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POWR-GARD®
Feeder Protection
PGR-7200 SERIES
Feeder Protection Relay

PGR-7200 DEVICENET INTERFACE

MAY 21, 2009

REVISION 1

QUICK SETUP

- Use the operator interface to access the *Setup* | *Hardware* | *Network Comms* menu. Set the *Network ID* for the device and 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.

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DISCLAIMER

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1. GENERAL

This document describes the DeviceNet features supported by the PGR-7200. The PGR-7200 supports Explicit and Polled I/O. It does not support the Unconnected Message Manager (UCMM).

The PGR-7200 is an isolated node and requires both control power for its operation and DeviceNet power for network operation.

2. PGR-7200 DEVICENET INTERFACE

2.1 Connections and Power Requirements

Connection to the PGR-7200 is made through the 5-pin, open style, terminal block, plug-in connector as defined by the DeviceNet standard:

Terminal 1: V-
Terminal 2: CAN-L
Terminal 3: DRAIN
Terminal 4: CAN-H
Terminal 5: V+

The interface requires 30 mA from the 24 Vdc DeviceNet supply.

2.2 PGR-7200 Network Settings

The DeviceNet MAC ID and baud rate is set using the PGR-7200 menu setting. Default settings are MAC ID equal to 63 and baud rate of 125 kb. Settings are located in the *Setup* | *Hardware* | *Network Comms* menu. MAC ID and baud rate can also be set using the DeviceNet object.

Note: Changing network settings using the menus or SE-Comm-RIS will restart the DeviceNet driver.

2.3 PGR-7200 Manual Changes

Appendix D, Register 379/380: Network ID range is 0 to 63. Values greater than 63 will be forced to 63.

2.4 Network Status Display

The DeviceNet communication status can be viewed using the *Metering* | *Network Status* menu.

This menu indicates “ACTIVITY” or “NO CNXNS”. The last communication status is also displayed. The PGR-7200 can be programmed to trip if there is no network activity.

2.5 Network Errors

The PGR-7200 can be configured to trip or alarm on a loss of connection by using the *Setup* | *Hardware* | *Network Comms* menu, or by using attribute 0x64 of the DeviceNet object.

The *Net Trip/Alarm* set point selects the action to be taken when the module has no connections. The latest communication status is displayed in the *Metering* | *Network Status* menu. Communication status displays are listed in Table 2.1.

TABLE 2.1 DeviceNet Status Display

DISPLAY	DESCRIPTION
Rx OVR	Receive Q Overrun [1]
Tx OVR	Transmit Q Overrun [1]
CAN OVR	CAN Overrun [1]
Dup MAC	Duplicate MAC [2]
Bus Sense	DeviceNet Power Off [3]
MAC Set	MAC Was Set [1]
ID Rst 0	ID Reset 0 [1]
ID Rst 1	ID Reset 1 [4]
Bus Off	Error on the Bus [2]
Expl T/O	Explicit Timeout
IO T/O	I/O Timeout [5]
IO Delete	I/O Connection Deleted
Drv Error	Driver Error [1]

[1] Driver is restarted.
[2] Faulted state with NS RED LED ON. Driver will attempt a restart after 120 seconds.
[3] NS LED off. Driver halted until DeviceNet power is applied.
[4] PGR-7200 is restarted with address 63 and baud rate of 125 kB.
[5] NS flashes RED until a new connection is established.

2.6 Configuration Using RSNetWorx

Use the EDS Wizard to register the eds file. The device will register as a Motor Starter named PGR-7200. 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 PGR-7200.

Parameters accessible using RSNetWorx have a DeviceNet parameter number listed in the DeviceNet Objects sections of this manual. The corresponding PGR-7200 register number is also shown where applicable.

PGR-7200 firmware revisions may also require a revision change to the eds file. RSNetWorx will indicate an error if the Major Rev number of the eds file does not match the value read from the PGR-7200. Select the eds file that matches the PGR-7200 revision number.

Note: A DeviceNet profile does not exist for a feeder-protection relay. The Motor Starter device is used.

2.7 LED Indication

Two LED’s on the rear panel of the PGR-7200 indicate Network Status (NS) and Module Status (MS). The MS LED is ON when the DeviceNet driver is enabled in the PGR-7200, and OFF when the driver is disabled. The NS LED is OFF when DeviceNet power is off and also OFF during the Duplicate MAC check, when there are no other nodes on the network. The NS LED flashes green after the Duplicate MAC check is complete and is

steady green when a connection is established. The NS LED flashes red when an I/O connection has timed out and is steady red if a Duplicate MAC or Bus Off condition exists.

Note: On loss of an I/O connection, the NS LED remains flashing red until a new connection is established.

2.8 Conformance Tests

Software passes Conformance Test Version A-17

Hardware passes the Physical Layer Test Version B4

The EDS file passes EDS file Test Version 2.17

TABLE 3.1 DeviceNet 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
0x66	RTC
0x67	User-Defined Registers
0x68	Data Logging
0x69	Inverse Curve

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

3. DEVICENET OBJECTS

(In Order of Class Number)

The module supports the following objects:

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 MACID and baud rate.

