Event Action is removed.				

719	Event Recovery Time: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Min Measured Position Limit status is no longer true before its Event Action is removed.				

720	Event Recovery Time: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after no longer At Home Position before its Event Action is removed.				

721	Event Recovery Time: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Position Following Error is no longer true before its Event Action is removed.				

722	Event Recovery Time: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Max Target Position Limit is no longer true before its Event Action is removed.				

723	Event Recovery Time: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Min Target Position Limit is no longer true before its Event Action is removed.				

724	Event Recovery Time: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after Communication Error is no longer true before its Event Action is removed.				

725	Event Recovery Time: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after User Stop is no longer true before it is considered no longer active.				

726	Event Recovery Time: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	milliseconds (ms)	Read / Write	Yes
Description: The time delay after PWM and Direction Broken Wire is no longer true before it is considered no longer active.				

Event Time-Out Window Parameters

727	Event Time-Out Window: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Motor Over Temperature as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

728	Event Time-Out Window: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Feedback Sensor Error as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

729	Event Time-Out Window: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a User Disable as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

730	Event Time-Out Window: User Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Positive Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

731	Event Time-Out Window: User Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description: The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Negative Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

732	Event Time-Out Window: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Current Limiting as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

733	Event Time-Out Window: Continuous Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Continuous Current as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

734	Event Time-Out Window: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Current Loop Saturated as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

735	Event Time-Out Window: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a User Under Voltage as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

736	Event Time-Out Window: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a User Over Voltage as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

737	Event Time-Out Window: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a User Auxiliary Disable as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

738	Event Time-Out Window: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Shunt Regulator as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

739	Event Time-Out Window: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Command Limiter Active as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

740	Event Time-Out Window: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Motor Over Speed as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

741	Event Time-Out Window: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of At Command as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

742	Event Time-Out Window: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Zero Velocity as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

743	Event Time-Out Window: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Velocity Following Error as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

744	Event Time-Out Window: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Positive Velocity Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

745	Event Time-Out Window: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Negative Velocity Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

746	Event Time-Out Window: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Max Measured Position Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

747	Event Time-Out Window: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Min Measured Position Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

748	Event Time-Out Window: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of At Home Position as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

749	Event Time-Out Window: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Position Following Error as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

750	Event Time-Out Window: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Max Target Position Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

751	Event Time-Out Window: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of Min Target Position Limit as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

752	Event Time-Out Window: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a Communication Error as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

753	Event Time-Out Window: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of a User Stop as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

754	Event Time-Out Window: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	milliseconds (ms)	Read / Write	Yes
Description:				
The time, after the Recovery Time and subsequent removal of the event action, during which the drive will NOT consider an occurrence of PWM & Dir Broken Wire as a new occurrence. The Event Action will still be applied in case an event does occur within this window. However, that occurrence will not be counted as a new occurrence with regard to the Maximum Recoveries attribute.				

Event Maximum Recoveries Parameters

755	Event Maximum Recoveries: Short Circuit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes
Description:				
Each occurrence of a Short Circuit performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Short Circuit event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.				

756	Event Maximum Recoveries: Hardware Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Hardware Under Voltage performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Hardware Under Voltage event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

757	Event Maximum Recoveries: Hardware Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Hardware Over Voltage performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Hardware Over Voltage event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

759	Event Maximum Recoveries: Drive Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Drive Over Temperature performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Drive Over Temperature event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

759	Event Maximum Recoveries: Invalid Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of an Invalid Hall State performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Invalid Hall State event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

760	Event Maximum Recoveries: Phase Synchronization Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Phase Synchronization Error performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Phase Synchronization Error event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

761	Event Maximum Recoveries: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Motor Over Temperature performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Motor Over Temperature event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

762	Event Maximum Recoveries: Phase Detection Failure			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Phase Detection Failure performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Phase Detection Failure event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

763	Event Maximum Recoveries: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Feedback Sensor Error performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Feedback Sensor Error event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

764	Event Maximum Recoveries: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Log Entry Missed performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Log Entry Missed event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

765	Event Maximum Recoveries: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a User Disable performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the User Disable event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

766	Event Maximum Recoveries: User Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Positive Limit performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Positive Limit event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

767	Event Maximum Recoveries: User Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Negative Limit performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Negative Limit event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

768	Event Maximum Recoveries: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Current Limiting performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Current Limiting event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

769	Event Maximum Recoveries: Continuous Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Continuous Current Limiting performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Continuous Current Limiting event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

770	Event Maximum Recoveries: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Current Loop Saturated performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Current Loop Saturated event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

771	Event Maximum Recoveries: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a User Under Voltage performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the User Under Voltage event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

772	Event Maximum Recoveries: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a User Over Voltage performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the User Over Voltage event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

773	Event Maximum Recoveries: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a User Auxiliary Disable performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the User Auxiliary Disable event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

774	Event Maximum Recoveries: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Shunt Regulator performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Shunt Regulator event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

775	Event Maximum Recoveries: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Command Limiter Active performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Command Limiter Active event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

776	Event Maximum Recoveries: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of a Motor Over Speed performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Motor Over Speed event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

777	Event Maximum Recoveries: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of At Command performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the At Command event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

778	Event Maximum Recoveries: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Zero Velocity performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Zero Velocity event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

779	Event Maximum Recoveries: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Velocity Following Error performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Velocity Following Error event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

780	Event Maximum Recoveries: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Positive Velocity Limit performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Positive Velocity Limit event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

781	Event Maximum Recoveries: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Negative Velocity Limit performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Negative Velocity Limit event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

782	Event Maximum Recoveries: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Max Measured Position performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Max Measured Position event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

783	Event Maximum Recoveries: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Min Measured Position performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Min Measured Position event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

784	Event Maximum Recoveries: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of At Home Position performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the At Home Position event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

785	Event Maximum Recoveries: Position Following Errors			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Position Following Errors performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Position Following Errors event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

786	Event Maximum Recoveries: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Max Target Position performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Max Target Position event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

787	Event Maximum Recoveries: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Min Target Position performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Min Target Position event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

788	Event Maximum Recoveries: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Communication Error performs the action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Communication Error event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

789	Event Maximum Recoveries: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of User Stop performs the event action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the User Stop event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

790	Event Maximum Recoveries: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of PWM and Direction Broken Wire performs the event action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the PWM and Direction Broken Wire event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

791	Event Maximum Recoveries: Motion Engine Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 65535	N/A	Read / Write	Yes

Description:

Each occurrence of Motion Engine Error performs the event action assigned to this event. Each time the event is removed for longer than the addition of the values in the Time-Out Window and Recovery Time, a recovery counter is incremented. This command sets the maximum recovery count allowed before the Motion Engine Error event latches and must be actively reset in order to enable the bridge. Re-setting the recovery counter requires a connection to the AMC drive configuration software appropriate for this drive. For more information on event handling, see the Help file associated with the AMC drive configuration software.

Programmable Status Parameters Determines which events will be mapped to the StatusWord bits, indicated below. When multiple events are mapped to a single bit, they will be logically OR-ed.

TABLE 2.11 Programmable Status Mapping

Programmable Status Mask	Description
Bit 9	Bit 11 (Internal Limit Active) in StatusWord
Bit 10...13	Reserved
Bit 14	Bit 7 (Warning) in StatusWord
Bit 15	Bit 8 (manufacturer specific) in StatusWord

520	Programmable Status Mask: Drive Reset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Drive Reset event. See Table 2.11 above for mapping structure.				

521	Programmable Status Mask: Drive Internal Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Drive Internal Error event. See Table 2.11 above for mapping structure.				

522	Programmable Status Mask: Short Circuit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Short Circuit event. See Table 2.11 above for mapping structure.				

523	Programmable Status Mask: Over Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Over Current event. See Table 2.11 above for mapping structure.				

524	Programmable Status Mask: Hardware Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Hardware Under Voltage event. See Table 2.11 above for mapping structure.				

525	Programmable Status Mask: Hardware Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Hardware Over Voltage event. See Table 2.11 above for mapping structure.				

526	Programmable Status Mask: Drive Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Drive Over Temperature event. See Table 2.11 above for mapping structure.				

527	Programmable Status Mask: Parameter Restore Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Parameter Restore Error event. See Table 2.11 above for mapping structure.				

528	Programmable Status Mask: Parameter Store Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Parameter Store Error event. See Table 2.11 above for mapping structure.				

529	Programmable Status Mask: Invalid Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Invalid Hall State event. See Table 2.11 above for mapping structure.				

530	Programmable Status Mask: Phase Synchronization Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Phase Synchronization Error event. See Table 2.11 above for mapping structure.				

531	Programmable Status Mask: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Motor Over Temperature event. See Table 2.11 above for mapping structure.				

532	Programmable Status Mask: Phase Detection Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Phase Detection Fault event. See Table 2.11 above for mapping structure.				

533	Programmable Status Mask: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Feedback Sensor Error event. See Table 2.11 above for mapping structure.				

534	Programmable Status Mask: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Log Entry Missed event. See Table 2.11 above for mapping structure.				

535	Programmable Status Mask: Software Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Software Disable Event. See Table 2.11 above for mapping structure.				

536	Programmable Status Mask: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Disable Event. See Table 2.11 above for mapping structure.				

537	Programmable Status Mask: Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Positive Limit event. See Table 2.11 above for mapping structure.				

538	Programmable Status Mask: Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Negative Limit event. See Table 2.11 above for mapping structure.				

539	Programmable Status Mask: Current Limiting (Foldback)			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Current Limiting event. See Table 2.11 above for mapping structure.				

540	Programmable Status Mask: Continuous Current Limit Reached			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Continuous Current Limit Reached event. See Table 2.11 above for mapping structure.				

541	Programmable Status Mask: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to Current Loop Saturated event. See Table 2.11 above for mapping structure.				

542	Programmable Status Mask: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Under Voltage event. See Table 2.11 above for mapping structure.				

543	Programmable Status Mask: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Over Voltage event. See Table 2.11 above for mapping structure.				

544	Programmable Status Mask: Non-sinusoidal Commutation			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Non-sinusoidal Commutation event. See Table 2.11 above for mapping structure.				

545	Programmable Status Mask: Phase Detection			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Phase Detection event. See Table 2.11 above for mapping structure.				

546	Programmable Status Mask: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Auxiliary Disable event. See Table 2.11 above for mapping structure.				

547	Programmable Status Mask: Shunt Regulator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Shunt Regulator event. See Table 2.11 above for mapping structure.				

548	Programmable Status Mask: Phase Detection Complete			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Phase Detection Complete event. See Table 2.11 above for mapping structure.				

549	Programmable Status Mask: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Command Limiter Active event. See Table 2.11 above for mapping structure.				

550	Programmable Status Mask: Motor Over Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Motor Over Speed event. See Table 2.11 above for mapping structure.				

551	Programmable Status Mask: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the At Command event. See Table 2.11 above for mapping structure.				

552	Programmable Status Mask: Zero Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Zero Velocity event. See Table 2.11 above for mapping structure.				

553	Programmable Status Mask: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Velocity Following Error event. See Table 2.11 above for mapping structure.				

554	Programmable Status Mask: Positive Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Positive Velocity Limit event. See Table 2.11 above for mapping structure.				

555	Programmable Status Mask: Negative Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Negative Velocity Limit event. See Table 2.11 above for mapping structure.				

556	Programmable Status Mask: Max Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Max Measured Position event. See Table 2.11 above for mapping structure.				

557	Programmable Status Mask: Min Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Min Measured Position Limit event. See Table 2.11 above for mapping structure.				

558	Programmable Status Mask: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the At Home Position event. See Table 2.11 above for mapping structure.				

559	Programmable Status Mask: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Position Following Error event. See Table 2.11 above for mapping structure.				

560	Programmable Status Mask: Max Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Max Target Position Limit event. See Table 2.11 above for mapping structure.				

561	Programmable Status Mask: Min Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Min Target Position Limit event. See Table 2.11 above for mapping structure.				

562	Programmable Status Mask: Set Measured Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Set Measured Position event. See Table 2.11 above for mapping structure.				

563	Programmable Status Mask: Homing Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Homing Active event. See Table 2.11 above for mapping structure.				

564	Programmable Status Mask: Apply Brake			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Apply Brake event. See Table 2.11 above for mapping structure.				

565	Programmable Status Mask: Communication Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Communication Error Mask event. See Table 2.11 above for mapping structure.				

566	Programmable Status Mask: Homing Complete			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Homing Complete event. See Table 2.11 above for mapping structure.				

567	Programmable Status Mask: Commanded Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Commanded Stop event. See Table 2.11 above for mapping structure.				

568	Programmable Status Mask: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Stop event. See Table 2.11 above for mapping structure.				

569	Programmable Status Mask: Bridge Enabled			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Bridge Enabled event. See Table 2.11 above for mapping structure.				

570	Programmable Status Mask: Dynamic Brake Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Dynamic Brake Active event. See Table 2.11 above for mapping structure.				

571	Programmable Status Mask: Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Stop Active event. See Table 2.11 above for mapping structure.				

572	Programmable Status Mask: Positive Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Positive Stop Active event. See Table 2.11 above for mapping structure.				

573	Programmable Status Mask: Negative Stop Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Negative Stop Active event. See Table 2.11 above for mapping structure.				

574	Programmable Status Mask: Positive Inhibit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Positive Inhibit event. See Table 2.11 above for mapping structure.				

575	Programmable Status Mask: Negative Inhibit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Negative Inhibit event. See Table 2.11 above for mapping structure.				

576	Programmable Status Mask: User Bit 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 0 event. See Table 2.11 above for mapping structure.				

577	Programmable Status Mask: User Bit 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 1 event. See Table 2.11 above for mapping structure.				

578	Programmable Status Mask: User Bit 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 2 event. See Table 2.11 above for mapping structure.				

579	Programmable Status Mask: User Bit 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 3 event. See Table 2.11 above for mapping structure.				

580	Programmable Status Mask: User Bit 4			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 4 event. See Table 2.11 above for mapping structure.				

581	Programmable Status Mask: User Bit 5			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 5 event. See Table 2.11 above for mapping structure.				

