



4B GROUP

IE-NODE (Industrial Ethernet Node)

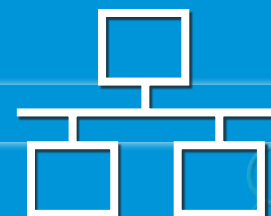
Remote Sensor Monitoring for PLC's & Automation Systems

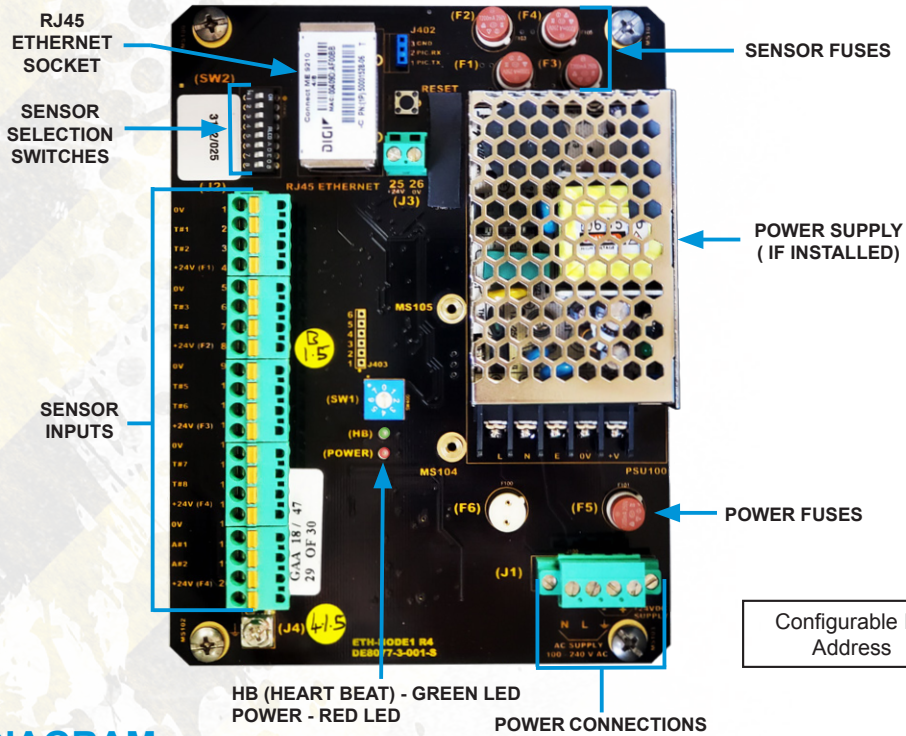
Key Features

- **Sensor Interface for PLC's & Automation Systems**
- **Supports PROFINET, EtherNet/IP and Modbus TCP/IP protocols**
- **Up to 16 Total Sensor Inputs with Available Expansion Boards**
- **Configurator Software for Easy Network Set Up and Visual Overview of All Devices**

