



Data Bridge for BACnet™

SPECIFICATIONS

Supersedes: 450.20-S20 (1201)

Form 450.20-S20 (202)

The Data Bridge for BACnet™ is an economical communication device that provides a reliable connection between the YORK ISN protocol and BACnet™ ethernet protocol.

The Data Bridge for BACnet is a fully configurable gateway device that translates YORK's Rev. 7 (operating at 50 kbaud) ISN network protocol into a standard BACnet open communications architecture (conforming to ANSI/ASHRAE® Standard 135-1995).

This device provides the method of making ISN features BACnet network visible. It maps the Present Value (PV) of 512 unique ISN points into the following standard BACnet object types: Analog Input (AI), Analog Output (AO), Analog Value (AV), Binary Input (BI), and Binary Output (BO).

The Data Bridge for BACnet may be used to integrate a variety of YORK equipment that supports the ISN Rev. 7 (50 kbaud only) ISN protocol into a BACnet network. YORK chillers may be controlled and monitored from a BACnet network when their data points are expressed as ISN variables using a BACnet Data Bridge MicroGateway. Other pieces of equipment that are native ISN devices can be connected directly without the need for translating devices.

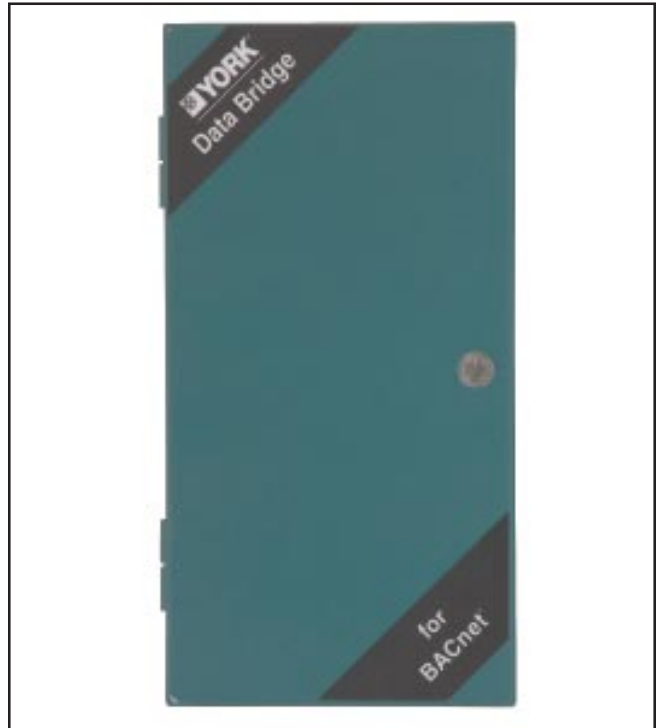


Figure 1. Data Bridge for BACnet

Features and Benefits

- *BACnet Conformance **Class 3** functionality.*
- *BACnet ethernet **10Base-T/100Base-TX** connection.*
- ***512 ISN Rev. 7 (50 kbaud LAN) points** are available for integration.*
- *Provides a BACnet **Server** function.*
- *Operates over a wide input voltage range (110 VAC to 240 VAC).*
- *Simple setup using the YORK BACnet Configuration Tool.*

The Data Bridge for BACnet is available within an enclosure (Figure 1) designed for indoor applications. Inside the enclosure resides a LINC MicroGateway which connects to an ISN network, a Single Board Computer (SBC) which connects to a BACnet network, and a power supply that supports both 110 and 240-volt input line voltages. Three dedicated communication ports allow simultaneous connection to the BACnet network, the ISN network and a computer running the YORK BACnet Configuration tool.

The Data Bridge for BACnet is configured using the YORK BACnet Configuration tool. This program allows the commissioning engineer to establish a correlation between ISN features and standard BACnet object types. The commissioning engineer may also choose to upload one or more standard profiles provided in the BACnet Configuration Tool database. These have been set up to help in the development of specific functions, e.g., chiller profile, air handler profile, etc.

