

PGR-5330 DEVICENET INTERFACE

MAY 20, 2009

REVISION 1

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TABLE OF CONTENTS

	<i>Page</i>
1. GENERAL	1
2. DEVICENET CONFIGURATION	1
2.1 DeviceNet Connections	1
2.2 Configuration Settings	1
2.2.1 Baud Rate.....	1
2.2.2 MAC ID	1
2.3 LED Indication	2
2.4 Termination.....	2
2.5 Power Consumption	2
2.6 EDS File.....	2
3. DEVICENET OBJECTS	2
3.1 Identity Object.....	4
3.2 Message Router	4
3.3 DeviceNet Object.....	4
3.4 Assembly Object.....	5
3.5 DeviceNet Connection Object	7
3.5.1 RSNetWorx I/O Configuration	7
3.6 Input Parameter Object	9
3.7 Parameter Output Object.....	9

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LIST OF FIGURES

	<i>Page</i>
2.1 PGR-5330 Top View.....	1
2.2 LED Indicators	2

LIST OF TABLES

	<i>Page</i>
2.1 PGR-5330 DeviceNet Connections.....	1
2.2 Baud-Rate Settings	1
2.3 Node-Address Settings.....	1
2.4 Module Status LED.....	2
2.5 Network Status LED	2
3.1 Class Objects	2

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1. GENERAL

This document describes the Anybus DeviceNet features supported by the PGR-5330. The DeviceNet module supports Explicit, Polled I/O, Bit-Strobe, and Change-of-State messages of predefined master/slave connection set. It does not support the Unconnected Message Manager (UCMM).

2. DEVICENET CONFIGURATION

2.1 DeviceNet Connections

TABLE 2.1 PGR-5330 DeviceNet Connections

PGR-5330 TERMINAL	DESCRIPTION
1	V -
2	CAN_L
3	SHIELD/DRAIN
4	CAN_H
5	V +

2.2 Configuration Settings

A DIP switch is used to set the baud rate and DeviceNet MAC ID. Both must be set prior to applying supply voltage.

2.2.1 Baud Rate

Three baud rates are supported by DeviceNet and selected using SW1 and SW2 on the communication module.

TABLE 2.2 Baud-Rate Settings

BAUD RATE	SW1	SW2
125 k	OFF	OFF
250 k	OFF	ON
500 k	ON	OFF
RESERVED	ON	ON

2.2.2 MAC ID

SW3 to SW8 are used to set the node address. SW3 is the most-significant bit and SW8 is the least-significant bit. Address selection is in binary.

