

Electronics International inc.

MVP-50T

Marking and Configuration Requirements

Rev B: 6/24/11

Electronics International Inc. will configure the MVP-50T to the range limits, markings and hardware outlined for the specified aircraft listed on this form. All data for a certified aircraft will to be provided by the pilot/owner and a FAA certified mechanic. For an experimental aircraft, if the pilot/owner agrees to take full responsibility for all technical aspects and accuracy of the data listed below, an FAA certified mechanic's signature is not required on this document.

All data must be verified for accuracy and must match the POH/AFM and any changes required by any AD's, Supplements or STC's. Also, limit and marking information must be cross-checked against the instruments mounted in the aircraft panel.

For a certified aircraft this document must be completed and signed by the aircraft owner AND by a FAA certificated mechanic. This form should then be delivered to Electronics International Inc., at which time a configuration file for a specific MVP-50T will be generated. A configuration file for a TSO'd and/or STC'd MVP-50T can *only* be generated or changed by Electronics International Inc. If any of the information provided on this form is wrong, there may be a reprogramming fee to change the configuration.

IMPORTANT: The information in this document must be verified for accurate and match the aircraft's hardware and POH/AFM marking requirements. **If you have not ordered the probes and transducers to support the functions you have listed in this document, your order will be delayed. Also, if the data supplied in this document is incomplete or missing, your order will be delayed.**

Aircraft Information:		Example
Customer Name		Peter Pilot
Customer Phone #		555-555-5555
FAA Certified Mechanic's Name		Marty Mechanic
Mechanic's Phone #		555-555-0000
Aircraft Make and Model		Pilatus, PC-6/B
Engine Mfg and Model		Pratt PT6A-6A
Aircraft Tail Number		NP 1234

N1 (Ng, Nh,) Calibration Information: On most engines the N1 signal comes from a Tach Generator and on other engines it comes from a Transmitter (usually counting gear teeth). If the signal is from a Tach Generator, we need to know the RPM of the Tach Gen for a 100% N1 reading. If the signal is from a Transmitter, we need to know the frequency of the signal for a 100% N1 reading.

Pratt PT6, Garrett/Honeywell TPE331, Walter/GE 601, Allison/Rolls-Royce 250, GE J85, Engine for the L39,

Tach Generator (RPM): _____ for 100% reading (Example: 4187 RPM)

GE H80, Lycoming/Honeywell LTS101, Williams FJ33, ...

Transmitter Output (Hz): _____ for 100% reading (Example: 4200 Hz)

N1 (Ng, Nh, ...) Markings:

Color	Range	Example
		Grn, 0 to 100.7%
		Yel, 100.7 to 102.2%
		Red, 102.2 and up

N2 (Np, NL, NF,) Calibration Information: On most engines the N2 signal comes from a Tach Generator and on other engines it comes for a Transmitter (usually counting gear teeth). If the signal is from a Tach Generator, we need to know the RPM of the Tach Gen for a given prop RPM (or for a 100% N2 reading). If the signal is from a Transmitter, we need to know the frequency of the signal for a given prop RPM (or for a 100% N2 reading).

Garrett/Honeywell TPE331 (N2 is geared off of N1 there therefore is not measured)

N/A

Pratt PT6, Walter/GE 601, GE H80, Allison/Rolls-Royce 250, GE J85, Engine for the L39, ...

Tach Generator (RPM): _____ for _____ Prop RPM or 100% reading (select one)

Example: 4200 Tach Gen RPM for 2080 Prop RPM reading.

Lycoming/Honeywell LTS101, Williams FJ33, ...

Transmitter Output (Hz): _____ for _____ Prop RPM or 100% reading (select one)

Example: 4200 Hz for 2200 Prop RPM reading.

N2 (Np, NL, NF, ...) Markings:		
Color	Range	Example
		Grn, 800 to 2090 rpm
		Yel, 2090 to 2140 rpm
		Red, 2140 and up

Garrett/Honeywell TPE331 Torque Configuration Information: Some Garrett engines use a strain gauge torque measurement system incorporating a Signal Conditioner and a Torque Temperature Limiter (TTL). If this is the case, Torque will be measure from the Signal Conditioner via a VI-221 resistor interface into a temperature channel on the EDC-33T. Also, the EGT signal will require an EGTI-1 resistive network to accommodate the offset voltage out of the TTL unit. These resistor networks are heatshrunk into wires attached to the EDC-33T and will be supplied with the kit.

Does this engine use a Strain Gauge with a Signal Conditioner and a TTL _____ (Yes/No)

Torque Calibration Information: (If your engine is a Garrett using a strain gauge torque measurement system, mark N/A for the pressure). Torque is measure via a pressure from the engine. We need to know the pressure for a 100% torque reading.

