

MPS DEVICENET INTERFACE

September 18, 2007

PRELIMINARY

QUICK SETUP

- ❖ Use the OPI to access the *Setup | Hardware | Network Comms* menu. Set the *Network ID* for the device. Set the *Baud Rate* as *DN 125K*, *DN 250K*, or *DN 500K*. Select the DeviceNet producing assembly from the *DeviceNet Produce* menu and the DeviceNet consuming assembly from the *DeviceNet Consume* menu. Select *DeviceNet* from the *Network Type* menu.
- ❖ Configure the scanner's polled connections for the selected assembly sizes. The scanner may issue a configuration warning if an I/O size other than the default is used. Disregard the warning. Use "Edit I/O Parameters" to enable the connection and adjust the byte size to match the assembly size.

Copyright © 2007 Startco Engineering Ltd.

All rights reserved.



TABLE OF CONTENTS

	PAGE
1. General	1
2. MPS DeviceNet Interface	1
2.1 MPS Network Settings	1
2.2 MPS Manual Changes	1
2.3 Communication Status Display	2
2.4 DeviceNet LED Indication	2
2.5 Network Errors	2
2.6 Configuration Using RSNetWorx.....	2
3. DeviceNet Objects	2
3.1 Identity Object	3
3.2 Message Router	3
3.3 DeviceNet Object	4
3.4 DeviceNet Connection Object	5
3.5 Assembly Object.....	7
3.6 Control Supervisor Object.....	11
3.7 Overload Class 0x2C	15
3.8 Set Point Class 0x64	16
3.9 Acceleration Class 0x65	21
3.10 Digital Input Class 0x66	22
3.11 Analog I/O Class 0x67	24
3.12 RTD Module Class 0x68	25
3.13 RTC Class 0x69	31
3.14 MPS Register Class 0x6A	32
3.15 Data Logging Class 0x6B.....	33
 Appendix A DeviceNet Communications	
Database Table	A 1

DISCLAIMER

Specifications are subject to change without notice. Startco Engineering Ltd. is not liable for contingent or consequential damages, or for expenses sustained as a result of incorrect application, incorrect adjustment, or a malfunction.

LIST OF FIGURES

	PAGE
1. MPS Outline Drawing	1



1. GENERAL

This document describes the DeviceNet features supported by the MPS. The MPS supports Explicit and Polled I/O. It does not support the Unconnected Message Manager (UCMM).

The MPS requires supply voltage connected to L1 and L2 to power the control unit and 24-Vdc supply voltage to power the isolated DeviceNet transceiver circuit. The DeviceNet transceiver circuit requires 70 mA @ 24-Vdc from the DeviceNet power supply.

2. MPS DEVICENET INTERFACE

2.1 MPS NETWORK SETTINGS

DeviceNet settings are located in the *Setup | Hardware | Network Comms* menu. Prior to making changes to network settings via the OPI, it is recommended to set the

Network Type to *None*. Set *Network ID* to the slave number. Set the *Baud Rate* to *DN 125K*, *DN 250K* or *DN 500K*. Select the producing assembly instance using the *DeviceNet Produce* menu and the consuming assembly instance using the *DeviceNet Consume* menu. See Section 3.5 for assembly details. Once the changes have been made, select *DeviceNet* from the *Network Type* menu.

2.2 MPS MANUAL CHANGES

Appendix E, Register 383: Baud rate selections (Type T17 in Appendix F) includes DeviceNet selections 5:125 kb, 6:250 kb, and 7: 500 kb.

Appendix E, Register 385: Network ID range is 0 to 63. Values greater than 63 will be forced to 63.

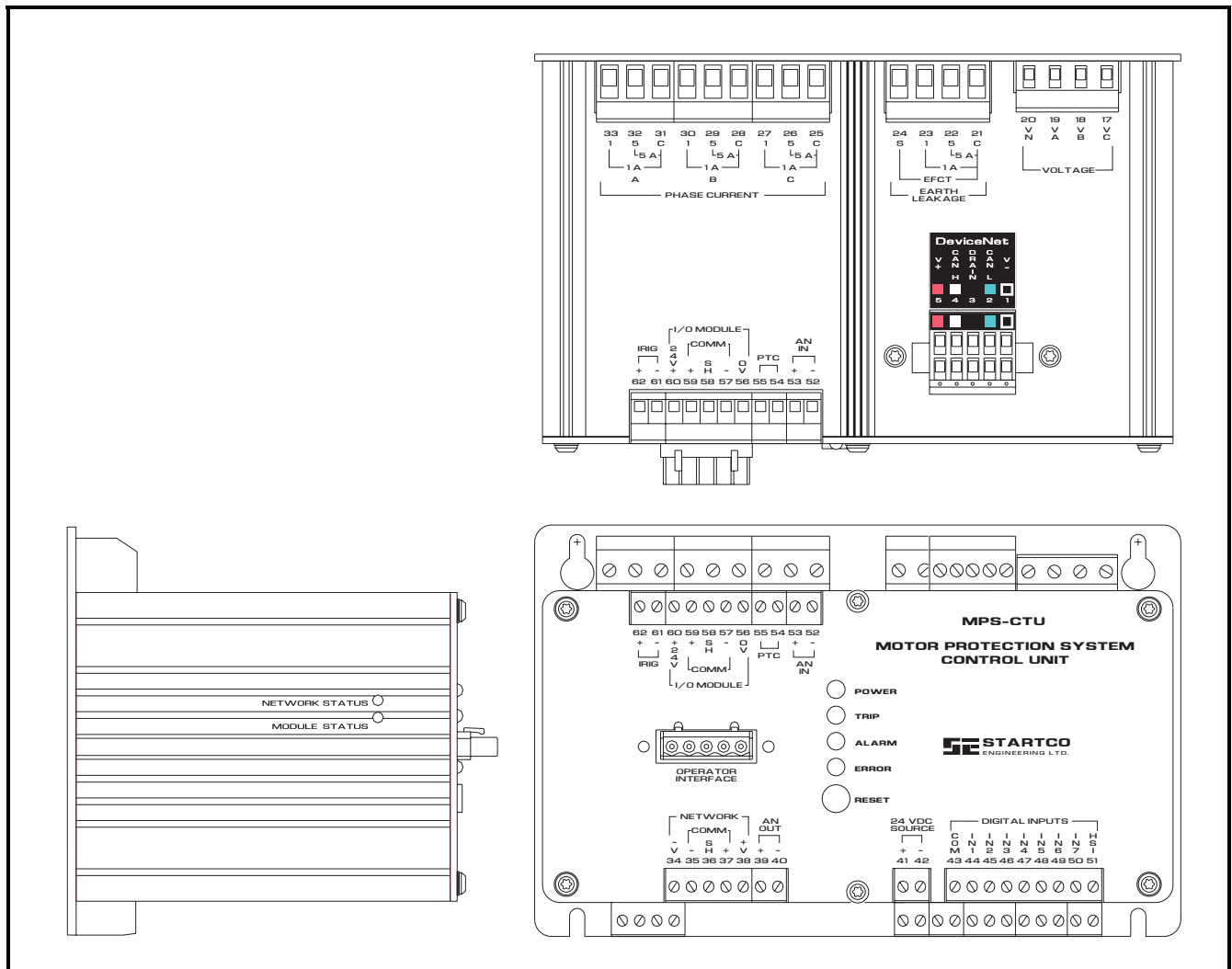


FIGURE 1 MPS Outline Drawing.



2.3 COMMUNICATION STATUS DISPLAY

The DeviceNet communication status can be viewed using the *Metering | Comm State* menu.

This menu indicates the connection state as ONLINE or OFFLINE. The last communication error is also displayed. The MPS can be programmed to trip if the connection is OFFLINE. The MPS is OFFLINE when there are no connections established and ONLINE when at least one connection is established.

2.4 DEVICENET LED INDICATION

Two LEDs labeled MODULE STATUS (MS) and NETWORK STATUS (NS) are located on the left side of the MPS as shown in Fig. 1. The MS LED is green when the MPS DeviceNet driver is operational. If this LED is off, verify that *DeviceNet* is selected from the *Setup | Hardware | Network Comms | Network Type* menu.

The NS LED is off when the MPS is the only device on the network. It flashes green when the MPS is physically connected to a network containing other devices but has no established communication connections. It is solid green when a Polling or Explicit Messaging connection is established. It flashes red when one or more connections have timed out. It is solid red if a Duplicate MAC ID or Bus-off error has occurred. Red LED indication requires a restart of the DeviceNet driver. This is done by cycling supply voltage or by using the *Setup | Hardware | Network Comms | Network Type* menu. Select *None* to shut down the driver and then select *DeviceNet* to restart.

2.5 NETWORK ERRORS

The MPS can be configured to trip or alarm on a network error using the *Setup | Hardware | Network Comms | Network Error* menu, or by using attribute 0x64 of the DeviceNet object.

The Network Error set point sets the action to be taken when the module is off line. Selections are Trip, Alarm, Trip and Alarm, or No Trip or Alarm. Network errors can originate from network watchdog timeouts or the network hardware in the MPS.

The last error code is displayed in the *Metering | Comm State* menu. The error codes are listed in the following table.

DEVICENET ERROR CODES

ERROR	DESCRIPTION
1	Receive Overrun
2	Transmit Overrun
3	CAN Overrun
4	IO Send
5	Duplicate MAC
6	Bus Sense
7	MAC Was Set
8	ID Reset 0
9	ID Reset 1
10	Bus Off
11	CAN ESET
12	CAN ERESET
13	Explicit Timeout
14	IO Timeout
15	IO Delete
16	No CAN Interface

2.6 CONFIGURATION USING RSNETWORX

Use the EDS Wizard to register the eds file. The device will register as a Motor Starter named Startco MPS. Select device properties to view Device Parameters. When there is a request to upload from device, select this option. This will load the present configuration from the MPS.

3. DEVICENET OBJECTS (In Order of Class Number)

The module supports the following objects:

CLASS	DESCRIPTION
0x01	Identity ⁽¹⁾
0x02	Message Router ⁽¹⁾
0x03	DeviceNet ⁽¹⁾
0x04	Assembly ⁽¹⁾
0x05	Connection ⁽¹⁾
0x29	Control Supervisor ⁽¹⁾
0x2C	Overload ⁽¹⁾
0x64	Set Point
0x65	Acceleration
0x66	Digital Input
0x67	Analog I/O
0x68	RTD Module
0x69	RTC Clock
0x6A	User Register

⁽¹⁾ Conformance tested using DeviceNet Protocol Conformance Test Software Version A-17.



3.1 IDENTITY OBJECT

Identity Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Identity Class (1), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

Identity Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modify the specified attribute.

Reset: Performs reset services based on the parameter.

No Parameter or Parameter = 0: The DeviceNet driver is reset with the existing MAC ID and baud rate.

Parameter = 1: The MAC ID is set to 63 and the baud rate is set to 125 kb. The MPS will then perform a reset that emulates cycling control power.

Identity Class (1), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		Vendor ID	Get	Identification of each vendor by number	691	UINT
2		Device Type	Get	Motor starter	22	UINT
3		Product Code	Get	MPS platform	201	UINT
4		Revision	Get	Major revision must match the eds value (Major.Minor)	4.100	A2 02 C6 C6
5		Status	Get	Summary Status of the device	0, 0, 255	WORD
6		Serial Number	Get	Serial number at MPS	N/A, 0, 999999999	UDINT
7		Product Name	Get	Human readable identification	"Startco MPS"	SHORT_STRING
100 (0x64)	467	MPS Revision	Get	Revision of MPS Firmware 100 = 1.00	N/A, 100, N/A	UINT
101 (0x65)	468	System Name	Get/Set	22 characters. Only 20 significant.	"Startco MPS"	SHORT_STRING
102 (0x66)	469	MPS Password	Get/Set	22 characters. Only 4 significant.	"1111"	SHORT_STRING

3.2 MESSAGE ROUTER

No attributes supported for this object.



3.3 DEVICENET OBJECT

DeviceNet Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

DeviceNet Class (3), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of the DeviceNet object class. Definition upon which the implementation is based.	1	UINT

DeviceNet Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modify specified attribute.

Allocate_Master/Slave_Connection_Set:

Release_Master/Slave_Connection_Set:

DeviceNet Class (3), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		MAC ID	Get/Set	Node address	63, 0, 63	USINT
2		Baud Rate	Get/Set	The baud rate of the device 0 = 125 kb 1 = 250 kb 2 = 500 kb	0, 0, 2	USINT
3		Buss-Off Interrupt	Get/Set	Define processing of BOI 0 = Hold CAN in reset 1 = Automatic CAN reset Set to 0 on powerup or when ID Reset is used. In both cases existing connections are lost.	0, 1, 0	BOOL
4		Buss-Off Counter	Get/Set	Number of times CAN went to the bus-off state. Writing any value clears the counter. Count held at 255.	0, 0, 255	USINT
5		Allocation Information	Get	Master/Slave allocation indication	Array	BYTE, USINT
100 (0x64)	470	Net Trip Action	Get/Set	Trip Action taken by MPS on communication error. 0 = Disable 1 = Trip1 2 = Trip2 3 = Trip3 4 = Trip1 & Trip2 5 = Trip1 & Trip3 6 = Trip1 & Trip2 & Trip3 7 = Trip2 & Trip3	0, 0, 7	UINT
101 (0x65)	471	Net Alarm Action	Get/Set	Action taken on communication error. 0 = Disable 1 = Alarm1 2 = Alarm2 3 = Alarm3 4 = Alarm1 & Alarm2 5 = Alarm1 & Alarm3 6 = Alarm1 & Alarm2 & Alarm3 7 = Alarm2 & Alarm3	0, 0, 7	UINT



3.4 DEVICENET CONNECTION OBJECT

Connection Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modify specified attribute.

DeviceNet Connection Class (5), Instance (0) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		Revision	Get	Revision of this Connection Object Class.	1	UINT
100 (0x64)	472	Polled Cons ID	Get/Set	Specifies output assembly ID for polled connection. ⁽¹⁾ 0 = None (empty EPATH) 1 = Basic Overload (0x02) 2 = Basic Motor Starter (0x03) 3 = Extended Contactor (0x04) 4 = Extended Motor Starter (0x05)	0, 0, 4	UINT
101 (0x65)	473	Polled Prod ID	Get/Set	Specifies Input assembly ID for polled connection. ⁽²⁾ 0 = None (empty EPATH) 1 = Basic Overload (0x32) 2 = Extended Overload (0x33) 3 = Basic Motor Starter (0x34) 4 = Extended Motor Starter 1 (0x35) 5 = Extended Motor Starter 2 (0x36) 6 = Status/Meters/RTD's (0x64) 7 = Status/Meters (0x65) 8 = Status (0x66) 9 = User Registers (0x67)	5, 0, 9	UINT

⁽¹⁾ Can also be set using Class 5, Instance 2, Attribute 16 path.

⁽²⁾ Can also be set using Class 5, Instance 2, Attribute 14 path.

Connection Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modify specified attribute.

Delete: Delete specified connection instance.

Reset: Reset the connection instance.