Parameter = 1: The MACID is set to 63 and the baud rate is set to 125 kb. The PGR-7200 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	COMM REGISTER
1		Vendor ID	Get	Identification of each vendor by number	1145	UINT	
2		Device Type	Get	Starter Device	22	UINT	
3		Product Code	Get	Hardware platform number	1302	UINT	0
4		Revision	Get	Major revision must match the eds value (Major.Minor)		A2 02 C6 C6	
5		Status	Get	Summary Status of the device	0, 0, 255	WORD	

Identity Class 1, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA	COMM REGISTER
6	1	Serial Number	Get	PGR-7200 Serial Number	N/A, 0, 999999999	UDINT	2/3
7		Product Name	Get	Human readable identification	"POWR-GARD PGR-7200"	SHORT_ STRING	
100 (0x64)	2	Revision	Get	Revision of Firmware 100 = 1.00	N/A, 100, N/A	UINT	1
101 (0x65)	3	System Name	Get/Set	22 characters. Only 20 significant.	"POWR-GARD PGR-7200"	SHORT_ STRING	600
102 (0x66)	4	Password	Get/Set	22 characters. Only 4 significant.	"1111"	SHORT_ STRING	590
103 (0x67)	5	Password timeout	Get/Set	Password timeout in minutes.	10, 1, 60	REAL	271

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	COMM REGISTER
1		MAC ID	Get/Set(1)	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		Bus-Off Interrupt	Get/Set(1)	Define processing of BOI 0 = Hold CAN in reset 1 = Automatic CAN reset. Connections will be lost Value set to 0 when supply voltage is cycled.	0, 1, 0	BOOL	

DeviceNet Class 3, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
4		Bus-Off Counter	Get/Set(1)	Number of times CAN went to the bus-off state. Writing any value clears counter. Count held at 255. Count cleared when supply voltage is cycled.	0, 0, 255	USINT	
5		Allocation Information	Get	Master/Slave allocation indication	Array	BYTE, USINT	
100 (0x64)	6	Net Trip Action	Get/Set	Trip Action taken 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	381
101 (0x65)	7	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	382
102 (0x66)	8	Net Count	Get	Count the number of network trips		UINT	1191

(1)Will take effect on power-up reset or by a reset request to the Identity object. Does not have to conform to A-19.

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)	10	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)	2, 0, 2	UINT

DeviceNet Connection Class 5, Instance 0 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
101 (0x65)	11	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 (0x35) 5 = User Registers (0x64)	5, 0, 5	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
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

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

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
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
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 33	EPATH

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
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	2	UINT
2	Max Instance	Get	Maximum instance of assembly	0x64	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 DeviceNet parameter 11 to the desired ID:

PRODUCING ASSEMBLY ID	INSTANCE	DESCRIPTION	DATA SIZE IN BYTES	SYMBOLIC IO CONNECTION PATH
5	100 (0x64)	User Registers (Default)	64	62 36 34
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

The following static output instance are supported and can be selected by setting DeviceNet parameter 10 to the desired ID (Default it as None):

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

Assemblies are configured using attributes 0x64 and 0x65 of Class 5, by selected by setting the Produced and Consumed connection path attribute in the Polled I/O connection instance, or by using the Setup 1 Hardware/Network Comms menu. 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, use class, instance, and attribute as indicated in Table 3.2.

TABLE 3.2 Explicit Messaging

INSTANCE	SERVICES	CLASS_INSTANCE_ ATTRIBUTE
0x02	Get/Set	04_02_03
0x03	Get/Set	04_03_03
0x32	Get	04_32_03
0x33	Get	04_33_03
0x34	Get	04_34_03
0x35	Get	04_35_03
0x64	Get	04_64_03

I/O Assembly Instance Attributes

The following are the attributes that are supported as part of the Control Supervisor. These can be individually accessed and are also part of the pre-defined DeviceNet assemblies.

Faulted

This bit is "1" when there is a Trip1, Trip2, or Trip3 condition on the PGR-7200 or "0" when there are no trips. Trips are reset using Explicit Messaging commands using 29-01-64, 29-01-0C or by using the FaultReset bit of the output assembly.

Warning

This bit is "1" when there is an Alarm1, Alarm2, or Alarm3 and "0" when there are no alarms.

Running1

This bit is "1" when current is detected and "0" when there is no current.

Ready

This bit is "1" when there are no trips and the PGR-7200. Remote Alarm set point is enabled.

CtrlFromNet

This bit is "1" when one of the PGR-7200 output relays is assigned to *Network Run1.* The assigned relay will follow the state of the Run1 bit of the Control Supervisor attribute 3. This bit is also bit 1 of output assembly instance 3.

Run1

When CtrlFromNet is "1", Run1 determines the state of the relay assigned to *Network Run 1*. When Run1 is "0", the relay is de-energized and when Run1 is "1" the relay is energized.

