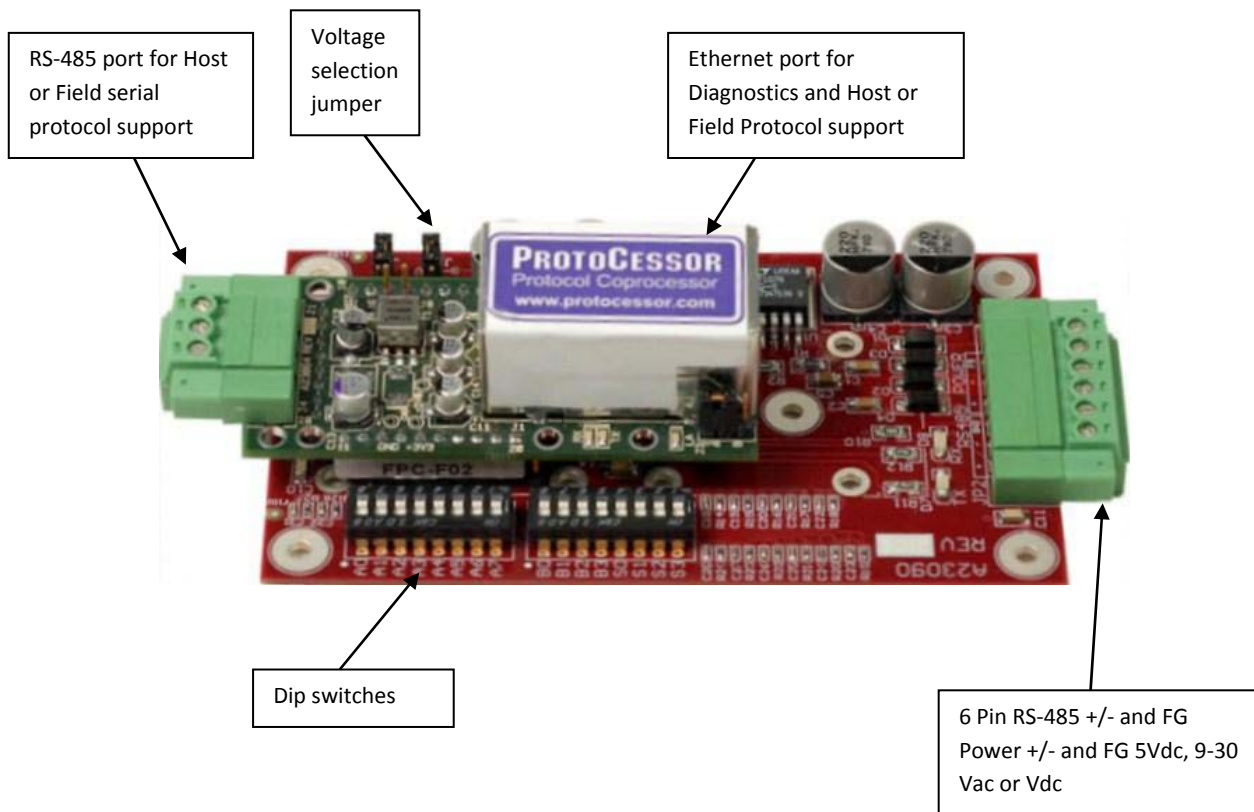# Setup Manual
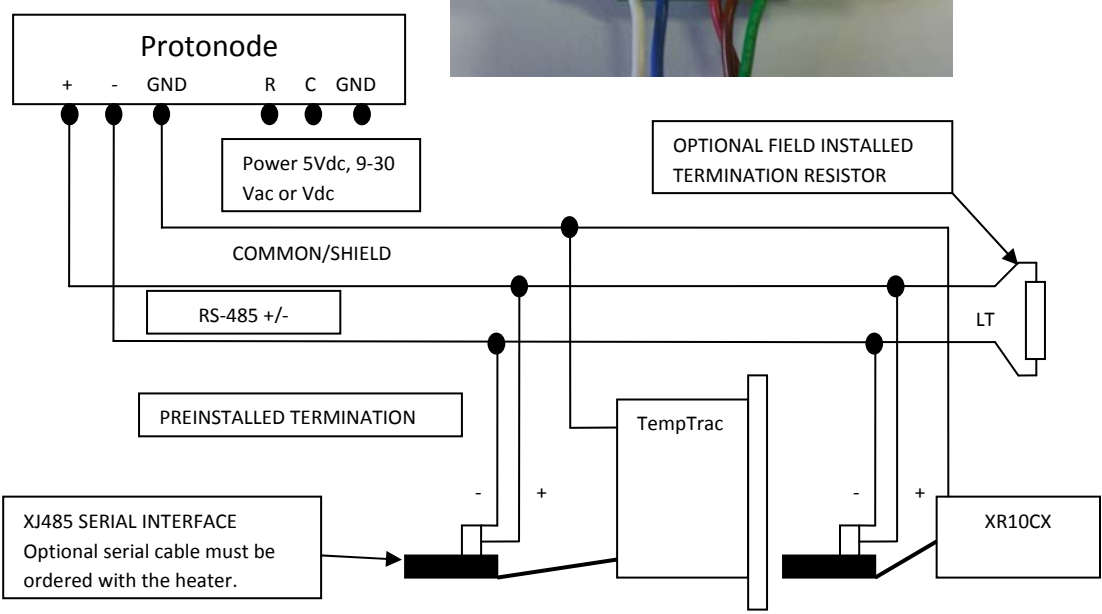