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# PRODUCT INFORMATION BULLETIN

**TAC-SWITCH**  
Digital Speed Switch  
**MODEL 220-8000-DC**  
PA BOTE APPROVAL: 1207-90

## DESCRIPTION

BWI Eagle's TAC-SWITCH monitors speed and detects motion in all types of machinery and apparatus. The model 220-8000-DC can monitor speed ranges of 6 - 3000 RPMs and includes a user-programmable 0-30 second ramp-up timer. The TAC-SWITCH 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 Tac-Switch is ideal for conveyors, crushers, fans, motors and other rotating apparatus.

## INSTALLATION

Disconnect DC power before proceeding with installation

1. Mount the TAC-SWITCH inside an existing control panel or other suitable protective enclosure
2. Make the following connections on the terminal strips:

TERMINAL	CONNECTION
<b>Front</b>	
1	No connection
2	No connection
3	No connection
4	No connection
5	No connection
6	No connection
7	Sensor Input (+)
8	Sensor Input Common (-)
<b>Back</b>	
9	N/C (2)
<i>Note – wire to terminals 10 &amp; 11 if driving a relay</i>	
10	Common (2)
11	N/O (2)
12	N/C (1)
<i>Note – wire to terminals 13 &amp; 14 if driving a PLC input</i>	
13	Common (1)
14	N/O (1)
15	(-) 9-36VDC
16	(+) 9-36VDC

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



## TRIP POINT SET-UP

Apply power to Tac Switch. If this is the first time powering unit up, the default trip point is 6 RPM or PPM, the built-in ramp-up timer is disabled and the relay is off. (TRIP: 0006 / RAMP: 0S / REL: OFF). 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 4<sup>th</sup> digit (the 1000s place). When highlighted, use the up/down arrow buttons to change number as needed. When 4<sup>th</sup> place is set correctly, momentarily depress the SET button to begin setting the 3<sup>rd</sup> (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 2<sup>nd</sup> (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 1<sup>st</sup> 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.

# TAC-SWITCH

## Digital Speed Switch

### MODEL 220-8000-DC

## RAMP-UP TIMER SET-UP

The default setting for the ramp-up timer is 0 seconds (timer disabled). To set the timer for a 1 to 30 second ramp-up period, follow the procedure below:

- Momentarily depress the down arrow to highlight "RAMP".
- Momentarily depress the SET button to highlight the timer in seconds.
- Use the up/down arrow buttons to increment the timer from 0 seconds up to a max of 30 seconds.
- 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,

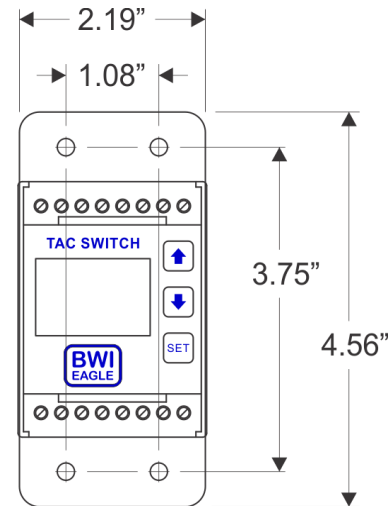
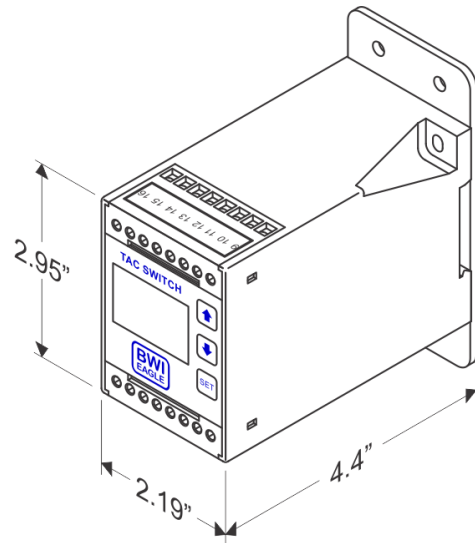
- Momentarily depress the down arrow button once to highlight "TEST".
- Depress and HOLD the SET button for approximately 3 seconds – the control relay will de-energize.
- Release the SET button. There is a safety delay that will keep the control relay off for 10 seconds after it has de-energized. The relay will automatically re-energize after the delay if RPM speed above the programmed trip point is detected.