DeviceNet Connection Class (5), Explicit Connection Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		State	Get	State of the object 0 = nonexistent 1 = configuring 3 = established 4 = timed out 5 = deferred delete	1, 0, 5	USINT
2		Instance Type	Get	Indicates either IO or messaging connection	0, 0, 0	USINT
3		Transport Class Trigger	Get	Defines behavior of the connection	0x83	BYTE
4		Produced Cnxn ID	Get	Placed in CAN Identifier field when the Connection Transmits		UINT
5		Consumed Cnxn ID	Get	CAN Identifier Field value that denotes message to be received		UINT
6		Initial Comm Characteristics	Get	Defines the Message Group(s) across which productions and consumptions associated with this Connection occur		BYTE



DeviceNet Connection Class (5), Explicit Connection Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
7		Produced Connection Size	Get	Maximum number of bytes transmitted across this Connection	254	UINT
8		Consumed Connection Size	Get	Maximum number of bytes received across this Connection	254	UINT
9		Expected Packet Rate	Get/Set	Defines timing (ms) associated with this Connection. Resolution is 10 ms.	2500, 0, 65535, N/A	UINT
12 (0x0C)		Watchdog Timeout Action	Get/Set	Defines how to handle inactivity/Watchdog timeouts 1 = Auto Delete 3 = Deferred Delete	1, 1, 3 Set to 1 or 3	USINT
13 (0x0D)		Produced Connection Path Length	Get	Number of bytes in the produced_connection_path length attribute	0	UINT
14 (0x0E)		Produced Connection Path	Get	Application Object producing data on this connection	{}	EPATH
15 (0x0F)		Consumed Connection Path Length	Get	Number of bytes in the consumed_connection_path length attribute	0	UINT
16 (0x10)		Consumed Connection Path	Get	Specifies the Application Object(s) that are to receive the data consumed by this Connection Object	{}	EPATH
17 (0x11)		Production Inhibit Time	Get/Set	Defines minimum time (ms) between new data production	0	UINT

DeviceNet Connection Class (5), Polled I/O Connection Instance (2) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		State	Get	State of the object 0 = nonexistent 1 = configuring 3 = established 4 = timed out	0, 0, 4	USINT
2		Instance Type	Get	Indicates either IO or messaging connection 0 = Explicit message 1 = I/O message	1, 0, 1	USINT
3		Transport Class Trigger	Get	Defines behavior of the connection	0x83	BYTE
4		Produced Cnxn ID	Get	Placed in CAN Identifier field when the Connection Transmits		UINT
5		Consumed Cnxn ID	Get	CAN Identifier Field value that denotes message to be received		UINT
6		Initial Comm Characteristics	Get	Defines the Message Group(s) across which productions and consumptions associated with this Connection occur		BYTE
7		Produced Connection Size	Get	Maximum number of bytes transmitted across this Connection	Defined by Assembly Instance	UINT
8		Consumed Connection Size	Get	Maximum number of bytes received across this Connection	Defined by Assembly Instance	UINT
9		Expected Packet Rate	Get/Set	Defines timing (ms) associated with this Connection.	0, 0, 65535, N/A, N/A	UINT
12 (0x0C)		Watchdog Timeout Action	Get	Defines how to handle inactivity/Watchdog timeouts 0 = Transition to time out 1 = Auto Delete 2 = Auto Reset	0, 0, 0	USINT



DeviceNet Connection Class (5), Polled I/O Connection Instance (2) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
13 (0x0D)		Produced Connection Path Length	Get	Number of bytes in the produced_connection_path length attribute. Symbolic notation.	3, 3, 3	UINT
14 (0x0E)		Produced Connection Path	Get/Set	Application Object producing data on this connection	62 33 36	EPATH
15 (0x0F)		Consumed Connection Path Length	Get	Number of bytes in the consumed_connection_path length attribute. Symbolic notation.	3	UINT
16 (0x10)		Consumed Connection Path	Get/Set	Specifies the Application Object(s) that are to receive the data consumed by this Connection Object	{}	EPATH
17 (0x11)		Production Inhibit Time	Get/Set	Defines minimum time (ms) between new data production	0	UINT

3.5 ASSEMBLY OBJECT

Assembly Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Assembly Class (4), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum instance of assembly	0x67	UINT

Assembly Object Instance Services

Get_Attribute_Single: Returns assembly-instance data. Applies to both output and input instances.

Set_Attribute_Single: Set assembly instance data. Applies to output instances only. Service not supported for input instances.

The following static input instances are supported and can be selected by setting parameter 473 to the desired ID:

MPS PRODUCING ASSEMBLY ID	INSTANCE	DESCRIPTION	DATA SIZE IN BYTES	SYMBOLIC IO CONNECTION PATH
6	100 (0x64)	Status/Meters/RTDs	244	62 36 34
7	101 (0x65)	Status/Meters	132	62 36 35
8	102 (0x66)	Status	6	62 36 36
9	103 (0x67)	User Registers ⁽¹⁾	32	62 36 37
1	50 (0x32)	Basic Overload	1	62 33 32
2	51 (0x33)	Extended Overload	1	62 33 33
3	52 (0x34)	Basic Motor Starter	1	62 33 34
4	53 (0x35)	Extended Motor Starter 1	1	62 33 35
5	54 (0x36)	Extended Motor Starter 2	1	62 33 36

⁽¹⁾ Requires configuration of the User Defined Registers defined by parameters 451 to 466 and set via RSNetWorx or the User Registers menu.

The following static output instance are supported and can be selected by setting parameter 472 to the desired ID:

MPS CONSUMING ASSEMBLY ID	INSTANCE	DESCRIPTION	DATA SIZE IN BYTES	SYMBOLIC IO CONNECTION PATH
1	2 (0x02)	Basic Overload	1	62 30 32
2	3 (0x03)	Basic Motor Starter	1	62 30 33
3	4 (0x04)	Extended Contactor	1	62 30 34
4	5 (0x05)	Extended Motor Starter	1	62 30 35



Assemblies are configured using attributes 0x64 and 0x65 of Class 5, or selected by setting the Produced and Consumed connection path attribute in the Polled I/O connection instance. Setting the path to empty (no data), will disable production or consumption and the corresponding connection size will be zero.

Assemblies are accessed using Polled I/O or can be read using Explicit Messaging. For explicit messaging, the Class is 4, the Attribute is 3, and the Instance is the assembly instance number.

INSTANCE	SERVICES	CLASS_INSTANCE_ATTRIBUTE
0x02	Get/Set	04_02_03
0x03	Get/Set	04_03_03
0x04	Get/Set	04_04_03
0x05	Get/Set	04_05_03
0x32	Get	04_32_03
0x33	Get	04_33_03
0x34	Get	04_34_03
0x35	Get	04_35_03
0x36	Get	04_36_03
0x64	Get	04_64_03
0x65	Get	04_65_03
0x66	Get	04_66_03
0x67	Get	04_67_03

Assembly Class (4), Instance (0x64), Attribute (3) – Input
Produced Connection Path = "62 36 34"

BYTE (Low to High)	DESCRIPTION	CLASS-INST-ATTR	TYPE
0, 1	Trip and Alarm Status	29-01-90	WORD
2, 3	Motor Status	29-01-91	WORD
4, 5	Starter Status	29-01-92	WORD
6, 7	Digital Inputs	29-01-93	WORD
8, 9	Relay Outputs	29-01-94	WORD
10, 11	Message 0	29-01-98	UINT
12, 13	Message 1	29-01-99	UINT
14, 15	Message 2	29-01-9A	UINT
16, 17	Message 3	29-01-9B	UINT
18, 19	Message 4	29-01-9C	UINT
20, 21, 22, 23	Phase A Current (A)	2C-01-90	REAL
24, 25, 26, 27	Phase B Current (A)	2C-01-91	REAL
28, 29, 30, 31	Phase C Current (A)	2C-01-92	REAL
32, 33, 34, 35	Ground-Fault Current (A)	2C-01-93	REAL
36, 37, 38, 39	Vab (V)	2C-01-94	REAL
40, 41, 42, 43	Vbc (V)	2C-01-95	REAL
44, 45, 46, 47	Vca (V)	2C-01-96	REAL
48, 49, 50, 51	Apparent Power (S) (kVA)	2C-01-97	REAL
52, 53, 54, 55	Reactive Power (Q) (kVAR)	2C-01-98	REAL
56, 57, 58, 59	Real Power (P) (kW)	2C-01-99	REAL
60, 61, 62, 63	Power Factor (± 1)	2C-01-9A	REAL
64, 65, 66, 67	Used Thermal Capacity (%)	2C-01-9B	REAL
68, 69, 70, 71	Analog Input (mA)	67-01-0D	REAL
72, 73, 74, 75	Thermal Trend (%)	2C-01-9C	REAL
76, 77, 78, 79	Positive Sequence Current (pu)	2C-01-9D	REAL
80, 81, 82, 83	Negative Sequence Current (pu)	2C-01-9E	REAL
84, 85, 86, 87	Unbalance Current (pu)	2C-01-9F	REAL
88, 89, 90, 91	Frequency	2C-01-A0	REAL
92, 93, 94, 95	Negative Sequence Voltage (pu)	2C-01-A1	REAL
96, 97, 98, 99	Unbalance Voltage (pu)	2C-01-A2	REAL
100, 101, 102, 103	Motor Speed From Tach (RPM)	65-01-0A	REAL
104, 105, 106, 107	Running Time (Seconds)	2C-01-A3	REAL
108 to 115	kW Seconds	2C-01-A4	ULINT
116 to 123	kVA Seconds	2C-01-A5	ULINT
124 to 131	kVAR Seconds	2C-01-A6	ULINT



Assembly Class (4), Instance (0x64), Attribute (3) – Input (Continued)

BYTE (Low to High)	DESCRIPTION	CLASS-INST-ATTR	TYPE
132, 133, 134, 135	Module 1 #1 Temperature (°C)	68-01-29	REAL
136, 137, 138, 139	Module 1 #2 Temperature (°C)	68-01-2A	REAL
140, 141, 142, 143	Module 1 #3 Temperature (°C)	68-01-2B	REAL
144, 145, 146, 147	Module 1 #4 Temperature (°C)	68-01-2C	REAL
148, 149, 150, 151	Module 1 #5 Temperature (°C)	68-01-2D	REAL
152, 153, 154, 155	Module 1 #6 Temperature (°C)	68-01-2E	REAL
156, 157, 158, 159	Module 1 #7 Temperature (°C)	68-01-2F	REAL
160, 161, 162, 163	Module 1 #8 Temperature (°C)	68-01-30	REAL
164, 165, 166, 167	Module 2 #1 Temperature (°C)	68-02-29	REAL
168, 169, 170, 171	Module 2 #2 Temperature (°C)	68-02-2A	REAL
172, 173, 174, 175	Module 2 #3 Temperature (°C)	68-02-2B	REAL
176, 177, 178, 179	Module 2 #4 Temperature (°C)	68-02-2C	REAL
180, 181, 182, 183	Module 2 #5 Temperature (°C)	68-02-2D	REAL
184, 185, 186, 187	Module 2 #6 Temperature (°C)	68-02-2E	REAL
188, 189, 190, 191	Module 2 #7 Temperature (°C)	68-02-2F	REAL
192, 193, 194, 195	Module 2 #8 Temperature (°C)	68-02-30	REAL
196, 197, 198, 199	Module 3 #1 Temperature (°C)	68-03-29	REAL
200, 201, 202, 203	Module 3 #2 Temperature (°C)	68-03-2A	REAL
204, 205, 206, 207	Module 3 #3 Temperature (°C)	68-03-2B	REAL
208, 209, 210, 211	Module 3 #4 Temperature (°C)	68-03-2C	REAL
212, 213, 214, 215	Module 3 #5 Temperature (°C)	68-03-2D	REAL
216, 217, 218, 219	Module 3 #6 Temperature (°C)	68-03-2E	REAL
220, 221, 222, 223	Module 3 #7 Temperature (°C)	68-03-2F	REAL
224, 225, 226, 227	Module 3 #8 Temperature (°C)	68-03-30	REAL
228, 229, 230, 231	Maximum Stator Temperature (°C)	68-00-12	REAL
232, 233, 234, 235	Maximum Bearing Temperature (°C)	68-00-13	REAL
236, 237, 238, 239	Maximum Load Temperature (°C)	68-00-14	REAL
240, 241, 242, 243	Maximum Ambient Temperature (°C)	68-00-15	REAL

Assembly Class (4), Instance (0x65), Attribute (3) – Input

Produced Connection Path = "62 36 35"

Assembly definition is the same as Byte 0 to 131 of Assembly Instance 0x64. Use this for applications where RTD temperature protection is not used.

Assembly Class (4), Instance (0x66), Attribute (3) – Input

Produced Connection Path = "62 36 36"

Assembly definition is the same as Bytes 0 to 5 of Assembly Instance 0x64. Use this assembly if network traffic must be minimized.

Assembly Class (4), Instance (0x67), Attribute (3)

Produced Connection Path = "62 36 37"

This assembly is used to access any combination of sixteen user-defined registers in the MPS. Assembly size is fixed at 32 bytes. User defined registers are programmed in the MPS using the *Setup | Hardware | Network Comms | User Registers* menu, or by explicit messaging to Class 0x6A via the configuration tool. Register values are defined in Appendix E of the MPS manual. Each MPS register in Appendix E defines a 16-bit value. For 32-bit float type (DeviceNet REAL), only the first register of the pair needs to be entered. For example, to configure an assembly to read the first four RTD temperatures in RTD Module 1, enter register numbers 902, 904, 906, 908. The first 16 bytes of the assembly will contain the RTD data and the other 16 bytes do not contain any valid data. Register definitions resulting in more than 32 bytes of data will be ignored.

Overload/Starter Instances

Instances 2 to 5 and 0x32 to 0x36 are assemblies containing attribute values from the Control Supervisor.



ASSEMBLY BIT	NAME	CLASS NAME	CLASS	INSTANCE	ATTRIBUTE
Bit 0	Faulted/Trip	Control Supervisor	0x29	1	10
Bit 1	Warning	Control Supervisor	0x29	1	11
Bit 2	Running 1	Control Supervisor	0x29	1	7
Bit 3	Running 2	Control Supervisor	0x29	1	8
Bit 4	Ready	Control Supervisor	0x29	1	9
Bit 5	Control From Net	Control Supervisor	0x29	1	15

Assembly Class (4), Instance (0x32), Attribute (3) – Input

Produced Connection Path = "62 33 32"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Faulted/ Trip

Assembly Class (4), Instance (0x33), Attribute (3) – Input

Produced Connection Path = "62 33 33"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Warning	Faulted/ Trip

Assembly Class (4), Instance (0x34), Attribute (3) – Input

Produced Connection Path = "62 33 34"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	Running1	Reserved	Faulted/ Trip

Assembly Class (4), Instance (0x35), Attribute (3) – Input

Produced Connection Path = "62 33 35"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	CntrlfrmNet	Ready	Reserved	Running1	Warning	Faulted/ Trip

Assembly Class (4), Instance (0x36), Attribute (3) – Input

Produced Connection Path = "62 33 36"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	CntrlfrmNet	Ready	Running2	Running1	Warning	Faulted/ Trip

Assembly Class (4), Instance (0x02), Attribute (3) – Output

Consumed Connection Path = "62 30 32"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	FaultReset	Reserved	Reserved

Assembly Class (4), Instance (0x03), Attribute (3) – Output

Consumed Connection Path = "62 30 33"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	FaultReset	Reserved	Run1

Assembly Class (4), Instance (0x04), Attribute (3) – Output

Consumed Connection Path = "62 30 34"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Run2	Run1



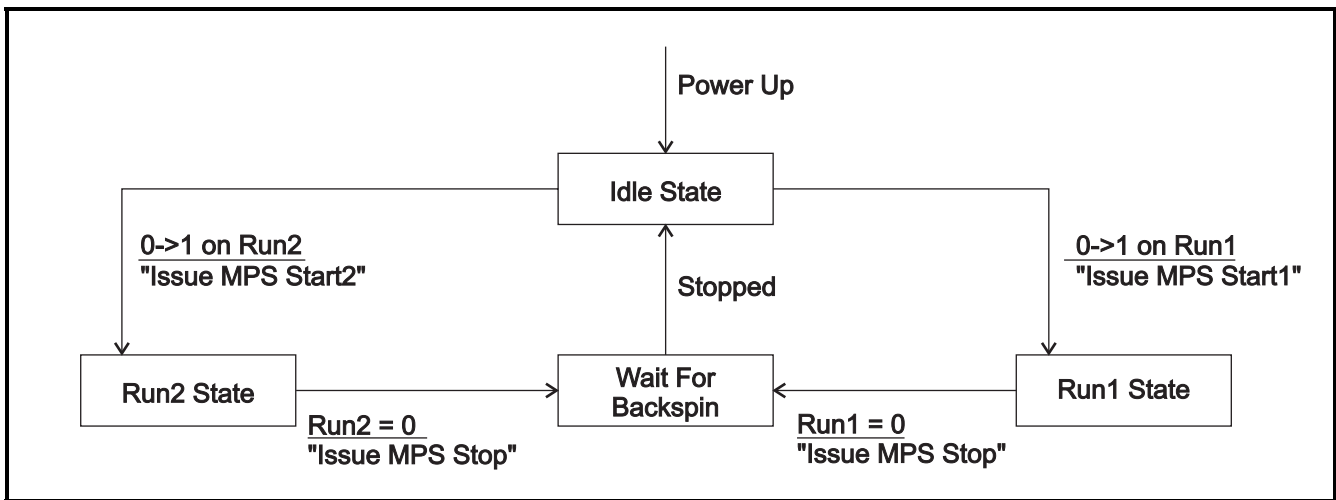
Assembly Class (4), Instance (0x05), Attribute (3) – Output
Consumed Connection Path = "62 30 35"

BYTE	BIT 7	BIT 6	BIT 5	BIT 4	BIT 3	BIT 2	BIT 1	BIT 0
0	Reserved	Reserved	Reserved	Reserved	Reserved	FaultReset	Run2	Run1

3.6 CONTROL SUPERVISOR OBJECT

State Transition Diagram

Start/Stop control can be performed using the control supervisor class attributes. The control supervisor issues commands to the MPS as shown in the state diagram.



