



4B GROUP



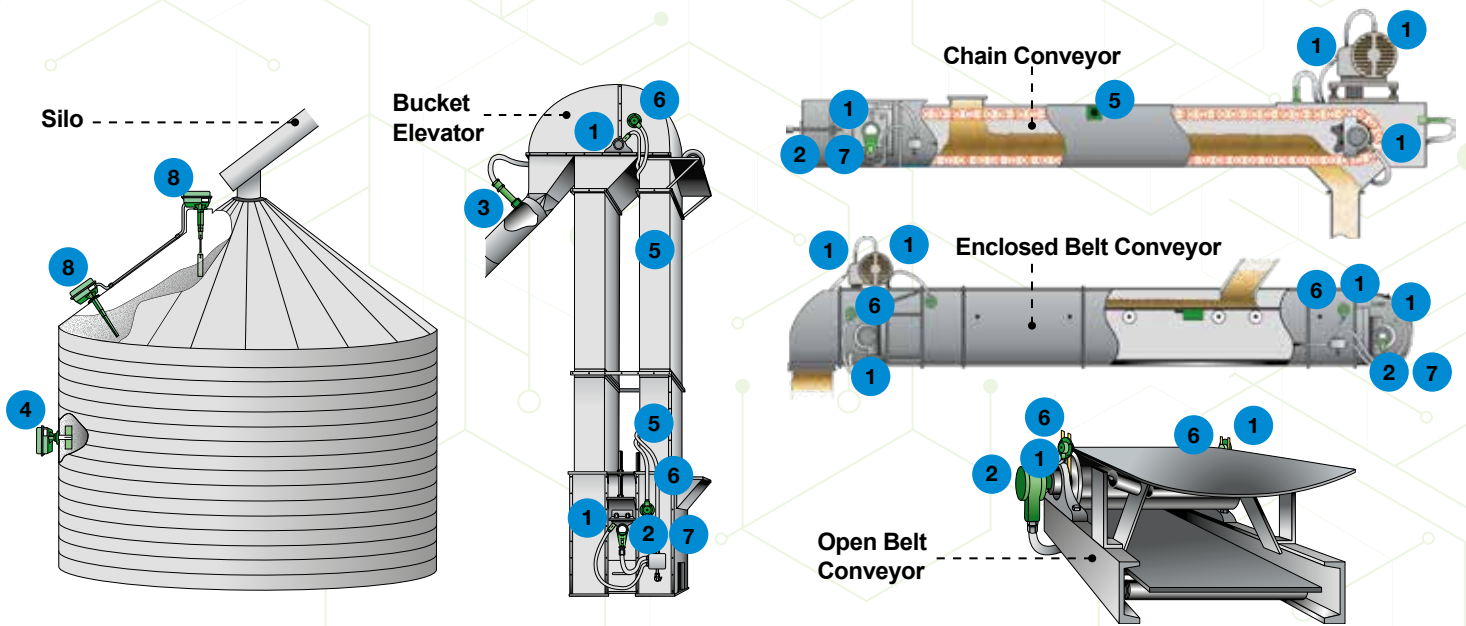
ELECTRONIC COMPONENTS & MONITORING SYSTEMS

A Worldwide Manufacturer of
High Quality, Technologically Advanced
Material Handling & Electronic Components



SENSOR APPLICATIONS

These illustrations show typical sensor placements for monitoring: speed, motion, bearing & surface temperature, belt alignment, level / plug indication, vibration and slack chain detection.



SENSORS

1 BEARING TEMPERATURE SENSORS

The ADB, MDB, and WDB Series bearing temperature sensors are designed to screw directly into an existing grease zerk fitting on a bearing housing. Each sensor is fitted with a grease nipple to allow lubrication of the bearing without the need for removal of the sensor. Most series are available with either a PTC thermistor with various factory set trip points, or a NTC thermistor with a user adjustable trip point, or as a Pt100 RTD version. Lug-style sensors also available.

Pages 9-10

2 SPEED SWITCHES

4B Speed Switches monitor rotating machinery for dangerous underspeed conditions. An inductive sensing device located in the nose of the enclosure will detect a metal target. Set to the normal machine RPM, 4B Speedswitches provide alarm and shutdown signals underspeed and stopped motion.

Page 14

3 BINSWITCH

The Binswitch detects level or plug conditions for bulk granular solids in tanks, bins, or silos and can be used as a plug or choke detector in chutes, conveyors and elevator legs.

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4 ROTO LEVEL SERIES

The Roto Level Series are rotary paddle switches designed to detect high and low levels of bulk granular solids in bins, tanks, silos, and as blockage detectors in spouts.

Page 23

5 WDA

The WDA Series are non-contacting extended range magnetic sensors used to detect ferrous targets at a distance of up to 75mm from the sensor. They can be used on chain conveyors to detect slack or broken chain. They can also be used on bucket elevators where they can detect bucket bolts and steel buckets to monitor belt misalignment.

Page 12

6 TOUCHSWITCH

The Touchswitch is an electro-mechanical limit-switch style sensor with no moving parts. It is designed to detect belt tracking and misalignment problems on bucket elevators and conveyors. Unlike a rub block that utilises friction (heat) to activate, the Touchswitch is pressure sensitive for safer and more reliable monitoring.

Page 12

7 INDUCTIVE SENSORS

4B inductive proximity sensors are designed to detect shaft speed, shaft position, gate position, or object presence. No contact is made between the sensor and the target being monitored.

Page 15

8 AUTOSET SERIES

The Autoset Series are self-contained point level monitors with digital displays for high, intermediate, or low-level detection of liquids, powders or free-flowing granular solids. The Autoset Series incorporates simple push-button calibration with microprocessor enable/disable switch for total protection of stored values. Once the unit is calibrated for a specific application, it never has to be re-calibrated.

Pages 22-23




9 VIBRATION SENSORS

Milli-Vib is a vibration sensor designed for continuous monitoring of vibration levels in industrial environments. It is current loop powered accelerometer and delivers accurate vibration RMS velocity using a 4-20 mA output. Built with a stainless-steel enclosure, including a 3/4" NPT thread for conduit connection. The sensor can be supplied with optional inbuilt NTC or PT100 temperature sensors (Milli-Con version).

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ELEVATOR / CONVEYOR MONITORING SYSTEMS

COMBINED MONITORING SYSTEMS

PRODUCT	WATCHDOG SUPER ELITE™	IE-GUARDFLEX	IE-NODE
	 Page 5	 Page 6	 Page 7
Bearing temperature	✓ (continuous) max. 6 sensors + 2 ambient temp. sensors	Upto 1024 Devices	8 dual use inputs (contact or NTC temperature)
Belt speed	✓ (continuous) max. 2 inputs – Differential speed monitoring	Upto 1024 Devices	2 pulse or 4-20mA
Belt alignment	✓ Pulses / Contact / Rub* Blocks 4 inputs	Upto 1024 Devices	8 dual use inputs (contact or NTC temperature)
Plugged condition	✓	✓	✓
Pulley alignment	✓	✓	✓
Communication interfaces	Ethernet with Modbus TCP protocol	Gateway available separately for PLC interface	Ethernet IP, Profinet, Modbus TCP
Test function	✓	×	
Alarm & shutdown function	✓	✓	×
Applications	Single elevator or conveyor	Bucket elevators & conveyors, plant- wide monitoring	Bucket elevators & conveyors, plant-wide monitoring
Hazardmon.com (Cloud based hazard monitoring)	✓ (Ethernet onboard)	✓ (Ethernet onboard)	✓ (Ethernet onboard)
Certifications	UKEx / ATEX / CSA / IECEX / InMetro / CCC	'Safe Area' Only	UKEx / ATEX / CSA / IECEx / InMetro / CCC

* total number of inputs / sensors, all sensors combined.

SPECIALISED MONITORING SYSTEMS

PRODUCT	T400N ELITE	A400 ELITE	B400 ELITE	USR
	 Page 10	 Page 10	 Page 10	 Page 11
Bearing temperature	✓ (continuous) max. 8 sensors	×	×	×
Belt speed	×	✓	×	✓
Belt alignment	×	✓	✓	×
Plugged condition	×	×	✓	×
Pulley alignment	×	×	✓	×
Communication interfaces	Modbus RTU (RS-485)	×	×	×
Test function	✓	✓	✓	×
Alarm & shutdown function	✓	✓	✓	×
Applications	Elevator & conveyors	Elevators	Elevator & conveyors	Elevator & conveyors
Hazardmon.com (Cloud based hazard monitoring)	×	×	×	×
Certifications	UKEx / ATEX / CSA / IECEx	UKEx / ATEX / CSA / IECEx	UKEx / ATEX / CSA / IECEx	UKCA

HAZARD MONITORING SYSTEMS



COMBINED MONITORING SYSTEMS

WATCHDOG SUPER ELITE™



Combined belt speed, belt alignment, continuous bearing temperature, pulley alignment and plugged condition monitoring system

The Watchdog Super Elite™ is a complete elevator and conveyor monitoring system with inputs for most of the types of sensors standard in the industry. Offers top-of-the-class flexibility and approvals. Unprecedented user friendliness via a 3.5" full colour bespoke design graphics screen. Controller settings can be set up either directly on the unit or via a PC application and transferred between the WDC4s and PC via a SD card. In-built Ethernet port with full support for the Hazardmon.com cloud based monitoring service. WDC4 has multi-lingual support. MODBUS/TCP support with the application notes for Rockwell, Siemens and Mitsubishi PLCs is available.

FEATURES

- Belt speed monitoring (single and differential speed)
- Belt alignment monitoring (contact, pulsed and rub blocks)
- Bearing temperature monitoring
- Vibration monitoring
- Plug condition monitoring
- Acceleration monitoring
- Jog prevention
- 3.5" Colour graphics LCD display
- SD card for settings save / restore and firmware updates
- Ethernet RJ45 port
- Multi-lingual display
- Hazardmon.com support for real-time remote monitoring and historical analysis

INPUT SUPPLY VOLTAGE

- 100 to 240 VAC
- 24 VDC (universal supply)

SENSOR SUPPLY

- 24 VDC



SENSOR OPTIONS

- ADB and WDB: bearing temperature
- WDA Series: motion alignment
- Touchswitch: belt alignment
- Inductive Proximity Sensors: speed (P1003V34AI / P3003V34AI)
- Binswitch: plugswitch
- Milli-Vib: vibration monitoring (expansion card needed)
- Encoder-Flex 1024
- AutoSet Flush Probe: plug condition detection

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Brazil - InMetro
- China - CCC
- Worldwide – IECEx

H X W X D

- 308 x 241 x 137mm

APPLICATIONS

- Bucket elevators and conveyors



For more detailed product information, please visit: www.go4b.com

WATCHDOG EXPANSION CARDS

The Watchdog Super Elite comes with standard 15 sensor inputs. However, it can be extended to up to 27 via the use of expansion cards. Cards can be pre-installed at the factory when ordering a new Watchdog WDC4, or installed into existing control units already in the field.

