BASgatewaySX

CONTEMPORARY CONTROLS

BASGSX-M1
BASGSX-M1/P

Modbus to BACnet Gateway with SSL

Installation Guide

Modbus remains a popular network interface, and is commonly found on jobs such as boiler control, variable speed drives, and metering applications, but these devices lack BACnet compliance. To make Modbus devices appear as individual BACnet devices, a BASgatewaySX is used. The BASgatewaySX has one 10/100 Mbps Ethernet port for Modbus TCP and BACnet/IP and an opto-isolated Modbus EIA-485 serial port for Modbus RTU or Modbus ASCII devices. Up to 200 Modbus serial devices (represented by up to 2000 polled points) can share the single Modbus EIA-485 port on the BASgatewaySX. The virtual routing feature in the BASgatewaySX allows each connected Modbus device to appear as an individual BACnet compliant device. A device profile is needed for each Modbus type device. Contemporary Controls maintains a library of freely-available device profiles available for download at www.ccontrols.com/profiles or scan QR below.

If the device profile is not available, Contemporary Controls will provide it upon request. Custom Modbus device profiles can also be uploaded to the BASgatewaySX using the webpage. Using HTTPS webpages and a resident database of common Modbus device profiles, Modbus data points from Modbus Serial or Modbus TCP/IP devices can be mapped to BACnet objects.

Electrical *(Class 2 Circuits Only)*

INPUT	***DC***	***AC***
Voltage (±10%):	24 V	24 V
Power:	2 W	3 VA
Frequency:	N/A	47-63 Hz

Environmental

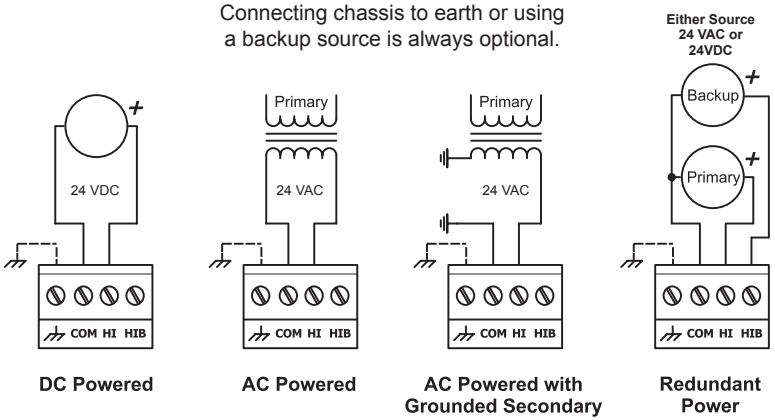
Operating temperature:	–40°C to +75°C
Storage temperature:	–40°C to +85°C
Relative humidity:	10–95%, non-condensing

Functional	***Ethernet***	***Modbus***
Physical Layer:	10BASE-T 100BASE-TX	EIA-485
Cable length limit:	100 m	1200 m (or 1000 m if using 115.2 kbps)
Modbus data rate (Kbps):	2.4, 4.8 9.6, 19.2, 38.4, 57.6, 76.8, 115.2 Kbps	

Installation

Power Connection

The BASgatewaySX requires 24 VAC or 24 VDC while drawing no more than 3 VA of power. The recommended conductor size is 16–18 AWG. COM is directly connected to zero volts and the chassis is DC isolated from zero volts. Input connections are reverse-polarity protected. See figure below for power options.



WARNING: Internally, this device utilizes a half-wave rectifier and therefore can only share the same AC power source with other half-wave rectified devices. Sharing a common DC power source is also possible. Sharing AC power with full-wave rectified devices is NOT recommended. Devices powered from a common AC source could be damaged if a mix of half-wave and full-wave rectified devices exists.

EIA-485 Physical Layer Bias and Termination

End-of-Line termination (120Ω) is normally applied at both ends of the EIA-485 bus, especially when using long cable segments and faster data rates. Fail-safe voltage bias (200mV) ensures stable Modbus operation. Depending on the application, bias and EOL termination can be configured from the selectable DIP-switches for the EIA-485 port.

NOTE: The switches for bias and termination should both be set to either ON or OFF together.

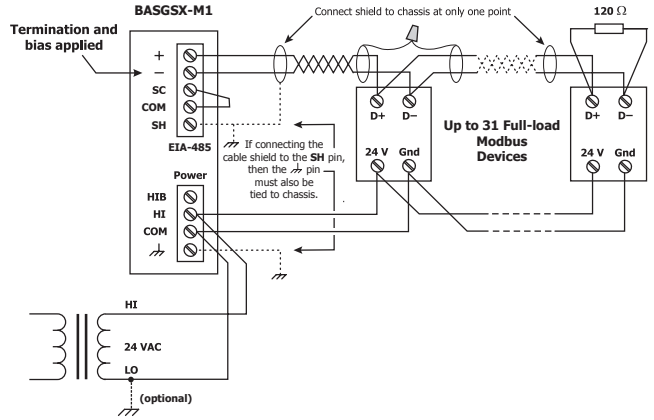
End Device – In an application where the location of the gateway is at the end of the EIA-485 bus segment – both bias and EOL termination must be ON.