NOTES:

- Commands issued to the MPS are only processed if the CtrlFromNet (Attribute 15) from the MPS is 1. For this bit to be set, the following conditions must be met:
 - 1) A starter type must be selected (Attribute 0x73).
 - 2) MPS must be in REMOTE CONTROL - Default setting.
 - 3) Network control must be in the remote group (Attribute 0x72) - Default setting.
- The MPS starter-sequence state is given by Attribute 0x92.
- The user is responsible for setting Run1 and Run2 bits (Attributes 3 & 4) to zero when a stop or trip condition occurs.

Control Supervisor Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Control Supervisor Class (0x29), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT



Supervisor Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

Reset: Issues a STOP and transition to idle state.

Supervisor Class (0x29), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
3	157	Run 1 ⁽¹⁾	Get/Set	Run 1 input to MPS	0, 0, 1	BOOL
4	158	Run 2 ⁽¹⁾	Get/Set	Run 2 input to MPS	0, 0, 1	BOOL
7	159	Running 1 ⁽¹⁾	Get	Starter Sequencer is running	0, 0, 1	BOOL
8	160	Running 2 ⁽¹⁾	Get	Starter Sequencer is running	0, 0, 1	BOOL
9	161	Ready	Get	Starter is ready	0, 0, 1	BOOL
10 (0x0A)	162	Faulted	Get	MPS is tripped	0, 0, 1	BOOL
11 (0x0B)	163	Warning	Get	MPS in alarm	0, 0, 1	BOOL
12 (0x0C)	164	Fault Rst	Get/Set	Reset issued on 0 → 1 transition	0, 0, 1	BOOL
15 (0x0F)	165	Ctrl From Net	Get	1 = Network control enabled	N/A	BOOL

⁽¹⁾ Not applicable in Protection Only mode.

100 (0x64)	166	MPS Command	Get/Set	A command "Set" will cause the requested command to be issued to the MPS. A "Get" will read the last command. 0 = Stop 1 = Start 1 2 = Start 2 3 = Reset Trips 4 = Set RTC 5 = Clear Data Logging Records 6 = Clear Trips Counters 7 = Clear Energy Totals 8 = Clear Running Time 9 = Emergency Pt Reset 10 = Select Local-Input Ctrl 11 = Release Local-Input Ctrl 12 = Re-enable Temperature Protection	0, 0, 12	USINT
106 (0x6A)	167	Trip Action	Get/Set	0 = Disable 1 = Trip1 2 = Trip2 3 = Trip3 4 = Trip1 & Trip2 5 = Trip1 & Trip3 6 = Trip1 & Trip2 & Trip3 7 = Trip2 & Trip3	0, 0, 7	UINT
107 (0x6B)	168	# of OPI's	Get/Set	Selects the number of OPI's connected to the MPS	1, 0, 3	UINT
108 (0x6C)	169	OPI Remote	Get/Set	0 = Enable OPI to select REMOTE 1 = OPI cannot select REMOTE	0, 0, 1	UINT
109 (0x6D)	170	OPI Control	Get/Set	0 = Enable OPI motor control 1 = Disable OPI motor control	0, 0, 1	UINT
110 (0x6E)	171	OPI Local	Get/Set	0 = Enable OPI to select LOCAL 1 = OPI cannot select LOCAL	0, 0, 1	UINT
111 (0x6F)	172	OPI Trips	Get	Number of OPI comm trips		UINT
112 (0x70)	173	RemGrpDig	Get/ Set	Bind digital start sources to the REMOTE group 0 = Include in group 1 = Do not include in group	0, 0, 1	UINT
113 (0x71)	174	RemGrpNet	Get/Set	Bind OPI start sources to the REMOTE group 0 = Include in group 1 = Not in group	0, 0, 1	UINT



Supervisor Class (0x29), Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
114 (0x72)	175	RemGrpOPI	Get/Set	Bind Net start sources to the REMOTE group 0 = Include in group 1 = Not in group	0, 0, 1	UINT
115 (0x73)	176	Starter Type	Get/Set	Selects the starter type 0 = Protection Only 1 = Full Voltage Non-Reversing 2 = Adjustable-Speed Drive 3 = Soft Start 4 = Full Voltage Reversing 5 = Two Speed * 6 = Reactor/Resistor Closed Trans. 7 = Reactor/Resistor Open Trans. 8 = Slip Ring 9 = Soft Start With Bypass 10 = Port Winding * 11 = Double Delta * 12 = Autotransformer 13 = Two Winding * 14 = Wye-Delta Open Trans. * 15 = Wye-Delta Closed Trans. * * Uses Full-Load Current 2	0, 0, 15	UINT
116 (0x74)	177	Start Time	Get/Set	See MPS Manual	20, 0.1, 500	REAL
117 (0x75)	178	Start Delay 1	Get/Set	See MPS Manual	20, 0.1, 500	REAL
118 (0x76)	179	Start Delay 2	Get/Set	See MPS Manual	20, 0.1, 500	REAL
119 (0x77)	180	Start Delay 3	Get/Set	See MPS Manual	20, 0.1, 500	REAL
120 (0x78)	181	Backspin Enable	Get/Set	0 = Backspin timer enabled 1 = Backspin timer disabled	1, 0, 1	UINT
121 (0x79)	182	Backspin Delay	Get/Set	Backspin delay in seconds	5, 0.1, 100	REAL
122 (0x7A)	183	Sequence Trips	Get	Number of starter sequence trips		UINT
123 (0x7B)	184	Stop Count	Get	Number of trips caused by STOP when starter type is set to Protection Only		UINT
124 (0x7C)	185	RY Status Trips	Get	Number of contactor status trips		UINT
125 (0x7D)	186	Transfer Type	Get/Set	Soft-start transfer type 0 = Time Transfer 1 = Current Transfer	0, 0, 1	UINT
126 (0x7E)	187	Transfer Level	Get/Set	Level in % FLA	1.25, 1.0, 3.0	REAL
128 (0x80)	188	RY1 Function	Get/Set	Function Assigned to Relay 1 0 = None 1 = Starter RLYA 2 = Starter RLYB 3 = Starter RLYC 4 = Starter RLYD 5 = Trip1 6 = Alarm1 7 = Aux 8 = Interlock 9 = Local 10 = Current Detected 11 = Run Mode 12 = Start Sequence Complete 13 = Thermal Lockout 14 = None 15 = Watchdog 16 = Trip3 17 = Alarm2 18 = Alarm3 19 = Trip1 Pulse 20 = Reduced OC	0, 0, 18	UINT



Supervisor Class (0x29), Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
129 (0x81)	189	RY1 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT
130 (0x82)	190	RY2 Function	Get/ Set	See Attribute 0x80	0, 0, 18	UINT
131 (0x83)	191	RY2 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT
132 (0x84)	192	RY3 Function	Get/ Set	See Attribute 0x80	0, 0, 18	UINT
133 (0x85)	193	RY3 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT
134 (0x86)	194	RY4Function	Get/ Set	See Attribute 0x80	0, 0, 18	UINT
135 (0x87)	195	RY4 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT
136 (0x88)	196	RY5 Function	Get/ Set	See Attribute 0x80	0, 0, 18	UINT
137 (0x89)	197	RY5 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT
138 (0x8A)	523	RY Pulse Time	Get/Set	Specifies the duration of the trip pulse when the RY function is set to "Trip1 Pulse"	0.25, 0.05, 10	REAL
144 (0x90)	198	TA Summary	Get	Trip, Alarm, Status Summary Bit 0: 1 = Trip (Trip1 or Trip3) Bit 1: 1 = Alarm (Alarm 1, 2, 3) Bit 2: 1 = Trip2 Bit 3: 1 = Interlocks Not Valid Bit 4: 1 = Start Lock Active Bit 5: 1 = Stop Input Active		WORD
145 (0x91)	199	Motor Status	Get	Bit 0: 1 = I > Threshold Bit 1: 1 = 10% < I < 125% for 10 s Bit 2: 1 = Tach at Full Speed Bit 3: 1 = I > 120% FLA Bit 4: 1 = Temperature Bypassed		WORD
146 (0x92)	200	Starter Status	Get	1 = Start 1 2 = Run 1 (Sequence Complete) 3 = Start 2 4 = Run 2 (Sequence Complete) 5 = Stop 6 = Backspin Timer Active		UINT
147 (0x93)	201	Digital Inputs	Get	Bit 0: IN1 Voltage Detected Bit 1: IN2 Voltage Detected Bit 2: IN3 Voltage Detected Bit 3: IN4 Voltage Detected Bit 4: IN5 Voltage Detected Bit 5: IN6 Voltage Detected Bit 6: IN7 Voltage Detected		WORD
148 (0x94)	202	Relay Outputs	Get	Bit 0: Relay 1 Energized Bit 1: Relay 2 Energized Bit 2: Relay 3 Energized Bit 3: Relay 4 Energized Bit 4: Relay 5 Energized		WORD
152 (0x98)	203	Trip/Alarm Msg 0	Get	Trip and Alarm FIFO. See MPS Manual Appendix F T27. 255 indicates no trip or alarm.		UINT
153 (0x99)	204	Trip/Alarm Msg 1	Get	Trip and Alarm FIFO. See MPS Manual Appendix F T27. 255 indicates no trip or alarm.		UINT
154 (0x9A)	205	Trip/Alarm Msg 2	Get	Trip and Alarm FIFO. See MPS Manual Appendix F T27. 255 indicates no trip or alarm.		UINT
155 (0x9B)	206	Trip/Alarm Msg 3	Get	Trip and Alarm FIFO. See MPS Manual Appendix F T27. 255 indicates no trip or alarm.		UINT
156 (0x9C)	207	Trip/Alarm Msg 4	Get	Trip and Alarm FIFO. See MPS Manual Appendix F T27. 255 indicates no trip or alarm.		UINT



3.7 OVERLOAD CLASS 0x2C

Overload Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Overload Class (0x2C), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

Overload Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modify specified attribute.

Overload Class (0x2C), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
100 (0x64)	1	Trip Action	Get/Set	0 = Disable 1 = Trip1 2 = Trip2 3 = Trip3 4 = Trip1 & Trip2 5 = Trip1 & Trip3 6 = Trip1 & Trip2 & Trip3 7 = Trip2 & Trip3	1, 0, 7	UINT
101 (0x65)	2	Thermal Model	Get/Set	0 = NEMA 1 = I ² t	0, 0, 1	UINT
102 (0x66)	3	Start Inhibit	Get/Set	Inhibits start if I ² t < Thermal Lockout Level 0 = Enable 1 = Disable	1, 0, 1	UINT
103 (0x67)	4	K-Factor	Get/Set	Used in I ² t Algorithm	6, 1, 10	REAL
104 (0x68)	5	LR Current	Get/Set	Locked Rotor Current (x FLA)	6, 1, 10	REAL
105 (0x69)	6	LR Time Cold	Get/Set	Locked Rotor Time Cold (s)	10, 0.1, 100	REAL
106 (0x6A)	7	LR Time Hot	Get/Set	Locked Rotor Time Hot (s)	5, 0.1, 100	REAL
107 (0x6B)	8	Cooling Factor	Get/Set	Multiples of running time constant	2, 0.1, 10	REAL
108 (0x6C)	9	Thermal Lock Level	Get/Set	Thermal Reset/Inhibit Level per unit	0.3, 0.1, 0.9	REAL
109 (0x6D)	10	Overload Alarm	Get/Set	Level where alarm occurs	1.0, 0.5, 1.0	REAL
110 (0x6E)	11	Alarm Action	Get/Set	0 = Disable 1 = Alarm1 2 = Alarm2 3 = Alarm3 4 = Alarm1 & Alarm2 5 = Alarm1 & Alarm3 6 = Alarm1 & Alarm2 & Alarm3 7 = Alarm2 & Alarm3	1, 0, 7	UINT
111 (0x6F)	12	V Connection	Get/Set	Voltage Input Connection 0 = None 1 = 1PT 2 = 2PT 3 = 3PT	0, 0, 3	UINT
112 (0x70)	13	CT Primary	Get/Set	CT Primary Rating (A)	100, 1, 5000	REAL
113 (0x71)	14	EFCT Primary	Get/Set	EFCT Primary Rating (A)	5, 1, 5000	REAL
114 (0x72)	15	Vin Rating	Get/Set	MPS input voltage at rated system voltage (kV)	0.12, 0.03, 0.6	REAL
115 (0x73)	16	Frequency	Get/Set	System Frequency 0 = 50, 1 = 60 Hz	1, 0, 1	UINT
116 (0x74)	17	FLA Rating 1	Get/Set	Full-Load Current #1	100, 1, 5000	REAL



Overload Class (0x2C), Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
117 (0x75)	18	System Voltage	Get/Set	Line-to-Line Voltage (kV)	0.6, 0.12, 25	REAL
118 (0x76)	19	Sync Speed	Get/Set	Motor Synchronous Speed (RPM)	1800, 100, 10k	REAL
119 (0x77)	20	Service Factor	Get/Set	Motor Service Factor	1, 1, 1.25	REAL
120 (0x78)	21	FLA Rating 2	Get/Set	Full-Load Current #2	100, 1, 5000	REAL
121 (0x79)	22	Trip Count	Get	Counts overload trips		UINT
122 (0x7A)	474	Run-Mode Delay	Get/Set	Time delay defines when motor is in run mode	10, 5, 60	REAL
144 (0x90)	23	I _A	Get	Phase A Current (A)		REAL
145 (0x91)	24	I _B	Get	Phase B Current (A)		REAL
146 (0x92)	25	I _C	Get	Phase C Current (A)		REAL
147 (0x93)	26	3I _O	Get	Ground-Fault Current (A)		REAL
148 (0x94)	27	V _{ab}	Get	Line-to-Line Voltage (kV)		REAL
149 (0x95)	28	V _{bc}	Get	Line-to-Line Voltage (kV)		REAL
150 (0x96)	29	V _{ca}	Get	Line-to-Line Voltage (kV)		REAL
151 (0x97)	30	S	Get	Apparent Power (kVA)		REAL
152 (0x98)	31	Q	Get	Reactive Power (kVAC)		REAL
153 (0x99)	32	P	Get	Real Power (kW)		REAL
154 (0x9A)	33	PF	Get	Power Factor	-1 to +1	REAL
155 (0x9B)	34	Used I ² t	Get	Used Thermal Capacity (%)		REAL
156 (0x9C)	35	Thermal Trend	Get	Thermal Trend (%)		REAL
157 (0x9D)	36	+Seq I	Get	Positive Sequence Current (Pu)		REAL
158 (0x9E)	37	-Seq I	Get	Negative Sequence Current (Pu)		REAL
159 (0x9F)	38	Unbalance I	Get	Current Unbalance (Pu)		REAL
160 (0xA0)	39	Frequency	Get	Frequency (from Vab)		REAL
161 (0xA1)	40	-Seq V	Get	Negative Sequence Voltage (Pu)		REAL
162 (0xA2)	41	Unbalance V	Get	Voltage Unbalance (Pu)		REAL
163 (0xA3)	42	Run Time	Get	Running time in seconds		UDINT
164 (0xA4)	43	KWs	Get	KW seconds		LREAL
165 (0xA5)	44	KVAs	Get	KVA seconds		LREAL
166 (0xA6)	45	KVARs	Get	KVAR seconds		LREAL

3.8 SET POINT CLASS 0x64

Set Point Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Set Point Class (0x64), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	4	UINT
2	Max Instance	Get	Maximum number of instances	18	UINT



Set Point Object Instances

Set Point Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

The set point class consists of seven attributes. Each set-point instance may use some or all of these attributes.

