IEFIS Extender

Extender module for iEFIS “Lite” and regular iEFIS systems

Functions available depend on whether the Extender module is added to a regular (Full) iEFIS system or a “Lite” system.

Extender in the 'Lite” system:

Connects to one or two iEFIS “Lite” panels using panel RS232 port 2 which is used in a special high speed mode.

Provides 5 RS232 ports bringing the total number of usable RS232 ports to 6.
Provides 8 analog/digital inputs. These are the exact equivalent of the 8 analog/digital ports on an iBOX used with a regular iEFIS system.

Provides 5 digital outputs (transistor switches to ground). These are the exact equivalent of the 5 outputs on an iBOX used with a regular iEFIS system.

Provides a OAT sensor input compatible with a MGL OAT sensor (LM335 semiconductor sensor).

Provides a AOA sensor (Angle of attack). This sensor is the exact equivalent of the AOA sensor used on the iBOX in a regular iEFIS system.

CAN bus 1 and CAN bus 2 are not used.

Extender in the regular iEFIS system:

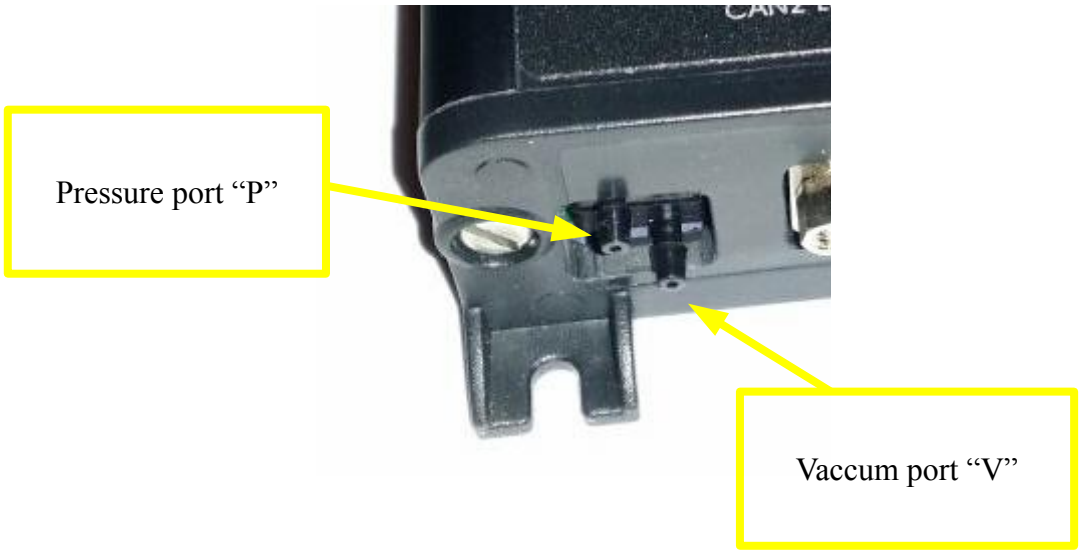
Connects to an iEFIS system using CAN bus interface 1.

Provides an additional 8 analog and digital inputs to the iBOX for a total of 16.

Provides an additional 5 digital outputs for a total of 10.

RS232 ports, CAN bus 2, OAT sensor and AOA sensor are not used.

The AOA sensor



The sensor ports are suitable for 2mm inside diameter PVC tubing or similar. **Please do not exert any large force while working with these ports.** They can break and excessive force can also break the sensor off the internal PCB.

