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EVO

EMS USER GUIDE AND INSTALLATION MANUAL

EVOLUTION, THE BEST EVER!

Revision	Description
06/01/2022	Initial release
12/10/2022	Updated and corrected sections

REVISIONS HISTORY

Summary

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1. INTRODUCTION

- Standard diameter installation shape 80mm (3'' 1/8).
- Adjustable brightness screen ever, sunlight visible, up to 1200 cd/m².
- Special release under request to reach up to 2000 cd/m².
- Low power consumption down to 3.5W (300mA @ 12Vdc).
- Ergonomic interface with double aeronautical rotary knob and switch.
- High integration level (totally embedded sensors).
- Several types of sensors:
  - CHT
  - EGT
  - Oil Temperature
  - Coolant Temperature
  - Oil Pressure
  - Fuel Pressure
  - Fuel Flow
  - Fuel Level
  - RPM
  - Battery Voltage
  - Ammeter
  - CAT
  - OAT
  - ABT
  - MAP
  - TIT

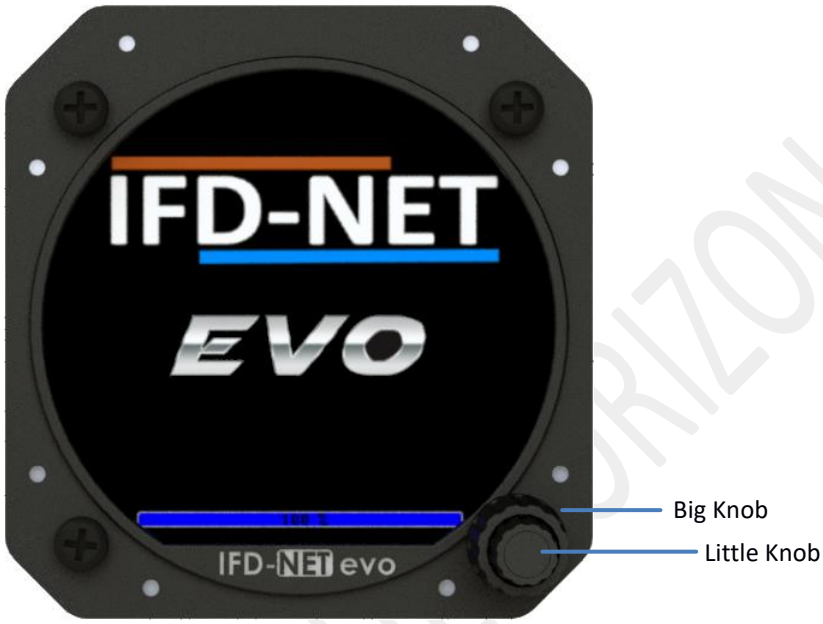
1.1. ELECTRICAL AND MECHANICAL SPECIFICATION

- Main power **10 - 28Vdc** 0.8A max with internal filter and peak transient protection.
- Functional temperature range 0°C to 70°C 90% Rh no condensation status.
- 85.4mm x 89mm x 67.5mm (width, height, depth).
- 1 or 2 MAP pneumatic inlets 1/8 NPT*.
- 1x Standard 9 pin SUB-D female connector for power and BUS connection.
- 2 x Standard 25 pin SUB-D female connector for sensors connection.

*2 MAP are only available in DUAL ENGINE model.

2. SYSTEM DECRIPTION

2.1. IFD-NET EVO EMS OVERVIEW



The IFD-NET EVO is part of a large range of instruments. In the follow sections will be described how to use the new aeronautical interface based on a high force double rotary knob with push switch.

Action	Effect
Tap the rotary switch button	Engage the actual focused feature. Use it to edit parameters or save those after their modification.
Rotate big rotary knob crown	Has different effects depending on the environment the user is. Please refer to below descriptions to deeply understand about this feature.
Rotate little rotary knob crown	Has different effects depending on the environment the user is. Please refer to below descriptions to deeply understand about this feature.
Long tap on switch button	Recall of the environment menu. Keep pressed for 2 seconds to obtain the options menu displayed on screen.