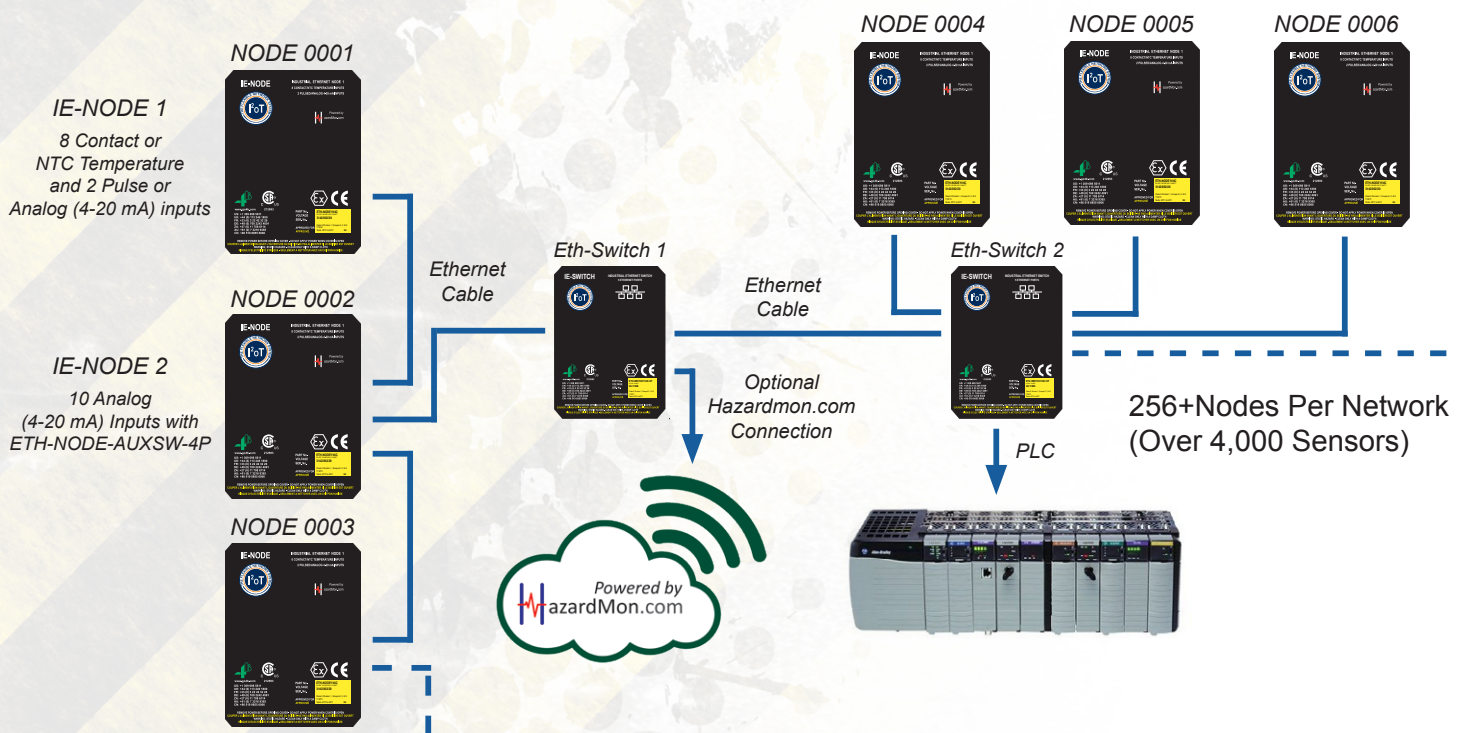


BETTER BY DESIGN





NETWORK DIAGRAM

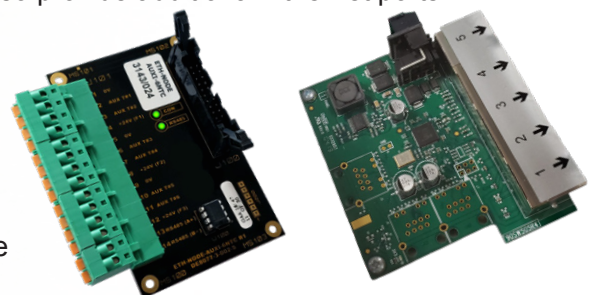


EXPANSION BOARDS (OPTIONAL)



Expansion boards provide additional features and are available for the IE-NODE to expand total sensor inputs from 10 to 16, allow RS485 Modbus RTU connections and also provide additional Ethernet ports.

1. The ETH-NODE-AUXI-6NTC expansion board allows for the support of up to 6 additional NTC temperature sensors or 6 contact sensors, or any combination of 6.
2. The ETH-NODE-AUXI-6AN expansion board allows for up to 6 additional 4-20 mA (current loop) sensors.
3. The ETH-NODE-AUXSW-4P expansion board provides 4 usable Ethernet ports for expanding the network.



NTC Expansion Board

Ethernet Node Switch Expansion



APPLICATION



The Industrial Ethernet Node (IE-NODE) is a remote monitoring interface designed to provide sensor data to PLC's or other automation and control systems.

The IE-NODE is available in two versions, both with a total of 10 sensor inputs. Version 1 has 8 contact or NTC temperature inputs, and 2 pulse or 4-20 mA (current loop) inputs. Version 2 has 10 inputs for 4-20 mA (current loop) sensors.

Both units can be expanded to 16 sensor inputs with the installation of optional expansion boards.

The IE-NODE operates by reading its sensor inputs and sending processed data when requested by another system (e.g. PLC). The units are equipped with an RJ45 Ethernet socket and supports PROFINET, EtherNet/IP and Modbus TCP/IP protocols for easy integration with Siemens, Allen-Bradley Rockwell, Delta V, Modicon and other PLC's or automation devices.

The IE-NODE's network configurator software provides a visual view of all devices on the network. It allows for easy identification of each unit on the network and allows for network settings to be changed as needed.

