

Smart Controller Protocol Converter Installation & Operation

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Replaces H-IM-UPC (09/15)

Smart Controller Protocol Converter

Installation and Operation Guide

Applicable for Bohn, Larkin, Climate Control, and Chandler brands



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General Safety Information

- 1. Installation and maintenance to be performed only by qualified personnel who are familiar with this type of equipment
- 2. Make sure that all field wiring conforms to the requirements of the equipment and all applicable national and local codes.
- 3. Make sure all power sources are disconnected before any service work is done on units.

Inspection

Responsibility should be assigned to a dependable individual at the job site to receive material. Each shipment should be carefully checked against the bill of lading. The shipping receipt should not be signed until all items listed on the bill of lading have been accounted. Check carefully for concealed damage. Any shortage or damages should be reported to the delivering carrier. Damaged material becomes the delivering carrier's responsibility, and should not be returned to the manufacturer unless prior approval is given to do so. When uncrating, care should be taken to prevent damage. Heavy equipment should be left on its shipping base until it has been moved to the final location. Check the serial tag information with invoice. Report any discrepancies to your Heatcraft Refrigeration Products Sales Representative.

Warranty Statement

Seller warrants to its direct purchasers that products, including Service Parts, manufactured by SELLER shall be of a merchantable quality, free of defects in material or workmanship, under normal use and service for a period of one (1) year from date of original installation, or eighteen (18) months from date of shipment by SELLER, whichever first occurs. Any product covered by this order found to Seller's satisfaction to be defective upon examination at Seller's factory will at SELLER's option, be repaired or replaced and returned to Buyer via lowest common carrier, or SELLER may at its option grant Buyer a credit for the purchase price of the defective article. Upon return of a defective product to SELLER's plant, freight prepaid, by Buyer, correction of such defect by repair or replacement, and return freight via lowest common carrier, shall constitute full performance by SELLER of its obligations hereunder.

SELLER shall have no liability for expenses incurred for repairs made by Buyer except by prior, written authorization. Every claim on account of breach of warranty shall be made to SELLER in writing within the warranty period specified above – otherwise such claim shall be deemed waived. Seller shall have no warranty obligation whatsoever if its products have been subjected to alteration, misuse, negligence, free chemicals in system, corrosive atmosphere, accident, or if operation is contrary to SELLER's or manufacturer's recommendations, or if the serial number has been altered, defaced,or removed. SELLER makes no express warranties except as noted above. All implied warranties are limited to the duration of the Express Warranty. Liability for incidental and consequential damages is excluded. The forgoing is in lieu of all other warranties, express or implied, notwithstanding the provisions of the uniform commercial code, the Magnuson-Moss Warranty - Federal Trade Commission Improvement Act, or any other statutory or common law, federal or state.

SELLER makes no warranty, express or implied, of fitness for any particular purpose, or of any nature whatsoever, with respect to products manufactures or sold by seller hereunder, except as specifically set forth above and on the face hereof. It is expressly understood and agreed that SELLER shall not be liable to buyer, or any customer of buyer, for direct or indirect, special, incidental, consequential or penal damages, or for any expenses incurred by reason of the use or misuse by buyer or third parties of said products. To the extent said products may be considered "consumer products," As defined in Sec. 101 of the Magnuson-Moss Warranty -Federal Trade Commission Improvement Act, SELLER makes no warranty of any kind, express or implied, to "consumers," except as specifically set forth above and on the face hereof.

The following conditions should be adhered to when installing this unit to maintain the manufacturers warranty:

- (a) The power supply to the unit must meet the following conditions:
 - A. Single phase must be within +10% or-5% of nameplate ratings.
 - B. Phase imbalance cannot exceed 2%.
- (b) All control and safety switch circuits must be properly connected according to the wiring diagram.
- (c) The factory installed wiring must not be changed without written factory approval.
- (d) All equipment is installed in accordance with local, state and national electrical code specified minimum clearances.



Introduction

The Smart Controller Protocol Converter is a general purpose protocol converter (translator) for mounting within the building envelope. The UPC can convert proprietary equipment data, such as Beacon II or QRC refrigeration systems, into open protocol data, enabling the Heatcraft Smart Controller to reside on a BACnet, Modbus, or LonWorks network, where it can be monitored or controlled by a Building Automation System (BAS).

Controller Dimensions

Overall Dimensions:

A: 5-3/16 in. (13.2 cm) B: 4-1/8 in. (10.5 cm)

Mounting Holes:

C: 4-7/8 in. (12.4 cm) D: 2-1/20 in. (5.2 cm) E: 3/16 in. (.5 cm)

Depth:

1-9/16 in. (4 cm)

Weight:

.44 lbs (.2 kg)



Register Mapping

Modbus:	Refer to H-IM-MOD (25008701)
BACnet:	Refer to H-IM-BAC (25008801)
LonWorks:	Refer to H-IM-LON (25008901)

Specifications

Power

24 Vac $\pm 10\%$, 50–60 Hz, 10 VA power consumption (16 VA with BA*Cview*[®] attached), 26 Vdc (25 V min, 30 V max) Single Class 2 source only, 100 VA or less.

Port 1a

For EIA-485 2-wire communications, configurable as a device port or BAS port.

Protocols supported:

- BACnet over ARC156
- BACnet MS/TP
- Modbus (RTU/ASCII)

NOTE: Port 1a or Port 1b can be used, but not both.

Port 1b

For LonWorks Option Card.

Port 2

For communication to Heatcraft Smart Controller.

Rnet port

For connecting to RS sensors and/or BACview® Supports any of the following:

- 1 RS Plus, RS Pro, or RS Pro-F
- 1-4 RS Standards
- 1-4 RS Standards, and 1 RS Plus, RS Pro, or RS Pro-F

Any of the above combinations, plus up to 2 BACviews, but no more than 6 devices total.

Local Access port

For local communication with a laptop computer running WebCTRL or for communication with a BACview. Memory 1 MB non-volatile battery-backed RAM, 1 MB Flash memory, 16-bit memory bus.

Memory

1 MB non-volatile battery-backed RAM, 1 MB Flash memory, 16-bit memory bus.

Battery

10-year Lithium CR2032 battery provides a minimum of 10,000 hours of data retention during power outages.

Protection

Built-in surge and transient protection circuitry - internal solid state Polyswitches on the incoming power and net work connections.



Status indicators

LED's indicate status of communications, running, errors, and power.

Environmental operating range

-22 to 150°F (-30 to 66°C), 0 to 90% relative humidity, non-condensing.

Physical

Rugged GE C2950HF Cycoloy plastic.

