BASremote



BASremote — Versatile BACnet/IP Controller/Gateway

The BASremote 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. With the release of version 3.7.0, support for open system protocols now goes beyond BACnet[®] and Modbus to include Sedona Framework[™] SOX. For small systems, it can operate stand-alone. For larger systems, it can communicate to supervisory controllers via Ethernet. Depending upon the model, the BASremote 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 or TCP to BACnet/IP gateway
- Modbus Master to Modbus TCP or serial slaves
- Certified Sedona Framework Controller™
- Power over Ethernet (PoE)
- Customisable webpages
- Programmatically send alarm emails
- Trending for all onboard and attached channels

Flexible Input/Output — expandable with the addition of expansion I/O modules

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



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BASremote Master - Versatile BACnet/IP Controller/Gateway

The BASremote 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 1.2 virtual machine. Powered by a Linux engine, the BASremote 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 the addition of Modbus slaves. If BACnet mapping is preferred, the unit incorporates a Modbus serial to BACnet/IP gateway — capable of processing up to 1000 points. The BASremote Master also allows you to install custom web pages so you can view the status of your system in a convenient manner.

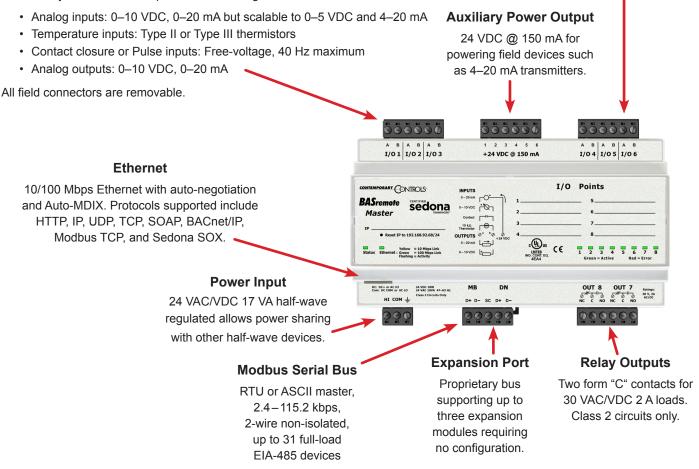
Additional universal I/O can be achieved with the simple addition of BASremote Expansion modules. The BASremote PoE has the same capabilities as the BASremote Master except that it is powered over the Ethernet connection — thereby providing a "One Cable Solution".

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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.



Common Components Used In Function Block Programming

The HVAC Group operations that facilitate control		Linear Sequencer — bar graph representation of input value Reheat sequence — linear sequence up to four outputs Reset — output scales an input range between two limits Thermostat — on/off temperature controller
The Scheduling Group scheduling operations based upon time of day	DailySc DailyS1 DateTime	Daily Schedule Boolean — two-period Boolean scheduler Daily Schedule Float — two-period float scheduler Time of Day — time, day, month, year
The Function Group convenient functions for developing control schemes	Freq Hysteresis IRamp Limiter Linearize LP Ramp SRLatch TickTock	Comparison math — comparison (<=>) of two floats Integer counter — up/down counter with integer output Pulse frequency — calculates the input pulse frequency Hysteresis — setting on/off trip points to an input variable IRamp — generates a repeating triangular wave with an integer output Limiter — Restricts output within upper and lower bounds Linearize — piecewise linearization of a float LP — proportional, integral, derivative (PID) loop controller Ramp — generates a repeating triangular or sawtooth wave with a float output Set/Reset Latch — single-bit data storage Ticking clock — an astable oscillator used as a time base Float counter — up/down counter with float output
The Priority Group prioritizing actions of Boolean, Float and Integer variables		Prioritized boolean output — highest of sixteen inputs Prioritized float output — highest of sixteen inputs Prioritized integer output — highest of sixteen inputs
The Types Group variable types and conversion between types	ConstFloat ConstInt F2B F2I I2F L2F WriteBool WriteFloat	Boolean constant — a predefined Boolean value Float constant — a predefined float variable Integer constant — a predefined integer variable
The Logic Group logical operations using Boolean variables	And2 And4 ASW ASW4 B2P BSW Demux12B4 ISW Not Or2 Or4	Analog switch — selection between four floats Binary to pulse — simple mono-stable oscillator (single-shot) Boolean switch — selection between two Boolean variables Four-output Demux — integer to Boolean de-multiplexer Integer switch — selection between two integer variables Not — inverts the state of a Boolean Two-input Boolean sum — two-input OR gate
The Timing Group extended Boolean logic	DlyOff DlyOn OneShot Timer	Off delay timer — time delay from a "true" to "false" transition of the input On delay timer — time delay from an "false" to "true" transition of the input Single Shot — provides an adjustable pulse width to an input transition Timer — countdown timer
The Math Group operations on Float, Integer and Boolean variables	Add4 Avg10 AvgN Div2 FloatOffset Max MinMax Mul4 Neg Round Sub2 Sub4	Minimum selector — selects the lesser of two inputs Min/Max detector — records both the maximum and minimum values of a float Multiply two — results in the multiplication of two floats

