SCC Inc.

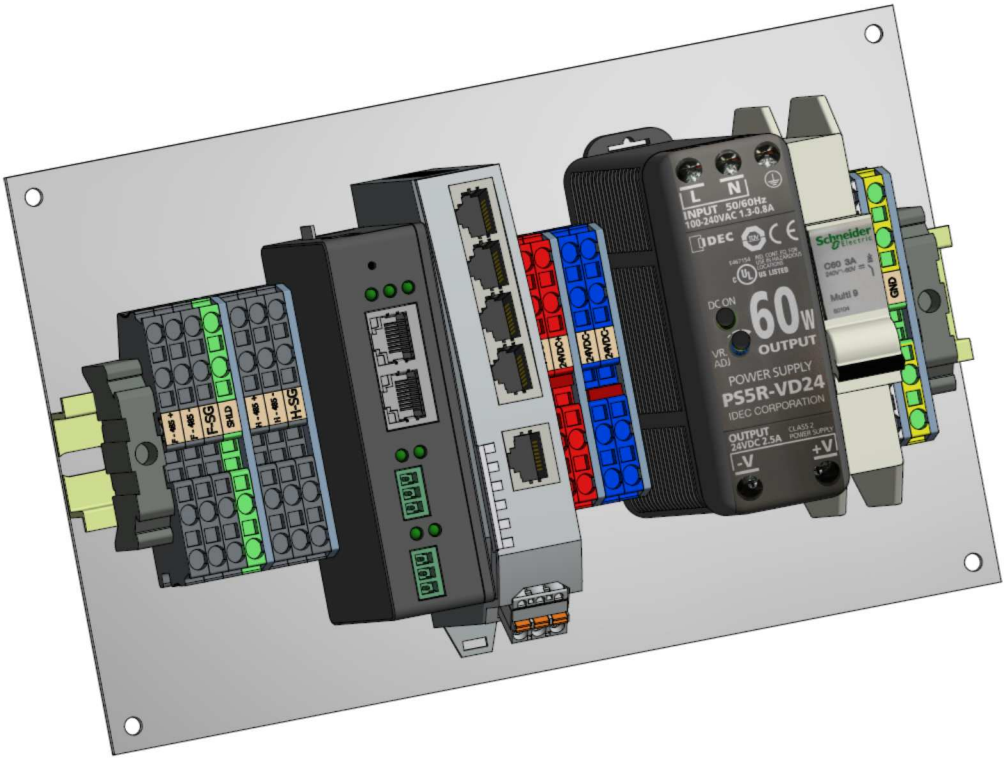
Technical Instructions

Document No. TS-6000

October 23, 2023

TS Series

TS-P… Protocol Converters
For Use with LMV3..., LMV5..., LME7…, RWF…, and TS… Series Controls



Description

A TS-P… series protocol converter provides a flexible communication interface to the building management system (BMS) for streamlined data collection and monitoring.

Features

- Converts native Modbus RTU to BACnet/IP, BACnet MS/TP, Ethernet/IP, Metasys N2, Modbus TCP/IP
- Allows simultaneous connection of up to 64 devices via serial connections, and up to 13 devices via Ethernet Modbus TCP/IP connections
- Easily configured using a web browser
- 63 data points per LMV3...
- 117 data points per LMV5...
- 64 data points per LME7…
- 11 data points per RWF10…
- 62 data points per RWF55…
- 295 data points per TS Series Touchscreen Kit
- 55 data points per TS Series Lead/Lag Master
- 90 data points per TS Series Lead/Lag Master (from each boiler)
- 90 data points per TS Series Deaerator/Surge Tank Master

Application

TS-P… protocol converter kits are suited for applications with BMS protocols other than Modbus TCP/IP or Modbus RTU. All SCC products that communicate using Modbus RTU are compatible.

Components

TS-Px2-x and TS-Px4-x protocol converter kits include the following components:

- Protocol converter module
- Plate kit including power supply and branch circuit protection
- Interconnect terminals for field wiring
- Field port for various protocols

The following options are available:

- Host port for Modbus RTU RS-232
- Host port for Modbus RTU RS-485
- Ethernet switch to support up to 13 TS… series TCP/IP devices via Ethernet to BMS

Product Part Numbers

The part number structure for TS-P… series protocol converters is shown below. Not all possible part number combinations are available. See Table 1 on the following page for a list of all available protocol converters.

TS - P X 4 - X

Touchscreer

Protocol Converter

FIELD Port
- X = RS-485 FIELD port
  - Supports: BACnet/IP
    BACnet MS/TP
    Metasys N2
    Modbus TCP/IP
    Ethernet/IP

HOST Port
- 2 = RS-232 HOST port
  - Supports: One LMV5...
- 4 = RS-485 HOST port (up to 64 devices)
  - Supports: LMV3... (via OCI412.10)
    LMV5... (via TS-5X-KT)
    LME7… (via OCI417.10)
    RWF10…
    RWF55…
- K = RS-232/RS-485 HOST port
  - Supports: Existing SCC Touchscreen Kit
  - Component shipped loose; to be installed with an existing SCC Touchscreen Kit
- M = RS-232/RS-485 HOST port
  - Supports: Existing SCC Master Panel
  - Component shipped loose; to be installed with an existing SCC Master Panel
- D = RS-232/RS-485 HOST port
  - Supports: Existing SCC DA/Surge/Cond. Control Panel
  - Component shipped loose; to be installed with an existing SCC DA/Surge/Cond. Control Panel

Ethernet Switch

Must be selected for multiple SCC Touchscreen Kits and/or SCC Combustion Enclosures w/ touchscreens
- X = None included
- 3 = 5-port switch (connects up to 4 TS series devices)
- 6 = 8-port switch (connects up to 7 TS series devices)
- 9 = 13-port switch (connects up to 10 TS series devices)
- 12 = 16-port switch (connects up to 13 TS series devices)

Product Part Numbers (continued)

Table 1: Available TS-P… Protocol Converter Part Numbers

	FIELD Port	HOST Port		Ethernet Switch					Equipment Provided	
Part Number	RS-485	RS-232	RS-485	None	5-port	8-port	13-port	16-port	Protocol Converter on Plate Kit with Terminals, Power Supply, and Circuit Breaker	Only Protocol Converter
TS-PX2-X	x	x		x					x	
TS-PX4-X	x		x	x					x	
TS-PX4-3	x		x		x				x	
TS-PX4-6	x		x			x			x	
TS-PX4-9	x		x				x		x	
TS-PX4-12	x		x					x	x	
TS-PXK-X	x	x	x	x						x
TS-PXM-X	x	x	x	x						x
TS-PXD-X	x	x	x	x						x

