data SHEET

BAS Remote — Versatile Building Automation Appliance

The BAS Remote series provide the system integrator a flexible building block when integrating diverse building automation protocols or when expanding the number of points in a building automation system. By supporting open system protocols such as BACnet®, Modbus and Sedona Framework™ SOX, the BAS Remote series is easily adaptable. For small systems, it can operate stand-alone. For larger systems, it can communicate to supervisory controllers over Ethernet. Depending upon the model, the BAS Remote has the flexibility to provide the following:

Versatile Control Device — remote I/O, router, gateway and controller

- Web-page configuration
- BACnet/IP Remote I/O
- Modbus TCP Remote I/O
- Modbus Serial to Modbus TCP Router
- Modbus Serial to BACnet/IP Gateway
- Modbus Master to Attached Modbus Slaves
- *Powered by Sedona Framework* Controller
- Power over Ethernet (PoE)
- Customisable webpages
- Web Services

Flexible Input/Output — expandable by adding modules

- Six universal input/output points web-page configurable
- Two relay outputs
- Thermistors, voltage, current, contact closure and pulse inputs
- Voltage, current and relay outputs
- 2-wire Modbus Serial Expansion port
- 2-wire expansion port for up to three expansion I/O modules

BAS Remote Master – Versatile Web Appliance

The **BAS Remote Master** provides the ultimate in flexibility. It can be used for expansion I/O at remote locations where an Ethernet connection exists. Its built-in router and gateway capabilities address unique integration needs where more than one communications protocol is involved. It can operate as a function block programmable controller with its resident Sedona Framework Virtual Machine. Powered by a Linux engine, the **BAS Remote Master** can operate as BACnet/IP and Modbus TCP remote I/O, Sedona Framework controller, Modbus Serial to Modbus TCP router, Modbus Serial to BACnet gateway, and Modbus master to attached Modbus slaves all at the same time. A 10/100 Mbps Ethernet port allows connection to IP networks and popular building automation protocols such as Modbus TCP, BACnet/IP, and Sedona SOX. Six universal I/O points and two relay outputs can be configured through resident web pages using a standard web browser and without the need of a special programming tool. A 2-wire Modbus serial port can greatly expand the I/O count with built-in routing to Modbus TCP clients. If BACnet mapping is preferred, the unit incorporates a Modbus serial to BACnet/IP gateway. The **BAS Remote Master** also allows you to install custom web pages so you can view the status of your system in a convenient manner. And using its onboard Web Services, your IT department can easily interact with the **BAS Remote Master**.

Additional universal I/O can be achieved with the simple addition of **BAS Remote Expansion** modules. The **BAS Remote PoE** has the same capabilities as the **BAS Remote Master** except it is powered over the Ethernet connection thereby providing a “One Cable Solution”.

Universal I/O

Using web pages, six points can be configured as either inputs or outputs, analog or digital. In addition to being discoverable as BACnet objects, these same points can be assigned Modbus addresses.

- Analog inputs: 0–10 VDC, 0–20 mA but scalable to 0–5 VDC and 4–20 mA
- Temperature inputs: Type II or Type III thermistors
- Contact closure or Pulse inputs: Free-voltage, 40 Hz maximum
- Analog outputs: 0–10 VDC, 0–20 mA

All field connectors are removable.

Auxiliary Power Output
24 VDC @ 150 mA for powering field devices such as 4–20 mA transmitters.

Ethernet
10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX. Protocols supported include HTTP, IP, UDP, TCP, SOAP, BACnet/IP, Modbus TCP, and Sedona SOX.

Power Input
24 VAC/VDC 10 VA half-wave regulated allows power sharing with other half-wave devices.