3. UNIT DESCRIPTION

The IFD-NET EVO EMS interface is based on a double concentric rotary knob with a push switch that gives access to all the settings the pilot needs during the flight, and allow to adjust the setup's parameters.
On the right side of this page is shown the main page of instrument.
Spinning the big crown rotary knob will show other sensors (if set) on the center-right part of the screen. Spinning the little crown rotary knob will show other sensors (if set) on the low part of the screen.
The pilot can access the main setup by keeping pressed the knob for about 2 seconds until the screen, shown on the right, appears.
Within setups, by rotating the little rotary knob's crown, moves the selection up and down, and tapping button confirms the highlighted selection.

IFD-NET EVO is available in three different models:

VERSION	Thermocouples	Programmable sensors	Impulsive input	MAP
BASE	6	6	3	1
FULL	12	12	3	1
DUAL ENGINE	12	12	3	2

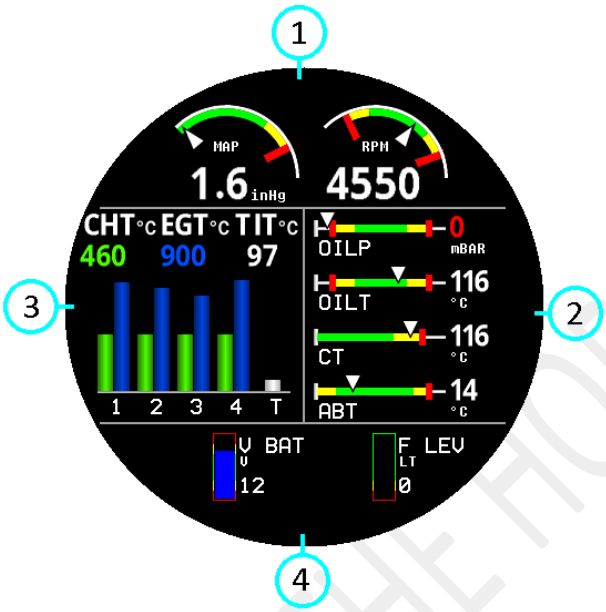
In order to realize a network, IFD-NET EVO EMS can be classified in:

- Master: It consists in a single unit witch capture and visualize various engine data and generate a RS485 pack data that will be used from slaves connected to the bus.
- Slave: The unit reads data from RS485 BUS

4. OPERATION

4.1. PAGE EMS

EMS screen is divided in 4 main areas:



The following sensors are displayed:

① MAP and RPM indicators.

② CHT, EGT and TIT indicators. System display only configured sensors, adjusting histogram bases

③ OIL P, OIL T, CT, ABT indicators in this order.

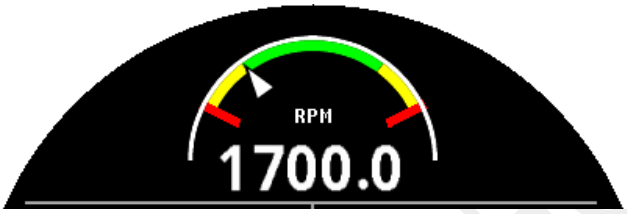
④ V BAT, FUEL LEVEL 1

4.1.1. SCREEN SECTION 1: Top Screen

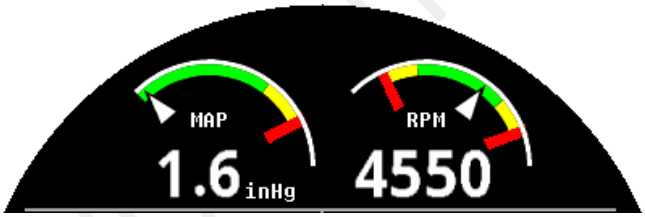
In order to setup configuration, in this area will appears one or two arc setting indicators.
Sensor priority is:

1. MAP 1
2. RMP 1
3. MAP 2
4. RPM 2

If only one sensor is active, the arc appears as a semicircle centered on top of the screen



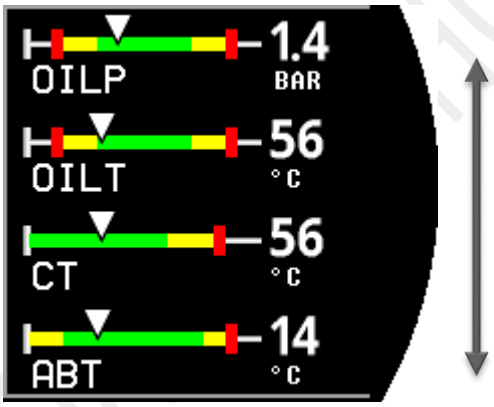
If there are more than two sensors set, the remaining are showed in SCREEN SECTION 2: Right Screen and system shown two arc indicator.



4.1.2. SCREEN SECTION 2: Right Screen

In order to setup configuration, in this area will appears up to four horizontal linear indicators.
Sensors priority are:

- [MAP 2] if not in top screen
- [RPM 2] if not in top screen
- Oil Pressure (OILP)
- Oil Temperature (OILT)
- Fuel Pressure (FUEL P)
- Fuel Flow (F FLOW)
- Coolant Temperature (CT)
- Carburetor Air Temperature (CAT)
- Cockpit Temperature (ABT)
- Outside Air Temperature (OAT)



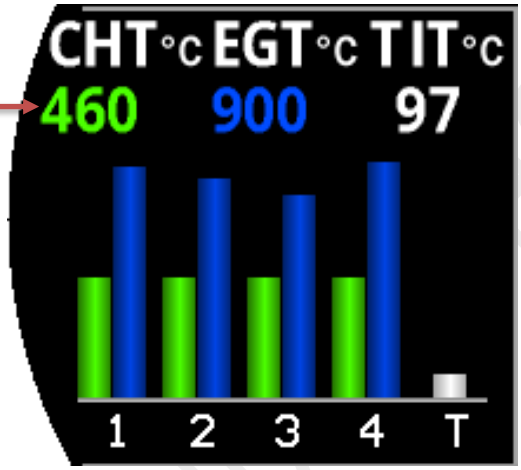
If there are more than 4 sensors set, spinning the big rotary knob will show other sensors, following the priority table above

4.1.3. SCREEN SECTION 3: Left Screen

Three types of sensors are shown in this section:

- Up to 6 CHT sensors
- Up to 6 EGT sensors
- 1 Turbine Inlet Temperature

Graphic dimensions depends to how many sensors are configured. This section shows also the maximum actual value per type

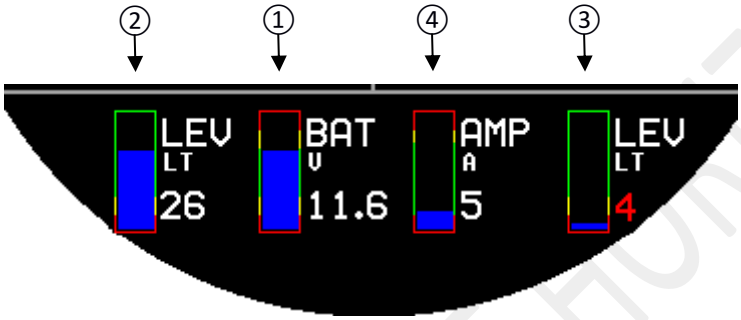


CHT sensor values are green, EGT sensor values are blue and TIT sensor value is white.

4.1.4. SCREEN SECTION 3: Bottom Screen

In order to setup configuration, in this area will appears up to four vertical linear indicators. Sensors priority are:

1. Battery Voltage (always available and shown)
2. Fuel Level 1
3. Fuel Level 2
4. Alternator Current



Only sensors correctly configured and calibrated are shown in this section.