Mounting and Wiring

CAUTION! AVOID RUNNING COMMUNICATION WIRES OR SENSOR INPUT WIRES NEXT TO AC POWER WIRES OR THE TRANSLATOR'S RELAY OUTPUT WIRES. THE RESULTING NOISE CAN AFFECT SIGNAL QUALITY. COMMON SOURCES OF NOISE ARE:

- Spark igniters
- Radio transmitters
- Variable speed drives
- Electric motors (> 1hp)
- Generators
- Relays
- Transformers
- Induction heaters
- Large contactors (i.e., motor starters)
- Video display devices
- Lamp dimmers
- Fluorescent lights

To address the UPC

The UPC's two rotary switches determine the UPC's MAC address when it is placed on a BACnet/ARC156 or BACnet MS/TP network. The rotary switches define the MAC address portion of the device's BACnet address, which is composed of the network address and the MAC address. They also set the slave address on a Modbus or N2 network, when less than 100.

- 1. If the UPC has been wired for power, pull the screw terminal connector from its power terminals labeled Gnd and Hot. The translator reads the address each time you apply power to it.
- 2. Using the rotary switches, set the translator's address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.

EXAMPLE: If the translator's address is 25, point the arrow on the Tens (10's) switch to 2 and the arrow on the Ones (1's) switch to 5



NOTE: The UPC recognizes its address only after power has been cycled.

Smart Controller System Connections

Kit Components:

- UPC Protocol Converter
- DB9 Serial Connection (Port 2)
- Beacon II Serial Ribbon Cable
- Null Modem Adapter

Note: 24VAC power supply required.



Wiring:

ALC Controller	S2-DB9	Beacon II
тх ———	2	Black
RX	3	Blue
DTR	6	White
Sig ———	5	Red

NOTES

- If you cannot determine the connections on the Heatcraft Smart Controller, contact your Heatcraft representative.
- A solid receive light on the UPC controller indicates a wiring or polarity problem.
- The UPC DIP switch configurations should always have switch 3 OFF, which defines the BAS port as Port 1a or Port 1b.



To Wire for Power

CAUTIONS

- THE UPC IS POWERED BY A CLASS 2 POWER SOURCE. TAKE APPROPRIATE ISOLATION MEASURES WHEN MOUNTING IT IN A CONTROL PANEL WHERE NON-CLASS 2 CIRCUITS ARE PRESENT.
- DO NOT POWER PILOT RELAYS FROM THE SAME TRANSFORMER THAT POWERS THE UPC.
- OEMCTRL TRANSLATORS CAN SHARE A POWER SUPPLY AS LONG AS YOU:
 - a. MAINTAIN THE SAME POLARITY
 - **b. USE THE POWER SUPPLY ONLY FOR OEMCTRL TRANSLATORS**
- THE UPC HAS AN OPERATING RANGE OF 21.6 VAC TO 26.4 VAC. IF VOLTAGE MEASURED AT THE UPC'S INPUT TERMINALS IS OUTSIDE THIS RANGE, THE UPC MAY NOT WORK PROPERLY.
- 1. Remove power from the power supply.
- 2. Pull the screw terminal connector from the translator's power terminals labeled Gnd and 24 Vac.
- 3. Connect the transformer wires to the screw terminal connector.
- 4. Apply power to the power supply.
- 5. Measure the voltage at the UPC's power input terminals to verify that the voltage is within the operating range of 21.6 26.4 Vac.
- 6. Insert the screw terminal connector into the UPC's power terminals.
- 7. Verify that the Power LED is on and the Run LED is blinking.

Troubleshooting

Communication LED's

The LED's indicate if the translator is speaking to the devices on the network. The LED's should reflect communication traffic based on the baud rate set. The higher the baud rate the more solid the LED's become.

LEDs	Status
Power	Lights when power is being supplied to the translator. NOTE The UPC is protected by internal solid state Polyswitches on the incoming power and network connections. These Polyswitches are not replaceable and will reset themselves if the condition that caused the fault returns to normal
Rx	Lights when the translator receives data from the network segment; there is an Rx LED for Ports 1 and 2.
Тх	Lights when the translator transmits data to the network segment; there is an Rx LED for Ports 1 and 2.
Run	Lights based on translator health. See table below.
Error	Lights based on translator health. See table below.

The Run and Error LED's indicate translator and network status.

If Run LED shows	And Error LED shows	Status is
1 flash per second	1 flash per second, alternating with the Run LED	The translator files are archiving. Archive is complete when Error LED stops flashing.
2 flashes per second	Off	Normal
2 flashes per second	2 flashes, alternating with Run LED	Five minute auto-restart delay after system error
2 flashes per second	3 flashes, then off	The translator has just been formatted
2 flashes per second	On	Two or more devices on this network have the same MS/TP network address
2 flashes per second	1 flash per second	The translator is alone on the network
2 flashes per second	On	 Exec halted after frequent system errors, due to: Controller halted Program memory corrupted Address conflicts - duplicate MS/TP MAC addresses One or more programs stopped
5 flashes per second	On	Exec start-up aborted, Boot is running
5 flashes per second	Off	Firmware transfer in progress, Boot is running
7 flashes per second	7 flashes per second, alternating with Run LED	Ten second recovery period after brownout
14 flashes per second	14 flashes per second, alternating with Run LED	Brownout
On	On	 Failure. Try the following solutions: Turn the UPC off, then on. Download memory to the UPC. Replace the UPC.



Compliance

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. **CAUTION CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE RESPONSIBLE PARTY FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.**

CE Compliance

WARNING THIS IS A CLASS A PRODUCT. IN A DOMESTIC ENVIRONMENT, THIS PRODUCT MAY CAUSE RADIO INTERFERENCE IN WHICH CASE THE USER MAY BE REQUIRED TO TAKE ADEQUATE MEASURES.

BACnet Compliance

BACnet[®] is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to requirements of ASHRAE Standard 135 is the responsibility of the BACnet manufacturers Association (BMA). BTL[®] is a registered trademark of the BMA.

INTEGRATION GUIDE

Protocols

Protocols are the communication languages spoken by control devices. They communicate information in the most efficient method possible. Different protocols provide distinct information for different applications.

In the BAS application, many different protocols are used, depending on the manufacturer. It is advantageous for the entire facility to be linked together and presented in one front end.

For 2 devices to communicate with each other, they must speak the same protocol or have a protocol translator. All of our translators have the ability to speak multiple protocols. No matter what controls are present in the rest of the building, our translator communicates with them without the added cost of a gateway.

Protocols are:

- A set of formal rules describing how to transmit data, especially across a network
- A low level protocol defines:
 - the electrical and physical standards to be observed
 - bit-and-byte-ordering
 - the transmission, error detection, and correction of the bit stream
- A high level protocol deals with data formatting, including:
 - syntax of messages
 - terminal-to-computer dialogue
 - character sets
 - sequencing of messages, etc.
- It is a language spoken between electronic devices

NOTE: An example is the protocol IP, which stands for Internet Protocol For two devices to communicate with each other, they must speak the same protocol or have a protocol translator.