Attribute 1 - Trip Action

Specifies the action to take on a trip.

0 = Disable

1 = Trip1 ⁽¹⁾

2 = Trip2

3 = Trip3

4 = Trip1 & Trip2

5 = Trip1 & Trip3

6 = Trip1 & Trip2 & Trip3

7 = Trip2 & Trip3

Attribute 2 - Alarm Action

Specifies the action to take on an alarm.

0 = Disable

1 = Alarm1

2 = Alarm2

3 = Alarm3

4 = Alarm1 & Alarm2

5 = Alarm1 & Alarm3

6 = Alarm1 & Alarm2 & Alarm3

7 = Alarm2 & Alarm3

Attribute 3 - Trip Level

Attribute 4 - Trip Delay

Attribute 5 - Alarm Level

Attribute 6 - Alarm Delay

Attribute 7 - Trip Counter for the set point

⁽¹⁾ Initiates a STOP when a starter function is enabled.

Class 0x64, Instance 1 - Overcurrent

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	46	Trip Action	Get/Set	1, 0, 7	UINT
3	47	Trip Level	Get/Set	10, 1, 15	REAL
4	48	Trip Delay	Get/Set	0.1, 0, 10	REAL
7	49	Trip Count	Get		UINT

Class 0x64, Instance 2 - Aux. Overcurrent

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	50	Trip Action	Get/Set	1, 0, 7	UINT
3	51	Trip Level	Get/Set	10, 1, 15	REAL
4	52	Trip Delay	Get/Set	0.1, 0, 10	REAL
7	53	Trip Count	Get		UINT

Class 0x64, Instance 3 - Earth Fault

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	54	Trip Action	Get/Set	1, 0, 7	UINT
2	55	Alarm Action	Get/Set	1, 0, 7	UINT
3	56	Trip Level	Get/Set	0.4, 0.05, 1	REAL
4	57	Trip Delay	Get/Set	0.25, 0, 100	REAL
5	58	Alarm Level	Get/Set	0.20, 0.05, 1	REAL
6	59	Alarm Delay	Get/Set	1, 0, 100	REAL
7	60	Trip Count	Get		UINT



Class 0x64, Instance 4 - Jam

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	61	Trip Action	Get/Set	1, 0, 7	UINT
2	62	Alarm Action	Get/Set	1, 0, 7	UINT
3	63	Trip Level	Get/Set	6, 1, 10	REAL
4	64	Trip Delay	Get/Set	5, 1, 100	REAL
5	65	Alarm Level	Get/Set	3, 1, 10	REAL
6	66	Alarm Delay	Get/Set	5, 1, 100	REAL
7	67	Trip Count	Get		UINT

Class 0x64, Instance 5 - Current Unbalance (I)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	68	Trip Action	Get/Set	1, 0, 7	UINT
2	69	Alarm Action	Get/Set	1, 0, 7	UINT
3	70	Trip Level	Get/Set	0.25, 0.05, 1	REAL
4	71	Trip Delay	Get/Set	15, 1, 100	REAL
5	72	Alarm Level	Get/Set	0.10, 0.05, 1	REAL
6	73	Alarm Delay	Get/Set	10, 1, 100	REAL
7	74	Trip Count	Get		UINT

Class 0x64, Instance 6 - Phase Reverse (I)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	75	Trip Action	Get/Set	0, 0, 7	UINT
4	76	Phase Reverse Delay	Get/Set	2, 1, 100	REAL
7	77	Trip Count	Get		UINT

Class 0x64, Instance 7 - Phase Loss (I)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	78	Trip Action	Get/Set	1, 0, 7	UINT
4	79	Phase Loss Delay	Get/Set	5, 1, 100	REAL
7	80	Trip Count	Get		UINT

Class 0x64, Instance 8 - Voltage Unbalance

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	81	Trip Action	Get/Set	1, 0, 7	UINT
2	82	Alarm Action	Get/Set	1, 0, 7	UINT
3	83	Trip Level	Get/Set	0.1, 0.05, 1	REAL
4	84	Trip Delay	Get/Set	15, 1, 100	REAL
5	85	Alarm Level	Get/Set	0.05, 0.05, 1	REAL
6	86	Alarm Delay	Get/Set	10, 1, 100	REAL
7	87	Trip Count	Get		UINT



Class 0x64, Instance 9 - Phase Reverse (V)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	88	Trip Action	Get/Set	0, 0, 7	UINT
4	89	Phase Reverse Delay	Get/Set	2, 1, 100	REAL
7	90	Trip Count	Get		UINT

Class 0x64, Instance 0x0A - Phase Loss (V)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	91	Trip Action	Get/Set	0, 0, 7	UINT
4	92	Phase Loss Delay	Get/Set	5, 1, 100	REAL
7	93	Trip Count	Get		UINT

Class 0x64, Instance 0x0B - Undercurrent

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	94	Trip Action	Get/Set	0, 0, 7	UINT
2	95	Alarm Action	Get/Set	0, 0, 7	UINT
3	96	Trip Level	Get/Set	0.5, 0.1, 1	REAL
4	97	Trip Delay	Get/Set	10, 1, 100	REAL
5	98	Alarm Level	Get/Set	0.8, 0.1, 1	REAL
6	99	Alarm Delay	Get/Set	20, 1, 100	REAL
7	100	Trip Count	Get		UINT

Class 0x64, Instance 0x0C - PTC Temperature

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	101	Trip Action	Get/Set	0, 0, 7	UINT
2	102	Alarm Action	Get/Set	0, 0, 7	UINT
7	103	Trip Count	Get		UINT

Class 0x64, Instance 0x0D - Overvoltage

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	104	Trip Action	Get/Set	1, 0, 7	UINT
2	105	Alarm Action	Get/Set	1, 0, 7	UINT
3	106	Trip Level	Get/Set	1.2, 1, 1.4	REAL
4	107	Trip Delay	Get/Set	5, 1, 500	REAL
5	108	Alarm Level	Get/Set	1.1, 1, 1.4	REAL
6	109	Alarm Delay	Get/Set	5, 1, 500	REAL
7	110	Trip Count	Get		UINT

Class 0x64, Instance 0x0E - Undervoltage

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	111	Trip Action	Get/Set	0, 0, 7	UINT
2	112	Alarm Action	Get/Set	0, 0, 7	UINT
3	113	Trip Level	Get/Set	0.7, 0.5, 1	REAL
4	114	Trip Delay	Get/Set	5, 1, 500	REAL
5	115	Alarm Level	Get/Set	0.8, 0.5, 1	REAL
6	116	Alarm Delay	Get/Set	5, 1, 500	REAL
7	117	Trip Count	Get		UINT



Class 0x64, Instance 0x0F - Underfrequency

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	118	Trip Action	Get/Set	0, 0, 7	UINT
2	119	Alarm Action	Get/Set	0, 0, 7	UINT
3	120	Trip Level	Get/Set	45, 30, 80	REAL
4	121	Trip Delay	Get/Set	5, 0.5, 500	REAL
5	122	Alarm Level	Get/Set	48, 30, 80	REAL
6	123	Alarm Delay	Get/Set	1, 0.5, 500	REAL
7	124	Trip Count	Get		UINT

Class 0x64, Instance 0x10 - Overfrequency

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	125	Trip Action	Get/Set	0, 0, 7	UINT
2	126	Alarm Action	Get/Set	0, 0, 7	UINT
3	127	Trip Level	Get/Set	65, 30, 80	REAL
4	128	Trip Delay	Get/Set	5, 0.5, 500	REAL
5	129	Alarm Level	Get/Set	62, 30, 80	REAL
6	130	Alarm Delay	Get/Set	1, 0.5, 500	REAL
7	131	Trip Count	Get		UINT

Class 0x64, Instance 0x11 - Power Factor Quadrant 4

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	132	Trip Action	Get/Set	0, 0, 7	UINT
2	133	Alarm Action	Get/Set	0, 0, 7	UINT
3	134	Trip Level	Get/Set	0.8, 0.5, 1	REAL
4	135	Trip Delay	Get/Set	5, 0.1, 500	REAL
5	136	Alarm Level	Get/Set	0.9, 0.5, 1	REAL
6	137	Alarm Delay	Get/Set	10, 0.1, 500	REAL
7	138	Trip Count	Get		UINT

Class 0x64, Instance 0x12 - Power Factor Quadrant 3

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	139	Trip Action	Get/Set	0, 0, 7	UINT
2	140	Alarm Action	Get/Set	0, 0, 7	UINT
3	141	Trip Level	Get/Set	0.8, 0.5, 1	REAL
4	142	Trip Delay	Get/Set	5, 0.1, 500	REAL
5	143	Alarm Level	Get/Set	0.9, 0.5, 1	REAL
6	144	Alarm Delay	Get/Set	10, 0.1, 500	REAL
7	145	Trip Count	Get		UINT



3.9 ACCELERATION CLASS 0x65

The MPS can measure motor speed using a digital tach connected to Digital Input 8, or a 4–20 mA speed sensor. This class defines parameters for speed protection.

Acceleration Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Acceleration Class (0x65), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

Acceleration Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

Instance 1 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	146	Accel Action	Get/Set	Specifies the action to take on a trip 0 = Disable 1 = Trip1 ⁽¹⁾ 2 = Trip2 3 = Trip3 4 = Trip1 & Trip2 5 = Trip1 & Trip3 6 = Trip1 & Trip2 & Trip3 7 = Trip2 & Trip3 ⁽¹⁾ Initiates a STOP when a starter function is enabled.	1, 0, 7	UINT
2	147	Speed1	Get/Set	The motor must reach this speed in the time defined by Time1. (%FS)	30, 1, 100	REAL
3	148	Time1	Get/Set	Defines the time when Speed1 must be reached. (s)	5, 1, 1000	REAL
4	149	Speed2	Get/Set	The motor must reach this speed in the time defined by Time2. (%FS)	60, 1, 100	REAL
5	150	Time2	Get/Set	Defines the time when Speed2 must be reached. (s)	10, 1, 1000	REAL
6	151	Speed3	Get/Set	The motor must reach this speed in the time defined by Time3. (%FS)	90, 1, 100	REAL
7	152	Time3	Get/Set	Defines the time when Speed3 must be reached. (s)	15, 1, 1000	REAL
8	153	Tach Enable	Get/Set	Enables speed measurement even if protection is disabled 0 = Enabled, 1 = Disabled	1, 0, 1	UINT
9	154	Pulses Per Rev	Get/Set	Sets the number of pulses per revolution for digital tach	60, 1, 100	REAL
10 (0x0A)	155	Tach Speed	Get	Motor speed from tach		REAL
11 (0x0B)	156	Trip Count	Get	Counts number of Accel Trips		UINT



3.10 DIGITAL INPUT CLASS 0x66

Digital Input Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Digital Input Class (0x66), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	7	UINT

Digital Input Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

The digital-input class consists of 5 attributes.

Attribute 1 - Function

Selects the function of the digital input.

- 0 = Input not used
- 1 = Start1 (N.O. Contact)
- 2 = Start2 (N.O. Contact)
- 3 = Stop (N.C. Contact)
- 4 = Starter RLYA contactor status
- 5 = Starter RLYB contactor status
- 6 = Starter RLYC contactor status
- 7 = Starter RLYD contactor status
- 8 = Interlock (N.C.)
- 9 = Trip1 (N.C.)
- 10 = Reset (N.O.)
- 11 = Local Select
- 12 = Local Start1
- 13 = Local Start2
- 14 = 2-Wire Start1
- 15 = 2-Wire Start2
- 16 = FLA2 Select
- 17 = Limit1 Select
- 18 = Limit2 Select
- 19 = Reduced OC

Attribute 2 - Bypass Enable/Disable

Attribute applies when the input function is trip. When enabled, the input is bypassed for the time defined by the Bypass Delay when a motor is started using starter control. 0 = Enable, 1 = Disable

Attribute 3 - Bypass Delay

Defines the Trip bypass time duration on start.

Attribute 4 - Trip Delay

Applies only to the trip function.

Attribute 5 - Trip Count

The trip counter only applies to the trip function.