PARTS NUMBERS & ACCESSORIES

- ETH-NODE1V46CAI IE-NODE 1 (120 to 240 VAC / 24 VDC)
- ETH-NODE1V4CAI IE-NODE 1 (24 VDC)
- ETH-NODE2V46CAI IE-NODE 2 (120 to 240 VAC / 24 VDC)
- ETH-NODE2V4CAI IE-NODE 2 (24 VDC)
- ETH-NODE-AUXI-6NTC NTC Expansion Board (6 NTC Input)
- ETH-NODE-AUXI-6AN Analog Expansion Board (6 4-20mA Inputs)
- ETH-NODE-AUXSW-4P Expansion Ethernet Switch (4 Usable Ports)
- ETH-SWITCH1V4CAI-5P 5 Port Ethernet Switch (24 VDC)

4B IE-Node is compatible with a wide range of sensors. Below is a list of 4B sensors available from stock. If you have another brand of sensor that you would prefer to use please contact the 4B Tech Team.



Industrial Ethernet Switch
ETH-SWITCH1V4CAI-5P



IE-NODE SENSORS

UKEx, ATEX, IECEx Zone 21 / 22

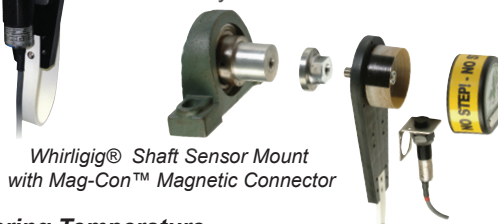


1 Belt Speed -



Speed Sensor
(P3003V34AI or
M300M1V10AI)

The P3004 is an inductive proximity sensor with a solid state output and the MilliSpeed provides a 4-20 mA output. It can sense a ferrous metal target on a rotating shaft from up to 8mm away.



Whirligig® Shaft Sensor Mount
with Mag-Con™ Magnetic Connector



3 Belt Misalignment -



Touchswitch
(TS2V34AI & TS2V4CAI)

The Touchswitch has a force activated contact signal. When contact from the belt occurs an alarm is generated.



Rub Block -
Round
(RB82D)



Rub Block -
Rectangular
(KIT-RUB-1 or
KIT-RUB-8)

Rub blocks process temperature information. When the belt rubs against the brass block, heat from friction generates an alarm.



2 Bearing Temperature -



ADB
(ADB810V3AI/D4 &
ADB81MV3AI/D4)

The ADB series are designed to allow the depth of the probe to be adjustable depending on the size of the bearing, and attach using the existing grease zerk threads.



ADBT4



SM2 & PP2

4B Tech Team professional testing equipment available for purchase -



4 Plug Indication -



Binswitch Elite
(BSE15V10AI)

The Binswitch Elite is a capacitance point plug/level indicator with automatic material build up compensation for bulk granular solids or liquids.