Web Page Configuration

Web Server Screen

CONTROLS	BAS Remote Web Configuration	1
Main Unit Expansion Unit 1 Expansion Unit 2 Expansion	Unit 3	
	Help Visit our Website	
Remote Configuration	To use form the DAG Damate	
I/01 I/02 I/03 I/04	To configure the BAS Remote, click on any of the ports to adjust the I/O settings. I/O 5 I/O 6	
BAS Remote Master	C - Configure F - Force	
	For additional help, see the help section.	
	🖉 Main Unit	
	8 OUT 7 Modbus Utility Set Time	
Current Settings		
Unit Name : Master Unit Modbus Address : 1 Bacnet I	Override 1 2 3 4 5 6 7 8 Device Instance: 2431 LED Status	
1	Device Instance: 2431 LED Status 2 3 4	
Channel Name Analog Output Analog Input		
Present Value 5.25 V 7.5 V	76.3 deg F 12 mA	
6 Channel Name <u>10K Type3 THM Binary I</u>		BAS Remote
Present Value 76.1 deg F ON		Help
@2004-2009 Contemp		
Requires Java Runtin	Channel Type User Scaling –	
	INPUT: 0-20mA	20 92
	Channel Name VALUE	ACTUAL SCALED
	4 Prod Floor Temp LOW	4 32
	•	* <u>J2</u>
	BACNet Unit Group Temperature	
	BACNet Unit Value	
	DEGREES_FAHRENH	
	BACNet COV Increment	
	0	
	BACNet Description	
	SAVE CANCEL	