Specifications

Physical characteristics	Operating voltage	110-120 VAC
	Operating frequency	50-60 Hz
	Protocessor power	24 VDC
	Power consumption	24 VA
Operating environment	Operating temperature	32 to 131 °F [0 to 55 °C]
	Humidity	Max. 85% with no condensation

Part Descriptions

A	Modbus RS-232 and RS-485 Terminals
B	ProtoNode Protocol Converter
D	5-Port Ethernet Switch
E	8-Port Ethernet Switch

F	24 VDC Terminals
G	24 VDC Power Supply
H	3 Amp Circuit Breaker
J	Neutral and Ground Terminals

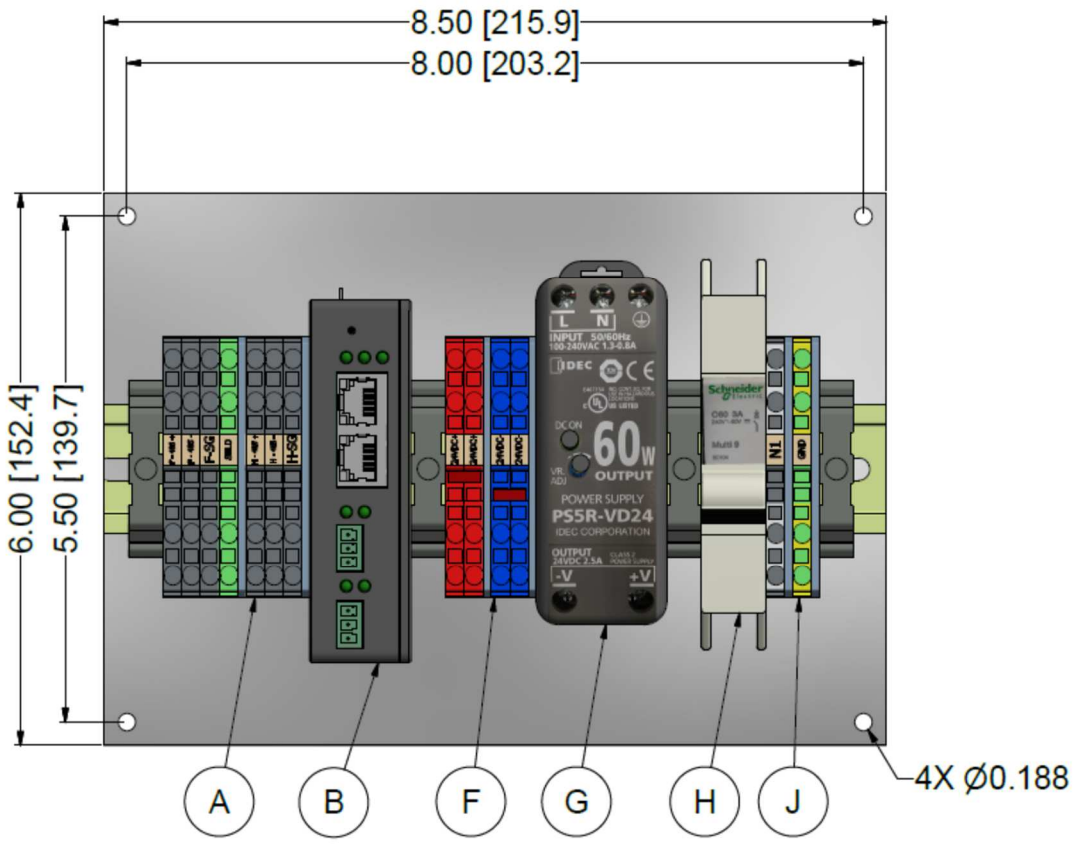
Dimensions

TS-PX2-X

LMV5 Modbus RTU to: BACnet/IP, BACnet MS/TP, Ethernet/IP, Metasys N2, or Modbus TCP/IP

TS-PX4-X

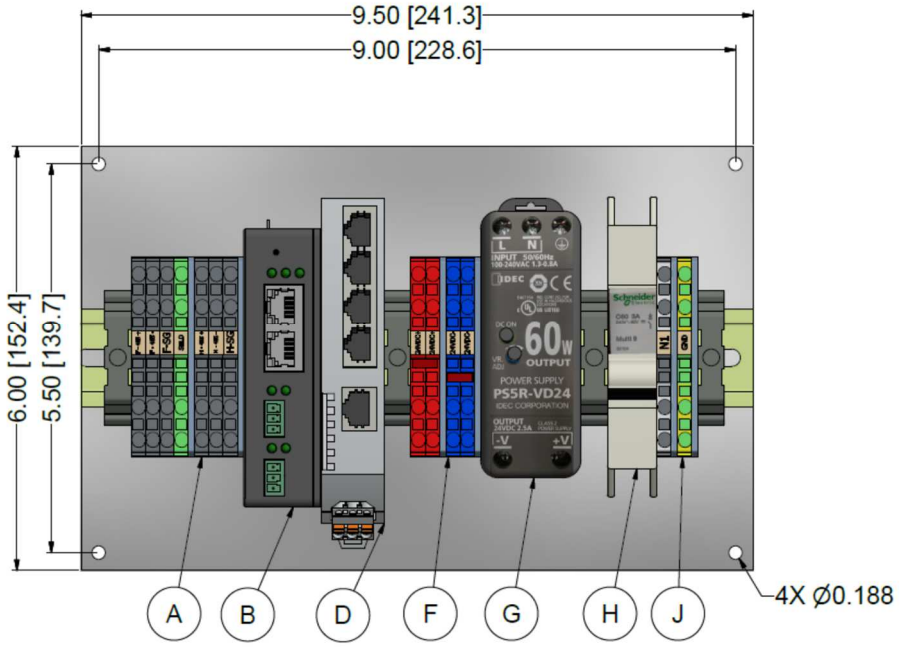
LMV3, LMV5, LME7, RWF10, and/or RWF55 to: BACnet/IP, BACnet MS/TP, Ethernet/IP, Metasys N2, or Modbus TCP/IP



Dimensions (continued)

