

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.

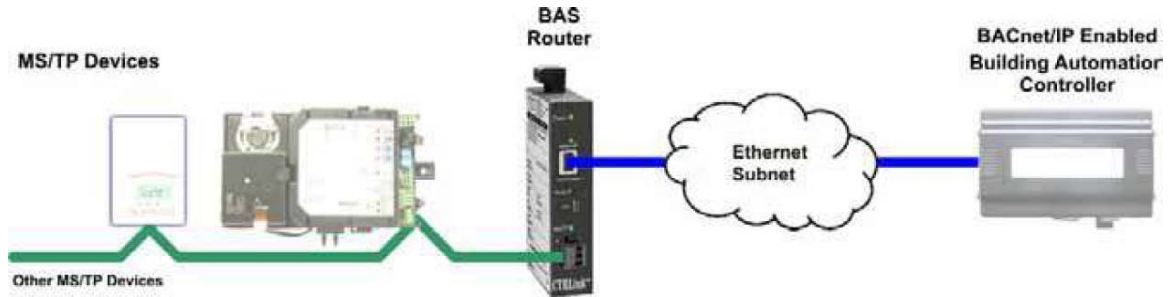
The three LED's offer the following information –

Green Power LED – ON when correct power applied

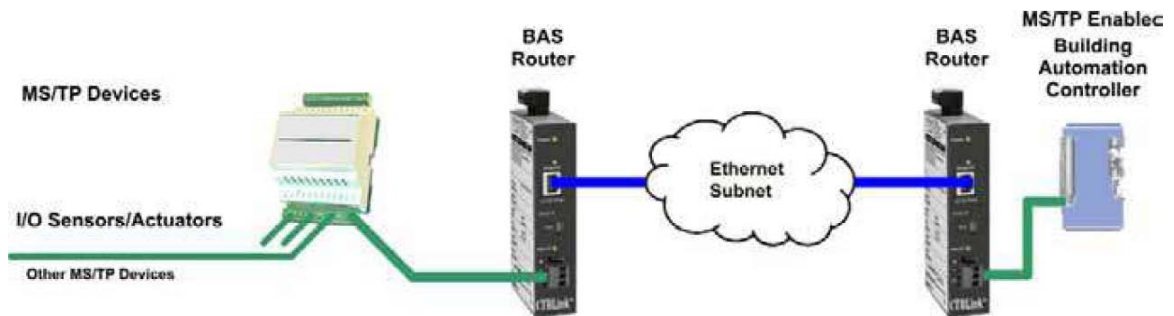
Bi-colour Ethernet Link LED – Green = 100Mbps, Yellow = 10Mbps

