



MVP-50P *Instrument Marking Requirements for Certified Aircraft*

Rev: C 9/29/08

The MVP-50P will be programmed by Electronics International Inc. to the range limits and markings provided on this form. The limits and markings are to be provided by the pilot and the mechanic and must be verified to those set forth in the POH or AFM of the specific aircraft in which the MVP-50P is to be installed. Limit and marking information also may be cross checked against the instruments mounted in the aircraft panel.

This form must be completed and signed by the aircraft owner AND by an FAA certificated mechanic. The form should then be delivered to Electronics International Inc., at which time a configuration file for a specific MVP-50P will be generated. A configuration file for a TSO'd MVP-50P can *only* be generated or changed by Electronics International Inc.

The MVP-50P is normally configured prior to shipping the unit to the customer but it may be configured in the aircraft after installation. A configuration file may be loaded into the MVP-50P from a USB data stick. A USB port is provided on the front of the MVP-50P for this purpose. The configuration file is prepared by Electronics International and can be sent electronically. If any of the information provided on this form is wrong, there may be a reprogramming fee to change the configuration.

Aircraft Information		Example
Customer Name		Peter Pilot
Customer Phone #		555-555-5555
FAA Certified A&P Mechanic's Name		Marty Mechanic
FAA Certified A&P Mechanics's Phone #		555-555-5555
A&P Mechanic's FAA Certificate #		12345678
Aircraft Make & Model		Cessna, 182R
Engine Manufacturer & Model		Continental, O-470U
1) Aircraft Tail Number		N5555H
2) # of Cylinders & Max Engine Horsepower		6, 230 HP

3) **EGT Markings:** If markings are not specified in the POH/AFM, write "No Limits"
If markings are not specified, EGT limits can be set by the pilot for engine diagnostics.

Color	Range	Example
5)		Red, 1650°F and Above

4) **CHT Markings:** If markings are not specified in the POH/AFM, write "No Limits".
If markings are not specified, CHT limits can be set by the pilot for engine diagnostics.

Color	Range	Example
		Red, 460°F and Above
		Yellow, 400 to 460°F
		Green, 200 to 400°F
		Yellow, 200°F and Below

7) **Tachometer Markings**

Color	Range	Example
		Red, 2700 and Above
		Green, 2100 to 2700
		Yellow, 1700 to 1900

8) **Manifold Pressure Markings:** If markings are not specified in the POH/AFM, write "No Limits".
High Manifold Pressure (up to 70" Hg) option available. See EI Price list for details.

Color	Range	Example
		Green, 15 to 24

9) **Fuel Flow Markings:** If markings are not specified in the POH/AFM, write "No Limits"
If you have a pressure carburetor, you will need the FFDM-1 Differential Module to accommodate the fuel return. See EI Pricelist for details.

Color	Range	Example
		Red, 19 and Above
		Green, 17 to 18.1

10) **Fuel Pressure Markings:** If markings are not provided, Fuel Pressure will not be displayed on the MVP-50P.
If the aircraft's fuel system is gravity fed AND does not have an engine-driven fuel pump, Fuel Pressure cannot be monitored.
If Fuel Pressure is to be referenced to the upper deck, you must purchase the UDP option. See EI Price list for details. This option requires a second pressure channel on the EDC.

Color	Range	Example
		Red, 14 PSI and Above
		Green, 9 to 14 PSI
		Red, 9 PSI and Below

Oil Pressure Markings		
Color	Range	Example
		Red, 100 PSI and Above
		Yellow, 90 to 100 PSI
		Green, 40 to 90 PSI
		Yellow, 25 to 40 PSI
		Red, 25 PSI and Below

Oil Temperature Markings		
Color	Range	Example
		Red, 240°F and Above
		Yellow, 200 to 240°F
		Green, 65 to 200°F
		Yellow, 65°F and Below

Volts:

13) Specify 12-Volt or 24-Volt system: _____

Amps: If markings are not specified in the POH/AFM, write "No Limits."
 A 100 Amp shunt is provided in the kit or the MVP can be connected to the aircraft's existing shunt. The value of the existing shunt must be provided. See www.buy-ei.com and look under MVP, Downloads for help on determining the value of your existing shunt.

Is the Amps a measurement of the Alternator output current or the Battery current (check one)?

Battery Current
 Alternator Current

Color	Range	Example
		Red, 50 Amps and Above

Existing Shunt Value: _____ Amps at _____ mV.
 (Not required if the 100 Amp Shunt supplied in the kit is to be used)

60 Amp, 50 mV

Optional Functions

Additional functions may be displayed on the MVP-50P. See the EI Price list for available functions and prices. Please verify that your EDC has the necessary inputs to support the optional function to be added to the system.

