ELECTRONIC COMPONENTS & MONITORING SYSTEMS

4B GROUP

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

BETTER BY DESIGN
Preventive maintenance can help reduce the risk of equipment failure and consequent downtimes. When it comes to monitoring your bucket elevators and belt conveyors, 4B can recommend you the ideal combination of sensors and monitoring systems to suit your requirements and budget.

4B provides an extensive range of their own ATEX / IECEx / CSA approved hazard monitoring systems, misalignment switches and bearing temperature monitors and level controls. We can offer you anything from a replacement sensor to a fully integrated hazard monitoring system which can be operated either as a stand-alone system or connected to your PLC.

We can offer you a scalable solution starting with correctly chosen equipment and systems that can be expanded at a later date to encompass other machines in the plant.

4B provides installation service and after-sales technical support to help you overcome any technical problems with your monitoring equipment.

To learn more about the services and products we offer, please visit www.go4b.com.
### ELEVATOR / CONVEYOR MONITORING SYSTEMS

#### COMBINED MONITORING SYSTEMS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>WATCHDOG SUPER ELITE™</th>
<th>T500 ELITE - HOTBUS™</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bearing temperature</td>
<td>(continuous) max. 6 sensors + 2 ambient temp. sensors</td>
<td>(continuous) max. 256 inputs*</td>
</tr>
<tr>
<td>Belt speed</td>
<td>(continuous) max. 2 inputs – Differential speed monitoring</td>
<td>(continuous) max. 256 inputs*</td>
</tr>
<tr>
<td>Belt alignment</td>
<td>Pulses / Contact / Rub* Blocks 4 inputs</td>
<td>max. 256 sensors*</td>
</tr>
<tr>
<td>Plugged condition</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Pulley alignment</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Communication interfaces</td>
<td>Ethernet with Modbus TCP protocol</td>
<td>All major industrial protocols supported via F500 Gateway</td>
</tr>
<tr>
<td>Test function</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alarm &amp; shutdown function</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Applications</td>
<td>Single elevator or conveyor</td>
<td>Multiple elevators &amp; conveyors; remote monitoring across site</td>
</tr>
<tr>
<td>Hazardmon.com (Cloud based hazard monitoring)</td>
<td>(Ethernet onboard) (via F500)</td>
<td></td>
</tr>
<tr>
<td>Certifications</td>
<td>ATEX / CSA / IECEx / InMetro / Nepsi</td>
<td>ATEX / CSA / IECEx / InMetro / Nepsi</td>
</tr>
</tbody>
</table>

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

#### SPECIALISED MONITORING SYSTEMS

<table>
<thead>
<tr>
<th>PRODUCT</th>
<th>T400N ELITE</th>
<th>T400 ELITE</th>
<th>A400 ELITE</th>
<th>B400 ELITE</th>
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<tbody>
<tr>
<td>Bearing temperature</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Belt speed</td>
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<td>✓</td>
<td>✓</td>
<td>X</td>
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<tr>
<td>Belt alignment</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Plugged condition</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Pulley alignment</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Communication interfaces</td>
<td>Modbus RTU (RS-485)</td>
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<tr>
<td>Test function</td>
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<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alarm &amp; shutdown function</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Applications</td>
<td>Elevator &amp; conveyors</td>
<td>Elevator &amp; conveyors</td>
<td>Elevators</td>
<td>Elevator &amp; conveyors</td>
</tr>
<tr>
<td>Hazardmon.com (Cloud based hazard monitoring)</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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### HAZARD MONITORING SYSTEMS

#### COMBINED MONITORING SYSTEMS

**WATCHDOG SUPER ELITE™**

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 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
- Pulley alignment 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, MDB, and WDB: bearing temperature
- WDA Series: motion alignment
- Touchswitch: belt alignment
- Inductive Proximity Sensors: speed (P1003V34AI / P3003V34AI)
- Binswitch: plugswitch

**Approvals**
- Europe – ATEX
- USA – CSA
- Brazil – InMetro
- China – Nepsi
- Worldwide – IECEx

**Dimensions**
- H x W x D: 308 x 241 x 137mm

**Applications**
- Bucket elevators and conveyors

**Additional options**
- 4 x solid state alarm relay outputs for the following conditions:
  - Speed
  - Temperature
  - Misalignment
  - Auxiliary Inputs

**WDC4-AUXO-SSR**
- 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-AUXO-6AN**
- 4 x 4-20mA current loop inputs
- 2 x Pt-100 temperature inputs
- Temperature range: -200 to 535 degrees C
- Three-wire configuration
- Individually enabled and configured in WDC

**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 WDC

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For more detailed product information, please visit: [www.go4b.com](http://www.go4b.com)
HAZARD MONITORING SYSTEMS

COMBINED MONITORING SYSTEMS

T500 ELITE - HOTBUS

The T500 Elite - Hotbus™ is a serial communication system specially designed to monitor up to 256 sensors, including continuous bearing temperature and belt misalignment. With automatic machine shutdown capability and PLC/PC compatibility, this advanced microprocessor-based system offers low cost installation, versatility, and easy system expansion.