Class 0x66, Instance 1 - Input 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	208	Function	Get/Set	0, 0, 15	UINT
2	209	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	210	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	211	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	212	Trip Counter	Get		UINT



Class 0x66, Instance 2 - Input 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	213	Function	Get/Set	0, 0, 15	UINT
2	214	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	215	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	216	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	217	Trip Counter	Get		UINT

Class 0x66, Instance 3 - Input 3

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	218	Function	Get/Set	0, 0, 15	UINT
2	219	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	220	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	221	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	222	Trip Counter	Get		UINT

Class 0x66, Instance 4 - Input 4

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	223	Function	Get/Set	0, 0, 15	UINT
2	224	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	225	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	226	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	227	Trip Counter	Get		UINT

Class 0x66, Instance 5 - Input 5

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	228	Function	Get/Set	0, 0, 15	UINT
2	229	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	230	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	231	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	232	Trip Counter	Get		UINT

Class 0x66, Instance 6 - Input 6

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	233	Function	Get/Set	0, 0, 15	UINT
2	234	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	235	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	236	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	237	Trip Counter	Get		UINT



Class 0x66, Instance 7 - Input 7

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	238	Function	Get/Set	0, 0, 15	UINT
2	239	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT
3	240	Bypass Delay	Get/Set	5, 0.5, 100	REAL
4	241	Trip Delay	Get/Set	0.1, 0.01, 100	REAL
5	242	Trip Counter	Get		UINT

3.11 ANALOG I/O CLASS 0x67

Analog I/O Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Analog I/O Class (0x67), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

Analog I/O Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

Analog I/O Class (0x67), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	243	Analog In Type	Get/Set	Defines the analog-input type 0 = Disabled 1 = Generic (Trip1, Alarm1 enabled) 2 = ASD sets sampling frequency 3 = Motor speed	0, 0, 3	UINT
2	244	High Trip	Get/Set	Sets high trip level for generic input type. (mA)	16, 0.1, 20	REAL
3	245	Low Trip	Get Set	Sets low trip level for generic input type. (mA)	7, 0.1, 20	REAL
4	246	Trip Delay	Get/Set	Applies to generic type. (s)	5, 0.01, 100	REAL
5	247	High Alarm	Get/Set	Sets high alarm level for generic input type. (mA)	14, 0.1, 20	REAL
6	248	Low Alarm	Get/Set	Sets low alarm level for generic input type. (mA)	9, 0.1, 20	REAL
7	249	Alarm Delay	Get/Set	Applies to generic type (s)	1, 0.01, 100	REAL
8	250	ASD_4mA	Get/Set	Applies to type 2 input. Frequency corresponding to 4 mA input. (Hz)	10, 0, 70	REAL



Analog I/O Class (0x67), Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
9	251	ASD_20mA	Get/Set	Applies to type 2 input. Frequency corresponding to 20 mA input. (%FS)	10, 0, 70	REAL
10 (0x0A)	252	Tach_4mA	Get/Set	Applies to type 3 input. % Speed corresponding to 4 mA input. (%FS)	10, 0, 100	REAL
11 (0x0B)	253	Tach_20mA	Get/Set	Applies to type 3 input. % Speed corresponding to 20 mA input. (%FS)	100, 0, 100	REAL
12 (0x0C)	254	Out Param	Get/Set	Specifies the analog output parameter 0 = Phase Current 1 = Earth Leakage 2 = Thermal Capacity 3 = Max Stator RTD 4 = Max Bearing RTD 5 = Max Load RTD 6 = Max Ambient RTD 7 = Voltage 8 = Unbalance (I) 9 = Power Factor 10 = Real Power 11 = Reactive Power 12 = Apparent Power 13 = Zero (4 mA) 14 = Full Scale (20 mA) 15 = Differential Current	0, 0, 14	UINT
13 (0x0D)	255	Reading	Get	Analog input reading. (mA)	0, 0, 20	REAL
14 (0x0E)	256	High Trips	Get	Input-high trip count		UINT
15 (0x0F)	257	Low Trips	Get	Input-low trip count		UINT

3.12 RTD MODULE CLASS 0x68

RTD Module Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

Class 0x68, Instance 0, Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1		Revision Number	Get	Revision number of this class	1	UINT
2		Max Instance	Get	Maximum number of RTD modules	3	UINT
100 (0x64)	258	Modules Used	Get/Set	Specifies the number of RTD modules used	0, 0, 3	UINT
101 (0x65)	259	Sensor Trip Action	Get/Set	Specifies trip action to take on a sensor error. 0 = Disable Trips 1 = Trip1 ⁽¹⁾ 2 = Trip2 3 = Trip3 4 = Trip1 & Trip2 5 = Trip1 & Trip3 6 = Trip1 & Trip2 & Trip3 7 = Trip2 & Trip3 ⁽¹⁾ Initiates a STOP when a starter function is enabled.	0, 0, 7	UINT



Class 0x68, Instance 0, Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
102 (0x66)	260	Sensor Alarm Action	Get/Set	Specifies alarm action to take on a sensor error. 0 = Disable Alarms 1 = Alarm1 2 = Alarm2 3 = Alarm3 4 = Alarm1 & Alarm2 5 = Alarm1 & Alarm3 6 = Alarm1 & Alarm2 & Alarm3 7 = Alarm2 & Alarm3	1, 0, 7	UINT
103 (0x67)	261	Module Error Trip Action	Get/Set	Specifies trip action to take on a module error. Action list is the same as Attribute 9.	0, 0, 7	UINT
104 (0x68)	262	Module Error Alarm Action	Get/Set	Specifies alarm action to take on a module error. Action list is the same as Attribute A.	1, 0, 7	UINT
105 (0x69)	263	Module1 Comm Trip Count	Get	Number of module1 communication-error trips.		UINT
106 (0x6A)	264	Module2 Comm Trip Count	Get	Number of module2 communication-error trips.		UINT
107 (0x6B)	265	Module3 Comm Trip Count	Get	Number of module3 communication-error trips.		UINT
108 (0x6C)	266	Sensor Trip Count	Get	Number of RTD sensor trips		UINT
109 (0x6D)	267	HMC Enable	Get/Set	Hot Motor Compensation control. 0 = Enable, 1 = Disable		UINT
110 (0x6E)	268	HMC Max Bias	Get/Set	Stator temperature (°C) where compensation ends at 100% I ² t.	150, 40, 200	REAL
111 (0x6F)	269	HMC Min Bias	Get/Set	Stator temperature (°C) where compensation begins at 0% I ² t.	40, 40, 200	REAL
112 (0x70)	270	Max Stator Temp	Get	Maximum stator temperature (°C)		REAL
113 (0x71)	271	Max Bearing Temp	Get	Maximum bearing temperature (°C)		REAL
114 (0x72)	272	Max Load Temp	Get	Maximum load temperature (°C)		REAL
115 (0x73)	273	Max Amb Temp	Get	Maximum ambient temperature (°C)		REAL
116 (0x74)	274	Min Stator Temp	Get	Minimum stator temperature (°C)		REAL
117 (0x75)	275	Min Bearing Temp	Get	Minimum bearing temperature (°C)		REAL
118 (0x76)	276	Min Load Temp	Get	Minimum load temperature (°C)		REAL
119 (0x77)	277	Min Ambient Temp	Get	Minimum ambient temperature (°C)		REAL

RTD Module Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.
Set_Attribute_Single: Modifies specified attribute.

Object Instance Attributes 1 to 8 define the RTD type. Selecting an RTD will enable trip and alarm set points. The trip action is fixed as Trip1 and the alarm action is fixed as Alarm1.

- 0 = RTD Disabled
- 1 = Platinum 100 ohm
- 2 = Nickel 100 ohm
- 3 = Nickel 120 ohm
- 4 = Copper 10 ohm

Object Instance Attributes 0x09 to 0x10 define the RTD function.

- 0 = Stator
- 1 = Bearing
- 2 = Load
- 3 = Ambient



Object Instance Attributes 0x11 to 0x20 define the trip and alarm settings in degrees C. The trip action is fixed as Trip1 and the alarm action is fixed as Alarm1.

Object Instance Attributes 0x21 to 0x28 define an 18-character name.

Object Instance Attributes 0x29 to 0x30 are temperature readings.

Object Instance Attributes 0x31 to 0x38 are the trip counters for each of the RTD's.

Class 0x68, Instance 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	278	RTD #1 Type	Get/Set	0, 0, 4	UINT
2	279	RTD #2 Type	Get/Set	0, 0, 4	UINT
3	280	RTD #3 Type	Get/Set	0, 0, 4	UINT
4	281	RTD #4 Type	Get/Set	0, 0, 4	UINT
5	282	RTD #5 Type	Get/Set	0, 0, 4	UINT
6	283	RTD #6 Type	Get/Set	0, 0, 4	UINT
7	284	RTD #7 Type	Get/Set	0, 0, 4	UINT
8	285	RTD #8 Type	Get/Set	0, 0, 4	UINT
9	286	RTD #1 Function	Get/Set	0, 0, 3	UINT
10 (0x0A)	287	RTD #2 Function	Get/Set	0, 0, 3	UINT
11 (0x0B)	288	RTD #3 Function	Get/Set	0, 0, 3	UINT
12 (0x0C)	289	RTD #4 Function	Get/Set	0, 0, 3	UINT
13 (0x0D)	290	RTD #5 Function	Get/Set	0, 0, 3	UINT
14 (0x0E)	291	RTD #6 Function	Get/Set	0, 0, 3	UINT
15 (0x0F)	292	RTD #7 Function	Get/Set	0, 0, 3	UINT
16 (0x10)	293	RTD #8 Function	Get/Set	0, 0, 3	UINT
17 (0x11)	294	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL
18 (0x12)	295	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL
19 (0x13)	296	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL
20 (0x14)	297	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL
21 (0x15)	298	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL
22 (0x16)	299	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL
23 (0x17)	300	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL
24 (0x18)	301	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL
25 (0x19)	302	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL
26 (0x1A)	303	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL
27 (0x1B)	304	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL
28 (0x1C)	305	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL
29 (0x1D)	306	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL
30 (0x1E)	307	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL
31 (0x1F)	308	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL
32 (0x20)	309	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL



Class 0x68, Instance 1 (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
33 (0x21)	310	RTD #1 Name	Get/Set	RTD M1 #1	SHORT_STRING
34 (0x22)	311	RTD #2 Name	Get/Set	RTD M1 #2	SHORT_STRING
35 (0x23)	312	RTD #3 Name	Get/Set	RTD M1 #3	SHORT_STRING
36 (0x24)	313	RTD #4Name	Get/Set	RTD M1 #4	SHORT_STRING
37 (0x25)	314	RTD #5 Name	Get/Set	RTD M1 #5	SHORT_STRING
38 (0x26)	315	RTD #6 Name	Get/Set	RTD M1 #6	SHORT_STRING
39 (0x27)	316	RTD #7 Name	Get/Set	RTD M1 #7	SHORT_STRING
40 (0x28)	317	RTD #8 Name	Get/Set	RTD M1 #8	SHORT_STRING
41 (0x29)	318	RTD #1 Temp RDG	Get		REAL
42 (0x2A)	319	RTD #2 Temp RDG	Get		REAL
43 (0x2B)	320	RTD #3 Temp RDG	Get		REAL
44 (0x2C)	321	RTD #4 Temp RDG	Get		REAL
45 (0x2D)	322	RTD #5 Temp RDG	Get		REAL
46 (0x2E)	323	RTD #6 Temp RDG	Get		REAL
47 (0x2F)	324	RTD #7 Temp RDG	Get		REAL
48 (0x30)	325	RTD #8 Temp RDG	Get		REAL
49 (0x31)	326	RTD #1 Trip Cntr	Get		UINT
50 (0x32)	327	RTD #2 Trip Cntr	Get		UINT
51 (0x33)	328	RTD #3 Trip Cntr	Get		UINT
52 (0x34)	329	RTD #4 Trip Cntr	Get		UINT
53 (0x35)	330	RTD #5 Trip Cntr	Get		UINT
54 (0x36)	331	RTD #6 Trip Cntr	Get		UINT
55 (0x37)	332	RTD #7 Trip Cntr	Get		UINT
56 (0x38)	333	RTD #8 Trip Cntr	Get		UINT

Class 0x68, Instance 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	334	RTD #1 Type	Get/Set	0, 0, 4	UINT
2	335	RTD #2 Type	Get/Set	0, 0, 4	UINT
3	336	RTD #3 Type	Get/Set	0, 0, 4	UINT
4	337	RTD #4 Type	Get/Set	0, 0, 4	UINT
5	338	RTD #5 Type	Get/Set	0, 0, 4	UINT
6	339	RTD #6 Type	Get/Set	0, 0, 4	UINT
7	340	RTD #7 Type	Get/Set	0, 0, 4	UINT
8	341	RTD #8 Type	Get/Set	0, 0, 4	UINT
9	342	RTD #1 Function	Get/Set	0, 0, 3	UINT
10 (0x0A)	343	RTD #2 Function	Get/Set	0, 0, 3	UINT
11 (0x0B)	344	RTD #3 Function	Get/Set	0, 0, 3	UINT
12 (0x0C)	345	RTD #4 Function	Get/Set	0, 0, 3	UINT
13 (0x0D)	346	RTD #5 Function	Get/Set	0, 0, 3	UINT
14 (0x0E)	347	RTD #6 Function	Get/Set	0, 0, 3	UINT
15 (0x0F)	348	RTD #7 Function	Get/Set	0, 0, 3	UINT
16 (0x10)	349	RTD #8 Function	Get/Set	0, 0, 3	UINT
17 (0x11)	350	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL
18 (0x12)	351	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL



Class 0x68, Instance 2 (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
19 (0x13)	352	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL
20 (0x14)	353	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL
21 (0x15)	354	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL
22 (0x16)	355	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL
23 (0x17)	356	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL
24 (0x18)	357	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL
25 (0x19)	358	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL
26 (0x1A)	359	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL
27 (0x1B)	360	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL
28 (0x1C)	361	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL
29 (0x1D)	362	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL
30 (0x1E)	363	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL
31 (0x1F)	364	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL
32 (0x20)	365	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL
33 (0x21)	366	RTD #1 Name	Get/Set	RTD M2 #1	SHORT_STRING
34 (0x22)	367	RTD #2 Name	Get/Set	RTD M2 #2	SHORT_STRING
35 (0x23)	368	RTD #3 Name	Get/Set	RTD M2 #3	SHORT_STRING
36 (0x24)	369	RTD #4Name	Get/Set	RTD M2 #4	SHORT_STRING
37 (0x25)	370	RTD #5 Name	Get/Set	RTD M2 #5	SHORT_STRING
38 (0x26)	371	RTD #6 Name	Get/Set	RTD M2 #6	SHORT_STRING
39 (0x27)	372	RTD #7 Name	Get/Set	RTD M2 #7	SHORT_STRING
40 (0x28)	373	RTD #8 Name	Get/Set	RTD M2 #8	SHORT_STRING
41 (0x29)	374	RTD #1 Temp RDG	Get		REAL
42 (0x2A)	375	RTD #2 Temp RDG	Get		REAL
43 (0x2B)	376	RTD #3 Temp RDG	Get		REAL
44 (0x2C)	377	RTD #4 Temp RDG	Get		REAL
45 (0x2D)	378	RTD #5 Temp RDG	Get		REAL
46 (0x2E)	379	RTD #6 Temp RDG	Get		REAL
47 (0x2F)	380	RTD #7 Temp RDG	Get		REAL
48 (0x30)	381	RTD #8 Temp RDG	Get		REAL
49 (0x31)	382	RTD #1 Trip Cntr	Get		UINT
50 (0x32)	383	RTD #2 Trip Cntr	Get		UINT
51 (0x33)	384	RTD #3 Trip Cntr	Get		UINT
52 (0x34)	385	RTD #4 Trip Cntr	Get		UINT
53 (0x35)	386	RTD #5 Trip Cntr	Get		UINT
54 (0x36)	387	RTD #6 Trip Cntr	Get		UINT
55 (0x37)	388	RTD #7 Trip Cntr	Get		UINT
56 (0x38)	389	RTD #8 Trip Cntr	Get		UINT



Class 0x68, Instance 3

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	390	RTD #1 Type	Get/Set	0, 0, 4	UINT
2	391	RTD #2 Type	Get/Set	0, 0, 4	UINT
3	392	RTD #3 Type	Get/Set	0, 0, 4	UINT
4	393	RTD #4 Type	Get/Set	0, 0, 4	UINT
5	394	RTD #5 Type	Get/Set	0, 0, 4	UINT
6	395	RTD #6 Type	Get/Set	0, 0, 4	UINT
7	396	RTD #7 Type	Get/Set	0, 0, 4	UINT
8	397	RTD #8 Type	Get/Set	0, 0, 4	UINT
9	398	RTD #1 Function	Get/Set	0, 0, 3	UINT
10 (0x0A)	399	RTD #2 Function	Get/Set	0, 0, 3	UINT
11 (0x0B)	400	RTD #3 Function	Get/Set	0, 0, 3	UINT
12 (0x0C)	401	RTD #4 Function	Get/Set	0, 0, 3	UINT
13 (0x0D)	402	RTD #5 Function	Get/Set	0, 0, 3	UINT
14 (0x0E)	403	RTD #6 Function	Get/Set	0, 0, 3	UINT
15 (0x0F)	404	RTD #7 Function	Get/Set	0, 0, 3	UINT
16 (0x10)	405	RTD #8 Function	Get/Set	0, 0, 3	UINT
17 (0x11)	406	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL
18 (0x12)	407	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL
19 (0x13)	408	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL
20 (0x14)	409	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL
21 (0x15)	410	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL
22 (0x16)	411	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL
23 (0x17)	412	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL
24 (0x18)	413	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL
25 (0x19)	414	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL
26 (0x1A)	415	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL
27 (0x1B)	416	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL
28 (0x1C)	417	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL
29 (0x1D)	418	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL
30 (0x1E)	419	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL
31 (0x1F)	420	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL
32 (0x20)	421	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL
33 (0x21)	422	RTD #1 Name	Get/Set	RTD M3 #1	SHORT_STRING
34 (0x22)	423	RTD #2 Name	Get/Set	RTD M3 #2	SHORT_STRING
35 (0x23)	424	RTD #3 Name	Get/Set	RTD M3 #3	SHORT_STRING
36 (0x24)	425	RTD #4Name	Get/Set	RTD M3 #4	SHORT_STRING
37 (0x25)	426	RTD #5 Name	Get/Set	RTD M3 #5	SHORT_STRING
38 (0x26)	427	RTD #6 Name	Get/Set	RTD M3 #6	SHORT_STRING
39 (0x27)	428	RTD #7 Name	Get/Set	RTD M3 #7	SHORT_STRING
40 (0x28)	429	RTD #8 Name	Get/Set	RTD M3 #8	SHORT_STRING
41 (0x29)	430	RTD #1 Temp RDG	Get		REAL
42 (0x2A)	431	RTD #2 Temp RDG	Get		REAL
43 (0x2B)	432	RTD #3 Temp RDG	Get		REAL
44 (0x2C)	433	RTD #4 Temp RDG	Get		REAL
45 (0x2D)	434	RTD #5 Temp RDG	Get		REAL
46 (0x2E)	435	RTD #6 Temp RDG	Get		REAL



