BASrouterLX



BASrouterLX — High-Performance BACnet[®] Router with Diagnostic Capabilities

The BASrouterLX is a high-performance BACnet router providing stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MS/TP. Besides its highspeed processor, it has advanced features such as MS/TP slave proxy support (allowing auto-discovery Router configuration is accomplished via web pages. of MS/TP slaves) and MS/TP frame capture and

storage for use with Wireshark[®]. As a BBMD, up to 50 BDT and 147 FDR entries can be supported. The BASrouterLX has two physical communication ports — a 10/100 Mbps BACnet/IP Ethernet port and an optically-isolated EIA-485 port for MS/TP.

Versatile Routing Between ...

- BACnet/IP and BACnet MS/TP
- BACnet Ethernet and BACnet MS/TP
- BACnet/IP and BACnet Ethernet
- BACnet/IP and BACnet Ethernet and BACnet MS/TP
- Two BACnet/IP networks

IP Network Support

- Web server for commissioning and troubleshooting
- MS/TP capture using Wireshark[®]
- BACnet/IP Broadcast Management Device (BBMD)
- Foreign Device Registration (FDR)

Flexible Communications

- 10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX
- Supports MS/TP slave auto-discovery and proxy
- Optically-isolated MS/TP port
- MS/TP baud rates range from 9.6–115.2 kbps

Convenient Installation

- 24 VAC/VDC (± 10%), 47-63 Hz input voltage
- **Din-rail mounted** •





BASrouterLX — High-Performance BACnet[®] Router

The BASrouterLX is housed in a metal case that mounts on 35-mm DIN-rail and it is powered from a 24 VAC/VDC (± 10%) source. Its half-wave rectified power supply allows sharing of power with other halfwave devices. There are two ports on the unit — one Ethernet and one EIA-485.

The optically-isolated EIA-485 serial port allows for connection to either 2-wire or 3-wire MS/TP networks using a removable 5-pin terminal block. Up to 31 full-load or 62 half-load EIA-485 devices can share the serial bus at data rates between 9.6 and 115.2 kbps. Internal jumpers provide 120Ω termination and bias. These jumpers can be removed for mid-span installations.

The Ethernet port offers a shielded RJ-45 connector. Through auto-negotiation and Auto-MDIX, it automatically matches connections to the attached equipment. Thus, either CAT5 straight-through or crossover cable can be used to attach to the BACnet/IP network at either 10 or 100 Mbps speed.

MS/TP slave devices do not participate in token passing but can be made assessable throughout the complete MS/TP address range using either Manual Slave Address Binding or Automatic Slave Discovery. Once they are known, the BASgatewayLX functions as their proxy.

A resident web server allows for commissioning, and troubleshooting via a standard web browser. A reset switch is provided on the router to return the unit to the factory default IP and password settings. Five LEDs are provided. The power LED indicates that proper power is being provided. Two Ethernet LEDs indicate link status, data activity, data rate and duplex. Two EIA-485 LEDs indicate transmission and reception of data.