Features

- Continuous bearing temperature monitoring with user adjustable trip points
- RS485 serial communication
- Monitors up to 256 sensors
- A 4 second scan time with 256 sensors installed
- Works with many types of sensors
- Enter your own sensor/locations names for easy identification
- Alarm and shutdown features
- Gateways available for various PLC connections
- HazardMon.com® cloud based hazard monitoring compatible

Input supply voltage

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

Sensor supply

- Use external 24 VDC supply

Approvals

- Europe - ATEX
- USA, Canada – CSA
- Brazil - Inmetro
- China - Nepal
- Worldwide – IECEx

H x W x D

- 246 x 188 x 102mm

Applications

- Bucket elevators and conveyors
- Touchswitch: belt alignment
- P5000V44 + SN2 Node: speed
- AutoSet Series: level indicator
- Roto-Level Series: level indicator
- Binswitch: level and plug indicator

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

ACCESSORIES

HazardMon.com®

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.

F500 Elite Fieldbus Gateway

The F500 is a communications gateway that allows for single point access to a maximum of four T500 Elite Hotbus™ systems via Fieldbus protocol. Fieldbus communication protocols supported include: EtherCAT, Profinet, DeviceNet, Proidentbus and others.

R500 Elite Alarm Relay Interface

The R500 is a microprocessor-controlled unit which accepts signals from the T500 Elite Hotbus™ monitor and is able to cause alarm or shutdown of equipment when a sensor exceeds its programmed alarm tolerance.

Hotbox Node – TN4 (Input Node)

The TN4 is a four input sensor node, powered by 24 VDC. Each input can be an NTC thermistor, PTC thermistor or Vol-Free Contact input. The types may be interchanged on a single node. The Node has a unique 4 digit address which is used to communicate to the T500 via a two wire serial RS485 connection. The TN4 Node processes information from electrical inputs into network data inputs for ADB, WDB, Binswitch and Touchswitch.

Hotbox Node – SN2 (Speed Node)

The SN2 is a two input speed node, powered by 24 VDC. The node is able to monitor two independent pulse (speed) sources for dangerous under speed conditions. When the sensor output is at zero speed, the Node has a unique 4 digit address which is used to communicate to the T500 via a two wire RS485 connection. The SN2 processes information from electrical inputs into network data inputs.

HazardMon

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.

Continuous Improvements

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.
### TEMPERATURE MONITORING

#### T400N Elite Hotswitch

The T400N Elite Hotswitch is a microprocessor controlled temperature monitor, which works in conjunction with PTC 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 alarm 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
  - Modbus RTU connection

- Applications:
  - Bucket elevators and conveyors

- Input supply voltage:
  - 100 to 240 VAC
  - 24 VDC (universal supply)

- Sensor supply:
  - 24 VDC

- Approvals:
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil - InMetro
  - China - Nepsi
  - Worldwide – IECEx

- H x W x D:
  - 246 x 188 x 102mm

### BELT ALIGNMENT MONITORING

#### B400 Elite

The B400 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 condition is detected.

- Features:
  - Uses up to 4 magnetic (reductance) 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 for general testing

- Sensor options:
  - Touchswitch: force activated

- Applications:
  - Belt bucket elevators and conveyors

- Input supply voltage:
  - 100 to 240 VAC
  - 24 VDC (universal supply)

- Sensor supply:
  - 24 VDC

- Approvals:
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil - InMetro
  - China - Nepsi
  - Worldwide – IECEx

- H x W x D:
  - 246 x 188 x 102mm

#### A400 Elite

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 (reductance) 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

- Applications:
  - Belt bucket elevators

- Input supply voltage:
  - 100 to 240 VAC
  - 24 VDC (universal supply)

- Sensor supply:
  - 24 VDC

- Approvals:
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil - InMetro
  - China - Nepsi
  - Worldwide – IECEx