582	Programmable Status Mask: User Bit 6			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 6 event. See Table 2.11 above for mapping structure.				

583	Programmable Status Mask: User Bit 7			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 7 event. See Table 2.11 above for mapping structure.				

584	Programmable Status Mask: User Bit 8			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 8 event. See Table 2.11 above for mapping structure.				

585	Programmable Status Mask: User Bit 9			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 9 event. See Table 2.11 above for mapping structure.				

586	Programmable Status Mask: User Bit 10			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 10 event. See Table 2.11 above for mapping structure.				

587	Programmable Status Mask: User Bit 11			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 11 event. See Table 2.11 above for mapping structure.				

588	Programmable Status Mask: User Bit 12			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 12 event. See Table 2.11 above for mapping structure.				

589	Programmable Status Mask: User Bit 13			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 13 event. See Table 2.11 above for mapping structure.				

590	Programmable Status Mask: User Bit 14			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 14 event. See Table 2.11 above for mapping structure.				

591	Programmable Status Mask: User Bit 15			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the User Bit 15 event. See Table 2.11 above for mapping structure.				

592	Programmable Status Mask: Capture 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Capture 1 event. See Table 2.11 above for mapping structure.				

593	Programmable Status Mask: Capture 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Capture 2 event. See Table 2.11 above for mapping structure.				

594	Programmable Status Mask: Capture 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Capture 3 event. See Table 2.11 above for mapping structure.				

595	Programmable Status Mask: Commanded Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Commanded Positive Limit event. See Table 2.11 above for mapping structure.				

596	Programmable Status Mask: Commanded Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Commanded Negative Limit event. See Table 2.11 above for mapping structure.				

597	Programmable Status Mask: Safe Torque Off Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Safe Torque Off Active event. See Table 2.11 above for mapping structure.				

598	Programmable Status Mask: Zero Position Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Zero Position Error event. See Table 2.11 above for mapping structure.				

599	Programmable Status Mask: Motion Engine Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Motion Engine Error event. See Table 2.11 above for mapping structure.				

600	Programmable Status Mask: Motion Engine Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Motion Engine Active event. See Table 2.11 above for mapping structure.				

601	Programmable Status Mask: Active Motion Execute			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Execute event. See Table 2.11 above for mapping structure.				

602	Programmable Status Mask: Active Motion Busy			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Busy event. See Table 2.11 above for mapping structure.				

603	Programmable Status Mask: Active Motion Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Active event. See Table 2.11 above for mapping structure.				

604	Programmable Status Mask: Active Motion MotionDone			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion MotionDone event. See Table 2.11 above for mapping structure.				

605	Programmable Status Mask: Active Motion SequenceDone			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion SequenceDone event. See Table 2.11 above for mapping structure.				

606	Programmable Status Mask: Active Motion Done			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Done event. See Table 2.11 above for mapping structure.				

607	Programmable Status Mask: Active Motion Aborted			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Aborted event. See Table 2.11 above for mapping structure.				

608	Programmable Status Mask: Active Motion Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Active Motion Error event. See Table 2.11 above for mapping structure.				

609	Programmable Status Mask: PWM and Direction Broken Wire			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the PWM and Direction Broken Wire event. See Table 2.11 above for mapping structure.				

610	Programmable Status Mask: Motion Engine Abort			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	N/A	Read / Write	Yes
Description: Specifies which StatusWord bit, if any, is assigned to the Motion Engine Abort event. See Table 2.11 above for mapping structure.				

Power Board Information

866	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

867	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

868	DC Bus Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	PBV	Read Only	Yes

869	DC Bus Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	PBV	Read Only	Yes

870	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

871	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

872	Maximum Peak Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	PBC	Read Only	Yes

873	Maximum Continuous Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	PBC	Read Only	Yes

874	Maximum Peak Current Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	PBT	Read Only	Yes

875	Maximum Peak To Continuous Current Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - $[2^{(16)} - 1]$	PBT	Read Only	Yes

876	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

877	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

878	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

879	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

880	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

881	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

882	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

883	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

884	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

885	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

886	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

887	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

888	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

889	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

890	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

891	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

892	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

893	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

894	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

895	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

896	Switching Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	N/A	PBF	Read Only	Yes

897	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

898	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

899	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

900	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

901	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

902	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

903	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

904	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

905	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

906	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	Yes

2.3 Drive Operation Commands

The following commands are typically used during operation. They are either used to perform specific tasks or to obtain information from the drive. These commands have been divided into the following three categories: Control Commands, Motion Profile Commands, and Monitor Commands.

2.3.1 Control Commands

ControlWord

911	ControlWord			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - 65535	N/A	Read / Write	No

Description:

The ControlWord instance sets the control state machine in the drive. "State Machine Overview" on page 1 explains each drive state and how to use the ControlWord to move the drive to that state. Below is a table providing the basic ControlWord commands and bit field definitions.

Value (Hex)	Command	Description
80	Reset Fault	On any transition to "1" of bit 7 causes a Reset Fault
04	Disable Voltage	Drive in "Switch On Disabled" state
06	Shutdown	Drive in "Ready to Switch On" state
07	Switch On	Drive in "Switched On" state
0F	Enable Operation	Drive in "Operation Enabled" state
02	Stop	Drive in "Stop Active" state
1F	Start Homing	Starts Homing (when in homing mode)
0F	End Homing	Ends Homing

Bit	Name	Description
0	Switch On	A transition from 0 to 1 commands the state machine into the Switched On state.
1	Disable Voltage	A transition from 0 to 1 commands the state machine into the Switch On Disabled State.
2	Quick Stop	A value of 0 activates a commanded stop.
3	Enable Operation	A transition from 0 to 1 commands the state machine into Operation Enabled state.
4	Mode Specific 1	In Jog Mode, Jog Select 0: Writing a 1 sets bit 0 of the Jog Speed Select. Writing a 0 clears it. In Homing, Home Execute: Writing a 1 causes the homing routine to be active. Writing a 0 ends it.
5	Mode Specific 2	In Jog Mode, Jog Plus: Writing a 1 asserts Jog Plus. Writing a 0 deasserts Jog Plus.
6	Mode Specific 3	In Jog Mode, Jog Minus: Writing a 1 asserts Jog Minus. Writing a 0 deasserts Jog Minus.
7	Reset Fault	A transition from 0 to 1 activates a fault reset.
8	Reserved	Read as zero / write as zero.
9	Mode Specific 4	In Jog Mode, Jog Select 1: Writing a 1 sets bit 1 of the Jog Speed Select. Writing a 0 clears it.
10	Reserved	Read as zero / write as zero.
11	Dynamic Brake	Activates the Dynamic Brake
12	Commanded Negative Limit	Activates negative limiting.
13	Commanded Positive Limit	Activates positive limiting.
14-15	Reserved	Read as zero / write as zero.

See "ControlWord (911)" on page 4 for more information on this subject.

Control Parameters

1	Drive Control Word 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 1FFFh	N/A	Read/Write	No

Description:

This bit field enables/disables certain drive functions according to the table below.

Bit	Name	Description
0	Software Disable	Causes the bridge to be disabled.
1	Zero Position Error	Sets the target position equal to the measured position
2	Phase Detect	Activates the phase detection routine.
3	Set Position	Causes the position counter to be loaded with the preset position value.
4	Motion Engine Enable	Causes the auxiliary input command counter to be loaded with the preset command value.
5	Home Execute	Causes the homing routine to be active.
6	Commanded Stop	Causes the drive to stop.
7	Capture 1 Arm	A change from 0 to 1 arms/rearms Capture unit 1. A change from 1 to 0 Disarms it.
8	Capture 2 Arm	A change from 0 to 1 arms/rearms Capture unit 2. A change from 1 to 0 Disarms it.
9	Capture 3 Arm	A change from 0 to 1 arms/rearms Capture unit 3. A change from 1 to 0 Disarms it.
10	Commanded Positive Limit	Activates positive limiting.
11	Commanded Negative Limit	Activates negative limiting.
12	Reset Events	Resets all but the following events: Current Overshoot, Parameter Restore Error, Parameter Store Error, Phase Detection Failure, Software Disable
13-15	Reserved	Read as zero / write as zero.

2	Drive Control Word 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 1FFFh	N/A	Read/Write	No

Description:

This bit field enables/disables certain drive functions according to the table below.

Bit	Name	Description
0	Gain Parameters Set	A change from 0 to 1 selects Gain Set 1. A change from 1 to 0 selects Gain Set 0.
1	Command Limiter Parameters Set	A change from 0 to 1 selects Command Limiter Set 1. A change from 1 to 0 selects Command Limiter Set 0.
2	Command Source Modifier Set	A change from 0 to 1 selects Source Modifier Set 1. A change from 1 to 0 selects Source Modifier Set 0.
3	Jog Plus	Writing a 1 asserts Jog Plus. Writing a 0 deasserts Jog Plus.
4	Jog Minus	Writing a 1 asserts Jog Minus. Writing a 0 deasserts Jog Minus.
5	Jog Select 0	Writing a 1 sets bit 0 of the Jog Speed Select. Writing a 0 clears it.
6	Jog Select 1	Writing a 1 sets bit 1 of the Jog Speed Select. Writing a 0 clears it.
7 - 15	Reserved	Read as zero / write as zero.

3	User Bit Control			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – FFFFh	N/A	Read / Write	No

Description:

Toggles the User Bits on or off by assigning a 1 or 0 to the appropriate bit. See the table below for bit assignment. Note that User Bits can be mapped to digital outputs through the configuration software or by directly configuring instance 139.

Bit	Assignment (1 = asserted, 0 = not asserted)
0	User Bit 0
1	User Bit 1
2	User Bit 2
3	User Bit 3
4	User Bit 4
5	User Bit 5
6	User Bit 6
7	User Bit 7
8	User Bit 8
9	User Bit 9
10	User Bit 10
11	User Bit 11
12	User Bit 12
13	User Bit 13
14	User Bit 14
15	User Bit 15

Modes Of Operation

913	Modes Of Operation			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer8	-128 - 127	N/A	Read / Write	No

Description:
This object indicates the requested mode of operation. This may differ from the actual mode of operation if the mode change is not yet possible (for example, if the mode change is requested while the drive is in the operation enabled state). The actual mode of operation can be found using the read-only instance 914. "StatusWord (912)" on page 5 explains the valid control loop configurations for an AMC servo drive.

Value	Operation Mode
1	Profile Position Mode
3	Profile Velocity Mode
4	Profile Torque Mode (current mode)
6	Homing Mode
7	Interpolated Position Mode (PVT)
8C	Jog Mode
9E	Config 0
DE	Config 1
EC	Motion Engine Mode
FF	None (Use active configuration settings)

2.3.2 Motion Profile Commands

Target Current

923	Target Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$-2^{15} – (2^{15}-1)$	DC2	Read / Write	No

Description:
Sets the Target Current while in Current Mode (set by instance 913 - Modes of Operation). See "Appendix A" on page 210 for units conversion.

Target Velocity

938	Target Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DS1	Read / Write	No

Description:
Use this object to set the Target Velocity when the drive is in Velocity mode. See "Appendix A" on page 210 for unit conversion.

Target Position

925	Target Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	counts	Read / Write	No
Description: Sets the Target Position value while in position mode (set by instance 913 - Modes of Operation). This is the target position before limiting and profiling is applied. Position error is derived from demanded position, which is this signal after limiting and profiling is applied.				

Velocity Offset

933	Velocity Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$-2^{31} – (2^{31}-1)$	DS1	Read / Write	No
Description: Contains a value corresponding to offset for the target velocity value.				

Current Offset

934	Current Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$-2^{14} – (2^{14}-1)$	DC2	Read / Write	No
Description: Contains a value corresponding to offset for the target current value.				

Interface Inputs

Interface inputs can be used in place of analog inputs for any function that can be assigned to an analog input. Examples of this include command source, feedback source, and motor temperature source. The units for interface inputs are dependent upon the function the interface input is assigned to as given in Table 2.12. For details on unit conversion see "Appendix A" on page 210.

TABLE 2.12 Interface Input Units

Interface Input Function	Units
Position Command Source	counts
Velocity Command Source	DS1
Torque/Current Command Source	DC2
Position Feedback Source	counts
Velocity Feedback Source	DS1
Motor Temperature Source	DT1

349	Interface Input 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.12	Read / Write	No
Description: Defines the value used with interface input 1.				

350	Interface Input 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.12	Read / Write	No
Description: Defines the value used with interface input 2.				

351	Interface Input 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.12	Read / Write	No
Description: Defines the value used with interface input 3.				

352	Interface Input 4			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.12	Read / Write	No
Description: Defines the value used with interface input 4.				

Dynamic Index Data

836	Move Index			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	-	Read / Write	No
Description: When defining a dynamic index, this value should be set to 0x0020.				

837	Move Type			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	-	Read / Write	No

Description:
Defines the type of move.

Value	Move Type
0x0008	Absolute
0x0018	Relative

838	Repeat Count			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	-	Read / Write	No

Description:
Specifies the number of times to repeat the move. Only valid for relative moves.

839	Dwell Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	milliseconds (ms)	Read / Write	No

Description:
Specifies the time after the move is complete before the Index Done status becomes active.

840	Position Target - Word 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	counts	Read / Write	No

Description:
The least significant word in the 2-word (32-bit) position command. Depending on the assigned move type, will apply to an absolute or relative position target.

841	Position Target - Word 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	counts	Read / Write	No

Description:
The most significant word in the 2-word (32-bit) position command. Depending on the assigned move type, will apply to an absolute or relative position target.

842	Max Velocity - Word 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DS3	Read / Write	No
Description: The least significant word in the 4-word (64-bit) maximum velocity value. See "Appendix A" on page 210 for unit conversion.				

843	Max Velocity - Word 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DS3	Read / Write	No
Description: The second word in the 4-word (64-bit) maximum velocity value. See "Appendix A" on page 210 for unit conversion.				

844	Max Velocity - Word 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DS3	Read / Write	No
Description: The third word in the 4-word (64-bit) maximum velocity value. See "Appendix A" on page 210 for unit conversion.				