BACnet

BACnet, which stands for Building Automation and Controls network, is a protocol developed by ASHRAE in response to industry concerns about increased networking of BAS components using proprietary communications methods. In the past, these proprietary communications severely limited the building owners' choices for system expansion, upgrade, and replacement. Every major controls vendor in North America, as well as academics, end users, consulting engineers, and government groups, participated in its development.

BACnet has been accepted as an open standard by the American National Standards Institute (ANSI) and the European CEN standards. It is also being adopted as an international ISO standard.

BACnet is designed to include all building systems, lighting, security, fire, heating, ventilation, and air conditioning. Its purpose is to promote interoperability - sharing data between systems made by different vendors.



It provides the necessary tools to develop a specification for systems that are interoperable. BACnet provides methods and standards for representing information, for requesting and interpreting information, and for transporting information.

NOTE: The UPC's latest supported function codes and capabilities are listed on the associated Protocol Implementation Conformance Statement (PICS), OEMCtrl BACnet PICS website http://www.bacnetinternational.net/catalog/index.php?m=47.

BACnet MS/TP

BACnet Master Slave/Token Passing or MS/TP is used for communicating BACnet over a sub-network of BACnet-only translators. Each translator on the network has the ability to hear the broadcast of any other device on the network. The speed of an MS/TP network ranges from 9600 bps to 76.8 kbps.

Configuring the Protocol Converter for BACnet MSTP for Port 1a

- 1. Turn off the UPC's power.
- 2. Using the rotary switches, set the translator's address. Set the Tens (10's) switch to the tens digit of the address, and set the Ones (1's) switch to the ones digit.
- **EXAMPLE:** If the translator's address is 25, point the arrow on the Tens (10's) switch to 2 and the arrow on the Ones (1's) switch to 5



3. Set the Comm Selector DIP Switches 1 - 8 for baud rate, port number, wiring, and protocol.

4. Set DIP switches 1 and 2 for the appropriate communications speed. See table below.

NOTE: Use the same baud rate for all devices on the network segment.

Baud Rate	DIP switch 1	DIP switch 2
9600 bps	Off	Off
19.2 kbps	Off	On
38.4 kbps	On	Off
76.8 kbps	On	On

5. Set Comm Selector DIP Switch 3 to OFF for BMS Port 1.

6. Set Comm Selector DIP Switch 4 to ON for EIA-485 2-wire.

7. Set Comm Selector DIP Switches 5 - 8 OFF for MSTP (m).

EXAMPLE: The following DIP Switches are set for 38.4k, Port 1, and MS/TP (m)



NOTE: MS/TP (m) is recommended.

8. Connect the communications wiring to Port 1a. Connect to Net+, Net-, and Gnd.



Wiring specifications

- A dedicated 22 AWG to 18 AWG twisted pair wire (EIA 485)
- 2000 feet (610 meters) for 76.8 kbps
- Devices should be daisy chained and not star wired.
- If the UPC is at either end of a network segment, connect a BT485 to the UPC

NOTE: Use the same polarity throughout the network segment.

- 9. Turn on the power for the UPC by connecting power terminals.
- 10. Set the correct network number to the unique BACnet MS/TP network at the site.

BACnet Mapping

Refer to H-IM-BACnet (25008801)



MODBUS

The Modbus protocol is used mostly in the industrial process market to communicate between PLCs (Programmable Logic Controllers). Although there is no official standard, there is extensive documentation on Modbus and most companies who choose to interface using this protocol follow the same format.

Modbus is not a protocol that is particularly well suited for building management because of its limited master/slave structure. However, many companies offer Modbus as an open protocol solution because it is relatively easy to construct an interface.

Configuring the UPC for Modbus RTU or ASCII on Port 1a

- 1. Turn off the power for the UPC by disconnecting power terminals.
- 2. Using the rotary switches, set the translator's address. Set the **Tens (10's)** switch to the tens digit of the ad dress, and set the **Ones (1's)** switch to the ones digit.

EXAMPLE If the translator's address is 25, point the arrow on the **Tens (10's)** switch to 2 and the arrow on the **Ones (1's)** switch to 5.



3. Set DIP switches 1 and 2 for the appropriate communications speed. See table below. **NOTE:** Use the same baud rate for all devices on the network segment.

Baud Rate	DIP switch 1	DIP switch 2
9600 bps	Off	Off
19.2 kbps	Off	On
38.4 kbps	On	Off
76.8 kbps	On	On

- 4. Set Comm Selector DIP Switch 3 OFF for BAS Port 1.
- 5. Set Comm Selector DIP Switches 5- 8 for Modbus.

The following example shows the DIP Switches set for 38.4k, Port 1, and Modbus.



BACnet MS/TP (m) Port 1 - EIA 485 BMS - Port 1 BMS - baud set to 38.4

6. Connect the communications wiring to Port 1a. Connect to Net+, Net-, and Gnd.



Wiring specifications

- A dedicated 24 AWG to 18 AWG twisted pair wire (EIA-485)
- 2000 feet (610 meters) for 76.8 kbps
- 3000 feet (914.4 meters) for 9600 bps, 19.2 or 38.4 kbps, before needing a Repeater
- Devices should be daisy chained and not star wired
- If the translator is at either end of a network segment, connect a BT485 to the UPC **NOTE:** Use the same baud rate for all devices on the network segment.
- 7. Turn on the power for the UPC by connecting power terminals.

Configuring the UPC for Modbus RTU or ASCII for Port 2

- 1. Turn off the power for the UPC by disconnecting power terminals.
- 2. Using the rotary switches, set the translator's address. Set the **Tens (10's)** switch to the tens digit of the address, and set the **Ones (1's)** switch to the ones digit.

EXAMPLE If the translator's address is 25, point the arrow on the **Tens (10's)** switch to 2 and the arrow on the **Ones (1's)** switch to 5.





Troubleshooting Modbus RTU or ASCII communication

The most common communication problems result from not properly following the configuration steps outlined above in this manual. Review all of the steps and use the following list to check your settings. **Verify accuracy of the following:**

- Baud rate DIP switches 1 and 2
- Modbus protocol DIP switches 5, 6, 7, and 8 Jumper set correctly to EIA-232 or EIA-485
- Proper connection wiring
- Unique rotary address switches 1-99. If translators have duplicate addresses, network communication can be lost.
- If RX LED is solid, then the terminations are incorrect.

NOTES: Use the same baud rate for all devices on the network segment.