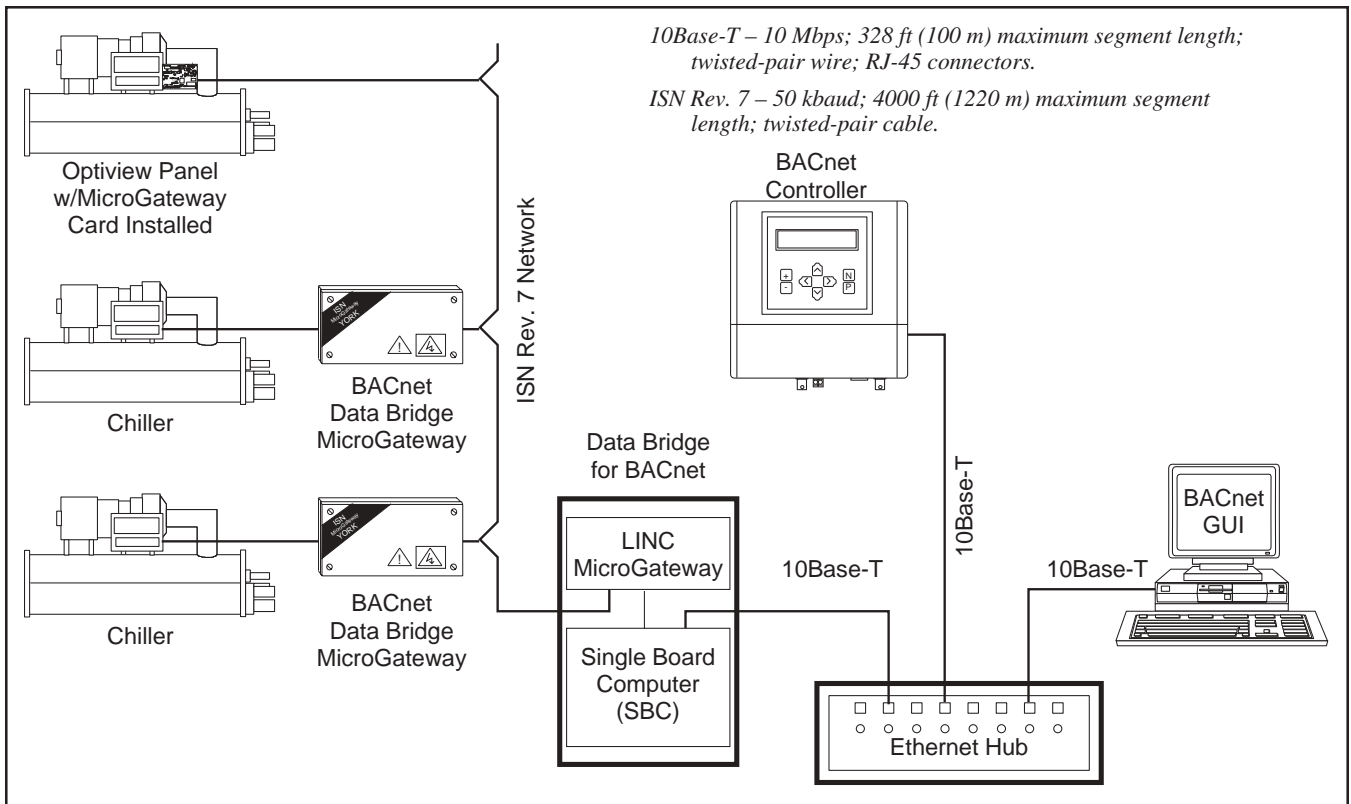


Figure 2. 10Base-T Ethernet Star Network

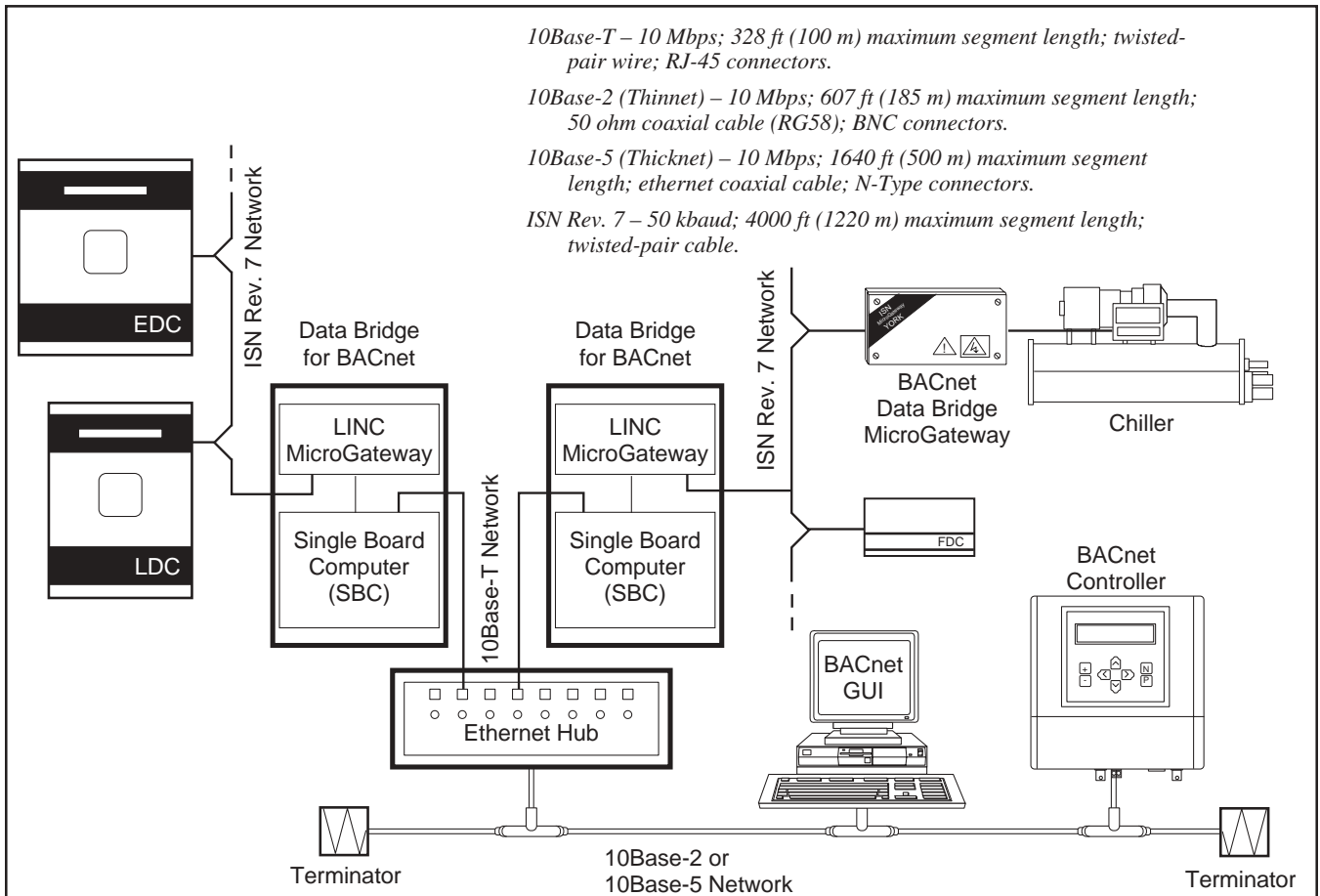


Figure 3. 10Base-2 or 10Base-5 Bus Network

Network Connectivity

The Data Bridge for BACnet connects to the BACnet ethernet network through a 10Base-T/100Base-TX RJ-45 connection. The ISN network connects through a shielded, twisted-pair cable daisy-chained between the ISN devices.

Functionality

The Data Bridge for BACnet provides the functional requirements of a BACnet SERVER and complies with BACnet Conformance **Class 3**. It provides Clock, Files, Time Master, and Device Communications BACnet functional group support. The BACnet data link layer is ISO 8802.3, 10Base-T/100Base-TX.

The Data Bridge for BACnet supports the following BACnet services:

Initiate Requests	Execute Requests
	AtomicReadFile
	AtomicWriteFile
	ReadProperty
	WriteProperty
	ReadPropertyMultiple*
	WritePropertyMultiple*
	DeviceCommunication Control
TimeSynchronization	TimeSynchronization
	Who-Has
I-Have	
Who-Is	Who-Is
I-Am	I-Am

* Limited to 64 properties. If exceeded, a BACnet Reject-PDU Buffer Overflow reason error is returned.

The Data Bridge supports the standard BACnet Analog Input, Analog Output, Analog Value, Binary Input, Binary Output and Device Object types. The Device Object is maintained by the Data Bridge itself while the other objects utilize mapping of ISN features.

IMPORTANT: This product should not be applied to systems manufactured by Delta Controls, Inc. Please contact the YORK Controls Group for alternative integration devices and solutions.

Data Mapping

ISN features are made visible on the BACnet network by mapping them to the standard BACnet properties of BACnet objects according to the following relationships:

BACnet Object	ISN Feature
Analog Input	F02 (Read Only)
Analog Output	F07 (Read and Write)
Analog Value	F03 (Read and Write)
Binary Input	F05 (Read Only)
Binary Output	F06 (Read and Write)

When **reading** ISN data the Present Value of each relevant ISN feature is mapped directly to the Present Value property of the corresponding BACnet object.

When **writing**, the relevant ISN feature may require setup before being able to accept a new value or status. In the case of F06 and F07, the new value or status is written directly into Present Value/Status of the feature. For F03, however, the offset value is overwritten.

All other required BACnet properties not mapped are maintained by the Data Bridge through the database generated by the YORK BACnet Configuration Tool.