845	Max Velocity - Word 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DS3	Read / Write	No
Description: The most significant word in the 4-word (64-bit) maximum velocity value. See "Appendix A" on page 210 for unit conversion.				

846	Max Acceleration - Word 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DA5	Read / Write	No
Description: The least significant word in the 2-word (32-bit) maximum acceleration value. See "Appendix A" on page 210 for unit conversion.				

847	Max Acceleration - Word 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DA5	Read / Write	No
Description: The most significant word in the 2-word (32-bit) maximum acceleration value. See "Appendix A" on page 210 for unit conversion.				

848	Max Deceleration - Word 0			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DA5	Read / Write	No
Description: The least significant word in the 2-word (32-bit) maximum deceleration value. See "Appendix A" on page 210 for unit conversion.				

849	Max Deceleration - Word 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - FFFFh	DA5	Read / Write	No
Description: The most significant word in the 2-word (32-bit) maximum deceleration value. See "Appendix A" on page 210 for unit conversion.				

850 - 863	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	-	-	-	No

2.3.3 Monitor Commands

StatusWord

912	StatusWord			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - 655535	N/A	Read Only	No

Description:

The StatusWord is used to determine which state the drive is in. "Drive States" on page 2 explains each drive's state and the StatusWord bit definitions. Below is a table of the hex values for each state.

Value	State	Description
xxxx xxxx x0xx 0000	Not Ready to Switch On	Drive is initializing, drive is disabled
xxxx xxxx x1xx 0000	Switch On Disabled	Drive completed initialization, drive is disabled
xxxx xxxx x01x 0001	Ready to Switch On	Bus power may be applied, drive is disabled
xxxx xxxx x01x 0011	Switched On	Bus power is applied, drive is disabled
xxxx xxxx x01x 0111	Operation Enabled	Drive is enabled
xxxx xxxx x0xx 1111	Fault Reaction Active	Drive will execute fault reaction event
xxxx xxxx x0xx 1000	Fault	Drive is in the fault state
xxxx xxxx x00x 0111	Stop Active	Stop received from host and now in this state

Drive Status

4	Event Action Status			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No

Description:

The function of each bit is given in Table 2.13 below.

5	Drive Protection Status			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No

Description:

The function of each bit is given in Table 2.13 below.

6	System Protection Status			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No
Description: The function of each bit is given in Table 2.13 below.				

7	Drive/System Status 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No
Description: The function of each bit is given in Table 2.13 below.				

8	Drive/System Status 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No
Description: The function of each bit is given in Table 2.13 below.				

9	Drive/System Status 3			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No
Description: The function of each bit is given in Table 2.13 below.				

10	Active Configuration Status			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only	No
Description: The function of each bit is given in Table 2.13 below.				

TABLE 2.13 Drive Status Bit-field Definitions

Bit	Drive Bridge Status	Drive Protection Status	System Protection Status	Drive System Status 1	Drive System Status 2	Drive System Status 3	Active Configuration Status
0	Bridge Enabled	Drive Reset	Parameter Restore Error	Log Entry Missed	Zero Velocity	PVT Buffer Full	Absolute Position Valid
1	Dynamic Brake Enabled	Drive Internal Error	Parameter Store Error	Software Disable	At Command	PVT Buffer Empty	Positive Stop Active
2	Stop Enabled	Short Circuit	Invalid Hall State	User Disable	Velocity Following Error	PVT Buffer Threshold	Negative Stop Active
3	Positive Stop Enabled	Current Overshoot	Phase Sync. Error	User Positive Inhibit	Positive Target Velocity Limit	PVT Buffer Failure	Reserved
4	Negative Stop Enabled	Under Voltage	Motor Over Temperature	User Negative Inhibit	Negative Target Velocity Limit	PVT Buffer Empty Stop	Reserved
5	Positive Torque Inhibit Active	Over Voltage	Phase Detection Fault	Current Limiting	Command Limiter Active	PVT Buffer Sequence Error	Reserved
6	Negative Torque Inhibit Active	Drive Over Temperature	Feedback Sensor Error	Continuous Current Foldback	In Home Position	Commanded Stop	Reserved
7	External Brake Active	Reserved	Motor Over Speed	Current Loop Saturated	Position Following Error	User Stop	Reserved
8	Reserved	Reserved	Max Measured Position	User Under Voltage	Max Target Position Limit	Capture 1 Active	Reserved
9	Reserved	Reserved	Min Measured Position	User Over Voltage	Min Target Position Limit	Capture 2 Active	Reserved
10	Reserved	Reserved	Comm. Error (Node Guarding)	Non-sinusoidal Commutation	Set Position Active	Capture 3 Active	Reserved
11	Reserved	Reserved	PWM & Dir Broken Wire	Phase Detection	Reserved	Commanded Positive Limit	Reserved
12	Reserved	Reserved	Motion Engine Error	Motion Engine Active	Homing Active	Commanded Negative Limit	Reserved
13	Reserved	Reserved	Motion Engine Abort	User Auxiliary Disable	Safe Torque Off Status	Reserved	Reserved
14	Reserved	Reserved	Reserved	Shunt Regulator	Homing Complete	Reserved	Reserved
15	Reserved	Reserved	Reserved	Phase Detect Done	Zero Position Error	Reserved	Reserved

Drive Status History

11	Event Action Status History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

12	Drive Protection Status History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

13	System Protection Status History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

14	Drive/System Status 1 History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

15	Drive/System Status 2 History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

16	Drive/System Status 3 History			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	N/A	N/A	Read Only*	No

Description:

If an event becomes active and then becomes inactive, Drive Status History will mark the event with a history bit. If a bit is 1, that event has occurred sometime in the past; 0 indicates the event has never occurred since power-up. The function of each bit is given in Table 2.13.

*Features a Read / Write function, in that any history bit can be cleared by writing a 1 to that bit.

Motion Engine Status

194	Active Sequence			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	-2 - 15	N/A	Read Only	No

Description:

Displays the active sequence number when using motion engine sequencing.

Bits 0:7

0-15 for index 0 to 15

FE: Dynamic Index

FF: No Invalid Index

Bits 8:15

Reserved

195	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	N/A	N/A	Read Only	No

196	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	N/A	N/A	Read Only	No

197	Motion Engine Status			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
N/A	0 - 9	N/A	Read Only	No

Description:

Defines the present state of the motion engine.

Value	Motion Engine State
0	Inactive
1	Waiting for Motion Start (Motion Engine is enabled and ready for an index)
2	Executing Motion (Index is currently running)
3	Program Load in Progress (Motion Engine is not ready for commanded index)
4	Program Load Failure - CRC Error (Problem loading Index. Must reset Motion Engine to continue)
5	Halt Asserted (Motion has been interrupted)
6	Single Step Active
7	Break Point Active
8	No Errors
9	Invalid Data Parameter (Problem loading Index. Must reset Motion Engine to continue)
10	Invalid Op-Code (Problem loading Index. Must reset Motion Engine to continue)
11	Invalid Op-code for Dynamic Motion (Problem with index parameters)
12	Invalid Reference Frame (Problem with index parameters)
13	Invalid Bridge State (Bridge must be enabled to begin indexed motion)
14	User Defined Fault

Modes Of Operation Display

914	Modes Of Operation Display			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer8	-128 - 127	N/A	Read Only	No

Description:

A "Mode Of Operation" refers to how the drive's internal control loops are configured. "Modes of Operation" on page 7 explains the valid control loop configurations for an AMC Ethernet IP servo drive.

Value	Operation Mode
1	Profile Position Mode
3	Profile Velocity Mode
4	Profile Torque Mode (current mode)
6	Homing Mode
7	Interpolated Position Mode (PVT)
8C	Jog Mode
9E	Config 0
DE	Config 1
EC	Motion Engine Mode
FF	None (Use active configuration settings)

Feedback Sensor Values

25	Electrical Cycle Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No

Description:

Contains a value corresponding to the electrical cycle position.

26	Latched Encoder/Resolver Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 - [2^{(32)} – 1]$	counts	Read Only	No

Description:

Contains a value corresponding to the latched encoder/resolver position.

27	Phase Sync Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No

Description:

Contains a value corresponding to the phase sync error.

28	Present Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	N/A	Read Only	No
Description: Contains a value corresponding to the present Hall state.				

29	Stator Angle			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	N/A	Read Only	No
Description: Contains a value corresponding to the stator angle.				

30	Rotor Angle			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$ –1]	N/A	Read Only	No
Description: Contains a value corresponding to the rotor angle.				

31	Stator Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$ –1]	e.c./min	Read Only	No
Description: Contains a value corresponding to the stator frequency of the motor.				

32	Rotor Frequency			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(15)}$ –1]	e.c./min	Read Only	No
Description: Contains a value corresponding to the rotor frequency of the motor.				

33	Cumulative Commutation Counts			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	0 – [$2^{(31)}$ –1]	counts	Read Only	No
Description: Contains a value corresponding to the cumulative commutation counts.				

34	Captured Electrical Cycle Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read Only	No
Description: Contains a value corresponding to the captured electrical cycle position.				

35	Phase Sync Adjustment			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read Only	No
Description: Contains a value corresponding to the phase sync adjustment.				

36	Step Cycle Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read Only	No
Description: Contains a value corresponding to the step cycle position.				

37	Estimated Drive Current in Phase 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	DC2	Read Only	No
Description: Contains a value corresponding to the estimated drive current in phase 1. See "Appendix A" on page 210 for unit conversion details.				

38	Estimated Generated Current in Phase 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	DC2	Read Only	No
Description: Contains a value corresponding to the estimated generated current in phase 1. See "Appendix A" on page 210 for unit conversion details.				

39	Estimated Drive Current in Phase 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	DC2	Read Only	No
Description: Contains a value corresponding to the estimated drive current in phase 2. See "Appendix A" on page 210 for unit conversion details.				

40	Estimated Generated Current in Phase 2			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	DC2	Read Only	No
Description: Contains a value corresponding to the estimated generated current in phase 2. See "Appendix A" on page 210 for unit conversion details.				

41	Local Error Raw			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read Only	No
Description: Contains a value corresponding to the position error before active damping is applied for stepper motors.				

42	Local Error Filtered			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(31)}] - [2^{(31)} - 1]$	counts	Read Only	No
Description: Contains a value corresponding to the position error after active damping is applied for stepper motors.				

Feedback Hardware Diagnostics

142	Sin/Cos Encoder Sine			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)}-1]$	Volts (SF1)	Read Only	No
Description: Represents the differential voltage of the +/- sine input of a 1V peak-to-peak encoder. Only applicable to drives that support Sin/Cos encoders. See "Appendix A" on page 210 for information on scaling.				

143	Sin/Cos Encoder Cosine			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] - [2^{(15)}-1]$	Volts (SF1)	Read Only	No
Description: Represents the differential voltage of the +/- cosine input of a 1V peak-to-peak encoder. Only applicable to drives that support Sin/Cos encoders. See "Appendix A" on page 210 for information on scaling.				

144	Sin/Cos Encoder Health			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	Volts (SF1)	Read Only	No

Description:

Represents the health of the Sin/Cos encoder inputs according to the formula below, where a value closer to 1 is healthy and a value closer to 0 is unhealthy. See "Appendix A" on page 210 for information on scaling.

Encoder Health = $Sin^2 + Cos^2$

145	Absolute Encoder Fault Word			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(16)}$-1]	N/A	Read Only	No

Description:

Contains a value that corresponds to an absolute encoder fault code. Fault codes are listed below by encoder type. The drive checks for faults and attempts to clear them during a phase detection routine. If a fault cannot be cleared, the appropriate fault code will be given by this object instance and the drive will activate a feedback sensor error.

Hiperface (Stegmann):

Status Value	Status Name
00h	No Error
01h	Analog signals outside of specification
02h	Internal angle offset erroneous
03h	Data field partition destroyed
04h	Analog limit is not available
05h	Internal I^2C is not serviceable
06h	Internal checksum error
07h	Encoder reset occurred
08h	Counter overflow
09h	Parity error
0Ah	Checksum of transmitted data is wrong
0Bh	Unknown command code
0Ch	Number of data transmitted is wrong
0Dh	Command argument transmitted is impermissible
0Eh	Data may not be written to the data field selected
0Fh	Wrong access code
10h	Size of specified data field cannot be changed
11h	Specified word address outside data field
12h	Access to non-existent data field
1Ch	Monitoring the magnitude of the analog signals
1Dh	Critical encoder current
1Eh	Critical encoder temperature
1Fh	Speed too high, position information not possible
20h	Position of single turn impermissible
21h	Position error, multi-turn
22h	Position error, multi-turn
23h	Position error, multi-turn
28h	Error absolute value formation linear measuring system

EnDat (Heidenhein):

Bit	Fault Name
0	Light Source
1	Signal Amplitude
2	Position Value
3	Over Voltage
4	Under Voltage
5	Over Current
6	Battery
7-15	RFU

146	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(16)}$-1]	N/A	Read Only	No

147	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	0 – [$2^{(16)}$-1]	N/A	Read Only	No

Gearing Input Values

106	Gearing Input 1			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] – [$2^{(31)}$-1]	counts	Read Only	No
Description: Contains a value corresponding to the number of encoder counts sent to the gearing module.				

107	Gear Ratio Denominator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	counts	Read Only	No
Description: Value corresponding to the denominator of the gear ratio input counts.				

108	Gear Ratio Numerator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – [$2^{(16)}$-1]	counts	Read Only	No
Description: Value corresponding to the numerator of the gear ratio input counts.				

Auxiliary Encoder Values

109	Auxiliary Encoder Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	[$-2^{(31)}$] – [$2^{(31)}$-1]	Counts	Read / Write	No
Description: Contains the raw number of counts seen on the auxiliary encoder input. This value resets to zero when the drive is power-cycled.				

110	Auxiliary Position Index Capture Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	Counts	Read Only	No
Description: Contains the position of the last auxiliary encoder index capture by the drive. Requires auxiliary encoder with index.				