TABLE 2.3 Node-Address Settings

ADDRESS	SW3	SW4	SW5	SW6	SW7	SW8
0	OFF	OFF	OFF	OFF	OFF	OFF
1	OFF	OFF	OFF	OFF	OFF	ON
.
63	ON	ON	ON	ON	ON	ON

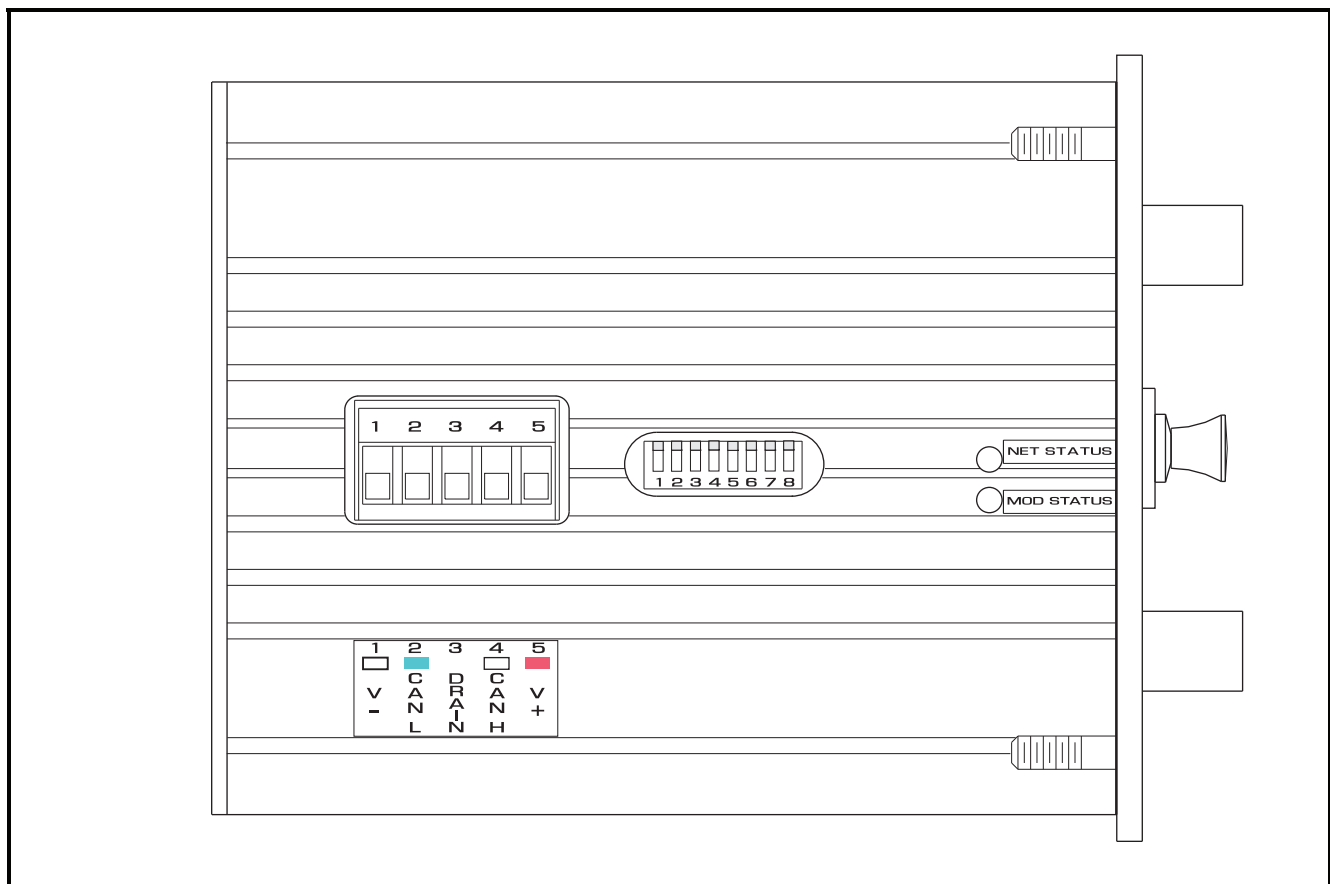


FIGURE 2.1 PGR-5330 Top View

2.3 LED Indication

The module contains two LED indicators.

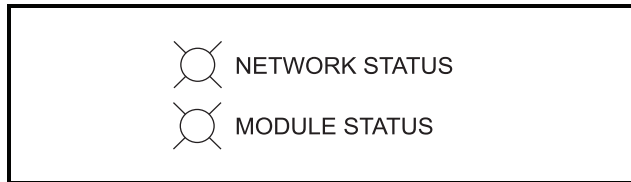


FIGURE 2.2 LED Indicators.

TABLE 2.4 Module Status LED

NETWORK STATUS LED	DESCRIPTION
Off	Not Powered/Not On Line
Steady Green	Link OK/On line/Connected
Steady Red	Link Failure
Flashing Green	On Line/Not Connected
Flashing Red	Connection Timed Out

TABLE 2.5 Network Status LED

MODULE STATUS LED	DESCRIPTION
Off	No Power
Steady Red	Unrecoverable Fault
Steady Green	Device Operational
Flashing Red	Minor Fault

2.4 Termination

DeviceNet requires a 120 Ω resistor at each end of the network.

2.5 Power Consumption

The DeviceNet module requires 30 mA from the 24 Vdc supply to power the driver circuits.

2.6 EDS File

The eds file defines the parameters that are user accessible using a configuration tool such as RSNetWorx. The eds file includes configuration information for I/O assemblies. The I/O assembly associated with each type of connection object can be selected by the configuration tool. These I/O assemblies are accessed using a DeviceNet master such as an A-B scanner module, see Section 3.5. I/O configuration parameters are stored in non-volatile memory.