The EDC (Engine Data Converter) monitors all the probes and transducers and provides the MVP-50P with digital information via two wires (RS422). After the primary functions have been selected (as was done on the previous pages) the EDC will have the following channels available:

Channels: (Type and Qty)	Channels Used So Far:	Channels Available:
Volts - 1	1	0
Amps - 1	1	0
Fuel Flow - 1	1	0
Pressure - 6	3 (MP/OP/FP)	3
Temp - 17	10 (for a 4-Cyl) 14 (for a 6-Cyl) (OAT/EGT/CHT/OT)	7 (for a 4-Cyl) 3 (for a 6-Cyl)
Fuel Level - 4	0	4
RPM - 2	2 (Right and Left)	0

Note: To increase the available channels, a second EDC may be purchased and connected to the MVP-50P (RS232 Port 3). See the EI price sheet for further information.

TIT Markings: This Function requires 1 EDC Temperature Channel and the TIT Option. See EI Price Sheet.		
Color	Range	Example
		Red, 1650°F and Above

Carb Temp Markings: This Function requires 1 EDC Temperature Channel and the CarbT Option. See EI Price Sheet. If markings are not specified in the POH/AFM, use Recommended Limits.		
Color	Range	Recommended Limits
		Yellow, 10 to 39°F

Vacuum Pressure Markings: This Function requires 1 EDC Pressure Channel and the Vac Option. See EI Price Sheet. If markings are not specified in the POH/AFM, use Recommended Limits.		
Color	Range	Recommended Limits
		Green, 4.5 to 5.5

Airspeed Markings: This Function requires 1 EDC Pressure Channel and the AS Option. See EI Price Sheet.
 This is only to be used as a backup instrument.
 If a Gear-Up Warning is to be provided, Airspeed is required.

Color	Range	Example
		All Green

Pressure Altitude Markings: This Function requires 1 EDC Pressure Channel and the Alt Option. See Price Sheet.

Color	Range	Example
		All Green

Cabin Altitude Markings: This Function requires 1 EDC Pressure Channel and the CAIt Option. See EI Price Sheet.

Color	Range	Example
		Yellow, => 12,500 ft.

Cabin Differential Pressure Markings: This Function requires 1 EDC Pressure Channel and the CDP Option.

Color	Range	Example
		Yellow, 7.0 to 8.0 psi
		Red, => 8.0 psi

Hydraulic Pressure Markings: This Function requires 1 EDC Pressure Channel and the HydP Option.

Color	Range	Example
		Green, 0 to 3000 PSI

Carbon Monoxide Detector Markings: This Function requires RS232 Input Port 3 on the MVP and the COT Option. See EI Price Sheet.

If markings are not specified in the POH/AFM, use recommended limits.
 If a second EDC is to be used, this function is not available.

Color	Range	Recommended Limits
		Red, => 75 ppm
		Yellow, 25 to 75 ppm
		Green, 0 to 25 ppm

Volts: This Function requires 1 EDC Temperature or Fuel Level Channel and a VI-221 Option. See EI Price Sheet.

Specify Function Name (6 characters max): _____ (This name will be displayed on the MVP-50 Screen)	<u>Example</u> V. AUX
Specify <u>12-Volt</u> or <u>24-Volt</u> system: _____	12 volts

Amps: This Function requires 1 EDC Temperature Channel and the VA option. See the E.I. Price sheet.
 If markings are not specified in the POH/AFM, write "No Limits."
 A 100 Amp shunt is provided in the kit. The MVP can be connected to the aircraft's existing shunt. The value of the shunt must be provided. See www.buy-ei.com and look under MVP, Downloads for help on determining the value of your existing shunt.

Is the Amps a measurement of the Alternator output current or the Battery current (check one)?