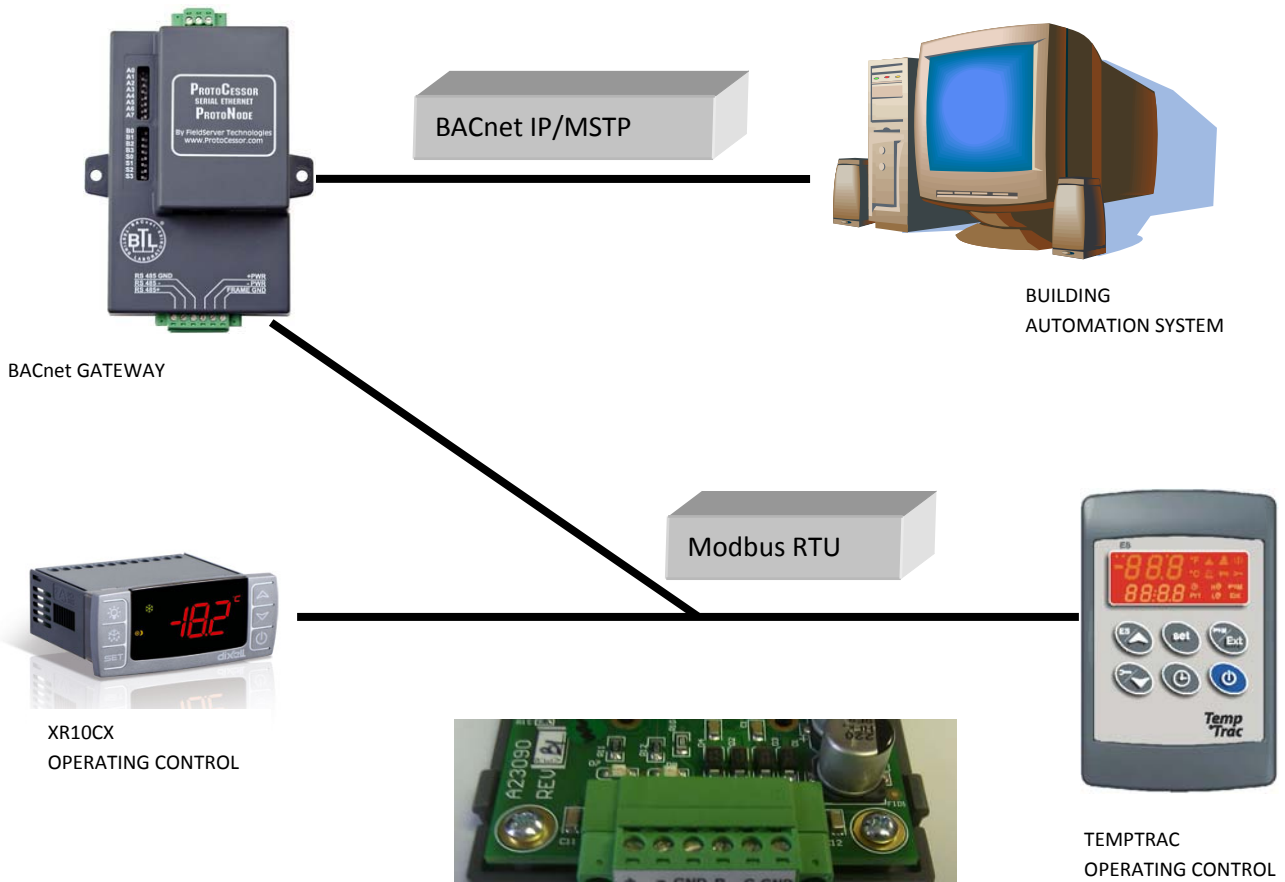# BACnet Protocol Gateway for TempTrac® and XR10CX Water Heater Control