Pressure _____ psi for a 100% Torque reading (Example: 61 psi for a 100% Torque reading)

Note: N/A for Jet engines.

Note: A pressure transducer will be provided in the kit. This transducer can be mounted in the engine compartment on the firewall away for heat and vibration. A flexible hose will be routed from the engine port to the transducer.

Torque Markings:		
Color	Range	Example
		Grn, 0 to 100%
		Yel, 100 to 106%
		Red, 106 and up

ITT (EGT, TOT) Markings (Start Only): When the engine is NOT running the MVP-50T displays engine start limits and automatically switches to display normal operating limits after the engine is running. The following marking information is only for engine start.

Max ITT (EGT) allowed to initiate a start _____ °C. (Example: 200 °C). A start should not be attempted above this temperature.

Max ITT (EGT) during Normal Operation _____ °C (Example: 680°C). This is the red limit during normal operation.

Max ITT (EGT) Start Limit _____ °C (Example: 1090°C)

Max time allowed (during start only) to be over the Max Normal Operating Limit but less than the Max Start Limit _____ seconds (Example: 1 second) Most engines have a time limit of 1, 2 or 5 seconds). This time limit is not a climb limit or any other limit associated with Normal Operation.

ITT (EGT, TOT) Markings (Normal Operating Only): The following markings should not include any start limits.

Color	Range	Example
		Grn, 400 to 640°C
		Yel, 640 to 680°C
		Red, 680 and up

Note: Some engines include a yellow range just above the top of the green for climb.

Oil Temp Configuration and Calibration Information: E.I. produces several probes suitable for oil temperature (P-120 5/8"-18, P-111 1/8" NPT Adj Depth, P-112, 7/16" – 20 Adj Depth, P114 1/4" NPT Adj Depth). See specification for these probes at www.buy-ei.com. For some engines, it's best to use the existing resistive oil temp probe. To do this we need the Temperature versus Resistance Chart for the probe.

Some Pratt PT6's, GE H80, Lycoming LTS101, Engine for L39, ...

_____ (Check if Yes) We will use the engines existing Resistive Oil Temp Probe. The Temperature versus Resistance Chart for this probe is attached.

Note: If you will be using an E.I. Oil Temp probe, one will be provided in the kit.

Oil Temp Markings:		
Color	Range	Example
		Yel, <68°C
		Grn, 68 to 185°C
		Red, 185 and up

Oil Pressure Markings: An Oil pressure transducer will be provided in the kit. This transducer can be mounted in the engine compartment on the firewall away from heat and vibration. A flexible hose will be routed from the engine port to the transducer.

Color	Range	Example
		Red, 0 to 17 psi
		Yel, 17 to 26 psi
		Grn, 26 to 39 psi
		Yel, 39 to 51 psi
		Red, 51 and up

Fuel Pressure Markings: A fuel pressure transducer will be provided in the kit. This transducer can be mounted in the engine compartment on the firewall away from heat and vibration. A flexible hose will be routed from the fuel pressure pickup port to the transducer.

Color	Range	Example
		Yel, 0 to 5 psi
		Grn, 5 to 60 psi
		Red, 60 and up

Fuel Flow Configuration and Markings: An FT-180 fuel flow transducer will be provided in the kit. If you elect to use your existing fuel flow transducer, we need to know if the output signal is a 5 volt pulse or an inductive pickup. Inductive pickup is the most common type and will require a Foxboro Interface unit IU-1, which will be supplied in place of the FT-180.

Will you be using your existing Fuel Flow Transducer? _____ (Yes/No)
 If Yes, what type of flow transducer it? _____ (Inductive or Pulsed)

Color	Range	Example
		Grn, 0 to 80 GPH

Note: In most cases the markings for fuel flow will be all green.

Volts Configuration Information: A single wire in the top connector of the EDC-33T is used to measure system voltage.

Specify 12-Volt or 24-Volt system _____ (Example 24 V)

Amps Configuration and Markings: If you will be monitoring the aircraft's existing shunt, we will need to know the value of your shunt. Otherwise, an E.I. 300A (S-300) shunt will be provided in the kit.

Will you be using your existing Shunt? _____ (Yes/No)

Existing Shunts Value _____ amps at _____ mV (Example: 300A at 50 mV)

Color	Range	Example
		Green, 0 to 150A
		Red, => 200A

Voice Annunciator System: Comes standard with TSO'd and Experimental units. Not yet available on STC'd units.

STC'd Option: This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC pressure channel.