Class 0x68, Instance 3 (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
47 (0x2F)	436	RTD #7 Temp RDG	Get		REAL
48 (0x30)	437	RTD #8 Temp RDG	Get		REAL
49 (0x31)	438	RTD #1 Trip Cntr	Get		UINT
50 (0x32)	439	RTD #2 Trip Cntr	Get		UINT
51 (0x33)	440	RTD #3 Trip Cntr	Get		UINT
52 (0x34)	441	RTD #4 Trip Cntr	Get		UINT
53 (0x35)	442	RTD #5 Trip Cntr	Get		UINT
54 (0x36)	443	RTD #6 Trip Cntr	Get		UINT
55 (0x37)	444	RTD #7 Trip Cntr	Get		UINT
56 (0x38)	445	RTD #8 Trip Cntr	Get		UINT

3.13 RTC CLASS 0x69

RTD Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

RTC Class (0x69), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

RTD Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

RTC Class (0x69), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	446	IRIG Min Offset	Get/Set	RTC Min = IRIG Min + IRIG Min Offset	0, 0, 30	REAL
2	447	IRIG Hr Offset	Get/Set	RTC Hrs = IRIG Hrs + IRIG Hr Offset	0, 0, 23	REAL
3	448	RTC Date	Get	Number of days since 1972-01-01		DATE
4	449	RTC Time	Get	Number of milliseconds since 00:00:00:00.000		TIME OF DAY
5	450	RTC Set	Get/Set ⁽¹⁾	String used to set the date and time YY/MM/DD-HH:MM:SS		SHORT_STRING

⁽¹⁾ Time value is not activated until a SET RTC command is issued using Class 0x29, Instance 1, Attribute 0x64.



3.14 MPS REGISTER CLASS 0x6A

This object defines the MPS registers that generate the data for Assembly Class 4, Instance 0x67, Attribute 3. Register values are defined in Appendix E of the MPS Manual. Each register in Appendix E defines a 16-bit value. For 32-bit float type (DeviceNet REAL), only the first register of the pair needs to be entered. For example, to configure an assembly to read the first four RTD temperatures in RTD Module 1, enter register numbers 902, 904, 906, 908. The first 16 bytes of the assembly will contain the RTD data and the other 16 bytes do not contain any valid data. Register definitions resulting in more than 32 bytes of data will be ignored.

MPS Register Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

MPS Register Class (0x6A), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

MPS Register Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

MPS Register Class (0x6A), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	451	Register 1	Get/Set	MPS Register value	0, 0, 1246	UINT
2	452	Register 2	Get/Set	MPS Register value	0, 0, 1246	UINT
3	453	Register 3	Get/Set	MPS Register value	0, 0, 1246	UINT
4	454	Register 4	Get/Set	MPS Register value	0, 0, 1246	UINT
5	455	Register 5	Get/Set	MPS Register value	0, 0, 1246	UINT
6	456	Register 6	Get/Set	MPS Register value	0, 0, 1246	UINT
7	457	Register 7	Get/Set	MPS Register value	0, 0, 1246	UINT
8	458	Register 8	Get/Set	MPS Register value	0, 0, 1246	UINT
9	459	Register 9	Get/Set	MPS Register value	0, 0, 1246	UINT
10	460	Register 10	Get/Set	MPS Register value	0, 0, 1246	UINT
11	461	Register 11	Get/Set	MPS Register value	0, 0, 1246	UINT
12	462	Register 12	Get/Set	MPS Register value	0, 0, 1246	UINT
13	463	Register 13	Get/Set	MPS Register value	0, 0, 1246	UINT
14	464	Register 14	Get/Set	MPS Register value	0, 0, 1246	UINT
15	465	Register 15	Get/Set	MPS Register value	0, 0, 1246	UINT
16	466	Register 16	Get/Set	MPS Register value	0, 0, 1246	UINT



3.15 DATA LOGGING CLASS 0x6B

This object is used to access one of 64 data-logging records. The Record Selector value defines the record that is displayed. Record Head indicates the record number for the latest record.

Data Logging Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Data Logging Class (0x6B), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1	UINT
2	Max Instance	Get	Maximum number of instances	1	UINT

Data Logging Object Instance Services

Get_Attribute_Single: Returns contents of specified attribute.

Set_Attribute_Single: Modifies specified attribute.

Data Logging Class (0x6B), Instance (1) Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	475	Record Count	Get	Number of captured records since the last time the event records were cleared	0, 0, 65535	UINT
2	476	Record Head	Get	Points to next record. Latest record at Record Head minus 1	0, 0, 63	UINT
3	477	Record Selector	Get/Set	Selects the record for which the data is displayed in this instance	0, 0, 63	UINT
4	478	Record Date	Get	The date when the record was captured	0, 0, 65535	DATE
5	479	Record Time	Get	Time-of-Day the record was captured	0, 0, 86399999	TOD
6	480	Record Type	Get	Specifies the trigger source 0 = Record Empty 1 = Triggered by start 2 = Triggered by trip	0, 0, 2	UINT
7	481	Trip Code	Get	See MPS Appendix F T27 for a list of trip codes. 255 = No Trip or Alarm	0, 0, 255	UINT
8	482	IA	Get	Phase A Current (A) 1		Real
9	483	IB	Get	Phase B Current (A) 1		Real
10 (0x0A)	484	IC	Get	Phase C Current (A) 1		Real
11 (0x0B)	485	3IA	Get	Ground-Fault Current (A) 1		Real
12 (0x0C)	486	Vab	Get	Line-to-Line Voltage (kV) 1		Real
13 (0x0D)	487	Vbc	Get	Line-to-Line Voltage (kV) 1		Real
14 (0x0E)	488	Vca	Get	Line-to-Line Voltage (kV) 1		Real
15 (0x0F)	489	Frequency	Get	Frequency in Hz		Real
16 (0x10)	490	S	Get	Apparent Power (kVA)		Real
17 (0x11)	491	P	Get	Real Power (kW)		Real
18 (0x12)	492	Q	Get	Reactive Power (kVAR)		Real
19 (0x13)	493	PF	Get	Power Factor (-1, +1)		Real
20 (0x14)	494	Ain	Get	Analog Input (mA)		Real
21 (0x15)	495	Unbalance I	Get	Current Unbalance (pu) 1		Real
22 (0x16)	496	Unbalance V	Get	Voltage Unbalance (pu) 1		Real



Data Logging Class (0x6B), Instance (1) Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
23 (0x17)	497	Start Time	Get	Start time in seconds. Only valid for start-type records		UINT
24 (0x18)	498	I ² t Used	Get	For start records this is the I ² t used during a start		REAL
32 (0x20)	499	M1 RTD1	Get	RTD Temperature reading (°C)		REAL
33 (0x21)	500	M1 RTD2	Get	RTD Temperature reading (°C)		REAL
34 (0x22)	501	M1 RTD3	Get	RTD Temperature reading (°C)		REAL
35 (0x23)	502	M1 RTD4	Get	RTD Temperature reading (°C)		REAL
36 (0x24)	503	M1 RTD5	Get	RTD Temperature reading (°C)		REAL
37 (0x25)	504	M1 RTD6	Get	RTD Temperature reading (°C)		REAL
38 (0x26)	505	M1 RTD7	Get	RTD Temperature reading (°C)		REAL
39 (0x27)	506	M1 RTD8	Get	RTD Temperature reading (°C)		REAL
40 (0x28)	507	M2 RTD1	Get	RTD Temperature reading (°C)		REAL
41 (0x29)	508	M2 RTD2	Get	RTD Temperature reading (°C)		REAL
42 (0x2A)	509	M2 RTD3	Get	RTD Temperature reading (°C)		REAL
43 (0x2B)	510	M2 RTD4	Get	RTD Temperature reading (°C)		REAL
44 (0x2C)	511	M2 RTD5	Get	RTD Temperature reading (°C)		REAL
45 (0x2D)	512	M2 RTD6	Get	RTD Temperature reading (°C)		REAL
46 (0x2E)	513	M2 RTD7	Get	RTD Temperature reading (°C)		REAL
47 (0x2F)	514	M2 RTD8	Get	RTD Temperature reading (°C)		REAL
48 (0x30)	515	M3 RTD1 ⁽²⁾	Get	RTD Temperature reading (°C)		REAL
49 (0x31)	516	M3 RTD2 ⁽³⁾	Get	RTD Temperature reading (°C)		REAL
50 (0x32)	517	M3 RTD3 ⁽⁴⁾	Get	RTD Temperature reading (°C)		REAL
51 (0x33)	518	M3 RTD4 ⁽⁵⁾	Get	RTD Temperature reading (°C)		REAL
52 (0x34)	519	M3 RTD5 ⁽⁵⁾	Get	RTD Temperature reading (°C)		REAL
53 (0x35)	520	M3 RTD6 ⁽⁵⁾	Get	RTD Temperature reading (°C)		REAL
54 (0x36)	521	M3 RTD7 ⁽⁵⁾	Get	RTD Temperature reading (°C)		REAL
55 (0x37)	522	M3 RTD8 ⁽⁵⁾	Get	RTD Temperature reading (°C)		REAL

⁽¹⁾ For start records, current and unbalance are maximum values recorded during the start. Voltages are the minimum values recorded during the start.

⁽²⁾ Phase A differential current for MPS firmware > 2.30

⁽³⁾ Phase B differential current for MPS firmware > 2.30

⁽⁴⁾ Phase C differential current for MPS firmware > 2.30

⁽⁵⁾ Ignore this value for MPS firmware > 2.30



APPENDIX A DEVICENET COMMUNICATIONS DATABASE TABLE

Overload Class (0x2C)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
<i>Instance 1</i>					
1	Trip Action	Get/Set	1, 0, 7	UINT	T42
2	Thermal Model	Get/Set	0, 0, 1	UINT	T33
3	Start Inhibit	Get/Set	1, 0, 1	UINT	T6
4	K-Factor	Get/Set	6, 1, 10	REAL	T1
5	Locked Rotor Current	Get/Set	6, 1, 10	REAL	T1
6	Locked Rotor Time Cold	Get/Set	10, 0.1, 100	REAL	T1
7	Locked Rotor Time Hot	Get/Set	5, 0.1, 100	REAL	T1
8	Cooling Factor	Get/Set	2, 0.1, 10	REAL	T1
9	Thermal Lock Level	Get/Set	0.3, 0.1, 0.9	REAL	T1
10	Overload Alarm	Get/Set	1.0, 0.5, 1.0	REAL	T1
11	Alarm Action	Get/Set	1, 0, 7	UINT	T43
12	Voltage Input Connection	Get/Set	0, 0, 3	UINT	T9
13	CT Primary Rating	Get/Set	100, 1, 5000	REAL	T1
14	EFCT Primary Rating	Get/Set	5, 1, 5000	REAL	T1
15	Vin Rating	Get/Set	0.12, 0.03, 0.6	REAL	T1
16	System Frequency	Get/Set	1, 0, 1	UINT	T10
17	FLA Rating 1	Get/Set	100, 1, 5000	REAL	T1
18	System Voltage	Get/Set	0.6, 0.12, 25	REAL	T1
19	Sync Speed	Get/Set	1800, 100, 10k	REAL	T1
20	Service Factor	Get/Set	1, 1, 1.25	REAL	T1
21	FLA Rating 2	Get/Set	100, 1, 5000	REAL	T1
22	Trip Count	Get		UINT	T3
23	I _A	Get		REAL	T1
24	I _B	Get		REAL	T1
25	I _C	Get		REAL	T1
26	3I _O	Get		REAL	T1
27	V _{ab}	Get		REAL	T1
28	V _{bc}	Get		REAL	T1
29	V _{ca}	Get		REAL	T1
30	S	Get		REAL	T1
31	Q	Get		REAL	T1
32	P	Get		REAL	T1
33	PF	Get	-1 to +1	REAL	T1
34	Used I ² t	Get		REAL	T1
35	Thermal Trend	Get		REAL	T1
36	+Seq I	Get		REAL	T1
37	-Seq I	Get		REAL	T1
38	Unbalance I	Get		REAL	T1
39	Frequency	Get		REAL	T1
40	-Seq V	Get		REAL	T1
41	Unbalance V	Get		REAL	T1
42	Run Time	Get		UDINT	T2
43	KWs	Get		LREAL	T4
44	KVAs	Get		LREAL	T4
45	KVARs	Get		LREAL	T4



Set Point Class (0x64)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
------------------------	------	----------	---------------------------------	--------------	----------

Overcurrent (Instance 1)

46	Trip Action	Get/Set	1, 0, 7	UINT	T42
47	Trip Level	Get/Set	10, 1, 15	REAL	T1
48	Trip Delay	Get/Set	0.1, 0, 10	REAL	T1
49	Trip Count	Get		UINT	T3

Aux. Overcurrent (Instance 2)

50	Trip Action	Get/Set	1, 0, 7	UINT	T42
51	Trip Level	Get/Set	10, 1, 15	REAL	T1
52	Trip Delay	Get/Set	0.1, 0, 10	REAL	T1
53	Trip Count	Get		UINT	T3

Earth Fault (Instance 3)

54	Trip Action	Get/Set	1, 0, 7	UINT	T42
55	Alarm Action	Get/Set	1, 0, 7	UINT	T43
56	Trip Level	Get/Set	0.4, 0.05, 1	REAL	T1
57	Trip Delay	Get/Set	0.25, 0, 100	REAL	T1
58	Alarm Level	Get/Set	0.20, 0.05, 1	REAL	T1
59	Alarm Delay	Get/Set	1, 0, 100	REAL	T1
60	Trip Count	Get		UINT	T3

Jam (Instance 4)

61	Trip Action	Get/Set	1, 0, 7	UINT	T42
62	Alarm Action	Get/Set	1, 0, 7	UINT	T43
63	Trip Level	Get/Set	6, 1, 10	REAL	T1
64	Trip Delay	Get/Set	5, 1, 100	REAL	T1
65	Alarm Level	Get/Set	3, 1, 10	REAL	T1
66	Alarm Delay	Get/Set	5, 1, 100	REAL	T1
67	Trip Count	Get		UINT	T3

Current Unbalance (Instance 5)

68	Trip Action	Get/Set	1, 0, 7	UINT	T42
69	Alarm Action	Get/Set	1, 0, 7	UINT	T43
70	Trip Level	Get/Set	0.25, 0.05, 1	REAL	T1
71	Trip Delay	Get/Set	15, 1, 100	REAL	T1
72	Alarm Level	Get/Set	0.10, 0.05, 1	REAL	T1
73	Alarm Delay	Get/Set	10, 1, 100	REAL	T1
74	Trip Count	Get		UINT	T3