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



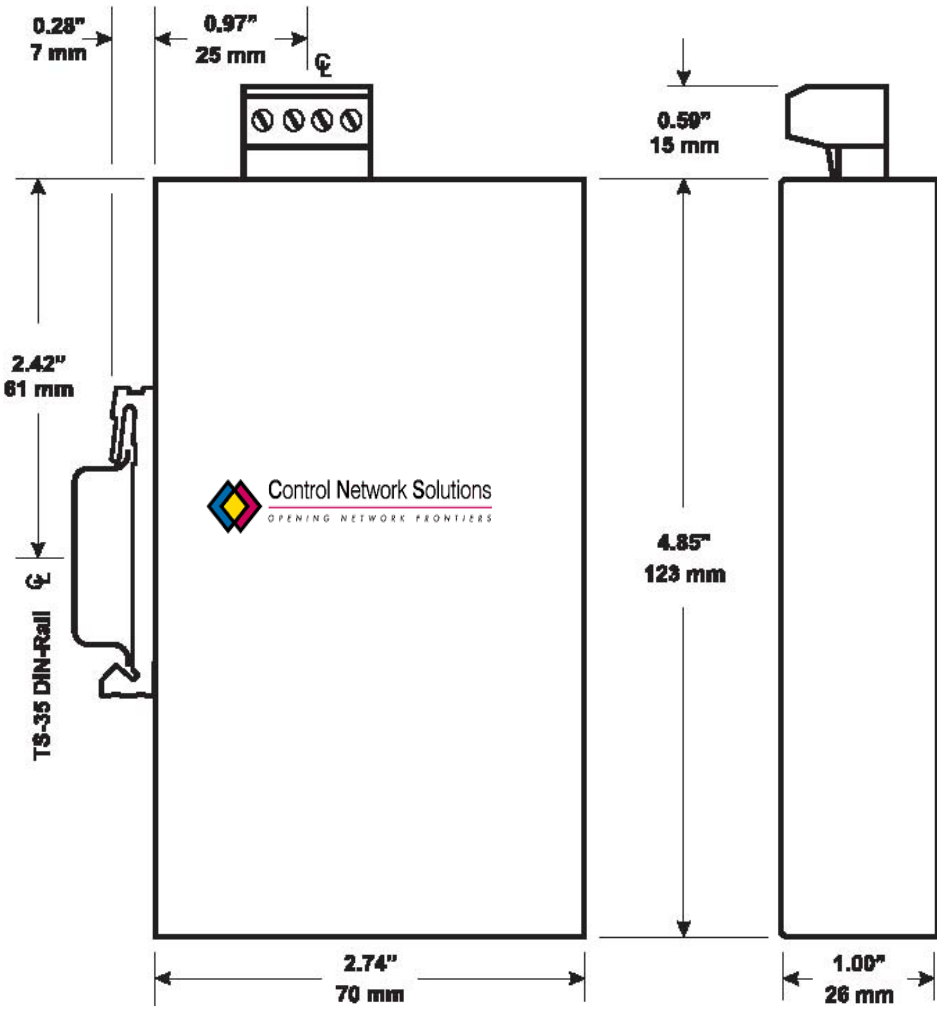
Specifications

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

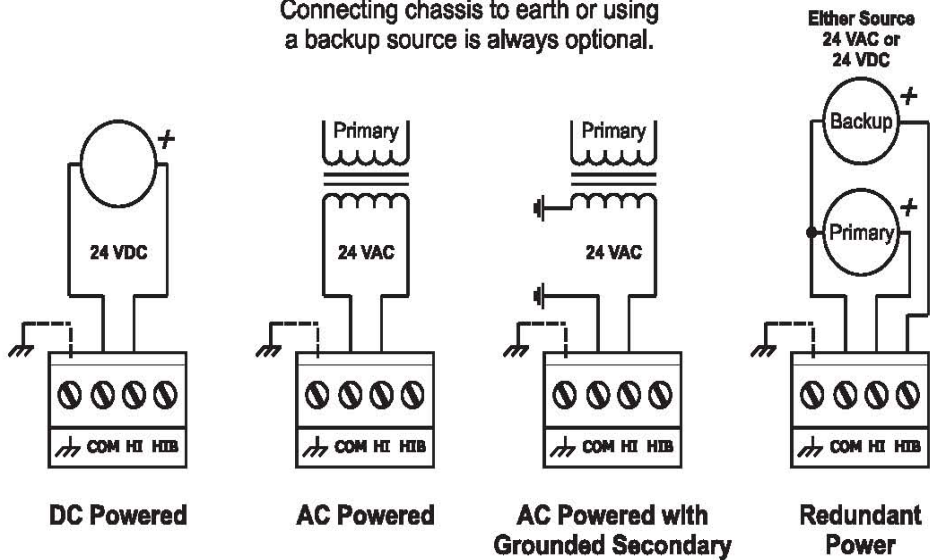
MS/TP Pin Assignments	
+	Data +
-	Data -
SC	Signal Common