Data Sheet — BASrouterLX

Web Page Configuration, Status and Diagnostics

Basic Setup	
Basic Setup	
Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup Setup	
form BASRTI X-B-XXXXX - where	
Device Name: BASRTLX-B-00984A the Xs are replaced with the final six characters of the router's Ethernet MAC address.	
Device Description: Device Location: Device Location: Device Location: Device State Control (0.4, 194, 302), Do not use 4, 194, 303 which is reserved by	
Ethernet Network: 0 (0 - 65534) Normally leave at 0. More information BACnet Leach BACnet device within the same BACnet Internetwork must have a unique device instance. One must be assigned to	
BACnet/P UDP Port 1: BACO (Hexadecimal value e.g. BACO) the BASRTLX-B.	
BACnet/P Network 1: 1 (1 - 65534) Location can be used to configure additional identifiable information	
P Subnet: 255 255 255 0 ▼ for the router. They are blank by default	
IP Gateway: 10.0.0.1 More Information	
MS/TP MAC: 0 (0 - 127) Need Support?	
MS/TP Network 2001 (1 - 65534) Our start of engineers is available to address any issues you may be having.	
Max Masters 127 (1 - 127) Max Info Frames: 100 (1 - 100) Please visit our website for more	
Advanced Ms/TP Baudrate: 38400 V	
Options	
Accept FDR: V	
DNAT I IV	
Slave Proxy	
Hi Broadcast Distribution Table It Router Secondary BACnet/P UDP Port: 0000 (Hexadecimal e.g. BAC1)	
Secondary BACheby Network: 0 Public P Address: 0.0.0	
Slave Proxy Enable:	
Auto Slave Enable. View Auto Slaves	
Apply Cancel Manual Slave Proxy Entry	
Current MS/TP Driver Status: Manual Slave Proxy Entry MAC Address Device Instance Vendor D Max APDU	
Current MS/TP Driver Status: BACnet MS/TP Line Discipline 2.24 Apply Cancel	
Current MS/TP Driver Status: BACnet MS/TP Line Discipline 2.24 Baud Rate: 78600 Silence Timer: 10	
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Current MS/TP Driver Status: BACnet MS/TP Driver Status: BACnet MS/TP Line Discipline 2.24 Image: State Continuer, 10 Nmax, master, 127 Nmax, master, 127 Nmax, info, frames; 100 This_Station: 0 Next_Station: 67 Poll State: 07 PollForMaster Thumaround: 1 PFM Imeguit: 30	
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Current MS/TP Driver Status: BACnet MS/TP Driver Status: Build Rate: 76800 Silenco Timer: 10 Nmax, master: 127 Nmax, master: 127 Next, Station: 67 Poll, State: 07 Pollofoldaster Themout: 85 Becrott: 0 Rev Count: 316006124 Rov Count: 316006124 Rovier Rovier NSTP Tentic	¥ 🗹 🕵 ¾
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Current MS/TP Other Status: BAChet MS/TP Line Discipline 2.24 Back RS: 7600	Apply Apply ACnet MS/ ACnet MS/ ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE ACNE
Current MSTPD Inter Status: BAChester 7600 Wind, Master 1627 Wind, Master 1628	Apply Apply Macnet MS/ Macnet MS/

Setup — System Settings

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Setup	Advanced	Status			
	BASrout High-Performance B	ACnet [®] Router	About This Page Use the setup page to perform basic settings for Device Parameters, BACnet Ethernet, BACnet/IP and MS/TP. Device Parameters Device Name (Default Value = BASRTLX-B-xxxxxx): This is used to configure a unique device object name for the device on the network, It can be up to 80 characters and defaults to a unique name of the		
Device Name:	BASRTLX-B-009B4A]	form BASRTLX-B-XXXXXX - where the Xs are replaced with the final six		
Device Instance:	0	(0 - 4194302)	characters of the router's Ethernet MAC address.		
Device Description:			Device Instance (Default Value = 0):		
Device Location: Ethernet Network:	0	(0 - 65534) Normally leave at 0. More Information	The router's device instance is a 22-bit value (0-4, 194, 302). Do not use 4, 194, 303 which is reserved by BACnet. Each BACnet device within the same BACnet internetwork must have a unique device instance. One must be assigned to		
BACnet/IP UDP Port 1:	BAC0	(Hexadecimal value e.g. BAC0)	the BASRTLX-B.		
BACnet/IP Network 1:	1	(1 - 65534)	Location can be used to configure		
IP Address:	10.0.0.222		additional identifiable information for the router. They are blank by		
IP Subnet:	255.255.255.0 🔻	~	default		
IP Gateway:	10.0.0.1		More Information		
MS/TP MAC: MS/TP Network Max Masters: Max Info Frames:	0 2001 127 100	(0 - 127) (1 - 65534) (1 - 127) (1 - 100)	Need Support? Our staff of engineers is available to address any issues you may be having. Please visit our website for more information.		
MS/TP Baudrate:	38400 -				
MS/TP Tolerance:	Strict Lenient				
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Release: 1.2.0					

