

BACnet/IP to BACnet MS/TP Router

Features

- ◆ Compact Size
- ◆ Routes between BACnet®/IP and BACnet® MS/TP networks
- ◆ 10/100Mbps Ethernet Auto-MDIX port
- ◆ Optically isolated MS/TP communications port
- ◆ MS/TP baud rates: 9,600 to 76,800 bps
- ◆ Jumper selectable MS/TP bias and termination
- ◆ DIN-rail mountable
- ◆ Input voltage range is 24VAC/VDC ($\pm 10\%$), 47 – 63 Hz
- ◆ Diagnostic LED's include MS/TP traffic monitor
- ◆ Removable connector for the MS/TP port
- ◆ Web server for commissioning, re-configuring and troubleshooting
- ◆ Reset switch to restore factory default IP address
- ◆ EMC rated for Building and Industrial environments
- ◆ CE Mark and RoHS Compliant
- ◆ UL 508 Listed, C-UL Listed Industrial Control Equipment



Description

This BACnet MS/TP router enables the use of standard Ethernet networks to position BACnet MS/TP devices where you most need them and interconnect them with other BACnet MS/TP devices or the head-end utilising standard Ethernet networks.

The BACnet router routes messages between BACnet IP and BACnet MS/TP networks set out in the ANSI/ASHRAE 135(ISO 16484-5) standard. The unit is configurable via its own web page.

This unit is housed in a metal case which mounts onto 35 mm DIN rail.

MS/TP Port

This port provides an optically isolated transceiver with a removable 3-pin block for a EIA-485 connection. This unit is able to logically address 255 devices but as ever the actual number of devices per MS/TP network is dependant upon the total device loading.

For a fully loaded network up to 31 devices can be connected to the same Bus segment as this router. For half load devices this can rise to 62.

All MS/TP baud rates are supported from 9,600bps to 76.8Kbps.

Internal MS/TP bias and termination jumpers are available. They can be removed for mid span installation.

BACnet Ethernet Port

This port uses shielded RJ-45 connector. It offers Auto-negotiation and along with Auto-MDIX it automatically sets its port settings to match the duplex, data rate and signal polarity required by connected Ethernet equipment. This also enables the use of CAT% cable.

Configuration

Resident on the BACnet router is a web server which provides the means of configuring and troubleshooting via a standard web browser.

A Reset switch is also provided to enable the unit's IP address to be reset back to its factory default setting.

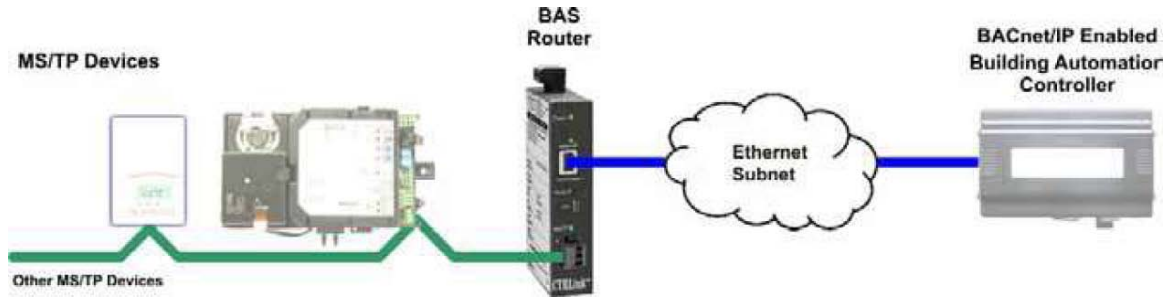
The three LED's offer the following information –

Green Power LED – ON when correct power applied

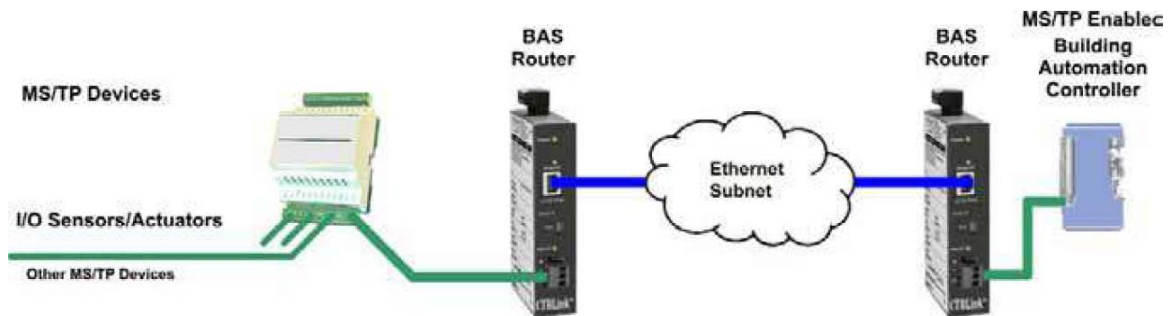
Bi-colour Ethernet Link LED – Green = 100Mbps, Yellow = 10Mbps

Green MS/TP – This flashes when there is traffic being transmitted and received via the MS/TP interface.

