EMIT Total Solution

Installation Manual
Governor

August 2016

Contents

CONVENTIONS USED

Within an instructional section:

Bold text refers to required tools.

Underlined text refers to EMIT item numbers, kit components, or assembly components.

Italicized text refers to items or parts already existing on the engine, compressor, or panel.

	Important notes or warnings

	Tips, examples, and suggested practices

EMIT INTERFACE MODULE (EIM) INSTALLATION

MOUNTING THE EIM

The EIM enclosure is designed to be weatherproof, but care should be taken when mounting the controller to minimize the impacts of the environment. The following guidelines should be followed when selecting a mounting location:

- Do not mount the controller in locations where excessive vibration, heat, and/or moisture exist (refer to EIM specifications).
- Avoid mounting the controller within eight (8) feet of high energy electrical sources such as ignition coils, sparkplug wires, or "G" leads.
- Do not mount with the front screen facing direct sunlight as the UV will degrade the touch screen material.
- Do not mount with the front screen of the controller facing ignition systems or ignition components. RF noise from these components may interfere with the operation of the controller.
- Do not mount either internally or externally on a "tattle tale" panel.

PANEL MOUNT

If mounting directly in the panel:

- Cut the panel and drill using the dimensions shown in Figure 1.
- Using the gasket and four (4) 10-32 nylon locking nuts, secure the EIM to the cutout location.

⚠	If the controller face is not mounted in a weatherproof enclosure, use of the EIM Panel Mount Gasket (14007) is required to maintain warranty coverage. This item is included in the EIM Panel Mount Kit (14200).

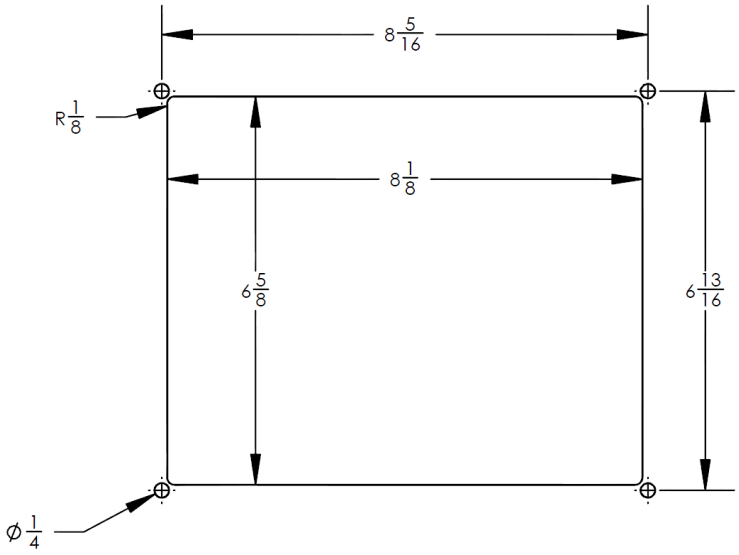


Figure 1. Cutout Dimensions for Panel Mounting

MOUNTING OUTSIDE OF THE PANEL

If mounting outside of the panel:

- Using the mounting enclosure found in the EIM Mount Outdoor Kit (14202), locate a space on either side of the panel that is appropriate taking into consideration operation and access of the panel and other components around the panel.
- Drill out the four (4) mounting bolt locations using a 5/16” drill bit for the mounting bracket on the side of the panel using the dimensions in Figure 2.
- Mount the bracket to the side of the panel using the included 1/4”-20 hardware.
- After wiring for the EIM and any other module that will be enclosed in the EIM base is competed, secure the EIM to the EIM base in the mounting bracket using the four (4) captured screws in the faceplate of the EIM.

⚠	Do not drill holes in the EIM enclosure or the warranty will be voided.

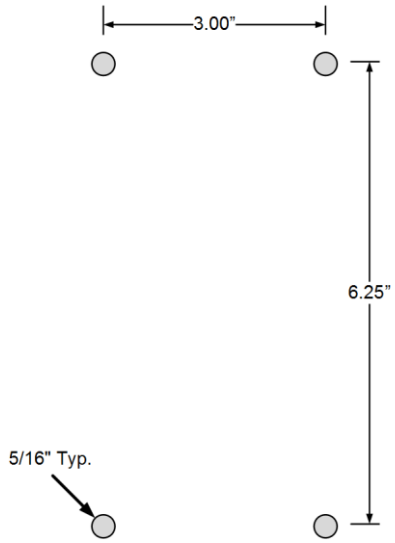


Figure 2. Outdoor Mount Drill Pattern

Figure 3. EIM Outdoor Mount Kit (14202)

MOUNTING THE GOVERNOR MODULE

PANEL MOUNT

If mounting directly in the panel, use Module Panel Mount Kit (14205).

