BWI EAGLE

PRODUCT INFORMATION BULLETIN

TAC-MONITOR
Digital Speed Monitor
MODEL 220-8100-DC

DESCRIPTION

BWI Eagle's TAC-MONITOR converts rotary shaft speed (RPM) into analog 4-20mA output. This allows "true-slip" monitoring during the critical ramp-up period of conveyors. The TAC-MONITOR interfaces directly with the customer's PLC. Non-contacting proximity sensors can be utilized by remotely locating them 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 LCD screen conveniently shows the current RPM in real time. The TAC-MONITOR is ideal for conveyors, crushers, fans, motors and other rotating apparatus.

INSTALLATION

Disconnect DC power before proceeding with installation

1. Mount the TAC-MONITOR inside an existing control panel or other suitable protective enclosure

2. Make the following connections on the terminal strips:

TERMINAL	CONNECTION
Front	
1	No connection
2	No connection
3	4-20mA Output – Positive (+)
4	4-20mA Output – Common (-)
5	No connection
6	No connection
7	Sensor Input (+)
8	Sensor Input Common (-)
Back	
9	No connection
10	No connection
11	No connection
12	No connection
13	No connection
14	No connection
15	(-) 9-36VDC
16	(+) 9-36VDC

3. Install EAGLE PROXIMITY SENSOR at roller or shaft. See sensor installation sheet.

SETUP AND DISPLAY INDICATORS

When power is applied to the unit, the display will show the following: "000" RPM (Displays the actual RPM from the remote speed senor).

"Line Open" – If displayed, indicates user should check 4-20mA line.
0-500 ohm is maximum line resistance.

"10-XXXX RPM" – Displays the current speed range/model of TAC-MONITOR. If this is NOT the correct range required for your installation, you can select the range by following the steps below:

1) Press the Up or Down arrow button until "RANGE" is highlighted.

2) Press the SET button. The thousands digit of the range will now be highlighted.

3) Use the Up/Down arrows to adjust the thousands digit. Press SET momentarily to move to the hundreds, tens and ones digits. Adjust those accordingly with the up/down arrow keys.

4) When the speed range is correct press the SET button and hold it for 2 seconds until the whole range number highlights. Release the SET button and "RANGE" will now be highlighted again. Setting is complete

* If you don't press a button for 10 seconds before completing the range setup then the display will go back to normal operation and **keep** the existing speed range.

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APPLICATION/SPEED INFORMATION

All models have a preset low end RPM range of 10 RPM (0.1666 hz X 60). The following formulas/examples can be used to determine the Frequency Range (SPAN) and corresponding 4-20mA output at any monitored speed.

1) Convert top end RPM into a Frequency in hertz (hz).
   XXXX RPM / 60 = XXX.X hz
2) Subtract Frequency in hertz from 0.1666 hz (10 RPM)
   XXX.X hz – 0.1666 hz = XXX.X SPAN in RPM's
3) Divide the SPAN in RPM by 160 = RPM's per each .1mA increment of the output.
   XXX.X RPM / 160 = XX RPM per .1mA output

Example below shows the speed information for 150 RPM/Model:

This example has an INPUT FREQUENCY RANGE of .166hz to 2.50hz. By installing 1 (one) target on the roller or shaft, the following formula can be used to convert to RPM's:

INPUT FREQUENCY * 60 = RPM

Examples:

.166hz * 60 =	9.96 RPM
1.33hz * 60 =	79.80 RPM
2.50hz * 60 =	150.00 RPM

This example unit has a factory set span of 2.334hz (2.50hz - .166hz). Multiplying 2.334hz * 60 will give the span in RPM's.
2.334hz * 60 = 140.04 RPM

Dividing 140.04 / 160 will give the RPM resolution for each .1mA increment.
140.04 / 160 = .87 RPM per .1mA output

By adding additional targets to the roller or shaft, a lower RPM range can be obtained. The following examples will show how to calculate the speed range for 4 (four) targets.

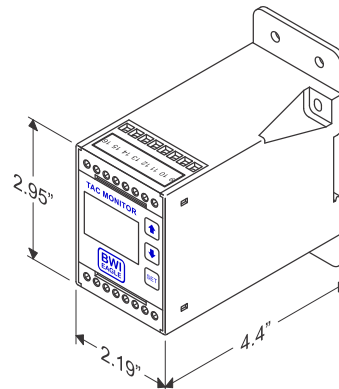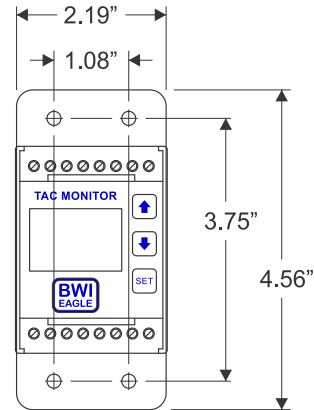INPUT FREQUENCY * 60 / 4 TARGETS = ACTUAL RPM

Examples:

.166hz * 60 / 4 =	2.49 RPM
1.33hz * 60 / 4 =	19.95 RPM
2.50hz * 60 / 4 =	37.50 RPM

CONCLUSION: By changing the number of targets on the roller or shaft, different speed ranges can be obtained from the same model.

Examples:

1 Target = 9.96 RPM to 150.00 RPM
2 Targets = 4.98 RPM to 75.00 RPM
4 Targets = 1.77 RPM to 37.50 RPM

DIMENSIONS

SPECIFICATIONS

DC Input	9-36VDC
Fuse Protected	1 amp
Output	Proportional 4-20mA D.C.
Linearity	Better than 1%
Accuracy	Better than 1%
Repeatability	Better than .5%
Enclosure	Polycarbonate

REPLACEMENT AND OPTIONAL PARTS

Control Module	220-8100-DC
Threaded PVC Proximity Sensor	10-7139
I.S. Threaded PVC Proximity Sensor	10-7039
I.S. Zener Barrier	10-7072