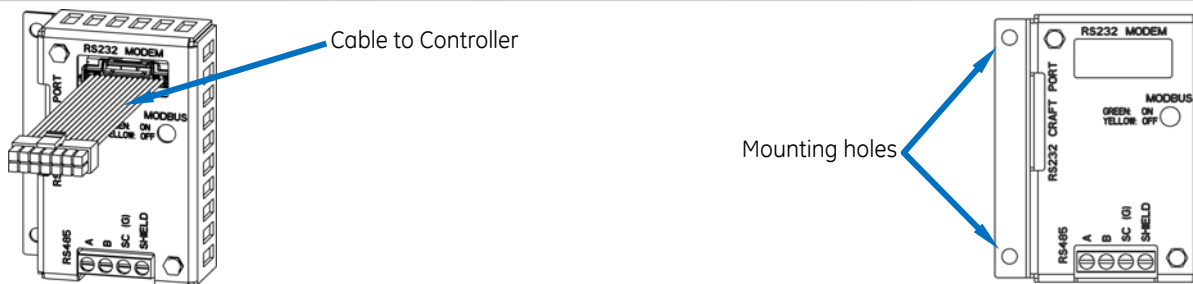




Pulsar Plus Modbus RTU Interface

150044438



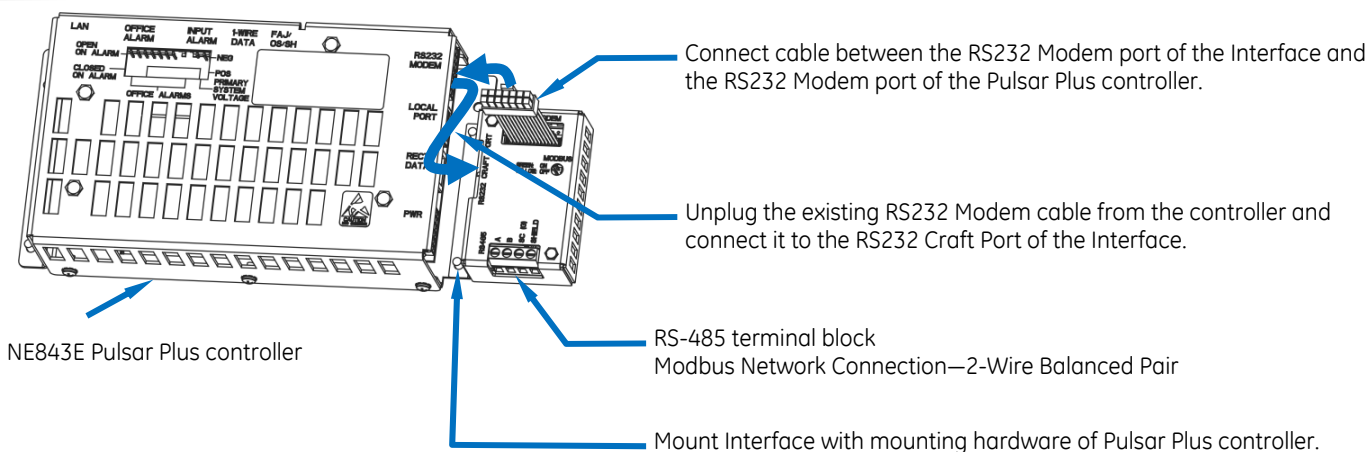
Provides RS-485 interface to GE NE843 Pulsar Plus controller. Modbus 2-wire Balanced Pair signaling is provided with compatible controller firmware.

Tools required:

Socket 5/16"

Torque Wrench

Flat screwdriver



Connect cable between the RS232 Modem port of the Interface and the RS232 Modem port of the Pulsar Plus controller.

Unplug the existing RS232 Modem cable from the controller and connect it to the RS232 Craft Port of the Interface.

RS-485 terminal block
Modbus Network Connection—2-Wire Balanced Pair

Mount Interface with mounting hardware of Pulsar Plus controller.

Step 1 - Mount the RTU

Interface mounts to the right side of the Pulsar Plus controller on the inside of the system door.