- If RX LED is solid, then the terminations are incorrect.
- If the network has greater than 32 devices, or exceeds 2,000 feet, a Repeater should be installed.
- If a translator begins or ends a network segment, a terminating resistor may be needed.
- The translator recognizes physical changes (DIP switches, rotary switches, and jumpers) upon power up.

Software settings defined via the Equipment Touch or BAC*view*[®]6 local display. To confirm settings, obtain a Modstat of the device. On the Equipment Touch, click the link to the Modstat. On the BAC*view*[®]6 device, click and hold the FN key and the (.) period key at the same time

Modbus Exception Codes that might be returned from this translator

Codes	Name	Description
01	Illegal Function	The Modbus function code used in the query is not supported by the translator.
02	Illegal Data Address	The register address used in the query is not supported by the translator.
04	Slave Device Failure	The Modbus Master has attempted to write to a non- existent register or a read-only register in the translator.

NOTE: See Appendix (B) (page 39) for Modbus Protocol Conformance Statement.

Modbus Protocol Implementation Conformance Statement

Vendor Name: OEM

Product Name: UPC

Applications Software Version: HW_Exec_B Firmware Revision: 6.0

Product Description

The UPC is a general purpose building management translator with custom programmable functionality, designed for communicating through multiple protocols. Modbus registers are spawned within the device as a result of downloading graphical control programs. The UPC translator speaks the Mod icon Mod bus RTU/ ASCII Protocol as described in the Modicon Modbus Protocol Reference Guide, PI-MBUS-300 Rev.J, and acts as a Modbus Master or Slave. Further details on the Modbus supported implementation are described below.

Verify accuracy of the following:

Hardware settings for speaking Mod bus (8 Data bits, No Parity, and 1 Stop bit):

Serlal Transmission Mode	Supported?				
RTU	Master or Slave	Master or Slave (Slave RTU is the Default Dipswitch setting)			
ASCII		Master or S	Slave		
Communication Types	Baud Rates	Baud Rates Data Bits Parity Stop B			
2-wire EIA-485 4-wire EIA-485 EIA-232	600, 19200, 38400, 76800	8	1	None	
Function Codes	Purpose	Purpose Used with Re		gular Numbers	
01 - Read Coil Status	Read Discrete Ou	Read Discrete Outputs		00001-65535	
02 - Read Input Status	Read Discrete Inputs		00001-65535		
03 - Read Holding Registers	Read Holding Reg	Read Holding Registers		-65535	
04 - Read Input Registers	Read Input Regi	Read Input Registers		-65535	
05 - Force Single Coil	Write Discrete Outpu	Write Discrete Outputs (single)		-65535	
06 - Preset Single Register	Write Hoding Registe	rs (single)	00001	-65535	
15 - Force Multiple Coils	Write Discrete Outputs		00001	-65535	
16 - Preset Multiple Coils	Write Hoding Reg	jisters	00001	-65535	

Register Type	Range	Function Codes Used with this RegIsterType
Float Value (FLOAT)	Single-Precision IEEE floating point value	3 - Read Holding Register 6 - Preset Single Register 16 - Preset Multiple Register
Signed Integer (SINT)	-32768 -32767	3 - Read Holding Register 6 - Preset Single Register 16 - Preset Multiple Registe
Discrete Input (DI)	0= 0ff 1= 0n	2 - Read Input Status
Discrete Output (DO)	0= 0ff 1= 0n	1 - Read Coil Status 5 - Force Single Coil 15 - Force Multiple Coils



LonWorks®

LonWorks is an open protocol that was developed by Echelon Corporation. It is now maintained by Echelon in collaboration with members of the LonMark Interoperability Association. It requires the use of Echelon's Neuron microprocessor to encode and decode the LonWorks packets.

The LonWorks protocol is based on the concept of using standardized functional profiles to control similar pieces of equipment. OEM translators are LonWorks-compatible devices, but are not LonMark devices. A LonMark device has been thoroughly tested by Echelon (LonMark.org) and has been given the Lon Mark logo indicating compliance with the LonWorks profile specification. All LonMark devices require the use of proprietary hardware manufactured by Echelon Corporation. In order to reduce the cost of adding that hardware on every translator, OEM formats the data packets in a manner specified by the LonWorks documentation and hands them off to the LonWorks Option Card.

Refer to the Appendix for the Lon Works Protocol Implementation Conformance Statement (PICS).



Configuring the UPC for the LonWorks Option Card

- 1. Turn off the power for the UPC by disconnecting power terminals.
- 2. Using the rotary switches, set the translator's address. Set the **Tens (10's)** switch to the tens digit of the address, and set the **Ones (1's)** switch to the ones digit.

EXAMPLE: If the translator's address is 25, point the arrow on the **Tens (10's)** switch to 2 and the arrow on the **Ones (1's)** switch to 5.



- Set the Communication mode for Port 1 using DIP Switch 4
 NOTE: When using Port 1b with the LonWorks Option Card, Port 1a cannot be used
- 4. Set the Comm Selector DIP Switches 5 through 8 for LonWorks Option Card.

Configuring the UPC for the LonWorks Option Card (cont.)

The following example shows the DIP Switches set for 38.4k baud, Port 1b, and LonWorks Option Card.



5. Plug the LonWorks Option Card's ribbon cable (9. 75 in.) into the <ALCProduct>'s Port 2b.

CAUTION The translator must be **OFF** before being connected.



6. Connect LON network to pins 1 and 2 on the Option Card.

Wiring specifications

- A dedicated 24 AWG to 18 AWG twisted pair wire (EIA-485)
- 2000 feet (610 meters) for 76.8 kbps
- 3000 feet (914.4 meters) for 9600 bps, 19.2 or 38.4 kbps, before needing a Repeater
- Devices should be daisy chained and not star wired
- If the translator is at either end of a network segment, connect a BT485 to the UPC

NOTE: Use the same polarity throughout the network segment.

7. Turn on the power for the UPC by connecting power terminals.



Configuring the UPC for the LonWorks Option Card (cont.)

- 1. Turn off the power for the UPC by disconnecting power terminals.
- 2. Using the rotary switches, set the translator's address. Set the **Tens (10's)** switch to the tens digit of the address, and set the **Ones (1's)** switch to the ones digit.
 - **EXAMPLE:** If the translator's address is 25, point the arrow on the **Tens (10's)** switch to 2 and the arrow on the **Ones (1's)** switch to 5.



3. Set DIP switches **1** and **2** for the appropriate communications speed. See table below. **NOTE:** Use the same baud rate for all devices on the network segment.

Baud Rate	DIP switch 1	DIP switch 2
9600 bps	Off	Off
19.2 kbps	Off	On
38.4 kbps	On	Off
76.8 kbps	On	On

- 4. Set Comm Selector DIP Switch **3** to ON for Port 2.
- 5. Set Comm Selector DIP Switch **5 8** for LonWorks SLTA. The following example shows the DIP Switches set for 38.4k, Port 2, and LonWorks SLTA.