WDC4-AUXO-SSR



4 x solid state alarm relay outputs for the following conditions:

- Speed
- Temperature
- Misalignment
- Auxiliary Inputs

WDC4-AUXI-6AN



Additional analogue inputs:

- 4 x 4-20mA current loop inputs (0-20mA range supported)
- 2 x 0-10VDC analogue inputs
- Individually enabled and configured in WDC4

WDC4-AUXI-6NTC



Additional NTC type temperature inputs:

- 6 x NTC inputs
- 2 x Sensor power supply (+24VDC)
- Individually enabled and configured in WDC4

WDC4-AUXI-4PT100



Additional Pt-100 type temperature inputs:

- 4 x Pt-100 inputs
- Temperature range: -200 to 535 degrees C
- Three-wire configuration
- Individually enabled and configured in WDC4

HAZARD MONITORING SYSTEMS

Distributed Hazard Monitoring Solution

IE-GuardFlex

NEW
PRODUCT



The **IE-GuardFlex** is the central control unit for 4B's Distributed Hazard Monitoring Solution (DHMS). Using industrial Ethernet technology, the IE-GuardFlex controller connects to, and monitors multiple machine mounted sensors via 4B's class leading IE-Nodes. The complete IE-GuardFlex system can be configured to support multiple machines, IE-Nodes and sensors, and will interface directly to the machine MCC's to perform a controlled stop in the event of the detection of a hazardous condition.

The IE-GuardFlex system is typically located within the plant MCC and dust hazard "safe area". Connection is then made, via industrial Ethernet (CAT6 cabling) to IE-Nodes distributed locally to the monitored machines in the "hazardous area".

FEATURES:

- Robust, IP66 stainless steel enclosure
- 7" Colour touchscreen display with intuitive GUI
- Supports multiple machine configurations
- Common ALARM and STOP relay
- Can be configured for up to: 100 Machines, 64 IE-Nodes, 1024 Devices
- Remote view and control over network
- Multi-user access control
- Active alarm and alarm history
- Change log

Input Supply Voltage:

- 24 VDC (universal supply)



IE-GUARDFLEX ACCESSORIES

ETH-SWITCH1V4C-5P (IE-SWITCH)



An unmanaged switch with 5x RJ45 Ethernet sockets for 10/100 Mbps Ethernet Communications. Designed to work with 4B's IE-Nodes or any other devices requiring 10/100 Mbps Ethernet communications.

IE-FIBRE-SWITCH



IE-Fibre-Switch, hazardous area copper to fibre media converter. Allows extension of point-to-point distances that exceed the limitations of copper Ethernet. Max distance of 10 km.

IE-ROUTER



4G Router to connect 4B's Hazard Monitoring Systems to Hazardmon via 4G Data SIM or Wi-Fi

- 4G/LTE up to 150 Mbps Download and 50 Mbps Upload. 4G/LTE (Cat 4), 3G, 2G
- 4 RJ45 Ports (3 x LAN, 1 x WAN)
- Dual SIM: With auto failover, backup WAN and other switching scenarios



Need Assistance?

Take Advantage of 4B's Free Hazard Monitoring Design Service



See p.8 for Hazard Monitoring Infrastructure using GuardFlex Components

COMBINED MONITORING SYSTEMS

IE-NODE (INDUSTRIAL ETHERNET-NODE)



Remote Sensor
Monitoring for PLC's &
Automation Systems



▶ WATCH VIDEO

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 RJ45 Ethernet sockets and support 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.

HAZARDOUS AREA APPROVALS

CSA,
ATEX, IECEx,
CCC

RJ-45 SOCKETS SUPPORT

EtherNet/IP,
PROFINET and
Modbus TCP/IP

4000 SENSORS PER SYSTEM

Digital, 4-20mA,
Temperature,
Speed

FEATURES

- Sensor Interface for PLC's & Automation Systems
- Supports PROFINET, EtherNet/IP and Modbus TCP/IP
- Up to 16 Total Sensor Inputs with Available Expansion Boards
- Configuration Software for Easy Network Set Up and Visual Overview of All Devices
- Level Indication: Auto-Set™ or Rotary Paddle Series
- Plug or Level Indication: Binswitch Elite or Auto-Set™
- Vibration: Milli-Vib

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Brazil - InMetro
- China - Nepsi, CCC
- Worldwide – IECEx

INPUT SUPPLY VOLTAGE

- 100 to 240 VAC
- 24 VDC (universal supply)

SENSOR SUPPLY

- 24 VDC

SENSOR OPTIONS

- Temperature (Bearing & Surface) - ADB Series (NTC Type) & Milli-Temp Series (4-20 mA)
- Belt Misalignment - Touchswitch (Contact) or Rub Block (NTC Type)
- Speed Monitoring - Milli-Speed Switch (4-20 mA), P300 & P800 Proximity Sensor (Pulse), M800 Elite Speed Switch (Pulse), Encoder-Flex 1024

H X W X D

- 248 x 188 x 133mm

APPLICATIONS

- Bucket elevators and conveyors, plant-wide monitoring



IE-NODE EXPANSION CARDS

The IE-NODE comes with standard 10 sensor inputs. However, it can be extended to up to 16 via the use of expansion cards. Cards can be pre-installed at the factory when ordering a new IE-Node, or installed into existing control units already in the field.

ETH-NODE-AUXSW-4P



Expansion board for use with 4B's IE-Node Monitors:

- Allows an additional 4 Ethernet Ports to be added to the IE-Node
- Enables flexible cable routing for reduced material costs and installation time

ETH-NODE-AUXI-6AN



Additional analogue inputs:

- Supports 6 extra 4-20 mA CLI (Current Loop Input) sensors
- RS485 Modbus RTU connection capability

ETH-NODE-AUXI-6NTC



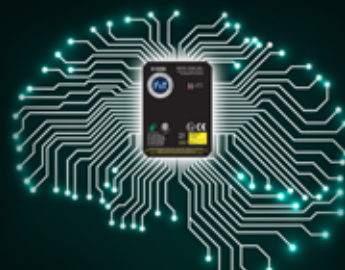
Additional NTC type temperature inputs:

- 6 extra NTC temperature sensors or 6 contact sensors, or any combination of 6
- RS485 Modbus RTU connection capability

The brain behind a smart operation.

The IE-Node. The future of hazard monitoring.

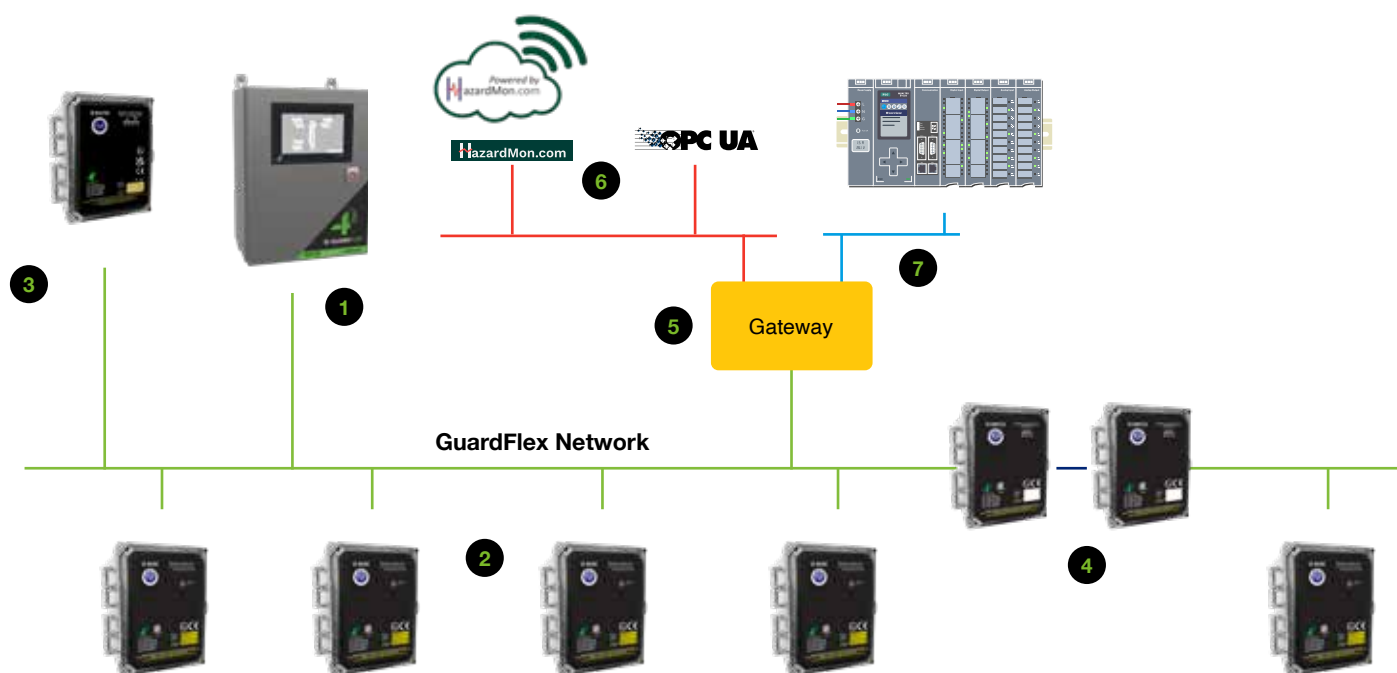
Put the IE-Node at the centre of your operation.



HAZARD MONITORING INFRASTRUCTURE

HAZARD MONITORING INFRASTRUCTURE

IE-GUARDFLEX INFRASTRUCTURE COMPONENTS



1 GuardFlex/GuardFlex Network

GuardFlex network for IE-Nodes and supporting infrastructure components: IE-Switch, IE-Fibre-Switch, IE-Router, IE-Gateway

3 IE-Router

4G Router to connect 4B's hazard monitoring systems to Hazardmon via 4G data SIM or Wifi.