Battery Current
 Alternator Current

Color	Range	Example
		Red, 50 Amps and Above

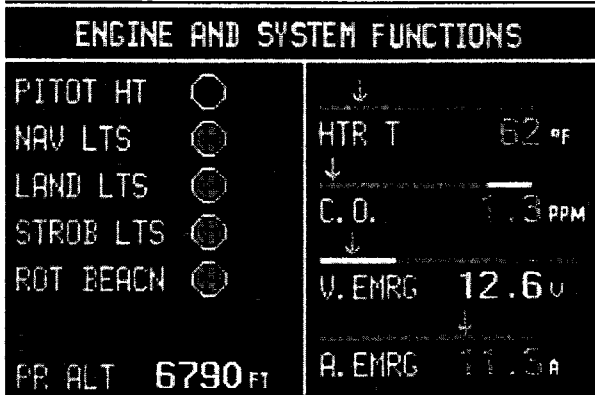
Specify Function Name (6 characters max): _____ (This name will be displayed on the MVP-50 Screen)	A. AUX
Existing Shunt Value: _____ Amps at _____ mV. (Not required if the Shunt supplied in the kit is to be used)	60 Amp, 50 mV

Fuel Level: This Function requires 1 EDC Fuel Level Channel per Tank and the RFLM Option (handles 4 tanks).
 Our STC does not currently support Certified Aircraft with Capacitive Fuel Probes.

Important Information: The MVP can provide accurate fuel level readings for straight and level flight. By calibrating the MVP to the fuel tank the MVP can compensate for nonlinearity in the tank's shape and nonlinearity in the Resistive Fuel Level Sensor. The MVP cannot correct for inconsistent or none repeatable readings from a Resistive Fuel Level Sensor. Unfortunately, many Resistive Fuel Level Sensors (and in some cases even new sensors) exhibit these problems. The problem is weak wiper pressure and/or corrosion on the wiper contact area and resistive element. If you find inconsistent or inaccurate fuel level readings (due to a defective Resistive Fuel Level Sensor), you must have the sensor replaced or repaired. Inaccurate fuel readings can lead to a dangerous situation. Read the "Important Notice" in the MVP Operating Instructions.

Fuel Tank Name (6 Characters Max)	Resistance of the Fuel Probe <u>Increases</u> or <u>Decreases</u> when adding fuel. (This can be checked using an Ohm Meter)	Full Fuel Level	Example
			L Main, Increases, 20 gal
			R Main, Increases, 20 gal

Optional 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 a light (annunciator) on the MVP-50P. Annunciator lights such as Landing Lights, Rotating Beacon, Strobes, Baggage Door, Deice, Pitot Heat, Fire, etc. can be displayed on either the Main or System screen on the MVP-50P. Each Annunciator requires one VI-221 Annunciator Interface. See the EI price sheet. Please verify that your EDC 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, Pink, Orange or Blue.

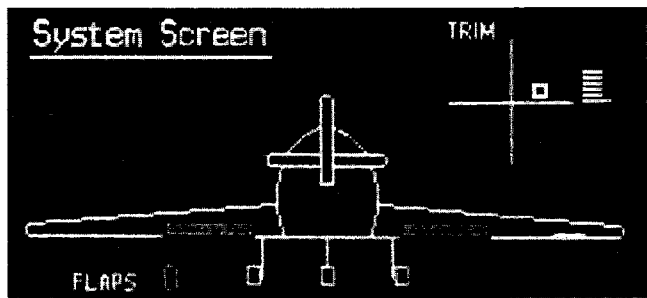
If an Annunciator is to be activated by a relay connected to ground, a pull-up resistor will be required to provide a voltage to the EDC when the relay is open. See the MVP Installation Instructions for further details.

Optional Annunciator: This Option Requires 1 EDC Temperature or Fuel Level Channel per Annunciator. A VI-221 will be required for each Annunciator. See EI. price sheet for more information.				
Annunciator Name (6 Characters Main Screen) (9 Characters System Screen)	* ON-State Voltage Level	* ON-State Color	* OFF-State Voltage Level	Example
				BOOST P, 12 volts, Green, 0 volts
				LND LTS, 12volts, Green, 0 volts
				STRB LTS, 12 volts, Green, 0 Volts
				FIRE, 0 vots, Red, 12 volts

* Note: The ON-State Voltage Level is the voltage provided to the EDC when the ON-State Color is displayed. For example: The voltage to the EDC may be 0 volts when the annunciator is to be Green.

The Off-State Voltage Level is the voltage provided to the EDC when the annunciator is to be black.

Optional Trim and Flaps



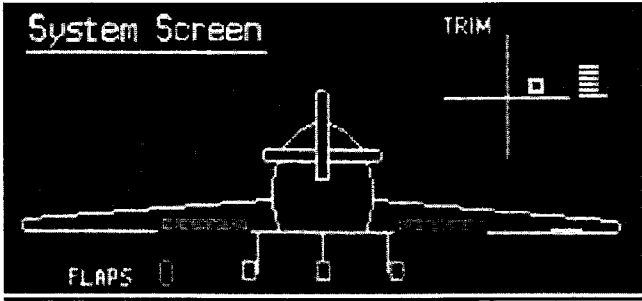
Elevator, Aileron and/or Rudder Trim can be displayed at the top right corner of the System Screen. Flaps are shown in the wing roots of the pictured aircraft. The Flap angle will be displayed in degrees just under the left flap. Only the applicable trim function(s) for your aircraft will be displayed.

