



238 Pillow Street
Butler, PA 16001
724-283-4681
724-283-5939 (fax)
www.bwieagle.com

PRODUCT INFORMATION BULLETIN

BRAKEMAN Slope Car Overspeed Control Unit MODEL 15-2002

DESCRIPTION

The EAGLE BRAKEMAN™ overspeed unit is specifically designed to monitor the speed of mine slope cars. Utilizing advanced digital technology, this unit has eliminated the need to be pre-calibrated for the speed of your particular slope car. Digital setpoint switches allow the user to adjust the unit to trip at any desired speed from 1 - 999 RPM's. The single/dual channel PC Board also allows the user to set individual RPM trip-points for two speed slope cars. Setting both channels to the same RPM trip-point provides redundant monitoring on single speed slope cars.

INSTALLATION

REMOVE DC Power before proceeding with installation.

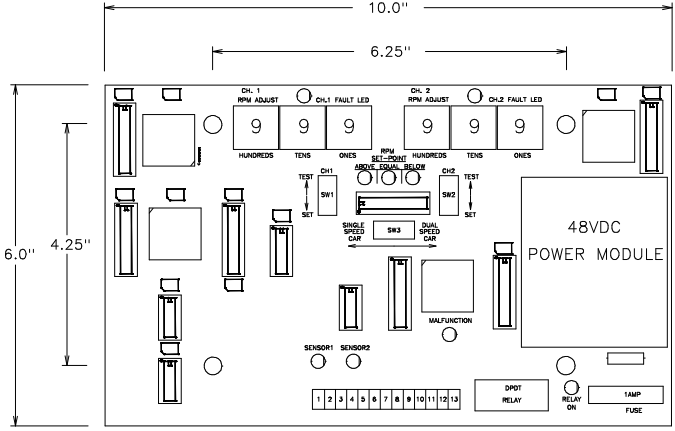
1. Mount the BRAKEMAN PC Board in a convenient location in the control panel of the slope car.
2. Connect 48VDC power, control relay contacts and sensors to the terminal strip points on the PC Board. (See terminal strip wiring information below)
3. Install EAGLE PROX SENSOR(S) on wheels of slope car. (See sensor installation sheet)

TERMINAL STRIP WIRING

| TERMINAL | CONNECTION |
|----------|--|
| 1 | Channel 1 Sensor Input |
| 2 | Sensor(s) - Common |
| 3 | Channel 2 Sensor Input |
| 4 - 5 | High Speed Input Contacts (Dual Speed Cars Only) |
| 6 | Relay - N/C (1) |
| * 7 | Relay - Common |
| * 8 | Relay - N/O (1) |
| * 9 | Relay - N/C (2) |
| * 10 | Relay - Common |
| * 11 | Relay - N/O (2) |
| 12 | +48 VDC Input |
| 13 | -48 VDC Input |

* Note - The Brakeman utilizes a fail-safe relay configuration. The relay contacts are shown above in their de-energized state.
Ex: The normally closed contacts would be open during normal operation

DIMENSIONS



SPECIFICATIONS

| | |
|-----------------------|-------------------------------|
| 48 VDC Input | 20 - 70 VDC |
| Fuse Protected | 1 amp |
| Operating Temperature | -40° to 60°C (-40° to +140°F) |
| Speed Range | 1 - 999 RPM |
| Speed Channels | 2 |
| Relay Contacts | DP/DT 4 amp @ 48 VDC |
| Response Time | 1/4 Second |
| Accuracy | 1% Full Scale |
| Repeatability | Better than .25% |