G-Meter: This option requires a GS-1 module. This module will be mounted in the cabin under the instrument panel. The G-Meter function provides a real time g-force display on the MVP-50. The MVP-50 does not provide a peak-hold function, but the g-force readings are recorded for the entire flight. To capture the g-forces for all phases of the flight with no gaps, set the "Data Sample Rate" to 0.3 seconds. The G-Meter option can be used to capture g-forces in slow flight when turning to final, hard landings, turbulence, hard pull-ups, steep turns, aerobatic maneuvers, stalls, spins or when performing any maneuver that may stress the aircraft or lead to a stall/spin situation.

Color	Range	Recommended Limits
		Red, < -1.5
		Green, -1.5 to 3.8
		Red > +3.8

STC'd Option: This function does not come with the standard kit and may require additional hardware. See E.I. price sheet.

Fuel Level: The MVP has two vertical strip gauges on the Main Screen to display fuel level.

Resistive Float Senders – If your system uses resistive float senders and the MVP system will be connecting directly to these senders, you will need a RFLM-4 module. **WARNING: DO NOT** connect an RFLM-4 module into any other system except directly to a resistive float sender. Damage to the fuel system will occur. Note: Your existing fuel gauges will need to be removed from the system.

Note: The MVP can provide accurate fuel level readings for straight and level flight. By calibrating the MVP to the fuel tank, nonlinearity in the tank's shape and nonlinearity in the Fuel Level Sensor will be compensated for. The MVP can not correct for inconsistent or non-repeatable readings from a Resistive Float Sender. Unfortunately, many Resistive Float Senders (and in some cases even new units) exhibit these problems. If you find inconsistent or inaccurate fuel level readings (due to a defective Resistive Float Sender), you must have the sensor replaced or repaired. Read the "Important Notice" in the MVP Operating Instructions. E.I. manufactures a P-300M Magnetic Float Sensor that can replace a resistive float sender. See the E.I. price sheet for further information.

E.I. Magnetic Float Senders – These senders are accurate and repeatable. They have one moving part (a magnet) and are not affected by oxidization or corrosion. The sender can replace a resistive float sender only when used with the MVP system. **WARNING:** An RFLM-4 module must NOT be used with these senders, damage to the system will occur.

E.I. Capacitive Probes – The MVP system will accept E.I. capacitive fuel level probes (P-300C). Generally these probes are difficult to adapt to a fuel tank incorporating a resistive float sender. **WARNING:** An RFLM-4 module must NOT be used with these probes, damage to the system will occur.

Other Fuel Systems – Other fuel system (whether capacitive or otherwise) will generally have a voltage output from a control unit that drives an analog gauge. This output voltage can be routed to the EDC-33T and used to measure fuel level. If this type of system is used, we need to know the output voltage for empty and full. **WARNING:** An RFLM-4 module must NOT be used with these systems. Damage to the system will occur.

Fuel Tank Name (6 Characters)	Probe Type (Resistive, Cap, Magnetic, Other)	Configuration Does the resistance (or voltage) of the system <u>Increase</u> or <u>Decrease</u> when adding fuel? (This can be checked using an Ohm Meter)	Full Fuel Level	Example
				L MAIN, Res, Incrs, 80 Gal
				R MAIN, Res, Incrs, 80 Gal

STC'd Option: This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC Pressure channel.

Hydraulic Pressure: This option requires a PT-3000S pressure transducer.

Color	Range	Recommended Limits
		Green, 1000 to 2000 psi

STC'd Option: This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC Pressure channel.

Vacuum Pressure: This option requires a PT-05Diff vacuum pressure transducer that will be mounted in the cabin under the instrument panel.

Color	Range	Recommended Limits
		Green, 4.5 to 5.5

STC'd Option: This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC Pressure channel.

Boom Pressure: This option requires a PT-100GA pressure transducer.

Color	Range	Recommended Limits
		Green, 0 to 100 psi

Other Optional Functions

Additional functions may be displayed on the MVP-50T. See the EI Price list for available functions and prices. Please verify that your EDC-33T has the necessary inputs to support the optional function to be added to the system. The EDC-33T (Engine Data Converter) monitors all the probes and transducers, and provides the MVP-50T with digital information via two wires (RS422). An EDC-33T has the following channels available:

N1/N2 - 2 Channels
 Fuel Flow - 1 Channel
 Amps - 1 Channel
 Volts - 1 Channel
 Pressure - 9 Channels
 Temp - 13 Channels

Note: To increase the available channels, a second EDC-33T may be purchased and connected to the MVP-50T. See the EI price sheet for further information.