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Setup — System Settings

Device Parameters	Default Value	Description
Device Name	BASRTLX-Bxxxxx	The unique default value ends with the last 6 characters of the unit's Ethernet MAC address. You can edit it to be up to 20 characters.
Device Instance	0	The router device instance is a 22-bit decimal value (0–4,194,302).
Device Description		If you wish, enter a brief description. This entry is optional.
Device Location		If you wish, specify a location for the device. This entry is optional.
BACnot Ethernet Parameter	Default Value	Description
BACnet Ethernet Network	0	16-bit decimal value (1–65534). Each BACnet network, regardless of technology, must have a unique network number, including BACnet Ethernet. By retaining the default value of 0, BACnet Ethernet routing is disabled — but not BACnet/IP routing.
BACnet/IP Parameters	Default Value	Description
BACnet/IP UDP Port 1	BAC0	16-bit hex value (0–FFFF) is set to BAC0 as the default value and should be used. All BACnet/IP devices on the same BACnet network must have the same UDP port assignment. For other assignments choose ports in the range from BAC1 to BACF while verifying that these ports are available.
BACnet/IP Network 1	1	16-bit decimal value (1–65534). Each BACnet network, regardless of technology, must have a unique network number. It is recommended that all subnets of the same BACnet/IP network be given the same BACnet network number as well.
IP Address	192.168.92.68	IP address in dotted decimal format. Select a valid address in the range from 0.0.0.1 through 255.255.255.254.
IP Subnet	255.255.255.0	The default value is 255.255.255.0 in the dotted decimal format. All devices on the same subnet which communicate via BACnet/IP should use the same subnet mask.
IP Gateway	192.168.92.1	IP Gateway address in dotted decimal format. Select a valid address in the range from 0.0.0.1 through 255.255.255.254.
MS/TP Parameters	Default Value	Description
MS/TP MAC Address	0	Decimal value (0–127) represents the MAC address of the router's MS/TP port. Lower MAC address numbers are preferred.
MS/TP Network	2001	16-bit decimal value (1–65535). Each BACnet network, regardless of technology, must have a unique network number.
Max Masters	127	This 8-bit decimal value (1–127) represents the highest master MAC address in the MS/TP network. If the highest value MAC address is unknown or if additional devices are to be added in the future above the current highest MAC address, use the default setting of 127.
Max Info Frames	100	This is the maximum number of messages $(1-100)$ that can be routed onto the MS/TP network by the router per token pass. Values above 20 are typical.
MS/TP Baud Rate	38400	The baud rate of the MS/TP network can be 9600, 19200, 38400, 57600, 76800 or 115200 bps. All MS/TP devices on the same MS/TP network must use the same baud rate. Auto-bauding devices will set their baud rates to that of the BASrouterLX.
MS/TP Tolerance	Lenient	Affects the degree to which interoperability with devices is successful. Lenient option causes less efficient traffic but optimises interoperability.



Data Sheet — BASrouterLX

Setup — Setting Date and Time

Set the **Year**, **Month** and **Day** as well as the **Hours**, **Minutes** and **Seconds**. The current data and time is appended to MS/TP captures that are viewed using Wireshark. Note that date and time settings are not retained after power is removed from the unit.

Setup — Username and Password

Change the **Username** and **Password** to access the BASTRLX-B webpage. Each string must be between 5 and 63 alphanumeric characters — and is case sensitive.

Setup — Configure Upload/Download

Router settings can be uploaded or downloaded to and from your PC. Click on the **Browse...** button to select the configuration file from your computer and then click **Upload** to upload it to the router. The router will check the file and if it is a valid configuration file, the router will reboot the router using the settings from the uploaded file.

By clicking on **Save**, the current router configuration is saved to your PC.

Setup — Firmware Upload

New firmware can be uploaded to the BASrouterLX. Click on the **Browse...** button to select the firmware file from your PC, then press **Upload**.

NOTE: The firmware filename should not be changed and used as provided by Contemporary Controls.

Set Date						
Year (YYYY)	Month (MM)	Day (DD)	Select Conf	iguration File to Upload :		Browse
2013	4	11				
					Upload	Cancel
Set Time						
Hours (hh)	Minutes (mm)	Secs (ss)				
09	44	25				
			Save Config	uration File to PC :	Save	
	Apply	ancel	-			
				Username:		
			_	Password:		
lect Firmware File to Upload :		Browse		Confirm Password:		
	Upload	Cancel				
				Ap	ply	•

Advanced — BACnet/IP Broadcast Management Device (BBMD)

Parameters	Default Value	Description
BBMD Enable	Unchecked	Check to enable BACnet/IP Broadcast Management Device (BBMD) which normally will also allow Foreign Device Registration (FDR).
BBMD UDP Port	Primary	Normally the primary port is selected. The secondary port is used in very special applications with NAT routing.
Accept FDR	Checked	Uncheck to disable foreign devices from registering with this router. Both BBMD Enable and Accept FDR must be checked to allow Foreign Device Registration.