Not all attributes listed in this document are defined by the eds file. Most attributes are part of the DeviceNet protocol, and do not need to be adjusted.

3. DEVICENET OBJECTS

(In Order of Class Number)

The module supports the following objects:

TABLE 3.1 Class Objects

CLASS	ATTRIBUTE
0x01	Identity
0x02	Message Router
0x03	DeviceNet
0x04	Assembly
0x05	Connection
0x2B	Acknowledge Handler
0xB0	Input Parameters
0xB1	Output Parameters

The following table contains the PGR-5330 attributes that are referenced in the sections dealing with the assembly and parameter classes.

Attribute Definitions

ATTRIBUTE NAME	DESCRIPTION	DEFAULT, MINIMUM MAXIMUM	DATA TYPE
Trip Status Pre-Trip Status	Bit string of fault bits Bit 0, EF/GF: 1 = Earth/Ground Fault Trip 0 = No Trip Bit 1, RF: 1 = Resistor Fault Trip 0 = No Trip Bit 2, CAL: 1 = Calibration Error ⁽¹⁾ 0 = No Error Bit 3, ADC: 1 = A/D Error ⁽¹⁾ 0 = No Error Bit 4, GRV: 1 = Voltage Trip 0 = No Trip Bit 5, EE: 1 = EEPROM Error 0 = No Error Bit 6, SYS: 1 = Internal Fault 0 = No Internal Fault (Will cause a EF/GF and RF trip) Bit 7, RMT: 1 = Remote Trip 0 = No Trip (Will cause a EF/GF and RF trip)	0, 0, 255	BYTE
	⁽¹⁾ These bits do not activate the EF/GF indication relay.		

Attribute Definitions (Continued)

ATTRIBUTE NAME	DESCRIPTION	DEFAULT, MINIMUM MAXIMUM	DATA TYPE																								
Pending Trips	Bit string of status bits Bit 0, EF/GF: 1 = EF/GF Current > Set Point 0 = EF/GF Current < Set Point Bit 1, RF: 1 = NER/NGR Resistance Exceeding Limits 0 = NER/NGR Resistance Within Limits	0, 0, 3	BYTE																								
Relay Status	Bit string indicating the state of output relays Bit 1, K3: 1 = RF Indication Relay Energized 0 = Not Energized Bit 2, K2: 1 = EF/GF Indication Relay Energized 0 = Not Energized Bit 3, K1: 1 = Trip/Pulse Relay Energized 0 = Not Energized	N/A, 0, 15	BYTE																								
Switches	Bit string indicating the state of the configuration switches Bit 0, S4: 1 = RF Latch 0 = RF Not Latched Bit 1, S3: 1 = EF/GF Latched 0 = EF/GF Not Latched Bit 2, S5: 1 = 20 k Sensor 0 = 100 k Sensor Bit 3, S6: 1 = 50 Hz 0 = 60 Hz Bit 4, S2: 1 = Fail Safe Trip-Relay Operation 0 = Non Fail Safe Operation Bit 5, S1: 1 = Trip Configuration (K1) 0 = Pulsing Configuration (K1)	N/A, 0, 255	BYTE																								
Record x (x = 0 to 9)	A trip record consists of the following: Trip Status (Data Type D1) Current (Data Type C6) Voltage (Data Type C6) Delta Ohms (Data Type C3)	N/A, N/A, N/A	STRUC T																								
Command	This value specifies the command. Command Request codes are as follows: Reset Command: Transition from 0 to 1 Remote Trip: Transition from 0 to 2	0, 0, 2	USINT																								
EF/GF Trip Time	Positions on front-panel EF/GF Trip Time Selector. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Position</th> <th>Trip Time</th> </tr> </thead> <tbody> <tr><td>0</td><td>100 ms</td></tr> <tr><td>1</td><td>200 ms</td></tr> <tr><td>2</td><td>300 ms</td></tr> <tr><td>3</td><td>400 ms</td></tr> <tr><td>4</td><td>500 ms</td></tr> <tr><td>5</td><td>700 ms</td></tr> <tr><td>6</td><td>1 s</td></tr> <tr><td>7</td><td>2 s</td></tr> <tr><td>8</td><td>3 s</td></tr> <tr><td>9</td><td>5 s</td></tr> <tr><td>10</td><td>10 s</td></tr> </tbody> </table>	Position	Trip Time	0	100 ms	1	200 ms	2	300 ms	3	400 ms	4	500 ms	5	700 ms	6	1 s	7	2 s	8	3 s	9	5 s	10	10 s	N/A, 0, 10	USINT
Position	Trip Time																										
0	100 ms																										
1	200 ms																										
2	300 ms																										
3	400 ms																										
4	500 ms																										
5	700 ms																										
6	1 s																										
7	2 s																										
8	3 s																										
9	5 s																										
10	10 s																										