TS-PX4-3

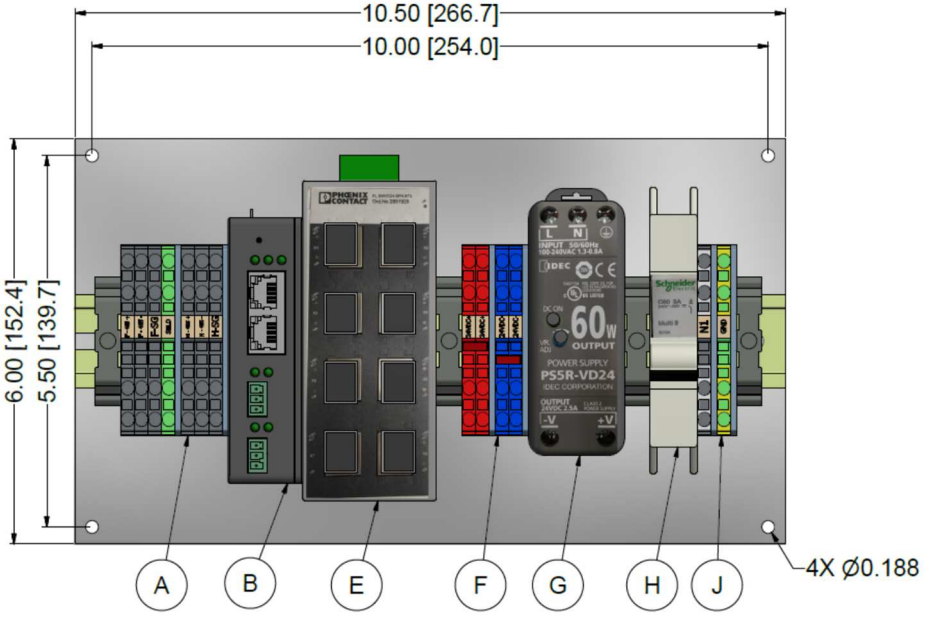
Up to 4 TS…Series Modbus TCP/IP to: BACnet/IP, BACnet MS/TP, Ethernet/IP or Metasys N2



Dimensions (continued)

TS-PX4-6

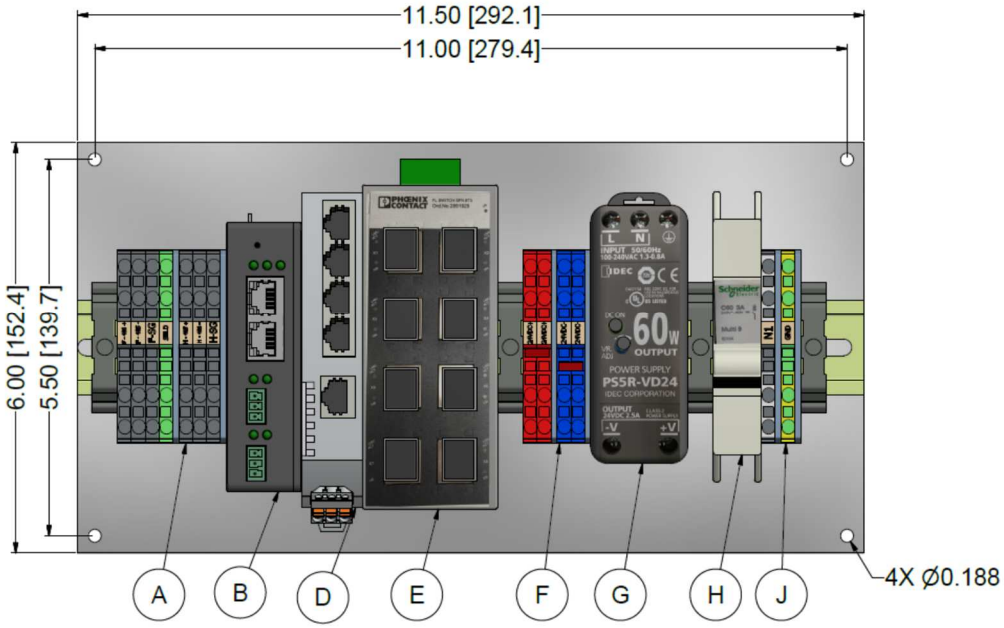
Up to 7 TS… Series Modbus TCP/IP to: BACnet/IP, BACnet MS/TP, Ethernet/IP, or Metasys N2



Dimensions (continued)

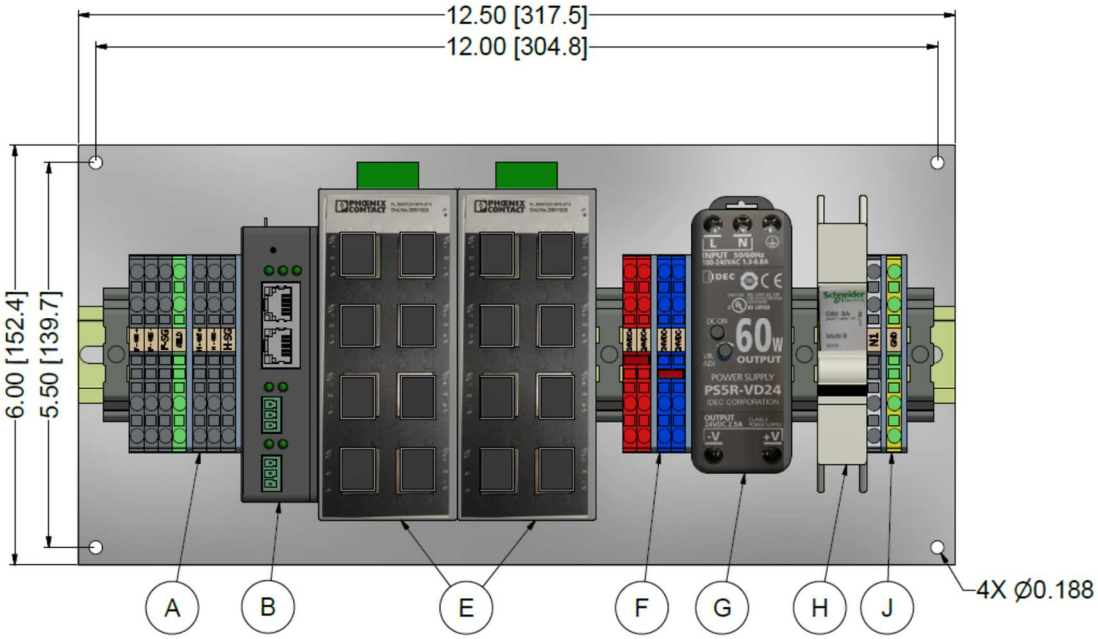
TS-PX4-9

Up to 10 TS… Series Modbus TCP/IP to: BACnet/IP, BACnet MS/TP, Ethernet/IP, or Metasys N2



TS-PX4-12

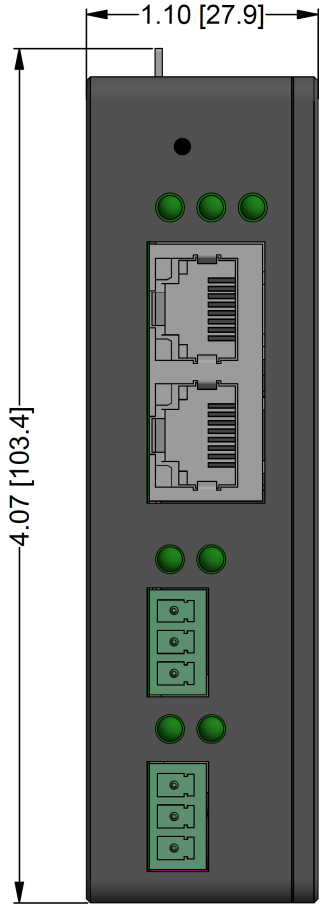
Up to 13 TS… Series Modbus TCP/IP to: BACnet/IP, BACnet MS/TP, Ethernet/IP, or Metasys N2