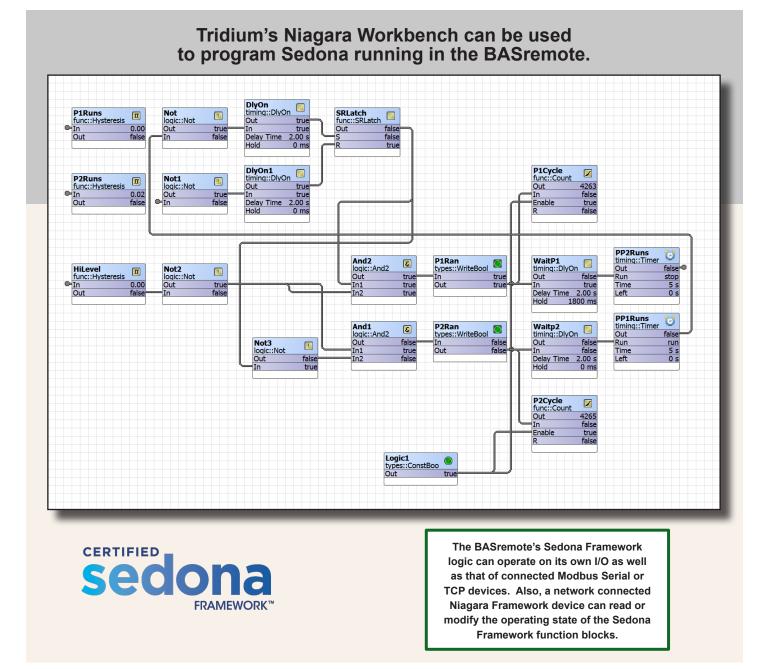
Typical I/O Point Configuration Screen

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Certified Sedona Framework for Implementing Control

The BASremote Master incorporates Sedona Virtual Machine (SVM) technology developed by Tridium and compatible with their Niagara Framework[®]. Using established Tridium tools such as Niagara 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 BASremote Master and executes by way of the SVM. The application can run standalone in the BASremote 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.



BASremote Services Sedona Components Input Boolean Input Float Output Boolean Output Float Output Float Conditional Send Email

BASremote binary input BASremote analog input or value BASremote binary output BASremote analog output BASremote conditional analog output BASremote email alert



Send Email from the Sedona Application

SendEmail allows the Sedona application to send emails when a specific event has occurred in the Sedona application. This can be a good way to send alarm alerts to the maintenance personal. The email will also carry the value which is passed into the component. The email also contains text which can be used to describe the alarm condition, along with the component input value. Many different emails can be sent by the BASremote to many different email addresses.

Email Server Setup

CONTEMPORARY (
Config ID:1	r	lelp	
Server:	smtpout.server.com		
From:	client@server.com		
Port:	587 (Use TLS Security if 465)		
Security	SSL/TLS 🗸	CONTEMPORARY	CONTROLS BASremote
User Name:	clientname		Help
Password:	•••••	Config ID:1	
	Update	ID#:	1
		To:	admin@server.com
		CC:	
		Subject: Body:	Value Change Notice
	New Copy Delete	Bouy:	Control value now: PROCESS_VALUE
			Update
		Teetileb	10015070
		Test Value:	1234.5678
			Send Test Message
			New Copy Delete

Individual Email Setup

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Trending

The new trending feature will allow the trending of the BASremote's 8 channels, any connected expansion unit's channels and those of any mapped Modbus devices (RTU or Modbus TCP). The trend data will be stored within the BASremote. You can select the frequency of trending and the frequency of storage. After the trend file is filled, it will discard the oldest trend data. The trend data is available via the BASremote webpage in a simple CSV format. The BASremote can store up to about 150,000 entries. The trend feature also supports an NTP feature for accurately setting the time within the trend.

NTP Time Server Sampling Sample Interval (Minutes) NTP Server IP Address 15 64.236.96.53 Save Interval (Minutes) NTP Refresh Inteval (Hours) 60 24 NTP Enabled Object Sample List Download CSV File Instance=1 : Name=Default Channel Name Instance=2 : Name=Default Channel Name 1 Instance=3 : Name=Default Channel Name 2 Instance=4 : Name=Default Channel Name 3 Instance=5 : Name=Default Channel Name 4 Instance=6 : Name=Default Channel Name 5 Instance=7 : Name=Default Channel Name 6 Instance=8 : Name=Default Channel Name 7 Instance=840001 : Name=Default Virtual Point Instance=910001 : Name=Time Set Select All Select None Submit Close

Trending

Firmware Upload Screen

The firmware of the new BASremote can be upgraded via a webpage screen on the BASremote.

		Back to Main Page	Help Visit our Website
oload Firmware			
Select Firmware File to Upload :	Browse No file selected.		
	Upload Cancel		
	© 2004-2013 Contemporary Control Systems, Release: 3.7.0 F-Ram	Inc. All rights reserved.	