4.2. SETUP MENU

The pilot can access the main menu by keeping pressed the knob for about 2 seconds until the screen.
In every SETUP page there are 2 types of items:

1. Parameters (Numeric, symbolic or other)
2. Sub-Menu

Spinning the big rotary knob move cursor between items. Spinning the little rotary knob, in certain pages (i.e. Thermocouples, sensors and others) it's possible to scroll between available pages.

To modify a Parameter:

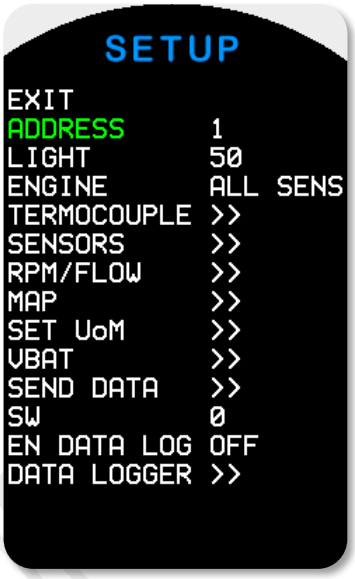
1. Move the cursor on the parameter (parameter become GREEN)
2. Press the knob (Value become GREEN)
3. Spin the big rotary knob to enter the desired value
4. Press the knob (Value turn back to WHITE)(

To enter a Sub-Menu

1. Move the cursor on the parameter (parameter become GREEN)
2. Press the knob

4.2.1. MAIN SETUP

- **EXIT**: Close setup.
- **ADDRESS**: Bus Address.
- **LIGHT**: Screen brightness regulation.
- **ENGINE**: Presets of the selected engine.
- **THERMOCOUPLE**: Thermocouples setup. See "**4.2.2 THERMOCOUPLES** ".
- **SENSORS**: Sensors setup. See "**4.2.3 SENSOR SETUP**".
- **RPM/FLOW**: Pulse input setup. See "**4.2.4 RPM/FLOW** ".
- **MAP**: Manifold setup.
- **SET UoM**: Set unit of measure for physical values.
- **VBAT**: Battery voltage indicator setup.
- **SEND DATA**: Send setup data to slave units.
- **SW**: Software Version.
- **EN DATA LOG**: Data Log setup.
- **DATA LOGGER**: Logger monitor.
- **SAVE SETUP**: Save setup data to SD/MMC.
- **LOAD SETUP**: Restore setup data from SD/MMC.



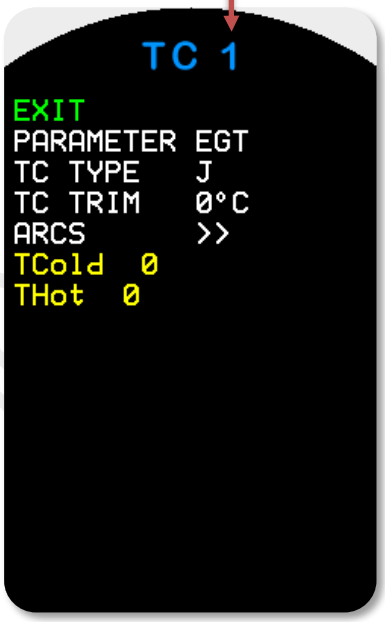
Main setup

4.2.2. THERMOCOUPLES SETUP

IFD-NET EVO EMS is able to read up to 12 thermocouples (TC) fully configurable.

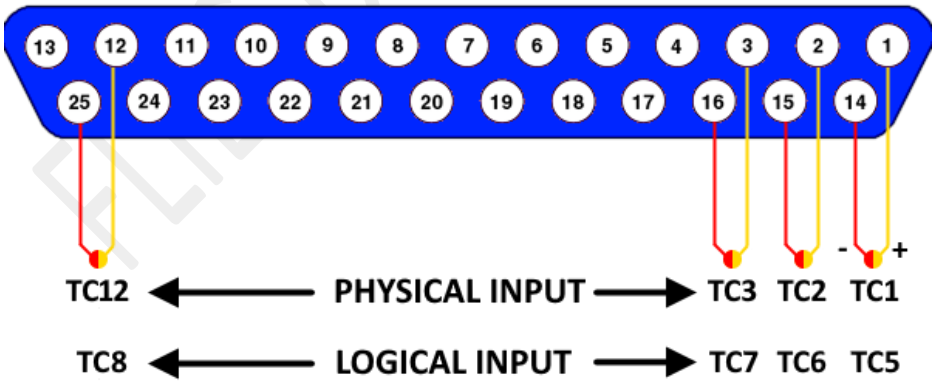
Through the THERMOCOUPLE setup it is possible to link the physical input (rear connector EMS1) of the thermocouple to its logical function.