## ADJUSTING RAMP-UP TIMER AFTER TAC SWITCH IS INSTALLED AND WIRED INTO CONTROL CIRCUIT

There may be times when after installation the ramp-up timer is found to be set to too short a period of time. This presents a problem because when the equipment being monitored is shut down, there is also no power going thru the Tac Switch. The following procedure should be performed to allow setting of the ramp-up timer on the next equipment start-up cycle:

- Before starting the monitored equipment, depress **and hold** the SET button until the equipment start-up sequence has been initiated – the display of the Tac Switch will be powered on, "RAMP" will be highlighted and the control relay (REL) will be "ON" (energized).
- Release the SET button then use the up arrow button to increment the ramp-up timer to the desired number of seconds (max of 30).
- Depress and release the SET button to "write" the new ramp-up timer setting in to the Tac Switch. The new setting will be used on the next equipment start-up sequence.

## DIMENSIONS



## SPECIFICATIONS

DC Input	9-36VDC
Fuse Protected	1 amp
Speed Range	6 - 3000 RPM
Relay Contacts	DPDT 5 amp @ 120VAC
Safety Delay	1 Second
Response Time	1 Second or Less
Enclosure	Polycarbonate

## REPLACEMENT AND OPTIONAL PARTS

Control Module	220-8000-DC
Threaded PVC Proximity Sensor	10-7139
I.S. Threaded PVC Proximity Sensor	10-7039
I.S. Zener Barrier	10-7072

# TAC-SWITCH

## Digital Speed Switch

### MODEL 220-8000-DC

#### TYPICAL BELT STARTER (Ramp-up Timer Disabled (Default))

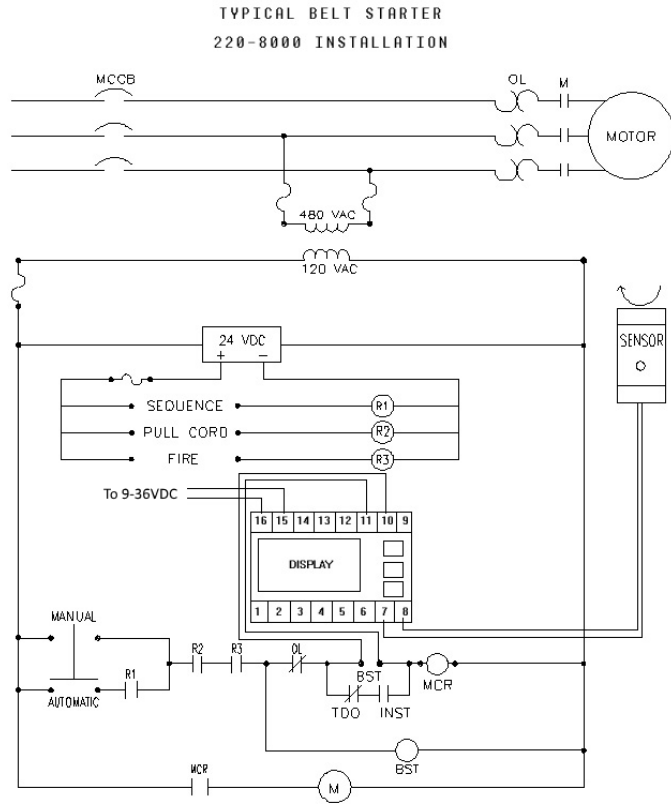


FIGURE 1

#### TYPICAL BELT STARTER (Ramp-up Timer Enabled)

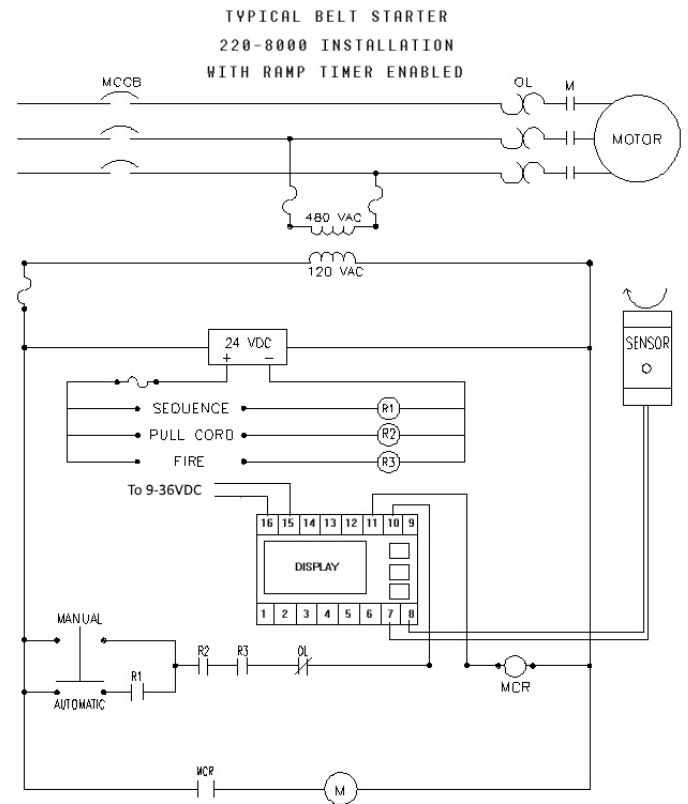


FIGURE 1

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# INSTALLATION CROSS REFERENCE