- H x W x D:
  - 246 x 188 x 102mm

### HAZARD MONITORING SYSTEMS

- For more detailed product information, please visit: www.go4b.com
## MISALIGNMENT SENSORS

### BELT MISALIGNMENT MONITORS

#### TOUCHSWITCH

- **Features**
  - Hardened stainless steel face
  - External test test for quick and simple system testing
  - Not affected by dust or material build up
  - No calibration or sensitivity adjustment needed
  - No moving parts

- **Supply voltage**
  - 12-24 VDC

- **Compatible 4B control unit**
  - Watchdog
  - T500
  - B400

- **Approvals**
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil – InMetro
  - China – Nepsi
  - Worldwide – IECEx

- **Applications**
  - Belt misalignment on elevators and conveyors

#### WDA HIGH POWER SENSOR

- **Features**
  - Long range magnetic sensor unaffected by material build up
  - Continuously monitors the moving elevators, 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

- **Supply voltage**
  - 24 VDC

- **Compatible 4B control unit**
  - Watchdog

- **Approvals**
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil – InMetro
  - China – Nepsi
  - Worldwide – IECEx

- **Applications**
  - Belt alignment
  - Belt speed (when used with Watchdog)
  - Chain slack / break monitor (page 21)

#### BAP

- **Features**
  - Magnetic sensor unaffected by material build up
  - Continuously monitors the moving elevators, 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

- **Approvals**
  - Europe – ATEX
  - USA, Canada – CSA
  - Brazil – InMetro
  - China – Nepsi
  - Worldwide – IECEx

- **Applications**
  - Belt alignment
  - Belt alignment sensor

### MISALIGNMENT SENSORS

#### BELT ALIGNMENT & RIP DETECTORS

#### BULLDOG

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

- **Approvals**
  - Europe – ATEX
  - Worldwide – IECEx

- **Applications**
  - Open belt conveyor alignment monitoring
  - Belt rip detection

- **Supply voltage**
  - 110-240 VAC

- **Compatible 4B control unit**
  - Watchdog
  - T500
  - B400

- **Approvals**
  - Europe – ATEX
  - USA, Canada – CSA

- **Applications**
  - Safety stop switch for open belt conveyors

#### PULLSWITCH

- **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**
  - Europe – ATEX
  - USA, Canada – CSA

- **Applications**
  - Safety stop switch for open belt conveyors

### SAFETY SWITCHES

#### CONVEYOR SAFETY STOP SWITCH

- The Pullswitch is a failsafe taut wire emergency pull cord stop switch for open conveyors. PVC coated steel pull wires and pigtailed 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 60m 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.

- **Features**
  - Installed on open belt conveyor

- **Approvals**
  - Europe – ATEX
  - USA, Canada – CSA

- **Applications**
  - Safety stop switch for open belt conveyors
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.

M300 SLIPSWITCH 2 OR 5-WIRE

- 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 protest against dangerous belt slip and underspeed conditions.

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 inducive 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.

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. Totally sealed and simple to calibrate.

MILLISPEED - US

- Monitors Rotating Machinery for Dangerous Underspeed Conditions
- 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. Totally sealed and simple to calibrate.
INDUCTIVE SENSORS

P100 INDUCTIVE SENSOR

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

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

Compatible with the Whirligig speed sensor mount

P300 INDUCTIVE SENSOR

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

Style
- 30mm cylindrical

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

Output
- FET transistor output
- PNP or NPN output

Approvals
- Europe – ATEX
- USA, Canada – CSA
- Brazil – InMetro
- China - Nepsi
- Worldwide – IECEx

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

ACCESSORIES

WHIRLIGIG

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 machinery. This allows the sensor to easily be tested and repaired out of the machinery without affecting the performance of the sensor, as the entire assembly moves as a unit. Personal safety is also improved since the mounting 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

MagCon™ Magnetic Connector (Patented)
31mm diameter magnetic coupler with 150 lb/660N of pulling force for connecting M12 thread to rotating shaft. Saves on drilling and tapping.

- 304 or 316 stainless steel
- Fully self-contained (no guards required)
- 10-30Vdc Supply voltage
- Multiple outputs
- Model dependent: 10-30Vdc
- 20-240VAC

SPEECH RELAY

DIN rail mounted speed relay can be used with any PNP or NPN pulse input sensor for providing a user selectable underspeed relay contact output in alarm or shutdown machinery.