6 IT Network

IT monitoring network for Hazardmon and OPC UA data exchange.

2 IE-Nodes

The IE-Node is utilised as the primary IO device for the GuardFlex system. This allows the sensor IO points to be located in the hazardous area, close to the machine being monitored.

4 IE-Fibre Switch

IE-Fibre-Switch, hazardous area copper to fibre media converter. Allows extension of point-to-point distances that exceed the limitations of copper Ethernet. Max distance of 10km.

5 IE-Gateway

GuardFlex gateway for transfer of data to PLC systems via industrial ethernet (ProfiNet, EthernetIP, ModbusTCP, EtherCAT) and OPC UA. Also pushes Guardflex system status and sensor data to the 4B Hazardmon cloud monitoring solution.

7 Process Network

Process Network for industrial ethernet data exchange.

- Profinet
- Ethernet IP
- ModbusTCP
- EtherCAT

Free Hazard Monitoring Design Service - contact 4B or visit: www.go4b.com

CLOUD-BASED HAZARD MONITORING

HAZARDMON



HazardMon.com® 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). Emails can be sent to notify users whenever a change in the system's health is detected. An automated maintenance feature allows site operators to verify that all sensors on the system are operational and working correctly.

FEATURES

- Secure Cloud Based Hazard Monitoring
- Works with Watchdog Super Elite & IE-Nodes
- Data Logged Automatically
- Real Time System Status & Alert Email Notifications
- Automated Maintenance
- View on Any Web-Enabled Device

Register For A Free Demo Account
www.hazardmon.com®
 See What The Cloud Can Do For You!

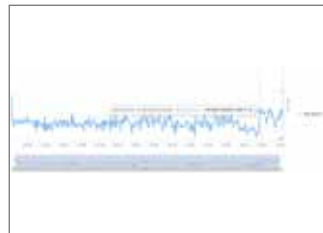


HazardMon.com® enables the WDC4 and IE-Nodes systems to become Industry 4.0 enabled. It offers real-time visualization and notifications for connected users anywhere in the world. All the data is collected with a two second latency and everything is saved for historical analysis.



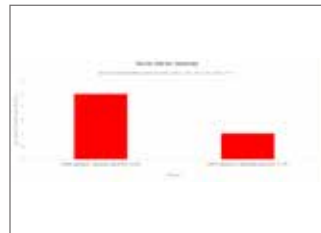
LIVE VIEW

Real-time remote view of your factory from anywhere in the world. Support mobile and desktop views. Data is dynamically updated and presented in most efficient view for operators and managers to understand.



DATA CHARTING

Any sensor data can be charted in a matter of two clicks. Time range is selectable between 1h and 30 days. There is also a live chart function for real-time maintenance of site.



DATA ANALYSIS

Comprehensive reports for the management to make quick data-driven decisions. With the help of Hazardmon analytics factory management can make maintenance budgeting decisions in matter of minutes. All the Hazardmon reports are exportable and can be easily incorporated into internal health and safety and performance reports.



AUTOMATED MAINTENANCE

Completely automated sensor testing process, which allows factory maintenance staff and management to comply with the annual or bi-annual test schedule. Just click on a sensor which needs testing, cause and alarm and clear the alarm. All of the conditions are logged along with the sensor location, name, operator full name, date and time, as well as the test outcome. The maintenance report can then be easily generated and exported in .CSV format.

CONTINUOUS IMPROVEMENTS

Hazardmon is updated several times a year with feedback from existing and new customers driving the changes. There is a constant flux of new industry-leading features.

Hazardmon together with the innovative sensing solutions allows 4B Group to stay a technology and solutions leader in the industry and at the forefront of Industry 4.0 and IoT research.

“What if my site's IT restricts external connections?”

No problem! The IE-Router allows Watchdog and IE-Node Monitors to connect through a 4G SIM card, ensuring full access to our hazard monitoring systems' capabilities.

IE-Router

- 4G Router to connect 4B's Hazard Monitoring Systems to Hazardmon via 4G Data SIM or Wi-Fi
- 4G/LTE up to 150 Mbps Download and 50 Mbps Upload. 4G/LTE (Cat 4), 3G, 2G
- 4 RJ45 Ports (3 x LAN, 1 x WAN)
- Dual SIM: With auto failover, backup WAN and other switching scenarios



HAZARD MONITORING SYSTEMS

TEMPERATURE MONITORING

BELT ALIGNMENT MONITORING

T400N ELITE HOTSWITCH



Bearing temperature monitor

The **T400N Elite Hotswitch** is a microprocessor controlled temperature monitor, which works in conjunction with NTC temperature sensors to monitor up to 8 bearings and can provide an alarm and automatic shutdown when a high bearing temperature condition is detected.

FEATURES

- Monitors up to 8 NTC bearing sensors
- Includes 2 separate alarm and 2 separate stop relays (2 machines monitored).
- Short circuit / open circuit fail-safe detection
- Status LEDs provide quick location of the hot bearing condition
- A range of alarms temperatures available from 45°C to 80°C
- Alarm mute with automatic time delayed reactivation
- PLC board (optional)

SENSOR OPTIONS

- ADB, MDB, and WDB Series: bearing temperature
- Extensive range of sensors available from 50 - 100°C
- Continuous temperature sensors
- Modbus RTU connection

INPUT SUPPLY VOLTAGE

- 100 to 240 VAC
- 24 VDC (universal supply)

SENSOR SUPPLY

- 24 VDC

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

H X W X D

- 246 x 188 x 102mm

APPLICATIONS

- Bucket elevators and conveyors

B400 ELITE



Conveyor or bucket elevator belt alignment monitoring system

The **B400 Elite** is a microprocessor based control unit which uses sensors to detect belt misalignment by pressure (Touchswitch) from one or two elevators/conveyors. The unit is able to provide an alarm and automatic shutdown of the elevator/conveyor when a belt misalignment condition is detected.

FEATURES

- Uses up to 4 touch sensors
- Monitors alignment of belts in two separate machines or top and bottom alignment in one machine
- Includes 2 separate alarm and 2 separate stop relays
- Simple, reliable, consistent
- Fully functional test via push button on front panel for general testing

SENSOR OPTIONS

- Touchswitch: force activated

INPUT SUPPLY VOLTAGE

- 100 to 240 VAC
- 24 VDC (universal supply)

SENSOR SUPPLY

- 24 VDC

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

H X W X D

- 246 x 188 x 102mm

APPLICATIONS

- Belt bucket elevators and conveyors

A400 ELITE



Bucket elevator belt alignment monitoring system

The **A400 Elite** is a microprocessor based control unit which uses high power magnetic sensors that detect moving metallic buckets or bolts from either one or two bucket elevators. The unit is able to provide an alarm and automatic shutdown of the elevator when a belt misalignment/ underspeed condition is detected.

FEATURES

- Uses up to 4 magnetic (reluctance) alignment sensors
- Monitors alignment of belts in two separate elevators or top and bottom alignment in one elevator
- Includes 2 separate alarm and 2 separate stop relays
- Simple, reliable, consistent
- Fully functional test via push button on front panel

SENSOR OPTIONS

- WDA Series: motion alignment
- BAP Series: motion alignment

INPUT SUPPLY VOLTAGE

- 100 to 240 VAC
- 24 VDC (universal supply)

SENSOR SUPPLY

- 24 VDC

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

H X W X D

- 246 x 188 x 102mm

APPLICATIONS

- Belt bucket elevators

HAZARD MONITORING SYSTEMS



SPEED MONITORING

NEW
PRODUCT

4B SPEED RELAY (USR)



USR
Universal Speed Relay

The **4B Speed Relay (USR)** is a microprocessor controlled digital speed monitor for use with 2, 3, 4 wire NPN/PNP sensors, 4B's WDA range of sensors or contact sensor inputs, with a user programmable electromechanical relay and PhotoMOS Solid State Relay (SSR) outputs. The Speed Relay has a 160x80 pixel LCD display to provide information, and 3 front panel buttons to program settings.

The Speed Relay reads input pulses and displays the calculated pulse frequency in a range of selectable units.

The user can set the Electromechanical Relay and PhotoMOS Solid State Relay outputs independently, with their own thresholds and output behaviors, and have the Alarm LED indicate the state of one of the outputs.

The Electromechanical Relay can be set to trigger when the input speed is outside the chosen range. The PhotoMOS Solid State Relay can provide a trigger output or can be configured to provide a pulsed output that matches the input pulse frequency.

One LED (Input LED) shows input status of the sensor's pulses, and another LED (Alarm LED) shows the state of the assigned output.

FEATURES:

- IP20 Enclosure with removable connectors
- 160x80 pixel LCD graphical display
- 0.1 Hz to 1000 Hz input range
- User configurable speed range
- Independent electromechanical and SSR relay outputs
- Pulse retransmission for downstream devices

INPUT SUPPLY VOLTAGE

- 24VDC or 24VDC/250 VAC options available

APPROVALS

- CE & UKCA certified

H X W X D

- 115 X 45 X 80mm

APPLICATIONS:

- Speed monitoring

Compatible Products



P300 Inductive Sensor



P100 Inductive Sensor



Encoder-Flex 1024



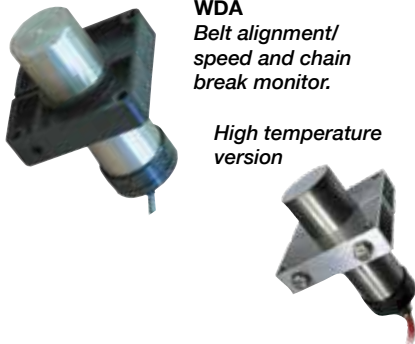
WDA High Power Sensor

For more detailed product information, please visit: www.go4b.com

MISALIGNMENT SENSORS

BELT MISALIGNMENT MONITORS

WDA HIGH POWER SENSOR



WDA
Belt alignment/
speed and chain
break monitor.

High temperature
version

The **WDA** sensor detects moving ferrous material and is designed for use with bucket elevators to detect buckets, for measurement of speed and alignment. WDA is a non-contact sensor, detecting metallic targets at up to 75mm range. It can also detect ferrous bolts where plastic or 316 stainless buckets are used. The sensor is used in conjunction with a PLC or with a Watchdog or A400 Elite control unit.

