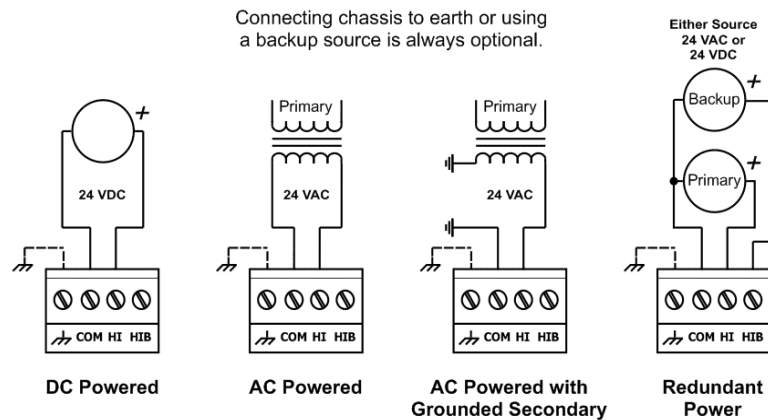# BASrouter

BACnet® Multi-Network Router

The 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 BASrouter – a 10/100 Mbps Ethernet port with auto-negotiation and Auto-MDIX using a shielded RJ-45 connector, and an optically isolated EIA-485 port for MS/TP connection. The BASrouter comes in a DIN-rail mounted metal case, powered by 24 VAC/VDC source. Three LEDs – one each for power, Ethernet, and MS/TP receive-traffic provide visual indication of proper operation. DHCP client feature can be enabled for easy IP addressing and reduced network administration. Advanced features allow for an optional BACnet Broadcast Management Device (BBMD) which can be enabled to allow BACnet communication across multiple IP subnets of routed IP networks. Foreign Device Registration (FDR) is also supported. Configuration is accomplished using a web page. MS/TP status web page provides diagnostic information about BACnet MS/TP bus. Routing status page provides a routing table of devices on the network.

Electrical *(Class 2 Circuits Only)*

INPUT	DC	AC
Voltage (±10%):	24 V	24 V
Power:	2 W	4 VA
Frequency:	N/A	47-63 Hz

Environmental

Operating temperature:	–40°C to +75°C
Storage temperature:	–40°C to +85°C
Relative humidity:	10–95%, non-condensing

Functional

	Ethernet	MS/TP
Physical Layer:	10BASE-T 100BASE-TX	EIA-485
Cable length limit:	100 m	1200 m
MS/TP data rate (bps):	9600, 19200, 38400, 76800	
MS/TP node limit:	254 devices total, 31 full-load devices per segment	

Installation

Power Connection

The BASRT-B requires 24 VAC or 24 VDC while drawing no more than 4 VA of power. The recommended conductor size is 16–18 AWG. COM is directly connected to zero volts and the chassis is DC isolated from zero volts. Input connections are reverse polarity protected. See figure below for power options.

Connecting chassis to earth or using a backup source is always optional.

Either Source 24 VAC or 24 VDC

24 VDC — DC Powered
24 VAC — AC Powered
24 VAC — AC Powered with Grounded Secondary
Backup / Primary — Redundant Power

WARNING: Internally, this device utilizes a half-wave rectifier and therefore can only share the same AC power source with other half-wave rectified devices. Sharing a common DC power source is also possible. Sharing AC power with full-wave rectified devices is NOT recommended. Devices powered from a common AC source could be damaged if a mix of half-wave and full-wave rectified devices exists.

MS/TP Physical Layer Bias and Termination

End-of-Line termination (120Ω) is normally applied at both ends of the MS/TP bus, especially when using long cable segments and faster data rates. Fail-safe voltage bias (200mV) ensures stable MS/TP operation. The BASrouter is shipped with fail-safe voltage bias and EOL termination applied. Depending on the application, these can be changed by removing jumpers inside of the case.

End Device – In a router application where the location of the router is at the end of the MS/TP bus segment – both bias and EOL termination must be applied.

Middle Device – In a router application where the location of the router is anywhere between the end MS/TP devices (in the middle of the bus), termination jumper should be removed. Fail-safe voltage bias jumpers could be left in place depending on whether other devices on the MS/TP bus are providing additional bias or not.

