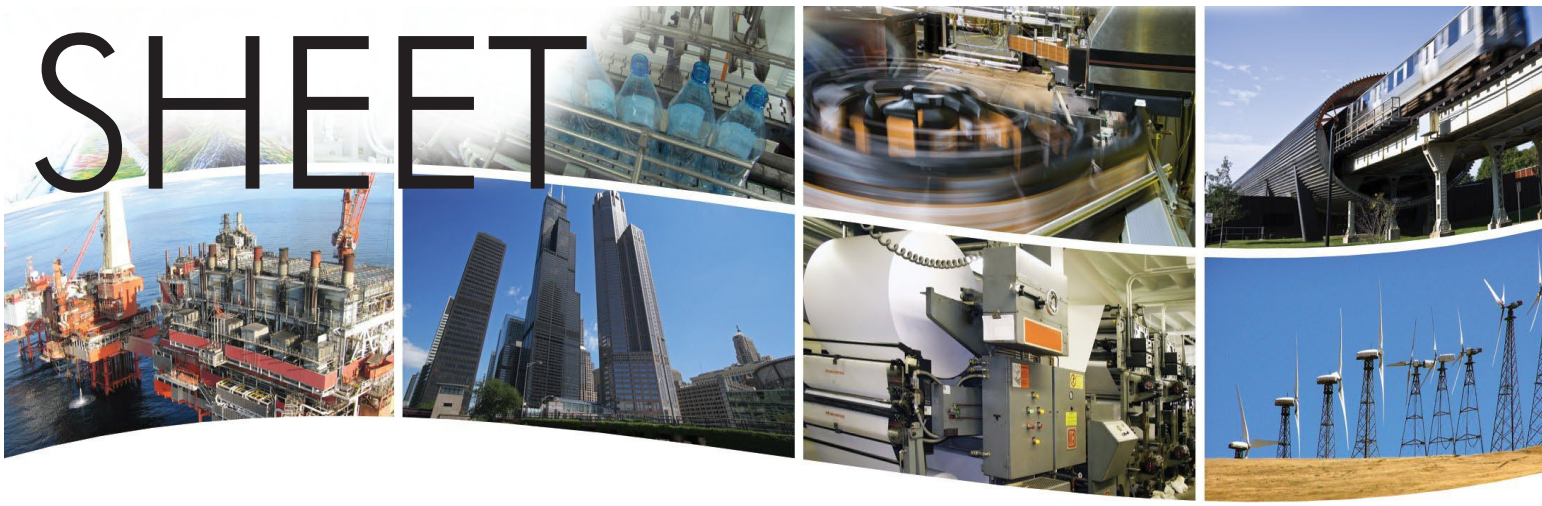
data SHEET



Portable BASrouter — BACnet® Multi-Network Router

The Portable BASrouter provides stand-alone routing between BACnet networks such as BACnet/IP, BACnet Ethernet, and BACnet MS/TP — thereby allowing the system integrator to mix BACnet network technologies within a single BACnet internetwork. There are two physical communication ports on the Portable BASrouter. One is a 10/100 Mbps Ethernet port and the other is an isolated MS/TP port. Configuration is accomplished via a web page.

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

IP Network Support

- Web server for commissioning and troubleshooting
- Communication diagnostic web page

Flexible Communications

- 10/100 Mbps Ethernet with auto-negotiation and Auto-MDIX
- Optically isolated MS/TP port
- MS/TP baud rates range from 9.6–76.8 kbps

Convenient Installation

- Powered via a USB port in a laptop
- Compact plastic case can be easily stored

BASautomation®

Portable BASrouter — BACnet® Multi-Network Router

The Portable BASrouter is housed in a plastic case that is powered from a USB port on a laptop computer. There is one MS/TP port and one 10/100 Mbps Ethernet port.