FEATURES

- Long range magnetic sensor unaffected by material build up
- Continuously monitors the moving elevator, with visual indication by an LED
- 25-75mm range depending on the size of the target, easily adjusted from the sensor itself or from the optional independent control unit
- Mounting bracket included
- Stainless steel construction
- High temperature version available (not ATEX approved)

SUPPLY VOLTAGE

- 24 VDC

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- A400

APPROVALS

- UK - UKEx
- Europe – ATEX (standard version)
- USA, Canada – CSA
- Brazil - InMetro
- China - CCC
- Worldwide – IECEx

APPLICATIONS

- Belt alignment
- Belt speed (when used on bucket elevators with Watchdog)
- Chain slack / break monitor (page 26)

BAP



BAP
Belt alignment/
speed monitor

The **BAP** detects moving ferrous material and is designed for use with bucket elevators to detect belt misalignment condition. It can also detect ferrous bolts where plastic or 316 stainless buckets are used. The sensor is used in conjunction with a PLC or with a Watchdog or A400 Elite control unit.

FEATURES

- Magnetic sensor unaffected by material build up
- Continuously monitors the moving elevator, with visual indication by an LED
- 12-50mm range depending on the size of the target, easily adjusted from the sensor itself or from the optional independent control unit

SUPPLY VOLTAGE

- 12/24 VDC

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- A400

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Brazil - InMetro
- China - CCC
- Worldwide – IECEx

APPLICATIONS

- Belt alignment sensor

BRASS RUB BLOCKS



Brass Rub Block
Belt alignment
sensors

Brass Rub Blocks help monitor belt misalignment in bucket elevators and conveyors by detecting heat generated from the friction caused by a misaligned belt rubbing against the brass surface. A temperature sensor embedded in the brass block measures the heat, and the system triggers an alarm and shutdown once the temperature reaches a trip-point.

Typically, these sensors are installed in pairs on opposite sides of the machine to detect misalignment on both sides. They can be connected directly to a PLC input or, for enhanced safety, integrated with an independent monitoring system such as 4B's IE-Node, Watchdog™ Super Elite, or T400N Elite Hotswitch.

Inspection doors are available for easier periodic maintenance and testing of the brass rub block and system.

FEATURES

- Supplied as "Rub Block Kit" - Includes: Rub Block, Inspection Door, Gasket, Shim, Bolts and Washers.
- Simple Installation
- Solid Brass Construction (No Moving Parts)
- Temperature-Activated by Friction
- Works with ADB / Milli-Temp bearing sensors - not included in kit
- External Sensor Testing Capability (ADB Tester)

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- IE-Node
- T400N

APPLICATIONS:

- Belt alignment sensor

MISALIGNMENT SENSORS



BELT ALIGNMENT DETECTORS

CONVEYOR BELT ALIGNMENT & RIP DETECTION

TOUCHSWITCH



Touchswitch
Belt/pulley
misalignment
sensor

The **Touchswitch** is an electro-mechanical limit switch, that detects the misalignment of both pulleys and belts in conveyors and bucket elevators. The sensor detects the lateral force of the belt or pulley and activates a volt-free solid state relay. Sensor output can be used to activate an alarm or shutdown the machine. The sensors are normally installed in pairs on opposite sides of the belt/pulley.

The face of the sensor is made from hardened and annealed stainless steel, not soft brass or aluminium, so wear life is longer when a belt contacts it. An external test wheel allows for quick and simple sensor/system testing. The sensors are usually installed in pairs on opposite sides of the machine. The sensors can be connected directly to a PLC input, or for greater safety, to a central independent monitoring system, such as Watchdog Super Elite or IE-Node.

FEATURES

- Hardened stainless steel face
- External test wheel for quick and simple sensor/system testing
- Not affected by dust or material build up
- No calibration or sensitivity adjustment needed
- No calibration needed
- Food Grade type available (TS2V34CAI-FG)
- IP Rating - NEMA 4X, IP66
- High-temp fuse rated version available

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Brazil - InMetro
- China - CCC
- Worldwide – IECEx

APPLICATIONS

- Belt/pulley misalignment on elevators and conveyors

ACCESSORIES

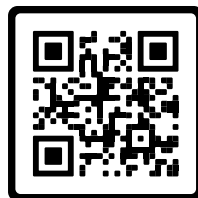
- Mounting bracket available
- Touchswitch Hole Saw

SUPPLY VOLTAGE

- 12-24 VDC

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- IE-Node



BULLDOG



Bulldog
Belt Alignment
& Rip Detection
Switch

The **Bulldog** alignment and rip detection switch is an electro-mechanical system designed to detect dangerous belt misalignment and belt tear damage on open belt conveyors. The switch will detect misalignment of belts when contact is made with the roller; the roller arm will be forced to pivot by the belt activating a switch at 20° to trigger an alarm, and 35° to trigger a shut down. The sensors are usually installed in pairs on opposite sides of the belt. A flexible wire is set below the running conveyor belt attached by a rare earth magnet at each end. If the belt is ripped or damaged the wire is pulled away releasing the magnet connection which in turn will activate a switch to trigger an alarm or shut down.

FEATURES

- Easy installation without calibration
- Solid construction
- Triggers an alarm at 20° and a shutdown of the machine at 35°
- Wire rope for optional belt rip detection

APPROVALS

- UK - UKEx
- Europe – ATEX
- China - CCC
- Worldwide – IECEx

APPLICATIONS

- Open belt conveyor alignment monitoring
- Belt rip detection

SUPPLY VOLTAGE

- 110-240 VAC

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- IE-Node
- B400



SPEED SWITCHES

SPEED SWITCHES

M100 STOPSWITCH



Stopped motion monitor

The **Stopswitch** is a straightforward shaft speed monitoring device. The 2-wire technology saves you time and makes installation hassle-free. If the shaft stops rotating, the Stopswitch will provide an output. It requires no calibration to operate and is a great tool for process control, motion verification and stopped shaft indication.

FEATURES

- Small 18mm diameter
- Totally sealed
- 3m cable
- Status LED's

STYLE

- 18mm cylindrical

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC

OUTPUT

- Stopped motion detection

APPROVALS

- UK - UKEx
- Europe - ATEX
- Brazil - InMetro
- China - CCC
- Worldwide – IECEX

APPLICATIONS

- Process control
- Provides a signal when the shaft has stopped rotating

M300 SLIPSWITCH



Intelligent underspeed switch 2 or 5-wire version available

User friendly and easy to install, the **Slipswitch** is a simple shaft speed monitoring device. Available in 2-wire and 5-wire models, the Slipswitch is self-calibrating and provides a 20% underspeed output to protect against dangerous belt slip and underspeed conditions.

FEATURES

- Totally sealed
- Auto calibration
- 2 or 5-wire connection
- 3m cable
- Status LED's

STYLE

- 30mm cylindrical

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC

OUTPUT

- 20% underspeed detection

APPROVALS

- UK - UKEx
- Europe - ATEX
- Brazil - InMetro
- China - CCC
- Worldwide – IECEX

APPLICATIONS

- Conveyors, bucket elevators, any speed sensitive shaft for automatic 20% underspeed detection

M800 SPEEDSWITCH



Intelligent underspeed switch with three outputs

A solid state unit with no moving parts, the **M800** is maintenance free. The unit operates using an inductive sensing device and requires no contact with the monitored machine. The M800 is calibrated to the machine's normal RPM. If the shaft speed falls by 10%, the M800 will alarm, and by 20% it will shut the machine down.

FEATURES

- Totally sealed
- Auto calibration
- 1/2-inch conduit entry with 2m cable
- Status LED's

STYLE

- DIN (40mm x 40mm)

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC

OUTPUT

- 1 x 10% underspeed relay
- 1 x 20% underspeed relay
- 1 x opto-isolated pulse (All 3 outputs in 1 unit)

APPROVALS

- USA, Canada - CSA

APPLICATIONS

- Conveyors, bucket elevators, any speed sensitive shaft for automatic underspeed detection with 10% alarm and 20% shutdown and pulsed output.

MILLISPEED - EU



Intelligent underspeed switch with three outputs

The **Milli-Speed Switch** with 4 - 20 mA output is designed to detect belt slip, belt underspeed, stop motion, and zero speed on bucket elevators, conveyors, airlocks, mixers, fans, grinders and many other rotating machines.

FEATURES

- 4 - 20 mA output
- Normalised output
- Simple magnetic calibration
- Loop powered (2 wire)
- Totally sealed construction: submersible

STYLE

- 30mm cylindrical

SUPPLY VOLTAGE

- 24 to 240 VAC
- 17-30 VDC

OUTPUT

- Over speed 20 mA (of calibrated speed)
- Calibrated speed 17 mA (100%)
- Zero speed 4 mA (0 - 10% of calibrated speed)

APPROVALS

- UK - UKEx
- Europe - ATEX
- Brazil - InMetro
- China - CCC
- Worldwide – IECEX

APPLICATIONS

- Conveyors, elevators, any speed sensitive shaft for automatic underspeed detection with 10% alarm and 20% shutdown



All 4B speed and inductive sensors are compatible with the Whirligig universal shaft sensor mount.

INDUCTIVE SENSORS



INDUCTIVE SENSORS

P100 INDUCTIVE SENSOR



Inductive Proximity Sensor

Inductive proximity sensors used to signal the position of equipment in conveyors, elevators and other mechanical assemblies. Also used as pulse generators for speed detection.

FEATURES

- IP 65
- Watchdog and PLC compatible
- Visual indication of output state by LED

STYLE

- 18mm cylindrical

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC
- 10-30VDC

OUTPUT

- FET transistor output
- PNP or NPN output

APPROVALS

- UK - UKEx
- Europe - ATEX
- USA, Canada - CSA
- Brazil - InMetro
- China - CCC
- Worldwide - IECEX

APPLICATIONS

- Conveyors, elevators and other mechanical assemblies, and other proximity detection and speed applications.

P300 INDUCTIVE SENSOR



Inductive Proximity Sensor

Inductive proximity sensors used to signal the position of equipment in conveyors, elevators and other mechanical assemblies. Also used as pulse generators for speed detection.

FEATURES

- IP 65
- Watchdog and PLC compatible
- Visual indication of output state by LED

STYLE

- 30mm cylindrical
- 2 and 4 wire

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC
- 10-30VDC

OUTPUT

- FET transistor output
- PNP or NPN output

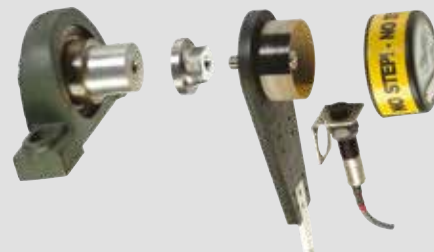
APPROVALS

- UK - UKEx
- Europe - ATEX
- USA, Canada - CSA
- Brazil - InMetro
- China - CCC
- Worldwide - IECEX

APPLICATIONS

- Conveyors, elevators and other mechanical assemblies, and other proximity detection and speed applications.