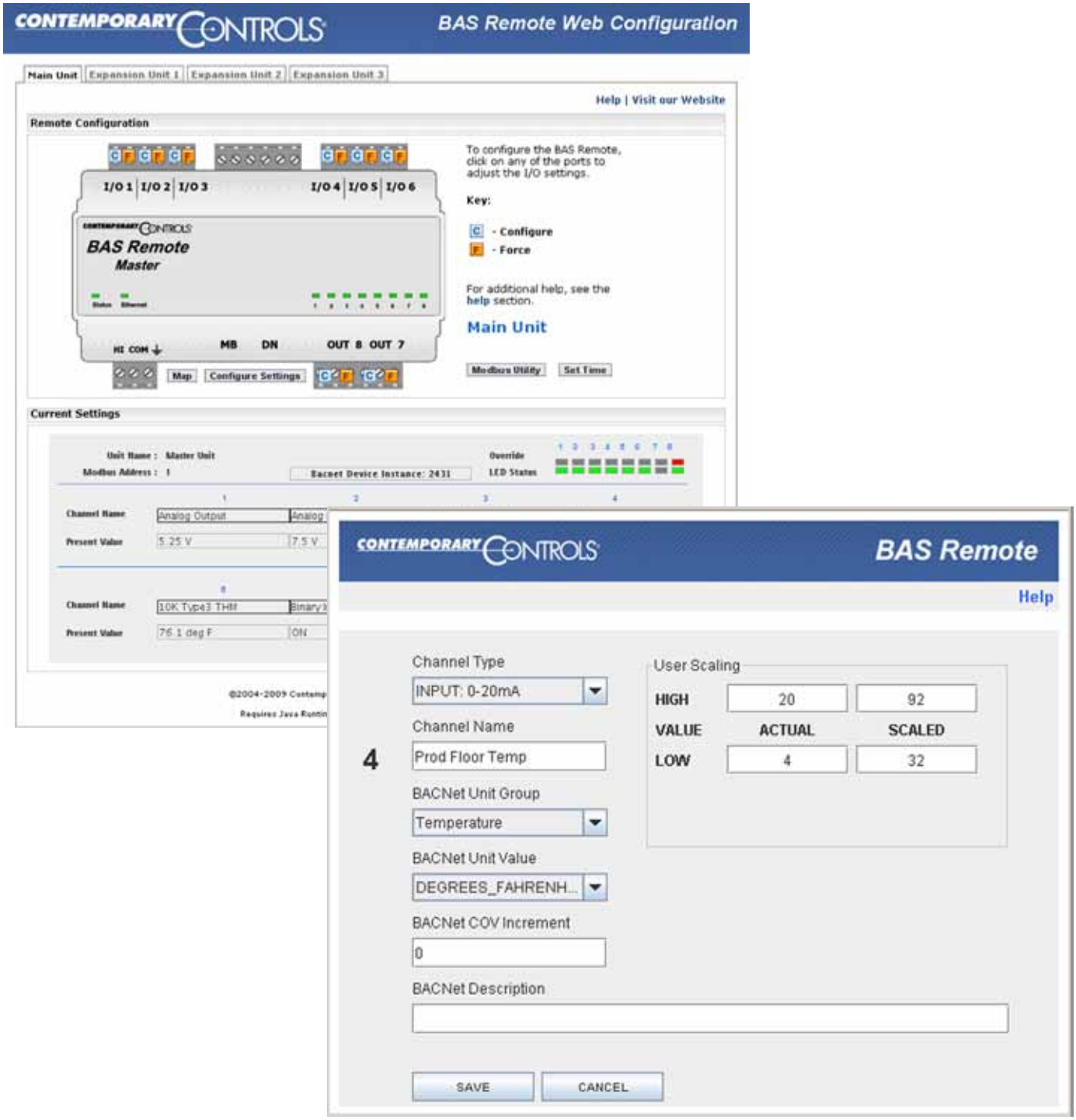
Modbus Serial
RTU or ASCII master, 2.4–115.2 kbps, 2-wire non-isolated.

Expansion Bus
Proprietary bus supporting up to three expansion modules requiring no configuration.

Relay Outputs
Two form “C“ contacts for 30 VAC/VDC 2 A loads. Class 2 circuits only.