- Remove the three screws and the end cap on one side of the module using a **No. 0 Phillips screw driver**.
- Slide the two DIN rail mounting clips onto the reverse side of the module with the larger tab side of the clip oriented towards the top.
- Reinstall the end cap using the original three screws and a **No. 0 Phillips screw driver**.
- If there is no existing DIN rail in the panel, find a location and install the DIN rail section included in the kit.
- Snap the DIN rail mounting clips installed on the module onto DIN rail.
- Install the included DIN rail stops on each end of the module.
- For wiring the black Power/Comm Harness, see the GOVERNOR WIRING DIAGRAM section.

Figure 4. Module Panel Mount Kit (14205)

MOUNTING INSIDE EIM OUTDOOR BOX

If mounting directly in the panel, use 14206 Module EIM Mount Kit.

- Insert the four plastic flange ears, two on each side, into the module end caps.
- Secure the module into the base of the EIM using the four 6-32 screws included in the kit.
- For wiring the black Power/Comm Harness, see section GOVERNOR WIRING DIAGRAM.

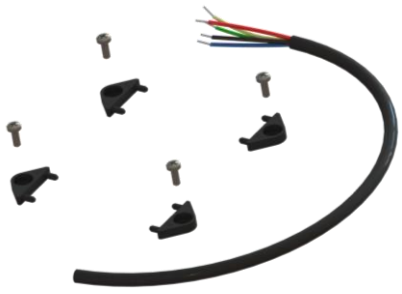


Figure 5. Module EIM Mount Kit (14206)

Figure 6. 14206 Installation Rendering

MOUNTING INSIDE NON-EIM EXTERNAL BOX

If there is no space in the panel to install the module and installation inside of the EIM enclosure is not an option, use Module External Enclosure Mount Kit (14207).

- Using the mounting enclosure found in the Module External Enclosure Mount Kit (14207), locate a space on either side of the panel that is appropriate taking into consideration operation and access of the panel and other components around the panel.
- Drill out the four (4) mounting bolt locations using a 5/16” drill bit for the mounting bracket on the side of the panel using the dimensions in Figure 7 below.
- Mount the bracket to the side of the panel using the included 1/4”-20 hardware.
- On the module, insert the four plastic flange ears, two on each side, into the end caps.
- Secure the module into the base of the enclosure using the four 6-32 screws included in the kit.
- For wiring the black Power/Comm Harness, see the GOVERNOR WIRING DIAGRAM section on page 10.
- After all wiring is complete, use the cover to enclose the module.

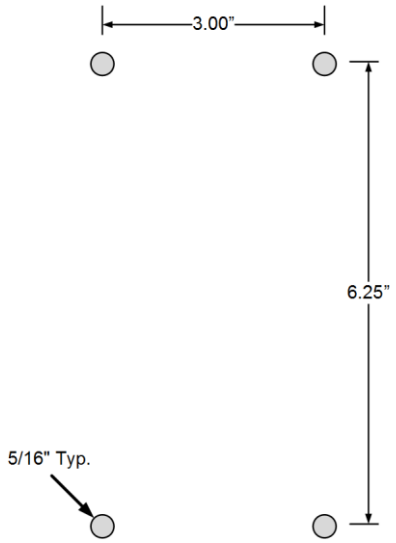


Figure 7. Outdoor Mount Drill Pattern

GOVERNOR SENSORS AND END DEVICES

MIXER/THROTTLE BODY ASSEMBLY

The mixer/throttle body assembly is to be installed on the intake manifold of the engine using the bolts provided. Below are install notes:

- Torque 5/16" bolts to 13 ft-lbs
- Torque 3/8" bolts to 23 ft-lbs
- If more than one mounting orientation is possible with the kit provided, the mixer/throttle body assembly should be installed in the orientation which places the axis of the throttle shaft as close to horizontal as possible.
- Use only black pipe or brass fittings when plumbing the fuel line
    - Under no circumstances should galvanized fittings be used to install the fuel piping.
- Install the AFRC digital power valve as close to the mixer as possible.

	Do not use galvanized fittings for fuel piping! The fuel will cause the galvanized coating to corrode and fall free which may cause engine damage.

	A rag may be placed in the intake port of the engine while scraping away the old intake gasket to prevent debris from falling into the intake manifold.

A more specific installation guide may be available for the specific engine the governor is being installed on, if so it will be provided by EMIT.

After installing the mixer/throttle body assembly on the engine, attach the throttle body harness and route it back to the Governor Module location.

PANEL SWITCH ASSEMBLY

- Identify an appropriate location in the instrument panel that will accommodate the drill/cutout pattern for the assembly.
- Drill and cutout the identified location based on the template shown in Figure 8 below.
  - Use a **3/16" drill bit** for the mounting holes.
- Use included 8-32 hardware to secure the assembly to the panel.
- Carefully route the integrated harness to the Governor module assembly installation location.