Attribute Definitions (Continued)

ATTRIBUTE NAME	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE																																																
EF/GF Level	Positions on front-panel EF/GF Trip Level Selector	N/A, 0, 10	USINT																																																
	<table border="1"> <thead> <tr> <th>Position</th> <th>Trip Setting</th> <th>PGC-3xxx</th> <th>PGC-5xxx</th> </tr> </thead> <tbody> <tr><td>0</td><td>2% CT Rating</td><td>125 mA</td><td>0.75 A</td></tr> <tr><td>1</td><td>4% CT Rating</td><td>250 mA</td><td>1.5 A</td></tr> <tr><td>2</td><td>6% CT Rating</td><td>300 mA</td><td>1.8 A</td></tr> <tr><td>3</td><td>8% CT Rating</td><td>400 mA</td><td>2.4 A</td></tr> <tr><td>4</td><td>10% CT Rating</td><td>500 mA</td><td>3.0 A</td></tr> <tr><td>5</td><td>15% CT Rating</td><td>750 mA</td><td>4.5 A</td></tr> <tr><td>6</td><td>20% CT Rating</td><td>1 A</td><td>6.0 A</td></tr> <tr><td>7</td><td>40% CT Rating</td><td>2 A</td><td>12.0 A</td></tr> <tr><td>8</td><td>60% CT Rating</td><td>3 A</td><td>18.0 A</td></tr> <tr><td>9</td><td>80% CT Rating</td><td>4 A</td><td>24.0 A</td></tr> <tr><td>10</td><td>100% CT Rating</td><td>5 A</td><td>30.0 A</td></tr> </tbody> </table>			Position	Trip Setting	PGC-3xxx	PGC-5xxx	0	2% CT Rating	125 mA	0.75 A	1	4% CT Rating	250 mA	1.5 A	2	6% CT Rating	300 mA	1.8 A	3	8% CT Rating	400 mA	2.4 A	4	10% CT Rating	500 mA	3.0 A	5	15% CT Rating	750 mA	4.5 A	6	20% CT Rating	1 A	6.0 A	7	40% CT Rating	2 A	12.0 A	8	60% CT Rating	3 A	18.0 A	9	80% CT Rating	4 A	24.0 A	10	100% CT Rating	5 A	30.0 A
	Position			Trip Setting	PGC-3xxx	PGC-5xxx																																													
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9	80% CT Rating	4 A	24.0 A																																																
10	100% CT Rating	5 A	30.0 A																																																
Pulse Time	Positions on front-panel Pulse Period Selector 0 = 1.0 s 1 = 1.2 s 2 = 1.4 s 3 = 1.6 s 4 = 1.8 s 5 = 2.0 s 6 = 2.2 s 7 = 2.4 s 8 = 2.6 s 9 = 2.8 s 10 = 3.0 s	N/A, 0, 10	USINT																																																
NER/NGR Current Pre-Trip Current	NER/NGR current reading in percent of CT Primary Rating	0, 0, 255	USINT																																																
NER/NGR Voltage Pre-Trip Voltage	NER/NGR voltage reading in percent of Vn trip level setting on the front panel	0, 0, 255	USINT																																																
NER/NGR Change Pre-Trip Change	Resistance deviation from calibrated setting	0, -32000, +32000	INT																																																
Record Head	Pointer to the latest of 10 pre-trip records. 255 indicates no trips recorded.	0, 0, 255	USINT																																																
Fault Reset	0 to 1 transition causes a reset	0, 0, 1	BOOL																																																
Remote Trip	0 to 1 transition causes a remote trip	0, 0, 1	BOOL																																																