ACCESSORIES



Whirligig® (Patented)

The Whirligig is the new standard for shaft speed monitoring. It is a three-in-one universal shaft sensor mount that makes installation simple and more reliable for all inductive shaft speed sensors.



Your sensor mounts to the Whirligig and the complete assembly bolts to the machine's shaft. Machine and shaft vibration does not affect the performance of the sensor, as the whole assembly moves with the shaft. Personal safety is also improved since the rotating target is completely enclosed behind a tough plastic cover.

- Fully Guarded Target for Easy Mounting of Motion Sensors
- For DIN Style and Standard Cylindrical Inductive Sensors
- Easy Installation – Only Requires M12 Tapped Hole in the Machines Shaft or Use a Mag-Con™ for Magnetic Connection
- Available with 1, 2 or 4 Targets
- Imperial version available
- ATEX, UKEx

MagCon™ Magnetic Connector (Patented)

50mm diameter magnetic coupler with 150 lb/660N of pulling force for connecting M12 thread to rotating shaft. Saves on drilling and tapping.



- Imperial version available

TEST TOOLS

SpeedMaster™ Speed Switch Tester

The Speedmaster is a calibration and testing device that accurately tests the calibration of a speed switch, and allows testing of the 10% alarm and 20% shutdown features of the sensor while installed on the machine shaft.



Compatible with the Whirligig speed sensor mount

ENCODER-FLEX 1024

NEW
PRODUCT

ENCODER-FLEX 1024

ROTARY SHAFT ENCODER AND GATE POSITION MONITOR



The **Encoder-Flex 1024** is a rotary shaft encoder that monitors slide gate position, shaft position, or shaft speed. Examples include position of rack and pinion gates, valves, distributors, and shaft on rotating shafts such as slow moving conveyors, mixers, and dryers.

The Encoder-Flex 1024 uses innovative technology to monitor gate position or shaft speed. The resolution is programmable from 1-1024 pulses per revolution and it consists of 4-20 mA output as well as quadrature pulsed output for directional speed, and a Modbus RTU communications for advanced configuration and diagnostics.

There are two status LEDs for easy identification of operational mode and target detection. The unit is quickly calibrated with the touch of a magnet for shaft speed, angular shaft position, or gate position. The sealed body is constructed from stainless steel.

Output signals can be wired to a PLC, SCADA system, or other controller for accurate display and control of shaft position and speed.

FEATURES

- Programmable resolution from 1 to 1024 Pulses per Revolution
- Compatible with gates with up to 500,000 rotations between closed and open positions
- Connects directly to control systems (PLC, SCADA, Watchdog, IE-Node, etc)
- Memorizes shaft position in the case of a power loss
- Simple magnetic calibration
- Comprehensive software for access to advanced programming and visualization
- LED Status Indicators
- Process tech display available (PTD)

STYLE:

- Sealed stainless steel enclosure

OUTPUT:

- 4-20 mA
- Quadrature Pulse (Speed/Relative Rotation)
- RS485 Modbus RTU

SUPPLY VOLTAGE:

- 12-24 VDC

COMPATIBLE 4B CONTROL UNIT:

- Watchdog
- IE-Node

APPROVALS:

- UK - UKEx
- Europe- ATEX
- USA, Canada - CSA
- Worldwide - IECEx

APPLICATIONS:

- Shaft speed & angle monitoring, gate position monitoring



Want a compact, weather proof and flexible encoder, that is reliable and accurate?

Upgrade to the Encoder-Flex 1024, 4B's innovative rotary shaft encoder using leading technology to monitor slide gate position.

4B Speed Relay (USR)

The 4B Speed Relay (USR) is a microprocessor controlled digital speed monitor for use with 2, 3, 4 wire NPN/PNP sensors, 4B's WDA range of sensors or contact sensor inputs, with a user programmable electromechanical relay and PhotoMOS Solid State Relay (SSR) outputs. The Speed Relay has a 160x80 pixel LCD display to provide information, and 3 front panel buttons to program settings.

ENCODERS



ROTECH ENCODERS

The 4B heavy duty Rotech rotary shaft encoders are used primarily for protecting equipment and personnel from dangerous underspeed/belt slip conditions in extreme environments. Other applications include accurate speed control, direction of rotation detection, gate position indication and counting the number of revolutions of the shaft.

POLYPROPYLENE SHAFT ENCODER



FEATURES

- Heavy duty design
- 1 to 1,000 PPR
- Multiple outputs
- Intrinsically safe option available
- IP66

STYLE

- Polypropylene (reinforced with 30% glass)
- Totally self-contained (no guards required)

SUPPLY VOLTAGE

- Model dependent:
- 10-30Vdc
 - 20-240VAC

OUTPUT

- Model dependent:
- Intrinsically safe
 - NPN
 - PNP
 - Quadrature

APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx
- USA & Canada - CSA

APPLICATIONS

- Conveyors, bucket elevators or any shaft speed measurement

ALUMINIUM SHAFT ENCODER



FEATURES

- Ultra heavy duty
- 1 to 1,000 PPR
- Multiple outputs
- Intrinsically safe option available
- IP67

STYLE

- Cast aluminium construction
- Totally self-contained (no guards required)

SUPPLY VOLTAGE

- Model dependent:
- 8.2Vdc for intrinsically safe version
 - 10-30Vdc
 - 20-240VAC

OUTPUT

- Model dependent:
- Intrinsically safe
 - NPN
 - PNP
 - Quadrature

APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx
- USA & Canada - CSA

APPLICATIONS

- Conveyors, bucket elevators or any shaft speed measurement

STAINLESS STEEL ENCODER



FEATURES

- Ultra heavy duty
- 1 to 1,000 PPR
- Multiple outputs
- Intrinsically safe option available
- IP67

STYLE

- 304 or 316 stainless steel
- Totally self-contained (no guards required)

SUPPLY VOLTAGE

- Model dependent:
- 8.2Vdc for intrinsically safe version
 - 10-30Vdc
 - 20-240VAC

OUTPUT

- Model dependent:
- Intrinsically safe
 - NPN
 - PNP
 - Quadrature

APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx
- USA & Canada - CSA

APPLICATIONS

- Conveyors, bucket elevators or any shaft speed measurement

WHEEL ENCODER



FEATURES

- Heavy duty design
- 1 to 1,000 PPR
- Multiple outputs
- Intrinsically safe option available
- IP67

STYLE

- Trailing arm and wheel

SUPPLY VOLTAGE

- Model dependent:
- 8.2Vdc for intrinsically safe version
 - 10-30Vdc
 - 20-240VAC

OUTPUT

- Model dependent:
- Intrinsically safe
 - NPN
 - PNP
 - Quadrature

APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx
- USA & Canada - CSA

APPLICATIONS

- Belt speed monitoring applications

ACCESSORIES

MagCon™ Magnetic Connector (Patented)

50mm diameter magnetic coupler with 150 lb/660N of pulling force for connecting M12 thread to rotating shaft. Saves on drilling and tapping.

- Imperial version available



4B SPEED RELAY (USR)

Microprocessor controlled digital speed monitor for use with 2, 3, 4 wire NPN/PNP sensors, 4B's WDA range of sensors or contact sensor inputs, with a user programmable electromechanical relay and PhotoMOS Solid State Relay (SSR) outputs.



TACHO DISPLAY

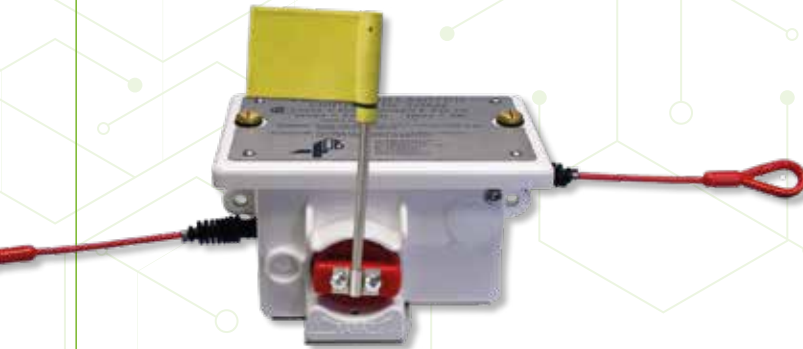
Bright 25mm high 4-digit LED display unit for connection to any PNP or NPN transistor output sensor to indicate shaft speed. The unit incorporates a user-adjustable under speed relay contact output. Quadrature display also available.



PULLSWITCH

CONVEYOR SAFETY STOP SWITCH

PULLSWITCH



Pullwire Safety Stop Switch

FEATURES

- Pullwire safety switch provides a safe and reliable means of stopping conveyors
- Double ended pull mechanism as standard
- Slack or taut wire operation
- Tough UV stabilised lightweight polycarbonate enclosure
- Designed for arduous environments e.g. quarries, open cast mines

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA

APPLICATIONS

- Safety stop switch for open belt conveyors

The Pullswitch is a failsafe taut wire emergency pull cord stop switch for open conveyors. PVC coated steel pull wires and pigtails connect between the switches to provide easy installation and continuous emergency stop access along the length of the entire conveyor. Pullswitches can be installed at 50m intervals, reducing overall system cost. Quick location of a tripped switch is provided by a flag marker or optional reflector, and the tripped signal can be wired back to a PLC or one of 4B's controllers.



Pullswitch installed on open belt conveyor



Pullswitch Accessories



For more detailed product information, please visit: www.go4b.com

MILLI-VIB

VIBRATION SENSOR (WITH OPTIONAL SURFACE TEMPERATURE MEASUREMENT)



Milli-Vib is a vibration sensor designed for continuous monitoring of vibration levels in industrial environments. It is current loop powered accelerometer and delivers accurate vibration RMS velocity using a 4-20 mA output. Built with a stainless-steel enclosure, including a 3/4" NPT thread for conduit connection. The Milli-Vib can be supplied with optional inbuilt NTC or PT100 temperature sensors.

The Milli-Vib is equipped with female 1/4"-28 UNF female mounting thread, allowing the use of a screw, stud, or mounting stud to secure the sensor to the desired application.