Current Phase Reverse (Instance 6)

75	Trip Action	Get/Set	0, 0, 7	UINT	T42
76	Phase Reverse Delay	Get/Set	2, 1, 100	REAL	T1
77	Trip Count	Get		UINT	T3

Current Phase Loss (Instance 7)

78	Trip Action	Get/Set	0, 0, 7	UINT	T42
79	Phase Loss Delay	Get/Set	2, 1, 100	REAL	T1
80	Trip Count	Get		UINT	T3

Voltage Unbalance (Instance 8)

81	Trip Action	Get/Set	1, 0, 7	UINT	T42
82	Alarm Action	Get/Set	1, 0, 7	UINT	T43
83	Trip Level	Get/Set	0.1, 0.05, 1	REAL	T1
84	Trip Delay	Get/Set	15, 1, 100	REAL	T1
85	Alarm Level	Get/Set	0.05, 0.05, 1	REAL	T1
86	Alarm Delay	Get/Set	10, 1, 100	REAL	T1
87	Trip Count	Get		UINT	T3

Voltage Phase Reverse (Instance 9)

88	Trip Action	Get/Set	0, 0, 7	UINT	T42
89	Phase Reverse Delay	Get/Set	2, 1, 100	REAL	T1
90	Trip Count	Get		UINT	T3



Set Point Class (0x64), Continued

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
<i>Voltage Phase Loss (Instance 10)</i>					
91	Trip Action	Get/Set	0, 0, 7	UINT	T42
92	Phase Loss Delay	Get/Set	5, 1, 100	REAL	T1
93	Trip Count	Get		UINT	T3
<i>Undercurrent (Instance 11)</i>					
94	Trip Action	Get/Set	0, 0, 7	UINT	T42
95	Alarm Action	Get/Set	0, 0, 7	UINT	T43
96	Trip Level	Get/Set	0.5, 0.1, 1	REAL	T1
97	Trip Delay	Get/Set	10, 1, 100	REAL	T1
98	Alarm Level	Get/Set	0.8, 0.1, 1	REAL	T1
99	Alarm Delay	Get/Set	20, 1, 100	REAL	T1
100	Trip Count	Get		UINT	T3
<i>PTC Temperature (Instance 12)</i>					
101	Trip Action	Get/Set	0, 0, 7	UINT	T42
102	Alarm Action	Get/Set	0, 0, 7	REAL	T43
103	Trip Count	Get		UINT	T3
<i>Overvoltage (Instance 13)</i>					
104	Trip Action	Get/Set	0, 0, 7	UINT	T42
105	Alarm Action	Get/Set	0, 0, 7	UINT	T43
106	Trip Level	Get/Set	0.7, 0.5, 1	REAL	T1
107	Trip Delay	Get/Set	5, 1, 500	REAL	T1
108	Alarm Level	Get/Set	1.1, 1, 1.4	REAL	T1
109	Alarm Delay	Get/Set	5, 1, 500	REAL	T1
110	Trip Count	Get		UINT	T3
<i>Undervoltage (Instance 14)</i>					
111	Trip Action	Get/Set	0, 0, 7	UINT	T42
112	Alarm Action	Get/Set	0, 0, 7	UINT	T43
113	Trip Level	Get/Set	0.7, 0.5, 1	REAL	T1
114	Trip Delay	Get/Set	5, 1, 500	REAL	T1
115	Alarm Level	Get/Set	0.8, 0.5, 1	REAL	T1
116	Alarm Delay	Get/Set	5, 1, 500	REAL	T1
117	Trip Count	Get		UINT	T3
<i>Underfrequency (Instance 15)</i>					
118	Trip Action	Get/Set	0, 0, 7	UINT	T42
119	Alarm Action	Get/Set	0, 0, 7	UINT	T43
120	Trip Level	Get/Set	45, 30, 80	REAL	T1
121	Trip Delay	Get/Set	5, 0.5, 500	REAL	T1
122	Alarm Level	Get/Set	48, 30, 80	REAL	T1
123	Alarm Delay	Get/Set	1, 0.5, 500	REAL	T1
124	Trip Count	Get		UINT	T3
<i>Overfrequency (Instance 16)</i>					
125	Trip Action	Get/Set	0, 0, 7	UINT	T42
126	Alarm Action	Get/Set	0, 0, 7	UINT	T43
127	Trip Level	Get/Set	65, 30, 80	REAL	T1
128	Trip Delay	Get/Set	5, 0.5, 500	REAL	T1
129	Alarm Level	Get/Set	62, 30, 80	REAL	T1
130	Alarm Delay	Get/Set	1, 0.5, 500	REAL	T1
131	Trip Count	Get		UINT	T3



Set Point Class (0x64), Continued

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Power Factor Quadrant 4 (Instance 17)

132	Trip Action	Get/Set	0, 0, 7	UINT	T42
133	Alarm Action	Get/Set	0, 0, 7	UINT	T43
134	Trip Level	Get/Set	0.8, 0.5, 1	REAL	T1
135	Trip Delay	Get/Set	5, 0.1, 500	REAL	T1
136	Alarm Level	Get/Set	0.9, 0.5, 1	REAL	T1
137	Alarm Delay	Get/Set	10, 0.1, 500	REAL	T1
138	Trip Count	Get		UINT	T3

Power Factor Quadrant 3 (Instance 18)

139	Trip Action	Get/Set	0, 0, 7	UINT	T42
140	Alarm Action	Get/Set	0, 0, 7	UINT	T43
141	Trip Level	Get/Set	0.8, 0.5, 1	REAL	T1
142	Trip Delay	Get/Set	5, 0.1, 500	REAL	T1
143	Alarm Level	Get/Set	0.9, 0.5, 1	REAL	T1
144	Alarm Delay	Get/Set	10, 0.1, 500	REAL	T1
145	Trip Count	Get		UINT	T3

Acceleration Class (0x65)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Instance 1

146	Acceleration Action	Get/Set	1, 0, 7	UINT	T42
147	Speed 1	Get/Set	30, 1, 100	REAL	T1
148	Time 1	Get/Set	5, 1, 1000	REAL	T1
149	Speed 2	Get/Set	60, 1, 100	REAL	T1
150	Time 2	Get/Set	10, 1, 1000	REAL	T1
151	Speed 3	Get/Set	90, 1, 100	REAL	T1
152	Time 3	Get/Set	15, 1, 1000	REAL	T1
153	Tach Enable	Get/Set	1, 0, 1	UINT	T6
154	Pulses Per Revolution	Get/Set	60, 1, 100	REAL	T1
155	Tach Speed	Get		REAL	T1
156	Trip Count	Get		UINT	T3

Supervisor Class (0x29)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Instance 1

157	Run 1	Get/Set	0, 0, 1	BOOL	T6
158	Run 2	Get/Set	0, 0, 1	BOOL	T6
159	Running 1	Get	0, 0, 1	BOOL	T6
160	Running 2	Get	0, 0, 1	BOOL	T6
161	Ready	Get	0, 0, 1	BOOL	T6
162	Faulted	Get	0, 0, 1	BOOL	T6
163	Warning	Get	0, 0, 1	BOOL	T6
164	Fault Reset	Get/Set	0, 0, 1	BOOL	T6
165	Control From Network	Get	N/A	BOOL	T6
166	MPS Command	Get/Set	0, 0, 12	USINT	T37
167	Trip Action	Get/Set	0, 0, 7	UINT	T42
168	Number of OPIs	Get/Set	1, 0, 3	UINT	T40
169	OPI Remote	Get/Set	0, 0, 1	UINT	T6



Supervisor Class (0x29), Continued

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
170	OPI Control	Get/Set	0, 0, 1	UINT	T6
171	OPI Local	Get/Set	0, 0, 1	UINT	T6
172	OPI Trips	Get		UINT	T3
173	Remote Start Sources – Digital Input	Get/ Set	0, 0, 1	UINT	T6
174	Remote Start Sources – Network	Get/Set	0, 0, 1	UINT	T6
175	Remote Start Sources – OPI	Get/Set	0, 0, 1	UINT	T6
176	Starter Type	Get/Set	0, 0, 15	UINT	T11
177	Start Time	Get/Set	20, 0.1, 500	REAL	T1
178	Start Delay 1	Get/Set	20, 0.1, 500	REAL	T1
179	Start Delay 2	Get/Set	20, 0.1, 500	REAL	T1
180	Start Delay 3	Get/Set	20, 0.1, 500	REAL	T1
181	Backspin Enable	Get/Set	1, 0, 1	UINT	T6
182	Backspin Delay	Get/Set	5, 0.1, 100	REAL	T1
183	Sequence Trips	Get		UINT	T3
184	Stop Count	Get		UINT	T3
185	RY Status Trips	Get		UINT	T3
186	Transfer Type	Get/Set	0, 0, 1	UINT	T41
187	Transfer Level	Get/Set	1.25, 1.0, 3.0	REAL	T1
188	Relay 1 Function	Get/Set	0, 0, 18	UINT	T13
189	Relay 1 Mode	Get/Set	0, 0, 1	UINT	T14
190	Relay 2 Function	Get/ Set	0, 0, 18	UINT	T13
191	Relay 2 Mode	Get/Set	0, 0, 1	UINT	T14
192	Relay 3 Function	Get/ Set	0, 0, 18	UINT	T13
193	Relay 3 Mode	Get/Set	0, 0, 1	UINT	T14
194	Relay 4 Function	Get/ Set	0, 0, 18	UINT	T13
195	Relay 4 Mode	Get/Set	0, 0, 1	UINT	T14
196	Relay 5 Function	Get/ Set	0, 0, 18	UINT	T13
197	Relay 5 Mode	Get/Set	0, 0, 1	UINT	T14
198	Trip/Alarm Summary	Get		WORD	T30
199	Motor Status	Get		WORD	T28
200	Starter Status	Get		UINT	T29
201	Digital Inputs	Get		WORD	T35
202	Relay Outputs	Get		WORD	T36
203	Trip/Alarm Msg 0	Get		UINT	T27
204	Trip/Alarm Msg 1	Get		UINT	T27
205	Trip/Alarm Msg 2	Get		UINT	T27
206	Trip/Alarm Msg 3	Get		UINT	T27
207	Trip/Alarm Msg 4	Get		UINT	T27



Digital Input Class (0x66)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
------------------------	------	----------	---------------------------------	--------------	----------

Input/Instance 1

208	Function	Get/Set	0, 0, 19	UINT	T12
209	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
210	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
211	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
212	Trip Counter	Get		UINT	T3

Input/Instance 2

213	Function	Get/Set	0, 0, 19	UINT	T12
214	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
215	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
216	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
217	Trip Counter	Get		UINT	T3

Input/Instance 3

218	Function	Get/Set	0, 0, 19	UINT	T12
219	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
220	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
221	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
222	Trip Counter	Get		UINT	T3

Input/Instance 4

223	Function	Get/Set	0, 0, 19	UINT	T12
224	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
225	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
226	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
227	Trip Counter	Get		UINT	T3

Input/Instance 5

228	Function	Get/Set	0, 0, 19	UINT	T12
229	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
230	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
231	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
232	Trip Counter	Get		UINT	T3

Input/Instance 6

233	Function	Get/Set	0, 0, 19	UINT	T12
234	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
235	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
236	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
237	Trip Counter	Get		UINT	T3

Input/Instance 7

238	Function	Get/Set	0, 0, 19	UINT	T12
239	Bypass Enable/Disable	Get/Set	1, 0, 1	UINT	T6
240	Bypass Delay	Get/Set	5, 0.5, 100	REAL	T1
241	Trip Delay	Get/Set	0.1, 0.01, 100	REAL	T1
242	Trip Counter	Get		UINT	T3



Analog I/O Class (0x67)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Instance 1

243	Analog In Type	Get/Set	0, 0, 3	UINT	T34
244	High Trip	Get/Set	16, 0.1, 20	REAL	T1
245	Low Trip	Get Set	7, 0.1, 20	REAL	T1
246	Trip Delay	Get/Set	5, 0.01, 100	REAL	T1
247	High Alarm	Get/Set	14, 0.1, 20	REAL	T1
248	Low Alarm	Get/Set	9, 0.1, 20	REAL	T1
249	Alarm Delay	Get/Set	1, 0.01, 100	REAL	T1
250	ASD_4mA	Get/Set	10, 0, 70	REAL	T1
251	ASD_20mA	Get/Set	10, 0, 70	REAL	T1
252	Tach_4mA	Get/Set	10, 0, 100	REAL	T1
253	Tach_20mA	Get/Set	100, 0, 100	REAL	T1
254	Out Parameter	Get/Set	0, 0, 14	UINT	T15
255	Reading	Get	0, 0, 20	REAL	T1
256	High Trips	Get		UINT	T3
257	Low Trips	Get		UINT	T3

RTD Module Class (0x68)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Global RTD Settings (Instance 0)

258	Modules Used	Get/Set	0, 0, 3	UINT	T19
259	Sensor Trip Action	Get/Set	0, 0, 7	UINT	T42
260	Sensor Alarm Action	Get/Set	1, 0, 7	UINT	T43
261	Module Error Trip Action	Get/Set	0, 0, 7	UINT	T42
262	Module Error Alarm Action	Get/Set	1, 0, 7	UINT	T43
263	Module1 Comm Trip Count	Get		UINT	T3
264	Module2 Comm Trip Count	Get		UINT	T3
265	Module3 Comm Trip Count	Get		UINT	T3
266	Sensor Trip Count	Get		UINT	T3
267	Hot Motor Compensation Enable	Get/Set		UINT	T6
268	Hot Motor Compensation Max Bias	Get/Set	150, 40, 200	REAL	T1
269	Hot Motor Compensation Min Bias	Get/Set	40, 40, 200	REAL	T1
270	Max Stator Temp	Get		REAL	T1
271	Max Bearing Temp	Get		REAL	T1
272	Max Load Temp	Get		REAL	T1
273	Max Ambient Temp	Get		REAL	T1
274	Min Stator Temp	Get		REAL	T1
275	Min Bearing Temp	Get		REAL	T1
276	Min Load Temp	Get		REAL	T1
277	Min Ambient Temp	Get		REAL	T1