Web Page Configuration

Web Server Screen



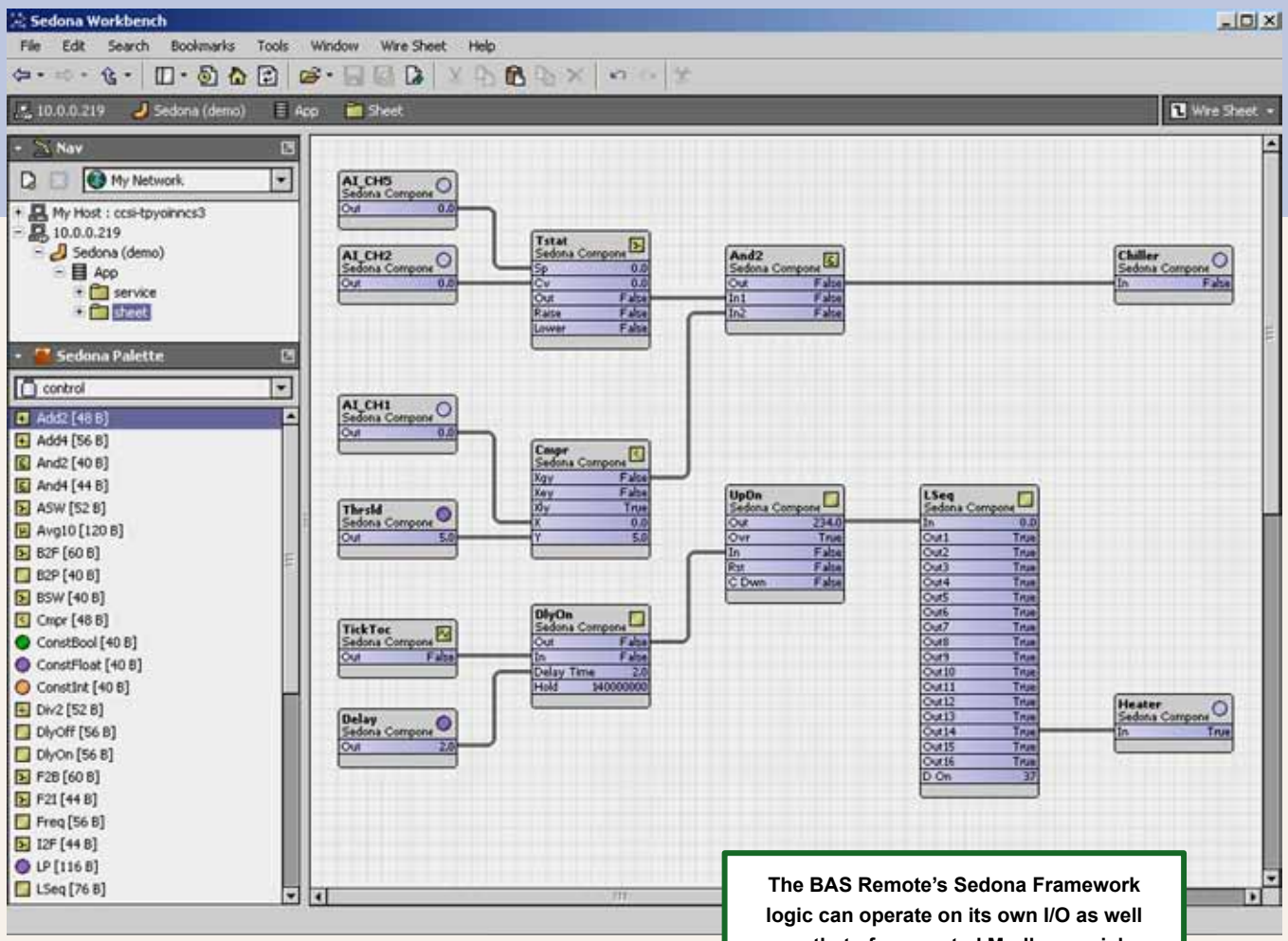
Typical I/O Point Configuration Screen

Powered by Sedona Framework for Implementing Control

The **BAS Remote Master** incorporates Sedona Virtual Machine (SVM) technology developed by Tridium and compatible with their Niagara Framework™. Using established Tridium tools such as Workbench, a system integrator can develop a control application using Workbench's powerful drag-and-drop visual programming methodology.

Once developed, the program remains stored in the **BAS Remote Master** and executes by way of the SVM. The application can run standalone in the **BAS Remote Master** or interact with a program in a Tridium JACE supervisory controller over Ethernet. The number of potential applications is only limited by the imagination of the system integrator.

Tridium's Sedona Workbench or Niagara Workbench can be used to program Sedona running in the BAS Remote.



The BAS Remote's Sedona Framework logic can operate on its own I/O as well as that of connected Modbus serial devices. Also, a network connected Niagara Framework device can read or modify the operating state of the Sedona Framework function blocks.

POWERED BY SEDONA FRAMEWORK™

BACnet Protocol Implementation Conformance (PIC) Statement

CONTEMPORARY CONTROLS

BAS Remote

Versatile Building Automation Appliance

BACnet Protocol Implementation Conformance Statement (Annex A)

Date: 2 September 2009
Vendor Name: Contemporary Controls
Product Name: BAS Remote
Product Model Number: BASR-8M, BASR-8M/P
Applications Software Version: **Firmware Revision:** 3.0 **BACnet Protocol Revision:**

Product Description: BACnet/IP compliant 8-point remote input/output device that allows a direct connection to Ethernet without the need of a BACnet router.