Advanced — Network Address Translation (NAT)

Parameters	Default Value	Description
Secondary BACnet/IP UDP Port	0000	Enter secondary UDP port as a 16-bit hex value (0-FFFF) when operating with two BACnet/IP BACnet networks. In this case use BAC1 if it is available.
Secondary BACnet/IP Net	0	Assign a network number unique from all other BACnet networks.
Public IP Address	0.0.0.0	If the BASrouterLX is being accessed through a NAT router then you'll need to enter the public IP address of the NAT router here. If not, leave this value at the default setting of 0.0.0.0.

BBMD Enable: BBMD UDP Port:	Caution: Only one BBMD can be enabled per subnet)
Accept FDR:	(BBMD must be enabled to accept FDR)
BBMD Logging Enable:	\checkmark
	Apply Cancel

Secondary BACnet/IP UDP Port:	0000		(Hexadecimal e.g. BAC1)
Secondary BACnet/IP Network:	0		(1-65534)
Public IP Address:	0.0.0.0		
	Apply	Cancel	



Advanced — Slave Proxy

Parameters	Default Value	Description
Slave Proxy Enable	Off	When enabled, the router will proxy MS/TP slave devices for clients. Slaves can be discovered (when Auto Slave is enabled) and you can also manually enter information about the slaves. When Auto Slave is disabled, MS/TP slaves must be manually configured.
Auto Slave Enable	Off	When enabled, MS/TP slaves will be automatically discovered — if Slave Proxy has first been enabled.
Auto Slave Table		This table lists the slaves that have been automatically discovered. To view the table, click View Auto Slaves.
Manual Slave Proxy Entry		Enter the MAC address, Device Instance, Vendor ID and Max APDU for each slave device and then click Apply.
Manual Slave Table		This table lists the slaves that have been manually entered.

Advanced — Broadcast Distribution Table (BDT)

Table or Screen Name	Default Value	Description
BBMD IP Address		Enter the IP address of every BBMD device on the internetwork except for this router. These entries will appear in the Broadcast Distribution Table. Up to 50 entries can be made.
Broadcast Distribution Mask	255.255.255.255	Use the default setting in almost all cases. If the IP router can pass broadcast messages, enter the same mask as the IP router.
Broadcast Distribution Table (BDT)		This table lists the IP addresses and broadcast distribution masks of all the other BBMDs located on the network. Entries can be deleted by entering the entry number and checking on Delete Entry No.



BBMD IP Add	dress Broadcast Distri Mask	bution	
	255.255.255.25	5 🔻	
	Apply Cancel		
Broadcast Distrib	ution Table		
Entry No.	IP Address	Distribution Mask	
1	192.168.3.3	255.255.255.255	
2	192.168.4.3	255.255.255.255	
3	192.168.5.3	255.255.255.255	
4	192.168.6.3	255.255.255.255	

Status — MS/TP Driver

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Current MS/TP Driver Status:

BACnet MS/TP Line Discipline 2.24

Description

For Contemporary Controls to assist a customer with an MS/TP bus issue, information about the bus is available within the BASrouterLX. During a technical support call, the customer may be asked to supply the information from this status page. Although to the customer the information is confusing, it could be helpful to the staff at Contemporary Controls. What follows are short definitions of the types of data being stored on an ongoing basis. The status page is refreshed automatically.