These functions can only be monitored and displayed if a linear voltage is provided for each function. A linear voltage can be routed to an unused Temperature or Resistive Fuel Level channel on the EDC. A VI-221 Interface must be placed in each line to the EDC. Please verify that your EDC has the available inputs to support the optional functions selected.

Trim Indicators: This Function requires 1 EDC Temperature or Resistive Fuel Level Channel per indicator and a VI-221 Interface. See E Price Sheet. You must have a transducer attached to the appropriate trim tab that produces a linear voltage output for this function.	
	Example
Display Elevator (Yes/No): _____	Yes
Display Aileron (Yes/No): _____	No
Display Rudder (Yes/No): _____	No

Flap Indicator: This Function requires 1 EDC Temperature or Resistive Fuel Level Channel per indicator and a VI-221 Interface. See E Price Sheet. You must have a transducer attached to the flaps that produces a linear voltage output for this function.	
	Example
Display Flaps (Yes/No): _____	Yes

Optional Landing Gear Indicator



The landing gear position can be displayed on the pictured aircraft shown on the MVP-50P System Screen. This display is secondary to the gear lights mounted on the aircraft instrument panel. Each gear can be monitored independently, requiring three (Temperature or Resistive Fuel Level) channels on the EDC.

An alternate method is to use one EDC channel connected to the nose gear to activate the display of all three landing gears on the MVP-50 System Screen. The disadvantage of this method is when the nose gear is down, all the gears will be shown in the down position regardless of their actual position (although an UNSAFE Annunciator will show if any gear is hung).

An UNSAFE Annunciator will show between the two flaps on the MVP System Screen any time the UNSAFE Light on the aircraft panel is ON. This display is secondary to the UNSAFE lights mounted on the aircraft instrument panel and requires one (Temperature or Resistive Fuel Level) channel on the EDC. If the EDC does not have available channels, a second EDC can be purchased. A VI-221 Interface must be placed in each line with each EDC channel.

Optional Gear Indicator: This Option Requires 4 EDC Temperature or Fuel Level Channels.			
A VI-221 will be required for each EDC channel. See E.I. price sheet for more information.			
Function	Gear UP State Voltage Level	Gear Down State Voltage Level	Example
Nose Gear			0v, 12v
Main Left Gear			0v, 12v
Main Right Gear			0v, 12v
	ON-State Voltage Level	OFF-State Voltage Level	
UNSAFE			0v, 12v

Optional Gear Indicator: This Option Requires 2 EDC Temperature or Fuel Level Channels.			
(Alternate Method) A VI-221 will be required for each EDC channel. See E.I. price sheet for more information.			
Function	Gear UP State Voltage Level	Gear Down State Voltage Level	Example
Nose Gear (provides the signal for all gear indications)			0v, 12v
	ON-State Voltage Level	OFF-State Voltage Level	
UNSAFE			0v, 12v

Optional Landing Gear Warning

If the Landing Gear option and the Airspeed options are provided, a Landing Gear Warning may be activated. A voice warning will be generated when the Gear is Up and the Airspeed is less than X and the Manifold Pressure is less than Y. The value for the airspeed (X) should be set just above the aircraft's approach speed for landing with the gear down. The value for the Manifold Pressure (Y) should be set just above the M.P. setting when on approach for landing with the gear down. If the M.P. is set too high, you will get a gear warning on climb out.

Optional Gear Warning: This Option Requires no EDC Channels. The Landing Gear and Airspeed options must have been selected. See previous pages.		
Function	Value on Approach with the Gear Down plus 5% to 10%	Example
Airspeed		85 kts
Manifold Pressure		20.0 "Hg.

We (the undersigned) have entered and verified all the limits and markings on this worksheet to be correct and taken from the information in the aircraft's POH/AFM. We understand there is important safety information in the Installation and Operating Instructions that must be read before installing the MVP-50P and flying the aircraft.

Once the unit is installed and checked out, **IT IS THE MECHANIC'S RESPONSIBILITY TO MAKE CERTAIN that this password is changed to a unique number and is protected from unauthorized access.** By signing below the installer/mechanic accepts and assumes full responsibility for such action.

Owner/Pilot's Printed Name

Owner/Pilot's Signature

Date

Mechanic's Printed Name

Mechanic's Signature

Date