

application NOTE



Using the BASrouter with an Alerton Controller

Installing and operating the BASrouter (BASRT-B, 35 mm DIN-rail mount) with several Alerton controllers is simple and straightforward. Once the BASrouter is properly installed and configured, all the connected Alerton controllers can be accessible from BACnet/IP.

Alerton Controllers

Alerton manufactures a line of low-cost BACnet MS/TP controllers that can be accessible from BACnet/IP once the BASrouter is in place. Although there are several controller models, the information in the application note should be applicable to each model.

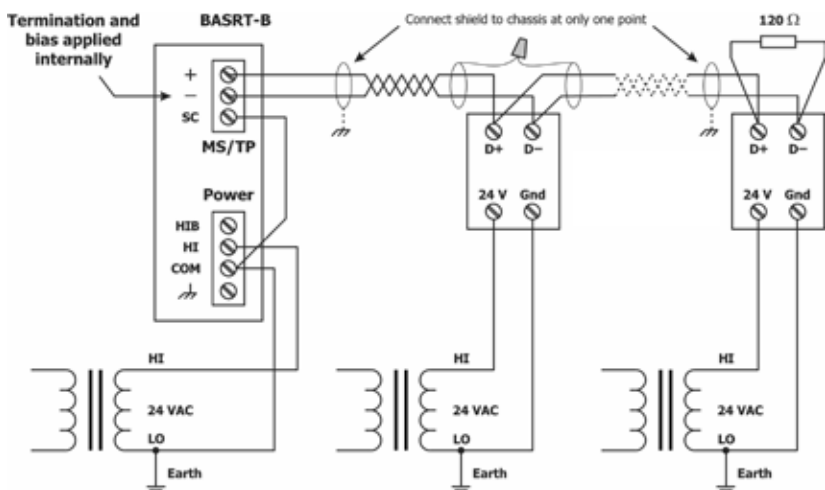
BACnet MS/TP data from the Alerton controllers are carried over a two-wire twisted-pair network. Alerton controllers auto-baud. They wait until a master device — usually a building controller — to send out frames so connected controllers can “wake-up” and set their speed to that of the building controller. The BASrouter takes the place of the building controller so its data rate must be set during configuration thereby allowing the Alerton controllers to automatically match their data rate with that of the BASrouter.

Wiring the BASrouter

A typical wiring diagram is shown. Like the BASrouter, the Alerton controllers incorporate a 24 VAC half-wave rectified power supply meaning that the BASrouter and the Alerton controllers can share the same AC power source as long as the COM pin on the BASrouter and

the GND pin on the Alerton controllers are connected together. If separate power sources are used – as shown in the diagram — then an earth connection must be shared by the COM and GND pins. The BASrouter requires about 4 VA of power.

The Alerton controllers utilize a two-wire, non-isolated MS/TP network while the BASrouter supports a 3-wire isolated MS/TP network. If possible, install the BASrouter at one end of the MS/TP segment. This will be called the near-end. Follow Alerton cabling and grounding recommendations. Connect the data pair as shown observing polarity. A common ground reference is required in order for the MS/TP transceivers to operate properly. Connect the SC pin and the COM pins together on the BASrouter. Make sure an earth connection exists between all the controllers and the BASrouter when separate power sources are involved. This helps protect the data lines from excessive common-mode voltages that could damage the transceivers or create data errors. Do not exceed 63 controllers on a network. A maximum number of about 45 is recommended to improve responsiveness. Apply a 120-ohm terminator to the last controller on the far-end of the MS/TP segment. The BASrouter has internal bias and termination applied so the near-end is already terminated and should not receive an external terminator. If the BASrouter is installed mid-span, termination and bias can be disabled by removing jumpers inside the BASrouter. In this situation, external bias and termination would need to be applied at the near-end while external termination is applied to the far-end.



BASautomation™

Configuring the BASrouter

Configuring the BASrouter with a web browser is straight forward. Both the BACnet/IP and MS/TP sides of the router need to be configured. The following settings apply to the BASrouter itself.

A unique **Device Instance** must be assigned to the BASrouter. If you are only connecting to a BACnet/IP network and not to a BACnet Ethernet network, leave the **Ethernet Network** number at 0.

Typically, use the **BACnet/IP UDP Port** default of **BAC0**. Set the **IP Address**, **Subnet** and **Gateway** accordingly.

For the **MS/TP MAC** address of the BASrouter, we suggest the default of 0. This gives the router the first opportunity to grab the token. Select a unique **MS/TP Network** for the MS/TP segment. Set **Max Masters** to 127 because Alerton controllers are preset to 127. The Max Master settings should be the same for all devices. **Max Info Frames** are not critical. Select a value between 30 and 100. Alerton controllers *auto-baud*, meaning they remain silent

until a device, such as a building controller, begins sending frames. Once traffic is sensed, the Alerton controllers match their data rate to that of the traffic. Instead of a building controller, a BASrouter is used. Set the **MS/TP Baudrate** to a typical rate such as 38,400. For **MS/TP Tolerance**, select *Lenient*.

Do not bother with the **Advanced** screen unless you must enable the BBMD feature for IP router traversal. If traversing standard IP routers (non-NAT routers), configure with the advanced screen. Although Alerton BACnet traffic can traverse NAT routers, it uses proprietary BBMD/NAT technology incompatible with the BASrouter. The Advanced screen will be covered in another document.

When you are finished with the settings, save the changes.



BASRT-B Configuration



Device Name	a unique name	
Device Instance	a unique number	
Ethernet Network	0	
BACnet/IP UDP Port 1	BAC0	
BACnet/IP Network 1	a unique network number	
IP Address	the proper IP address	Advanced
IP Subnet	the proper IP subnet value	
IP Gateway	the proper gateway address	
MS/TP MAC	0	Status
MS/TP Network	a unique network number	
Max Masters	127	
Max Info Frames	100	
MS/TP Baudrate	38400	Security
MS/TP Tolerance	<input type="radio"/> Strict <input checked="" type="radio"/> Lenient	
Save Changes		
MAC Address 00-50-DB-00-4A-A0		
Firmware Revision 2.6.0		

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