RTD Module Class (0x68), Continued

PARAMETER	NAME	SERVICES	DEFAULT, MIN, MAX	DATA TYPE	MPS TYPE
RTD Module/Instance 1					
278	RTD #1 Type	Get/Set	0, 0, 4	UINT	T20
279	RTD #2 Type	Get/Set	0, 0, 4	UINT	T20
280	RTD #3 Type	Get/Set	0, 0, 4	UINT	T20
281	RTD #4 Type	Get/Set	0, 0, 4	UINT	T20
282	RTD #5 Type	Get/Set	0, 0, 4	UINT	T20
283	RTD #6 Type	Get/Set	0, 0, 4	UINT	T20
284	RTD #7 Type	Get/Set	0, 0, 4	UINT	T20
285	RTD #8 Type	Get/Set	0, 0, 4	UINT	T20
286	RTD #1 Function	Get/Set	0, 0, 3	UINT	T21
287	RTD #2 Function	Get/Set	0, 0, 3	UINT	T21
288	RTD #3 Function	Get/Set	0, 0, 3	UINT	T21
289	RTD #4 Function	Get/Set	0, 0, 3	UINT	T21
290	RTD #5 Function	Get/Set	0, 0, 3	UINT	T21
291	RTD #6 Function	Get/Set	0, 0, 3	UINT	T21
292	RTD #7 Function	Get/Set	0, 0, 3	UINT	T21
293	RTD #8 Function	Get/Set	0, 0, 3	UINT	T21
294	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL	T1
295	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL	T1
296	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL	T1
297	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL	T1
298	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL	T1
299	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL	T1
300	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL	T1
301	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL	T1
302	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL	T1
303	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL	T1
304	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL	T1
305	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL	T1
306	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL	T1
307	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL	T1
308	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL	T1
309	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL	T1
310	RTD #1 Name	Get/Set	RTD M1 #1	SHORT STRING	T22
311	RTD #2 Name	Get/Set	RTD M1 #2	SHORT STRING	T22
312	RTD #3 Name	Get/Set	RTD M1 #3	SHORT STRING	T22
313	RTD #4 Name	Get/Set	RTD M1 #4	SHORT STRING	T22
314	RTD #5 Name	Get/Set	RTD M1 #5	SHORT STRING	T22
315	RTD #6 Name	Get/Set	RTD M1 #6	SHORT STRING	T22
316	RTD #7 Name	Get/Set	RTD M1 #7	SHORT STRING	T22
317	RTD #8 Name	Get/Set	RTD M1 #8	SHORT STRING	T22
318	RTD #1 Temp Reading	Get		REAL	T1
319	RTD #2 Temp Reading	Get		REAL	T1
320	RTD #3 Temp Reading	Get		REAL	T1
321	RTD #4 Temp Reading	Get		REAL	T1
322	RTD #5 Temp Reading	Get		REAL	T1
323	RTD #6 Temp Reading	Get		REAL	T1
324	RTD #7 Temp Reading	Get		REAL	T1
325	RTD #8 Temp Reading	Get		REAL	T1
326	RTD #1 Trip Counter	Get		UINT	T3
327	RTD #2 Trip Counter	Get		UINT	T3
328	RTD #3 Trip Counter	Get		UINT	T3
329	RTD #4 Trip Counter	Get		UINT	T3
330	RTD #5 Trip Counter	Get		UINT	T3
331	RTD #6 Trip Counter	Get		UINT	T3
332	RTD #7 Trip Counter	Get		UINT	T3
333	RTD #8 Trip Counter	Get		UINT	T3



RTD Module Class (0x68), Continued

PARAMETER	NAME	SERVICES	DEFAULT, MIN, MAX	DATA TYPE	MPS TYPE
RTD Module/Instance 2					
334	RTD #1 Type	Get/Set	0, 0, 4	UINT	T20
335	RTD #2 Type	Get/Set	0, 0, 4	UINT	T20
336	RTD #3 Type	Get/Set	0, 0, 4	UINT	T20
337	RTD #4 Type	Get/Set	0, 0, 4	UINT	T20
338	RTD #5 Type	Get/Set	0, 0, 4	UINT	T20
339	RTD #6 Type	Get/Set	0, 0, 4	UINT	T20
340	RTD #7 Type	Get/Set	0, 0, 4	UINT	T20
341	RTD #8 Type	Get/Set	0, 0, 4	UINT	T20
342	RTD #1 Function	Get/Set	0, 0, 3	UINT	T21
343	RTD #2 Function	Get/Set	0, 0, 3	UINT	T21
344	RTD #3 Function	Get/Set	0, 0, 3	UINT	T21
345	RTD #4 Function	Get/Set	0, 0, 3	UINT	T21
346	RTD #5 Function	Get/Set	0, 0, 3	UINT	T21
347	RTD #6 Function	Get/Set	0, 0, 3	UINT	T21
348	RTD #7 Function	Get/Set	0, 0, 3	UINT	T21
349	RTD #8 Function	Get/Set	0, 0, 3	UINT	T21
350	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL	T1
351	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL	T1
352	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL	T1
353	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL	T1
354	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL	T1
355	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL	T1
356	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL	T1
357	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL	T1
358	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL	T1
359	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL	T1
360	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL	T1
361	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL	T1
362	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL	T1
363	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL	T1
364	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL	T1
365	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL	T1
366	RTD #1 Name	Get/Set	RTD M2 #1	SHORT STRING	T22
367	RTD #2 Name	Get/Set	RTD M2 #2	SHORT STRING	T22
368	RTD #3 Name	Get/Set	RTD M2 #3	SHORT STRING	T22
369	RTD #4 Name	Get/Set	RTD M2 #4	SHORT STRING	T22
370	RTD #5 Name	Get/Set	RTD M2 #5	SHORT STRING	T22
371	RTD #6 Name	Get/Set	RTD M2 #6	SHORT STRING	T22
372	RTD #7 Name	Get/Set	RTD M2 #7	SHORT STRING	T22
373	RTD #8 Name	Get/Set	RTD M2 #8	SHORT STRING	T22
374	RTD #1 Temp Reading	Get		REAL	T1
375	RTD #2 Temp Reading	Get		REAL	T1
376	RTD #3 Temp Reading	Get		REAL	T1
377	RTD #4 Temp Reading	Get		REAL	T1
378	RTD #5 Temp Reading	Get		REAL	T1
379	RTD #6 Temp Reading	Get		REAL	T1
380	RTD #7 Temp Reading	Get		REAL	T1
381	RTD #8 Temp Reading	Get		REAL	T1
382	RTD #1 Trip Counter	Get		UINT	T3
383	RTD #2 Trip Counter	Get		UINT	T3
384	RTD #3 Trip Counter	Get		UINT	T3
385	RTD #4 Trip Counter	Get		UINT	T3
386	RTD #5 Trip Counter	Get		UINT	T3
387	RTD #6 Trip Counter	Get		UINT	T3
388	RTD #7 Trip Counter	Get		UINT	T3
389	RTD #8 Trip Counter	Get		UINT	T3



RTD Module Class (0x68), Continued

PARAMETER	NAME	SERVICES	DEFAULT, MIN, MAX	DATA TYPE	MPS TYPE
RTD Module/Instance 3					
390	RTD #1 Type	Get/Set	0, 0, 4	UINT	T20
391	RTD #2 Type	Get/Set	0, 0, 4	UINT	T20
392	RTD #3 Type	Get/Set	0, 0, 4	UINT	T20
393	RTD #4 Type	Get/Set	0, 0, 4	UINT	T20
394	RTD #5 Type	Get/Set	0, 0, 4	UINT	T20
395	RTD #6 Type	Get/Set	0, 0, 4	UINT	T20
396	RTD #7 Type	Get/Set	0, 0, 4	UINT	T20
397	RTD #8 Type	Get/Set	0, 0, 4	UINT	T20
398	RTD #1 Function	Get/Set	0, 0, 3	UINT	T21
399	RTD #2 Function	Get/Set	0, 0, 3	UINT	T21
400	RTD #3 Function	Get/Set	0, 0, 3	UINT	T21
401	RTD #4 Function	Get/Set	0, 0, 3	UINT	T21
402	RTD #5 Function	Get/Set	0, 0, 3	UINT	T21
403	RTD #6 Function	Get/Set	0, 0, 3	UINT	T21
404	RTD #7 Function	Get/Set	0, 0, 3	UINT	T21
405	RTD #8 Function	Get/Set	0, 0, 3	UINT	T21
406	RTD #1 Trip Level	Get/Set	130, 40, 200	REAL	T1
407	RTD #1 Alarm Level	Get/Set	110, 40, 200	REAL	T1
408	RTD #2 Trip Level	Get/Set	130, 40, 200	REAL	T1
409	RTD #2 Alarm Level	Get/Set	110, 40, 200	REAL	T1
410	RTD #3 Trip Level	Get/Set	130, 40, 200	REAL	T1
411	RTD #3 Alarm Level	Get/Set	110, 40, 200	REAL	T1
412	RTD #4 Trip Level	Get/Set	130, 40, 200	REAL	T1
413	RTD #4 Alarm Level	Get/Set	110, 40, 200	REAL	T1
414	RTD #5 Trip Level	Get/Set	130, 40, 200	REAL	T1
415	RTD #5 Alarm Level	Get/Set	110, 40, 200	REAL	T1
416	RTD #6 Trip Level	Get/Set	130, 40, 200	REAL	T1
417	RTD #6 Alarm Level	Get/Set	110, 40, 200	REAL	T1
418	RTD #7 Trip Level	Get/Set	130, 40, 200	REAL	T1
419	RTD #7 Alarm Level	Get/Set	110, 40, 200	REAL	T1
420	RTD #8 Trip Level	Get/Set	130, 40, 200	REAL	T1
421	RTD #8 Alarm Level	Get/Set	110, 40, 200	REAL	T1
422	RTD #1 Name	Get/Set	RTD M3 #1	SHORT STRING	T22
423	RTD #2 Name	Get/Set	RTD M3 #2	SHORT STRING	T22
424	RTD #3 Name	Get/Set	RTD M3 #3	SHORT STRING	T22
425	RTD #4 Name	Get/Set	RTD M3 #4	SHORT STRING	T22
426	RTD #5 Name	Get/Set	RTD M3 #5	SHORT STRING	T22
427	RTD #6 Name	Get/Set	RTD M3 #6	SHORT STRING	T22
428	RTD #7 Name	Get/Set	RTD M3 #7	SHORT STRING	T22
429	RTD #8 Name	Get/Set	RTD M3 #8	SHORT STRING	T22
430	RTD #1 Temp Reading	Get		REAL	T1
431	RTD #2 Temp Reading	Get		REAL	T1
432	RTD #3 Temp Reading	Get		REAL	T1
433	RTD #4 Temp Reading	Get		REAL	T1
434	RTD #5 Temp Reading	Get		REAL	T1
435	RTD #6 Temp Reading	Get		REAL	T1
436	RTD #7 Temp Reading	Get		REAL	T1
437	RTD #8 Temp Reading	Get		REAL	T1
438	RTD #1 Trip Counter	Get		UINT	T3
439	RTD #2 Trip Counter	Get		UINT	T3
440	RTD #3 Trip Counter	Get		UINT	T3
441	RTD #4 Trip Counter	Get		UINT	T3
442	RTD #5 Trip Counter	Get		UINT	T3
443	RTD #6 Trip Counter	Get		UINT	T3
444	RTD #7 Trip Counter	Get		UINT	T3
445	RTD #8 Trip Counter	Get		UINT	T3



Real-Time Clock Class (0x69)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
446	IRIG Min Offset	Get/Set	0, 0, 30	REAL	T1
447	IRIG Hr Offset	Get/Set	0, 0, 23	REAL	T1
448	RTC Date	Get		DATE	T23
449	RTC Time	Get		TIME OF DAY	T24
450	RTC Set	Get/Set		SHORT_STRING	T31

MPS Register Class (0x6A)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
451	Register 1	Get/Set	0, 0, 1246	UINT	⁽¹⁾
452	Register 2	Get/Set	0, 0, 1246	UINT	⁽¹⁾
453	Register 3	Get/Set	0, 0, 1246	UINT	⁽¹⁾
454	Register 4	Get/Set	0, 0, 1246	UINT	⁽¹⁾
455	Register 5	Get/Set	0, 0, 1246	UINT	⁽¹⁾
456	Register 6	Get/Set	0, 0, 1246	UINT	⁽¹⁾
457	Register 7	Get/Set	0, 0, 1246	UINT	⁽¹⁾
458	Register 8	Get/Set	0, 0, 1246	UINT	⁽¹⁾
459	Register 9	Get/Set	0, 0, 1246	UINT	⁽¹⁾
460	Register 10	Get/Set	0, 0, 1246	UINT	⁽¹⁾
461	Register 11	Get/Set	0, 0, 1246	UINT	⁽¹⁾
462	Register 12	Get/Set	0, 0, 1246	UINT	⁽¹⁾
463	Register 13	Get/Set	0, 0, 1246	UINT	⁽¹⁾
464	Register 14	Get/Set	0, 0, 1246	UINT	⁽¹⁾
465	Register 15	Get/Set	0, 0, 1246	UINT	⁽¹⁾
466	Register 16	Get/Set	0, 0, 1246	UINT	⁽¹⁾

⁽¹⁾ The data type will vary

Identity Class (0x01)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
467	MPS Revision	Get	N/A, 100, N/A	UINT	T3
468	System Name	Get/Set	"Startco MPS"	SHORT_STRING	T22
469	MPS Password	Get/Set	"1111"	SHORT_STRING	T22

DeviceNet Class (0x03)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
470	Net Trip Action	Get/Set	0, 0, 7	UINT	T42
471	Net Alarm Action	Get/Set	0, 0, 7	UINT	T43



DeviceNet Connection Class (0x05)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Instance 1

472	MPS Consuming Assembly ID	Get/Set	0, 0, 4	UINT	T3
473	MPS Producing Assembly ID	Get/Set	5, 0, 9	UINT	T3

Miscellaneous Parameters

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
474	Run-Mode Delay	Get/Set	10, 5, 60	REAL	T1

Data Logging Class (0x6B)

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
---------------------	------	----------	---------------------------	-----------	----------

Instance 1

475	Record Count	Get	0, 0, 65535	UINT	T3
476	Record Head	Get	0, 0, 63	UINT	T3
477	Record Selector	Get/Set	0, 0, 63	UINT	T3
478	Record Date	Get	0, 0, 65535	DATE	T23
479	Record Time	Get	0, 0, 86399999	TOD	T24
480	Record Type	Get	0, 0, 2	UINT	T26
481	Trip Code	Get	0, 0, 255	UINT	T27
482	I _A	Get		REAL	T1
483	I _B	Get		REAL	T1
484	I _C	Get		REAL	T1
485	3I _A	Get		REAL	T1
486	V _{ab}	Get		REAL	T1
487	V _{bc}	Get		REAL	T1
488	V _{ca}	Get		REAL	T1
489	Frequency	Get		REAL	T1
490	S	Get		REAL	T1
491	P	Get		REAL	T1
492	Q	Get		REAL	T1
493	PF	Get		REAL	T1
494	A _{in}	Get		REAL	T1
495	Unbalance I	Get		REAL	T1
496	Unbalance V	Get		REAL	T1
497	Start Time	Get		UINT	T3
498	I ^t Used	Get		REAL	T1
499	M1 RTD1	Get		REAL	T1
500	M1 RTD2	Get		REAL	T1
501	M1 RTD3	Get		REAL	T1
502	M1 RTD4	Get		REAL	T1
503	M1 RTD5	Get		REAL	T1
504	M1 RTD6	Get		REAL	T1
505	M1 RTD7	Get		REAL	T1
506	M1 RTD8	Get		REAL	T1
507	M2 RTD1	Get		REAL	T1
508	M2 RTD2	Get		REAL	T1
509	M2 RTD3	Get		REAL	T1



Data Logging Class (0x6B), Continued

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
Instance 1					
510	M2 RTD4	Get		REAL	T1
511	M2 RTD5	Get		REAL	T1
512	M2 RTD6	Get		REAL	T1
513	M2 RTD7	Get		REAL	T1
514	M2 RTD8	Get		REAL	T1
515	M3 RTD1 ⁽¹⁾	Get		REAL	T1
516	M3 RTD2 ⁽²⁾	Get		REAL	T1
517	M3 RTD3 ⁽³⁾	Get		REAL	T1
518	M3 RTD4 ⁽⁴⁾	Get		REAL	T1
519	M3 RTD5 ⁽⁴⁾	Get		REAL	T1
520	M3 RTD6 ⁽⁴⁾	Get		REAL	T1
521	M3 RTD7 ⁽⁴⁾	Get		REAL	T1
522	M3 RTD8 ⁽⁴⁾	Get		REAL	T1

⁽¹⁾ Phase A differential current for MPS firmware > 2.30

⁽²⁾ Phase B differential current for MPS firmware > 2.30

⁽³⁾ Phase C differential current for MPS firmware > 2.30

⁽⁴⁾ Ignore this value for MPS firmware > 2.30

Miscellaneous Parameters

DEVICENET PARAMETER	NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	MPS TYPE
523	Relay Pulse Time	Get/Set	0.25, 0.05, 10	REAL	T1



This page intentionally left blank.