6. Set the Communications Selection jumper to **EIA-232**.



Configuring the UPC for the LonWorks Option Card (cont.)

7. Turn off the power for the UPC by disconnecting power terminals.



Wire Specifications

- 18-28 AWG; twisted pair preferable
- 50 feet (15.24 meters) maximum length

NOTE: Do not power the device from the same transformer that powers the UPC.

8. Set the following SLTA-10 DIP Switch settings.



9. Turn on the power for the UPC by connecting power terminals.

Commissioning the UPC for LonWorks

Before a device can communicate on a LonWorks network, it must be commissioned. Commissioning allows the system integrator to associate the device hardware with the Lon Works system's network layout diagram. Together, the UPC and its Lon Works Option Card serve as a single LonWorks device or node. This is done using the device's unique Neuron ID. A network management tool such as Echelon's LonMaker is used to commission each device, as well as to assign addressing. Specific instructions regarding the commissioning of LonWorks devices should be obtained from documentation supplied with the LonWorks Network Management Tool.

When a new device is first commissioned onto the LonWorks network, you must upload the device's External Interface File (XIF) information. LonWorks uses the XIF to determine the points (network variables) that are available from a device. The UPC has a set of predefined network variables. These variables can be bound or accessed by the network management tool. **See Obtaining LonWorks object mapping** (XIF file) (page 28).

The network variables defined on the UPC Network Variables Property pages determine its XIF information. If any information is changed, added, or deleted on the Network Variable Property pages, the UPC must be removed from the network management tool's database and recommissioned, including uploading the XIF information again.



Configuring and Troubleshooting Protocols

There are some issues with LonWorks that should be considered when using the UPC:

Device Configuration Information (XIF)

- When members of the object cache are modified, you must modify the device configuration information (XIF) from that originally imported into the LonWorks Network Management Tool. The new information will not be recognized by the Network Management Tool until it is imported again from the UPC.
- The user must first undefine all of the network variable bindings and the device, recommission the device, and establish the network variable bindings again.
- Modifications to the object cache should be avoided once the device is fully commissioned and operational. Any modifications to the addressing schemes should also be avoided once the UPC is commissioned.

Address Parameters

- If the address parameters are modified, the LonWorks Option card will be set to Node Offline, and Unconfigured, which means it no longer communicates with the LonWorks network.
- This does not require deletion or importing the device configuration information again, but does require the device to be recommissioned by the Network Management Tool.

Point Configuration

- When the UPC is first commissioned onto the LonWorks network, you should use the Browse features of the Network Management Tool to check the data that is available from the translator.
- Any changes in point count and point configuration should be made prior to performing any further system integration.
- UPC may be deleted and re-imported as many times as necessary to ensure that the points are correct.
- **NOTE:** For these reasons, all parameters on the module driver parameter page should be configured prior to connecting this device to a LonWorks network. The Browse feature of the Network Management Tool also allows you to read real-time values from the UPC. The Tool allows you to test integration prior to binding the UPC's network variables to other LonWorks nodes.

See Obtaining LonWorks object mapping ()(IF) file (page 28).

Obtaining LonWorks object mapping (XIF file)

- 1. Install Echelon U10 network interface device using supplied drivers (or visit the Echelon website (http://www.echelon.com) for driver downloads).
- 2. Verify proper installation of Echelon U10 network interface device.
 - a. Navigate to Control Panel and select LonWorks Interfaces.
 - Select the USB tab for a list of available USB network interface devices. Take note of the Network Interface Name to use later (LON3 is the network interface name in the example shown below).
 - c. Click Test in the LonWorks Interfaces dialog box.

Obtaining LonWorks object mapping (cont.)

3. Click Test in the LON3 Test dialog box. Correct installation and test shown below.

		Name -	Comments	
Control Fanel	0	AC3 Fitter	Configures speaker configuration and other parameters of AC3 decoder filter.	
Controls for Castanness Marrie		Accessibility Options	Adjust your computer settings for vision, hearing, and mobility.	
Common construction of the		Badd or Remove Programs	Install or remove programs and Windows components.	
		Administrative Tools	Configure administrative settings for your c	
ee Also	*	R Adobe Gamma	Calibrate monitor for consistent color, creat Q LowWorks Interfaces	
Windows Update		BAutodesk Plotter Manager	Adds, removes and changes picitiers prope Set up Windows to automotically deliver my	
Help and Support		AVCIS Media Control	Configures the AV25 Media Control National Interface Name Status	Network Interface
		Date and Time	Set the date, time, and time zone for your	Contraction of the
		3- Display	Change the appearance of your desitop, s	Weit
		Folder Options	Customice the display of files and folders, c	Danie I
		Ports	Add, change, and manage fonks on your cc	Trenter
		Tradition Controllers	Voci, removel, and compute gave controle	Properties
		Internet Options	Catar	
		E Java 1	Java (Th LON3 Test	Test
		akeyboard	Customi Network Interface Notes	
		LonWorks Interfaces	Configu (RC Errors: [00000]	
	-	Disorimonia Mi	Configu TX Timeouts: [00000]	
		LonWorks@ Plug 'n Play	Configu User (MET) Messages: [00000]	
		Network Corrections	Configured Node State: Configured	
		WIDLA r/Vew Desitop Manager	Configu Reset Cause: Internal	Marrier 2 20 020
		Phone and Moders Options	Configu	YERRAL 3-341020
		Power Options	Configu	
		Printers and Faxes	20m3	Help
		Program Updates	Classed	
		Quotine Restoral and i sea and Californi	Comput J	
		Scanners and Cameras	Add real Test Comm Service Reset Help	
		ind Scheduled Tasks	Shada	
		Security Center	Vervi so	
		I SignaTel Audo	Controls signative c water water and any ances settings.	

- **NOTE:** If U10 installation problems occur, consult your U10 documentation or visit the Echelon website (http://www.echelon.com) for more assistance.
- From Windows command prompt, launch nodeutil from NodeUtil install directory. Include -D and network interface device name in syntax.

The example below shows LON3 as the network interface device name.

