I²oT
THE FLEXIBLE NETWORK SYSTEM

4B Components Limited
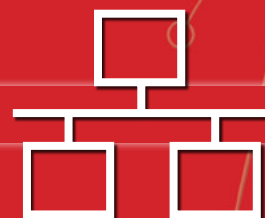
IE-NODE *(Industrial Ethernet Node)*

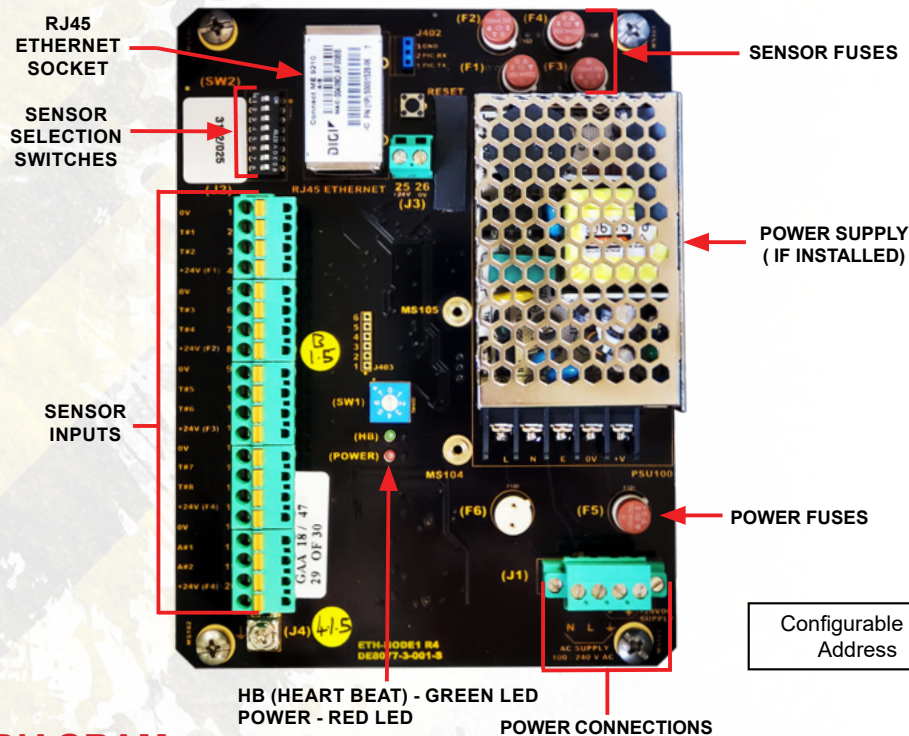## Remote Sensor Monitoring for PLC's & Automation Systems