Current Loop / Commutation Values

111	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

112	Torque Summation Input			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DC2	Read Only	No
Description: Contains the raw current command before filtering or an offset has been applied. See "Appendix A" on page 210 for unit conversion.				

113	Torque Summation Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DC2	Read Only	No
Description: Contains the offset of the commanded current in the current loop. See "Appendix A" on page 210 for unit conversion.				

114	Torque Current Target			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	$0 – (2^{32}-1)$	DC2	Read Only	No
Description: Contains a value corresponding to the current target. See "Appendix A" on page 210 for unit conversion.				

115	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

116	Reserved			
Data Type	Data Range	Units	Accessibility	Stored to NVM
-	-	-	-	-

117	Reserved			
Data Type	Data Range	Units	Accessibility	Stored to NVM
-	-	-	-	-

118	Flux Current Target			
Data Type	Data Range	Units	Accessibility	Stored to NVM
Unsigned32	$-2^{31} – (2^{31}-1)$	DC2	Read Only	No
Description: Contains a value corresponding to the flux current target. See "Appendix A" on page 210 for unit conversion.				

119	Reserved			
Data Type	Data Range	Units	Accessibility	Stored to NVM
-	-	-	-	-

120	Reserved			
Data Type	Data Range	Units	Accessibility	Stored to NVM
-	-	-	-	-

121	Reserved			
Data Type	Data Range	Units	Accessibility	Stored to NVM
-	-	-	-	-

122	Phase-A Measured Current			
Data Type	Data Range	Units	Accessibility	Stored to NVM
Unsigned16	$0 – (2^{16}-1)$	DC1	Read Only	No
Description: Contains a value corresponding to the phase-A measured current. See "Appendix A" on page 210 for unit conversion.				

123	Phase-B Measured Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – (2^{16}-1)	DC1	Read Only	No
Description: Contains a value corresponding to the phase-B measured current. See "Appendix A" on page 210 for unit conversion.				

124	Phase-C Measured Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – (2^{16}-1)	DC1	Read Only	No
Description: Contains a value corresponding to the phase-C measured current. See "Appendix A" on page 210 for unit conversion.				

125	Phase-D Measured Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – (2^{16}-1)	DC1	Read Only	No
Description: Contains a value corresponding to the phase-D measured current. See "Appendix A" on page 210 for unit conversion.				

126	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

127	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

128	Flux Current Reference Target			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned32	0 – (2^{31}-1)	DC2	Read Only	No
Description: Contains a value corresponding to the flux current reference target. See "Appendix A" on page 210 for unit conversion.				

129	Flux Current Reference Demand			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – (2^{16}-1)$	DC1	Read Only	No
Description: Contains a value corresponding to the flux current reference demand. See "Appendix A" on page 210 for unit conversion.				

130	Flux Current Reference Measured			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – (2^{16}-1)$	DC1	Read Only	No
Description: Contains a value corresponding to the flux current reference measured. See "Appendix A" on page 210 for unit conversion.				

131	Flux Current Reference Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – (2^{16}-1)$	DC1	Read Only	No
Description: Contains a value corresponding to the flux current reference error. See "Appendix A" on page 210 for unit conversion.				

Actual Current

924	Actual Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$-2^{15} – (2^{15}-1)$	DC1	Read Only	No
Description: Contains the instantaneous current applied to the motor. See "Appendix A" on page 210 for units conversion.				

Current Values

57	Current Target - Torque			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DC2	Read Only	No
Description: Contains the value of the target current (torque-producing). See "Appendix A" on page 210 for unit conversion.				

58	Current Demand - Torque			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the value of the demand current (torque-producing). See "Appendix A" on page 210 for unit conversion.				

59	Current Measured - Torque			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the value of the measured current (torque-producing). See "Appendix A" on page 210 for unit conversion.				

60	Current Error - Torque			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the error between the target current and the measured current (torque-producing). This is equivalent to: demand current minus measured current. When the demand current is reached, the current error is zero. See "Appendix A" on page 210 for unit conversion.				

61	Current Target - Flux			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DC2	Read Only	No
Description: Contains the value of the target current (flux-producing). See "Appendix A" on page 210 for unit conversion.				

62	Current Demand - Flux			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the value of the demand current (flux-producing). See "Appendix A" on page 210 for unit conversion.				

63	Current Measured - Flux			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the value of the measured current (flux-producing). See "Appendix A" on page 210 for unit conversion.				

64	Current Error - Flux			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains the value of the Current error (flux-producing). See "Appendix A" on page 210 for unit conversion.				

65	Current Target - Flux Reference			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DC2	Read Only	No
Description: Contains a value corresponding to the Current target flux reference. See "Appendix A" on page 210 for unit conversion.				

66	Current Demand - Flux Reference			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the current demand flux reference.				

67	Current Measured - Flux Reference			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the current measured flux reference.				

68	Current Error - Flux Reference			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the current error flux reference.				

69	Current Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the current limit.				

70	Current Measured - Phase A			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains a value corresponding to the current measured in phase A. See "Appendix A" on page 210 for unit conversion.				

71	Current Measured - Phase B			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DC1	Read Only	No
Description: Contains a value corresponding to the current measured in phase B. See "Appendix A" on page 210 for unit conversion.				

72	Phase Angle - Rotor			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 359	DG1	Read Only	No
Description: Contains a value corresponding to the Phase Angle – Rotor. See "Appendix A" on page 210 for unit conversion.				

73	Phase Angle - Stator			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 – 359	DG1	Read Only	No
Description: Contains a value corresponding to the Phase Angle – Stator. See "Appendix A" on page 210 for unit conversion.				

74	Torque Summation Input			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DC2	Read Only	No
Description: Contains the raw current command before filtering or an offset has been applied. See "Appendix A" on page 210 for unit conversion.				

75	Torque Summation Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DC2	Read Only	No
Description: Contains the offset of the commanded current in the current loop. See "Appendix A" on page 210 for unit conversion.				

Velocity Sensor Actual Value

918	Velocity Sensor Actual Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DS1	Read Only	No
Description: The value read from this object is the velocity measured directly from the primary feedback device before filtering or conditioning is applied. To read the actual velocity value used by the velocity control loop, see 920 - Actual Velocity. See "Appendix A" on page 210 for unit conversion.				

Velocity Demand

919	Velocity Demand			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DS1	Read Only	No
Description: Velocity Demand is defined as the target velocity, after limits and profiling, which is applied to the signal. This is the signal used by the velocity loop to produce a velocity error signal. See "Appendix A" on page 210 for unit conversion.				

Actual Velocity

920	Actual Velocity			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	DS1	Read Only	No
Description: Actual Velocity is defined as the measured velocity, after conditioning, used to close the drive's velocity loop. See "Appendix A" on page 210 for unit conversion.				

Velocity Window

921	Velocity Window			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)} – 1]$	DS1	Read / Write	No
Description: The maximum allowed difference between the target velocity and the velocity actual value. Bit 10 of the StatusWord shall be set to 1 (*target reached)* when the difference between the target velocity and velocity actual value is within the velocity window longer than the velocity window time. See "Appendix A" on page 210 for unit conversion.				

Velocity Window Time

922	Velocity Window Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(15)} – 1]$	ms	Read / Write	Yes
Description: The time delay after the occurrence of Velocity Following Error before its Event Action is executed. The functionality of this object is identical to that of manufacturer-specific instance Event Response Time: Velocity Following Error.				

Velocity Values

76	Velocity Measured Pre-Filter			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the measured velocity before the feedback cutoff filter. See "Appendix A" on page 210 for unit conversion.				

77	Velocity Measured Post-Filter			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the measured velocity after the feedback cutoff filter. See "Appendix A" on page 210 for unit conversion.				

78	Velocity Target			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the current velocity target when the drive is in velocity mode. See "Appendix A" on page 210 for unit conversion.				

79	Velocity Demand			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the current velocity demand when the drive is in velocity mode. See "Appendix A" on page 210 for unit conversion.				

80	Velocity Target Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the error between the target velocity and the measured velocity. This is equivalent to target velocity minus measured velocity. When the current commanded velocity is reached, the velocity loop error will be zero. See "Appendix A" on page 210 for unit conversion.				

81	Velocity Summation Input			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the raw velocity command before filtering or an offset has been applied. See "Appendix A" on page 210 for unit conversion.				

82	Velocity Summation Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	DS1	Read Only	No
Description: Contains the offset of the commanded velocity in the velocity loop. See "Appendix A" on page 210 for unit conversion.				

Actual Position

915	Actual Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$-2^{31} – (2^{31}-1)$	counts	Read Only	No
Description: Actual Position contains the measured position of the primary feedback device. This is the actual value used to create position error in position mode.				

Position Values

83	Position Measured			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the current measured position in counts.				

84	Position Target			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the current commanded position when the drive is used in the position mode.				

85	Position Demand			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the current position demand in counts.				

86	Position Target Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the error between the target position (in counts) and the measured position (in counts). This is equivalent to target position (counts) minus measured position (counts). When the current commanded position is reached, the position loop error will be zero.				

87	Position Summation Input			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the raw position command before filtering or an offset has been applied.				

88	Position Summation Offset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the offset of the commanded position in the position loop.				

89	Position Index Capture Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the position of the last encoder index captured by the drive. Requires encoder with index.				

Command Limiter Input

92	Input Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the input of the command limiter.				

Power Bridge Values

43	DC Bus Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the DC Bus Voltage. See "Appendix A" on page 210 for unit conversions.				

44	Control Loop 1 Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Control Loop 1 Output Voltage. See "Appendix A" on page 210 for unit conversions.				

45	Control Loop 2 Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Control Loop 2 Output Voltage. See "Appendix A" on page 210 for unit conversions.				

46	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

47	Reserved			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
-	-	-	-	-

48	Trap Mode Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DPV	Read Only	No
Description: Contains a value corresponding to the trap mode output voltage. See "Appendix A" on page 210 for unit conversion details.				

49	Phase A Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DPV	Read Only	No
Description: Contains a value corresponding to the Phase A Output Voltage. See "Appendix A" on page 210 for unit conversion details.				

50	Phase B Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DPV	Read Only	No
Description: Contains a value corresponding to the Phase B Output Voltage. See "Appendix A" on page 210 for unit conversion details.				

51	Phase C Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DPV	Read Only	No
Description: Contains a value corresponding to the Phase C Output Voltage. See "Appendix A" on page 210 for unit conversion details.				

52	Phase D Output Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DPV	Read Only	No
Description: Contains a value corresponding to the Phase D Output Voltage. See "Appendix A" on page 210 for unit conversion details.				

53	Va Measured Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Va Measured Voltage. See "Appendix A" on page 210 for unit conversion details.				

54	Vb Measured Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Vb Measured Voltage. See "Appendix A" on page 210 for unit conversion details.				

55	Vc Measured Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Vc Measured Voltage. See "Appendix A" on page 210 for unit conversion details.				

56	Vd Measured Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DV1	Read Only	No
Description: Contains a value corresponding to the Vd Measured Voltage. See "Appendix A" on page 210 for unit conversion details.				

Drive Temperature Values

132	External Thermal Sense Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	N/A	Read Only	No
Description: Contains a value corresponding to the external thermal sense value. This value represents the motor temperature value detected by the drive. To determine the physical temperature, use the following formula: (Thermal Sense Value) / 65536 = Temperature measured by drive (in °C) Example: The reported External Thermal Sense Value is 1234567 (decimal). The temperature measured by the drive is therefore (1234567/65536) = 18.8 °C				

133	Thermistor Resistance			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	Ohms	Read Only	No
Description: If supported by the hardware, this value represents the measured thermistor resistance value in ohms.				

Capture Values The capture values have units that vary with the operating mode of the drive. For these parameters, refer to Table 2.14 for the correct unit selection.

TABLE 2.14 Capture Units

Drive Operation Mode	Units
Current (Torque)	DC2
Velocity	DS1
Position (Around Velocity Or Current)	counts

97	Capture 'A' Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.14	Read Only	No
Description: Capture A captured value				

98	Capture 'B' Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.14	Read Only	No
Description: Capture B captured value				

99	Capture 'C' Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] - [2^{(31)} - 1]$	See Table 2.14	Read Only	No
Description: Capture C captured value				

Digital Input Values

138	Digital Inputs (Post Active Level)			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	See Table	N/A	Read Only	No

Description:

Bit field corresponding to the state of the digital inputs. Bit field definitions are given below.

Bit	Digital Inputs*
0	Digital Input 1
1	Digital Input 2
2	Digital Input 3
3	Digital Input 4
4	Digital Input 5
5	Digital Input 6
6	Digital Input 7
7	Digital Input 8
8	Digital Input 9
9	Digital Input 10
10	Digital Input 11
11	Digital Input 12
12	Digital Input 13
13	Digital Input 14
14	Digital Input 15
15	Digital Input 16

*Number of actual inputs depends on drive model

Digital Output Values

139	Digital Outputs (Pre Active Level)			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	See Table	N/A	Read Only	No

Description:

Bit field corresponding to the state of the digital outputs. Bit field definitions are given below.

Bit	Digital Outputs*
0	Digital Output 1
1	Digital Output 2
2	Digital Output 3
3	Digital Output 4
4	Digital Output 5
5	Digital Output 6
6	Digital Output 7
7	Digital Output 8
8	Digital Output 9
9	Digital Output 10
10	Digital Output 11
11	Digital Output 12
12	Digital Output 13
13	Digital Output 14
14	Digital Output 15
15	Digital Output 16

*Number of actual outputs depends on drive model

Analog Input Values

100	Analog Input 1 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAI	Read Only	No

Description:

Contains a value corresponding to the voltage present on analog input 1. See "Appendix A" on page 210 for unit conversion details.

101	Analog Input 2 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAI	Read Only	No
Description: Contains a value corresponding to the voltage present on analog input 2. See "Appendix A" on page 210 for unit conversion details.				

102	Analog Input 3 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAI	Read Only	No
Description: Contains a value corresponding to the voltage present on analog input 3. See "Appendix A" on page 210 for unit conversion details.				

103	Analog Input 4 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAI	Read Only	No
Description: Contains a value corresponding to the voltage present on analog input 4. See "Appendix A" on page 210 for unit conversion details.				