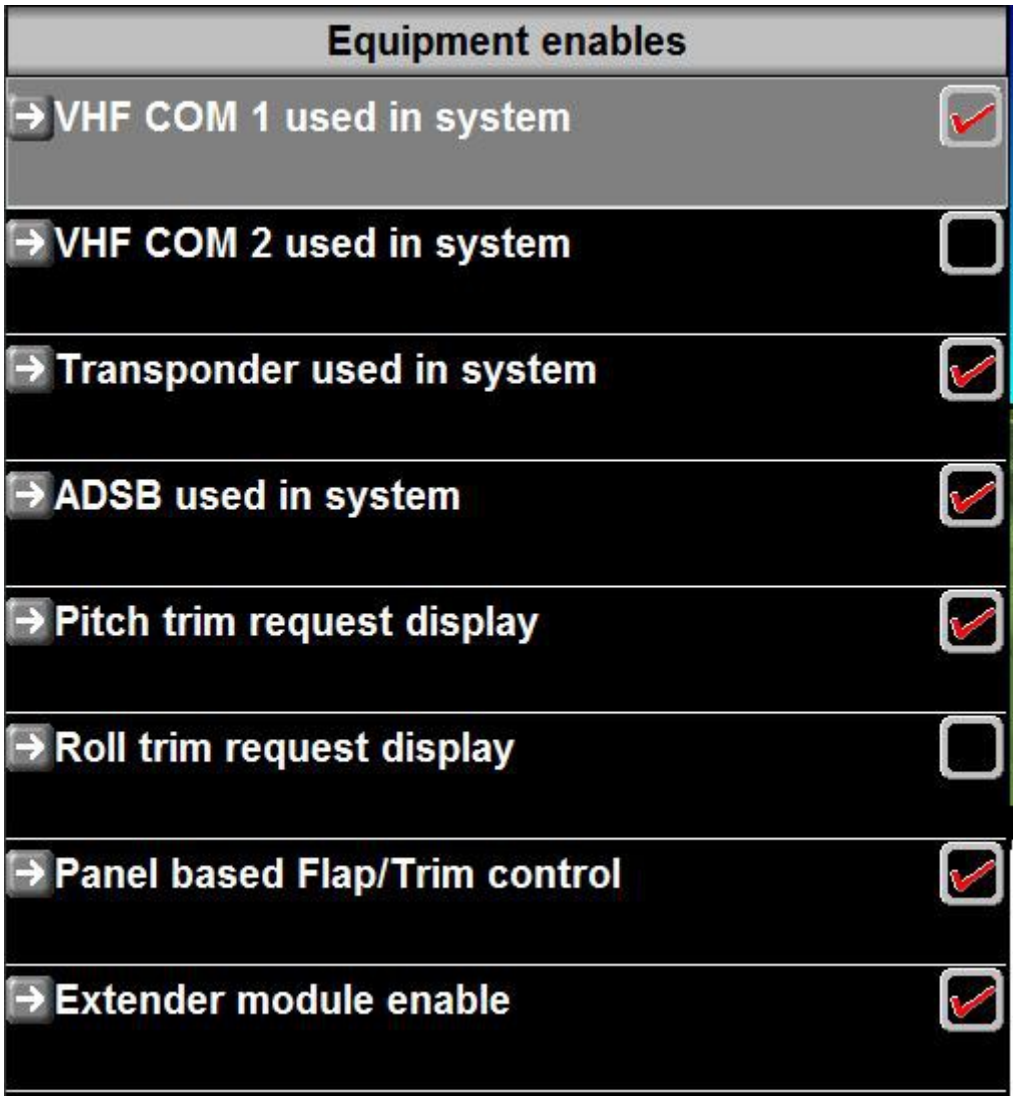
Please use the provided tubing to construct an adaptor if possible. You can easily create a suitable adaptor by using a standard 3mm inside diameter tubing and inserting the provided smaller diameter tubing. Use a small quantity of soapy water to assist.

Usage and calibration flight are exactly as per standard AOA sensor in a “regular” iEFIS system.

Note: the AOA sensor in the Extender is NOT used with a regular iEFIS system. The regular iEFIS system uses the AOA sensor provided with the iBOX.

Note: Should you have a dual panel iEFIS “Lite” system, you need to perform the calibration on both panels. You can do this one at a time or both together (recommended).

Enabling the Extender in the EFIS setup



Once connected, please enable the Extender module in the Equipment Enables menu (this is in the System Setup menu). You need to restart (power cycle your EFIS) to complete the installation. Please save your new setting by exiting the menu in the normal manner before removing power.