Authentication Screen

The new authentication feature will allow the BASremote's user ID and password of the BASremote. webpages to be password protected. You can set the

	Back to Main Page	Help Visit our Website
ange Username/Password		
Username		
Password		
Confirm Password		
Submit		
© 2004 2012 Company	Control Systems, Inc. All rights reserved.	
© 2004-2013 Contemporary Rele	ase: 3.7.0 F-Ram	

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Data Sheet — BASremote

Customisable Webpages

1 MB of Flash is set aside for your use. Assuming the default IP address as an example, your Flash area is accessible at:

192.168.92.68/user/

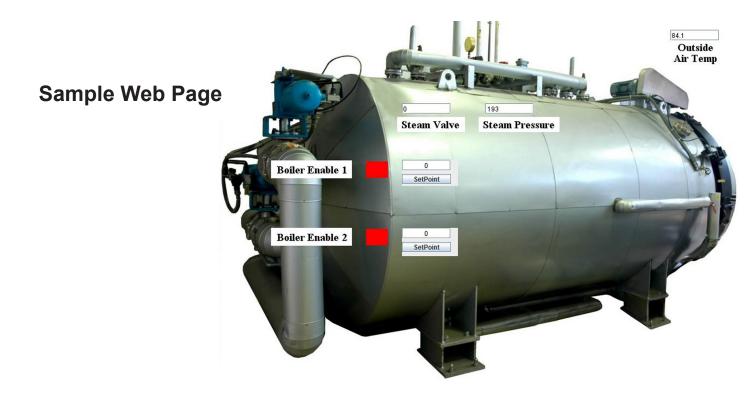
A userid and password secure your access to the user folder. By uploading web pages and images to your Flash space, you can view the BASremote status in a graphical format of your own design.

Via custom webpage Java applets, you can access the current status of a channel, virtual object or mapped

Modbus variable. The *Binary Applet* displays status by a coloured square. Red represents a 0 and green a 1 — with the pixel size specified in your HTML code. The *Channel Set Applet* writes to a channel or instance and the *Channel View Applet* reads a channel or instance. An example web page shows you how to use the three applets. It is available at:

192.168.92.68/user.html

After studying it, you can replace it with your own design. An example appears below.



Set Time

The BASremote Master has a **Set Time Screen** that allows you to set the unit's time and date. This is most useful in Sedona control strategies. The *Time* and *Date* can be read via Telnet. The time can also be set by the BACnet Time Synchronization service.



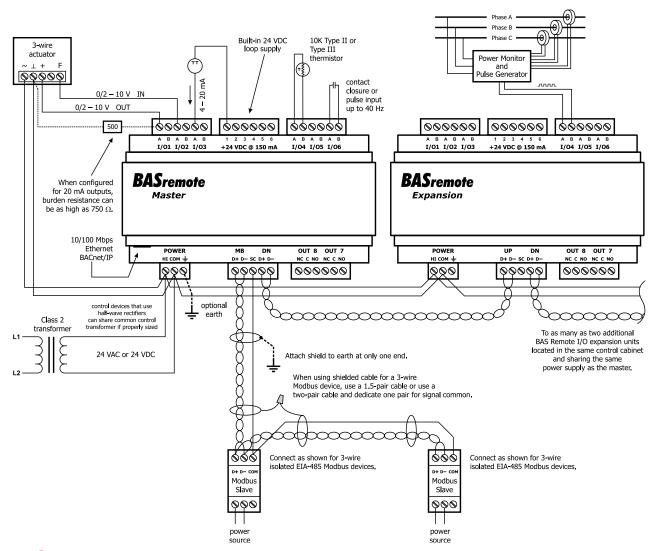


Data Sheet — BASremote

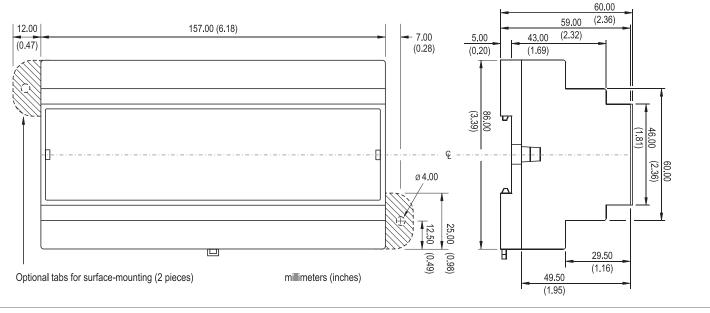
BACnet Protocol Implementation Conformance (PIC) Statement