Analog Input ADC Raw Values

134	Analog Input 1 ADC Raw Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read Only	No
Description: Provides the full scale raw value of the ADC used for Analog Input 1.				

135	Analog Input 2 ADC Raw Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read Only	No
Description: Provides the full scale raw value of the ADC used for Analog Input 2.				

136	Analog Input 3 ADC Raw Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read Only	No
Description: Provides the full scale raw value of the ADC used for Analog Input 3.				

137	Analog Input 4 ADC Raw Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	$0 – [2^{(16)}-1]$	N/A	Read Only	No
Description: Provides the full scale raw value of the ADC used for Analog Input 4.				

Analog Output Values

140	Analog Output 1 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAO	Read Only	No
Description: Contains a value corresponding to the value of analog output 1. The analog outputs have a range of 0 to 10 Volts. See "Appendix A" on page 210 for unit conversion details.				

141	Analog Output 2 Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(15)}] – [2^{(15)}-1]$	DAO	Read Only	No
Description: Contains a value corresponding to the value of analog output 2. The analog outputs have a range of 0 to 10 Volts. See "Appendix A" on page 210 for unit conversion details.				

Programmable Limit Switch Values

94	PLS Input Value			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer32	$[-2^{(31)}] – [2^{(31)}-1]$	counts	Read Only	No
Description: Contains the value of the programmable limit switch position input. If a rollover value has been defined, this value will range between zero and the rollover value.				

95	PLS 1 State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Bits	0-1	-	Read Only	No
Description: Contains the current state of PLS 1. This bit is high when PLS 1 is active.				

96	PLS 2 State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Bits	0-1	-	Read Only	No
Description: Contains the current state of PLS 2. This bit is high when PLS 2 is active.				

PWM and Direction Input Values

104	Applied PWM Duty Cycle			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$[-2^{(13)}] – [2^{(13)}]$	Fractional duty cycle * $2^{(13)}$	Read Only	No
Description: Contains the value of the input duty cycle expressed as a signed fraction when the drive is configured for PWM command input. This value represents the measured duty cycle after polarity and inversions applied.				

105	Input PWM Duty Cycle			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Integer16	$0 – [2^{(13)}]$	duty cycle * $2^{(13)}$	Read Only	No
Description: Contains the value of the input duty cycle expressed as an unsigned fraction when the drive is configured for PWM command input. This value represents the measured duty cycle before polarity and inversions applied.				

Fault Log Counter

148	Log Counter: Total Run Time			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned48	$0 – 2^{48}$	msec	Read Only	No
Description: This command holds the total run time of the drive.				

149	Log Counter: Drive Reset			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0- [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Drive Reset occurred in the life of the drive.				

150	Log Counter: Drive Internal Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0- [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Drive Internal Error occurred in the life of the drive.				

151	Log Counter: Short Circuit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Short Circuit occurred in the life of the drive.				

152	Log Counter: Current Overshoot			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Current Overshoot occurred in the life of the drive.				

153	Log Counter: Hardware Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Hardware Under Voltage occurred in the life of the drive.				

154	Log Counter: Hardware Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Hardware Over Voltage occurred in the life of the drive.				

155	Log Counter: Drive Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Drive Over Temperature occurred in the life of the drive.				

156	Log Counter: Parameter Restore Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Parameter Restore Error occurred in the life of the drive.				

157	Log Counter: Parameter Store Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Parameter Store Error occurred in the life of the drive.				

158	Log Counter: Invalid Hall State			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Invalid Hall State occurred in the life of the drive.				

159	Log Counter: Phase Synchronization Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Phase Sync. Error occurred in the life of the drive.				

160	Log Counter: Motor Over Temperature			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Motor Over Temperature occurred in the life of the drive.				

161	Log Counter: Phase Detection Fault			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Phase Detection Fault occurred in the life of the drive.				

162	Log Counter: Feedback Sensor Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Feedback Sensor Error occurred in the life of the drive.				

163	Log Counter: Log Entry Missed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Log Entry Missed occurred in the life of the drive.				

164	Log Counter: Software Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Software Disable occurred in the life of the drive.				

165	Log Counter: User Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Disable occurred in the life of the drive.				

166	Log Counter: User Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Positive Limit occurred in the life of the drive.				

167	Log Counter: User Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Negative Limit occurred in the life of the drive.				

168	Log Counter: Current Limiting			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Current Limiting occurred in the life of the drive.				

169	Log Counter: Continuous Current			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Continuous Current occurred in the life of the drive.				

170	Log Counter: Current Loop Saturated			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Current Loop Saturated occurred in the life of the drive.				

171	Log Counter: User Under Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Under Voltage occurred in the life of the drive.				

172	Log Counter: User Over Voltage			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Over Voltage occurred in the life of the drive.				

173	Log Counter: User Auxiliary Disable			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Auxiliary Disable occurred in the life of the drive.				

174	Log Counter: Shunt Regulator Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Shunt Regulator Active occurred in the life of the drive.				

175	Log Counter: Command Limiter Active			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Command Limiter Active occurred in the life of the drive.				

176	Log Counter: Motor Overspeed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Motor Overspeed occurred in the life of the drive.				

177	Log Counter: At Command			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times At Command occurred in the life of the drive.				

178	Log Counter: Zero Speed			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Zero Speed occurred in the life of the drive.				

179	Log Counter: Velocity Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Velocity Following Error occurred in the life of the drive.				

180	Log Counter: Positive Target Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Positive Target Velocity Limit occurred in the life of the drive.				

181	Log Counter: Negative Target Velocity Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Negative Target Velocity Limit occurred in the life of the drive.				

182	Log Counter: Upper Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Upper Measured Position Limit occurred in the life of the drive.				

183	Log Counter: Lower Measured Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Lower Measured Position Limit occurred in the life of the drive.				

184	Log Counter: At Home Position			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times At Home Position occurred in the life of the drive.				

185	Log Counter: Position Following Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Position Following Error occurred in the life of the drive.				

186	Log Counter: Upper Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Upper Target Position Limit occurred in the life of the drive.				

187	Log Counter: Lower Target Position Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Lower Target Position Limit occurred in the life of the drive.				

188	Log Counter: Communication Channel Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Communication Channel Error occurred in the life of the drive.				

189	Log Counter: Commanded Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times Commanded Stop occurred in the life of the drive.				

190	Log Counter: User Stop			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description: Number of times User Stop occurred in the life of the drive.				

191	Log Counter: Commanded Positive Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description:				
Number of times Commanded Positive Limit occurred in the life of the drive.				

192	Log Counter: Commanded Negative Limit			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description:				
Number of times Commanded Negative Limit occurred in the life of the drive.				

193	Log Counter: PWM and Direction Broken Wire Error			
Data Type	**Data Range**	**Units**	**Accessibility**	**Stored to NVM**
Unsigned16	0 - [$2^{(16)}$ –1]	count	Read Only	No
Description:				
Number of time PWM and Direction Broken Wire Error occurred in the life of the drive.				

Appendix A

A.1 Drive Units

Table A.1 below shows scaling factors and formulas for converting physical units to drive units.

TABLE A.1 Drive Units and Scaling Factors

Abbreviation	Drive Unit Type	Physical Units	Data Type	Scaling Factor
DA1	Acceleration	counts/s^2	Integer32/Unsigned32	$2^{34}/K_S^2$
DA2	Acceleration	counts/s^2	Unsigned48	$2^{34}/K_I K_S^2$
DA3	Acceleration	counts/s^2	Integer32	$2^{28}/(K_{MS}\ K_S)$
DA4	Acceleration	counts/s^2	Integer32	$2^{(18)}/(K_S^2)$
DA5	Acceleration	counts/s^2	Unsigned48	$2^{28}/K_{DS}\ K_S$
DC1	Current	A	Integer16	$2^{14}/K_P$
DC2	Current	A	Integer32	$1000/K_P$
DJ1	Jerk	A/s	Unsigned48	$2^{32}/(K_P\ K_S)$
DG1	Angle	degrees	Integer16/Unsigned16	$2^{16}/360$
DS1	Speed/Velocity	counts/s	Integer32	$2^{17}/K_I K_S$
DS2	Speed/Velocity	counts/s	Unsigned48	$2^{17}/K_S$
DS3	Speed/Velocity	counts/s	Integer64	$2^{33}/K_S$
DS4	Speed/Velocity	counts/s	Unsigned32	$2^{17}/K_S$
DV1	Voltage	V	Integer16	$2^{14}/(1.05\ K_{OV})$
DPV	Phase Voltage	V	Integer16	$2^{14}/K_B$
DAI	Analog Input Voltage	V	Integer16	$2^{14}/20$
DAO	Analog Output Voltage	V	Integer16	$2^{14}/10$
DT1	Temperature	°C	Integer32	2^{16}
PBC	Power Board Current	A	Unsigned16	10
PBV	Power Board Voltage	V	Unsigned16	10
PBT	Power Board Time	s	Unsigned16	100
PBF	Power Board Frequency	Hz	Unsigned32	$2^{16}/1000$
SF1	Scale Factor 1	-	-	2^{14}

1.Multiply physical units by the scaling factor to obtain drive units. Divide drive units by the scaling factor to obtain physical units.

The drive units used for a parameter depend upon the parameter type and size. Drive units must be rounded to the nearest integer and then converted to a hexadecimal base of the appropriate data type before they are written to the drive. When converting to a signed integer data type, use two's complement for representation of negative numbers (see Conversion Example 2). Some scaling factors involve drive dependent constants. These constants are given in Table A.2, along with details on determining their values.

TABLE A.2 Drive Dependent Conversion Constants

Constant	Value
K_B	DC Bus Voltage in volts. This value can be read from instance 43 ("Power Bridge Values" on page 193).
K_{DS}	Maximum dynamic index speed (in counts/s). This value can be read from instances 841 - 844 ("Dynamic Index Data" on page 165).
K_I	Feedback interpolation value. Only applies to drives that support 1 V_{pp} Sin/Cos feedback. For all other drives, K_I = 1. When applicable, this value can be read from instance 226 ("Feedback Sensor Parameters" on page 26).
K_{MS}	Maximum profiler speed (in counts/s) for an Accel/Decel command profile. This value can be read from instance 301 for Configuration 0 and instance 304 for Configuration 1 ("Command Limiter Parameters" on page 54) .
K_{OV}	The hardware defined, DC bus, over-voltage limit of the drive in volts. This value can be read from instance 869 ("Power Board Information" on page 153).
K_P	The maximum rated peak current of the drive in amps. For example, 20 for the DPRALTE-**020**B080. This value can be read from instance 872 ("Power Board Information" on page 153).
K_S	Switching frequency of the drive in Hz. This value can be found on the drive datasheet, or can be read from instance 896 ("Power Board Information" on page 153) and divided by 65.536.

A.1.1 Conversion Example 1

Drive: DPPANIU-020B080
Feedback: 1000 Line Incremental Encoder

To specify a Motor Over Speed Limit (instance 263) of 10,000 RPM, first convert to the appropriate physical unit as shown below, keeping in mind that counts have a quadrature resolution (4X) over lines.

$$10{,}000\frac{\text{rev}}{\text{min}}\times\frac{1000\,\text{lines}}{1\,\text{rev}}\times\frac{4\,\text{counts}}{1\,\text{line}}\times\frac{1\,\text{min}}{60\,\text{sec}}=666{,}666.7\frac{\text{counts}}{\text{sec}}.$$

Motor Over Speed is of data type Integer32 and uses DS1 drive units. Taking the appropriate 32-bit scaling factor from Table A.1 yields

$$666{,}666.7\times\frac{2^{17}}{K_I K_S}=666{,}666.7\times\frac{2^{17}}{1\times 20{,}000}=4369066.9,$$

where K_I = 1 because we are not dealing with 1 V_{PP} Sin/Cos feedback. Rounding this to the nearest integer and converting to a hexadecimal base then results in

$$4369067_{10} = 42AAAB_{16}.$$

Now, to apply the setting, a value of 42AAABh would be written to instance 263.

A.1.2 Conversion Example 2

To set a temperature parameter to 23°F first convert to the appropriate physical unit as shown below.

$$\frac{5}{9}(23-32) = -5 \text{ °C.}$$

Referring to Table A.1, the appropriate scaling factor yields

$$-5 \times 2^{16} = -327680.$$

Because the resulting integer value is negative, two's complement notation will be used to represent its hexadecimal equivalent. To obtain the two's complement, the positive version of the desired number should be subtracted from 2^N, where N is the number of bits in the data type. Temperature parameters use the data type Integer32 so the calculation is as follows.

$$2^N - 327680 = 2^{32} - 327680 = 4294639616$$
$$4294639616_{10} = FFFB0000_{16}$$

The final step would be to write a value of FFFB0000h to the appropriate parameter.

A.2 Homing

ADVANCED Motion Controls' drives support a wide variety of homing routines. These routines rely on signals such as limit switch, home switch, and encoder index signals to achieve precise starting positions. Four commands define the speed, acceleration, and the particular homing method used. These commands are listed in the table below.

TABLE A.3 Homing Objects

Command Instance	Description
930	Homing Speed During Search For Switch
931	Homing Speed During Search For Zero
929	Homing Method
932	Homing Acceleration

A.2.1 Homing Speeds

There are two homing speeds to take into consideration: the speed during the search for home switch, and the speed during the search for zero. Typically, the speed during the search for the home switch is set to be faster than the speed during the search for the index.

A.2.2 Homing Method

ADVANCED Motion Controls homing methods depend on the presence of up to three different system components: an index pulse, a home switch, and a limit switch. The simplest homing methods require just one or none of these components, whereas the more complex methods require two or all of these components. All homing methods have been summarized in Table A.4, along with their necessary components. There are a total of 35 possible homing methods, some of which are reserved and not currently specified.

A.2.3 Homing Acceleration

A single value is used to define the acceleration and deceleration of all moves during the homing routine.