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Baud Rate: 76800	Confirms the baud rate of the MS/TP segment
SilenceTimer: 12	A counter indicating the amount of time between successive characters
Nmax_master: 127	The highest address of a master node as set by the router
Nmax_info_frames: 100	The maximum number of frames the router can send before a token pass
This_Station: 0	MAC address of the router
Next_Station: 67	The router's logical neighbor in the token pass
Poll_Station: 39	The last MAC address sent by the router in a poll-for-master sequence
RFSM State: 00 Idle	Receive frame state machine: current state
MNSM State: 01 Idle	Master node state machine: current state
Tturnaround: 1	Time between the end of a reception to the beginning of a transmission
PFM timeout: 30	Poll-for-master timeout setting
TP timeout: 85	Token-passing timeout setting
Event Count: 24	Number of received characters or error — used to detect activity
Rcv Count: 116482958	Receive frame counter
Rcv Error Count: 0	Receive frame error counter
RX Queue size: 0	Number of messages in the receive queue
TX Queue size: 0	Number of messages in the transmit queue
Trace Queue size: 1438	Background task related to Wireshark capture

Application Assistance

Contemporary Controls has produced an Application Guide that covers all its BACnet routers. Numerous network examples are provided with appropriate completed configuration screens to assist the installer on how best to apply BACnet routers in the field. It is available from the company website.

Status — MS/TP Traffic

The BASrouterLX has the ability to view MS/TP traffic from the Ethernet side of the router. This is a handy feature when verifying proper MS/TP network activity without the need of installing specialized interfacing hardware to the MS/TP bus. As a background task, the BASrouterLX continuously records the last 3900 messages sent over MS/TP — including both data and token passes. By depressing the **Generate MS/TP** *Wireshark File*, those last 3900 messages are converted to a "pcap" format file for viewing by a Wireshark[®] protocol analyzer. Once the conversion is made, depressing the *View MS/TP Traffic* button sends the captured file to the attached PC for Wireshark viewing. BACnet protocol decoding is built into this free but powerful protocol analyzer.

CONTEMPORAR

ACtrace.pcap [Wireshark 1.6.0 (SVN Rev 37592 from /trunk-1.6)]					
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>G</u> o <u>C</u> apture <u>A</u> nalyze <u>S</u> tatistics Telephony <u>T</u> ools <u>I</u> nternals <u>H</u> elp					
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Filter		Evpression			
Thitei.		LAPICSSION	п. Стеат Аррту		
Time Source	Destination	Protocol	Length Info		
1 0x00	0x01	BACnet	9 BACnet MS/TP Poll For Master		
2 0x00	0x02	BACnet	9 BACnet MS/TP Poll For Master		
3 0x00	0x03	BACnet	9 BACnet MS/TP Poll For Master		
▲ NSAA	ASA A	DAChat	D BACmot MC/TB Ball Fan Mastan	111	
□ Frame 1: 9 byte	s on wire (72 bits).	9 bytes captured (72 bits)		
Arrival Time:	Dec 31. 2011 18:00:	00.266421120 Central	Standard Time		
Epoch Time: 0	.266421120 seconds				
[Time delta f	rom previous capture	d frame: 0.00000000) seconds]		
[Time delta f	rom previous display	ed frame: 0.0000000	00 seconds]		
[Time since r	eference or first fr	ame: 0.000000000 sec	conds]		
Frame Number:	1				
Frame Length:	9 bytes (72 bits)				
Capture Lengt	h: 9 bytes (72 bits)				
[Frame is mar	ked: False]				
[Frame is ignored: False]					
[Protocols in frame: mstp]					
■ BACnet MS/TP, S	rc (0), Dst (1), Pol	l For Master			
Preamble 55:	0x55				
Preamble FF: Oxff					
Frame Type: Poll For Master (1)					
Destination Address: 1					
Source Address: 0					
Length: 0	65 5 · · · ·				
B Header CRC: 0xf5 [correct]					
			0		

Status — Foreign Device Table

Table or Screen Foreign Device Ta	Name able (FDT)	Description This table automatically lists all foreign devices that have reg this router. Information includes IP address, port number, tim remaining time of each lease. Up to 147 entries can be acco	istered with ie-to-live, and mmodated
	Foreign Device Registrations:		

 IP Address: Port
 TTL
 Remaining Time

 10.0.0.103:BAC0
 300
 143

Protocol Implementation Conformance Statement (PICS)