Mechanical Drawing –



Power Supply Options

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

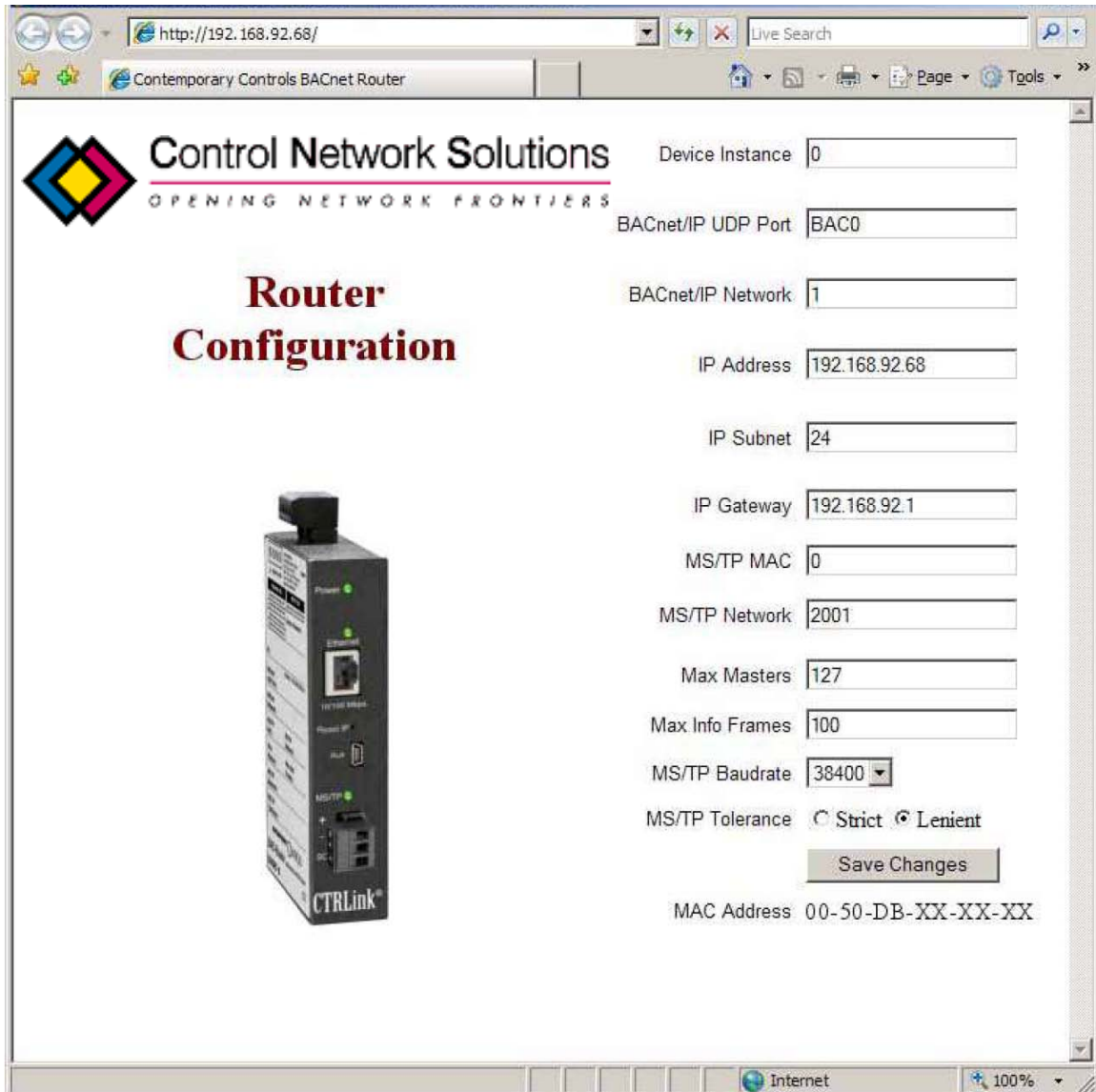


Electrical

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 a photograph 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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