3.1 Identity Object

Identity Class (1), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	Revision	Get_Attribute_Single	Revision of this object	1, 1, 1	UINT

Identity Class (1), Instance (1) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	Vendor ID	Get_Attribute_Single	Identification of each vendor by number. Littelfuse vendor number is 1145	1145	UINT
2 0x02	Device Type	Get_Attribute_Single	Indication of the general type of product. Generic product.	0	UINT
3 0x03	Product Code	Get_Attribute_Single	This is a code assigned by the vendor to describe the device.	5300	UINT
4 0x04	Revision	Get_Attribute_Single	Revision of the item the Identity Object represents.	0x0101	A2 02 C6 C6
5 0x05	Status	Get_Attribute_Single	Summary Status of the device.	0, 0, 255	WORD
6 0x06	Serial Number	Get_Attribute_Single	Serial Number of the device.	N/A, N/A, N/A	UDINT
7 0x07	Product Name	Get_Attribute_Single	Human readable identification.	PGR-5330	SHORT-STRING
9 0x09	Config. Consist Value	Get_Attribute_Single	Contents identify configuration of device.	N/A, N/A, N/A	UINT

3.2 Message Router

Message Router Class (2), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	Revision	Get_Attribute_Single	Revision of this object	1, 1, 1	UINT

3.3 DeviceNet Object

DeviceNet Class (3), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	Revision	Get_Attribute_Single	Revision of the DeviceNet object class. Definition upon which the implementation is based.	2, 2, 2	UINT

DeviceNet Class (3), Instance (1) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	MAC ID	Get_Attribute_Single	Node address	63, 0, 63	USINT
2 0x02	Baud Rate	Get_Attribute_Single	The baud rate of the device 0 – 125 k 1 – 250 k 2 – 500 k	0, 0, 2	USINT

3.4 Assembly Object

Class 4 defines three INPUT and one OUTPUT assembly. Assemblies are accessed using a connection object (Explicit Messaging, Polling, Strobed, or COS).

The assembly used by the specific connection is set using a configuration tool such as RSNetWorx. See section 3.5.

Assembly Class (4), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1 0x01	Revision	Get_Attribute_Single	Revision of this object	1, 1, 1	UINT

Assembly Class (4), Instance (100), Attribute (3) – Input 1 (9 Bytes)

BYTE	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
1							RF Detect	EF/GF Detect
2	EF/GF Trip Time Selector (Position 0 to 10)							
3	EF/GF Trip Level Selector (Position 0 to 10)							
4	Pulse Period Selector (Position 0 to 10)							
5	NER/NGR Current (% of CT Rating)							
6	NER/NGR Voltage (% of Setting)							
7	Delta Ohms (Low) (ohms)							
8	Delta Ohms (High) (ohms)							

Assembly Class (4), Instance (101), Attribute (3) – Input 2 (2 Bytes)

BYTE	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
1							RF Detect	EF/GF Detect

Assembly Class (4), Instance (102), Attribute (3) – Input 3 (51 Bytes)

BYTE	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0	Record Head							
1	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
2	NER/NGR Current (% of CT Rating)							
3	NER/NGR Voltage (% of Setting)							
4	Delta Ohms (Low) (ohms)							
5	Delta Ohms (High) (ohms)							
6	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
7	NER/NGR Current (% of CT Rating)							
8	NER/NGR Voltage (% of Setting)							
9	Delta Ohms (Low) (ohms)							
10	Delta Ohms (High) (ohms)							
11	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
12	NER/NGR Current (% of CT Rating)							
13	NER/NGR Voltage (% of Setting)							
14	Delta Ohms (Low) (ohms)							
15	Delta Ohms (High) (ohms)							