BACnet Standardized Device Profile (Annex L):

- ☐ **BACnet Operator Workstation (B-OWS)**
- ☐ **BACnet Building Controller (B-BC)**
- ☐ **BACnet Advanced Application Controller (B-AAC)**
- ☒ **BACnet Application Specific Controller (B-ASC)**
- ☐ **BACnet Smart Sensor (B-SS)**
- ☐ **BACnet Smart Actuator (B-SA)**

List all BACnet Interoperability Building Block Supported (Annex K):

DS-RP-B Data Sharing — ReadProperty – B
DS-WP-B Data Sharing — WriteProperty – B
DS-RPM-B Data Sharing — ReadPropertyMultiple – B
DS-COV-B Data Sharing — ChangeOfValue – B
DM-DDB-B Device Management — Dynamic Device Binding – B
DM-DOB-B Device Management — Dynamic Object Binding – B
DM-DCC-B Device Management — Device Communication Control – B

Segmentation Capability:

- ☐ Able to transmit segmented messages Window Size:
- ☐ Able to receive segmented messages Window Size:

Standard Object Types Supported:

Object Type Supported	Can Be Created Dynamically	Can Be Deleted Dynamically
Analog Input	No	No
Analog Output	No	No
Analog Value	No	No
Binary Input	No	No
Binary Output	No	No
Device	No	No

No optional properties are supported.

Data Link Layer Options:

- ☒ BACnet IP, (Annex J)
- ☒ BACnet IP, (Annex J), Foreign Device
- ☐ ANSI/ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s):
- ☐ MS/TP master (Clause 9), baud rate(s):
- ☐ MS/TP slave (Clause 9), baud rate(s):
- ☐ Point-To-Point, EIA 232 (Clause 10), baud rate(s):
- ☐ Point-To-Point, modem, (Clause 10), baud rate(s):
- ☐ LonTalk, (Clause 11, medium:
- ☐ Other:

Device Address Binding:

Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) ☐ Yes ☒ No

Networking Options:

- ☐ Router, Clause 6 List all routing configurations, e.g., ARCNET-Ethernet-MS/TP, etc.
- ☐ Annex H, BACnet Tunnelling Router over IP
- ☐ BACnet/IP Broadcast Management Device (BBMD)
  Does the BBMD support registrations by Foreign Devices? ☐ Yes ☐ No

Character Sets Supported:

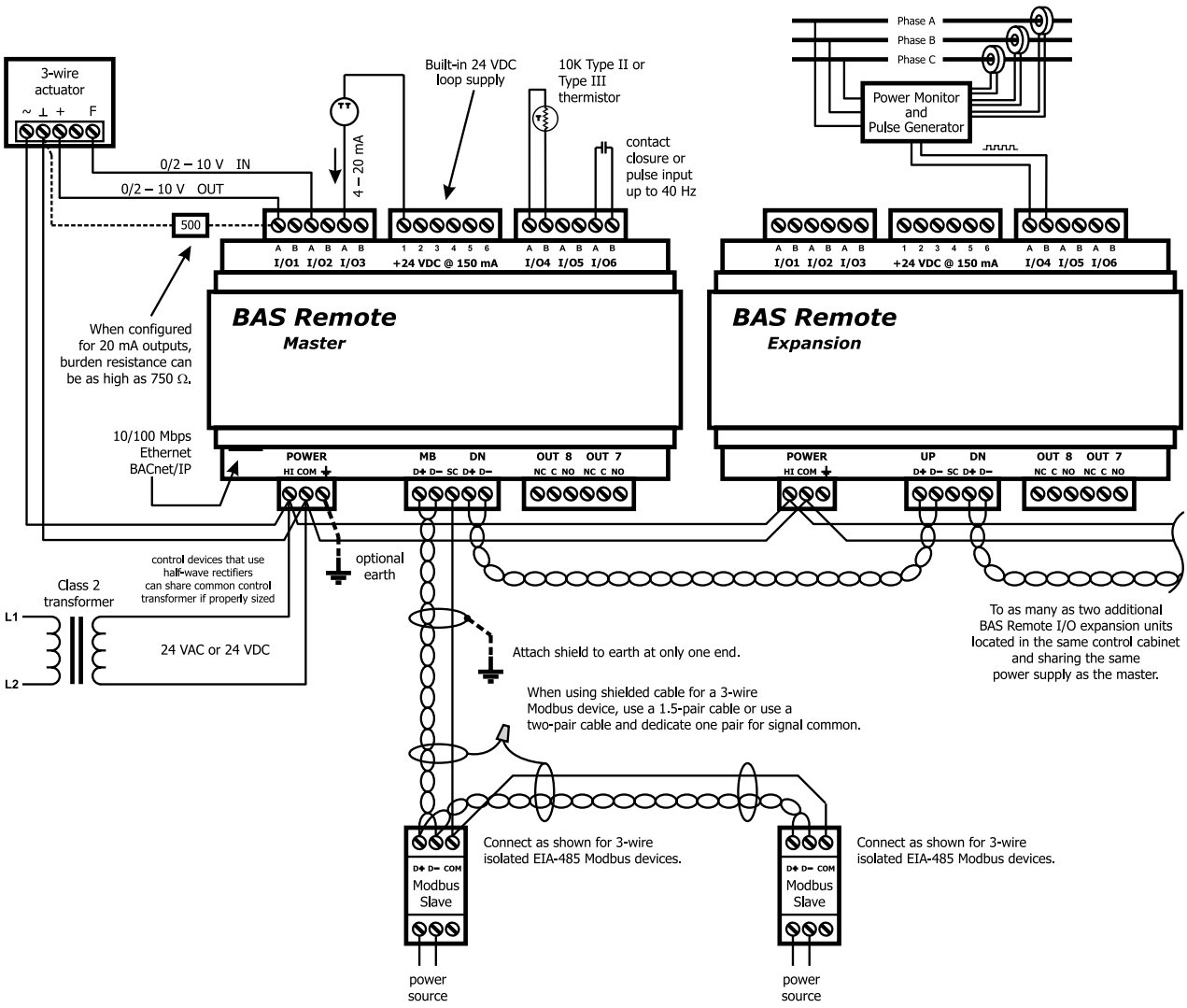
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.

- ☒ ANSI X3.4
- ☐ IBM/ MicrosoftDBCS
- ☐ ISO 8859-1
- ☐ ISO 10646 (UCS-2)
- ☐ ISO 10646 (UCS-4)
- ☐ JIS C 6226

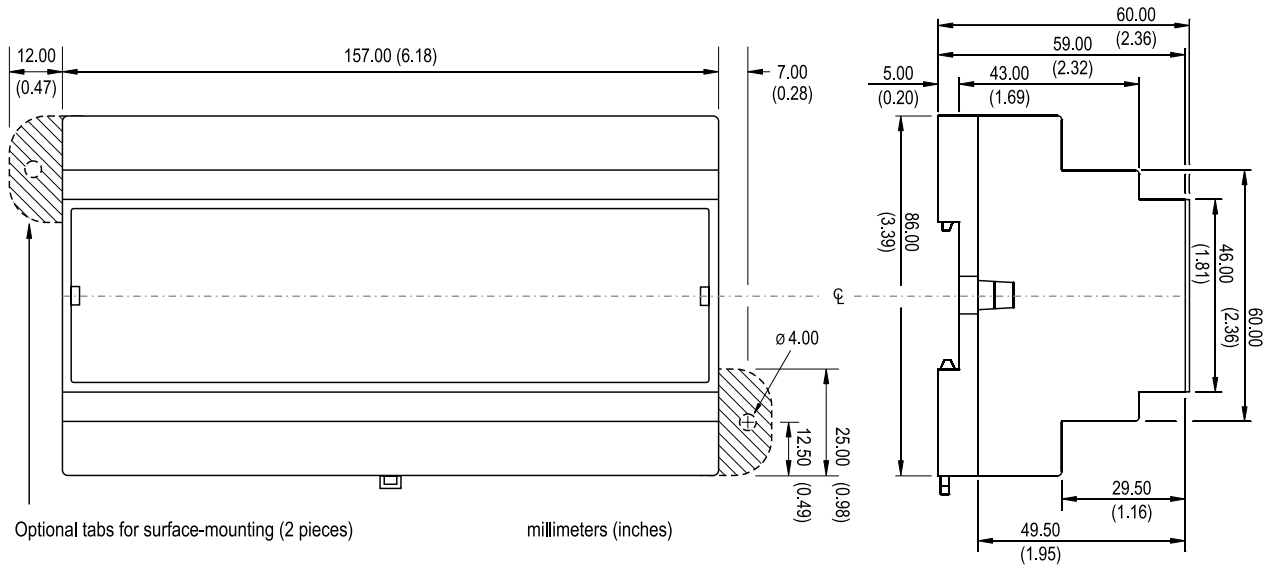
If this product is a communication gateway, describe the types of non-BACnet equipment/network(s) that the gateway supports:

No gateway support.