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**

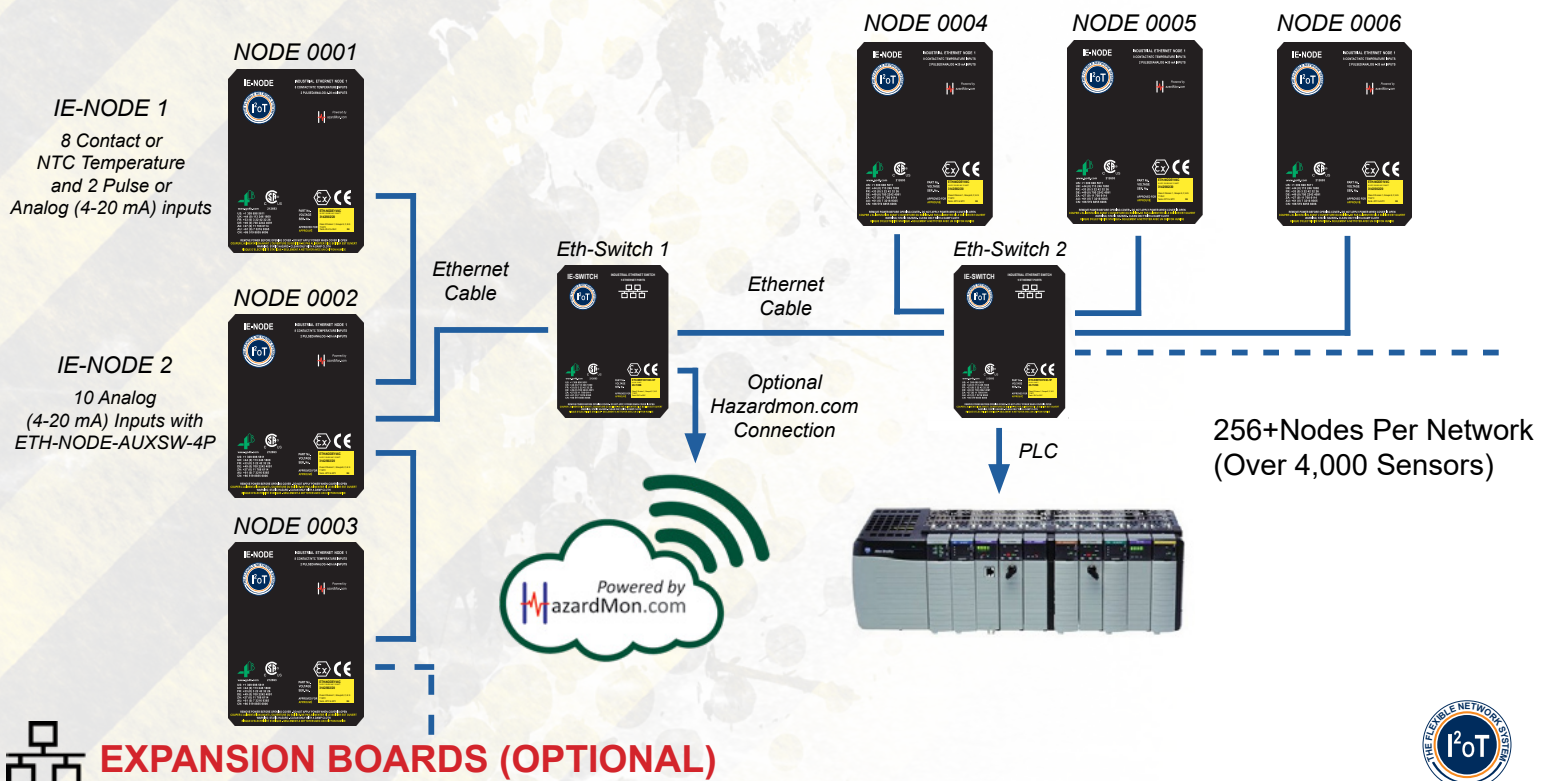- **Configurator Software for Easy Network Set Up and Visual Overview of All Devices**

Powered by HazardMon.com

IE-NODE

INDUSTRIAL ETHERNET NODE 1
8 CONTACT/NTC TEMPERATURE INPUTS
2 PULSED/ANALOG 4-20 mA INPUTS

Powered by azardMon.com

www.go4b.com
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UK: +44 (0) 113 246 1800
FR: +33 (0) 3 22 42 32 26
DE: +49 (0) 700 2242 4091
ZA: +27 (0) 11 708 6114
AU: +61 (0) 7 3216 9365
CN: +86 519 8855 6006

CSA
c 212693 us

PART No.   ETH-NODE1V4C
VOLTAGE   94 VAC 88-264 VAC 50 VA FLT
SER. No.   3142/002/16

Class II, Division 2, Groups F and G
T 130°C
Temp -20°C to 150°C

APPROVED FOR
APPROUVÉ

CE

REMOVE POWER BEFORE OPENING COVER - DO NOT APPLY POWER WHEN COVER IS OPEN
COUPER L'ALIMENTATION AVANT L'OUVERTURE DU BOITIER-NE PAS ALIMENTER SI LE BOITIER EST OUVERT
WARNING: STATIC HAZARD - CLEAN ONLY WITH A DAMP CLOTH
RISQUE D'ELECTRICITE STATIQUE - SEULEMENT A NETTOYER AVEC UN CHIFFON HUMIDE