Input Connections on DB25 connector

AD1 to AD8	Analog or Digital inputs 1 to 8 for “Lite”. 9 to16 for “regular” iEFIS.
GND	Grounding point for use with sensors.
OAT	Outside air temperature sender (Type LM335, MGL OAT senders). These senders are polarized devices and connect between this input and GND.
Outputs 1 to 4	Transistor output (switch to ground), 0.5A DC maximum. Outputs 6 to 9 for regular iEFIS.
Alarm out	Transistor output (switch to ground), 0.5A DC maximum. Alarm output for “Lite”, output 10 for “regular” EFIS.
RX/TX2 to RX/TX6	5 RS232 serial ports. These appear as serial ports 2 to 6 for iEFIS “Lite” systems. Not used for “regular” iEFIS.

DB25 connector pins

1 - Analog/Digital input 1
2 - Analog/Digital input 2
3 - Analog/Digital input 3
4 - Analog/Digital input 4
5 - Analog/Digital input 5
6 - Analog/Digital input 6
7 - Analog/Digital input 7
8 - Analog/Digital input 8
9 - Digital output 1
10 - Digital output 2
11 - Digital output 3
12 - Digital output 4
13 - Alarm output

14 - RS232 RX2
15 - RS232 TX2
16 - RS232 RX3
17 - RS232 TX3
18 - RS232 RX4
19 - RS232 TX4
20 - RS232 RX5
21 - RS232 TX5
22 - RS232 RX6
23 - RS232 TX6
24 - Ground (same as power supply ground), used for sensor grounds.
25 - OAT sender

DB 9 connector pins

1 - Ground. Power supply ground.
2 - +12V DC supply. Range +8V to +18V.
3 - RS232 RX1
4 - RS232 TX1
5 - No connection.
6 - CAN 1 Low

7 - CAN 1 High
8 - CAN 2 Low
9 - CAN 2 High

Rear view of Extender module

Connecting to an iEFIS “Lite”

Use a shielded two conductor cable and connect Panel RS232 port 2 TX to RX1 on the DB-9 connector. Likewise, connect Panel RS232 port 2 RX to TX1 on the DB-9 connector.

Connect the shield to ground on the DB-9 connector (Pin number 1). If your Extender is connected to the same supply as your panel (very likely) do NOT connect the shield to the panel ground. Doing so would introduce a ground loop and possible radio interference.

In case of a dual panel “Lite” system, it is recommended to connect the Extender module to both panels RS232 port 2 ports. In this case you will wire these two ports in parallel (TX to TX of the other panel and RX to RX of the other panel).

Ensure that you second panel is setup to be the secondary panel and that a correct CAN bus connection is available between both panels.
Note: The secondary panel will not switch any outputs unless it becomes the active panel (in the event that the primary panel is not functioning).

Connecting to an iEFIS “Regular”

Connect the Extender CAN bus number 1 to the iBOX CAN interface (either one of the two interfaces). Observe the normal CAN bus wiring requirements (twisted pair wires,

termination resistors).

OAT sensor

Should you wish to use the OAT sensor input on the Extender, please configure your iEFIS “Lite” to use this sender input as source. This is done in the “Internal and Extender setup menu” (OAT probe source selection).

Testing basic functionality

In order to quickly find out if your Extender is connected and sending information to your panel, go to the Diagnostics menu and choose “Internal sensor diagnostics”.

On the iEFIS Lite observe the 8 analog channel values shown. Even if nothing is connected you should see the numbers changing by a little continuously (electrical noise at the Extender inputs). If you do not see anything changing, please verify your setup and wiring to the Extender.

The green LED on the extender should flash twice in a two second interval. This confirms that it is powered and that the internal processor is operating normally.

Power supply

Supply voltage: 12VDC. Range 8V to 18V.
Current consumption: <100mA (65mA typical).

It is recommended that a power supply is used that has been fitted with surge protection devices.

The Extender module should be powered from an avionics bus. It is not required that the module be supplied via its own breaker.

An inline power supply fuse (500mA slow blow) may be installed if desired.

Input impedance

Analog/Digital inputs: 12 K to ground, compatible in every way to iBOX equivalent inputs.

Outputs

Outputs are Darlington transistor open collectors, switching to ground. Low level is 0.6V.

Please observe maximum output current capability of 0.5A per output.

Should you switch inductive loads such as relays or motors it is mandatory to connect a reverse biased diode (such as a 1N4007) between the output and the positive supply point of the relay or motor. Failure to do this can damage the Extender module.

IEFIS Extender dimensions