Note: When the DeviceNet protocol starts or if an internal protocol error occurs, the Run1 bit is cleared.

FaultReset

This bit is used to reset PGR-7200 trips. A transition from "0" to "1" will issue a reset to the PGR-7200.

This attribute is also updated when a "Reset Trips" command is issued using 29-01-64. When using 29-01-64 commands, a transition on the command or the FaultReset bit is not required.

Assembly Class (4), Instance (0x64), Attribute (3)

Produced Connection Path = "62 36 34"

This assembly is used to access any combination of 32 user-defined registers in the PGR-7200. Assembly size is fixed at 64 bytes. User defined registers are programmed in the PGR-7200 using the *Setup* | *Hardware* | *Network Comms* | *User Registers* menu, or by explicit messaging to Class 0x64 via the configuration tool. Register values are not DeviceNet parameter numbers but the register numbers defined in Appendix D of the PGR-7200 manual. Each PGR-7200 register in Appendix D defines a 16-bit value. For 32-bit float types (DeviceNet REAL), a register pair needs to be entered. For example, to configure an assembly to read the first four meter values, enter register numbers 860, 861, 862, 863, 864, 865, 866, 867 in order. The first 16 bytes of the assembly will contain the meter data and the remaining bytes do not contain any valid data.

Build assemblies so that REAL types fall on a 32-bit boundry. This simplifies access and type conversions within the PLC's DeviceNet scanner.

Note: Byte order follows the DeviceNet convention and is not the same as indicated in Appendix D of the PGR-7200 manual, however 32-bit values are specified as 2 registers in order as per the above example.

Input Assemblies

INPUT 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 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 – Basic Overload
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 – Extended Overload
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 – Basic Starter
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 – Extended Motor Starter 1
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	CtrlfromNet	Ready	Reserved	Running1	Warning	Faulted/ Trip

Output Assemblies

OUTPUT ASSEMBLY BIT	NAME	CLASS NAME	CLASS	INSTANCE	ATTRIBUTE
Bit 0	Run1	Control Supervisor	0x29	1	3
Bit 2	Fault Reset	Control Supervisor	0x29	1	12

Assembly Class 4, Instance 0x02, Attribute 3 – Output – Basic Overload
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 – Basic Motor Starter
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

3.6 Control Supervisor Object

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: Resets attributes 3, 12, 100

Supervisor Class 0x29, Instance 1 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	PGR-7200 REGISTER
3		Run1 (1)	Get/Set	Run 1 input to PGR-7200	0, 0, 1	BOOL	
7		Running	Get	Current detected	0, 0, 1	BOOL	
9		Ready	Get	No trips and Run1 enabled	0, 0, 1	BOOL	
10 (0x0A)		Faulted	Get	Unit is tripped	0, 0, 1	BOOL	
11 (0x0B)		Warning	Get	Unit in alarm	0, 0, 1	BOOL	
12 (0x0C)		FaultReset(2)	Get/Set	Reset issued on 0 - >1 transition	0, 0, 1	BOOL	
15 (0x0F)		CtrlFromNet	Get	1 = Relay assigned to "Network Run1"	N/A	BOOL	
100 (0x64)	15	Command	Get/Set	A command "Set" will cause the requested command to be issued to the PGR-7200. A "Get" will read the last command. 0 = Reserved 1 = Reserved 2 = Reserved 3 = Reset Trips 4 = Set RTC 5 = Clear Data Logging Records 6 = Clear Trips Counters 7 = Reserved 8 = Clear Running Time 9 = Emergency I²t Reset 10 = Reserved 11 = Reserved 12 = Re-enable PTC/RTD 13 = Remote/Net Trip Set 14 = Remote/Net Trip Clear 15 = Remote/Net Alarm Set 16 = Remote/Net Alarm Clear 17 = Run1 Set 18 = Run1 Clear	0, 0, 18	USINT	
101 (0x65)	16	TA Summary	Get	Trip, Alarm, Status Summary Bit 4: 1 = Trip1 Bit 5: 1 = Trip2 Bit 6: 1 = Trip3 Bit 7: 1 = Alarm1 Bit 8: 1 = Alarm2 Bit 9: 1 = Alarm3	0, 0, 1023	WORD	1096

(1) At least one relay must be assigned to "Network Run1".
(2) A transition from 0 to 1 is required.