When a BAS interface with Temptrac or the XR10CX requires a protocol other than the standard Modbus RTU for Temptrac and XR10CX, PVI Industries offers a premapped gateway from FieldServer Technologies. The ProtoCessor ProtoNode RER currently supports BACnet IP or MSTP. Consult factory for other protocols.

This manual is meant to be a general overview of the application of this gateway, for additional information please visit: *www.protocessor.com* or contact FieldServer Technologies at 800-317-8319 **Email:** *sales@protocessor.com* for technical assistance. The ProtoCessor ProtoNode can be user configured with the following specifics: IP address, serial address, baud rate and one of three register profiles.

HARDWARE DISCRIPTION

RS-485 port for Host or Field serial protocol support

Voltage selection jumper

Ethernet port for Diagnostics and Host or Field Protocol support

Dip switches

6 Pin RS-485 +/- and FG Power +/- and FG 5Vdc, 9-30 Vac or Vdc

SYSTEM OVERVIEW TEMPTRAC & XR10CX

BACnet IP/MSTP

BUILDING
AUTOMATION SYSTEM

BACnet GATEWAY

Modbus RTU

XR10CX
OPERATING CONTROL

TEMPTRAC
OPERATING CONTROL

Protonode

| + | - | GND | | R | C | GND |

Power 5Vdc, 9-30
Vac or Vdc

OPTIONAL FIELD INSTALLED
TERMINATION RESISTOR

COMMON/SHIELD

RS-485 +/-

LT

PREINSTALLED TERMINATION

TempTrac

XJ485 SERIAL INTERFACE
Optional serial cable must be
ordered with the heater.

- +

- +

XR10CX

Note: Wiring for the RS485 serial network should be made in a "daisy chained" 2 wire shielded/twisted pair.

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CONFIGURATION SETTINGS TEMPTRAC & XR10CX

Dip switches A0 to A7 configure the serial address. The table below lists the settings up to 10. The full 257 address settings can be found in the **ProtoCessor Getting Started (T17007)** manual at www.protocessor.com

A7	A6	A5	A4	A3	A2	A1	A0	Address
Off	Off	Off	Off	Off	Off	Off	Off	0
Off	Off	Off	Off	Off	Off	Off	On	1
Off	Off	Off	Off	Off	Off	On	Off	2
Off	Off	Off	Off	Off	Off	On	On	3
Off	Off	Off	Off	Off	On	Off	Off	4
Off	Off	Off	Off	Off	On	Off	On	5
Off	Off	Off	Off	Off	On	On	Off	6
Off	Off	Off	Off	Off	On	On	On	7
Off	Off	Off	Off	On	Off	Off	Off	8
Off	Off	Off	Off	On	Off	Off	On	9
Off	Off	Off	Off	On	Off	On	Off	10

Dip switches B0 to B3 configure baud rate.

The table below lists the settings.

Baud	B3	B2	B1	B0
Auto$_3$	Off	Off	Off	Off
110	Off	Off	Off	On
300	Off	Off	On	Off
600	Off	Off	On	On
1200	Off	On	Off	Off
2400	Off	On	Off	On
4800	Off	On	On	Off
9600	Off	On	On	On
19200	On	Off	Off	Off
20833	On	Off	Off	On
28800	On	Off	On	Off
38400	On	Off	On	On
57600	On	On	Off	Off
76800	On	On	Off	On
115200	On	On	On	Off

Dip switches S0 to S3 select the register profile to be used. When switch S0 is On the register profile will only monitor one control with an node address of 1. All registers are analog/16bit.

When switch S0 is Off and S1 is On the register profile will monitor up to 8 controls. The register addresses are detailed below. The respective node addresses are 1 to 8.

Control	Discription	Modbus Address	BACnet Address
Temptrac	Set Point Read/Write	40769	1
Temptrac	Temp. Probe 1 Read Only	40257	90
Temptrac	Temp. Probe 2 Read Only	40259	91
Temptrac	Temp. Probe 3 Read Only	40261	92
Temptrac	On/Off Enable Read/Write	401281	95
XR10CX	Temp. Probe 1 Read Only	40257	90
XR10CX	Set Point Read/Write	40854	101

Off---On

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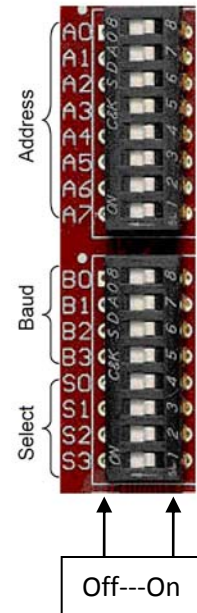
POWERING UP THE PROTOCESSOR/PROTONODE

- **Power** LED comes on and remains solid

- **LA** starts flashing about once per second. This tells us that PIC (Peripheral Interface Controller) number 1 in the ProtoCessor has powered up successfully.