The sensor is supplied with a 1/4"-28 UNF set screw as standard. Optional converters to M8 and M6 male threads are available.

For maximum sensitivity, mount the sensor vertically along

FEATURES

- Robust, compact, IP66 Stainless Steel enclosure
- Monitors RMS velocity in mm/s
- Measuring range 0-25 mm/s standard, and 0-50 mm/s special request.
- Can also monitor surface temperature with optional NTC or PT100 temperature sensor (Milli-Con version)
- 2 wire 4-20mA loop powered sensor
- 3/4" NPT conduit fitting
- 1/4" – 28 Female UNF mounting thread
- Adapters available in M6 & M8 male

SUPPLY VOLTAGE:

- 15 / 24 VDC (+10%)

VERSIONS:

- Milli-Vib - vibration monitoring only
- Milli-Con - vibration & surface temperature monitoring

COMPATIBLE 4B CONTROL UNIT:

- Watchdog
- IE-Node

APPROVALS:

- UK - UKEx
- Europe- ATEX
- USA, Canada - CSA
- Worldwide - IECEx

APPLICATIONS:

- Industrial vibration monitoring



For more detailed product information, please visit: www.go4b.com



SURFACE TEMPERATURE SENSORS

ACCESSORIES

ADB BEARING SENSOR TESTER

The ADB Sensor Tester has been designed to test 4B adjustable depth bearing (ADB) temperature sensors in the field. This hand held test unit features an integrated heating block specifically designed to have a 4B ADB sensor directly inserted. With integral controls and temperature display, the unit heats the sensor to the desired trip point, and allows quick and easy real life testing of the sensor and temperature monitoring system.

During planned maintenance or periodic testing, the ADB Sensor Tester can be used as a diagnostic tool to verify the alarm and shutdown sequences of the control unit are functioning as expected. To test, the heater block should be set above the control units alarm operating temperature. Remove the ADB bearing sensor probe from the housing and insert it into the heater block. As the heater block reaches the alarm temperature, the ADB sensor will relay this data to the control unit, allowing you to verify that the alarm and shutdown sequences run as expected.

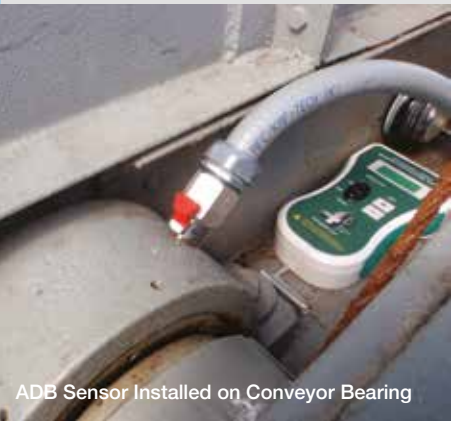
FEATURES

- ADB Bearing Sensor Tester
- Hand Held Portable Unit
- Exact Alarm Point Testing
- Exact Shutdown Point Testing
- Easy To Read Display



ADB WRENCH

Used to loosen and tighten the ADB bearing temperature probe for proper depth adjustment.



ADB Sensor Installed on Conveyor Bearing

SURFACE TEMPERATURE SENSORS

MILLI-CON



MILLI-CON is a vibration sensor that can be supplied with optional inbuilt NTC or PT100 temperature sensors for surface temperature measurement. Built with a stainless-steel enclosure, including a 3/4" NPT thread for conduit connection.

See p.19 for vibration monitoring

FEATURES

- Robust, compact, IP66 Stainless Steel enclosure
- Can monitor surface temperature with optional NTC or PT100 temperature sensor
- 2 wire 4-20mA loop powered sensor
- 3/4" NPT conduit fitting
- 1/4" – 28 Female UNF mounting thread.

INPUT SUPPLY VOLTAGE

- 12/24 VDC (+10%)

COMPATIBLE 4B CONTROL UNIT:

- Watchdog
- IE-Node

APPROVALS:

- UK - UKEx
- Europe- ATEX
- USA, Canada - CSA
- Worldwide - IECEx

APPLICATIONS:

- Industrial vibration monitoring
- Surface temperature monitoring

ADB LUG-STYLE



The **ADB Lug** series is a surface mount style NTC thermistor, Platinum RTD (PT100), or 4-20 mA "Milli Temp" type of continuous temperature monitoring. It has been designed to bolt onto bearing housings, motors, gearboxes, or casings, the sensor features an 8mm mounting hole (expandable to 13mm). It connects to a PLC or hazard monitoring systems such as 4B's IE-Node, Watchdog Elite, or T400, with no polarity-sensitive wiring needed. Connections are not polarity sensitive therefore special connections requirements are eliminated.

FEATURES

- Surface mount installation
- 3/8" to 1/2" bolt entry
- 1/2" NPT conduit entry

SENSOR OPTIONS:

- NTC version - continuous temperature
- 4-20mA linear output version
- PT100 version - platinum RTD

INPUT SUPPLY VOLTAGE

- 12/24 VDC (current limited)

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- T400
- IE-Node

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

APPLICATIONS

- Surface temperature measurement and control

WDB7 LUG-STYLE



The **WDB7** series is a lug style NTC, Pt-100 or PTC thermistor type for surface temperature monitoring and has been designed to bolt onto bearing housings, motors, gearboxes, or casings, the sensor features an 8mm mounting hole (expandable to 13mm). It connects to a PLC or hazard monitoring systems such as 4B's IE-Node, Watchdog Elite, or T400, with no polarity-sensitive wiring needed.

FEATURES

- Surface mount installation
- 8mm to 13mm bolt entry
- 1/2" NPT conduit entry
- Continuous temperature monitoring

SENSOR OPTIONS:

- NTC Thermistor
- Pt-100 4-wire RTD
- PTC (trip temperature selected at time of purchase)

INPUT SUPPLY VOLTAGE

- 12/24 VDC (current limited)

COMPATIBLE 4B CONTROL UNIT

- Watchdog
- T400
- IE-Node

APPROVALS

- UK - UKEx
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx


APPLICATIONS

- Surface temperature measurement and control

BEARING TEMPERATURE SENSORS



BEARING TEMPERATURE SENSORS

ADB	WDB8	WDB83x	MILLITEMP
 <p>The ADB series have been designed to allow the depth of the sensor to be adjustable depending on the application. Three standard versions are available with probe lengths of 50, 100 and 200mm (other lengths available for special order). The sensors screw directly into a bearing housing through the existing grease zerk thread. Each sensor is fitted with a grease zerk to allow lubrication of the bearing without the need for removal of the sensor. The ADB style sensors are available with a standard NTC thermistor for 4B's IE-Node and Watchdog systems, or a Pt100 - RTD type for PLC and DCS systems.</p> <p>FEATURES</p> <ul style="list-style-type: none"> Screw in positive mount installation Grease zerk for bearing lubrication Adjustable depth (50, 100, 200mm probes) 1/4" NPT (brass body) NTC or Pt100 RTD versions – continuous temperature <p>SENSOR OPTIONS:</p> <ul style="list-style-type: none"> NTC Thermistor Pt-100 4-wire RTD Selectable probe length: 50, 100 and 200 mm <p>INPUT SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> 12/24 VDC (current limited) <p>COMPATIBLE 4B CONTROL UNIT</p> <ul style="list-style-type: none"> Watchdog T400 IE-Node <p>APPROVALS</p> <ul style="list-style-type: none"> UK - UKEx Europe – ATEX USA, Canada – CSA Worldwide – IECEx <p>APPLICATIONS:</p> <ul style="list-style-type: none"> Bearing temperature control Temperature measurement 	 <p>The WDB8 series is a range of bearing temperature sensors designed to screw directly into an existing 1/4" BSP grease zerk fitting on a bearing housing. Each sensor is fitted with a grease nipple to allow lubrication of the bearing without the need for removal of the sensor. The WDB Series is available with either a PTC thermistor with various factory set trip points or an NTC thermistor with a user adjustable trip point.</p> <p>FEATURES</p> <ul style="list-style-type: none"> Screw in positive mount installation Grease zerk for bearing lubrication 1/4" BSP (brass body) Cable with protective anti-bend cover <p>SENSOR OPTIONS:</p> <ul style="list-style-type: none"> NTC Thermistor PTC (trip temperature selected at time of purchase) <p>INPUT SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> 12/24 VDC (current limited) <p>COMPATIBLE 4B CONTROL UNIT</p> <ul style="list-style-type: none"> Watchdog IE-Node T400N (NTC-type sensors only) <p>APPROVALS</p> <ul style="list-style-type: none"> UK - UKEx Europe – ATEX USA, Canada – CSA Worldwide – IECEx <p>APPLICATIONS:</p> <ul style="list-style-type: none"> Bearing temperature control 	 <p>The WDB83x series is a range of contact bearing sensors designed for over-temperature protection of bearings. The sensors screw directly into a bearing housing. Each sensor is fitted with a grease nipple to allow lubrication of the bearing without the need for removal of the sensor. The sensor has a fixed two core cable ready for connection either directly to a monitoring device or to a junction box.</p> <p>All contact sensor models in this series are normally in the closed position allowing electricity to flow through the circuit. When the temperature exceeds a preset trip temperature, the bimetal element opens to break the circuit. Circuit is restored when temperature drops below the reset temperature limit.</p> <p>FEATURES</p> <ul style="list-style-type: none"> Temperature Trip Point Ranges: 60°C, 70°C or 80°C Cable style: Fixed Body Material: Stainless Steel Thread Size: 1/4" BSPT Cable: 2 wire <p>SENSOR OPTIONS:</p> <ul style="list-style-type: none"> Sensor Type: Contact <p>INPUT SUPPLY VOLTAGE:</p> <ul style="list-style-type: none"> 5 – 24 VDC <p>COMPATIBLE 4B CONTROL UNIT</p> <ul style="list-style-type: none"> Watchdog IE-Node <p>APPROVALS</p> <ul style="list-style-type: none"> UK - UKEx Europe - ATEX <p>APPLICATIONS:</p> <ul style="list-style-type: none"> Bearing temperature control 	 <p>The Milli-Temp is a loop powered analog sensor with a 4-20 mA linear output that is scaled across a temperature range for continuous temperature monitoring. The sensor has been designed to allow the depth of the probe to be adjustable depending on your application. The sensor screws directly into a bearing housing through the existing grease zerk thread. Each sensor is fitted with a zerk to allow lubrication of the bearing without the need for removal of the sensor.</p> <p>FEATURES</p> <ul style="list-style-type: none"> 4-20 mA output Screw in positive mount installation Grease zerk for bearing lubrication Lug style adaptor (surface temp.) 1/2" NPT conduit entry 304 stainless steel body <p>SENSOR OPTIONS:</p> <ul style="list-style-type: none"> Selectable probe length: 50, 100 and 200mm 4-20 mA loop <p>INPUT SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> 15-28 VDC (24VDC nominal) <p>COMPATIBLE 4B CONTROL UNIT</p> <ul style="list-style-type: none"> Watchdog IE-Node <p>APPROVALS</p> <ul style="list-style-type: none"> UK - UKEx Europe – ATEX USA, Canada – CSA China - CCC Worldwide – IECEx <p>APPLICATIONS:</p> <ul style="list-style-type: none"> Bearing temperature control Temperature measurement

LEVEL INDICATORS

AUTO-SET™

A user friendly, reliable point level indicator for bulk granular solids, powders and liquids. Digital display, push-button calibration and material build-up compensator make this unit the elite point level sensor.

