BWI EAGLE

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PRODUCT INFORMATION BULLETIN

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

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 AC 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	AC Input - 200-250VAC
16	AC Input - 200-250VAC

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

2.95"L x 2.19"W x 4.4"H

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 from 22 other preset speed ranges/models by following the steps below:

1) Depress **and hold** the "set" button for approximately 4 seconds. The display will now change to show models from 100 RPM top range to 6000 RPM top range.

2) Now using the "arrow" keys, select the desired range/model from the list.

3) With the correct model "highlighted," depress **and hold** the "set" button for approximately 4 seconds. The display will now change back to normal operation with the new RPM range shown on the screen.

* If you do not make a selection within approximately 10 seconds, the display will go back to normal operation and **keep** the existing model speed range.

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This New model has ALL the "previous style" TAC-MONITOR speed ranges included in the firmware, this allows for "22-8100" models to be replaced without having to change computer programming.

i.e. If you're previous model was 22-8100-260A, you'd select the 260RPM model during set-up – see below for available preset speeds:

AVAILABLE TOP END SPEED SETTINGS		
Screen 1		
100 RPM	225 RPM	350 RPM
150 RPM	260 RPM	360 RPM
160 RPM	300 RPM	400 RPM
200 RPM	325 RPM	500 RPM
Screen 2 (⟶)		
600 RPM	1200 RPM	4100 RPM
660 RPM	1800 RPM	4500 RPM
800 RPM	2000 RPM	6000 RPM
1000 RPM	2500 RPM	

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.
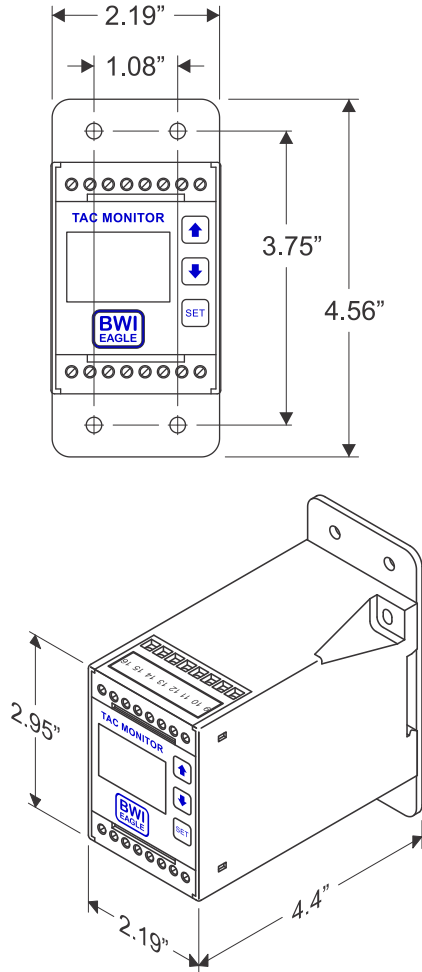
Examples:

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

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DIMENSIONS

SPECIFICATIONS

AC Input	200-250VAC 50/60hz @ 4W
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	220-8100-220VAC
Threaded PVC Proximity Sensor	10-7139
I.S. Threaded PVC Proximity Sensor	10-7039
I.S. Zener Barrier	10-7072