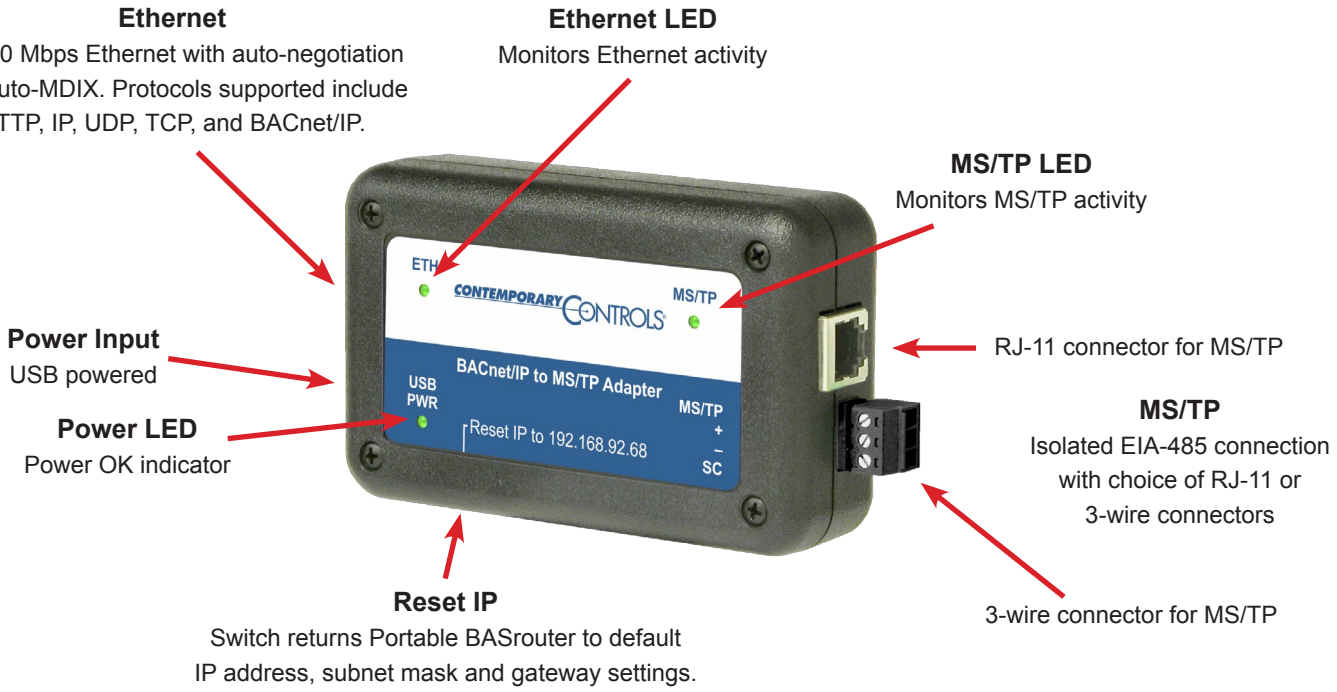
The MS/TP port offers an optically-isolated transceiver. It has a removable 3-pin terminal block for the EIA-485 connection. Logically, 255 devices can be addressed. Physically, the number of devices depends upon device loading.

Up to 31 full-load EIA-485 devices can share the same MS/TP bus segment as the Portable BASrouter. For half-load devices, there can be 62. All MS/TP standard baud rates are supported — from 9.6 to 76.8 kbps.

The Ethernet port offers a shielded RJ-45 connector.

Through auto-negotiation and Auto-MDIX, this port automatically matches connections to the attached equipment. Therefore, either straight-through or crossover CAT5/6 cable can be used for hook-up.

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 address. Three LEDs are provided: The power LED glows green when proper power is provided. A bicolour Ethernet LED glows green for 100 Mbps operation and yellow for 10 Mbps and indicates activity by flashing. A green LED flashes with MS/TP activity.