ROTECH ENCODERS

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)
- Fully self-contained (no guards required)

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

Output
- Model dependent:
- Intrinsic safe
- PNP
- Quadrature

Approvals
- Europe – ATEX
- Worldwide – IECEx
- USA & Canada – CSA

Applications
- Conveyors, bucket elevators or any shaft speed measurement

ALUMINUM SHAFT ENCODER

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

Style
- Cast aluminium construction
- Fully self-contained (no guards required)

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

Output
- Model dependent:
- Intrinsic safe
- PNP
- Quadrature

Approvals
- 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
- Fully self-contained (no guards required)

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

Output
- Model dependent:
- Intrinsic safe
- PNP
- Quadrature

Approvals
- 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:
- Intrinsic safe
- PNP
- Quadrature

Approvals
- Europe – ATEX
- Worldwide – IECEx
- USA & Canada – CSA

Applications
- Belt speed monitoring applications

ACCESSORIES

SPEED RELAY

DIN rail mounted speed relay can be used with any PNP or NPN pulse input sensor for providing a user selectable underspeed relay contact output in alarm or shutdown machinery.

TACHO DISPLAY

Bright 25mm high LED display unit for connection to any PNP or NPN pulse input sensor to indicate shaft speed. The unit incorporates a clearly visible under-speed indicator, a bright 25mm high LED display and a relay contact output available.
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 bearing block specifically designed to have a 4B ADB sensor directly inserted. With integral controls and temperature display, the unit reads the sensor to the desired trip point, and allows quick and easy real time 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 operating correctly. To test, the heater block should be set above the control unit 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.

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

ADB BEARING SENSOR TESTER

BEARING TEMPERATURE SENSORS

ADB

The ADB series have been designed to allow the depth of the sensor to be adjustable depending on your 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 fitting on a bearing housing. Each sensor is fitted with a zerk fitting 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 HotBus and Watchdog systems, or a Pt100 - RTD type for PLC and DCS systems.

Features
- Screw in positive mounting installation
- Grease zerk for bearing lubrication
- Adjustable depth (50, 100, 200mm probes)
- 1/4” NPT (brass body)
- NTC or Pt100 RTD versions – continuous temperature

Sensor options
- NTC Thermistor
- Pt-100 4-wire RTD
- Selectable probe length: 50, 100 and 200 mm

Input supply voltage
- 12/24 VDC (current limited)

Compatible 4B control unit
- Watchdog
- T500
- T400

Approvals
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

Applications
- Bearing temperature control
- Temperature measurement

Milli-Temp

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 fitting to allow lubrication of the bearing without the need for removal of the sensor.

Features
- 4-20 mA output
- Screw in positive mounting installation
- Grease zerk for bearing lubrication
- 1/2” NPT conduit entry
- Continuous temperature monitoring
- 304 stainless steel body

Sensor options
- Selectable probe length: 50, 100 and 200mm
- 4-20 mA loop

Input supply voltage
- 15-28 VDC (24VDC nominal)

Compatible 4B control unit
- Watchdog

Approvals
- USA, Canada - CSA

Applications
- Bearing temperature control
- Temperature measurement

BEARING TEMPERATURE SENSORS

WDB7 LUG STYLE

The WDB7 is a lug style NTC, Pt-100 or PTC thermistor type surface temperature monitoring and has been designed to bolt directly onto a bearing housing, motor, gearbox, or machine casing. The mounting hole is 8mm from the factory, but can be drilled up to 13mm if needed. The sensor can be connected to a PLC or to a hazard monitoring system, such as 4B’s T500 HotBus Elite, Watchdog Elite, or T400 Elite. The connections are not polarity sensitive therefore special connections requirements are eliminated.

Features
- Screw in installation
- Grease zerk for bearing lubrication
- Continuous temperature monitoring
- 1/2” NPT conduit entry

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
- T500
- T400

Approvals
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

Applications
- Surface temperature measurement and control

WDB8

The WDB8 series is a range of bearing temperature sensors designed to screw directly into an existing 1/4” BSP grease zerk filling 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.

Features
- Screw in positive mounting installation
- Grease zerk for bearing lubrication
- 1/4” BSP (brass body)
- Cable with protective anti-bend cover

Sensor options
- NTC Thermistor
- PTC (trip temperature selected at time of purchase)

Input supply voltage
- 12/24 VDC (current limited)

Compatible 4B control unit
- Watchdog
- T500
- T400

Approvals
- Europe – ATEX
- USA, Canada – CSA
- Worldwide – IECEx

Applications
- Bearing temperature control
- Temperature measurement

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

#### Features
- Push button calibration
- Digital display
- Inner timer
- Automatic material build-up compensator
- Attachable SS probes

#### Style
- 1 inch BSP

#### Supply voltage
- 120/240 VAC
- 24 VDC

#### Output
- 1 set of voltage-free changeover relay contacts

#### Approvals
- Europe - ATEX
- USA, Canada - CSA
- IECEx - worldwide

#### Applications
- Material point level indication in silos, bins and other vessels.

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### AUTO-SET™ REMOTE CONTROL

Auto-Set™ Remote Control
Remote control unit with digital display and calibration push buttons.