Dimensions (continued)

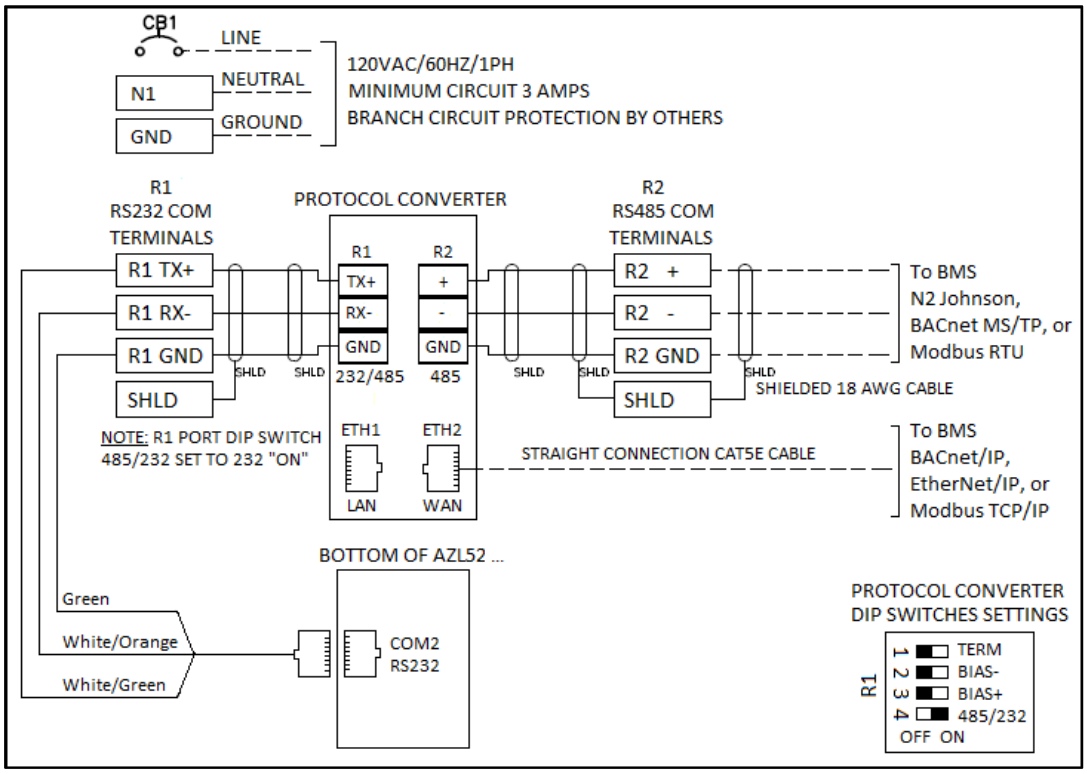
TS-PXD-X, TS-PXK-X, TS-PXM-X

Modbus TCP/IP to: BACnet/IP, BACnet MS/TP, Ethernet/IP, N2 Johnson, or Modbus RTU