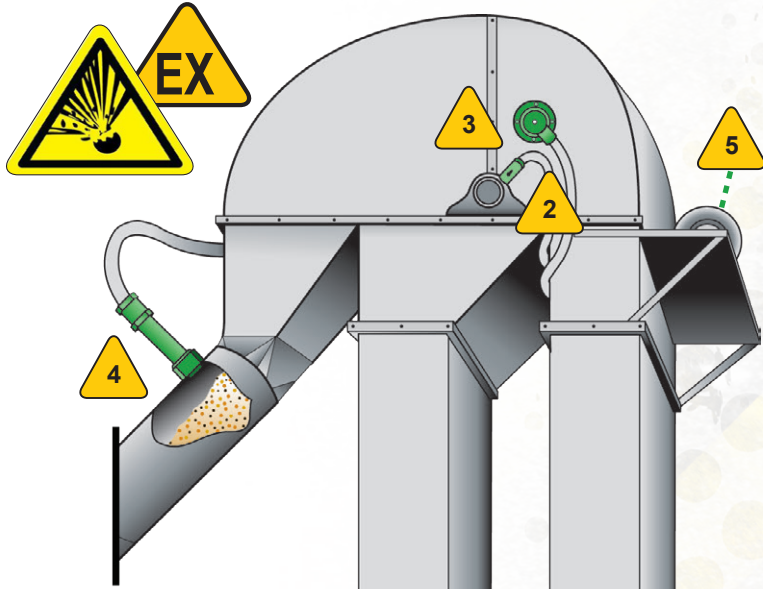
5 Surface Temperature -



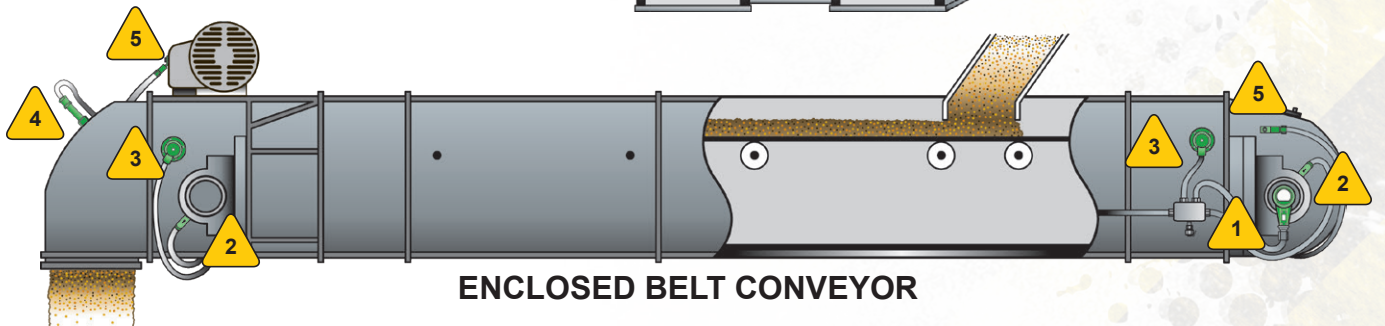
Lug Sensor
(WDB70V3CAI)

The lug sensor mounts to the conveyor housing to detect the heat generated by a pulley misalignment. It can also be used to detect overheating motors and gearboxes.

TYPICAL SENSOR LOCATIONS



**BUCKET
ELEVATOR**



ENCLOSED BELT CONVEYOR



Easy order kits for the most common monitoring system configurations are shown below.

For additional kits and options visit: www.go4b.com

BUCKET ELEVATOR KIT-ETH-BE1

**Industrial Ethernet Node
(ETH-NODE1V46CAI or
ETH-NODE1V4CAI)**

Qty. 1 – Industrial Ethernet Node with 8 contact or NTC inputs and 2 pulse or 4-20 mA inputs



**Belt Speed - Milli-Speed
(M300M1V4AI)**

Qty. 1 - one sensor located on either side of the boot shaft.



**Bearing Temperature -
ADB Sensor (ADB810V3AI/D4)**

Qty. 4 - One sensor for the bearings at each end of the head and boot shafts.



**Belt Misalignment -
Touchswitch (TS2V34AI)**

Qty. 4 - Sensors work in pairs, one for each side of the belt on the head and boot sections.

OPTIONAL SENSORS



**Plug Indication -
Binswitch Elite (BSE15V10AI)**

Qty. 1 - One located near the top of the spouting by the discharge.



**Surface Temperature -
Lug Sensor (WDB70V3CAI)**

Qty. 2 - Monitor for overheating motors and/or gearboxes.

4B TECH TEAM SERVICE

- Help In selecting Equipment
- On Site Start-Up / Commissioning
- On Site Annual Product Testing

BELT CONVEYOR KIT-ETH-BC1

**Industrial Ethernet Node
(ETH-NODE1V46CAI or
ETH-NODE1V4CAI)**

Qty. 1 – Industrial Ethernet Node with 8 contact or NTC inputs and 2 pulse or 4-20 mA inputs.

**6 NTC Expansion Board
(ETH-NODE-AUXI-6NTC)**

Qty. 1 – Industrial Ethernet Node Expansion board with 6 additional contact or NTC inputs.



**Belt Speed - Milli-Speed
(M300M1V4AI)**

Qty. 1 - one sensor located on either side of the boot shaft.



**Bearing Temperature -
ADB Sensor (ADB810V3AI/D4)**

Qty. 4 - One sensor for the bearings at each end of the head and boot shafts.



**Belt Misalignment -
Touchswitch (TS2V34AI)**

Qty. 4 - Sensors work in pairs, one for each side of the belt on the drive and tail sections.



**Tail Pulley Misalignment -
Lug Sensor (WDB70V3CAI)**

Qty. 2 - One for each side of the housing on the tail section to monitor for pulley misalignment.