Example Application – Connecting MS/TP devices to BACnet enabled IP controller.



Example Application – Tunnelling MS/TP communications through existing Ethernet infrastructure



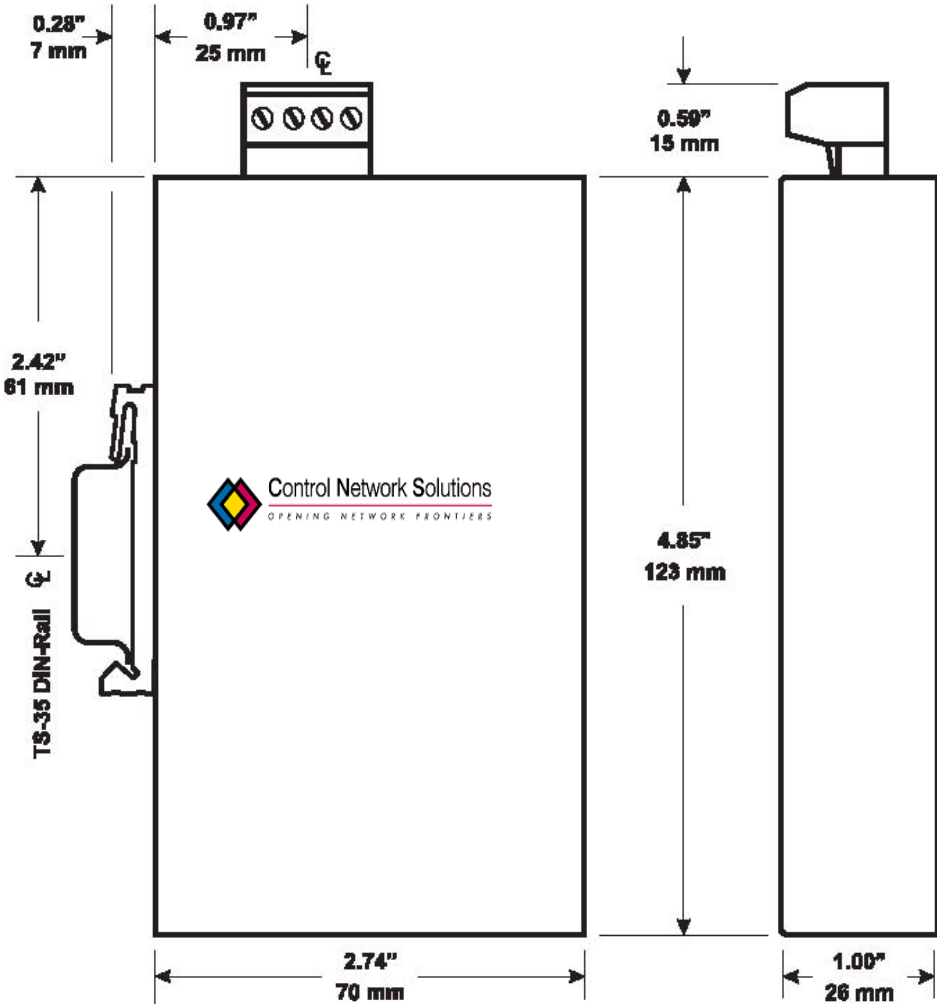
Specifications

RJ-45 10BASE-T/100BASE-TX Port Assignments

RJ-45	Usage
1	TD+
2	TD-
3	RD+
4	Not Used
5	Not used
6	RD-
7	Not Used
8	Not Used

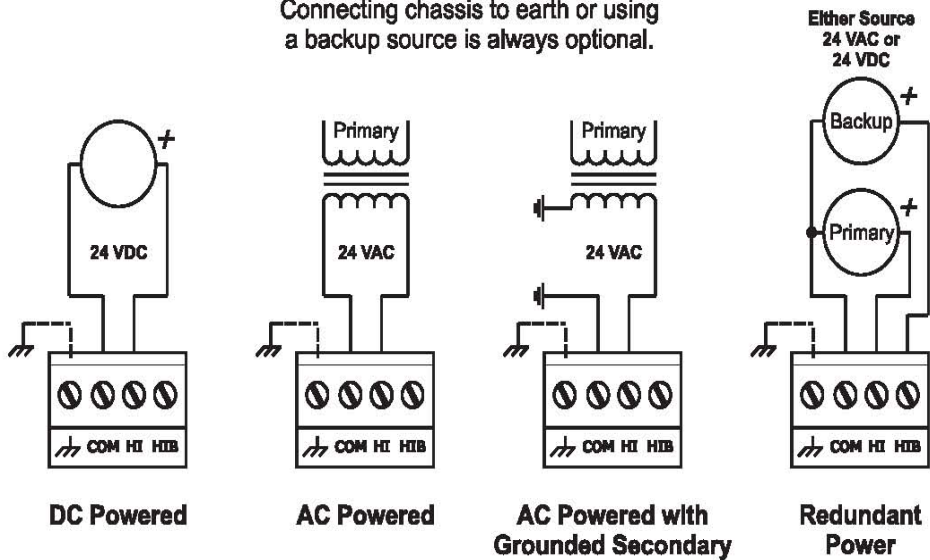
MS/TP Pin Assignments	
+	Data +
-	Data -
SC	Signal Common

