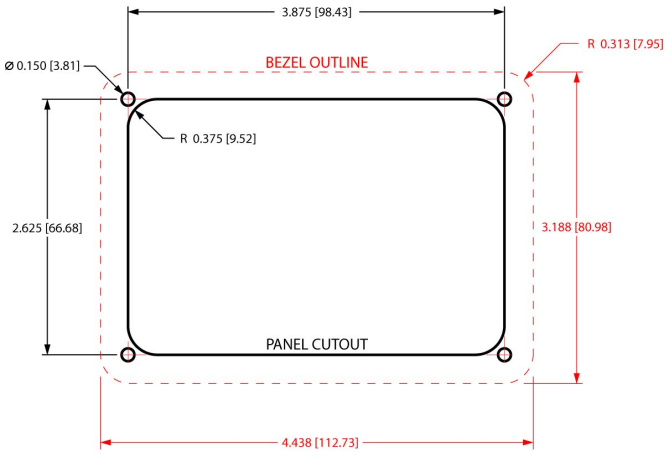
# Twister™ – Analog Electronic Throttle OEM Quick Manual

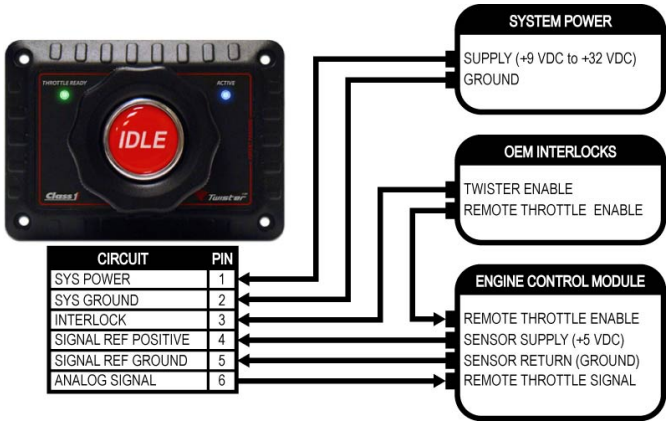
## INSTALLATION

Mount the Twister™ (p/n 119971) on the operator's panel with four #6 screws and nuts. The dimensions in the detail below are in inches [millimeters].




## WIRING

The Twister has a single six (6) pin Deutsch connector. The mating connector is a DT06-6S.




## IDLE BUTTON OPERATION

The Twister's IDLE button is used to set the engine RPM back to idle (and enter passwords for configuration).

Press and hold the IDLE button for a half second and the engine ramps down to the configured idle RPM. The ACTIVE LED remains ON while the Twister ramps the engine to idle and then it turns OFF.

## CONTROL KNOB OPERATION

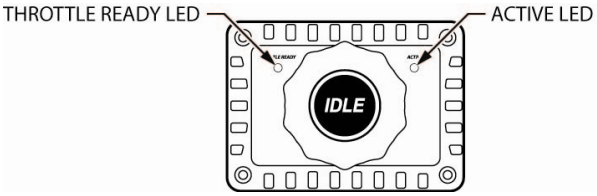
The Twister's control knob is used to control engine RPM (and enter passwords for configuration).

The "increase RPM" direction of the control knob can be configured for clockwise or counter-clockwise rotation (clockwise is default).

The control knob utilizes 5 ¼ turns for full span of output voltage (from idle to maximum).

## LED OPERATION

The Twister has two (2) LEDs located on its front panel on either side of the control knob.




**Throttle Ready LED:**

The green THROTTLE READY LED is ON when the Twister's interlock (pin 3) is active. This indicates the Twister is ready for operator initiated control via the control knob.

The THROTTLE READY LED flashes when the Twister's analog signal is not within the valid range. No throttle control is permitted when the THROTTLE READY LED is flashing.