- **EXIT:** Come back to main setup
- **PARAMETER:** Type of measurement required. The available values vary depending on the model
- **TC TYPE:** Construction type of the thermocouple. Available values j, k, n, e, r, s, t (See thermocouple data sheet under examination):
- **TC TRIM:** offset value
- **ARCS:** Set coloured arcs (See **4.2.8 ARCS SETUP**Errore. L'origine riferimento non è stata trovata.)
- **TCold:** Cold junction temperature indication
- **THot:** Hot junction temperature indication



Thermocouples setup

Example of thermocouples configuration



EMS1 CONNECTOR

Thermocouple grade type K
Wire color according to ANSI MC96.1

4.2.3. SENSOR SETUP

EVO EMS is able to read up to 12 sensors configurable according to the model.
Like Thermocouples, through the SENSORS setup it is possible to link the physical input of the sensor to its logical function.

The characterization of the sensor can be done in two ways:

1. Selecting a specific sensor model from the internal database (parameter SENS)
2. By inserting customized characteristic (parameter TYPE) and curve (parameter CURVE)

Settings of Sensors menu

- **EXIT:** Come back to main setup
- **PARAMETER:** Type of measurement required. The available values vary depending on the model
- **TYPE:** sensor construction technology. Valid only if the SENS parameter is not active. Possible values:
    - **V (Voltage Sensor)**
    - **I (Current Sensor)**
    - **R (Resistive Sensor)**
- **SENS:** Sensor model (See **10 SENSORS LIST**).
- **RES:** External parallel resistance applied (See **5.4.4**CURRENT SENSORS NOTE).
- **CURVE :** Manual setting of the sensor characteristic curve (See **4.2.6 CURVES SETUP**).
  If sensor PARAMETER is F LEV (fuel level) this voice became **CALIB**
- **ARCS :** Set coloured arcs (See **4.2.8 ARCS SETUP**)

Sensors setup

4.2.4. RPM/FLOW SETUP

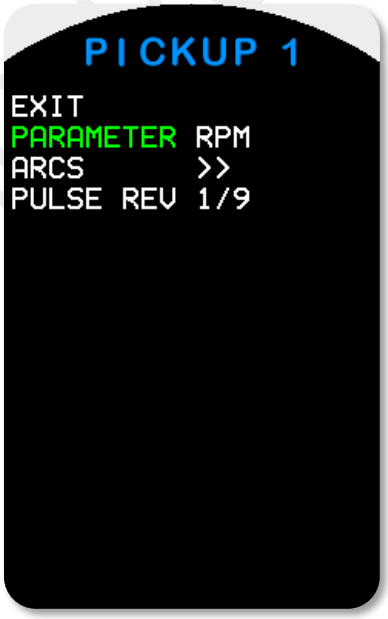
EVO EMS can read up to 3 impulsive inputs fully configurable. Each sensor can be connected to each input REVn (See 5.3 EXPANSION CONNECTORS). Through the RPM / FLOW setup it is possible to link the physical input of the sensor to its logical function.