Mechanical Drawing –



Power Supply Options

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



Electrical

Electrical		
Input (Class 2 circuits ONLY)	DC	AC
Voltage ($\pm 10\%$)	24	24
Current (mA, Max)	125	125
Power	3W	3VA
Frequency	N/A	47 – 63 Hz
Environmental		
Operating Temp	0C to +60C	
Storage Temp	-40C to +85C	
Relative Humidity	10 – 95%, non-condensing	

Protection	IP30	
Functional		
	Ethernet	MS/TP
Compliance	IEEE 802.3	ANSI/ASHRAE 135 (ISO 16484-5)
Data rate	10Mbps, 100Mbps	9.6K, 19.2K, 38.4K, 76.8K
Physical Layer	10BASE-T, 100BASE-T	EIA-485
Cable Length	100m (MAX)	1200m
Port connector	Shielded RJ-45	3-pin Terminal block, jumper selectable termination and bias
LEDs	Green = 100Mbps	Flashing Green = Receive activity
	Yellow = 10Mbps	
	Flashing = Activity	
Flow control	Half duplex (back pressure)	
Regulatory Compliance		
EN55024	EN 61000-4-2 thro -6	
	EN 61000-4-11	
EN55022	CISPR 22	
CFR 47, Part 15	ANSI-C63-4	

Configuration

The screenshot shows a web browser window displaying the configuration page for a Contemporary Controls BACnet Router. The browser's address bar shows the URL `http://192.168.92.68/`. The page features the Control Network Solutions logo and the slogan "OPENING NETWORK FRONTIERS". The main heading is "Router Configuration". On the left, there is an image of the physical router device, a vertical black unit with a "CTRLink" label. On the right, there is a form with various configuration fields:

- Device Instance:
- BACnet/IP UDP Port:
- BACnet/IP Network:
- IP Address:
- IP Subnet:
- IP Gateway:
- MS/TP MAC:
- MS/TP Network:
- Max Masters:
- Max Info Frames:
- MS/TP Baudrate:
- MS/TP Tolerance: Strict Lenient
- Save Changes:
- MAC Address:

The browser's taskbar at the bottom shows the "Internet" icon and a 100% zoom level.

Device Parameter	Default Value	Description
Device Instance	0	The router device instance is a 22-bit value (1-4,194,303). Each network device has a unique device instance
BACnet/IP Parameters		
BACnet/IP Parameters	Default Value	Description
BACnet/IP UDP Port	BAC0	16-bit hex value (0-FFF) is set to 0xBAC0. Value should not change but if you must change it avoid well known ports having hex addresses such as 15, 17, 50 etc
BACnet/IP Network	1	BACnet/IP network number is a 16-bit value (1-65535). Each network must have a unique.
IP Subnet	24	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	The default gateway for the IP stack is a dotted decimal number in the range of 0.0.0.1 through to 255.255.255.254.
MS/TP Parameters		
MS/TP Parameters	Default Value	Description
MS/TP MAC Address	0	The 8-bit (0-127) MAC address of the router's MS/TP port in decimal. Lower MAC address numbers are preferred.
MS/TP Network	2001	This 16-bit decimal network number (1-65535) must be unique. No other MS/TP network can have the same network number.
Max Masters	127	The highest master MAC address (in decimal) in the MS/TP network. This can be as large as 127 and you should use 127 if you are unsure of other MS/TP devices address settings.
Max Info Frames	100	The maximum number of messages that can be routed onto the MS/TP network by the router per token pass. Its range is 1-100 and typical values are 20 through 40.
MS/TP Baud Rate	38.4K	The baud rate of the MS/TP network can be 9.6K, 19.2K, 38.4K, 76.8Kbps. All MS/TP devices on the same MS/TP network must use the same baud rate.
MS/TP Tolerance	Lenient	Setting determines the degree to which interoperability with devices is successful. Lenient option is less efficient for traffic flow but optimises interoperability

Ordering Information

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