OPTIONAL SENSORS



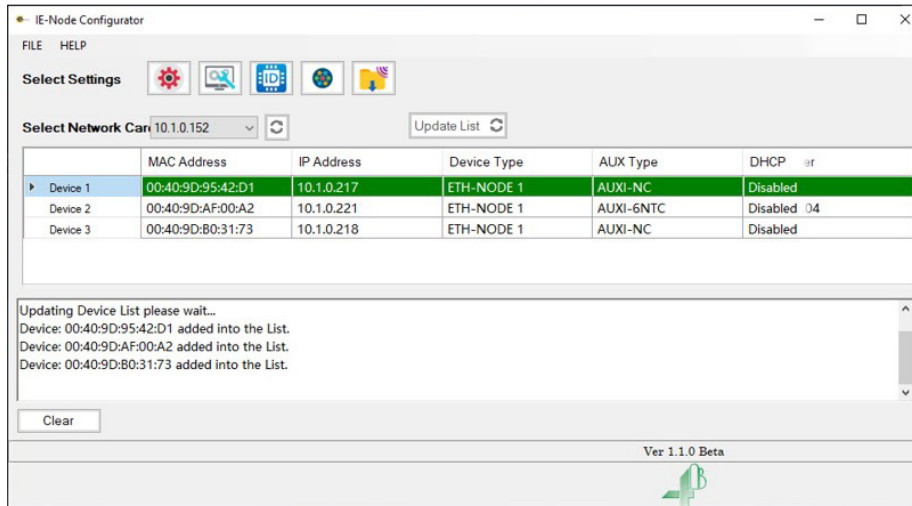
**Plug Indication -
Binswitch Elite (BSE15V10AI)**

Qty. 1 - One located near the top of the drive section by the discharge.



**Surface Temperature -
Lug Sensor (WDB70V3CAI)**

Qty. 2 - Monitor for overheating motors and/or gearboxes.



The IE-NODE network configurator software provides you with a visual view of all devices on the network. It allows for easy identification of each unit on the network, and allows you to change network settings as needed.

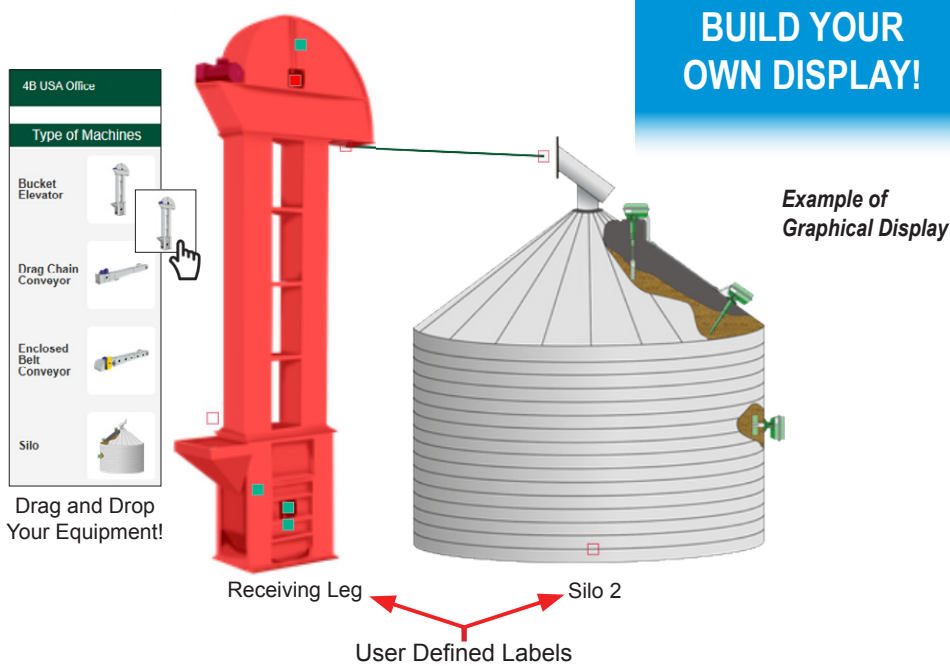
Alternatively, the network settings can be configured through the IE-Node built-in web server.