A selection of screw-on stainless steel probes to suit your application.



AUTO-SET™ REMOTE

A user friendly, reliable point level indicator for bulk granular solids or powders where there is high vibration and/or temperature involved. Remote electronic display/control unit allows for remote calibration/set-up away from vibration or heat.

ATS8	ATS8 & EXTENDED POWER SHIELD	ATS8 FLUSH PROBE	AUTO-SET™ REMOTE PROBE	AUTO-SET™ REMOTE CONTROL
 <p>ATS8 <i>RF capacitance point level indicator</i></p> <p>FEATURES</p> <ul style="list-style-type: none"> • Push button calibration • Digital display • Internal timer • Automatic material build-up compensator • Attachable SS probes <p>STYLE</p> <ul style="list-style-type: none"> • 1 inch BSP <p>SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> • 120/240 VAC • 24 VDC (universal supply) <p>OUTPUT</p> <ul style="list-style-type: none"> • 1 set of voltage-free changeover relay contacts <p>APPROVALS</p> <ul style="list-style-type: none"> • UK - UKEx • Europe - ATEX • USA, Canada - CSA <p>APPLICATIONS</p> <ul style="list-style-type: none"> • Material point level indication in silos, bins and other vessels. 	 <p>ATS8 with Extended Power Shield <i>RF capacitance point level indicator for thick-walled silos</i></p> <p>FEATURES</p> <ul style="list-style-type: none"> • Push button calibration • Digital display • Internal timer • Automatic material build-up compensator, 12 or 16 inches long • Attachable SS probes <p>STYLE</p> <ul style="list-style-type: none"> • 1 inch BSP <p>SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> • 120/240 VAC • 24 VDC (universal supply) <p>OUTPUT</p> <ul style="list-style-type: none"> • 1 set of voltage-free changeover relay contacts <p>APPROVALS</p> <ul style="list-style-type: none"> • UK - UKEx • Europe - ATEX • USA, Canada - CSA <p>APPLICATIONS</p> <ul style="list-style-type: none"> • Material point level indication in thick-walled concrete silos. 	 <p>ATS8 Flush Probe <i>RF capacitance heavy-duty plug-switch</i></p> <p>FEATURES</p> <ul style="list-style-type: none"> • Push button calibration • Digital display • Internal timer • Automatic material build-up compensator • No moving parts <p>STYLE</p> <ul style="list-style-type: none"> • 100mm dia. probe with integral mount <p>SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> • 120/240 VAC • 24 VDC (universal supply) <p>OUTPUT</p> <ul style="list-style-type: none"> • 1 set of voltage-free changeover relay contacts <p>APPROVALS</p> <ul style="list-style-type: none"> • UK - UKEx • Europe - ATEX • USA, Canada - CSA • Worldwide - IECEx <p>APPLICATIONS</p> <ul style="list-style-type: none"> • Plug condition in chutes, discharges and pipes. 	 <p>Auto-Set™ Remote Probe <i>Polyprop probe - 120°C PEEK probe - 250°C Ceramic probe - 600°C</i></p> <p>FEATURES</p> <ul style="list-style-type: none"> • No moving parts • No electronic components • Automatic material build-up compensator • Attachable SS probes • High temp available <p>STYLE</p> <ul style="list-style-type: none"> • 1 inch BSP <p>SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> • From control unit <p>OUTPUT</p> <ul style="list-style-type: none"> • To control unit <p>APPROVALS</p> <ul style="list-style-type: none"> • Not approved <p>APPLICATIONS</p> <ul style="list-style-type: none"> • Material point level indication in surge bins, vibratory feeders and high temperature processes. 	 <p>Auto-Set™ Remote Control <i>Remote control unit with digital display and calibration push buttons</i></p> <p>FEATURES</p> <ul style="list-style-type: none"> • Push button calibration • Digital display • Internal timer • DIN rail mountable <p>STYLE</p> <ul style="list-style-type: none"> • DIN rail mountable enclosure processes <p>SUPPLY VOLTAGE</p> <ul style="list-style-type: none"> • 120/240 VAC • 24 VDC (universal supply) <p>OUTPUT</p> <ul style="list-style-type: none"> • 1 set of voltage-free changeover relay contacts <p>APPROVALS</p> <ul style="list-style-type: none"> • Not approved <p>APPLICATIONS</p> <ul style="list-style-type: none"> • Material point level indication in surge bins, vibratory feeders and high temperature processes.

LEVEL INDICATORS



LEVEL INDICATORS

BINSWITCH



The **Binswitch** is a capacitive sensor for the detection of blockages in chute, discharges and pipes. Available in 2-wire and 5-wire models. Simple semi-automated calibration process using magnets.

FEATURES

- Capacitance probe
- Detects presence or absence of liquids & free-flowing bulk granular materials
- Easy installation & self-containing
- Magnet calibration

STYLE

- 30mm cylindrical
- 2 or 5 wire options

SUPPLY VOLTAGE

- 24 to 240 VAC/VDC

OUTPUT

- Programmable high or low level detection

APPROVALS

- UK - UKEx
- Europe - ATEX
- China - CCC
- Worldwide - IECEx

APPLICATIONS

- Plug condition in chutes, discharges and pipes.

RLI



The **RLI** is designed to signal the presence or absence of bulk materials such as: chemical products, wood chips, grain, granules and powders. It is ideal for use as a point level indicator in tanks and silos as well as a blockage detector in conveyor chutes.

FEATURES

- High or low level indication
- Automatic power shut off
- Limit switch contact output
- 14 foot vertical extensions (maximum)

STYLE

- Rotary level indicator with 1 1/4-inch NPT mounting thread
- Glass-fibre reinforced nylon housing

SUPPLY VOLTAGE

- 24 VDC
- 110VAC
- 240VAC

OUTPUT

- 1 set of voltage-free changeover relay contacts

APPROVALS

- No explosive environment approvals

APPLICATIONS

- Material point level indication in surge bins, vibratory feeders and high temperature processes

RG SERIES



The **RG Level Sensors** series is designed to indicate the presence or absence of bulk materials such as grains, pellets, chemicals, wood chips and other powders. If material impedes the rotation of the paddle, the motor topples of its axis and triggers an alarm. The RG has a variety of compatible paddles which offer the ability to detect a wide range of products.

FEATURES

- Can be top and side mounted
- Easy installation
- Wide range of paddles available
- Optional extensions and shard guards for more challenging applications
- RG4 High-Temp version now available (up to +200°C)

STYLE

- Rotary level indicator

SUPPLY VOLTAGE

- 10/240 VAC
- 24 VDC

OUTPUT

- 1 set of voltage-free changeover relay contacts

APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx

APPLICATIONS

- Material point level indication in surge bins, vibratory feeders and high temperature processes

ACCESSORIES

BINSWITCH ACCESSORIES



BAS3 Abrasion Shield

Polyethylene abrasion shield for ATEX Binswitch.

BAS4 Binswitch abrasion shield

Steel, zinc plated, heavy duty cover

Mounting Plate

Powder-coated mild steel mounting plates with 1 1/4-inch NPT or 1 inch BSP, half or full coupling. Use with AutoSet, Roto-Level / RG Series Indicators and Binswitches with adapters. (Also available in stainless steel.)



PADDLE SWITCH ACCESSORIES

Rotary Level Paddles

Complete range of stainless steel paddles for Roto-Level Indicators.



Binswitch Installed on Bucket Elevator Spouting (with SMP, BAS & conduit adapter)



Auto-Set™ Flush Probe Installed on Belt Conveyor Discharge



Auto-Set™ Flush Probe Installed on Screw Conveyor Discharge

JUNCTION BOXES

4B COMMISSIONING SERVICE

After 4B products have been installed by a qualified electrician, 4B's commissioning service is available to inspect and certify proper installation of our sensors and control units prior to operation. A brief overview of the service is listed below -

Features

- All rigid and flexible conduits inspected for: cracks, breaks, tightness of connections, and suitability for purpose.
- All wiring inspected for: ground faults, shorts, suitability for purpose.
- All sensors and controls inspected for correct installation and wiring.
- All sensors and controls inspected for any signs of damage, and tested to insure proper working order.
- Detailed written inspection and testing report with any recommendations given to client.

Belt & Pulley Alignment Sensors

- Sensors are removed from their location to ensure that they were centered on the belt.
- Each sensor is physically inspected for damage and wear.
- Sensor LED and alarm contacts are tested.
- Wire terminations are inspected.

Temperature Sensors

- All sensors are inspected and resistance is checked.
- Sensors are also checked for correct identification, location and sensor type.
- Sensors are checked for proper temperature alarm and shutdown trip points using 4B's ADB Tester.
- Wire terminations are inspected.

Speed Switches

- All speed switches are checked for proper installation.
- Sensors are checked for proper underspeed alarm and shutdown set points using 4B's SpeedMaster™.
- Wire terminations are inspected.



Warning: 4B recommends that all sensors are wired to provide automatic shutdown of monitored equipment, when a hazardous condition is detected.

JUNCTION BOXES

NEW
PRODUCT

4B-JB



4B-JB
Junction Boxes

4B Atex approved junction boxes allow for the easy installation of sensors in potentially explosive dust hazard environments.