1. Re-use the two right side 6-32 nuts mounting the controller. Torque to 10 in-lb (1.1 Nm) - 5/16" socket.

Step 2 - Connect to Controller

1. Unplug the existing RS232 Modem cable from the controller and connect it to the RS232 Craft Port of the Interface.
2. Connect cable between the RS232 Modem port of the Interface and the RS232 Modem port of the Pulsar Plus controller.

Step 3 - Connect to Modbus Network

1. Connect Modbus 2-Wire Balanced Pair to RS-485 terminal block.

Step 4 - Startup the Modbus—Pulsar Plus controller - see Pulsar Plus Controller Manual for details of front panel navigation

1. Find the IP address of the Pulsar Plus Controller

Front panel path **Menu**→**Status**→**Network Settings**→**IP address**

Note: If the Port is not configured as a Server it will not have the correct IP address. To use the Ethernet port locally as a Craft port it needs to be configured as a DHCP Server. DHCP Server operation can be validated at **Menu**→**Status**→**Network Settings**. Scroll down to view the port's present configuration.

If it is not in DHCP Server mode, make sure the Craft port is not plugged into a LAN connection and re-configure the DHCP setting from the front panel to be Server. Front panel path **Menu**→**Configuration**→**Communication Ports**→**Network Settings**→**DHCP**.

Note: when performing this operation from the front panel, the controller must be rebooted by removing and reapplying power to the unit so that it can accept the new Ethernet port configuration. This can be done by removing and re-inserting the slot controller or by removing and reattaching the power connection at J9 on the door-mounted controller. The rebooting process takes approximately two minutes.

Validate the change to server mode at **Menu**→**Status**→**Network Settings**.

2. Connect a laptop PC to the LAN port of the controller.
3. Log into the controller using a web-browser
 - a. Enter the IP address of the controller into the location bar.
 - b. Enter the super-user password - "super-user" by default.
4. Configure RS-485 baud rate, parity, data bits, stop bits, and the Modbus slave address.
Path **Settings Tab**→**Modbus**

Verify that the local port application is "MODBUS SLAVE".
Edit changes, and when done, press "OK."

5. Refresh the web page (press the F5 on the PC) to show the total number of successful and unsuccessful packets in the Error/Total Packet section of the screen.
6. Read coil registers to read in the values of all alarms from the controller.
7. Read holding registers to read in status values from the controller.

Data is separated into four address ranges.

Address 40001-40031 (starting from register 0) returns DC plant values.
Address 42001-43880 contains individual rectifier measurements.
Address 50001-50070 contains mid-string voltage measurements.
Address 51001-51090 contains shunt measurements.

- a. Rectifier G01-G188 data measurements are stored sequentially. There are 10 holding registers per rectifier module, so there are 1880 total rectifier holding registers that can be polled.

The first rectifier in a plant is rectifier G11, the 11th rectifier in the list.

To access this rectifier's information, the address to poll is 42001 (the first rectifier address) + (10 * 10) = address 42101.

The first rectifier in shelf 2 is rectifier G21.

To start accessing information for this rectifier, the address is 42001 + 20*10 = address 42201.

- b. Mid-string voltage module data measurements are stored sequentially. The controller can communicate with up to 7 mid-string voltage modules. There are 10 holding registers per mid-string module, so there are 70 total mid-string voltage holding registers that can be polled.

The first mid-string module in a plant is module M01.

To access this module's information, the address to poll is 50001 (the first module address) + (0 * 10) = address 50001.

The second module is module M02.

To start accessing information for this module, the address is 50001 + 1*10 = address 50011.

- c. Shunt data measurements are stored sequentially. The shunt measurements are for the Plant shunt, followed by 8 external LVD shunts. There are 10 holding registers per shunt measurement, so there are 90 total shunt holding registers that can be polled. The plant shunt measurements are in the range 51001 to 51010.

To access the first external shunt measurement, the address to poll is 510101 (the first module address) + (0 * 10) = address 51011.

The second module is module DCM02.

To start accessing information for this module, the address will be 51011 + 1*10 = address 51021.