Supervisor Class 0x29, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
102 (0x66)	17	Status	Get	Bit 0: 1 = I > Threshold Bit 1: 1 = $3I_0$ Inverse Picked up Bit 2: 1 = Ph Inverse Picked up Bit 4: 1 = ETR on Bit 8: 1 = Digital Input valid Bit 9: 1 = RY1 on Bit 10: 1 = RY2 on Bit 11: 1 = RY3 on	0, 0, 4095	WORD	1097
103 (0x67)	18	Trip/Alarm Group 0	Get	Trip and Alarm Bits 0-15		UINT	1104
104 (0x68)	19	Trip/Alarm Group 1	Get	Trip and Alarm Bits 16-31		UINT	1105
105 (0x69)	20	Trip/Alarm Group 2	Get	Trip and Alarm Bits 32-47		UINT	1106
106 (0x6A)	21	Trip/Alarm Group 3	Get	Trip and Alarm Bits 48-63		UINT	1107
107 (0x6B)	22	Trip/Alarm Group 4	Get	Trip and Alarm Bits 64-79		UINT	1108
108 (0x6C)	23	Trip/Alarm Group 5	Get	Trip and Alarm Bits 80-95		UINT	1109
109 (0x6D)	24	Trip/Alarm Group 6	Get	Trip and Alarm Bits 96-111		UINT	1110
110 (0x6E)	25	Trip/Alarm Group 7	Get	Trip and Alarm Bits 112-127		UINT	1111
111 (0x6F)	26	RY1 Function	Get/Set	Function Assigned to Relay 1 0 = None 1 = Trip1 2 = Trip2 3 = Trip3 4 = Alarm1 5 = Alarm2 6 = Alarm3 7 = Current Detected 8 = Reserved 9 = Reserved 10 = Trip1 Pulse 11 = Watchdog 12 = Network Run1	0, 0, 12	UINT	334
112 (0x70)	27	RY1 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT	335
113 (0x71)	28	RY2 Function	Get/Set	See Attribute 0x6F	0, 0, 12	UINT	336
114 (0x72)	29	RY2 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT	337
115 (0x73)	30	RY3 Function	Get/Set	See Attribute 0x6F	0, 0, 12	UINT	338
116 (0x74)	31	RY3 Mode	Get/Set	0 = Fail Safe, 1 = Non Fail Safe	0, 0, 1	UINT	339
117 (0x75)	32	RY Pulse Time	Get/Set	Specifies the duration of the trip pulse when the RY function is set to “Trip1 Pulse”	0.05, 0.25, 10	REAL	340/ 341

Supervisor Class 0x29, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
118 (0x76)	33	Din Function	Get/Set	Digital Input function selection 0 = Input not used 1 = Trip1 2 = Reset 3 = Program Enable 4 = Set-Point Group	0, 0, 4	UINT	280
119 (0x77)	34	Set-Point Group	Get/Set	Selects Set-Point Group 0 = Group 1 1 = Group 2	0,0,1	UINT	7
120 (0x78)	35	Reserved					
121 (0x79)	36	Din Trip Delay	Get/Set	Applies when Trip1 is selected.	0.1, 0.01, 100	REAL	281/ 282
122 (0x7A)	37	Din Trip Count	Get	Number of times the Digital Input has tripped		UINT	1145
123 (0x7B)	38	Aout Param	Get/Set	Specifies the Analog Output parameter. 0 = Phase Current 1 = Earth Leakage (CT measured) 2 = Earth Leakage (calculated) 3 = Used I^2t 4 = Reserved 5 = Reserved 6 = Reserved 7 = Reserved 8 = Reserved 9 = Unbalance 10 = Zero 11 = Full Scale	0, 0, 11	UINT	373
124 (0x7C)	39	Reserved					
125 (0x7D)	40	OPI 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	270
126 (0x7E)	41	OPI Trip Count	Get	Number of OPI comm trips		UINT	1189
127 (0x7F)	42	Temp Sensor	Get/Set	Selects the temperature sensor 0 = Disabled 1 = RTD 2 = PTC	0, 0, 2	UINT	560
128 (0x80)	43	Temp SensorCount	Get	RTD sensor trip count		UINT	1148
129 (0x81)	44	Remote 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	230

Supervisor Class 0x29, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
130 (0x82)	45	Remote 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	0, 0, 7	UINT	231
131 (0x83)	46	Remote Trip Count	Get	Number of Remote Trips		UINT	1192
132 (0x84)	47	UPI Select	Get/Set	Selects UPI Function 0 = None 1 = Trip1 2 = Trip2 3 = Trip3 4 = Alarm1 5 = Alarm2 6 = Alarm3 7 = Relay1 8 = Relay2 9 = Relay3 10 = Digital Input 11 = Current Detected 12 = Reserved 13 = Reserved 14 = Reserved 15 = Reserved 16 = Network Run1 17 = Net Activity	0, 0, 17	UINT	273
133 (0x85)	48	CT Primary	Get/Set	CT Primary Rating (A)	100, 1, 5000	REAL	251/252
134 (0x86)	49	EFCT Primary	Get/Set	EFCT Primary Rating (A)	5, 1, 5000	REAL	253/254
135 (0x87)	50	Frequency	Get/Set	System Frequency 0 = 50, 1 = 60 Hz	1, 0	UINT	250
136 (0x88)	51	I_A	Get	Phase A Current (A)		REAL	860/861
137 (0x89)	52	I_B	Get	Phase B Current (B)		REAL	862/863
138 (0x8A)	53	I_C	Get	Phase C Current (C)		REAL	864/865
139 (0x8B)	54	Ict	Get	Ground-Fault Current (A) from CT		REAL	866/867
140 (0x8C)	55	$3I_0$	Get	Ground-Fault Current (A) calculated		REAL	868/869
141 (0x8D)	56	+Seq Current	Get	Positive Sequence Current (Pu)		REAL	870/871
142 (0x8E)	57	-Seq Current	Get	Negative Sequence Current (Pu)		REAL	872/873
143 (0x8F)	58	Unbalance Current	Get	Current Unbalance (Pu)		REAL	874/875
144 (0x90)	59	Used I^2t	Get	Used Thermal Capacity (Pu)		REAL	876/877
145 (0x91)	60	Thermal Trend	Get	Thermal Trend (Pu)		REAL	878/879
146 (0x92)	61	RTD Temp	Get	RTD Temperature		REAL	880/881
147 (0x93)	62	Thermal Time	Get	Overload trip or reset time		REAL	882/883
148 (0x94)	63	Run Time	Get	Run Time. Time with current detected		UDINT	884/885