Middle Device – In an application where the location of the gateway is anywhere between the end Modbus devices (i.e. in the middle of the bus), the DIP switches should be in the OFF position. Other devices on the EIA-485 bus can be used to provide additional bias.

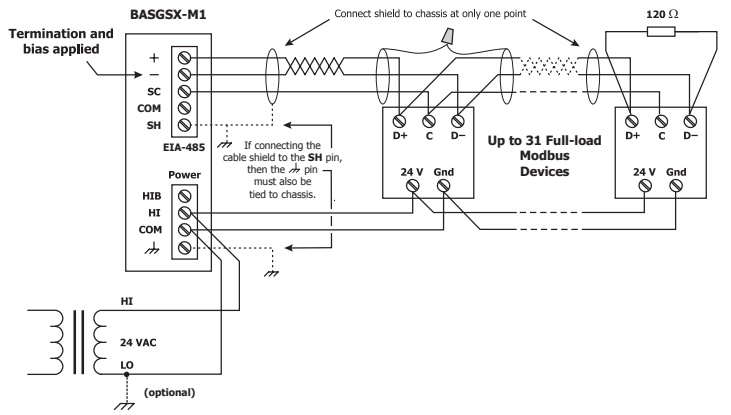
Modbus EIA-485 Physical Layer Connection Options

For Modbus devices that share a power source with the BASgatewaySX

2-wire EIA-485 Bus with Shared Power Source

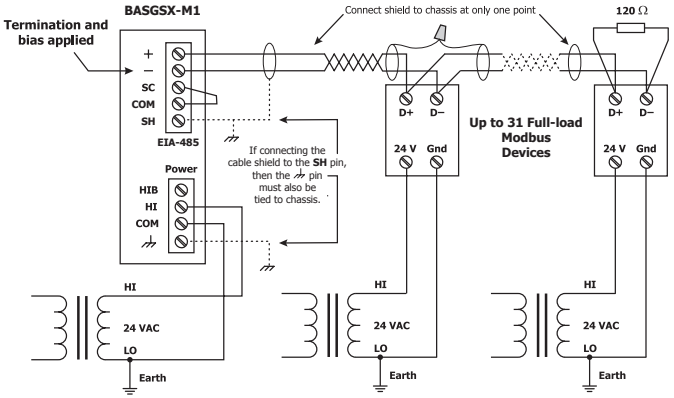


3-wire EIA-485 Bus with Shared Power Source

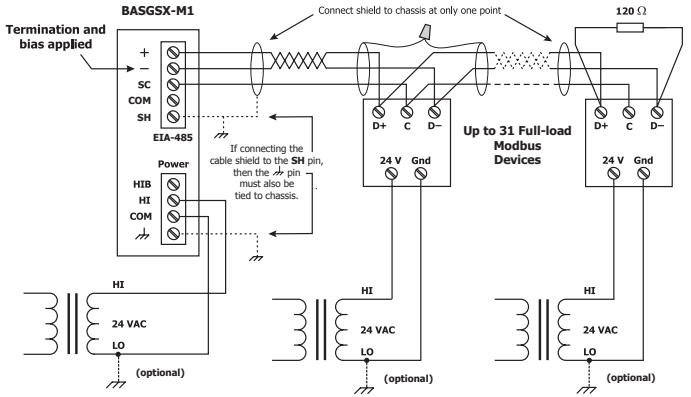


For Modbus devices that use a power source separate from the BASgatewaySX

2-wire EIA-485 Bus with Separate Power Sources



3-wire EIA-485 Bus with Separate Power Sources



Web Page Configuration

The BASgatewaySX contains an interactive web server accessible from any Internet-compatible PC on the local network with recent versions of most standard web browsers such as Microsoft Internet Explorer, Microsoft Edge, Mozilla Firefox, or Google Chrome installed. To configure the gateway initially, connect it to your Windows PC using an Ethernet cable and set the PC's IP and subnet mask in Local Area Connection –> Properties. In the Internet Protocol Version 4 (TCP/IPv4) settings of your Windows PC, specify an IP address and a Subnet mask in the same subnet as the BASgatewaySX (e.g. 192.168.92.5 /24).

*BASgatewaySX's factory-programmed: Default IP address is **192.168.92.68** and a Class C subnet mask of **255.255.255.0 (/24).** Username and Password are configured by user upon initial login.*

ATTENTION: The login credentials must be configured before the BASgatewaySX can be used or its system configuration altered. Set the username to an 8-63 character alphanumeric value (at least one letter and one number), and the password to an 8-63 character alphanumeric and the optional special characters allowed (~!@#%^+[ ]{ }_) value. This ensures only authorized access to the gateway.

Reset IP button feature: Do not remove power while reset process is underway. Reset IP switch is located on the front, underneath Power LED. Press and hold the Reset IP button using a paper clip for at least 10 seconds until the status light turns off, then remove the paper clip. Once the status light turns back on, wait an additional 30 seconds and the BASgatewaySX webpage should be accessible at its factory-programmed default IP. Reconfigure the Username and Password.

For complete datasheet and details on BASgatewaySX, support, or compliance information, please download our BASgatewaySX User Manual at: https://www.ccontrols.com/basautomation/basgatewaysx.php and click on the Support tab under More Information.

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