<form></form>	CONTEMPORARY BASgatewayLX	ONTROLS [®]		
Date: March 1, 2013 Vendor Name: DisSignersystX Product Model Number: DisSignersystX Product Model Number: DisSignersystX Product Model Number: DisSignersystX Product Model Number: DisSignersystX Product Description: Gateway between Modbus and BACnet. Bachel Advanced Operator Workstation (B-WKS) BACnet Advanced Application Second Controller (B-AC) Bachel Advanced Operator Workstation (B-WKS) BACnet Advanced Application Second Controller (B-AC) Bachel Advanced Operator Workstation (B-WKS) BACnet Advanced Application Specific Controller (B-AC) Bachel Building Controller (B-BC) BACnet Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DDB-B Device Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DDB-B Device Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DDB-B Device Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DC-G Bevice Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DC-G Bevice Management – Dynamic Device Binding – B DisKPAB Data Sharing – ReadProperty-B DM-DC-G Bevice Management – Dynamic Device Control - B	Modbus to BACnet [®] Converter			
Vendor Name: Exact State S	BACnet Protocol Im	plementation Conformanc	e Statement (Annex A)	
BACnet Operator Workstation (B-OWS) BACnet Application Controller (B-ASC) BACnet Operator Display (B-OD) BACnet Advanced Application Specific Controller (B-ASC) BACnet Operator Display (B-OD) BACnet Smart Sensor (B-SS) BACnet Mainted Controller (B-BC) 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 — ReadProperty-B DM-DDE-B Device Management — Dynamic Object Binding – B DS-WP-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-WP-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-WP-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-WP-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-WP-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-COV-B Data Sharing — ChangeOValue - B DM-DDE-B Device Management — Dynamic Object Binding – B DS-COV-B Data Sharing — ChangeOValue - B DM-DDE-Device Management — Dynamic Object Binding – B DS-COV-B Data Sharing — ChangeOValue - B DM-DDE-Device Management — Dynamic Object Binding – B DS-COV-Data Shand Photon No No	Vendor Name: Contempor Product Name: BASgatev Product Model Number: BASGLX- Applications Software Version: 1.2.0 Product Description: Gateway between Mode	orary Controls wayLX M1 Firmware Revision: 1.2.0 BACne Ibus and BACnet.	t Protocol Revision: 6	
DS-RP-B Data Sharing — ReadProperty - B DM-DDE-B Device Management — Dynamic Device Binding - B DS-WPM-B Data Sharing — ReadPropertyMulpie - B DM-DDC-B Device Management — Dynamic Device Communication Control - B DS-RPM-B Data Sharing — ReadPropertyMulpie - B DM-DCC-B Device Management — Device Communication Control - B DS-COV-B Data Sharing — ReadPropertyMulpie - B DM-TS-B Device Management — Device Communication Control - B Ds-COV-B Data Sharing — ReadPropertyMulpie - B DM-TS-B Device Management — Diverse Communication Control - B Ds-COV-B Data Sharing — ReadPropertyMulpie - B DM-TS-B Device Management — Diverse Communication Control - B Ds-COV-B Data Sharing — ReadPropertyMulpie - B DM-TS-B Device Management — Time Synchronization - B Segmentation Capability:	 BACnet Operator Workstation (B-OWS BACnet Advanced Operator Workstation BACnet Operator Display (B-OD) 	b) ☐ BACnet Adva on (B-AWS) ☐ BACnet Appli ☐ BACnet Smal	cation Specific Controller (B-ASC) t Sensor (B-SS)	
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Data Link Layer Options:		No	No	
Indicating support for multiple character sets does not imply that they can all be supported simultaneously.	□ BACnet IP, (Annex J) □ MS/TP slave (Clause 9), baud rate(s): □ BACnet IP, (Annex J), Foreign Device □ Point-To-Point, EIA 232 (Clause 10), baud rate(s): □ ISO 8802-3, Ethernet (Clause 7) □ Point-To-Point, modem, (Clause 10), baud rate(s): □ ATA 878.1, 2.5 Mb. ARCNET (Clause 8) □ LonTalk, (Clause 11), medium: □ ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s): □ BACnet/Zigbee (Annex O) □ MS/TP master (Clause 9), baud rate(s): □ Other: Device Address Binding: □ other: Is static device binding supported? (This is currently necessary for two-way communication with MS/TP slaves and certain other devices.) □ Metworking Options: □ No □ Router, Clause 6 — List all routing configurations, e.g., ARCNET-Ethernet, 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			
Modbus gateway support. Network Security Options: Non-secure Device — is capable of operating without BACnet Network Security Secure Device — is capable of using BACnet Network Security (NS-SD BIBB)	Indicating support for multiple character so ⊠ ISO 10646 (UTF-8) □ IBM™	⁴ /Microsoft [™] DBCS □ ISO	8859-1	
☑ Non-secure Device — is capable of operating without BACnet Network Security ☐ Secure Device — is capable of using BACnet Network Security (NS-SD BIBB)		describe the types of non-BACnet equ	pment/network(s) that the gateway supports:	
	☑ Non-secure Device — is capable of op ☐ Secure Device — is capable of using E			
November 28, 2017 TD100301-0XC	November 28, 2017		TD100301-0XC	