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BETTER BY DESIGN

NETWORK DIAGRAM

RJ45 ETHERNET SOCKET

SENSOR SELECTION SWITCHES

SENSOR INPUTS

SENSOR FUSES

POWER SUPPLY (IF INSTALLED)

POWER FUSES

Configurable IP Address

HB (HEART BEAT) - GREEN LED
POWER - RED LED

POWER CONNECTIONS

EXPANSION BOARDS (OPTIONAL)

NODE 0001

IE-NODE 1

8 Contact or NTC Temperature and 2 Pulse or Analog (4-20 mA) inputs

NODE 0002

IE-NODE 2

10 Analog (4-20 mA) Inputs with ETH-NODE-AUXSW-4P

NODE 0003

Ethernet Cable

Eth-Switch 1

Ethernet Cable

Optional Hazardmon.com Connection

Powered by HazardMon.com

NODE 0004   NODE 0005   NODE 0006

Eth-Switch 2

PLC

256+Nodes Per Network (Over 4,000 Sensors)

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-NODE1V46C   IE-NODE 1 (120 to 240 VAC / 24 VDC)
- ETH-NODE1V4C   IE-NODE 1 (24 VDC)
- ETH-NODE2V46C   IE-NODE 2 (120 to 240 VAC / 24 VDC)
- ETH-NODE2V4C   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-SWITCH1V4C-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 at (309) 698-5611.

*Industrial Ethernet Switch
ETH-SWITCH1V4C-5P*

IE-NODE SENSORS

Class II Div. 1 Groups E, F and G Approved (USA & Canada)

1 **Belt Speed -**

The P800 is an inductive proximity sensor with a solid state relay and the MilliSpeed provides a 4-20 mA output. It can sense a ferrous metal target on a rotating shaft from up to 1/2" away.

*Speed Sensor
(P8004V10C
or MIL8001V4C)*

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

2 **Bearing Temperature -**

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.