Web Page Configuration

CONTEMPORARY CONTROLS

BASRPT-B Configuration

Device Name	BASRT-B00c546
Device Instance	0
Device Location	Location
Ethernet Network	0
BACnet/IP UDP Port 1	BAC0
BACnet/IP Network 1	1
IP Address	192.168.92.68
IP Subnet	24
IP Gateway	192.168.92.1
MS/TP MAC	0
MS/TP Network	2001
Max Masters	127
Max Info Frames	100
MS/TP Baudrate	38400
MS/TP Tolerance	Strict / Lenient

Status

Save Changes

MAC Address 00-50-DB-00-C5-46

Firmware Revision 2.7.2

Status Screen

This screen displays a log of events that facilitate troubleshooting. Use this information when discussing any of your routing issues with Contemporary Controls technical support staff.

BIP 1 Incoming Packets=28688
BIP 1 Outgoing Packets=381
BIP 2 Incoming Packets=0
BIP 2 Outgoing Packets=0
BACnet/Ethernet Incoming Packets=0
BACnet/Ethernet Outgoing Packets=0
MSTP Incoming Packets=0
MSTP Outgoing Packets=14305
SilenceTimer=11
EventCount=0
Flag = SoleMaster
RFSM state=00 Idle
MNSM state=07 PollForMaster
Next Station=124
Poll Station=99
Available Memory=25624
TX PFM count=970637
RX PFM count=0
TX Token Count=0
RX Token Count=0
Invalid long Frames=0
Clear Silence Time=0

Portable BASrouter Parameter Settings

Device Parameters	*Default Value*	*Description*
Device Name	BASRT-Bxxxxxx	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 (0–4,194,303). Each BACnet device has a unique device instance.
Device Location	Location	The default value can be edited to be up to 20 characters.
BACnet 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. By retaining the default value of 0, BACnet Ethernet routing is disabled.
BACnet/IP Parameters	***Default Value***	***Description***
BACnet/IP UDP Port	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	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	24	Decimal value (0–30) in the "slash" notation is the number of bits with a "1" in the mask. The default value of 24 corresponds to 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 most 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 or 76800 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 BAS Router.
MS/TP Tolerance	Lenient	Affects the degree to which interoperability with devices is successful. Lenient option causes less efficient traffic but optimises interoperability.

BACnet Protocol Implementation Conformance (PIC) Statement

CONTEMPORARY CONTROLS

Portable BAS Router

Portable BACnet Commissioning Tool

BACnet Protocol Implementation Conformance Statement (Annex A)

Date: 5 September 2014
Vendor Name: Contemporary Controls
Product Name: Portable BAS Router
Product Model Number: BASRTP-B
Applications Software Version: **Firmware Revision:** 2.0 **BACnet Protocol Revision:** 2
Product Description: Device to route between BACnet/IP, ISO 8802-3 and MS/TP networks.

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
DM-DDB-B Device Management — Dynamic Device Binding – 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
Device	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 directed to the router.

Data Link Layer Options:

- ☒ BACnet IP, (Annex J)
- ☐ BACnet IP, (Annex J), Foreign Device
- ☒ ISO 8802-3, Ethernet (Clause 7)
- ☐ ANSI/ATA 878.1, EIA-485 ARCNET (Clause 8), baud rate(s):
- ☒ MS/TP master (Clause 9), baud rate(s): 9600; 19,200; 38,400; 76,800
- ☐ 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 — routing between BACnet/IP, ISO 8802-3, and MS/TP
- ☐ 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™/Microsoft™ DBCS
- ☐ 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.