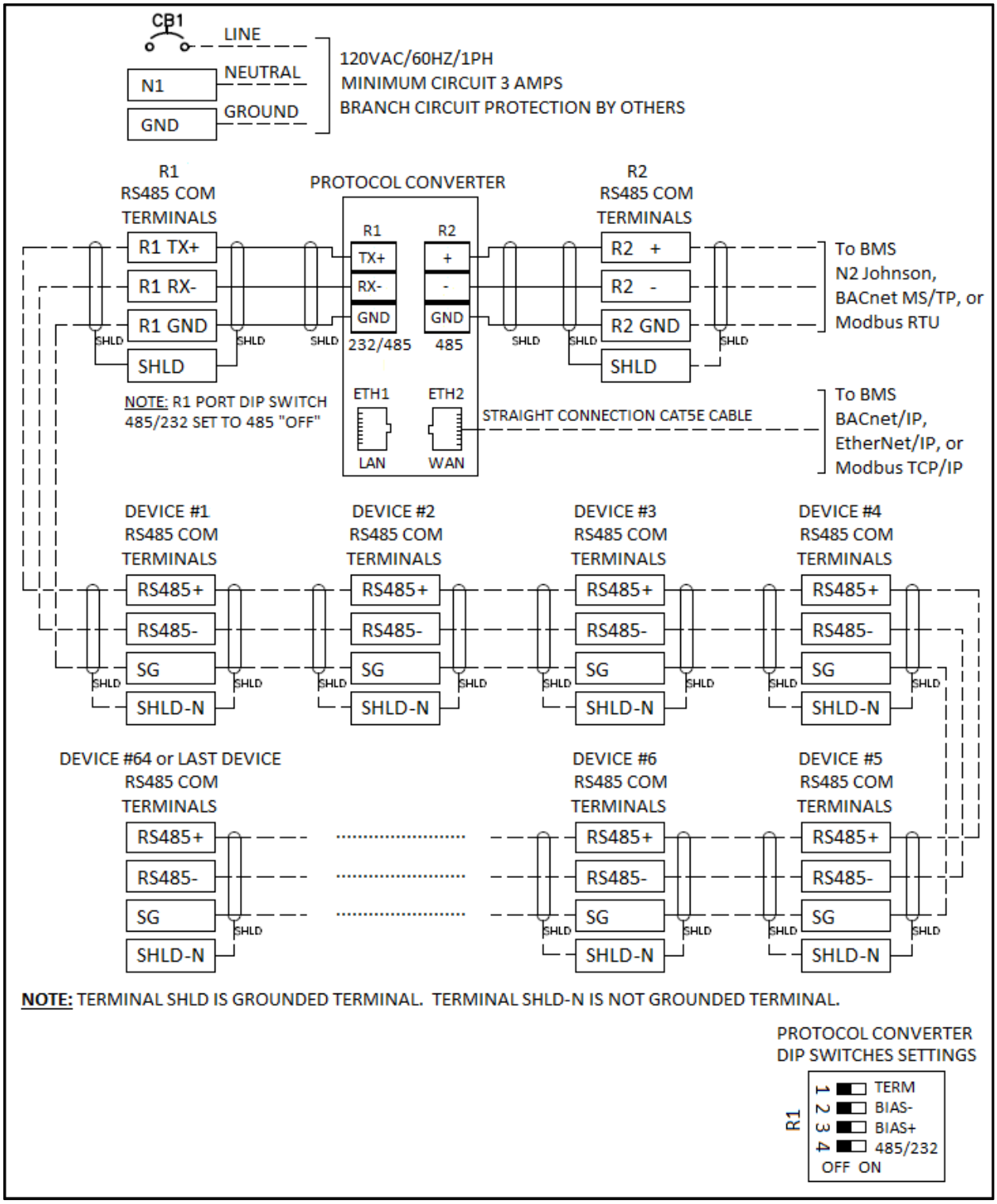
Connections

TS-PX2-X



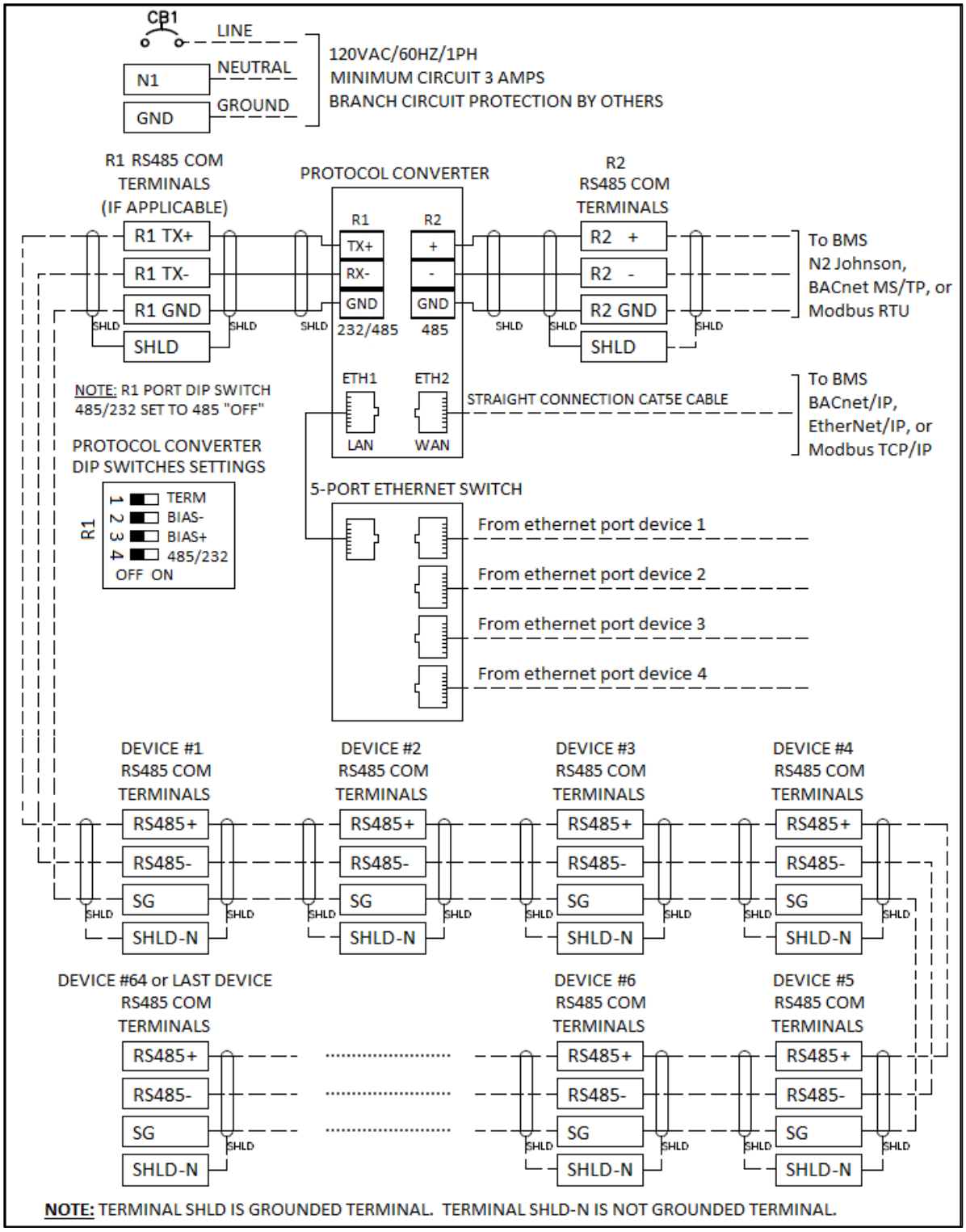
Connections (continued)

TS-PX4-X



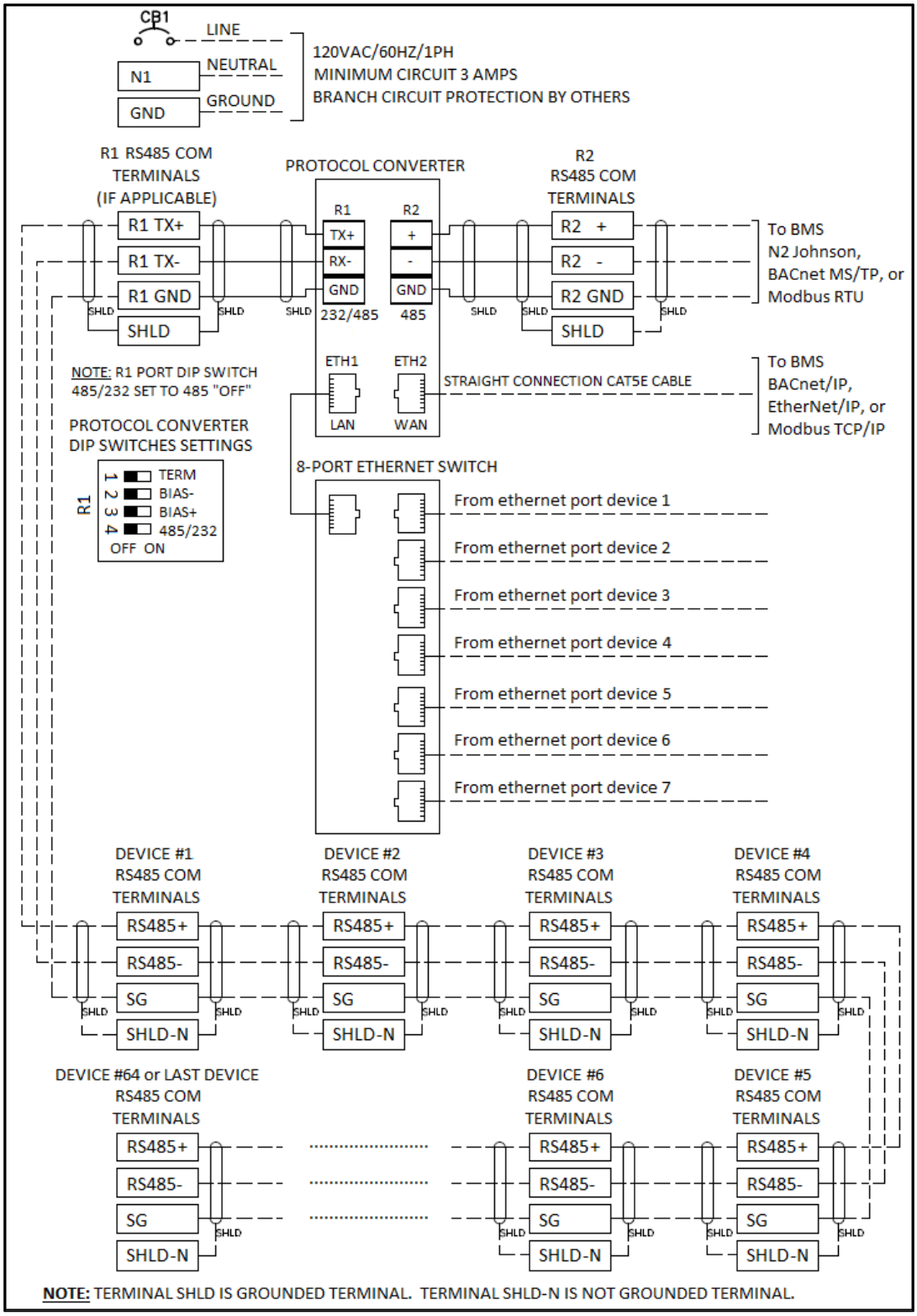
Connections (continued)