Assembly Class (4), Instance (102), Attribute (3) – Input 3 (51 Bytes) (Continued)

BYTE	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
16	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
17	NER/NGR Current (% of CT Rating)							
18	NER/NGR Voltage (% of Setting)							
19	Delta Ohms (Low) (ohms)							
20	Delta Ohms (High) (ohms)							
21	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
22	NER/NGR Current (% of CT Rating)							
23	NER/NGR Voltage (% of Setting)							
24	Delta Ohms (Low) (ohms)							
25	Delta Ohms (High) (ohms)							
26	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
27	NER/NGR Current (% of CT Rating)							
28	NER/NGR Voltage (% of Setting)							
29	Delta Ohms (Low) (ohms)							
30	Delta Ohms (High) (ohms)							
31	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
32	NER/NGR Current (% of CT Rating)							
33	NER/NGR Voltage (% of Setting)							
34	Delta Ohms (Low) (ohms)							
35	Delta Ohms (High) (ohms)							
36	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
37	NER/NGR Current (% of CT Rating)							
38	NER/NGR Voltage (% of Setting)							
39	Delta Ohms (Low) (ohms)							
40	Delta Ohms (High) (ohms)							
41	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
42	NER/NGR Current (% of CT Rating)							
43	NER/NGR Voltage (% of Setting)							
44	Delta Ohms (Low) (ohms)							
45	Delta Ohms (High) (ohms)							
46	Remote Trip	Internal Error	EEPROM Error	NER/NGR Volts	ADC Error	CAL Error	RF Trip	EF/GF Trip
47	NER/NGR Current (% of CT Rating)							
48	NER/NGR Voltage (% of Setting)							
49	Delta Ohms (Low) (ohms)							
50	Delta Ohms (High) (ohms)							

Assembly Class (4), Instance (150), Attribute (3) – Output 1 (1 Byte)

BYTE	BIT7	BIT6	BIT5	BIT4	BIT3	BIT2	BIT1	BIT0
0							Remote Trip	Fault Reset

3.5 DeviceNet Connection Object

Attributes in Instance (0) are used to assign an Assembly Instance to an I/O connection. These attributes must be set prior to the corresponding connection being established.

The Anybus module supports six INPUT and OUTPUT assemblies, however only three INPUT assemblies and one OUTPUT assembly are supported by the PGR-5330. The INPUT or OUTPUT

assembly is selected using a configuration tool and the corresponding parameter value is sent to the module. Parameters are stored in non-volatile memory and are retained on loss of control power. INPUT and OUTPUT assemblies are described in Section 3.4.

Input 1: Status, Settings, Meters
 Assembly Class 4, Instance 100, Attribute 3
 Byte size = 9
 Parameter value 0 is Input 1
 Input 1 is the default for Polled Production

Input 2: Status
 Assembly Class 4, Instance 101, Attribute 3
 Byte size = 2
 Parameter value 1 is Input 2
 Input 2 is the default for Strobed and COS
 Production

Input 3: Pre-Trip Values
 Assembly Class 4, Instance 102, Attribute 3
 Byte size = 51
 Parameter value 2 is Input 3

Input 4, Input 5, Input 6: Not supported by SE-330.

Output 1: Commands
 Assembly Class 4, Instance 150, Attribute 3
 Byte size = 1
 Parameter value 0 is Output 1
 Output 1 is the default for Polled and Strobed
 Consumption

Output 2, Output 3, Output 4, Output 5, Output 6:
 Not supported.

3.5.1 RSNetWorx I/O Configuration

The DeviceNet interface module supports Polling, Bit Strobe, and Change of State. The Polling connection is the default. Each connection type has an associated INPUT and OUTPUT assembly. The INPUT assembly type for a specific connection can be changed using parameters 1, 3, and 5. The OUTPUT assembly (parameter 2 and 4) cannot be changed and is fixed as OUTPUT1 with a byte size of 1. When the INPUT assembly for a specific connection is changed to a value other than the default, the scanner may indicate a configuration warning. Disregard the warning. Use “Edit I/O Parameters” to enable the required connection and adjust the byte size to match the INPUT assembly. The byte size for the OUTPUT must be set to 1.