C:\BEF\OEM\NodeUtil>nodeutil -DLON3

1200										
Echelon Node Utility Kelease 1.82										
auc	Successfully installed Invit-10 network interface.									
we.	elcome to the Echelon Node Utility application.									
HCL	ctivate the service pin on remote device to access it.									
Ent	cer	one of the following commands by typing the indicated letter:								
o .		(A)dd dauiae to list								
8		Cart the Character of the patron interface								
2		VENut the optimal of the network interface.								
8		(E)xit this application.								
F -		(F)ind devices in the current domain.								
1		Find devices in all (1)-byte domains.								
G -		(G)o to device menu								
Η -		(H)elp with commands.								
I -		Redirect (I)nput from a file.								
L -		Display device (L)ist.								
Μ-		Change device (M)ode or state.								
0 -		Redirect (O)utput to a file.								
P -		Send a service (P)in message.								
R -		(R)eboot 3150 device.								
S -		Report device (S)tatus and statistics.								
Τ-		(T)ransceiver parameters.								
Ū-		Control (U)erbose modes.								
Ū-		(W)ink a device.								
z -		Shell out to command prompt.								
Nor	lell	til)								
100										

5. Press service pin on the Lon device to see the **Program ID** for the device. (OEM Program ID defaults to **PROG_ID**).

NodeUtil> Received an ID message from device 1. Program ID is OEM_Demo NodeUtil>



6. Type G to go to device menu. You may be asked to Enter node Id for Neuron data structures (0-1) - select the Lon device you wish to access, likely node 1.

NodeUt	;il>	(G)	o to	de	evi	ce	menu						
Node 1	D Net	uror	ı ID				Program	ID					
2	04	30	23	E4	01	00	USBLTA				***	network	interface
1	04	5D	1 E	E5	02	ØØ	OEM_Demo						
Enter	node	id	for	Ne	euro	on	data struct	ures	(0-1)	[1]		:1	

7. Type **X** for **Create device Interface XIF file** in the device menu for the program in the translator.



6. Modify output file name as required and/or click **Enter.** The default file name is **PROG_ID.xlf** and the file will be saved to the nodeutil install directory. If you changed the **Program ID** parameter on the **Protocol Setup** page in the WebCTRL[®] for OEMs application, the default XIF file name changes accordingly. When completed, distribute file to the controls contractor as necessary.

File OEM_	DEMO.XIF	created	successfully
DEVICE:12	>	and the second	- But the Proposition Beauty and the second

Troubleshooting LonWorks Communication

The most common communication problems result from not properly following the configuration steps outlined above in this manual. Review all of the steps and use the following list to check your settings.

Verify accuracy of the following:

Hardware settings for speaking LonWorks (8 Data bits, No Parity, and 1 Stop bit):

- Baud rate DIP switches 1 and 2 set to 38.4 kbps
- LonWorks protocol DIP switches 5, 6, 7, and 8
- Jumper set to EIA-485 2-wire when using the LonWorks Option Card
- Jumper set to EIA-232 when using the LON-SL TA

- Proper connection wiring
- LON network terminated on LonWorks Option Card pins 1 and 2

• Unique rotary address switches 1-99. If translators have duplicate addresses, network communication can be lost. **NOTES:**

- If RX LED is solid, then the terminations are incorrect.
- If the network has greater than 32 devices, or exceeds 2,000 feet, a Repeater should be installed.

Software settings defined via the Equipment Touch or BACview[®]6 local display. LonWorks network number and device instance. To confirm settings, obtain a Modstat of the device through the Equipment Touch or BACview[®]6 interface. Click and hold the FN key and the(.) Period key at the same time.

NOTE: See Appendix (D) (page 42) for the LonWorks Protocol Conformance Statement



LonWorks® Protocol Implementation Conformance Statement

Vendor Name: **OEM**

Product Name: UPC

Applications Software Version: HW_Exec_B Firmware Revision: 6.0

Product Description

The UPC is a general purpose building automation translator with custom programmable functionality, designed for communicating through multiple protocols. LonWorks network points are spawned within the device as a result of downloading graphical control programs. The UPC translator speaks the Lon Works Protocol as described by Echelon Protocol Specification. Since the translator is custom programmable it does not conform to LonMark certification. Further details on the LonWorks supported implementation are described below.

The FT 3120 Free Topology Smart Transceiver is fully compatible with the TP/FT-10 channel and can communicate with devices using Echelon's ITT-10A Free Topology Transceiver. The free topology transceiver supports polarity insensitive cabling using a star bus, daisy-chain, loop, or combination topology.

Serlal Transmission Mode		Supported?									
LonWorks	Master or Slave	Master or Slave (Slave RTU is the Default Dipswitch setting)									
ASCII		Master or Slave									
Communication Types	Baud Rates	Data Bits	Parity	Stop Bits							
2-wire EIA-485	variable	8	1	None							

The translator supports the following SNVT listing as noted by the Echelon Protocol Specification											
SNVT _abs_humid	SNVT _elec_whr	SNVT _mass_kilo	SNVT _speed								
SNVT _address	SNVT _elec_whr_f	SNVT _mass_mega	SNVT _speed_f								
SNVT _alarm	SNVT _enthalpy	SNVT _mass_mil	SNVT _speed_mil								
SNVT _alarm_2	SNVT _evap_state	SNVT _motor_state	SNVT _state								
SNVT _amp	SNVT _ex_control	SNVT _muldiv	SNVT _state_64								
SNVT _amp_ac	SNVT _file_pos	SNVT _multiplier	SNVT _str_asc								
SNVT _amp_f	SNVT _file_reg	SNVT _obj_request	SNVT _str_int								
SNVT _amp_mil	SNVT _file_status	SNVT _obj_status	SNVT _switch								
SNVT _angle	SNVT _file_indcte	SNVT _occupancy	SNVT _telecom								
SNVT _angle_deg	SNVT _fire_init	SNVT _override	SNVT _temp								
SNVT _angle_f	SNVT _fire_test	SNVT _ph	SNVT _temp_diff_p								
SNVT _angle_vel	SNVT _flow	SNVT _ph_f	SNVT _temp_f								
SNVT _angle_vel_f	SNVT _flow_f	SNVT _pos_ctrl	SNVT _temp_p								
SNVT _area	SNVT _flow_mill	SNVT _power	SNVT _temp_ror								
SNVT _btu_f	SNVT _flow_p	SNVT _power_f	SNVT _temp_setpt								
SNVT _btu_kilo	SNVT _freq_f	SNVT _power_kilo	SNVT _therm_mode								
SNVT _char_ascii	SNVT _freq_hz	SNVT _ppm	SNVT _time_f								
SNVT _char_mega	SNVT _freq_kilohz	SNVT _ppm_f	SNVT _time_hour								
SNVT _chir_status	SNVT _freq_milhz	SNVT _preset	SNVT _time_min								
SNVT _color	SNVT _gfci_status	SNVT _press	SNVT _time_passed								