- **LB** starts flashing about once per second. This tells us that PIC number 2 in the ProtoCessor has powered up successfully.

- **GP105** will go on solid within 45 – 60 seconds after power up, signifying normal operation. ProtoCessor will be able to come up in RUINET shortly after this LED comes on. During the first 45-60 seconds the LED should be dark.

- Upon successful operation of **GP105 t**he ProtoCessor will go through diagnostics of the field port communications.

- The FFP-ETH module is operational after this point.

- **RX** Field Port LED: On normal operation, the **RX** LED will flash when a message is received on the field port of the ProtoCessor.

- **TX** Field Port LED: On normal operation, the **TX** LED will flash when a message is sent on the field port of the ProtoCessor.
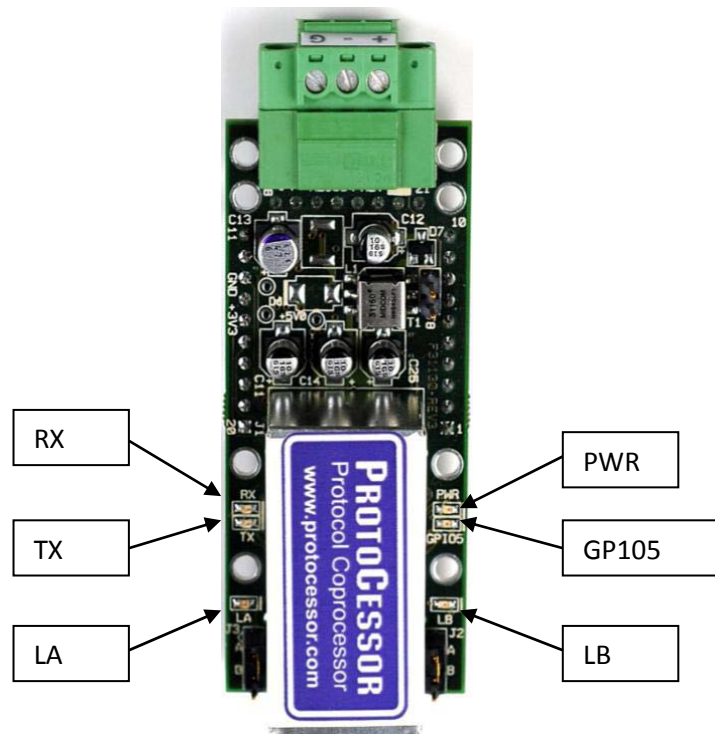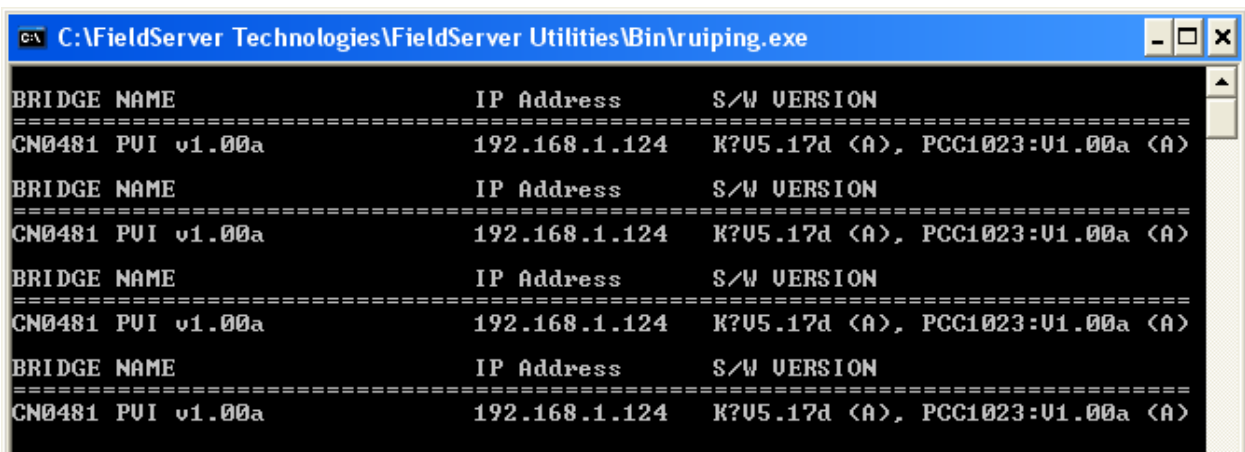
CONNECTION TO PROTOCESSOR USING UTILITIES

Make sure that the FST Utilities is downloaded on the computer.