REPLACEMENT AND OPTIONAL PARTS

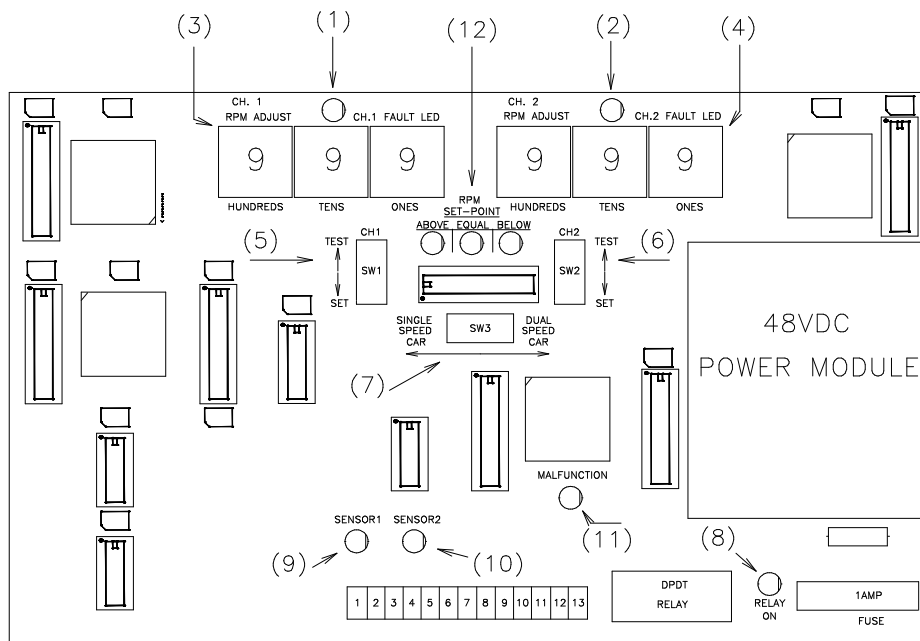
| DESCRIPTION | PART NUMBER |
|-------------------------------|-------------|
| Brakeman PCB | 15-2002 |
| Threaded PVC Proximity Sensor | 10-7139 |
| Relay | 99-REL-0020 |

BRAKEMAN

Slope Car Overspeed Control Unit

MODEL 15-2002

CONTROLS AND INDICATORS



- 1) **Channel #1 Fault LED** - Will illuminate momentarily while changing the RPM setting for Channel #1. If LED continues to illuminate after adjustment has been completed, the RPM switches are defective and the unit must be repaired.
- 2) **Channel #2 Fault LED** - Will illuminate momentarily while changing the RPM setting for Channel #2. If LED continues to illuminate after adjustment has been completed, the RPM switches are defective and the unit must be repaired.
- 3) **Channel #1 RPM Trip-point Switches** - Adjust switches to required RPM trip-point.
Ex: 2 6 5 = 265 RPM (or pulses per minute). **NOTE:** On dual speed cars, Channel #1 should be adjusted for the **low speed** RPM setting.
- 4) **Channel #2 RPM Trip-point Switches** - Adjust switches to required RPM trip-point.
Ex: 3 9 0 = 390 RPM (or pulses per minute). **NOTE:** On dual speed cars, Channel #2 should be adjusted for the **high speed** RPM setting.
- 5) **Channel #1 Test/Set Switch** - Pushing switch in the up (test) position will simulate an overspeed condition on Channel #1 and de-energize the control relay. Pushing switch in the down (set) position will activate the **RPM set-point LEDs (12)**. This allows the user to see the relationship between the RPM setting and actual RPM's being monitored by the sensor. By changing the RPM switches while holding this switch in the (set) position, the user can read the actual RPM's being monitored. (This feature will normally not be used because it will be impossible to set the switches while the slope car is moving).
- 6) **Channel #2 Test/Set Switch** - Pushing switch in the up (test) position will simulate an overspeed condition on Channel #2 and de-energize the control relay. Pushing switch in the down (set) position will activate the **RPM set-point LEDs (12)**. This allows the user to see the relationship between the RPM setting and actual RPM's being monitored by the sensor. By changing the

RPM switches while holding this switch in the (set) position, the user can read the actual RPM's being monitored. (This feature will normally not be used because it will be impossible to set the switches while the slope car is moving).

- 7) **Single/Dual Speed Switch** - Set switch toward the left position for single speed slope cars. Set switch toward the right position for dual speed slope cars.
- 8) **Relay Status LED** - When illuminated, indicates the control relay is energized (normal operation).
- 9) **Sensor #1 LED** - Pulses at the rate of speed being received by the sensor for Channel #1.
- 10) **Sensor #2 LED** - Pulses at the rate of speed being received by the sensor for Channel #2.
- 11) **Malfunction LED** - Will illuminate and de-energize the control relay when the card is not configured properly. Ex: Single/dual speed switch is set to **single** speed and a contact closure is detected by the low/high input on the terminal strip. (Switch should be set for **dua**l speed if the low/high input is used)
- 12) **RPM Set-Point LEDs** - Active only when Channel #1 or Channel #2 set switches are active.

Above LED - Indicates RPM switches are set higher than the incoming RPM's by the sensor.

Equal LED - Indicates RPM switches are equal to the incoming RPM's from the sensor.

Below LED - Indicates RPM switches are set lower than the incoming RPM's by the sensor.