*ADB
(ADB20V3C/D3 or
ADBMIL1V4C/D2)*

4B Tech Team professional testing equipment available for purchase -

ADB & Lug Tester

SpeedMaster

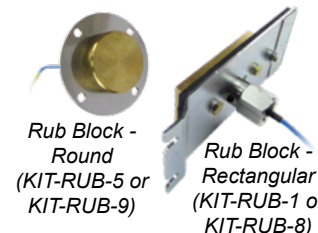**3** **Belt Misalignment -**

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

*Touchswitch
(TS2V4C)*

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

*Rub Block -
Round
(KIT-RUB-5 or
KIT-RUB-9)*

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

4 **Plug Indication -**

The Binswitch Elite is a capacitance point plug/level indicator with automatic material build up compensation for bulk granular solids or liquids.
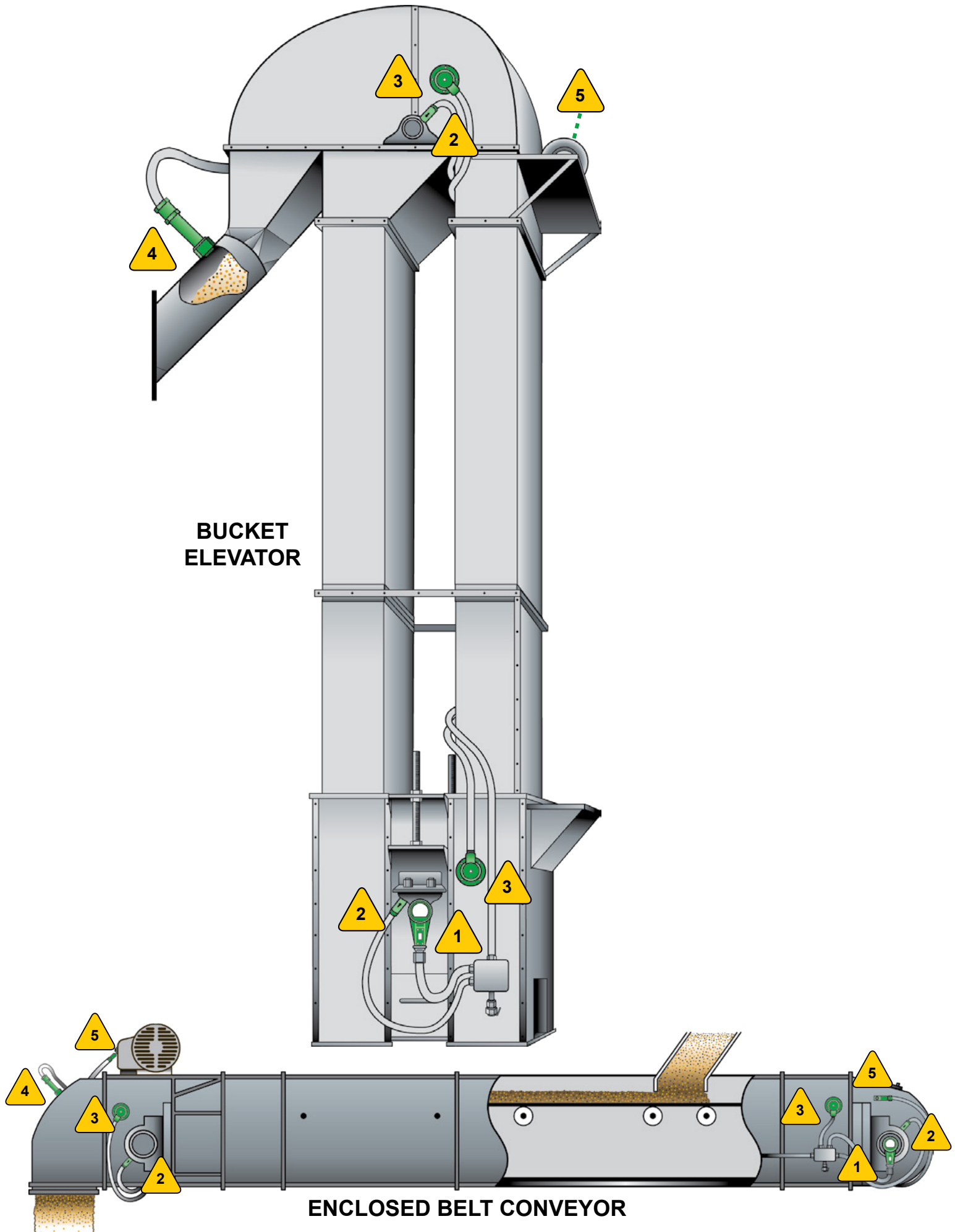
*Binswitch Elite
(BSE1V10C)*

5 **Surface Temperature -**

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.

*Lug Sensor
(KIT-LUG-ADB20
or KIT-LUG-MIL)*

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-NODE1V4C)
Qty. 1 – Industrial Ethernet Node with 8 contact or NTC inputs and 2 pulse or 4-20 mA inputs

1 **Belt Speed - Milli-Speed (MIL8001V4C)**
Qty. 1 - one sensor located on either side of the boot shaft.

2 **Bearing Temperature - ADB Sensor (ADB20V3C/D3)**
Qty. 4 - One sensor for the bearings at each end of the head and boot shafts.

3 **Belt Misalignment - Touchswitch (TS2V4C)**
Qty. 4 - Sensors work in pairs, one for each side of the belt on the head and boot sections.