SYSTEM CONFIGURATION SETTINGS

Add-on instructions are provided at no charge for Allen Bradley PLC's, ControlLogix® and CompactLogix® allowing easily implemented control logic that supports the functionality of the IE-NODE. 4B also has sample code and a GDSML file for easy integration into Siemens SIMATIC S7 PLC's.

| Scope: <input type="button" value="Bucket_Elevator"/> | | Show: All Tags | | |
|--|-------|----------------|---------|------------|
| Name | Value | Force Mask | Style | Data Type |
| + ENodeData[1].ETH_ENODE_1.Temperature[0] | {...} | {...} | | NTC_Inputs |
| - ENodeData[1].ETH_ENODE_1.Temperature[1] | {...} | {...} | | NTC_Inputs |
| - ENodeData[1].ETH_ENODE_1.Temperature[1].Temperat... | 69.2 | | Float | REAL |
| - ENodeData[1].ETH_ENODE_1.Temperature[1].ShortCircuit | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[1].OpenCirc... | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[2] | {...} | {...} | | NTC_Inputs |
| - ENodeData[1].ETH_ENODE_1.Temperature[2].Temperat... | 69.3 | | Float | REAL |
| - ENodeData[1].ETH_ENODE_1.Temperature[2].ShortCircuit | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[2].OpenCirc... | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[3] | {...} | {...} | | NTC_Inputs |
| - ENodeData[1].ETH_ENODE_1.Temperature[3].Temperat... | 70.1 | | Float | REAL |
| - ENodeData[1].ETH_ENODE_1.Temperature[3].ShortCircuit | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[3].OpenCirc... | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[4] | {...} | {...} | | NTC_Inputs |
| - ENodeData[1].ETH_ENODE_1.Temperature[4].Temperat... | 72.2 | | Float | REAL |
| - ENodeData[1].ETH_ENODE_1.Temperature[4].ShortCircuit | 0 | | Decimal | BOOL |
| - ENodeData[1].ETH_ENODE_1.Temperature[4].OpenCirc... | 0 | | Decimal | BOOL |



The IE-NODE has in-built network support for Hazardmon.com service connectivity. HazardMon is a secure cloud based hazard monitoring solution providing status notifications and data logging for bucket elevators and conveyors. Live system status, graphs and historical data can be viewed on any web-enabled device (smartphone, tablet PC, desktop or laptop computer).

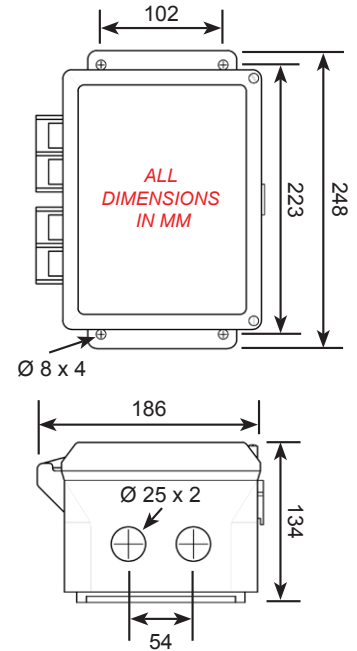
To review all of the available features, and to see how the system works for yourself register for a free demo account at: www.hazardmon.com.





IE-NODE Versions 1 & 2

| | |
|--------------------|---|
| Supply Voltage | 120 to 240 VAC / 24 VDC (ETH-NODE1V46CAI or ETH-NODE2V46CAI) 24 VDC (ETH-NODE1V4CAI or ETH-NODE2V4CAI) |
| Power Dissipation | 12 Watts Maximum |
| Sensor Supply | 24 VDC @ 800 mA (Across Fuse 1 - Fuse 4) |
| Power Terminals | 14 AWG / 2.5 mm ² |
| Signal Terminals | 14 AWG / 2.5 mm ² |
| PLC Communications | PROFINET, EtherNet/IP and Modbus TCP/IP |
| Height | 9-3/4 in. (248 mm) |
| Width | 7-5/16 in. (186 mm) |
| Depth | 5-1/4 in. (134 mm) |
| Fixing Centers | 8-13/16 x 4 in. (224 x 102 mm) |
| Cable Entry | 2 Holes - 1-1/8 in. (28 mm) Diameter - 3/4 in. Conduit |
| Weight | 2.5 lbs / 1.1 kg |
| Protection | IP66 |
| Approvals | CSA Class II Div 2 Groups F and G (ETH-NODE1V46CAI or ETH-NODE2V46CAI) UKEx, ATEX, IECEx - Zone 21 (ETH-NODExV4CAI) UKEx, ATEX, IECEx - Zone 22 (ETH-NODExV46CAI) |



For more information and a quote for your monitoring application, contact 4B today!

www.go4b.com

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