Option: For TSO'd and Experimental units. Not yet available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This Option Requires 1 EDC Temperature or Fuel Level Channel per Annunciator. Check to ensure you have one available.

Annunciators: Any unused Temperature or Resistive Fuel Level channel on the EDC may be used to monitor the state of a switch, relay or output from a device. This output can be used to trigger an annunciator located at the top of the MVP-50T Main Screen display. Annunciators such as Beta, Chip Detect, Oil Bypass, Fuel Bypass, EHT, Exceedance, Deice, Pitot Heat, Fire, etc. can be displayed. Each Annunciator requires one VI-221 Resistive Interface to drop the voltage entering the EDC. Please verify that your EDC-33T has the available inputs to support these optional annunciator(s).

The Off-State of the Annunciator will be black. The On-State can be Green, Yellow, Red, or Blue. Red and Yellow should only be use if they are called out in the POH/AFM.

If an Annunciator is to be activated by a device pulling a line down (to ground) and this line has no load to pull the line up (usually to buss voltage) when off, a pull-up resistor (VI-221) will be required to pull the line high. See the MVP Installation Instructions for further details.

Annunciator Name (9 Characters)	* On-State Voltage Level	* On-State Color	* Off-State Voltage Level	Example
				BETA, 0V, Yel, 24V

* Note: The ON-State Voltage Level is the voltage provided to the EDC when the ON-State Color is to be displayed. For Example: The voltage to the EDC may be 0 volts (On-State Voltage Level) when the annunciator is to be Yellow (On-State Color) and at buss voltage (24V, Off-State Voltage Level) when the annunciator is to be black (off).

Option: For TSO'd and Experimental units. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC Temperature or Pressure channel. Check to ensure you have one available.

Aux Amps Configuration and Markings: This option requires a FM-VA-3 Module. If you will be monitoring the aircrafts existing shunt, we will need to know the value of your shunt. Otherwise, an E.I. 300A (S-300) shunt will be provided in the kit.

Will you be using your existing Shunt? _____ (Yes/No)

Exiting Shunts Value _____ amps at _____ mV (Example: 300A at 50 mV)

Color	Range	Example
		Green, 0 to 150A
		Red, => 200A

Option: For TSO'd and Experimental units. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This option requires 1 EDC Temperature channel. Check to ensure you have one available.

Aux Volts: This option requires a VI-221 Resistive Interface.

Specify 12-Volt or 24-Volt system _____ (Example 24 V)

Option: For TSO'd and Experimental units. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This Option Requires 1 EDC Pressure channel. Check to ensure you have one available.

Airspeed: This option requires a PT-05Diff Pressure transducer.

Color	Range	Recommended Limits
		Grn, 80 to 180 kts

Option: For TSO'd and Experimental units. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This Option Requires 1 EDC Pressure channel. Check to ensure you have one available.

Cabin Altitude: This option requires a PT-30ABS Pressure transducer.

Color	Range	Recommended Limits
		Grn, < 12,500 ft.
		Yel, => 12,500 ft.

Option: For TSO'd and Experimental units only. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This Option Requires 1 EDC Pressure channel. Check to ensure you have one available.

Cabin Differential Pressure: This option requires a PT-05ALT Pressure transducer.

Color	Range	Recommended Limits
		Grn, 80 to 180 kts

Option: For TSO'd and Experimental units only. Not available on STC'd units. This function does not come with the standard kit and may require additional hardware. See E.I. price sheet. This Option Requires 1 EDC Pressure channel. Check to ensure you have one available.

Pressure Altitude: This option requires a PT-30ABS Pressure transducer.

Color	Range	Recommended Limits
		All Green

More Options: Some additional options are Landing Gear Indicator, Gear Warning, Flaps, Elevator Trim, Rudder Trim and Aileron Trim. Call for more information.

* Be sure you have ordered the hardware to support all the functions specified in this document.

* Check to be sure that all range and configuration information is complete and accurate.

We (the undersigned) have verified all the limits, markings and aircraft configuration data listed in this worksheet to be correct, accurate and taken from the information in the aircraft's POH/AFM, which includes any changes mandated by any AD's, Supplements and STCs. Even if the information on this form has been provided by Electronics International, we have checked and verified all the information for its accuracy. We understand there is important safety information in the Installation and Operating Instructions that must be read before installing the MVP-50T and flying the aircraft.

Owner/Pilot's Printed Name

Owner/Pilot's Signature

Date

Mechanic's Printed Name

Mechanic's Signature

Date

If this is an experimental aircraft and the Owner/Pilot agrees (by signing above) to take full responsibility for all the technical aspects and accuracy of the data listed in this document, the Mechanic's Signature will not be required.