Supervisor Class 0x29, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
149 (0x95)	64	I_2/I_1 Threshold	Get/Set	Unbalance (I_2/I_1) Threshold	0.25, 0.10, 0.50	REAL	255/256
150 (0x96)	65	Sensor-Error Trip Action	Get/Set	As per Attribute 129	0. 0, 7	UINT	388
151 (0x97)	66	Sensor-Error Alarm Action	Get/Set	As per Attrbute 130	0, 0, 7	UINT	389
152(0x98)	67	Default Menu	Get/Set	Selects Default Display 0: Main 1: Current 2: Unbalance 3: Earth Leakage 4: Thermal Status 5: Inverse Status 6: Local Sensor 7: Ilo Status 8: System Status 9: Network Status	0, 0, 9	UINT	274

3.7 Overload

Overload Object Class Services

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

Overload Class 0x2C, Instance 0 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1		Revision	Get	Revision of this object	1	UINT	
2		Max Instance	Get	Maximum number of instances	2	UINT	
100 (0x64)	68	Reset Type	Get/Set	Specifies Type of Reset	0, 0, 2	UINT	44
100 (0x65)	69	Reset Level	Get/Set	Specifies Reset Level	0.3, 0.1, 0.9	REAL	45/46

Overload Object Instance Services

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

Overload Class 0x2C, Instance 1 Attributes – Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
100 (0x64)	70	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	8

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

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
101 (0x65)	71	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	9
102 (0x66)	72	Reserved					
103 (0x67)	73	Pickup	Get/Set	O/L Curve Pickup Level	1, 0.1, 1.25	REAL	11/12
104 (0x68)	74	Reserved					
105 (0x69)	75	H-Factor	Get/Set	Hot Factor Multiplier For I < 100%	0.5, 0.1, 1.0	REAL	15/16
106 (0x6A)	76	C-Factor	Get/Set	Time-Constant Multiplier when cooling	2, 1, 10	REAL	17/18
107 (0x6B)	77	Time Constant	Get/Set	Thermal Time Constant in minutes	10, 1, 60	REAL	19/20
108 (0x6C)	78	Alarm Level	Get/Set	Level where alarm occurs	1.0, 0.5, 1.0	REAL	21/22
109 (0x6D)	79	Trip Count	Get	Counts number of trips		UINT	1130

Overload Class 0x2C, Instance 2 Attributes – Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
100 (0x64)	80	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	26
101 (0x65)	81	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	27
102 (0x66)	82	Reserved					
103 (0x67)	83	Pickup	Get/Set	O/L Curve Pickup Level	1, 0.1, 1.25	REAL	29/30
104 (0x68)	84	Reserved					
105 (0x69)	85	H-Factor	Get/Set	Hot Factor Multiplier For I < 100%	0.5, 0.1, 1.0	REAL	33/34
106 (0x6A)	86	C-Factor	Get/Set	Time-Constant Multiplier when cooling	2, 1, 10	REAL	35/36
107 (0x6B)	87	Time Constant	Get/Set	Thermal Time Constant in minutes	10, 1, 60	REAL	37/38
108 (0x6C)	88	Alarm Level	Get/Set	Level where alarm occurs	1.0, 0.5, 1.0	REAL	39/40
109 (0x6D)	89	Trip Count	Get	Counts number of trips		UINT	1131

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	2	UINT
2	Max Instance	Get	Number of last instance	11 (0x0B)	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
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

Class 0x64, Instance 1 - Definite-Time Overcurrent, Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	100	Trip Action	Get/Set	0, 0, 7	UINT	70
2	101	Alarm Action	Get/Set	0, 0, 7	UINT	71
3	102	Trip Level	Get/Set	10, 1, 15	REAL	72/73
4	103	Trip Delay	Get/Set	0.05, 0, 10	REAL	74/75
5	104	Alarm Level	Get/Set	10, 0.1, 15	REAL	76/77
6	105	Alarm Delay	Get/Set	0.05, 0, 10	REAL	78/79
7	106	Trip Count	Get/Set		UINT	1134