High-Performance	X BACnet Router		
BACnet	Protocol Implementat	ion Conformance	e Statement (Annex A)
Date:	11 April 2013		
Vendor Name:	Contemporary Controls		
Product Name:	BASrouterLX		
Product Model Number:	BASRTLX-B		
Applications Software Ver	sion: 1.0.0 Firmware Rev	ision: 1.2.0 BACnet	Protocol Revision: 7
Product Description: BAS	SRTLX-B High-Performance BACne	et Router with slave proxy s	upport.
BACnet Standardized Dev BACnet Operator \ BACnet Building C BACnet Advanced	ice Profile (Annex L): Workstation (B-OWS) Controller (B-BC) Application Controller (B-AAC)	⊠ BACnet Appli ☐ BACnet Smar ☐ BACnet Smar	cation Specific Controller (B-ASC) : Sensor (B-SS) t Actuator (B-SA)
List all BACnet Interopera DS-RP-A Data Sharing DS-RP-B Data Sharing DS-RPM-B Data Sharing DS-WP-B Data Sharing DS-WPM-B Data Sharing	bility Building Block Supported (— ReadProperty – A — ReadProperty – B g — ReadPropertyMultiple – B J — WriteProperty – B ng — WritePropertyMultiple – B	Annex K): DM-DDB-B Device N DM-DOB-B Device N DM-DCC-B Device M DM-RD-B Device Ma DM-R-B Device Man DM-LM-B Device Man NM-RC-B Network N	fanagement — Dynamic Device Binding – B fanagement — Dynamic Object Binding – B fanagement — Device Communication Control – B inagement — Restart – B inagement — List Manipulation – B fanagement — Router Control
Segmentation Capability:	mented messages Window Siz mented messages Window Siz	e: e:	
Standard Object Types Su	ipported:		
Device	Supported Can Be C	No	No
No optional properties	are supported. NOTE: The above	object is directed supported	on the router. The router will pass to the
appropriate network all	BACnet communications not direc	ted to the router.	
Data Link Laver Options:	J)		
 ☑ BACnet IP, (Annex ☑ BACnet IP, (Annex ☑ BACnet IP, (Annex ☑ ISO 8802-3, Ethern ☑ ANSI/ATA 878.1, Ei ☑ MS/TP master (Claus ☑ MS/TP slave (Claus ☑ Point-To-Point, EIA ☑ Point-To-Point, moc □ LonTalk, (Clause 11) □ Other: 	6), Folegin Device et (Clause 7) IA-485 ARCNET (Clause 8), baud r use 9), baud rate(s): 9600; 19,200; se 9), baud rate(s): 9600; 19,200; 3 232 (Clause 10), baud rate(s): Jem, (Clause 10), baud rate(s): 1, medium:	ate(s): 38,400; 57,600; 76,800; 11! 8,400; 57,600; 76,800; 115,	5,200 200
 BACnet IP, (Annex BACnet IP, (Annex ISO 8802-3, Ethern ANSI/ATA 878.1, E MS/TP master (Clau MS/TP slave (Claus Point-To-Point, EIA Point-To-Point, Clause 1' Other: Device Address Binding: Is static device binding devices.) ∑ Yes 	 a), Folegin Device b), Folegin Device c), Folegin Device c), Clause 7) (A-485 ARCNET (Clause 8), baud rate(s): 9600; 19,200; 3 c), baud rate(s): 9600; 19,200; 3 	ate(s): 38,400; 57,600; 76,800; 11 8,400; 57,600; 76,800; 115, ssary for two-way communic	5,200 200 cation with MS/TP slaves and certain other
 BACnet IP, (Annex BACnet IP, (Annex BACnet IP, (Annex ISO 8802-3, Ethern ANSI/ATA 878.1, E MS/TP master (Claus MS/TP slave (Claus Point-To-Point, EIA Point-To-Point, Clause Other: Device Address Binding: Is static device binding devices.) Yes Networking Options: Router, Clause 6 — Annex H, BACnet T BACnet/IP Broadca Does the BBMD s 	o), Folegin Device et (Clause 7) IA-485 ARCNET (Clause 8), baud r use 9), baud rate(s): 9600; 19,200; se 9), baud rate(s): 9600; 19,200; 3 232 (Clause 10), baud rate(s): dem, (Clause 10), baud rate(s): 1, medium: supported? (This is currently neces in No - routing between BACnet/IP, ISO 8 funnelling Router over IP st Management Device (BBMD) support registrations by Foreign Device	ate(s): 38,400; 57,600; 76,800; 11; 8,400; 57,600; 76,800; 115, ssary for two-way communio 802-3, and MS/TP vices? ⊠ Yes □ No	5,200 200 cation with MS/TP slaves and certain other
 BACnet IP, (Annex BACnet IP, (Annex BACnet IP, (Annex ISO 8802-3, Ethern ANSI/ATA 878.1, E MS/TP master (Claus Point-To-Point, EIA Point-To-Point, EIA Point-To-Point, Clause Other: Device Address Binding: Is static device binding devices.) Yes Networking Options: Router, Clause 6 — Annex H, BACnet T BACnet/IP Broadca Does the BBMD s Character Sets Supported Indicating support for n ANSI X3.4 ISO 10646 (UCS-2) 	o), Folegin Device et (Clause 7) IA-485 ARCNET (Clause 8), baud r use 9), baud rate(s): 9600; 19,200; se 9), baud rate(s): 9600; 19,200; 3 232 (Clause 10), baud rate(s): dem, (Clause 10), baud rate(s): 1, medium: supported? (This is currently neces in nelling Router over IP st Management Device (BBMD) support registrations by Foreign Device in the set of the s	ate(s): 38,400; 57,600; 76,800; 11; 8,400; 57,600; 76,800; 115, ssary for two-way communic 802-3, and MS/TP vices? ⊠ Yes □ No ly that they can all be suppor CS □ ISO 8 □ JIS C	5,200 200 cation with MS/TP slaves and certain other prted simultaneously. 859-1 6226