FEATURES

- Robust glass reinforced nylon casing
- Up to 4 gland inputs
- Dust and water tight seal
- Detachable cover for easy terminal access

TERMINAL SPRINGS

- 6 x 2.5mm² or 12 x 2.5mm²

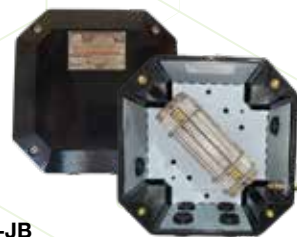
APPROVALS

- UK - UKEx
- Europe - ATEX
- Worldwide - IECEx

APPLICATIONS

- Electrical installations in dust - explosive environments

GRP-JB



GRP-JB
Junction Boxes

GRP (glass-reinforced polyester) junction box range, suitable for use within ATEX/IECEx increased safety areas, and allow for the easy installation of sensors in potentially explosive dust hazard environments.

FEATURES

- GRP Junction Box
- 200H x 200W x 120D (mm)
- 24 x terminals
- 6 x M25 entries
- IP66

APPROVALS

- UK - UKEx
- Europe - ATEX Zone 21
- Worldwide - IECEx

APPLICATIONS

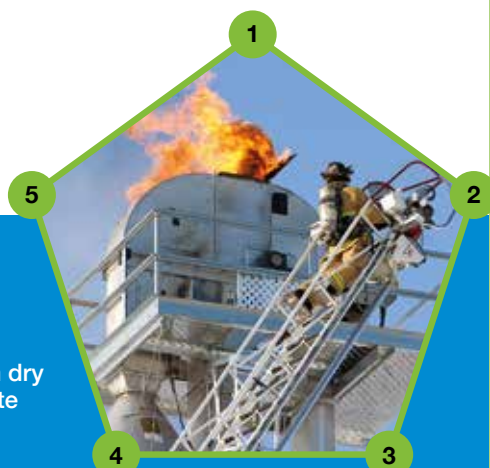
- Electrical installations in dust - explosive environments

DUST EXPLOSION PREVENTION

It is well known that transporting certain dry dusty materials, such as grain, can create explosive atmospheres.

Five conditions, known as the "Dust Explosion Pentagon", have to exist in order for the explosive state to occur. First, there needs to be a high concentration of dust (fuel), followed by an ignition source (heat) and oxygen (oxidizer). If all of these appear in a confined space with dispersion, an explosion can occur.

The most common ignition sources on bucket elevators and conveyors have long been identified as overheated bearings, misaligned belts and belts that are slipping.



- 1 Ignition source (heat)
- 2 Confinement of the dust cloud
- 3 Oxygen in air (oxidizer)
- 4 Combustible dust (fuel)
- 5 Dispersion of dust particles

TOOLS AND SERVICES

4B SITE INSPECTION & TESTING SERVICE



- All rigid and flexible conduits inspected for: cracks, breaks, tightness of connections, and suitability for purpose
- All wiring inspected for: ground faults, shorts, suitability for purpose
- All sensors and controls inspected for correct installation, and wiring
- All sensors and controls inspected for any signs of damage, and tested to insure proper working order
- Detailed written inspection and testing report with any recommendations given to client



Warning: 4B recommends that all sensors are wired to provide automatic shutdown of monitored equipment, when a hazardous condition is detected.

4B offers an array of tools and services to support you and your products. The 4B Tech Team can answer your installation and operating questions, and provide on-site inspection, testing or commissioning services for our products. 4B has developed testing tools to easily check our sensors in the field during routine maintenance. We also have a selection of tools available to help with the installation of our products.

SPEEDMASTER™



The SpeedMaster™ is the only device that accurately tests the calibration of a speed switch, and allows testing of the alarm and shutdown features of the sensor while installed on the machine shaft.

- Speed switch calibration testing
- Exact alarm & shutdown point testing
- No need to modify sensor assembly for testing

ADB BEARING SENSOR TESTER



The ADB sensor tester has been designed to test 4B adjustable depth bearing (ADB) style temperature sensors in the field. With integral controls and temperature display, the unit heats the sensor to the desired trip point, and allows quick and easy real life testing of the sensor and temperature monitoring system.

HOTBUS™ NODE TESTER



The Hotbus Node Tester is a portable testing unit that can be used in the field to determine the operational status of any Hotbus communications node and network to quickly identify wiring or node issues.

- Portable & compact
- Optional PC connection for extensive data analysis

TOUCHSWITCH™ BELT ALIGNMENT SENSOR HOLE SAW



- Recommended tool for Touchswitch™ sensor installation
- 57mm carbide teeth for optimum performance and durability
- Cobalt steel pilot drill with split point tip prevents walking
- Built in flange stop prevents over drilling
- Ejector spring

BROKEN OR SLACK CHAIN DETECTION



MONITORING FOR DRAG CHAIN CONVEYORS



Speed Relay

&



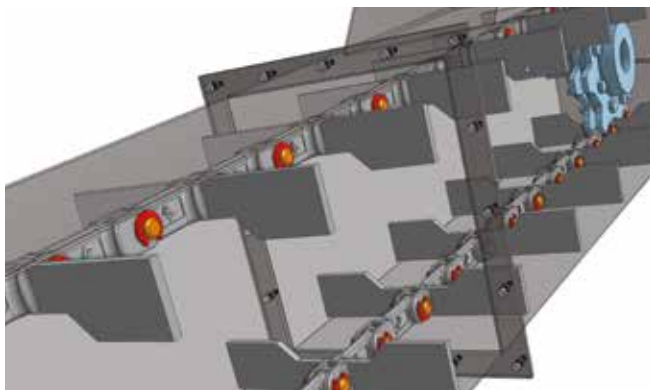
WDA Sensor

By using a WDA sensor in combination with a speed relay, ferrous steel flights or bolts on plastic paddles are used to monitor for broken or slack chain issues on drag conveyors.

The WDA is a non-contacting extended range magnetic proximity sensor, not affected by dust or material build up, used to detect moving ferrous material up to 75mm away from the sensor. The speed relay is used to monitor the speed of a rotating shaft and detect if it rises or falls below a preset safety level.

FEATURES

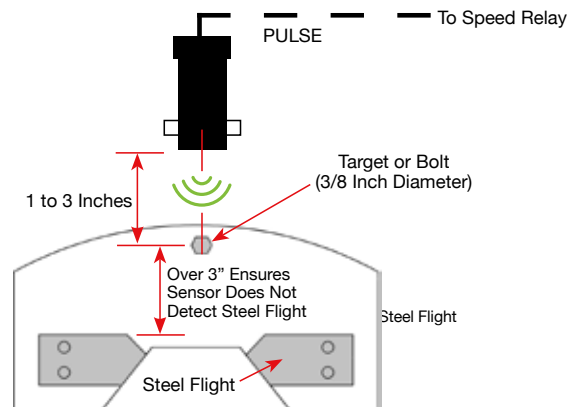
- Solution for drag chain conveyors
- Monitor for chain slack or breakage
- Detects movement of steel flights or bolts on plastic paddles
- Prevent costly equipment damage and downtime
- Simple sensor and speed relay solution



OPTION 1

> Sensor Detecting Bolt Installed on the Paddle

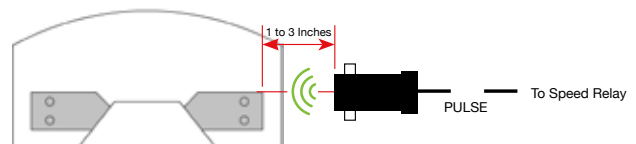
Under normal running conditions, the target bolt passes through the sensor's field and a pulse is sent to the speed relay. If the chain becomes slack, the target bolt will drop below the field and the pulses will stop, causing the relay contact to change state.



OPTION 2

> Sensor Detecting Steel Flight

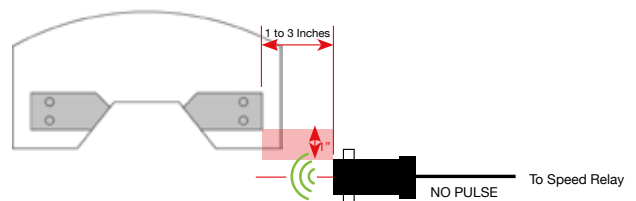
Under normal running conditions, the steel flight passes through the sensor's field and a pulse is sent to the speed relay. If the chain becomes slack, the steel flight will drop below the field and the pulses will stop, causing the relay contact to change state.



OPTION 3

> Sensor Waiting to Detect Steel Flight

Under normal running conditions, the steel flight is out of the sensor's field, so no pulses are sent to the speed relay. If the chain becomes slack, the steel flight comes into the sensor's field and a pulse is sent to the speed relay, causing it to change state.



Warning: - Make sure that there is no ferrous steel (such as the machine's frame) within the sensing field.

ASK FOR OUR CATALOGUES

BUCKET ELEVATOR COMPONENTS



ELEVATOR BUCKETS

- Pressed seamless steel, stainless steel and welded steel
- High density polyethylene, nylon and polyurethane
- For agricultural and industrial applications



ELEVATOR BOLTS

- EURO BOLTS
- EASIFIT BOLTS
- REF 70
- FANG BOLTS



ELEVATOR BELTING

- SBR / NBR
- HOT OIL
- FRASOR
- T150 - High Temperature
- FDA - White Food Quality
- STEEL WEB



BELT FASTENERS

A range of mechanical splices and fasteners for use on most PVC, rubber and steel web elevator belts.

CONVEYOR CHAINS



DROP FORGED CHAINS

- Made from special heat treated alloy steel
- Case hardened to Rockwell C57- C62, with ductile core hardness of Rockwell C40
- Maximum shock and wear resistance



DOUBLE / TRIPLE LINKS

- For use with 2 and 3-strand chain applications
- Ultimate strengths
- For high capacity applications



BOLT-N-GO CHAINS

- Easy assembly system using bolt-on flights instead of welding
- Available for forged and round link chains



SPROCKETS & TRAILERS

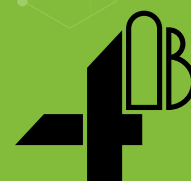
- For drop forged chains
- Manufactured from high grade heat treated steel
- Minimum hardness of 57 HRC



**VISIT OUR WEBSITE FOR
DETAILED TECHNICAL
INFORMATION:**

www.go4b.com

- Technical Manuals
- Installation Guides
- Wiring Guides
- CAD Drawings
- Certificates
- Videos
- Case Studies



4B GROUP

4B catalogues also available:

-  Elevator Buckets  Elevator Belting
-  Elevator Bolts  Forged Chains



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