Class 0x64, Instance 2 - Definite-Time Overcurrent, Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	107	Trip Action	Get/Set	0, 0, 7	UINT	84
2	108	Alarm Action	Get/Set	0, 0, 7	UINT	85
3	109	Trip Level	Get/Set	10, 1, 15	REAL	86/87
4	110	Trip Delay	Get/Set	0.05, 0, 10	REAL	88/89
5	111	Alarm Level	Get/Set	10, 0.1, 15	REAL	90/91
6	112	Alarm Delay	Get/Set	0.05, 0, 10	REAL	92/93
7	113	Trip Count	Get/Set		UINT	1135

Class 0x64, Instance 3 – $3I_0$ Definite-Time Earth Fault, Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	114	Trip Action	Get/Set	0, 0, 7	UINT	120
2	115	Alarm Action	Get/Set	0, 0, 7	UINT	121
3	116	Trip Level	Get/Set	10, 0.1, 15	REAL	122/123
4	117	Trip Delay	Get/Set	0.05, 0, 10	REAL	124/125
5	118	Alarm Level	Get/Set	10, 0.1, 15	REAL	126/127
6	119	Alarm Delay	Get/Set	0.05, 0, 10	REAL	128/129
7	120	Trip Count	Get		UINT	1138

Class 0x64, Instance 4 – $3I_0$ Definite-Time Earth Fault, Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	121	Trip Action	Get/Set	0, 0, 7	UINT	136
2	122	Alarm Action	Get/Set	0, 0, 7	UINT	137
3	123	Trip Level	Get/Set	10, 0.1, 15	REAL	138/139
4	124	Trip Delay	Get/Set	0.05, 0, 10	REAL	140,141
5	125	Alarm Level	Get/Set	10, 0.1, 15	REAL	142/143
6	126	Alarm Delay	Get/Set	0.05, 0, 10	REAL	144/145
7	127	Trip Count	Get		UINT	1139

Class 0x64, Instance 5 – EFCT Definite-Time, Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	128	Trip Action	Get/Set	0, 0, 7	UINT	150
2	129	Alarm Action	Get/Set	0, 0, 7	UINT	151
3	130	Trip Level	Get/Set	0.4, 0.01, 1	REAL	152/153
4	131	Trip Delay	Get/Set	0.25, 0, 100	REAL	154/155
5	132	Alarm Level	Get/Set	0.2, 0.01, 1	REAL	156/157
6	133	Alarm Delay	Get/Set	1, 0, 100	REAL	158/159
7	134	Trip Count	Get		UINT	1140

Class 0x64, Instance 6 - EFCT Definite-Time, Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	135	Trip Action	Get/Set	0, 0, 7	UINT	166
2	136	Alarm Action	Get/Set	0, 0, 7	UINT	167
3	137	Trip Level	Get/Set	0.4, 0.01, 1	REAL	168/169
4	138	Trip Delay	Get/Set	0.25, 0, 100	REAL	170/171
5	139	Alarm Level	Get/Set	0.2, 0.01, 1	REAL	172/173
6	140	Alarm Delay	Get/Set	1, 0, 100	REAL	174/175
7	141	Trip Count	Get		UINT	1141

Class 0x64, Instance 7 – Current Unbalance

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	142	Trip Action	Get/Set	1, 0, 7	UINT	180
2	143	Alarm Action	Get/Set	1, 0, 7	UINT	181
3	144	Trip Level	Get/Set	0.25, 0.05, 1	REAL	182/183
4	145	Trip Delay	Get/Set	15, 1, 100	REAL	184/185
5	146	Alarm Level	Get/Set	0.10, 0.05, 1	REAL	186/187
6	147	Alarm Delay	Get/Set	10, 1, 100	REAL	188/189
7	148	Trip Count	Get		UINT	1142

Class 0x64, Instance 8 – Phase Reverse

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	149	Trip Action	Get/Set	0, 0, 7	UINT	192
2	150	Alarm Action	Get/Set	0, 0, 7	UINT	193
4	151	Trip Delay	Get/Set	5, 1, 100	REAL	194/195
6	152	Alarm Delay	Get/Set	2, 1, 100	REAL	196/197
7	153	Trip Count	Get		UINT	1143

Class 0x64, Instance 9 – Phase Loss

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	154	Trip Action	Get/Set	0, 0, 7	UINT	198
2	155	Alarm Action	Get/Set	0, 0, 7	UINT	199
4	156	Trip Delay	Get/Set	5, 1, 100	REAL	200/201
6	157	Alarm Delay	Get/Set	2, 1, 100	REAL	202/203
7	158	Trip Count	Get		UINT	1144

Class 0x64, Instance 0x0A - PTC Temperature

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	260	Trip Action	Get/Set	0, 0, 7	UINT	561
2	261	Alarm Action	Get/Set	0, 0, 7	UINT	562
7	262	Trip Count	Get		UINT	1147