Information: Coil Registers

Address	Alarm	Alarm Description
00001	DC1 AMJ	Auxiliary Fuse Major
00002	DC1 VSF	Sense/Control Fuse
00003	DC1 OSA	Open String
00004	DC1 ZID	ID Not Configured
00005	DC1 TPA	Thermal Probe Alarm
00006	DC1 VMF	Voltage Module Fail
00007	DC1 CMA	Minor Communication Failure
00008	DC1 MCM	Major Communication Failure
00009	DC1 EPO	Emergency Power Off
00010	DC1 ICR	Incompatible Rectifier
00011	DC1 RFA	Rectifier Fail
00012	DC1 ACF	AC Fail
00013	DC1 MAN	Manual Off
00014	DC1 DID	ID Conflict
00015	DC1 CLM	Rectifier Current Limit
00016	DC1 RFN	Rectifier Fan Failure
00017	DC1 VLA	Very Low Voltage
00018	DC1 MFA	Multiple Rectifier Fail
00019	DC1 RTL	Reserve Time Low
00020	DC1 RRTL	Real-time Reserve Time Low
00021	DC1 RLS	Redundancy Loss
00022	DC1 MMAN	Multiple Manual Off
00023	DC1 MACF	Multiple AC Failure
00024	DC1 BDA	Battery On Discharge
00025	DC1 HVA	High Voltage
00026	DC1 HFV	High Float Voltage
00027	PS1 EPR	External Password Reset
00028	PS1 PFD	Passwords At Default
00029	PS1 EXL	Excessive Login Attempts
00030	PS1 BBL	Memory Backup Battery Low
00031	PS1 CLC	Clock Changed
00032	PS1 STF	Self Test Failed
00033	PS1 PGI	Program Line Invalid
00034	PS1 CCH	Configuration Changed
00035	PS1 HCL	History Cleared
00036	PS1 AX1	Auxiliary Event 1
00037	PS1 AX2	Auxiliary Event 1
00038	PS1 AX3	Auxiliary Event 1
00039	PS1 AX4	Auxiliary Event 1
00040	PS1 AX5	Auxiliary Event 1
00041	PS1 AX6	Auxiliary Event 1
00042	PS1 FAN24	24 V Fuse Minor
00043	PS1 FAN48	48 V Fuse Minor
00044	PS1 FAJ24	24 V Fuse Major
00045	PS1 FAJ48	48 V Fuse Major
00046	AT1 ATA	Alarm Test Active
00047	AT1 ATB	Alarm Test Aborted
00048	CP1 CFA	Converter Fail
00049	CP1 CFN	Converter Fan Minor
00050	CP1 CFJ	Converter Fan Major

Address	Alarm	Alarm Description
00051	CP1 DFA	Distribution Fail
00052	CP1 DID	ID Conflict
00053	CP1 ICC	Incompatible Converter Alarm
00054	CP1 MFA	Multiple Converter Fail
00055	CP1 HVA	Converter High Voltage Major
00056	CP1 HFV	Converter High Voltage Minor
00057	CP1 VLA	Converter Very Low Voltage
00058	CP1 RL	Converter Redundancy Loss
00059	BR1 BTA	Battery Test Active
00060	BR1 BFA	Battery Test Failed
00061	BR1 SCDA	Shorted Cell Detected
00062	BR1 ISDA	Imminent Shutdown
00063	BR1 MDP	Voltage Duplicate ID
00064	BR1 MZD	Voltage ID Not Configured
00065	BR1 BTHA	High Battery Temperature
00066	CN1 CNO	Contactors Open
00067	CN1 CNF	Contactors Failed
00068	CN2 CNO	Contactors Open
00069	CN2 CNF	Contactors Failed
00070	CN3 CNO	Contactors Open
00071	CN3 CNF	Contactors Failed
00072	CN4 CNO	Contactors Open
00073	CN4 CNF	Contactors Failed
00074	CM1 COF	Queue Overflow
00075	CM1 COR	Number Did Not Respond
00076	CM1 NNC	Number Not Configured
00077	PO1 POR	Number Did Not Respond
00078	RP1 RF	Ringer Minor Fail
00079	RP1 RPF	Ringer Fan Fail
00080	RP1 RPRL	Ringer Redundancy Loss
00081	RP1 RPFJ	Ringer Major Fail
00082	RP1 RPXJ	Ringer Major External Fault
00083	RP1 RPXN	Ringer Minor External Fault
00084	RP1 RCDP	Ringer ID Conflict
00085	N/A	Reserved for future use
00086	DC1 EMD	Energy Management Disabled
00087	DC1 PFS	Thermal Probe Fail Safe
00088	DC1 RIF	Rectifier Internal Fault
00089	DC1 LSF	Load Share Fail
00090	PS1 AX7	Auxiliary Event 7
00091	PS1 AX8	Auxiliary Event 8
00092	PS1 AX9	Auxiliary Event 9
00093	PS1 AX10	Auxiliary Event 10
00094	PS1 AX11	Auxiliary Event 11
00095	PS1 AX12	Auxiliary Event 12
00096	BR1 BTLA	Low Battery Temperature
00097	BR1 BTVH	Very High Battery Temperature
00098	BR1 BTVL	Very Low Battery Temperature
00099	GN1 GNR	Generator Running
00100	GN1 GNM	Generator Maintenance Required



