# Using Powerlink® G4 Controllers in Pass-Through Mode

## with Modbus® TCP Ethernet Communications Protocol

**Retain for Future Use**

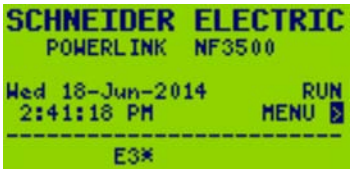
### ABOUT THIS BULLETIN

This bulletin provides technical data and information about using Powerlink® G4 Controllers in pass-through mode from Modbus® TCP Ethernet communications protocol to RS232 or RS485 serial ports and RS232 to RS485 ports.

### SETUP

To access the pass-through mode on the Powerlink G4 controller, follow these screens to the Serial Comms setup screen from the controller front:

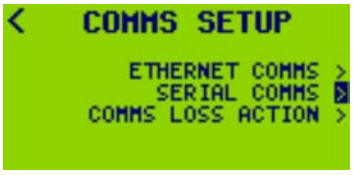
Step 1:




Step 2:


Step 3:


Step 4:




Step 5:


#### Modbus TCP Ethernet to RS485 or RS232 Ports

The pass-through mode from MB/TCP to RS232 or RS485 allows Modbus Serial devices to be addressed through the Powerlink G4 Controller. Up to 8 devices are supported on the RS485 serial chain. The pass-through device (Powerlink G4 Controller) will pass through all Modbus TCP requests that are not the controller's serial ID or device ID. All requests that are passed through are converted to Modbus RTU and transmitted out the RS232/RS485 serial port. Replies from the serial device are converted back to a Modbus TCP packet and transmitted out to the network via the Ethernet port.



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From the Serial Comms setup screen, follow the steps in the "Modbus TCP Pass-through to RS232 to RS485" table to setup pass-through mode from Modbus TCP to RS232 or RS485.

**Table 1: Modbus TCP Pass-through to RS232 to RS485**

| Pass-through Mode | Screen Example | Pass-through Mode Setup Steps |
|---|---|---|
| MB/TCP to RS232 |  | 1. Select "GATEWAY MB/TCP" under 232 Mode.<br>2. Select baud rate.<br>*NOTE: See "RS232 2-Wire Communications Parameters" table for baud rate information.*<br>3. Select Modbus Address (MB Addr) to pass through to the RS232 serial port. |
| MB/TCP to RS485 |  | 1. Select "GATEWAY MB/TCP" under 485 Mode.<br>2. Select baud rate.<br>*NOTE: See "RS485 2-Wire Communications Daisy-chain Parameters" table for baud rate information.*<br>3. Select Modbus Address (MB Addr) to pass through to the RS485 serial port. |

### RS232 Pass-through to RS485 Ports

Pass-through mode from RS232 to RS485 passes Modbus RTU or Modbus ASCII messages out to the serial port. The pass-through device (Powerlink G4 Controller) will pass through all Modbus RTU or Modbus ASCII requests that are not the controller's serial ID or device ID. All requests that are passed through are converted to Modbus RTU packets and transmitted out the RS485 serial port.

*NOTE: The RS232 and the RS485 ports must both be configured for Modbus RTU or Modbus ASCII.*

From the Serial Comms setup screen, follow the steps in the "RS232 Pass-through to RS485 Serial Ports" table to setup pass-through mode from RS232 to RS485 ports.

**Table 2: RS232 Pass-through to RS485 Serial Ports**

| Pass-through Mode | Screen Example | Pass-through Mode Setup Steps |
|---|---|---|
| RS232 to RS485 |  | 1. Select "GATEWAY to 485" under 232 Mode.<br>2. Select RS232 baud rate.<br>*NOTE: See "RS232 2-Wire Communications Parameters" table for baud rate information.*<br>3. Select Modbus Address (MB Addr) to pass through to the RS232 serial port.<br>*NOTE: The Modbus Address will automatically update for RS485 when RS232 Modbus Address is assigned.*<br>4. Select "GATEWAY frm 232" under 485 mode to pass communications to RS485 from RS232.<br>5. Select RS485 baud rate.<br>*NOTE: RS232 to RS485 is a one-to-one communication, so it cannot be daisy-chained.* |

## ERROR MESSAGES

**Table 3: Error Messages**

| Error Message | Causes |
|---|---|
| RS485 Gateway Mode and RS232 Gateway Mode must both be enabled | When RS232 mode is set to "GATEWAY to 485", RS485 mode must be set to "GATEWAY frm 232" to create a pass-through to receive communications from RS232. |

## HARDWARE

**Table 4: Hardware Specifications**

| | |
|---|---|
| Baud Rates Supported | 4800, 9600, 19200, 38400, 76800, 115200 |
| Serial Connection | RS232 - 2 wire, RS485 - 2 wire |
| Biasing | 10k ohms |
| Termination | none |
| Isolation | none |

## RS232 2-WIRE COMMUNICATIONS PARAMETERS

**Table 5: RS232 2-WIRE Communications Parameters**

| Baud Rate | Distance |
|---|---|
| 4800, 9600, 19200, 38400, 76800, 115200 | 50 ft. (15 m) |

## RS485 2-WIRE COMMUNICATIONS DAISY CHAIN PARAMETERS

Use Belden® Cable 8723 CN2P22 Shielded E108998 or equivalent.

**Table 6: RS485 2-WIRE Communications Daisy Chain Parameters**

| Baud Rate | Distance (1-8 Devices) | Serial Communications Time-out |
|---|---|---|
| 4800 | 10,000 ft. (3048 m) | 2 seconds minimum |
| 9600 | 8,000 ft. (24408 m) | 1 seconds minimum |
| 19200 | 4,000 ft. (1220 m) | 1 seconds minimum |
| 38400 | 2,000 ft. (610 m) | 1 seconds minimum |
| 76800 | 2,000 ft. (610 m) | 1 seconds minimum |
| 115200 | 2,000 ft. (610 m) | 1 seconds minimum |

## CUSTOMER SUPPORT AND SERVICE

Contact the Customer Information Center for technical support by phone at 1 (888) 778 2733 or 1 (615) 287 3331.

E-mail at lightingcontrol.support@us.schneider electric.com.

Technical Support Center Hours: 7:30 AM to 5:00 PM CST

Contact your local Schneider Electric service representative for repairs or service to your network.

You may also find helpful information on our web site at www.Schneider Electric.us or our mobile website at mysecontrols.com.

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