SNVT _config_src	SNVT _grammage	SNVT _press_f	SNVT _time_sec					
SNVT _count	SNVT _grammage_f	SNVT _press_p	SNVT _time_stamp					
SNVT _count_f	SNVT _hvac_emerg	SNVT _privacyzone	SNVT _time_zone					
SNVT _count_inc	SNVT _hvac_mode	SNVT _ptz	SNVT _tod_event					
SNVT _count_inc_f	SNVT _hvac_overrride	SNVT _pumpset_mn	SNVT _trans_table					
SNVT _ctrl_req	SNVT _hvac_status	SNVT _pumpset_sn	SNVT _turbidity					
SNVT _ctrl_resp	SNVT _hvac_type	SNVT _pump_sensor	SNVT _turbidity_f					
SNVT _currency	SNVT_IS0_7811	SNVT _pwr_fact	SNVT _valve_mode					
SNVT _date_cal	SNVT _length	SNVT _pwr_fact_f	SNVT _vol					
SNVT _date_day	SNVT _length_f	SNVT _reg_val	SNVT _volt					
SNVT _date_time	SNVT _length_kilo	SNVT _reg_val_ts	SNVT _volt_ac					
SNVT _defr_mode	SNVT _length_micro	SNVT _res	SNVT _volt_dbmv					
SNVT _defr_state	SNVT _length_mil	SNVT _res_f	SNVT _volt_f					
SNVT _defr_term	SNVT _lev_cont	SNVT _res_kilo	SNVT _volt_kilo					
SNVT _density	SNVT _lev_cont_f	SNVT _rpm	SNVT _volt_mil					
SNVT _density_f	SNVT _lev_disc	SNVT _scene	SNVT _vol_f					
SNVT _dev_c_mode	SNVT _lev_percent	SNVT _scene_cfg	SNVT _vol_kilo					
SNVT _earth_pos	SNVT _lux	SNVT _setting	SNVT _vol_mil					
SNVT _elapsed_tm	SNVT _magcard	SNVT _smo_obscur	SNVT _zerospan					
SNVT _elec_kwh	SNVT _mass	SNVT _sound_db						
SNVT _elec_kwh_1	SNVT _mass_f	SNVT _sound_db_f						



Smart Controller Translator Startup Guide

Communication established

Communication from the UPC to the Heatcraft Smart Controller takes 3 minutes. We recommend you check the Comm Error object to ensure the UPC-to-Heatcraft Smart Controller is correctly configured and then wait 3 minutes before gathering system information.

BAS Connection Requirements

Refer to the UPC Integration Guide for site-specific protocol configuration for BACnet MS/TP, BACnet over ARC156, or Modbus RTU that is terminated on Port 1a. You need protocol object listing to ensure proper point mapping.

Power up status

The UPC has a 3 minute power up delay for the first power up and after a memory download. During this power up, the communication to the Heatcraft Smart Controller is limited. Confirm this object is ON before attempting to gather system information. You can access this object through the BAS network or BAC*view*[®] local display.

BAS Object definition:

Name:	Туре:	Instance:
power_up_1	BV - BACnet	55
	DI – Modbus RTU	59

BAC view® display

-			-	-	-						S	У	s	t	e	m		Ρ	a	r	a	m	e	t	e	r	s				-	-	_			
Ρ	01	vĭ ∈	r		U	р		=		0	f	f		(Ι	n	i	t	i	a	1		D	е	1	a	У		3	m	i	n	u	te	9 2	\$)
F	i	e 1	.d		W	r.	i	t	е		E	n	а	b	1	е			Y	е	s			(N	0	=	=	В	A	S)				
Ρ	a	3 3	w	0	r	d		=		0	f	f			(Ι	n	i	t	i	a	1		H	a	n	ds	31	ha	k	е)				
С	oı	nn	ι	E	r	r	0	r		=		Y	е	s		(U	Ρ	С		t	0		В	е	a	c	וכ	n)							
N	uı	nk	e	r		0	f		S	У	s	t	е	m	s		=		0	0		(1		t	0	4	4)							
S	ma	a r	t		С	0	n	t	r	0	1	1	е	r		=		0	0		V	e	r	s	i	0	n									
B	A	Cn	le	t		S.	i	t	е		Ρ	r	i	0	r	i	t	У			0	0			1	6	-	=	d	e	f	a	u	1 t	E	
		[-	P	r	e	v]																													

Password

When communication is established, the UPC and Heatcraft Smart Controller perform a handshake, which shows as the Password object ON. Wait for this object to be OFF before gathering system status information. You can access this object through the BAS network or BA*Cview*[®] local display.



BAS Object definition:

Name:	Туре:	Instance:
power_up_1	BV - BACnet	2
	DI – Modbus RTU	2



Comm Error

The Comm Error object monitors communication from the UPC to the Heatcraft Smart Controller. If the object is ON, check that the connection is configured correctly. Wait for this object to be OFF before gathering system status information. You can access this object through the BAS network or BAC*view*[®] local display.

BAS Object definition:

Name:	Туре:	Instance:
com_er_1	BV - BACnet	1
	DI – Modbus RTU	1

BACview® display

-	-	-			-						S	У	st	e	m		Ρ	a	r	a	m	e 1	te	e 1	s				-	-				
Ρ	0	w	e r		U	р		=		0	f	f	(Ι	n	i	t	i	a	1		De	е.	1 a	аy		3	m	ii	n	u t	:e	S)
F	i	e	lc	1	W	r	i	t	e		E	n	ak	1	е			Y	е	s			(1	N o	D	=	E	3A	S)				
Ρ	a	s	su	10	r	d		=	1	0	f	f		(Ι	n	i	t	i	а	1	H	E	a r	nd	sl	ha	a k	e)				
С	0	m	m	Ε	r	r	0	r		=		Y	e s		(U	Ρ	С		t	0	I	3 6	e a	ac	0	n)							
N	u	ml	be	e r		0	f	1	S	У	s	t	e n	ເຮ		=		0	0		(1	1	to	D	4)							
S	m	а	r t	-	С	0	n	t	r	0	1	1	e r		=		0	0		V	е	r	3 :	ic	o n									
В	A	C	ne	e t		S	i	t	е		Ρ	r	ic	r	i	t	У			0	0			1 (5	=	C	le	f	a	u]	Lt		
		[-	→E	r	e	v]																											



Field Write Enable

The Beacon Smart Controller can define local setpoints, but the Beacon Field Write Enable parameter must be set to YES. A setting of NO allows BAS communications. You can access this object through the BAS network or BAC*view*[®] local display. The default object setting is YES. If controlling the Beacon II system through a BAS system is desired verify that the UPC configurator is communicating the correct values to the BAS system before changing the Beacon Field Write Enable parameter to NO.