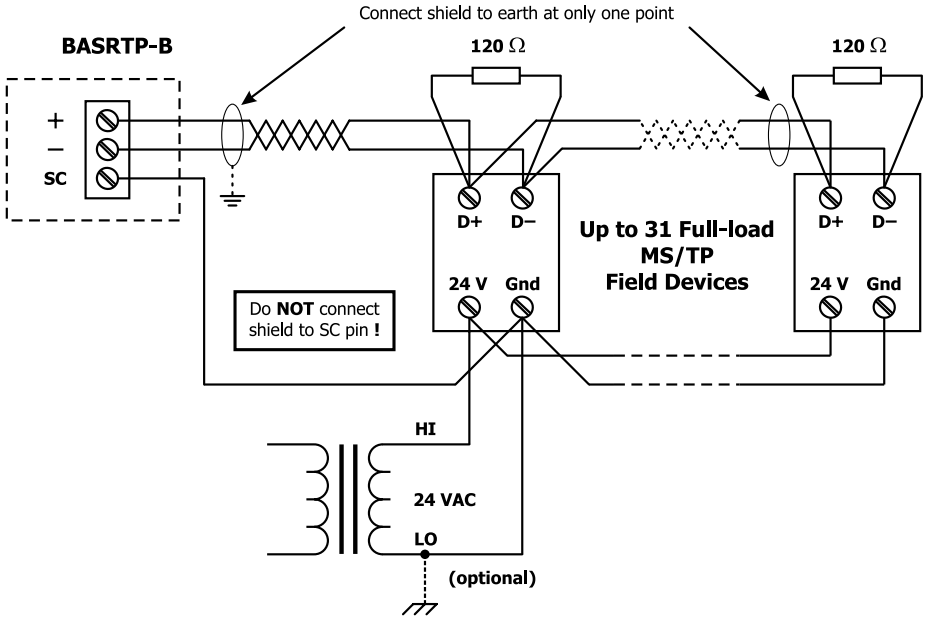
5 September 2014 TD070210-0XF

Wiring Diagrams

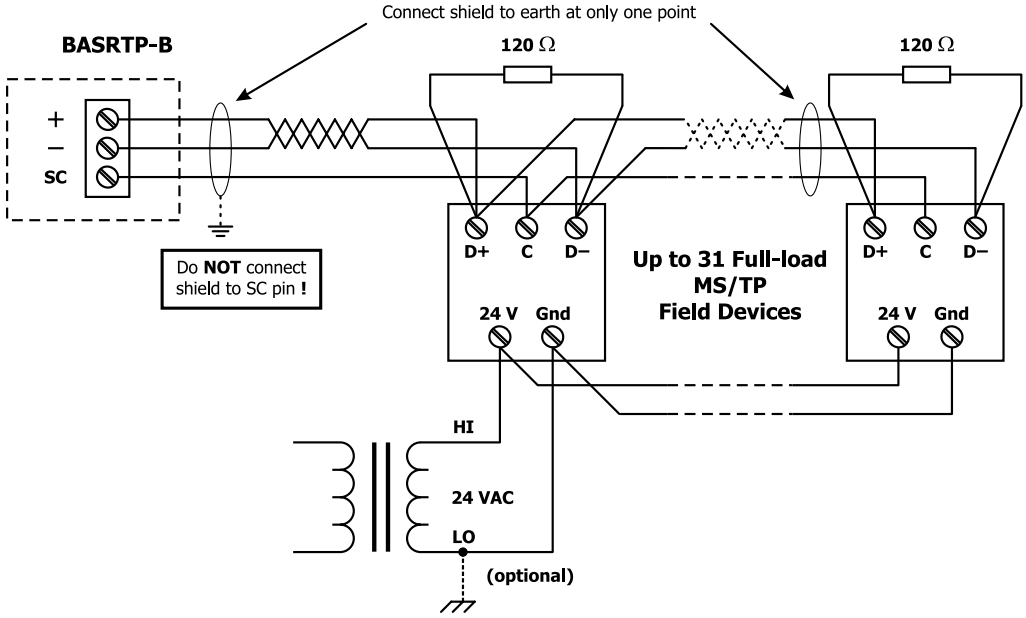
The Portable BASrouter features a USB 2.0 Full Speed Device Port that accepts the Type B plug of the USB cable that is included in the box. It takes 5 VDC from a host computer, while typically drawing 400 mA of current. It can operate from a USB hub, if desired, and no driver installation is needed.