Wiring Diagram



Dimensions (for all models)



Specifications

Universal Inputs/Outputs (Channels 1–6)

Configured As Analog input	Characteristics 0–10 VDC or 0–20 mA scalable by user. 10-bit resolution. Input impedance 100 k Ω 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.
Analog output	0–10 VDC or 0–20 mA scalable by user. 12-bit resolution. Maximum burden 750 Ohms when using current output.

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; UL 508, C22.2 No. 142-M1987





Functional	Ethernet (BASremote Master Only)	Modbus Serial	IND. CONT. EQ. 4EA4
Compliance	IEEE 802.3	V1.02	
Protocols supported	Modbus TCP	RTU master	
	BACnet/IP SOX	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-is	olated
Cable length	100 m (max)	100 m (max)	
Port connector	Shielded RJ-45	3-pin terminal	
Flow control	Half-duplex (backpressure)		

LEDs

Ethernet (master only)Green: 100 Mbps link — Yellow: 10 Mbps link — Flashing: link activityStatus (all units)Green solid: unit operational — Green flashing: unit booting — Red: unit in fault stateI/O channels (all units)Unlit: channel inactive — Green: channel active — Red: channel fault (detailed in manual)Network (expansion only)Green: valid link to master — Flashing: data exchange with master

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)

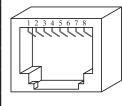


Specifications (continued)

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

MB DN D+ D- SC D+ D-

Expansion Port (DN) Pin Assignments

Terminal	Usage	
D +	Data +	
D –	Data –	

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	Conducted Emissions	Class B
EN 55022	CISPR 22	Radiated Emissions	Class A
CFR 47, Part 15	ANSI C63-4	Radiated Emissions	Class A

Ordering Information

Model	RoHS	Description
BASR-8M	A.	BASremote Master with 8 I/O points
BASR-8X	A	BASremote Expansion with 8 I/O points
BASR-8M/P	A	BASremote Master with 8 I/O points and PoE

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