Three configuration jumpers are located inside BASrouter's case near the MS/TP connector. Removing the BASrouter cover provides access to the 6-pin jumper block.
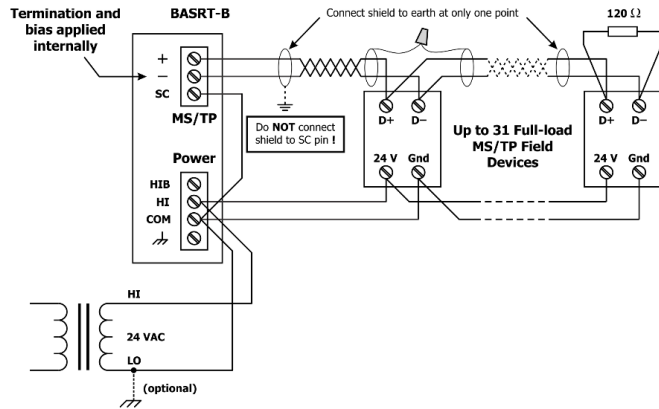
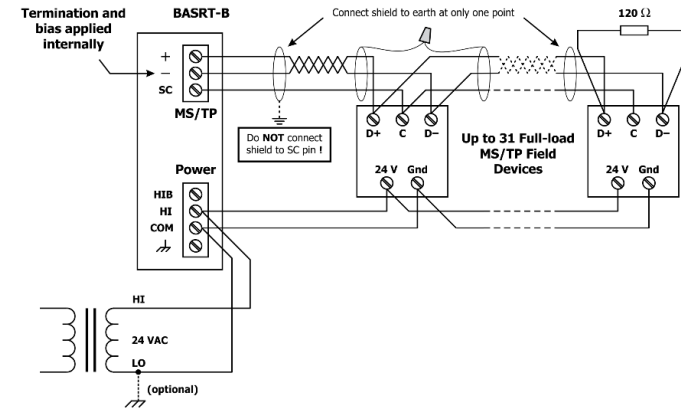| U | Install jumper to apply pull-up bias. |
| T | Install jumper to terminate bus. |
| D | Install jumper to apply pull-down bias. |

(all jumpers are installed by default)

MS/TP Physical Layer Connection Options

For MS/TP devices that share a power source with the BASRT-B

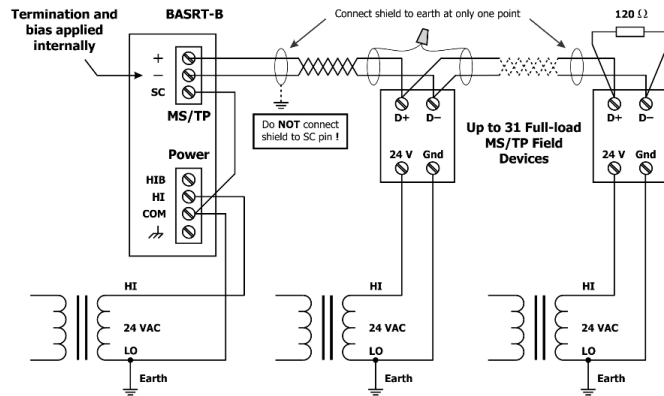### 2-wire MS/TP Bus with Shared Power Source
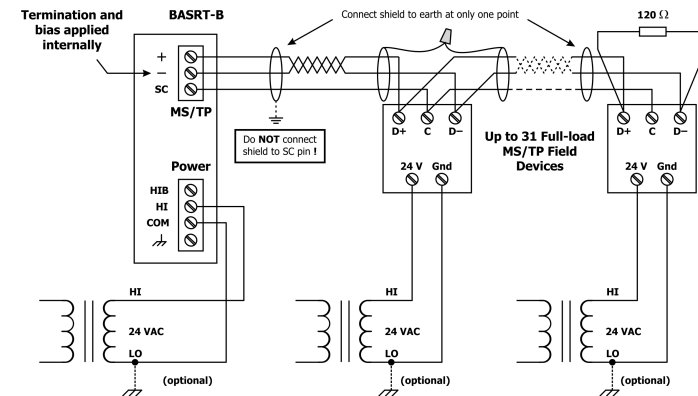

3-wire MS/TP Bus with Shared Power Source

For MS/TP devices that use a power source separate from the BASRT-B

2-wire MS/TP Bus with Separate Power Sources

3-wire MS/TP Bus with Separate Power Sources

Web Page Configuration

The BASrouter is configured using a web server accessible from any PC on the local network with recent versions of any standard web browser installed. To configure the router initially, connect it to your Windows PC using an Ethernet cable and set the PC's IP and subnet mask in Local Area Connection –> Properties. In the Internet Protocol Version 4 (TCP/IPv4) settings of your Windows PC, specify an IP address and a Subnet mask in the same subnet as the BASrouter (e.g. 192.168.92.5 /24).

*BASrouter's factory-programmed: Default IP address is **192.168.92.68** and a Class C subnet mask of **255.255.255.0 (/24)**. User Name is: **admin** and Password is: **admin***

ATTENTION: The default login credentials must be changed before the BASrouter system configuration can be altered. Please change the password to an 8-10 character alphanumeric value (at least one letter and one number). This ensures authorized access to the router only.

Reset IP switch is located on the front, underneath RJ-45 connector. Press and hold the *Reset IP* button using a paper clip for at least 5 seconds while the router is powered. Remove power and restore power again to complete the reset IP, User ID, and Password procedure to factory-programmed defaults. For complete datasheet and details on BASrouter, support, or compliance information, please download our BASrouter User Manual at: https://www.ccontrols.com/basautomation/basrouter.php and click on the Support tab under More Information.

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