The device incorporates a 3-wire optically-isolated EIA-485 interface for the MS/TP 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 Portable BASrouter must share the reference used by the 2-wire devices. This can be accomplished by tying the SC pin to COM on the Portable BASrouter and then 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**.

2-wire MS/TP Bus Wiring



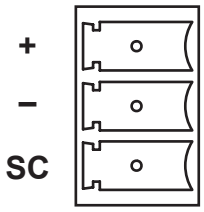
3-wire MS/TP Bus Wiring



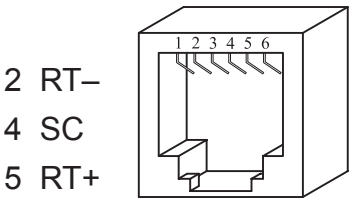
Typical Installation

Connector Pin Assignments

3-pin (MS/TP)



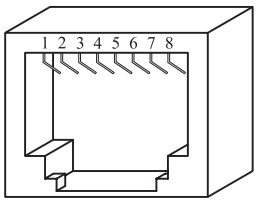
RJ-11 (MS/TP)



2 RT–
4 SC
5 RT+

(All other pins are unused.)

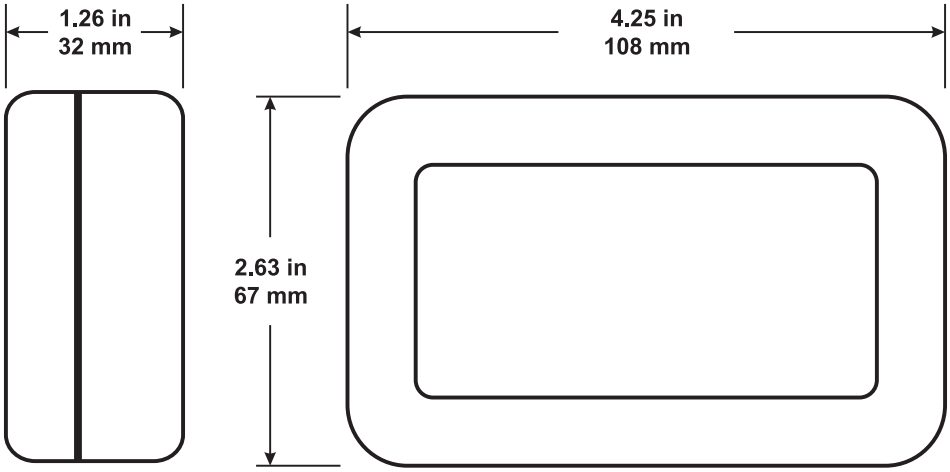
RJ-45 (MDI Ethernet)



1 TD+
2 TD–
3 RD+
6 RD–

(All other pins are unused.)

Mechanical Drawing



Specifications

Power Requirements	USB power: 5 VDC ±10%, 400 mA, 2 W	
Operating Temperature	0°C to 60°C	
Storage Temperature	–40°C to 85°C	
Relative Humidity	10–95%, non-condensing	
Protection	IP30	
Ethernet Communications	IEEE 802.3 10/100 Mbps data rate 10BASE-T, 100BASE-TX physical layer 100 m (max) CAT5 cable length	
MS/TP Communications	ANSI/ASHRAE 135 (ISO 16484-5) 9600, 19200, 38400, 76800 bps data rate EIA-485 physical layer 1200 m (max) cable length	
LEDs	Power	Green = power OK
	Ethernet	Green = 100 Mbps Yellow = 10 Mbps Flash = activity
	MS/TP	Flashing green = receive activity
Regulatory Compliance	CE Mark; CFR 47, Part 15 Class A; RoHS UL508 and C22.2 No. 142-M1987: Industrial Control Equipment	

Ordering Information

Model	*RoHS*	*Description*
BASRTP-B	✔	Portable BASrouter BACnet multi-network router

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