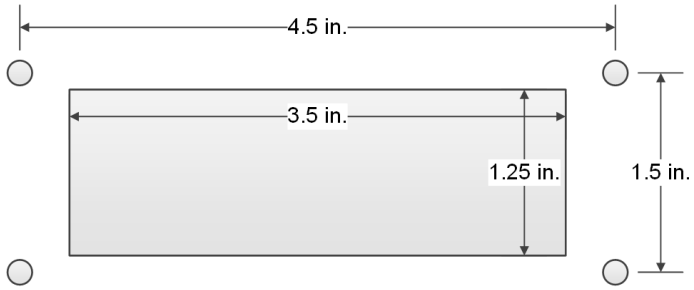


Figure 8. Panel Switch Cutout Dimensions

MAGNETIC PICKUP

- Identify a *5/8"-18 threaded location* directly over the flywheel teeth and remove the placeholder cap, if necessary.
- Thread the magnetic pickup into the identified location until the sensor makes contact with the flywheel teeth.
- Rotate the magnetic pickup out 1/4 turn after making contact with the flywheel.
  - 1/4 turn will provide a gap of 0.013".
- Secure the position of the magnetic pickup using the jam nut on the sensor.
- Carefully route the integrated harness to the Governor module assembly installation location.
  - Avoid routing near ignition or alternator wires.

SUCTION OR DISCHARGE SENSOR

- Close the *valve* of the pressure that the sensor is going to be monitoring at the point where it enters the *panel*.
- Inside of the *panel*, install appropriate fittings into the stainless line of the pressure to be monitored taking into consideration the physical size of the sensor.
- Before installing the sensor to the fittings, apply an appropriate amount of thread sealant.
- Install sensor to fitting and torque to 15 ft-lbs.
- Carefully route the integrated harness to the Governor module assembly installation location.

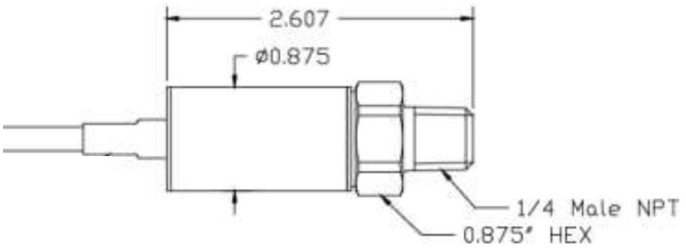
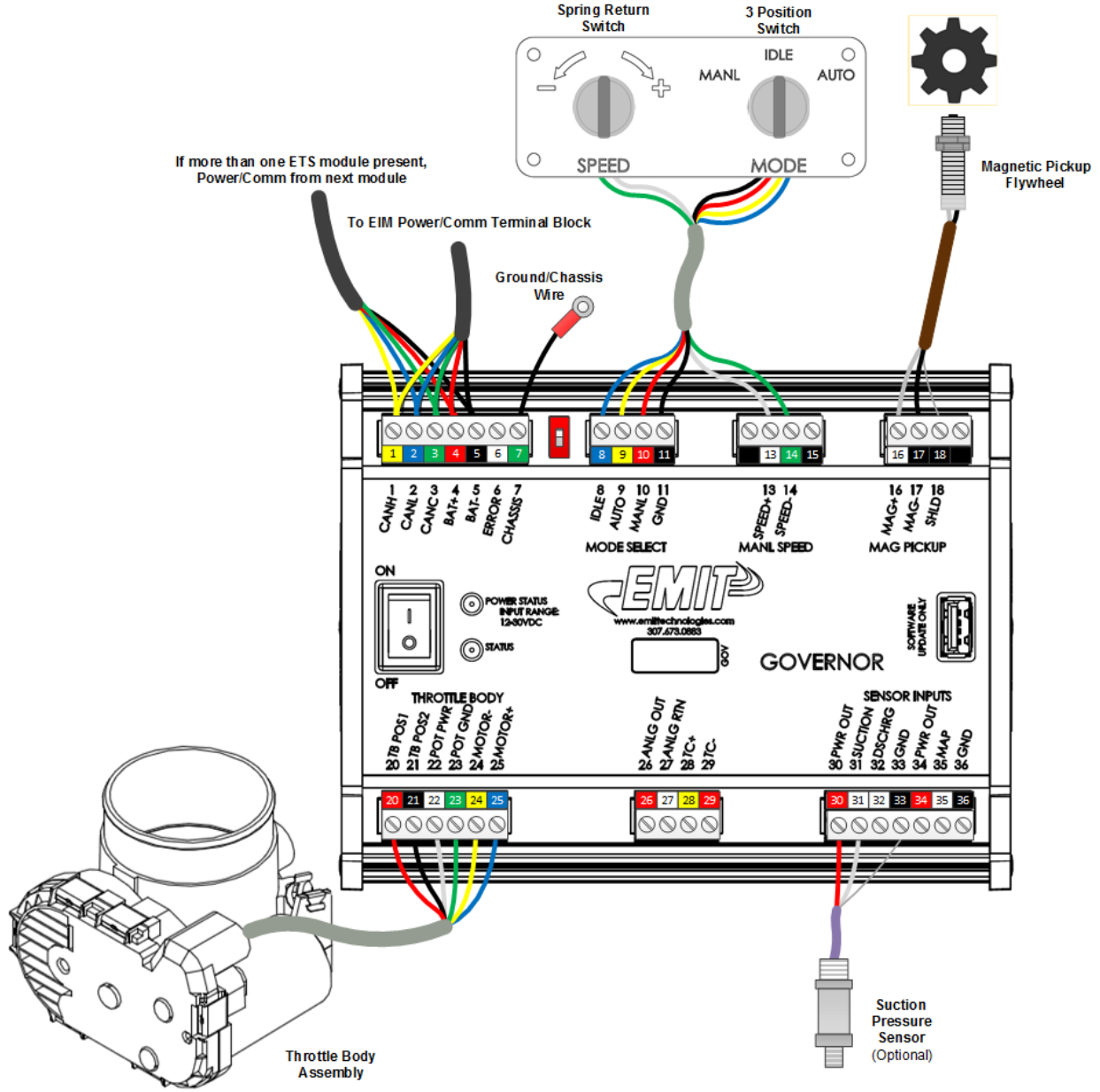