Information: Coil Registers - continued

Address	Alarm	Alarm Description	Address	Alarm	Alarm Description
00101	GN1 GNF	Generator Fail	00115	IVP1 ILV	Inverter Low Output
00102	PS1 AMTL	Low Ambient Temperature	00116	IVP1 IFA	Inverter Frequency Lock
00103	PS1 AMTH	High Ambient Temperature	00117	IVP1 IHV	Inverter High Output
00104	ACO1 AAC	ACO Active	00118	IVP1 IDA	Inverter Distribution Alarm
00105	BR1 RBA	Reverse Battery	00119	IVP1 IOF	Inverter Output Fuse
00106	CP1 CIN	Converter Input Fail	00120	IVP1 IDID	Inverter ID Conflict
00107	DC1 BOF	Rectifier ORing FET Fault	00121	IVP1 IIRM	Inverter High RMS Current
00108	DC1 SOF	Rectifier Shorted ORing FET	00122	IVP1 IIPK	Inverter High Peak Current
00109	DC1 DER	Rectifier Under Voltage	00123	IVP1 ICF	Inverter High Crest Factor
00110	GN1 GNS	Generator Start	00124	IVP1 MIF	Multiple Inverter Fail
00111	IVP1 ILVI	Inverter Low Input	00125	IVP1 IRLS	Inverter Redundancy Loss
00112	IVP1 IHVI	Inverter High Input	00126	DC1 PMF	Probe Minimum Fail
00113	IVP1 ITA	Inverter High Temperature	00127	PS1 CRT	Configuration Changed Reboot Required
00114	IVP1 IF	Inverter Fail	00128	IVP1 MILV	Multiple Inverter Low Input Voltage

Information: Holding Registers

Address	Description	Units	Notes
40001	System DC bus voltage	Volts * 100	
40002	Total system load current	Amps	
40003	Total installed rectifier capacity	Amps	
40004	Total system rectifier current drain	Amps	
40005	Plant operating state/mode		0 = Float Mode 1 = Boost Mode 2 = BTP Mode 3 = Float-Slope Temperature Compensated 4 = Battery on Discharge 5 = Battery Test Active 6 = Generator Running 7 = Recharge Current Limit 8 = Boost-Slope Temperature Compensated
40006	Number of battery strings		
40007	Programmed string capacity	Amps	
40008	Calculated Reserve Time	Minutes	
40009	Battery state of charge percentage	% * 10	Range 0 - 1000
40010	Time on Battery Discharge		
40011	Highest battery temperature	C	
40012	Lowest battery temperature	C	
40013	Number of battery temperature probes		
40014	Battery current	Amps	
40015, 40016	Installed battery capacity	Ampere Hours	
40017	Highest ambient temperature	C	
40018	Next Highest ambient temperature	C	
40019	Lowest ambient temperature	C	
40020	Number of ambient temperature probes		
40021	Number of total alarms active		
40022	Number of critical alarms active		
40023	Number of major alarms active		
40024	Number of minor alarms active		
40025	Number of warnings active		
40026	Number of record only events active		
40027	Application version		
40028	Web-pages version		
40029	Display version		
40030	Boot block version		
40031	Modbus version		