Wiring Diagram



Dimensions (for all models)



Specifications

Universal Inputs/Outputs (Channels 1–6)

Configured As	Characteristics
Analog output	0–10 VDC or 0–20 mA scalable by user. 12-bit resolution.
	Maximum burden 750 Ohms when using current output.
Analog input	0–10 VDC or 0–20 mA scalable by user. 10-bit resolution.
	Input impedance 100 kΩ on voltage and 250 Ω on current.
Temperature input	Type II or type III thermistors +40°F to +110°F (+4.4°C to +44°C)
Contact closure input	Excitation current 2 mA. Open circuit voltage 24 VDC.
	Sensing threshold 0.3 VDC. Response time 20 ms.
Pulse input	0–10 VDC scalable by user. User adjustable threshold.
	40 Hz maximum input frequency with 50% duty cycle.

Relay Outputs (Channels 7 and 8)

Form “C” contact with both NO and NC contacts. 30 VAC/VDC 2 A. Class 2 circuits only.

Regulatory Compliance

CE Mark; CFR 47, Part 15 Class A; RoHS

Functional	Ethernet (BAS Remote Master Only)	Modbus Serial
Compliance	IEEE 802.3	V1.02
Protocols supported	Modbus TCP	RTU master
	BACnet/IP	ASCII master
Data rate	10 Mbps, 100 Mbps	2.4 to 115.2 kbps
Physical layer	10BASE-T, 100BASE-TX	EIA-485, 2-wire, non-isolated
Cable length	100 m (max)	100 m (max)
Port connector	Shielded RJ-45	3-pin terminal
LEDs	Green = 100 Mbps	
	Yellow = 10 Mbps	Status green flashing = Modbus active
	Flash = activity	
Flow control	Half-duplex (backpressure)	

Electrical	Master		Expansion		Master/PoE
Input (DC or AC)	DC	AC	DC	AC	DC
Voltage (V, ± 10%)	24	24	24	24	48
Power	10 W	17 VA	8 W	17 VA	10 W
Frequency	N/A	47–63 Hz	N/A	47–63 Hz	N/A
Loop supply (24 VDC nom.)	150 mA (max)		150 mA (max)		150 mA (max)

Environmental/Mechanical

Operating temperature	0°C to 60°C
Storage temperature	–40°C to +85°C
Relative humidity	10–95%, noncondensing
Protection	IP30
Weight	0.6 lbs. (.27 kg)

Specifications (continued)

RJ-45 Pin Assignments

MDI 10BASE-T/100BASE-TX

Terminal	Usage
1	TD +
2	TD –
3	RD +
6	RD –
Other pins	Not Used

Modbus (MB) Pin Assignments

Terminal	Usage
D +	Data +
D –	Data –
SC	Signal Common

Electromagnetic Compatibility

Standard	*Test Method*	*Description*	*Test Levels*
EN 55024	EN 61000-4-2	Electrostatic Discharge	6 kV contact & 8 kV air
EN 55024	EN 61000-4-3	Radiated Immunity	10 V/m, 80 MHz to 1 GHz
EN 55024	EN 61000-4-4	Fast Transient Burst	1 kV clamp & 2 kV direct
EN 55024	EN 61000-4-5	Voltage Surge	2 kV L-L & 2 kV L-Earth
EN 55024	EN 61000-4-6	Conducted Immunity	10 Volts (rms)
EN 55024	EN 61000-4-11	Voltage Dips & Interruptions	1 Line Cycle, 1 to 5 s @ 100% dip
EN 55022	CISPR 22	Radiated Emissions	Class A
EN 55022	CISPR 22	Conducted Emissions	Class B
CFR 47, Part 15	ANSI C63-4	Radiated Emissions	Class A

Ordering Information

Model	*Description*
BASR-8M	BAS Remote Master with 8 I/O points
BASR-8X	BAS Remote Expansion with 8 I/O points
BASR-8M/P	BAS Remote Master with 8 I/O points and PoE

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