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PRODUCT INFORMATION BULLETIN

Overspeed Monitor

Fail Safe Overspeed Switch

MODEL 220-4100-120VAC

DESCRIPTION

BWI Eagle's Overspeed monitors speed and detects motion in all types of machinery and apparatus. The model 220-4100-120VAC can monitor speed ranges of 30 - 3000 RPMs and includes a user-programmable 5-30 second fault timer. The Overspeed monitor utilizes a non-contacting proximity sensor that may be remotely located up to two miles from the control unit. Enclosed in durable polycarbonate, the control unit conveniently mounts inside an existing electrical panel or O.E.M. control box. The aluminum mounting plate is removable for mounting to DIN rail. The up-front digital display conveniently shows the current RPM in real time. This eliminates setting "guesswork" by constantly showing the actual RPM being monitored. The Overspeed monitor is ideal for conveyors, crushers, fans, motors and other rotating apparatus.

INSTALLATION

Disconnect AC power before proceeding with installation

1. Mount the Overspeed monitor inside an existing control panel or other suitable protective enclosure
2. Make the following connections on the terminal strips:
3. Install EAGLE PROXIMITY SENSOR at roller or shaft. See sensor installation sheet.

TERMINAL	CONNECTION
Front	
1	Sensor Input Common (-)
2	Sensor Input (+)
3 -4	Run/Reset Input
5	No connection
6	No connection
7	No connection
8	No connection
Back	
9	N/C (2)
10	Common (2)
11	N/O (2)
12	N/C (1)
13	Common (1)
14	N/O (1)
15	120VAC Neutral
16	120VAC Hot

* Note - When AC power is applied to the unit, the relay will energize. If an overspeed condition or sensor fault condition is detected, the relay will de-energize.

TRIP POINT SET-UP

Apply power to the Overspeed monitor. If this is the first-time powering unit up, the default trip point is 30 RPM or PPM, the built-in fault timer is set to a 5 second default and the relay is on. (TRIP: 0030 / FAULT: 05 / REL: ON). Read through the following instructions before starting the set-up procedure.

- Momentarily depress the down arrow button once to highlight "TEST".
- Momentarily depress the down arrow a second time to highlight "TRIP".
- Momentarily depress the SET button to begin setting unit to the trip speed desired, starting with the 4th digit (the 1000s place). When highlighted, use the up/down arrow buttons to change number as needed. When 4th place is set correctly, momentarily depress the SET button to begin setting the 3rd (100s place) digit. Again, use the up/down arrow buttons to change the number. When set correctly, momentarily depress the SET button to begin setting the 2nd (10s place) digit. Use up/down arrow buttons as before to change the number, and once set, momentarily depress the SET button to begin setting the 1st and final digit.
- Review your settings for accuracy. If a digit needs to be adjusted, momentarily depress the SET button one or more times to get to the proper digit, then use the up/down arrows to switch number and when satisfied, press **and hold** the SET button – the RPM setting will highlight and then go back to normal. The SET button can then be released. The RPM setting will be maintained in non-volatile memory until changed by the operator.

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FAULT TIMER SET-UP

The default setting for the fault timer is 5 seconds. To set the timer to a range of 5 to 30 seconds (in increments of 5 seconds)

- Momentarily depress the down arrow to highlight "FAULT".
- Momentarily depress the SET button to highlight the timer in seconds.
- Use the up/down arrow buttons to increment the timer from 5 seconds up to a max of 30 seconds in 5 second increments
- When satisfied, press **and hold** the SET button – the timer setting will highlight then return to normal.

TESTING PROCEDURE

A test function has been provided to allow the operator to de-energize the internal control relay and stop the monitored equipment. To activate a test shutdown,

- Momentarily depress the down arrow button once to highlight "TEST".
- Depress and HOLD the SET button for approximately 3 seconds – the control relay will de-energize.
- Release the SET button. The relay will re-energize after the Run/Reset input is cycled

SET-UP and OPERATION

This unit can be set-up in two different configurations:

Overspeed AND Sensor Fault Monitoring

SET-UP - Install two wires from the run relay in your control circuit to terminals 3 and 4 on the socket of the overspeed monitor. These contacts must be normally closed, and must open when the equipment begins to run. For a manual reset circuit wire a normally open switch to terminals 3 and 4