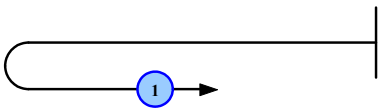
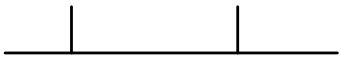
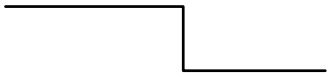
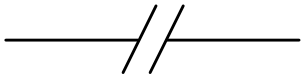
TABLE A.4 Homing Methods Summary

Homing Method	Index Pulse	Home Switch	Limit Switch
Methods 1 & 2	✓		✓
Methods 3 to 6	✓	✓	
Methods 7 to 14	✓	✓	✓
Methods 15 & 16	Reserved		
Methods 17 & 18			✓
Methods 19 to 22		✓	
Methods 23 to 30		✓	✓
Methods 31 & 32	Reserved		
Methods 33 & 34	✓		
Method 35			

Because these homing methods can become fairly complex, they are best described visually. As a result, *homing diagrams* are utilized to illustrate the behavior of each method. Homing diagrams consist of multiple components each of which is described in Figure A.1.

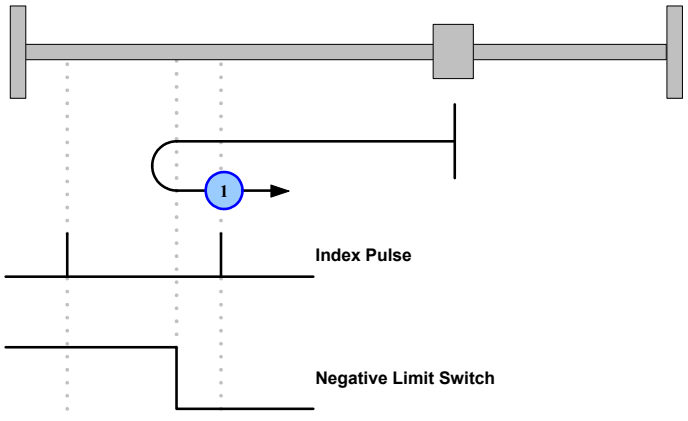
FIGURE A.1 Homing Diagrams

Load and physical limits	
The square near the middle of the illustration shows the load object that is to be moved. The endpoints represent physical limitations or barriers, which the load cannot travel past. The left side is in the negative direction while the right side is in the positive direction.	

Direction of travel	
The vertical line on the right side represents the starting position. The load travels in the direction of the arrow. In the illustration shown, the load begins traveling in the negative direction and then switches directions to move in the positive direction. The circle represents the home position at which point the (actual) measured position is reset to zero. The small section of arrow following the circle represents the distance traveled, past the home position, during deceleration of the load. Lastly, the number in the circle represents the number designated to that particular homing method.	
Index Pulse	
Each vertical line represents one index pulse.	
Limit/Home Switch	
A label in the actual homing diagram will be used to label a switch as either a limit/home switch. As shown, there are only two positions for a switch: high (active) or low (inactive).	
Break	
Represents a break in the diagram. This is used for representing a length of distance too large to properly scale on the diagram.	

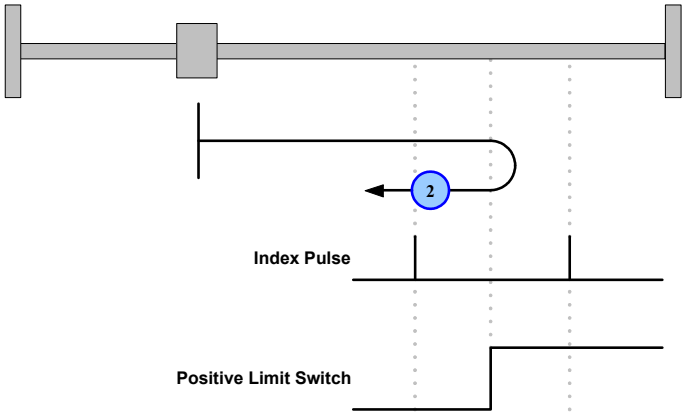
Method 1: Homing on the Negative Limit Switch This method uses the negative limit switch and index to home the load. If the negative limit switch is off, the motor moves in the negative direction. Once the limit switch toggles, the motor changes direction and moves until the next encoder index. Homing is complete at this point. Figure A.2 illustrates the homing diagram for this method.

FIGURE A.2 Homing on the Negative Limit Switch



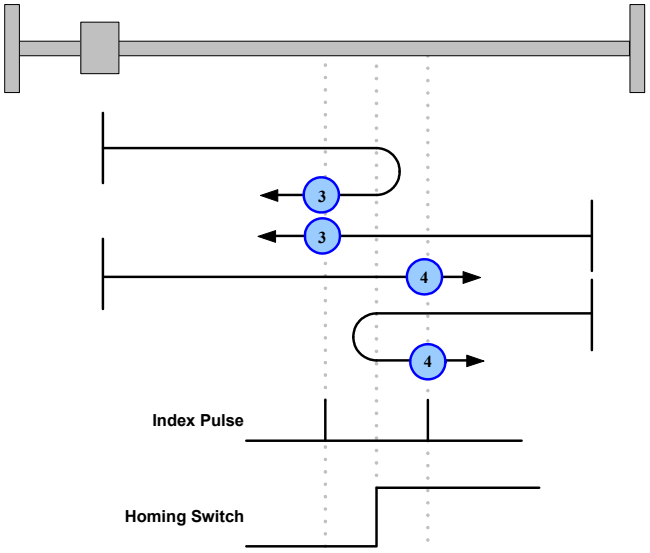
Method 2: Homing on the Positive Limit Switch This method uses the positive limit switch and index to home the load. If the positive limit switch is off, the motor moves in the positive direction. Once the limit switch toggles, the motor changes direction and moves until the next encoder index. Homing is complete at this point. Figure A.3 illustrates the homing diagram for this method.

FIGURE A.3 Homing on the Positive Limit Switch



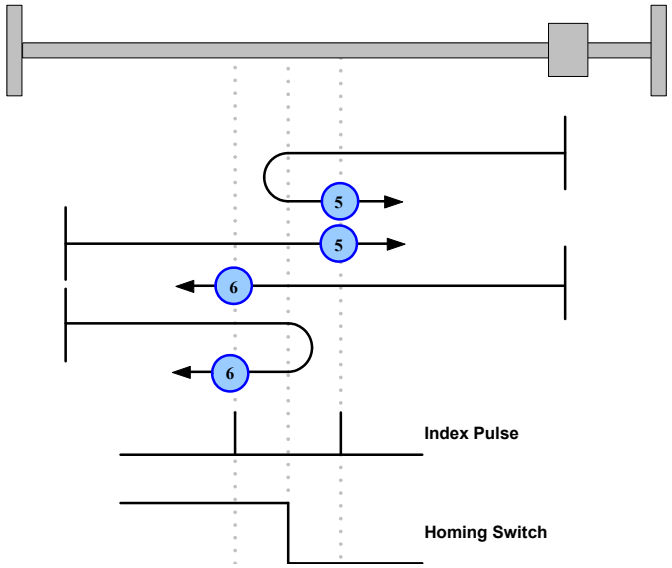
Methods 3 and 4: Homing on the Positive Home Switch These methods use the positive home switch and index to home the load. The initial direction of movement for a given routine method is dependent on the home switch position. However, the final position is always in the same direction. Homing methods 3 and four perform the same operations, but in opposite directions with opposite home switch polarity. Figure A.4 illustrates the homing diagram for these methods.

FIGURE A.4 Homing on the Positive Home Switch



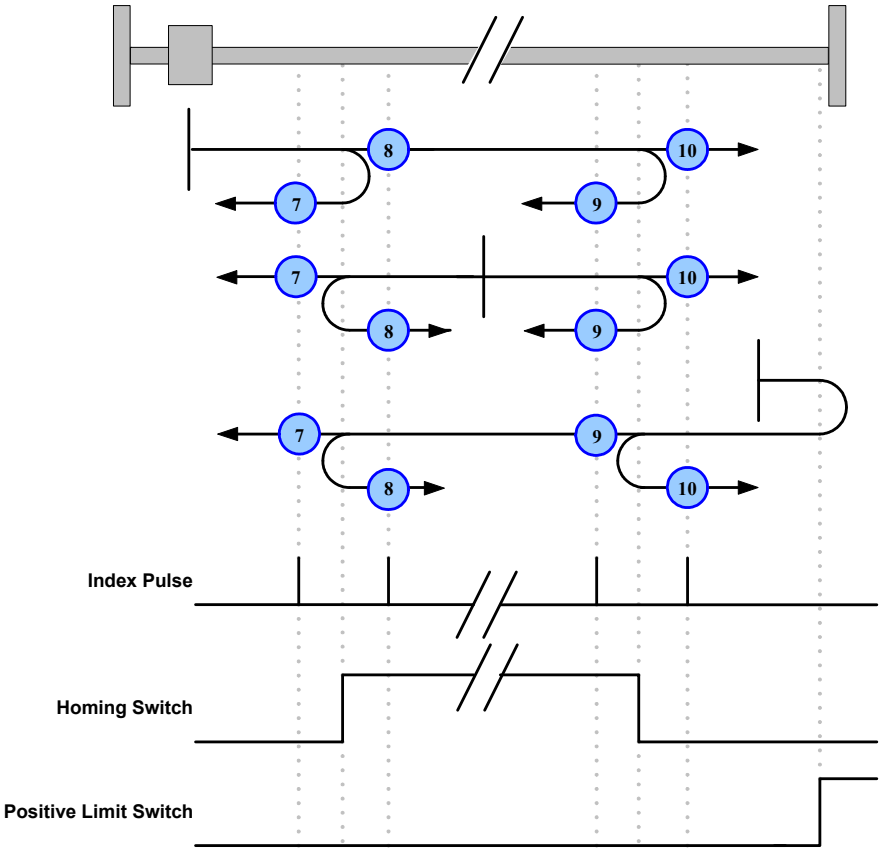
Methods 5 and 6: Homing on the Negative Home Switch This is literally a mirror image of the homing routines used by methods 3 and 4. Figure A.5 illustrates the homing diagram for these methods.

FIGURE A.5 Homing on the Negative Home Switch



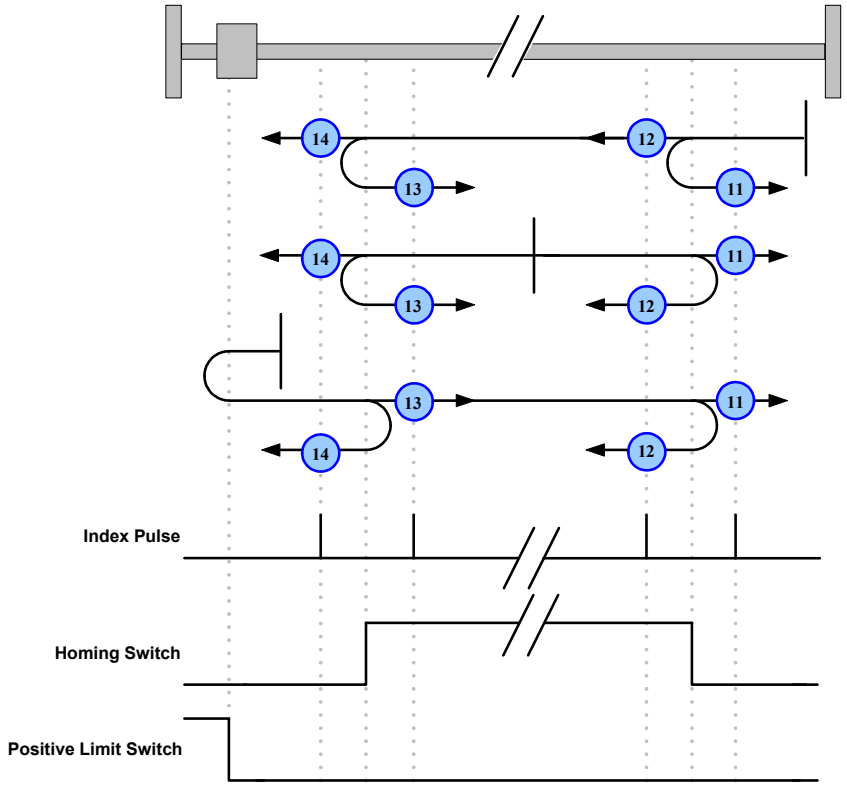
Methods 7-14: Homing on the Home Switch These methods use all three possible homing components (index pulse, home switch, and limit switch) with the index pulse to the nearest right or left of the home switch always being the sought after home position. Methods 7 to 10 use a positive limit switch and if the starting position is outside the active home switch region the initial direction of travel is always positive. For cases where the starting position is inside the active home switch region the initial direction will depend upon the index pulse being sought after: methods 7 & 8 home towards the left home switch edge so the initial direction will be left, whereas methods 9 & 10 home towards the right home switch edge so the initial direction will be right. Note that the only difference between methods 7 & 8 is that one homes to the index pulse left of the home switch edge whereas the other homes to the index pulse to the right; the same difference holds true for methods 9 & 10. Figure A.6 illustrates the homing diagram for methods 7 to 10.

FIGURE A.6



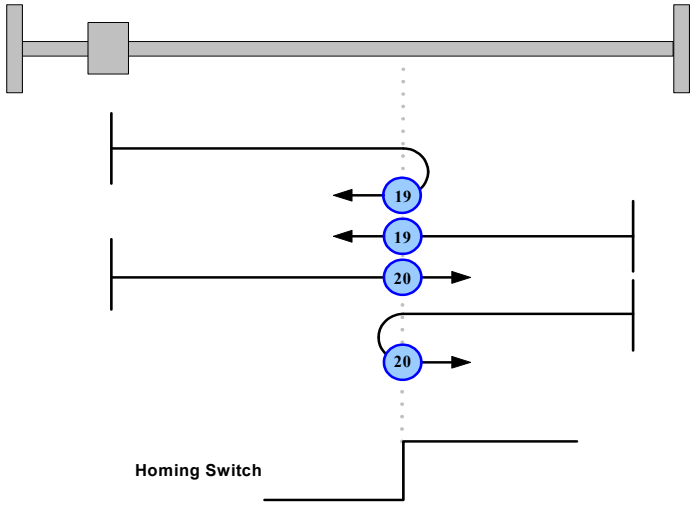
Methods 11 to 14 use a negative limit switch instead of a positive limit switch. As a result, the initial direction will be left, instead of right, whenever the starting point is outside of the active home switch region. Outside of this difference, methods 11 to 14 are identical to methods 7 to 10. Figure A.7 illustrates the homing diagram for methods 11 to 14.