The PGR-5330 assemblies can be read without the use of a scanner. From RSNetWorx, select Device and Class Instance Editor. Use the “Get Single Attribute” service to read the assemblies listed in section 3.4.

Note: The Anybus module supports six I/O assemblies and requires the EDS file to support six setting values, even though the PGR-5330 does not support all six I/O assemblies.

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

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM ⁽²⁾	DATA TYPE	EDS PARAM
1 0x01	Revision	Get_Attribute_Single	Revision of this Connection Object Class. Definition upon which the implementation is based.	1, 1, 1	UINT	N/A
100 0x64	Polled Production	Get_Attribute_Single Set_Attribute_Single	Selects input assembly used for connection	0, 0, 2	USINT	1
101 0x65	Polled Consumption	Get_Attribute_Single Set_Attribute_Single	Selects output assembly used for connection	0, 0, 0	USINT	2
102 0x66	Strobed Production	Get_Attribute_Single Set_Attribute_Single	Selects input assembly used for connection ⁽¹⁾	1, 0, 2	USINT	3
103 0x67	Strobed Consumption	Get_Attribute_Single Set_Attribute_Single	Selects output assembly used for connection.	0, 0, 0	USINT	4
104 0x68	COS Production	Get_Attribute_Single Set_Attribute_Single	Selects input assembly used for connection	1, 0, 2	USINT	5

⁽¹⁾ A maximum of 8 bytes can be transferred across this connection.
⁽²⁾ The module will return an error if parameter value exceeds the maximum.

3.6 Input Parameter Object

This object allows individual parameters to be read from the PGR-5330 using Explicit Messaging.

Input Parameter Class (176), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get	Revision of this object	1, 1, 1	UINT

Input Parameter Class (176), Instance (1) Attributes

All attributes in this instance are read-only and support the Get_Attribute_Single service using Explicit Messaging.

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	EDS PARAM
1	Revision	Get	Firmware Revision	0, 0, 255	USINT	6
2	Trip Status	Get	Bits define trips	0, 0, 255	USINT	7
3	Pending Trips	Get	Bits define pending trips	0, 0, 3	USINT	8
4	EF/GF Time	Get	Selector position	0, 0, 10	USINT	9
5	EF/GF Level	Get	Selector position	0, 0, 10	USINT	10
6	Pulse Time	Get	Selector position	0, 0, 10	USINT	11
7	NER/NGR Current	Get	Percent of CT rating	0, 0, 255	USINT	12
8	NER/NGR Voltage	Get	Percent of V_N setting	0, 0, 255	USINT	13
9	NER/NGR Change	Get	Deviation from calibrated value	0, -32k, +32k	INT	14
10	Relay Status	Get	Bits indicate output relay state	0, 0, 15	BYTE	15
11	Switches	Get	Front panel switch state	0, 0, 255	BYTE	16
12	Record Head	Get	0 to 9 or 255	0, 0, 255	USINT	17
13	Pre-Trip Status	Get	Trip status for last record	0, 0, 255	BYTE	18
14	Pre-Trip Current	Get	Percent of CT rating	0, 0, 255	USINT	19
15	Pre-Trip Voltage	Get	Percent of V_N setting	0, 0, 255	USINT	20
16	Pre-Trip Change	Get	Deviation from calibrated value	0, -32k, +32k	INT	21

3.7 Parameter Output Object

This object allows commands to be written to the PGR-5330 using Explicit Messaging.

Class (177), Instance (0) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE
1	Revision	Get_Attribute_All	Revision of this object	1, 1, 1	USINT

Class (177), Instance (1) Attributes

ATTRIBUTE NUMBER	ATTRIBUTE NAME	SERVICES	DESCRIPTION	DEFAULT, MINIMUM, MAXIMUM	DATA TYPE	EDS PARAM
1	Command	Get/Set	Sends reset or remote trip command. 0 = No action (IDLE) 1 = Transition from 0 to 1 causes a trip reset. 2 = Transition from 0 to 2 causes a remote trip.	0, 0, 2	USINT	22