OVERSPEED OPERATION - When an overspeed condition is detected, the control relay in the overspeed monitor will open to shut down the equipment and "TRIP" will blink on the display and the relay status will display "OFF". This relay will not reset until a contact closure is detected on terminals 3 & 4 and "TRIP" will stop blinking and the relay status will display "ON"

SENSOR FAULT OPERATION - When a sensor fault is detected, the control relay in the overspeed monitor will open to shut down the equipment and "FAULT" will blink on the display and the relay status will display "OFF". This relay will not reset until a contact closure is detected on terminals 3 & 4. Fault monitoring will restart when the run relay's contacts are opened again on terminals 3 & 4 and "FAULT" will stop blinking and relay status will be "ON".

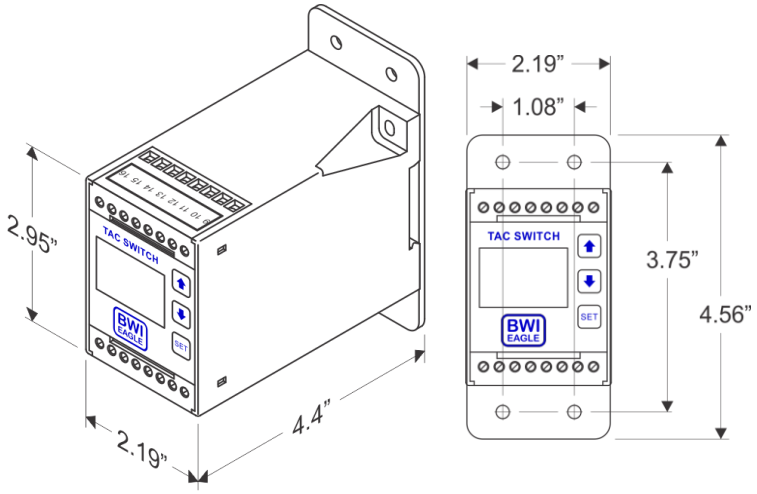
Overspeed Monitoring ONLY (No Sensor Fault Monitoring)

Fault timer setting will be ignored in this mode

SET-UP - Install a normally closed dry contact switch to terminals 3 and 4 on the socket of the overspeed monitor.

OVERSPEED OPERATION - When an overspeed condition is detected, the control relay in the overspeed monitor will open to shut down the equipment and "TRIP" will blink on the display and relay status will show "OFF". This relay will not reset until the normally closed switch on terminals 3 and 4 has been momentarily opened then re-closed. This will re-energize the control relay and "TRIP" will stop blinking and relay status will show "ON"

DIMENSIONS



SPECIFICATIONS

AC Input	120VAC 8W
Fuse Protected	1 amp
Speed Range	30 - 3000 RPM
Relay Contacts	DPDT 5 amp @ 120VAC
RPM Accuracy	+/- 0.4%
Repeatability	+/-0.1%
Fault Delay	5-30 seconds selectable in 5 second increments
Enclosure	Polycarbonate

REPLACEMENT AND OPTIONAL PARTS

Control Module	220-4100-120VAC
Threaded PVC Proximity Sensor	10-7139
I.S. Threaded PVC Proximity Sensor	10-7039
I.S. Zener Barrier	10-7072

INSTALLATION CROSS REFERENCE

Old Socket Mounted Overspeed Monitor

Overspeed Monitor
Fail Safe Overspeed Switch
MODEL 22-4100

New Plate Mounted Overspeed Monitor

Overspeed Monitor
Fail Safe Overspeed Switch
MODEL 220-4100-120VAC

Old Model 22-4100		New Model 220-4100-120VAC
TERMINAL	CONNECTION	TERMINAL
1	Sensor - Common (-)	1
2	Sensor - Positive (+)	2
3-4	Run/Reset Input	3-4
5	120VAC Hot	16
6	120VAC Neutral	15
11	Relay - Common (2)	10
12	Relay - N/O (2)	11

Note – as connections for the new Overspeed Monitor are located on the top of the unit, you may need to extend your connecting wires. This is perfectly acceptable.

DOCUMENT DATE: 09/17/2019 / PRODUCT REV: 1

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