TS-PX4-3



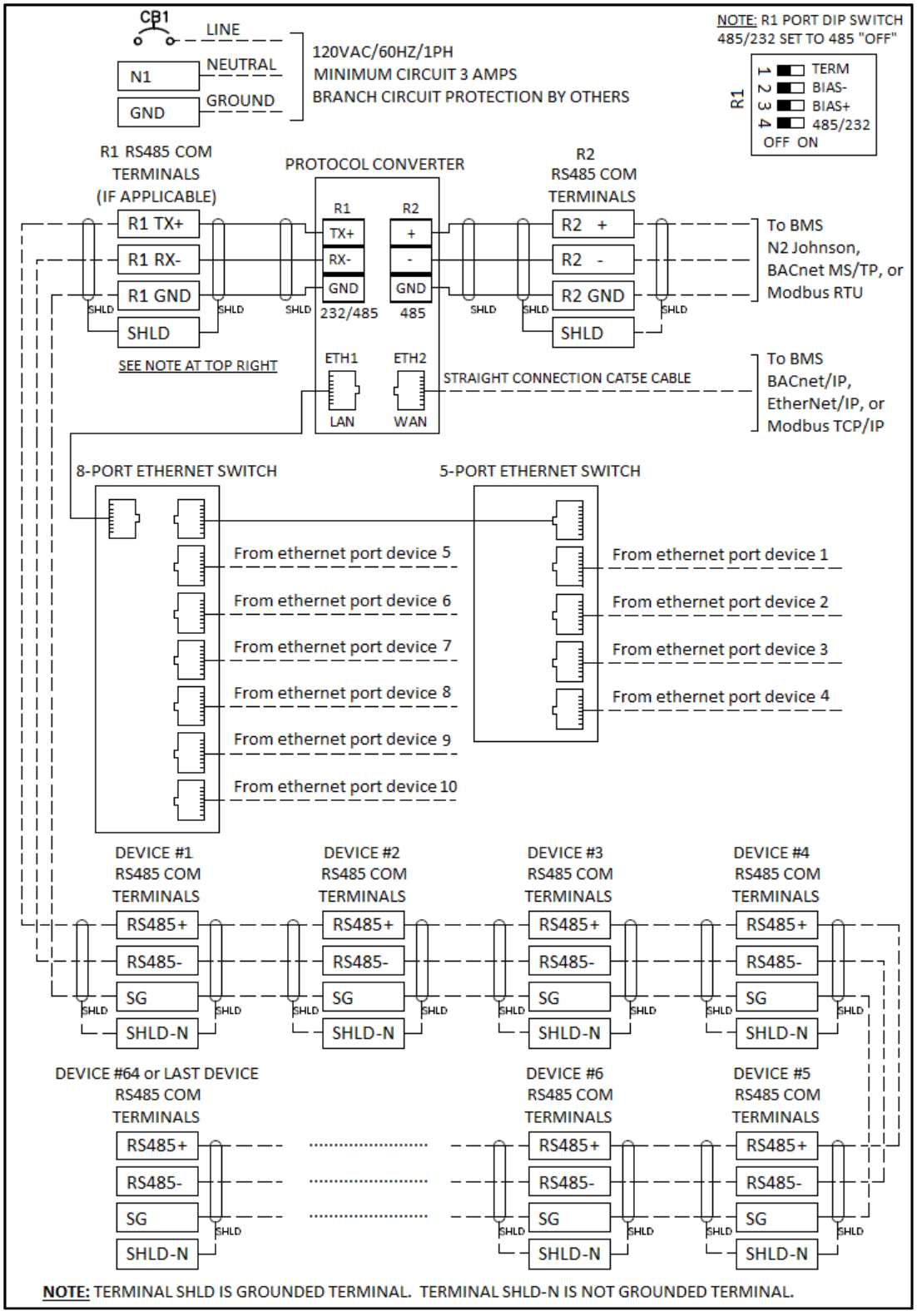
Connections (continued)