Configuration Tool

The Data Bridge for BACnet must be configured using the YORK BACnet Configuration tool. Operating under Windows 95® and Windows 98®, this program allows the user to establish the correspondence between ISN features and standard BACnet object types. The program creates a binary file which is uploaded to the BACnet Data Bridge configuration file.

The Configuration Tool calculates unique BACnet ObjectIdentifiers based on the ISN feature, section, node, and network for each ISN point. The resulting database can be printed to provide remote knowledge and access to the mapped ISN points.

Diagnostics

The operation of the ISN network may be diagnosed by observing the communication LEDs on the LINC MicroGateway. Similarly, LEDs on the SBC may be used to determine if there is communication on the BACnet ethernet network. The Data Bridge for BAC-

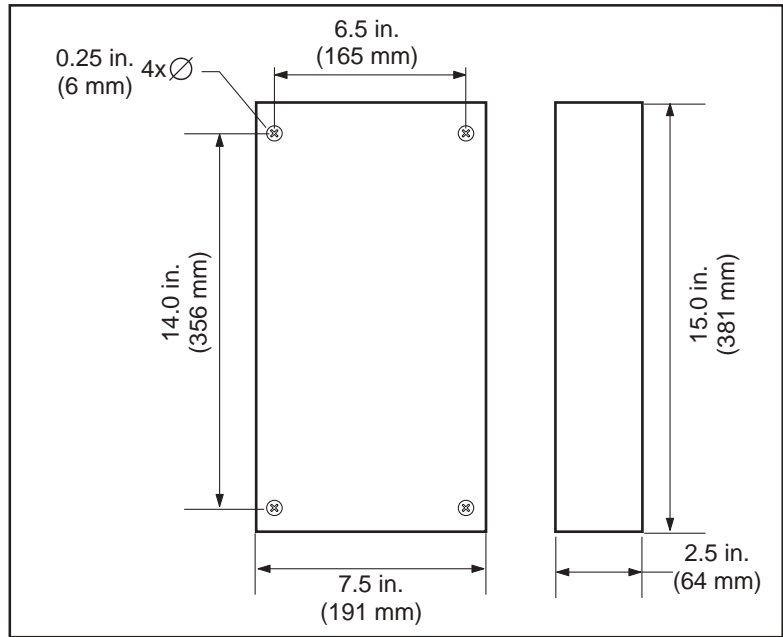


Figure 4. Dimensions

SPECIFICATIONS

General

Primary Power Source	90 to 260 VAC
Frequency	47 to 65 Hz
Maximum Load	100 VA maximum
Power Consumption	Typically 70 VA
Operating Environment	32 to 122° F (0 to 50° C) 0 to 95% RH non-Condensing
Size (H x W x D)	7.5 x 15.0 x 2.5 in. (91 x 381 x 64 mm)
Weight	4.5 pounds (2.0 kg)

Linc MicroGateway

Processor	NEC V25 Operating at 8 MHz
Memory PROM	256 kbytes of CMOS EPROM or OTP
Memory RAM	128 kbytes of capacitor-backed CMOS SRAM
Comm Port 1	RS485 (connects to ISN LAN)
Comm Port 2	RS232 (connects to Single Board Computer)
LEDs	TX/RX on both ports for Communication Status
Special Features	Auto Restart, ISN LAN baud rate fixed at 50 kbaud, RS232 to SBC baud rate fixed at 19.2 kbaud, Selectable ISN network node address

Single Board Computer (SBC)

Processor	Cyrix GXLV 32-bit x86 operating at 233 MHz
Comm Port 1	RS232 (connects to the Linc MicroGateway)
Comm Port 2	RS232 (dedicated port for the YORK BACnet Configuration Tool)
Special Features	Auto Restart, DiskOnChip® Flash Disk, IEEE 802.3 (ethernet), Realtek RTL8139 ethernet chip, Real Time Clock (RTC), and battery backup

Network Interface

Linc MicroGateway	LAN Port
Recommended Wire	Shielded Twisted-pair with drain (Belden 9841 or equivalent)
SBC	Ethernet 10Base-T/100Base-TX
Recommended Wire	Twisted unshielded pair with RJ45 connectors (maximum length is 328 ft/100 m)

Ordering Information

Data Bridge for BACnet™	371-03626-101
BACnet Data Bridge MicroGateway (110 volt w/Enclosure)	371-02592-107
BACnet Data Bridge MicroGateway (240 volt w/Enclosure)	371-02592-207
BACnet Data Bridge MicroGateway (OptiView)	371-03609-007