### AUTO-SET™ FLUSH PROBE

Auto-Set™ Flush Probe
RF capacitance heavy-duty plugswitch

#### Features
- Push button calibration
- Digital display
- Inner timer
- Automatic material build-up compensator
- No moving parts

#### Style
- 1 inch BSP

#### Supply voltage
- 120/240 VAC
- 24 VDC

#### Output
- 1 set of voltage-free changeover relay contacts

#### Approvals
- Europe - ATEX
- USA, Canada - CSA
- IECEx - worldwide

#### Applications
- Material point level indication in thick-walled silos.

### LEVEL INDICATORS

#### BINSWITCH

The Binswitch is a capacitive sensor for the detection of blockages in chutes, discharge pipes 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-contained
- Magnet calibration

#### Style
- 30mm cylindrical

#### Supply voltage
- 24 to 240 VAC/VDC

#### Output
- Programmable high or low level detection

#### Approvals
- Europe - ATEX
- IECEx - worldwide

#### Applications
- Plug condition in chutes, discharges and pipes.

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### 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 conveyer 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
- Vertical extensions to 2m (max.) wire rope

#### Supply voltage
- 120/240 VAC
- 24 VDC

#### Output
- 1 set of voltage-free changeover relay contacts

#### Approvals
- Europe - ATEX
- IECEx - worldwide

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

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### RLI SHAKER

A rotary paddle switch used to detect high / low levels of bulk granular solids in bins, tanks and silos. It can also be used as a plug sensor in spouts, where long life and failsafe detection is required. The RLI “Shaker” rotates clockwise, then counter-clockwise and then shakes to shed any excess material build-up.

#### Features
- Failsafe rotation detection
- Shaking action for shedding material build-up
- Use adjustable torque control
- Direct stepper motor drive
- No clutch and no gearbox
- Built-in adjustable timer

#### Style
- Glass-fibre reinforced nylon housing
- Vertical extensions to 2m (max.) wire rope

#### Supply voltage
- 120/240 VAC
- 24 VDC

#### Output
- 1 set of voltage-free changeover relay contacts

#### Approvals
- USA, Canada - CSA

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

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### ACCESSORIES

#### BINSWITCH ACCESSORIES

- BAS3 Abrasion Shield
  - Polyurethane abrasion shield for ATEX Binswitch.
- Mounting Plate
  - Powder coated mild steel mounting plates with 1 1/4-inch NPT or 1 inch BSP, half or full coupling. 50% with Automatic Roto-Level 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.
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 proper 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

4BJ JUNCTION BOXES

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
- Europe – ATEX

Applications
- Electrical installations in dust – explosive environments

4BJ Junction Boxes

DSM INLINE JUNCTION BOX

Features
- Ideal for extending sensor cables within ATEX hazard areas
- Complete with ATEX glands and mounting bracket

Terminal springs
- 5 x 2.5mm²

Approvals
- Europe – ATEX

Applications
- Electrical installations in dust – explosive environments

DSM Inline Junction Box

BROKEN OR SLACK CHAIN

MONITORING FOR DRAG CHAIN CONVEYORS

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

Speed Relay

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.
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”, need 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.

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.

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 ensure 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.

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

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

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

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.

- 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

ASK FOR OUR CATALOGUES

TOOL & SERVICES

ATEX COMPATIBILITY

- 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 ensure 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.

Also in the 4B Range

Belt Fasteners

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

Belt Fasteners

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

Conveyor Chains

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

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

Sprockets & Trailers

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

Aluminium Electrolytic Capacitors

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

Installation Guides

- Technical Manuals
- Installation Guides
- Wiring Guides
- CAD Drawings
- Certificates...

VISIT OUR WEBSITE FOR DETAILED TECHNICAL INFORMATION:
www.go4b.com
Our policy is one of continuous improvement; therefore we reserve the right to amend specification without prior notice. All information contained herein is provided in good faith and no warranty is given or implied. E&OE.