BAS Object definition:

Name:	Туре:	Instance:
bcn_wr_en_1	BV - BACnet	7
	DO – Modbus RTU	25

BAC view® display

-			-	-	-						S	У	S	t	e	m		Ρ	a	r	a	m	e	t	e	r	s				-	-	-			
Ρ	10	мe	r		U	p		=		0	f	f		(Ι	n	i	t	i	a	1		D	е	1	a	У	1.1	3	m	i	n	u	te	e :	3)
F	i	e l	d		W	r	i	t	e		Ε	n	а	b	1	е		[Y	e	s]		(N	0	=	=	В	A	S)				
Ρ	a	3 S	W	0	r	d		=		0	f	f			(Ι	n	i	t	i	a	1		Η	a	n	ds	3 ł	na	ık	е)				
С	01	nm		E	r	r	0	r		=		Y	е	s		(U	Ρ	С		t	0		В	е	а	С	o r	n)							
N	uı	nb	е	r		0	f		S	У	s	t	е	m	s		=		0	0		(1		t	0	4	1)								
S	ma	a r	t		С	0	n	t	r	0	1	1	е	r		=		0	0		V	е	r	S	i	0	n									
В	A	Cn	е	t		S	i	t	e		Ρ	r	i	0	r	i	t	У		[0	0]		1	6	=	=	d	le	f	a	u	11	t	
		[→	Ρ	r	e	v]																													

NOTE: You must set the Beacon Field Write Enable parameter to NO for proper BAS communication.

Number of Systems

The Heatcraft Smart Controller supports a maximum of 4 systems, consisting of 4 condensers and up to 4 evaporators per condenser. The UPC has a 4-system maximum configuration and we recommend you read this analog value status to determine the actual number of systems defined at each site. You can access this object through the BAS network or BAC *view*[®] local display.

BAS Object definition:

Name (Total Systems Status)	Туре:	Instance:
ttl_sys_1	AV - BACnet	296
	FLOAT (Input) – Modbus RTU	145

BAC view® display

	-	-				Sy	rs	t	е	m		Ρ	a	r	an	ιe	e t	e	r	s					- -		- -	
Power	•	Up)	=	0	f f		(Ι	n	i	t	i	a	1	E)e	1	a	У	3		m	i	nu	te	e s	\$)
Field		Wr	i	te		Εr	ıa	b	1	е		[Y	е	ຮ]		(N	0	=	-	В	A	S)			
Passw	0	rc	1	=	0	f f			(Ι	n	i	t	i	al		Η	a	n	ds	s h	a	k	e))			
Comm	E	rr	0	r	=	2	?e	s		(U	Ρ	С		tc)	В	e	а	c	o n)						
Numbe	r	C	οf	S	У	зt	e	m	s		=		0	0	(1		t	0	4	1)							
Smart		Сc	n	tr	0	1]	. e	r		=		0	0		Ve	r	s	i	0	n								
BACne	t	5	5i	te		Ρı	i	0	r	i	t	У		[00]		1	6	=	=	d	e	fa	au	11	t	
[→P	r	eν	7]																									

BACnet Site Priority

The UPC communicates the BACnet protocol via BACnet MS/TP and BACnet over ARC156 at a default lowest priority of 16. This setting is standard for BAS systems, but there a few that communicate at a higher priority. To accommodate this difference, you must set this object to the priority of the site-specific BACnet BAS communication. You can access this object through the BAS network or BAC*view*[®] local display.

BAS Object definition:

Name (Total Systems Status)	Туре	Instance (#)
bacnet_wr_pri_1	MSV - BACnet	1

BAC*view*® display

	Syst	em Par	ameters	
Power Up	o = Off (Initia	l Delay 3	3 minutes)
Field Wr	ite Enab	le Ye	s (No =	BAS)
Password	l = Off	(Initi	al Hands	nake)
Comm Err	or = Yes	(UPC	to Beacon	n)
Number c	of System	s = 00	(1 to 4)	
Smart Co	ontroller	= 00	Version	
BACnet S	ite Prio	rity	00 16 =	default
[→Prev	r]			

NOTE: You can change the BACnet Site Priority from a lower priority to a higher priority, as an example from 16 to 10. Once it has been changed to a higher priority, it cannot be changed to a lower priority without factory assistance. BACnet systems should only write to this object if necessary.



Smart Controller Version

The Heatcraft Smart Controller version is displayed in a whole number value. Technical support uses this object for troubleshooting. You can access this object through the BAS network or BAC view® local display.

BAS Object definition:

Name (Total Systems Status)	Туре	Instance (#)
smrt_cntrlr_ver_1	AV - BACnet	1
	FLOAT (Input) – Modbus RTU	1

BAC view® display

play	Name (Total Systems Status) ttl_sys_1	Type Instance (#) 296
S	ystem Parameters	3
Power Up = Of	f (Initial Delay	7 3 minutes)
Field Write E	nable [Yes] (No	= BAS)
Password = Of	f (Initial Hand	ishake)
Comm Error =	Yes (UPC to Bead	con)
Number of Sys	tems = 00 (1 to	4)
Smart Control	ler = 00 Version.	1
BACnet Site P	riority [00] 16	= default
[→Prev]		

In-Warranty Return Material Procedure

Material may not be returned except by permission of authorized factory service personnel of Heatcraft Refrigeration Products in Stone Mountain, Georgia. A "Return Goods" tag will be sent to be included with the returned material. Enter the required information on the tag in order to expedite handling at our factories and prompt issuance of credits. All parts shall be returned to the factory designated on the "Return Goods" tag, transportation charges prepaid.

The return of a part does not constitute an order for replacement. Therefore, a purchase order must be entered through your nearest Heatcraft Refrigeration Products representative. The order should include part number, model number and serial number of the unit involved.

Following our careful inspection of the returned par and if it is determined that the failure is due to faulty material or workmanship, credit will be issued on customer's purchase order.

Parts by InterLink[™]

When writing to the factory for service or replacement parts, refer to the model number and serial number of the unit as stamped on the serial plate attached to the unit. If replacement parts are required, mention the date of installation of the unit and date of failure, along with an explanation of the malfunctions and a description of the replacement parts required.



Item	Part Number
Protocol Converter	28999501
DB9 to RS232 Adapter	22595301
Ribbon Cable	22576101
Power Supply	22595101
LonWorks Card	22595201
24V Transformer	22595101
Null Modem Connector	28999201

InterLink[™] Smart Controller Protocol Converter Parts List



Notes:



Smart Controller Protocol Converter Installation & Operation Manual

Notes:



Notes:

This guide is designed to provide only general information. If you need advice about a particular product application or installation, you should consult your Heatcraft or Kysor Warren representative. The applicable specification sheets, data sheets, handbooks, and instructions for Heatcraft or Kysor Warren products should be consulted for information about that product, including, without limitation, information regarding the design, installation, maintenance, care, warnings relating to, and proper uses of each product.

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