Class 0x64, Instance 0x0B – RTD Sensor

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	263	Trip Action	Get/Set	1, 0, 7	UINT	563
2	264	Alarm Action	Get/Set	1, 0, 7	UINT	568
3	265	Trip Level	Get/Set	200, 40, 230	REAL	564/565
5	266	Alarm Level	Get/Set	130, 40, 230	REAL	566/567
7	267	Trip Count	Get		UINT	1146

3.9 RTC Class 0x66

RTC Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

RTC 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	1	UINT

RTC Object Class Services

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

RTC Class 0x66, Instance 1 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	160	RTC Date	Get	Number of days since 1972-01-01		DATE	574/575
2	161	RTC Time	Get	Number of milliseconds since 00:00:00:00.000		TIME OF DAY	576/577
3	162	RTC Set	Get/Set (1)	String used to set the date and time YY/MM/DD-HH:MM:SS		SHORT_ STRING	580-589

(1) Time value is transferred to the RTC with SET RTC command issued using Class 0x29, Instance 1, Attribute 0x64. (DeviceNet Parameter 15)

3.10 User-Defined Register Class 0x67

This object defines the PGR-7200 registers that generate the data for Assembly Class 4, Instance 0x64, Attribute 3. Register values are defined in Appendix E of the PGR-7200 Manual and also listed in the PGR-7200 REGISTER column in this manual. Enter the register number for the required parameter data. Parameter data is 16 bits and two registers must be defined to retrieve a 32-bit float value. For example, to configure an assembly to read the first four meter values, enter 860, 861, 862, 863, 864, 865, 866, and 867 in User Registers 0 to 7. The first 16 bytes of the assembly will contain the RTD data and the remainder of the assembly will not contain any valid data. Register definitions resulting in more than 64 bytes of data will be ignored.

User-Defined Register Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

User-Defined Register 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

User-Defined Register Object Instance Services

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

User-Defined Register Class 0x67, Instance 1 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	170	Register 0	Get/Set	User Register 0	0, 0, 1274	UINT	1400
2	171	Register 1	Get/Set	User Register 1	0, 0, 1274	UINT	1401
3	172	Register 2	Get/Set	User Register 2	0, 0, 1274	UINT	1402
4	173	Register 3	Get/Set	User Register 3	0, 0, 1274	UINT	1403
5	174	Register 4	Get/Set	User Register 4	0, 0, 1274	UINT	1404
6	175	Register 5	Get/Set	User Register 5	0, 0, 1274	UINT	1405
7	176	Register 6	Get/Set	User Register 6	0, 0, 1274	UINT	1406
8	177	Register 7	Get/Set	User Register 7	0, 0, 1274	UINT	1407
9	178	Register 8	Get/Set	User Register 8	0, 0, 1274	UINT	1408
10	179	Register 9	Get/Set	User Register 9	0, 0, 1274	UINT	1409
11	180	Register 10	Get/Set	User Register 10	0, 0, 1274	UINT	1410
12	181	Register 11	Get/Set	User Register 11	0, 0, 1274	UINT	1411
13	182	Register 12	Get/Set	User Register 12	0, 0, 1274	UINT	1412
14	183	Register 13	Get/Set	User Register 13	0, 0, 1274	UINT	1413

User-Defined Register Class 0x67, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
15	184	Register 14	Get/Set	User Register 14	0, 0, 1274	UINT	1414
16	185	Register 15	Get/Set	User Register 15	0, 0, 1274	UINT	1415
17	186	Register 16	Get/Set	User Register 16	0, 0, 1274	UINT	1416
18	187	Register 17	Get/Set	User Register 17	0, 0, 1274	UINT	1417
19	188	Register 18	Get/Set	User Register 18	0, 0, 1274	UINT	1418
20	189	Register 19	Get/Set	User Register 19	0, 0, 1274	UINT	1419
21	190	Register 20	Get/Set	User Register 20	0, 0, 1274	UINT	1420
22	191	Register 21	Get/Set	User Register 21	0, 0, 1274	UINT	1421
23	192	Register 22	Get/Set	User Register 22	0, 0, 1274	UINT	1422
24	193	Register 23	Get/Set	User Register 23	0, 0, 1274	UINT	1423
25	194	Register 24	Get/Set	User Register 24	0, 0, 1274	UINT	1424
26	195	Register 25	Get/Set	User Register 25	0, 0, 1274	UINT	1425
27	196	Register 26	Get/Set	User Register 26	0, 0, 1274	UINT	1426
28	197	Register 27	Get/Set	User Register 27	0, 0, 1274	UINT	1427
29	198	Register 28	Get/Set	User Register 28	0, 0, 1274	UINT	1428
30	199	Register 29	Get/Set	User Register 29	0, 0, 1274	UINT	1429
31	200	Register 30	Get/Set	User Register 30	0, 0, 1274	UINT	1430
32	201	Register 31	Get/Set	User Register 31	0, 0, 1274	UINT	1431