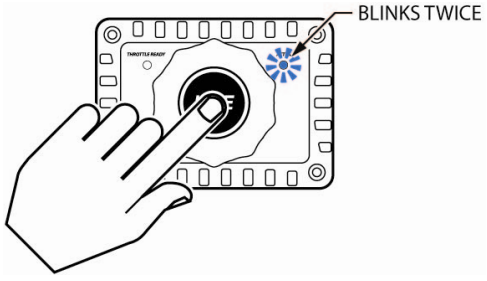
**Active LED:**

The blue ACTIVE LED is ON when the Twister's knob has been turned in the increase RPM direction. This LED indicates the Twister is actively controlling the engine with its analog output voltage.

The ACTIVE LED flashes when the operator is rotating the control knob while the Twister's output voltage is at the configured minimum or maximum.

## ENTERING PASSWORDS

The Twister utilizes passwords to modify its operational parameters. All operational parameters are stored in memory and will not be lost when power is disconnected.




To enter a password:

- **Press and hold** the IDLE button until the ACTIVE LED blinks twice (two seconds). **Continue holding** the IDLE button while entering the password.
- Each clockwise ↻ rotation will turn the ACTIVE LED ON for a half- second and each counter-clockwise ↺ rotation will turn the THROTTLE READY LED ON for a half-second.
- Wait for the LED indication to turn OFF before rotating the knob again.

*If an error is made while entering a password, release the IDLE button to clear and then re-attempt the password from the beginning.*

## ANALOG OUTPUT VOLTAGE CONFIGURATION

Engine manufacturers have different requirements for the analog voltage input into their Engine Control Modules. Some manufactures may require and idle voltage of 0.7 VDC and a maximum voltage of 4.0 VDC and others may require an idle voltage of 1.0 VDC and a maximum voltage of 3.7 VDC.

The Twister allows configuration of its minimum and maximum analog output voltage for meeting the analog voltage requirement of Engine Control Module. The Twister's default analog output voltage range is 0.25 VDC to 4.2 VDC.

**Idle voltage configuration:**

Enter the password -

Release the IDLE button.

Make certain the interlock input (pin 3) is active, the engine is running, and the ECM's remote throttle enable is active.

Rotate the Twister's knob in the INCREASE RPM direction (clockwise is default) until the engine's RPM increases.

Rotate the Twister's knob in the DECREASE RPM direction (counter-clockwise is default) until the engine's RPM has just reached its natural idle RPM.

Press the IDLE button for one (1) second to save the idle voltage.

**Maximum voltage configuration:**

Enter the password -

Release the IDLE button.

Make certain the interlock input (pin 3) is active, the engine is running, and the ECM's remote throttle enable is active.

Rotate the Twister's knob in the INCREASE RPM direction (clockwise is default) until the desired maximum engine RPM is reached.

Press the IDLE button for one (1) second to save the maximum voltage.

The analog output voltage configurations are saved in memory and will not be lost due to power interruption or by unplugging the Twister's connector.

## KNOB ROTATION CONFIGURATION

The Twister allows the knob rotation direction for increase RPM to be configured. The default is clockwise rotation yields an increase in engine RPM. But this may be changed to counter-clockwise rotation yields an increase in engine RPM by entering a password.

Clockwise rotation equals increase engine RPM (**default**):

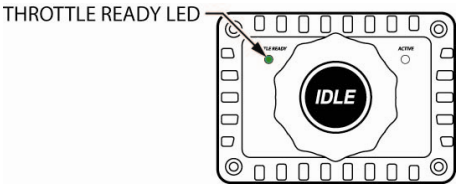
Counter-clockwise rotation equals increase engine RPM:

## INTERLOCKING

The interlock input (pin 3) must be active before the Twister will allow control of the engine's RPM.

It is the OEM's responsibility to create a safe interlocking scheme to activate the Twister's interlock input.

The Twister's green THROTTLE READY LED will ON when the interlock input is active. The Twister is now ready for operator initiated control.




The Twister allows configuration of the interlock input's (pin 3) activation polarity (positive voltage or ground).

Positive polarity interlock configuration password (**default**):

Ground polarity interlock configuration password:

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