FIGURE A.7



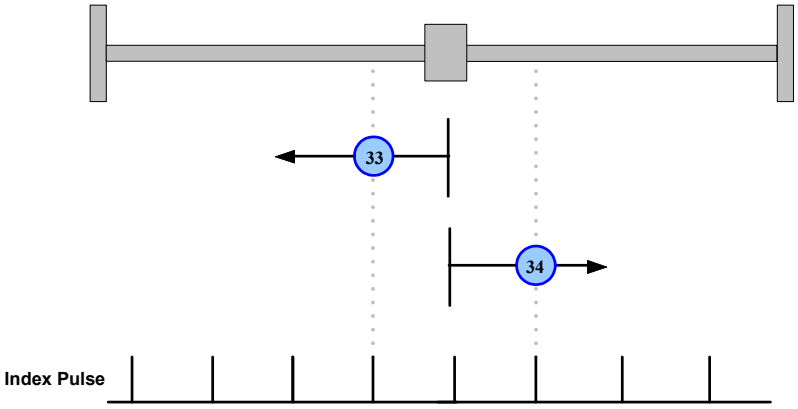
Methods 17-30: Homing without an Index Pulse: These homing routines use the same methods as 1 to 14, except the index pulse is not used. Instead, the home position is dependant on the edge of the relevant home or limit switch. To illustrate this difference, Figure A.8 shows the homing diagram for methods 19 and 20, which are equivalent to methods 3 and 4 without the index pulse.

FIGURE A.8



Methods 33 and 34: Homing on the Index Pulse These homing methods home to the nearest index pulse. Method 33 homes in the negative directions and method 34 homes in the positive direction.

FIGURE A.9

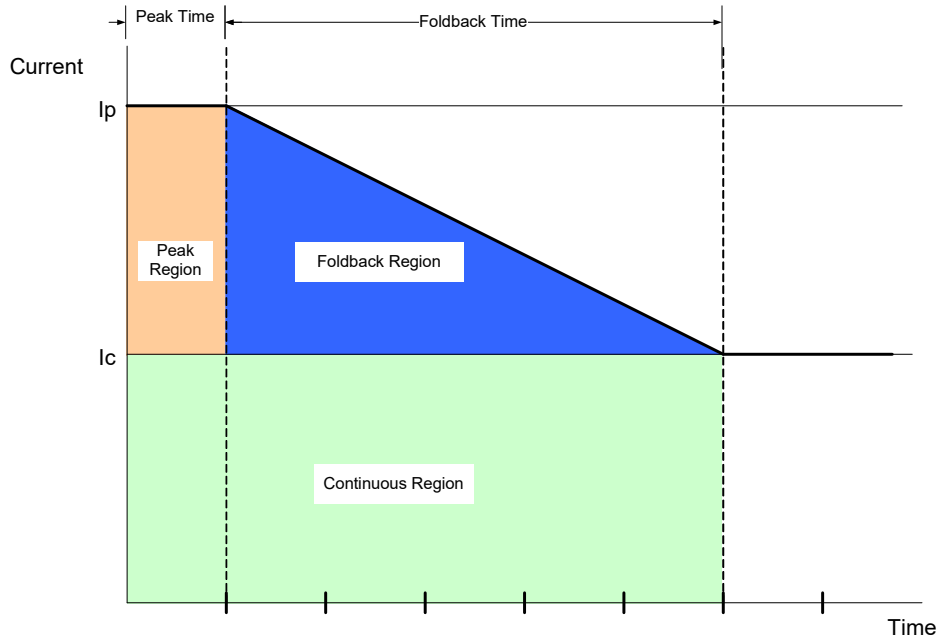


Method 35 This homing method requires no index pulse or switches and involves nothing more than setting the current measured position equal to the home position value, which can be accomplished in instance 283 ("Position Limits" on page 50).

A.3 Current Limiting Algorithm

In order to understand the current limiting algorithm used by *ADVANCED* Motion Controls Digiflex Performance servo drives, it is necessary to first understand the different current limiting regions. The graph in Figure A.10 breaks the available current into three different regions.

FIGURE A.10 Current Limiting Regions



- **Continuous Region:** The commanded current is less than or equal to the continuous current limit. The available current is equal to the commanded current.
- **Peak Region:** The commanded current is between the continuous and peak current limits. The available current is equal to the commanded current for a limited time (Peak Time).
- **Foldback Region:** Commanded current is between the continuous and peak current limits of the drive. The available current is less than the commanded current. The available current decreases over time until it equals the continuous current limit. The rate of this decrease is equal to:

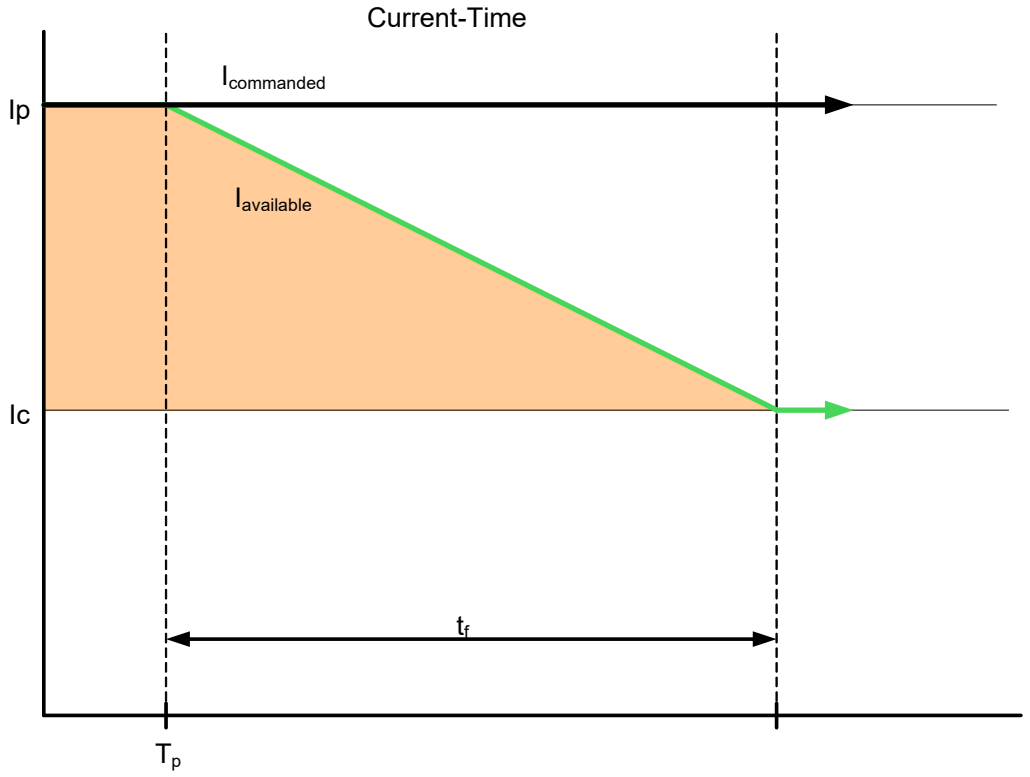
$$Slope = \frac{Ip - Ic}{tf}$$

Ip	Peak current limit
Ic	Continuous current limit
tf	Foldback time

A.3.1 Time-Based Peak Current Limiting

The full peak value of current is available to begin with. When a current command is equal to the peak current limit, the current begins to foldback to the continuous limit after T_p, following the same slope as given in "Current Limiting Algorithm" on page 220. Once the available current has reached the continuous current limit after t_f, the available current will be limited to the continuous current limit until the commanded current is dropped below the continuous level.

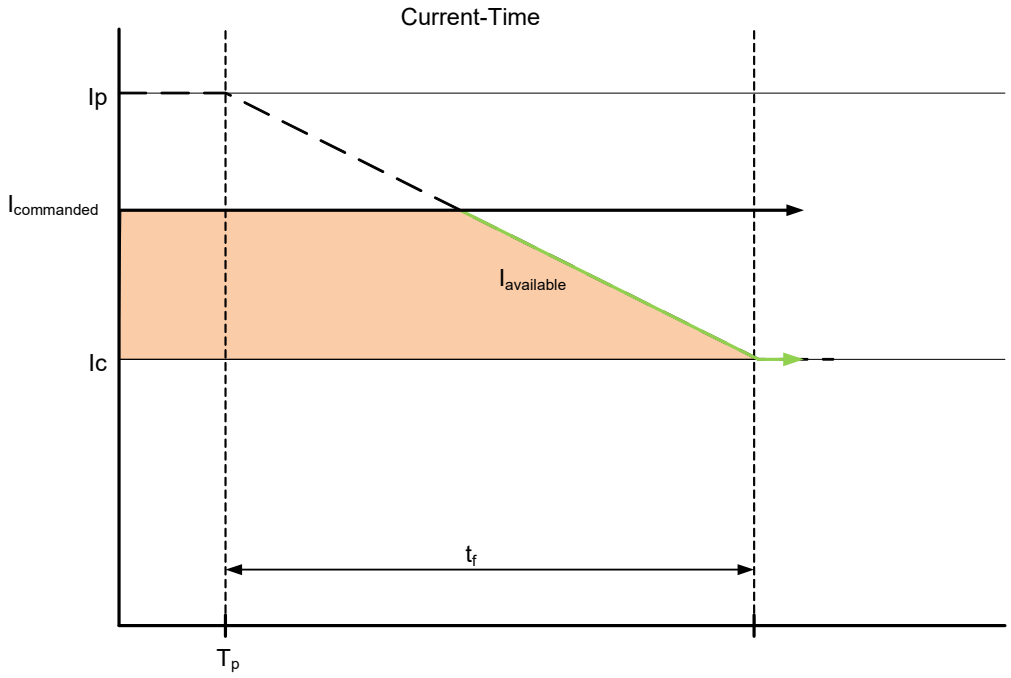
FIGURE A.11 Time-Based Peak Current Limiting



A.3.2 Time-Based Non-Peak Current Limiting

When the commanded current is between the peak and continuous current limits, the available current will begin to foldback at the intersection with the slope from "Time-Based Peak Current Limiting". The larger the commanded current, the sooner the available current will begin to foldback.

FIGURE A.12 Time-Based Non-Peak Current Limiting



A.3.3 Time-Based Current Recovery

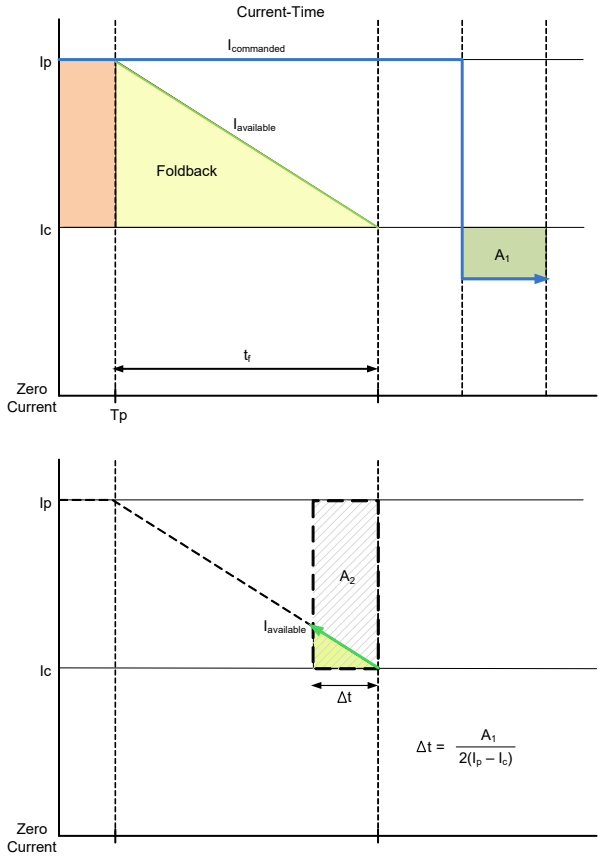
Initially, the full peak value of current is available. A commanded current above the continuous level causes the available current to foldback to the continuous level as shown in the first graph of Figure A.13. When the commanded current drops below the continuous current limit value ($\mathbf{A_1}$ in the first graph), the available current will then begin to recover along the slope of the foldback line towards the peak current level, as shown in the second graph of Figure A.13. The relationship between the commanded current and the recovered current is given as:

$$A_2 = \frac{1}{2}A_1$$

Using this relationship, you can calculate the amount of time recovered, Δt, by using the following equation:

$$\Delta t = \frac{A_1}{2(I_p - I_c)}$$

FIGURE A.13 Time-Based Current Recovery - Foldback and Commanded Current

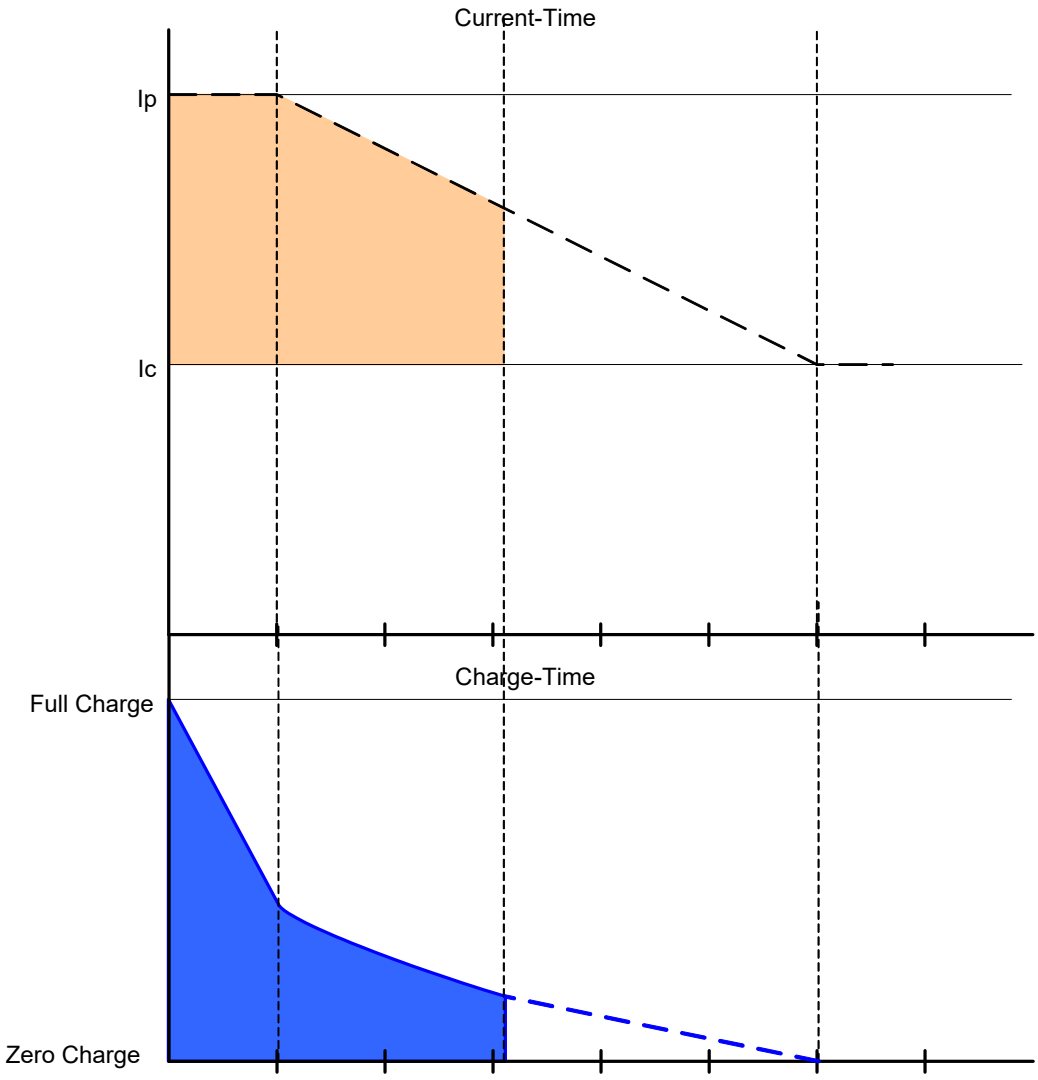


Note that it will take a command of zero current to fully recover from a full foldback condition.

A.3.4 Charge-Based Peak Current Limiting

The charge is full to begin with. When a current greater than the continuous current limit is commanded, the charge begins to decay. The loss of charge is determined by the area under the curve as shown in Figure A.14. The larger the command, the faster the charge will decay. When the charge decreases to zero, the available current will be limited to the continuous current limit until the charge is restored.

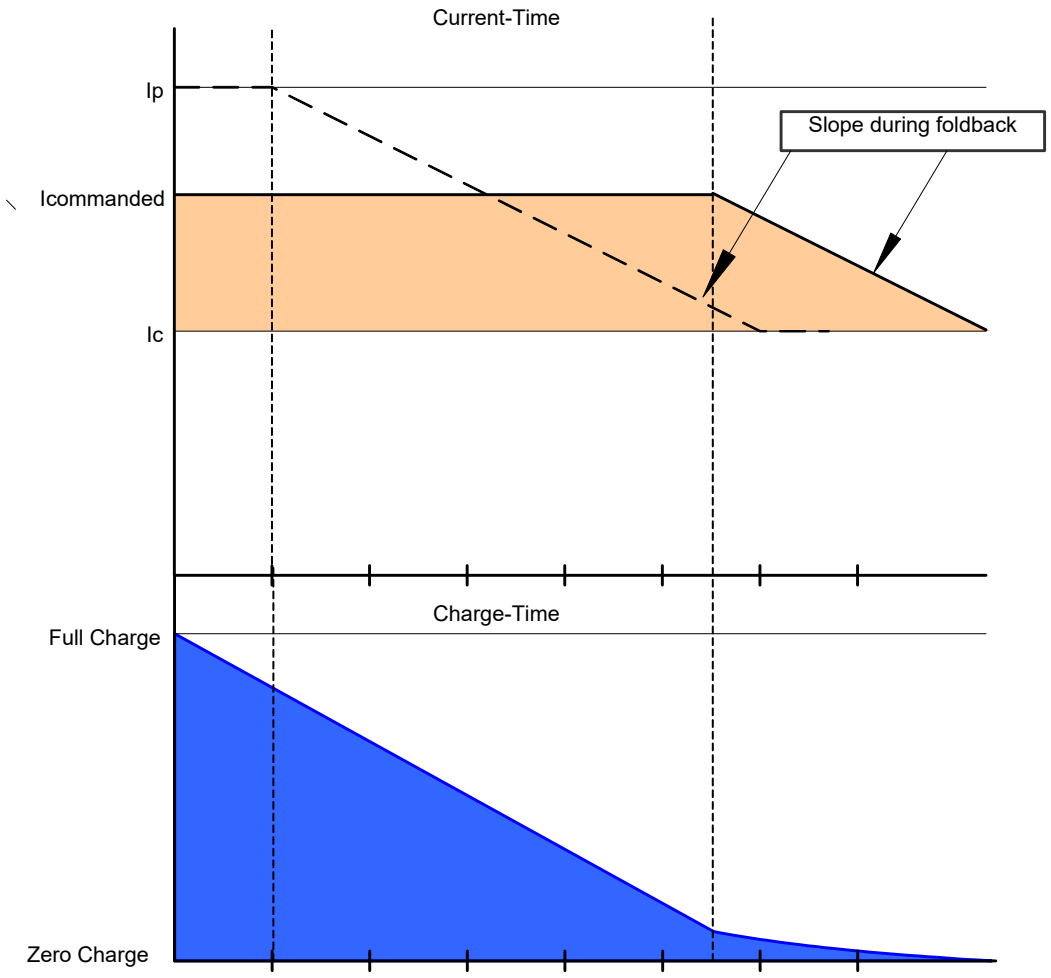
FIGURE A.14 Charge-Based Peak Current Limiting



A.3.5 Charge-Based Non-Peak Current Limiting

When the commanded current is between the peak and continuous current limits, the commanded current will be available for a longer period when compared to limiting at peak command. Note that the slope of the line during foldback is the same for both cases.

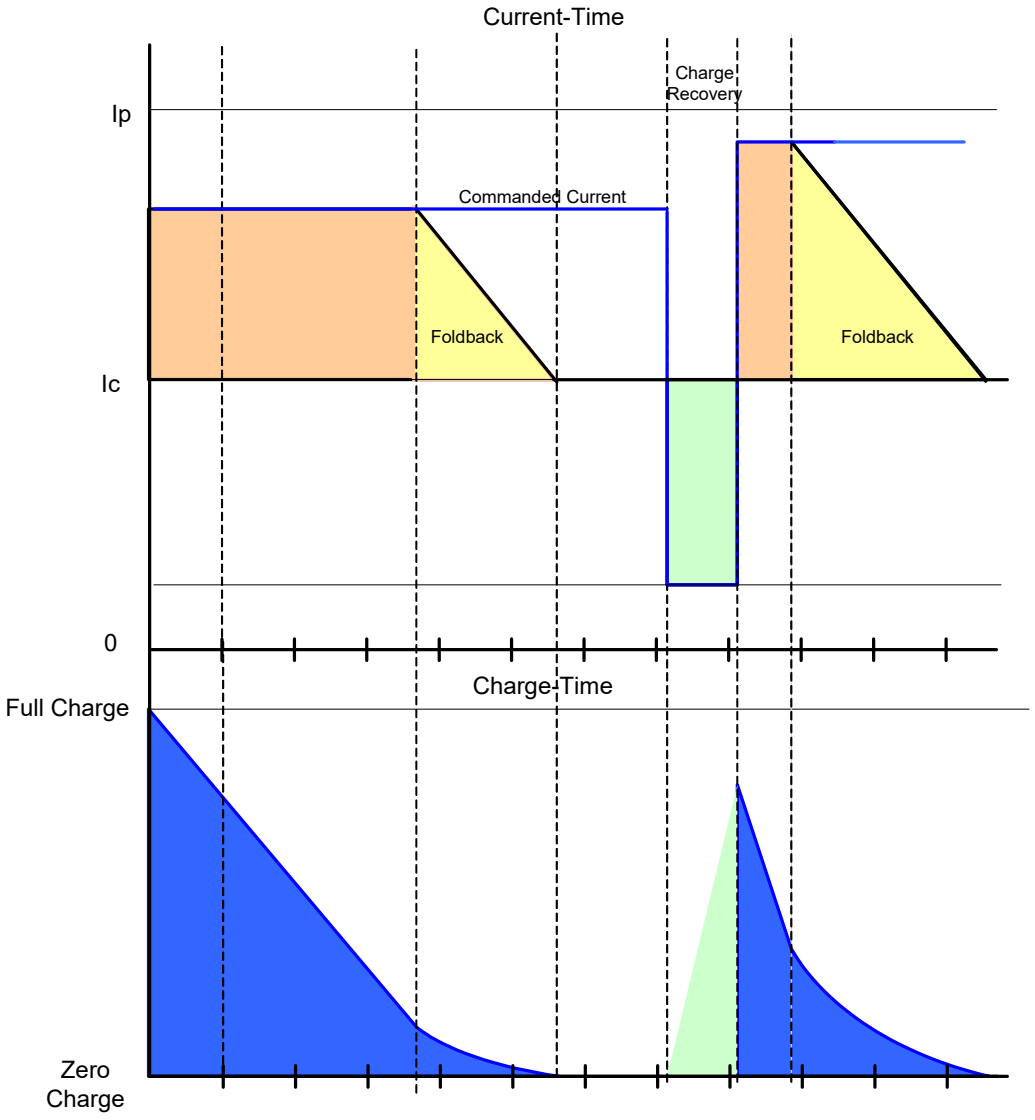
FIGURE A.15 Charge-Based Non-Peak Current Limiting



A.3.6 Charge-Based Current Recovery

After losing some value of charge, the charge may be recovered when the commanded value is dropped less than the continuous current limit. The amount of charge recovered depends on the magnitude of the commanded current and the amount of time in which it is commanded. The new amount of charge can be calculated by measuring the area within the curve as shown during the charge recovery phase in Figure A.16.

FIGURE A.16 Charge Recovery



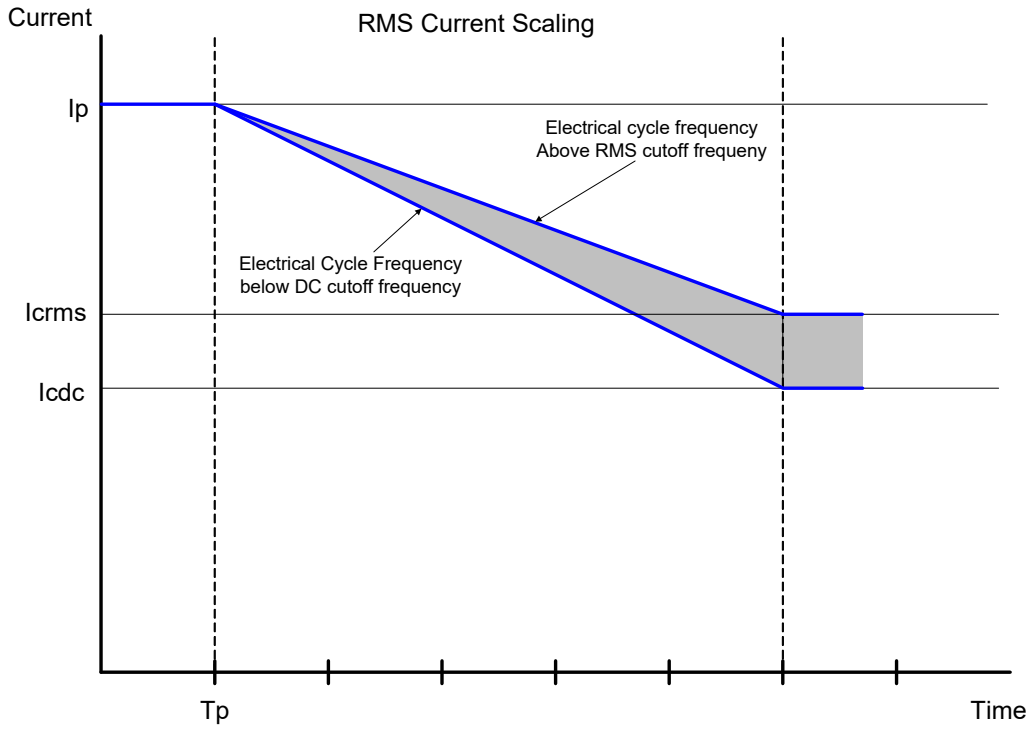
A.3.7 RMS Current Scaling

RMS Current Scaling uses the charge-based algorithm described above. The only difference is the value of the continuous current the drive is capable of outputting. The continuous RMS limit can be used when the motor is moving so that the electrical cycle frequency is greater than the upper frequency assigned to that drive. The upper frequency is typically around 5Hz or 150 RPM for a 4-pole motor. The continuous RMS value is the continuous DC value multiplied by the square root of two.

$$Icrms \equiv \sqrt{2} \cdot Icdc$$

When the electrical cycle frequency drops below the upper frequency, the continuous current drops below the RMS value. When the motor is moving at slow speeds, the continuous current is equal to the DC value of the current.

FIGURE A.17 RMS Current Limiting



Index

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Reference Manual
MNCMENFP-03

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