Figure 9. Suction or Discharge Sensor Dimensions

GOVERNOR WIRING DIAGRAM



EIM SETUP

SECURITY ACCESS

- Press the 'Access: Operator' button in the footer of the display
- Using the keypad on the screen, enter the Setup security password, then press the 'Submit' button
    - Passwords for the system are located on the cover of the EMIT USB drive included with the EIM
- The 'Access:' button will now display 'Access: Setup' after successfully entering the password

DATE AND TIME

- Press the button displaying the date and time in the lower right corner of the display
- Use the buttons and keypad to set the current date and time
    - Time is in 24-hour format
- Press the 'Submit' button when completed

GOVERNOR SETUP

After wiring is complete, setup of the Governor is required through the EIM display. To configure, navigate to the **Governor Setup** screen (Pg. 519). Security access of Setup or Engineering is required. Passwords are provided with the EIM.

Step 1: Engine Setup

Step 1 of the setup process involves identifying engine parameters.

- "Flywheel Teeth" – Number of teeth on the flywheel for one revolution
- "Idle RPM" – Desired RPM when in "Idle" mode
- "Underspeed RPM" – Kills the engine if the RPM goes below this speed
- "Overspeed RPM" – Kills the engine if the RPM goes above this speed

Step 2: Control Setup

Step 2 of the setup process involves defining the RPM control mode while the panel switch is in "Auto" mode. The options are listed below

- "RPM" – Controls to the "Setpoint" RPM when in "Auto" mode.
- "Suction" – Automatically adjusts the RPM to control to the suction pressure setpoint.
    - RPM range is set on the next screen.
- "Discharge" – Automatically adjusts the RPM to control to the suction pressure setpoint.
    - RPM range is set on the next screen.

Step 3: Suction or Discharge Pressure Control (If Selected)

Step 3 of the setup process is only required if controlling to suction or discharge pressure.

- "Low "Auto" RPM" – Minimum speed of the Governor while trying to hold the pressure setpoint.
- "High "Auto" RPM" – Maximum speed of the Governor while trying to hold the pressure setpoint.
- "Deadband (PSI)" – Pressure range around the setpoint where the governor will not try to control.
    - Larger deadband will improve RPM stability at the expense of tight control.
    - Smaller deadband will reduce RPM stability and improve control.
- "Response Rate (Default 50%)" – Defines how quickly the governor RPM adjusts to changes in pressure.

Step 4: Suction or Discharge Pressure Sensor Setup (If Selected)

Step 4 of the setup process defines the range of the pressure sensor.

To configure, enter the minimum and maximum pressure ranges it their respective boxes. If either of the sensors is not used, the buttons for that sensor can be ignored.

Step 5: Setup Review

Step 5 is used to review the setup configuration. If the information is correct, press the “Setup Complete” button. If not, press the “< Back” button to modify the settings.

INITIAL STARTUP

The governor should show 0% throttle when the engine is off, if not, visit the throttle calibration page and calibrate before starting.

During crank, the governor should go to the starting throttle position until the engine starts. The starting throttle position can be adjusted on the “Engineering Setup” screen under governor setup. If after starting the engine overshoots quickly, try a smaller starting throttle position. If the engine does not start readily, try a larger starting throttle position.