OPTIONAL SENSORS

4 **Plug Indication - Binswitch Elite (BSE1V10C)**
Qty. 1 - One located near the top of the spouting by the discharge.

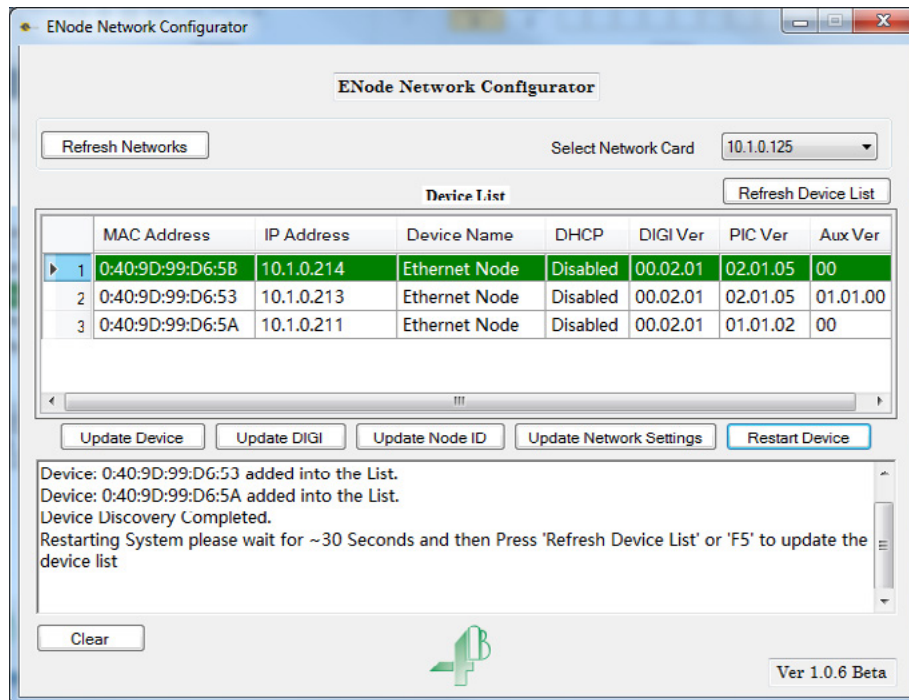**5** **Surface Temperature - Lug Sensor (KIT-LUG-ADB20)**
Qty. 2 - Monitor for overheating motors and/or gearboxes.

4B TECH TEAM SERVICE
- **Help In selecting Equipment**
- **On Site Start-Up / Commissioning**
- **On Site Annual Product Testing**
- **24 Hour Tech Support**

BELT CONVEYOR
KIT-ETH-BC1

Industrial Ethernet Node (ETH-NODE1V4C)
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.

1 **Belt Speed - Milli-Speed (MIL8001V4C)**
Qty. 1 - one sensor located on either side of the boot shaft.

2 **Bearing Temperature - ADB Sensor (ADB20V3C/D3)**
Qty. 4 - One sensor for the bearings at each end of the drive and tail shafts.

3 **Belt Misalignment - Touchswitch (TS2V4C)**
Qty. 4 - Sensors work in pairs, one for each side of the belt on the drive and tail sections.

5 **Tail Pulley Misalignment - Lug Sensor (KIT-LUG-ADB20)**
Qty. 2 - One for each side of the housing on the tail section to monitor for pulley misalignment.

OPTIONAL SENSORS

4 **Plug Indication - Binswitch Elite (BSE1V10C)**
Qty. 1 - One located near the top of the drive section by the discharge.

5 **Surface Temperature - Lug Sensor (KIT-LUG-ADB20)**
Qty. 2 - Monitor for overheating motors and/or gearboxes.