Data Sheet — BASrouterLX

Wiring Diagrams

Since the product incorporates a half-wave rectifier circuit, it can share the same 24 VAC power with other half-wave rectified devices. It can also be powered from a 24 VDC source. A redundant power connection exists for back-up power schemes.

The product incorporates a 3-wire optically-isolated EIA-485 interface for the serial connection, allowing better circuit protection and noise immunity. To connect to other 3-wire devices simply make a one-to-one connection to the other devices. But when connecting to 2-wire non-isolated devices, the

signal common (SC) on the product must share the reference used by the 2-wire devices. This is accomplished by tying the SC pin to COM on the product and by grounding the low-side of each power supply on all connected devices. In this way all EIA-485 transceivers share the same earth reference. Notice that the SC pin is signal common and not a shield pin. For shield connections, use the SH pin. Far-end external termination is required as shown. Near-end bias and termination are internally supplied within the product.



Connector Pin Assignments

2-wire MS/TP Network



Mechanical Drawing



Data Sheet — BASrouterLX

Specifications

Power Requirements	24 VAC ±10% 10 VA	47–63 Hz or	24 VDC	±10% 6 W		
Operating Temperature	0°C to 60°C					
Storage Temperature	–40°C to 85°C					
Relative Humidity	10–95%, non-condensing					
Protection	IP30					
USB Port	USB 2.0, Type A					
Communication Compliance Protocols supported Data rate Physical layer Cable length (max) Port connector	Ethernet IEEE 802.3 BACnet/IP 10 Mbps, 100 Mbps 10BASE-T, 100BASE 100 m Shielded RJ-45	E-TX	E A 9 E 1 5	EIA-485 NSI/ASHRAE 1 ACnet MS/TP .6, 19.2, 38.4, 5 IA-485, 3-wire is 200 m (or 1000 -pin removable 1	35 (ISO 16 7.6, 76.8, solated m if using terminal	6484-5) 115.2 kbps 115.2 kbps)
LEDs	<i>L (Link)</i> Green = 100 Mbps Yellow = 10 Mbps Flash = activity	D (Duplex) Green = Full-du Off = Half-duple Flash = Collision	7 plex G x n	x Green = activity	Rx Green = a	RoHS√
Regulatory Compliance	CE Mark; CFR 47, P	art 15 Class A; F	RoHS	CE	0	X

Ordering Information

Description Model **RoHS BASRTLX-B** High-performance BACnet router with diagnostic capabilities **United States** China **United Kingdom** Germany

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