**Old Socket Mounted Tac Switch**



**New Plate Mounted Tac Switch**

**TAC-SWITCH**  
Critical Speed Switch  
**MODEL 22-8000**

**TAC-SWITCH**  
Digital Speed Switch  
**MODEL 220-8000-DC**

TYPICAL BELT STARTER  
22-8000 INSTALLATION

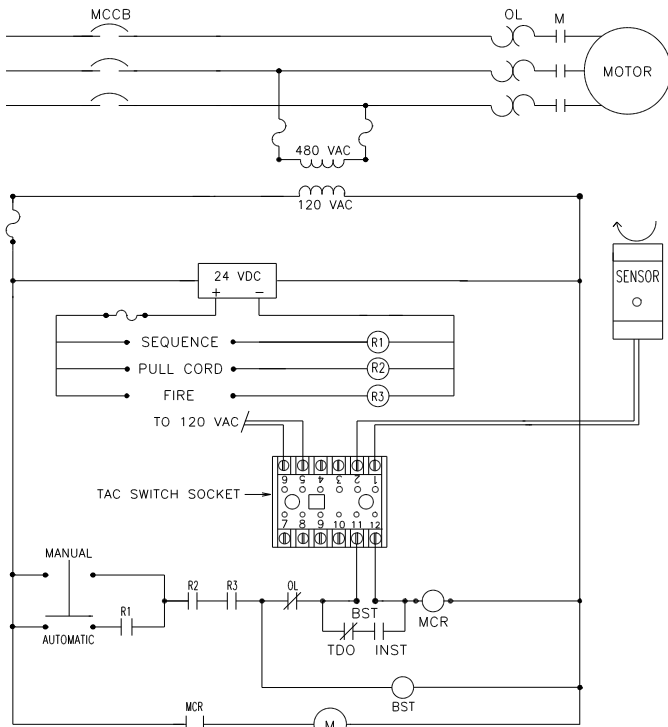


FIGURE 1

TYPICAL BELT STARTER  
220-8000 INSTALLATION

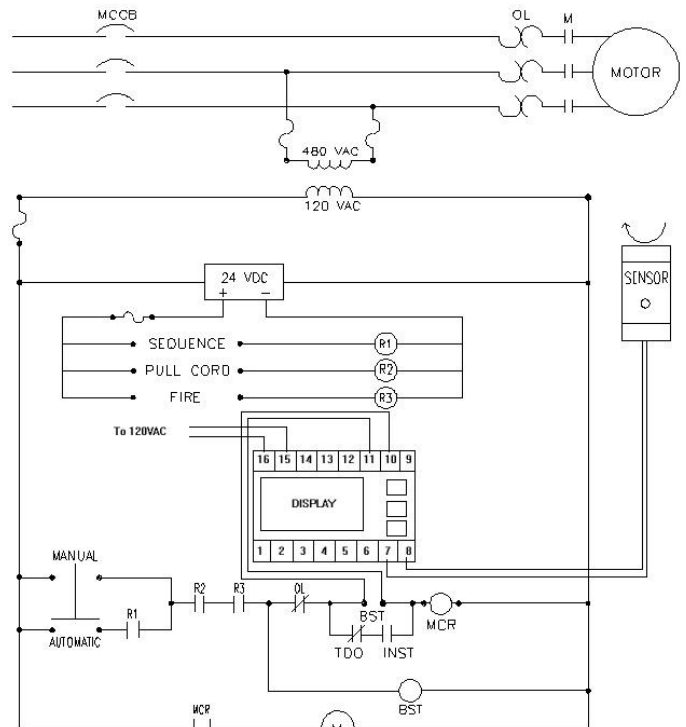


FIGURE 1

**Old Model**  
**22-8000-DC**



**New Model**  
**220-8000-DC**

TERMINAL	CONNECTION	TERMINAL
1	Sensor - Common (-)	8
2	Sensor - Positive (+)	7
5	(+) 9-36VDC	16
6	(-) 9-36VDC	15
11	Relay - Common (2)	10
12	Relay - N/O (2)	11

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