TS-PX4-6



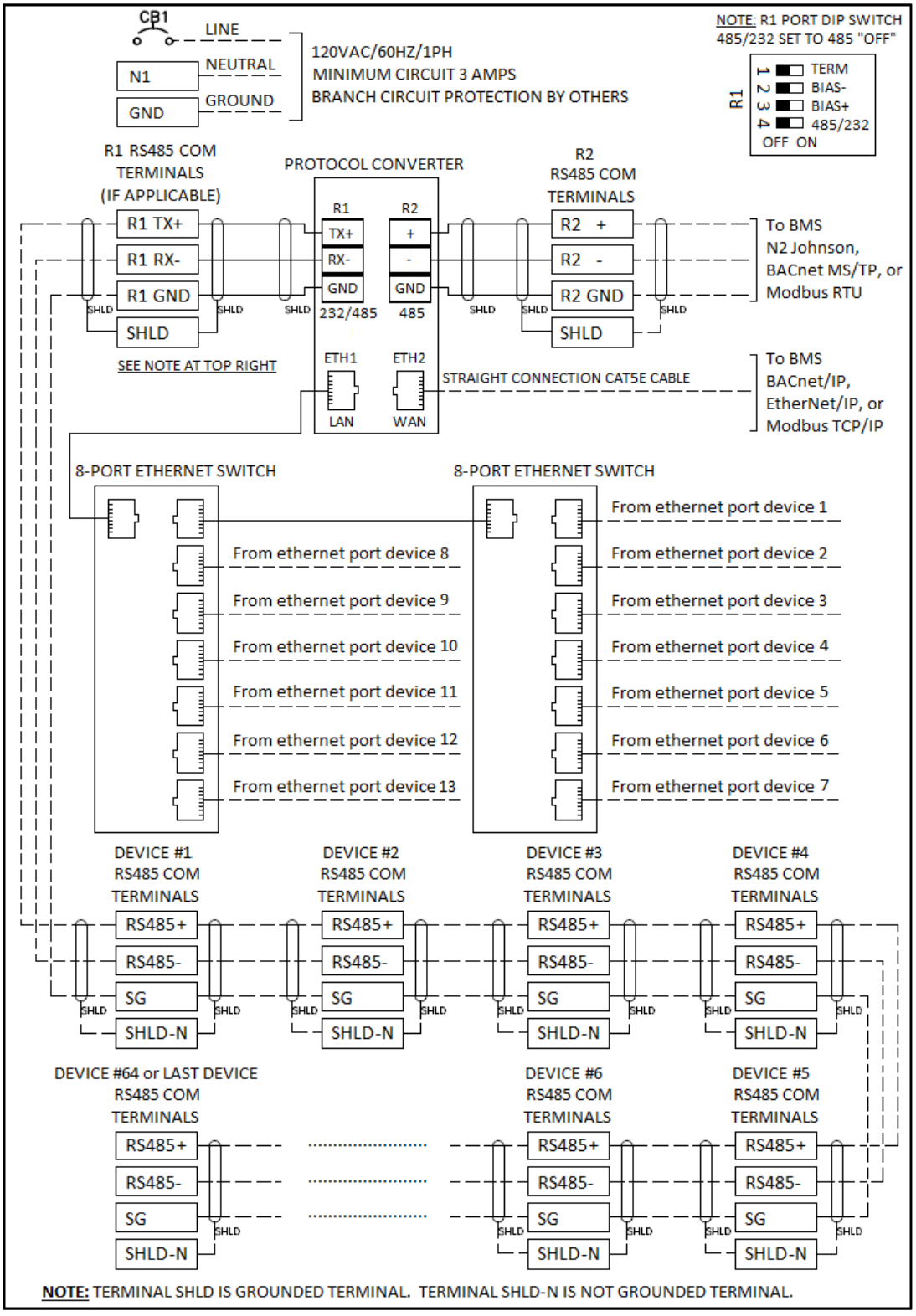
Connections (continued)

TS-PX4-9



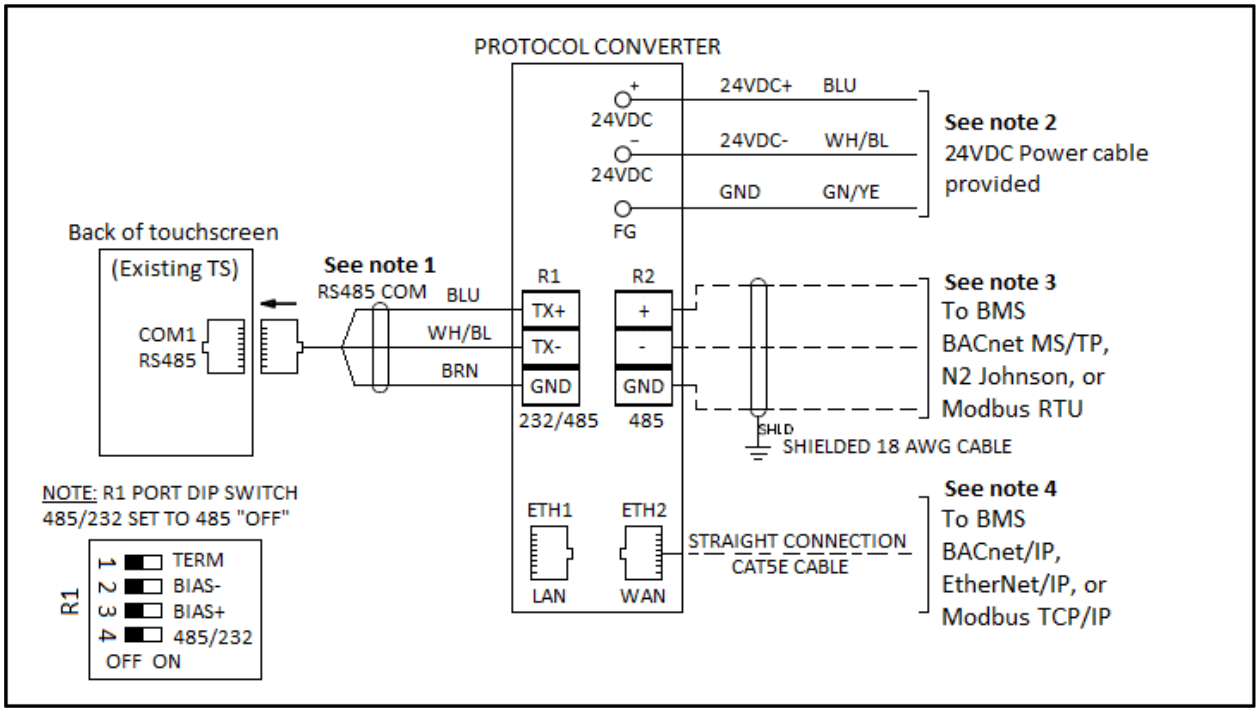
Connections (continued)

TS-PX4-12



Connections (continued)

TS-PXM-X (Supports: Existing SCC Master Panel)



Note 1:

Plug ‘RS485 COM’ white CAT5 cable to HMI GTU Touchscreen ‘COM1 RS485’ port.