(http://fieldserver.com/techsupport/utility/utility.php)

- Connect an Ethernet cross-over cable between the PC and ProtoCessor or connect the ProtoCessor and the PC to the Hub/switch using a straight cat5 cable.

- The Default IP Address of the ProtoCessor **is 192.168.1.24**, Subnet Mask is **255.255.255.0.**

- If the PC and the ProtoCessor are on different IP Networks, assign a Static IP Address to the PC on the 192.168.1.0 network.

- Double click on the "RUIPING" Utility. If the IP Address of the ProtoCessor module appears on the screen, the ProtoCessor is running.

```
C:\FieldServer Technologies\FieldServer Utilities\Bin\ruiping.exe

BRIDGE NAME              IP Address      S/W VERSION
=======================================================================
CN0481 PVI v1.00a        192.168.1.124   K?V5.17d (A), PCC1023:V1.00a (A)
BRIDGE NAME              IP Address      S/W VERSION
=======================================================================
CN0481 PVI v1.00a        192.168.1.124   K?V5.17d (A), PCC1023:V1.00a (A)
BRIDGE NAME              IP Address      S/W VERSION
=======================================================================
CN0481 PVI v1.00a        192.168.1.124   K?V5.17d (A), PCC1023:V1.00a (A)
BRIDGE NAME              IP Address      S/W VERSION
=======================================================================
CN0481 PVI v1.00a        192.168.1.124   K?V5.17d (A), PCC1023:V1.00a (A)
```

- Double click on the debugging utility, "RUINET4" (Remote User Interface). The following screen will appear:


```
Remote User Interface                                    _ □ ✕
                        Main Menu

    CN0481 PVI v1.00a

    B - FieldServer Information

    O - Connection Overview
    N - Node Overview
    M - Map Descriptor Overview
    A - Data Array Overview

    L - Message Log
    E - Error Log
    F - Driver Log
    C - Combined Log

    D - Download Configuration to FieldServer
    U - Upload Configuration from FieldServer

    I - Change IP Address
    ! - Restart FieldServer


Keys: Type Appropriate Key for Selection
 <Q>uit  <→> Next  <←> Prev  <Ctrl→> Last  <Ctrl←> First  <n> Goto
```

- See the "ProtoCessor Mapping" document to ensure that the device is set up correctly with respect to Baud rate, Node Address, and Points which are configured in the device.

- Select "O" for Connect Overview to see the number of messages on each protocol. If the ProtoCessor is communicating correctly with the device then the display will show Tx and Rx messages without any errors.

- If there are errors on the ProtoCessor socket communications, then the points list in the CSV file will require editing until there are no errors. Each time the points are edited, the CSV will need to be re-downloaded using Ruinet.

- When communication between the device and the ProtoCessor is established the Field Side of the ProtoCessor may be connected to the appropriate device/software. Ensure that the Field Side parameters on the device/software are set up as per the "ProtoCessor Mapping" document.

- Read and Write data from each side and make sure the ProtoCessor works as expected.

TROUBLESHOOTING TIPS

- If **PWR** LED does not come on and LA and LB don't flash, call or email ProtoCessor support support@ProtoCessor.com.

- If **PWR** LED does not come on but the LA and LB flash, then the **PWR** LED is broken.

- If **LA** and **LB** don't start to flash there could be a problem with the ProtoCessor and you need to contact support@ProtoCessor.com.

- If **GP105** never comes on then you need to contact ProtoCessor support.

- If **TX** and or **RX** don't flash, it may represent a problem with the field wiring or Configuration problems in the ProtoCessor on field side or incorrect polling parameters (such as COMM properties like baud, parity, and etc).

- The Gateway is unable to find one or more controls in the RS485 network. The individual controls may not be programmed with the correct and unique node address. See the respective control manual for details.
- The Gateway has no communication with the controls in the RS485 network. Check the RS485 wiring for correct wiring method. See page 2 of this manual for details.

More information for the ProtoCessor/ ProtoNode can be found at: **Web:** *www.protocessor.com*

FieldServer Technologies, 1991 Tarob Court, Milpitas, California 95035 USA
Tel: 408-964-4433, **FAX:** 408-262-9042, **Toll-Free**: 800-317-8319 **Email:** *sales@protocessor.com*