CONFIGURATION SOFTWARE

The IE-NODE network configurator software provides you with a visual view of all devices on the network. It allows for easy identification for 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.
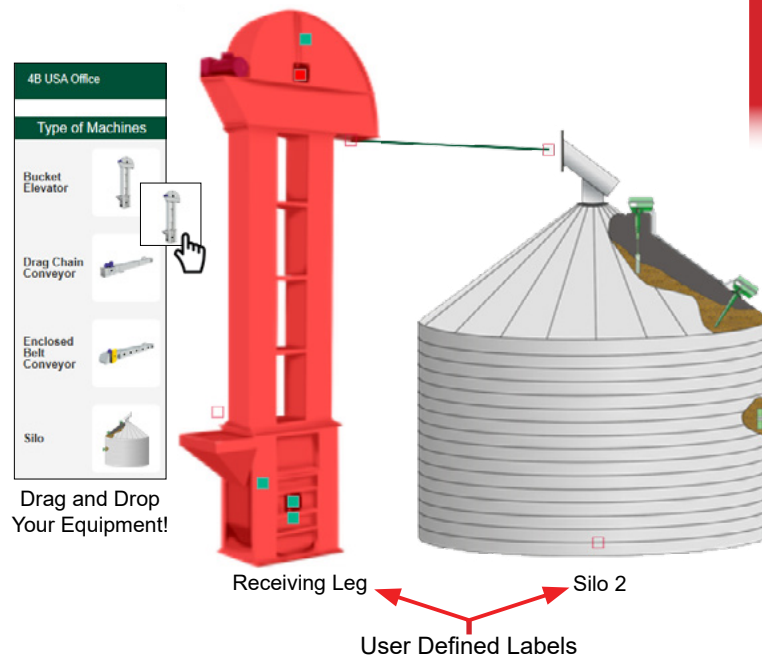
SYSTEM CONFIGURATION SETTINGS

4B Components Ltd. provides free add-on instructions 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.

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

Scope: Bucket_Elevator   Show: All Tags

HAZARDMON.COM

BUILD YOUR OWN DISPLAY!

Example of Graphical Display

4B USA Office

Type of Machines

Bucket Elevator

Drag Chain Conveyor

Enclosed Belt Conveyor

Silo

Drag and Drop Your Equipment!

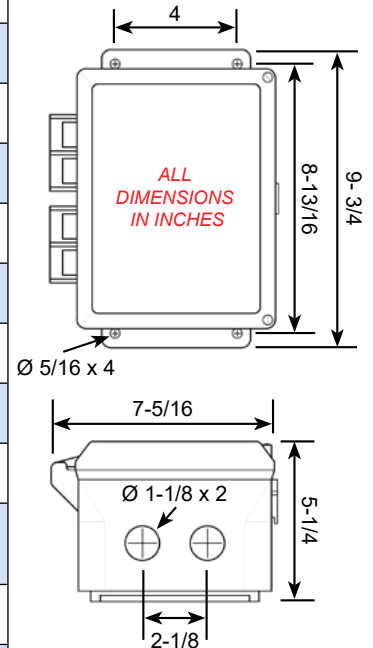Receiving Leg

Silo 2

User Defined Labels

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.

Powered by HazardMon.com

IE-NODE Versions 1 & 2

Supply Voltage	120 to 240 VAC / 24 VDC (ETH-NODE1V46C or ETH-NODE2V46C) 24 VDC (ETH-NODE1V4C or ETH-NODE2V4C)
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 Approved in the US and Canada for: Class II Div 1 Groups E, F, & G (ETH-NODE1V4C, ETH-NODE2V4C & ETH-SWITCH1V4C-5P) Class II Div 2 Groups F & G (ETH-NODE1V46C & ETH-NODE2V46C) ATEX & CE (Versions Available)

ALL DIMENSIONS IN INCHES

4

9-3/4

8-13/16

Ø 5/16 x 4

7-5/16

5-1/4

Ø 1-1/8 x 2

2-1/8

Rockwell Automation®

SIEMENS®

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

www.go4b.com/usa

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