Note 2:

Connect 24VDC cables to 24VDC terminals on the Master Panel (24VDC+ wire to 24+ RED terminal and 24VDC- wire to 24- BLUE terminal)

Note 3:

Protocol Converter serial ‘R2 RS485’ port for BMS BACnet MS/TP, N2 Johnson, or Modbus RTU (if applicable)

Note 4:

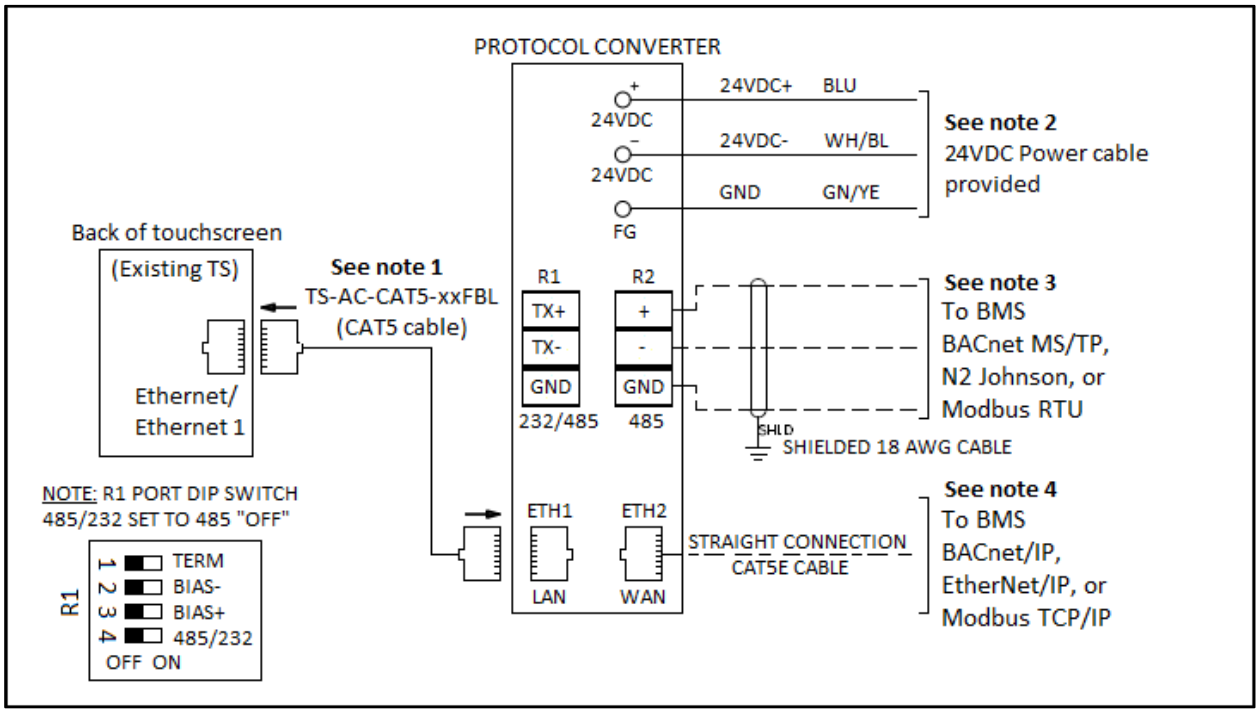
Protocol Converter Ethernet ‘ETH2’ port for BMS BACnet/IP, Ethernet/IP, or Modbus TCP/IP (if applicable)

Connections (continued)

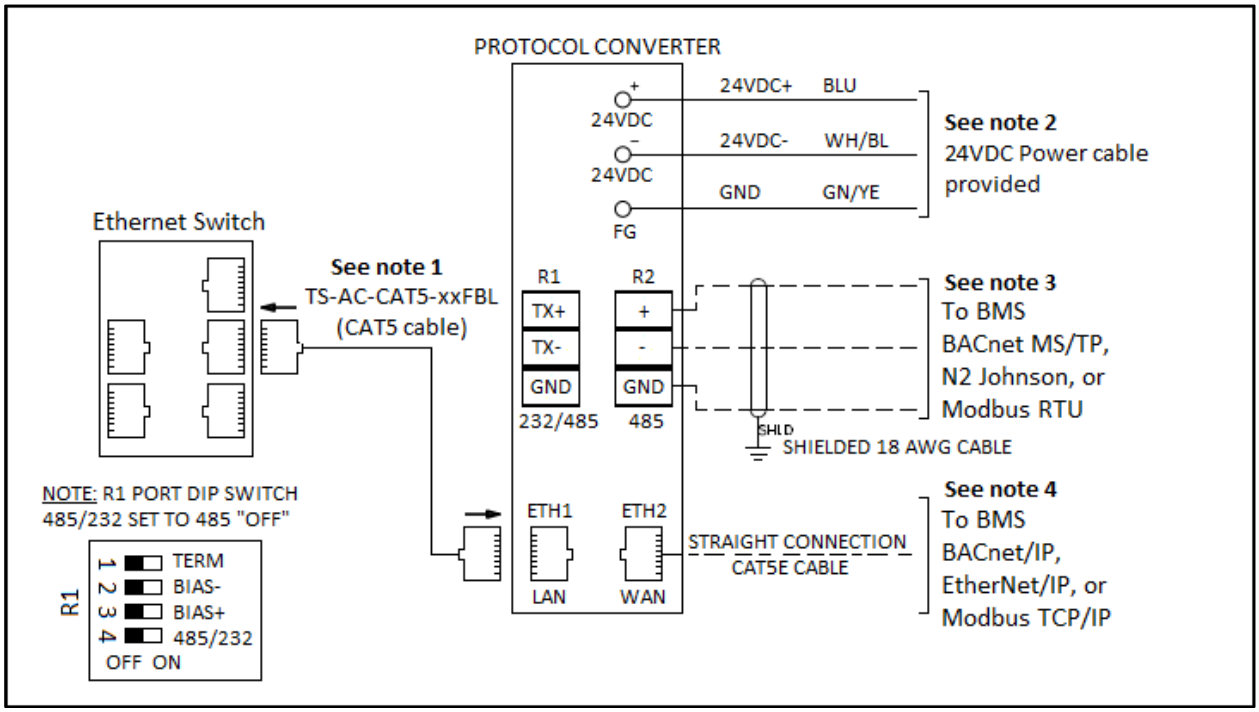
TS-PXK-X/TS-PXD-X

(TS-PXK-X supports: Existing SCC Touchscreen Kit with no PLC annunciation)

(TS-PXD-X supports: Existing DA/Surge/Condensate Panel)



(TS-PXK-X supports: Existing SCC Touchscreen Kit with PLC annunciation)



Connections (continued)

Note 1:

Plug blue CAT5 cable to HMI GTU Touchscreen Ethernet 'Ethernet or Ethernet 1' port (or Ethernet switch when with PLC annunciation) and Protocol Converter Ethernet 'ETH1' port.

Note 2:

Connect 24VDC cables to 24VDC terminals on the Touchscreen Kit or DA/Surge/Condensate Panel (24VDC+ wire to 24+ RED terminal and 24VDC- wire to 24- BLUE terminal)

Note 3:

Protocol Converter serial 'R2 RS485' port for BMS BACnet MS/TP, N2 Johnson, or Modbus RTU (if applicable)

Note 4:

Protocol Converter Ethernet 'ETH2' port for BMS BACnet/IP, Ethernet/IP, or Modbus TCP/IP (if applicable)