3.11 Data Logging Class 0x68

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 0x68, 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 0x68, Instance 1 Attributes

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	210	Record Count	Get	Number of captured records since the last time the event records were cleared	0, 0, 65535	UINT	973
2	211	Record Head	Get	Points to next record. Latest record at Record Head – 1	0, 0, 99	UINT	974
3	212	Record ID	Get/Set	Selects the record for which the data is displayed in this instance	0, 0, 99	UINT	975
4	213	Record Date	Get	The date when the record was captured	0, 0, 65535	DATE	976/977

Data Logging Class 0x68, Instance 1 Attributes (Continued)

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
5	214	Record Time	Get	Time-of-Day the record was captured	0, 0, 86399999	TOD	978/979
6	215	Record Type	Get	Specifies the trigger source 0 = Record Empty 1 = Triggered by trip 2 = Triggered by ETR	0, 0, 3	UINT	980
7	216	Trip Code	Get	See Product Manual Appendix F T27 for a list of trip codes. 255 = No Trip or Alarm	0, 0, 255	UINT	981
8	217	I_A	Get	Phase A Current (A) [1]		REAL	982/983
9	218	I_B	Get	Phase B Current (A) [1]		REAL	984/985
10 (0x0A)	219	I_C	Get	Phase C Current (A) [1]		REAL	986/987
11 (0x0B)	220	Ict	Get	Ground-Fault Current (A) [1]		REAL	988/989
12 (0x0C)	221	$3I_0$	Get	Residual Ground Fault		REAL	990/991
13 (0x0D)	222	Unbalance	Get	Current Unbalance (pu) [1]		REAL	992/993
14 (0x0E)	223	I^2t Used	Get	Used I^2t from overload model		REAL	994/995
15 (0x0F)	224	RTD Reading	Get	RTD Reading		REAL	996/997

3.12 Inverse Curve Class 0x69

Inverse Curve Object Class Services

Get_Attribute_Single: Returns contents of specified attribute.

Inverse Curve 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	4	UINT

Inverse Curve Object Instance Services

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

The inverse curve class consists of five attributes.

Attribute 1 - Trip Action

Specifies the action to take on a trip.

0 = Disable Trip
1 = Trip1
2 = Trip2
3 = Trip3
4 = Trip1 & Trip2
5 = Trip1 & Trip3
6 = Trip1 & Trip2 & Trip3
7 = Trip2 & Trip3

Attribute 2 – Curve

0 = IEC Normal Inverse A
1 = IEC Very Inverse B
2 = IEC Extreme Inverse C
3 = IEC Short Inverse A
4 = IEC Long Inverse B
5 = IEEE Moderate Inverse
6 = IEEE Very Inverse
7 = IEEE Extreme Inverse

Attribute 3 – Multiplier

Adjusts the trip time for the selected curve type.

Attribute 4 – Pickup

Sets the threshold current in multiples of CT rating.

Attribute 5 – Trip Count

Trip counter for the set point.

For curve formulas, see the PGR-7200 manual.

Class 0x69, Instance 1 – Phase Inverse, Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	230	Trip Action	Get/Set	1, 0, 7	UINT	50
2	231	Curve	Get/Set	0, 0, 7	UINT	51
3	232	Multiplier	Get/Set	0.2, 0.05, 1	REAL	52/53
4	233	Pickup	Get/Set	2, 0.1, 10	REAL	54/55
5	234	Trip Count	Get		UINT	1132

Class 0x69, Instance 2 – Phase Inverse, Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	235	Trip Action	Get/Set	1, 0, 7	UINT	60
2	236	Curve	Get/Set	0, 0, 7	UINT	61
3	237	Multiplier	Get/Set	0.2, 0.05, 1	REAL	62/63
4	238	Pickup	Get/Set	2, 0.1, 10	REAL	64/65
5	239	Trip Count	Get		UINT	1133

Class 0x69, Instance 3 – $3I_0$ Inverse, Group 1

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	240	Trip Action	Get/Set	1, 0, 7	UINT	100
2	241	Curve	Get/Set	0, 0, 7	UINT	101
3	242	Multiplier	Get/Set	0.2, 0.05, 1	REAL	102/103
4	243	Pickup	Get/Set	2, 0.1, 10	REAL	104/105
5	244	Trip Count	Get		UINT	1136

Class 0x69, Instance 4 – $3I_0$ Inverse, Group 2

ATTRIBUTE NUMBER	DEVICENET PARAMETER	ATTRIBUTE NAME	SERVICES	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	COMM REGISTER
1	245	Trip Action	Get/Set	1, 0, 7	UINT	110
2	246	Curve	Get/Set	0, 0, 7	UINT	111
3	247	Multiplier	Get/Set	0.2, 0.05, 1	REAL	112/113
4	248	Pickup	Get/Set	2, 0.1, 10	REAL	114/115
5	249	Trip Count	Get		UINT	1137