Information: Holding Registers - continued

Address	Description	Units	Notes
42001	Rectifier G01 State		0 = On 3 = Missing 1 = Off 4 = Vacant 2 = Standby
42002	Rectifier G01 Output Voltage	Volts * 100	
42003	Rectifier G01 Output Current	Amps * 10	
42004	Rectifier G01 Temperature	C	
42005	Rectifier G01 AC Voltage	Volts	
42006	Rectifier G01 AC Current	Amps * 10	
42007	spare		
42008	spare		
42009	spare		
42010	spare		
42011	Rectifier G02 State		0 = On 3 = Missing 1 = Off 4 = Vacant 2 = Standby
42012	Rectifier G02 Output Voltage	Volts * 100	
42013	Rectifier G02 Output Current	Amps * 10	
42014	Rectifier G02 Temperature	C	
42015	Rectifier G02 AC Voltage	Volts	
42016	Rectifier G02 AC Current	Amps * 10	
42017	Spare		
42018	Spare		
42019	Spare		
42020	Spare		
•••	•••	•••	•••
43871	Rectifier G188 State		0 = On 3 = Missing 1 = Off 4 = Vacant 2 = Standby
43872	Rectifier G188 Output Voltage	Volts * 100	
43873	Rectifier G188 Output Current	Amps * 10	
43874	Rectifier G188 Temperature	C	
43875	Rectifier G188 AC Voltage	Volts	
43876	Rectifier G188 AC Current	Amps * 10	
43877	spare		
43878	spare		
43879	spare		
43880	spare		
50001	Mid-String Voltage Module 1 State		0 = None 2 = Present 1 = Missing
50002	Mid-String Voltage Module 1 Voltage	Volts * 100	
50003	spare		
50004	spare		
50005	spare		
50006	spare		
50007	spare		
50008	spare		
50009	spare		
50010	spare		
50011	Mid-String Voltage Module 2 State		0 = None 2 = Present 1 = Missing
50012	Mid-String Voltage Module 2 Voltage	Volts * 100	
50013	spare		
50014	spare		
50015	spare		
50016	spare		
50017	spare		
50018	spare		
50019	spare		
50020	spare		
•••	•••	•••	•••



Information: Holding Registers - continued

Address	Description	Units	Notes
50061	Mid-String Voltage Module 7 State		0 = None 2 = Present 1 = Missing
50062	Mid-String Voltage Module 7 Voltage	Volts * 100	
50063	spare		
50064	spare		
50065	spare		
50066	spare		
50067	spare		
50068	spare		
50069	spare		
50070	spare		
51001	Plant Shunt Type		0 = None 2 = Battery 1 = Load
51002	Plant Shunt State		0 = None 2 = Present 1 = Missing
51003	Plant Shunt Current	Amps * 10	
51004	Plant Shunt Kwh	kWh	
51005	spare		
51006	spare		
51007	spare		
51008	spare		
51009	Spare		
51010	Spare		
51011	LVD Module 1 Shunt Type		0 = None 2 = Battery 1 = Load
51012	LVD Module 1 Shunt State		0 = None 2 = Present 1 = Missing
51013	LVD Module 1 Shunt Current	Amps * 10	
51014	LVD Module 1 Shunt Kwh	kWh	
51015	spare		
51016	spare		
51017	spare		
51018	spare		
51019	spare		
51020	spare		
• • •	• • •	• • •	• • •
51081	LVD Module 8 Shunt Type		0 = None 2 = Battery 1 = Load
51082	LVD Module 8 Shunt State		0 = None 2 = Present 1 = Missing
51083	LVD Module 8 Shunt Current	Amps * 10	
51084	LVD Module 8 Shunt Kwh	kWh	
51085	spare		
51086	spare		



Specifications and Application

- Specifications and ordering information are in the **Infinity-M Brochure** available at www.gecriticalpower.com
- Equipment and subassembly ports: 1. are suitable for connection to intra-building or unexposed wiring or cabling;
2. can be connected to shielded intra-building cabling grounded at both ends.
- Grounding / Bonding Network – Connect to an Isolated Ground Plane (Isolated Bonding Network) or an Integrated Ground Plane (Mesh-Bonding Network or Common Bonding Network).
- Installation Environment - Install in Network Telecommunication Facilities, OSP, or where NEC applies.
- Battery return may be either Isolated DC return (DC-I) or Common DC return (DC-C).

Reference Documents

These documents are available at www.gecriticalpower.com.

Document	Title
CC848815341	Pulsar Plus Product Manual

Notes



Notes







Notes