Logical features availables are :

1. RPM (rpm motor or rotor)
2. F FLOW (Fuel Flow)

Settings of RPM/FLOW setup:

- **EXIT:** Come back to main setup
- **PARAMETER:** Type of measurement required. The available values vary depending on the model
- **ARCS :** Set coloured arcs (See **4.2.8 ARCS SETUP**)
- **PULSE REV/FLOW:** Indicate pulse revolutions respectively or the impulse liters



Pickup setup

4.2.5. MAP/VBAT SETUP

These setup allow the settings of coloured arcs for MAP and Power Supply instruments (See **4.2.8 ARCS SETUP**).

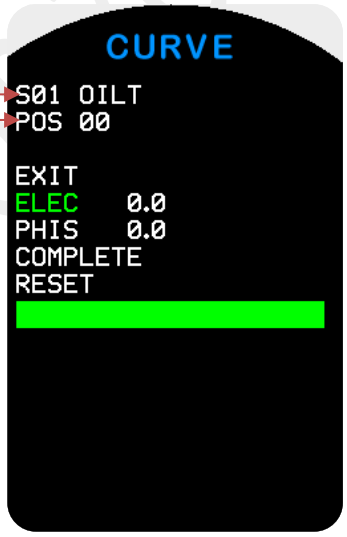
4.2.6. CURVES SETUP

The sensor characterization curves are composed of 24 distinct points.
For each point, the value of the electrical quantity and the corresponding value must be entered value of the physical quantity to be measured.

Spin the big crown rotary knob to scroll between parameters
Spin the little crown rotary knob to select the right point

Settings of curve setup:

- Sensor Name
- Point Index
- EXIT : Come back to SENSORS menu
- ELEC : Value of the electrical quantity at the considered point
- PHIS : Value of the physical quantity of the considered point
- COMPLETE : Complete and apply the curve
- RESET : Reset all curve points

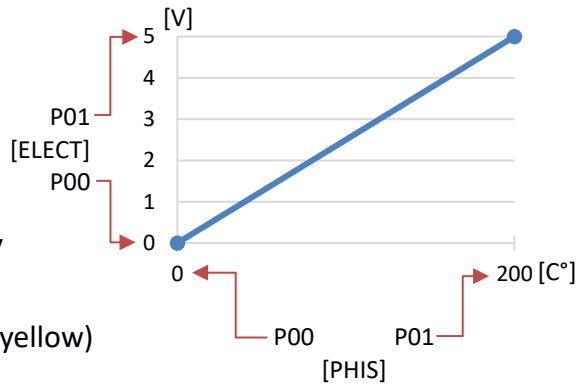


Menu Curve

A color bar at bottom indicates if the curve is correctly configured.
Every curve must be monotone, growing or downwarding

Less than 24 points can be entered manually; in this case press on COMPLETE copy the actual point until the end.
Suppose to insert the curve of a linear sensor that has the following characteristics:

- Temperature-Voltage sensor
- 0V -> 10°C
- 5V ->200°C



To set this curve :

- Select POS 00 by spinning the little crown rotary
- Set ELEC parameter to '0'
- Set PHIS parameter to '10' (colored bar turn to yellow)
- Select POS01 by spinning the little crown rotary
- Set ELEC parameter to '5'
- Set PHIS parameter to '200'
- Select COMPLETE position by spinning the big crown rotary
- Press KNOB to complete operation (colored bar turn to green)

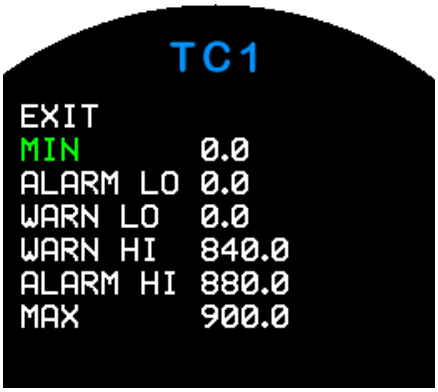
4.2.7. FUEL LEVEL CALIB SETUP

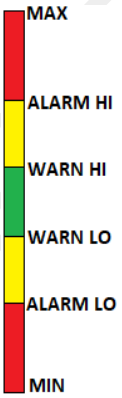
This page appears only in case of FUEL LEVEL sensor.

The user must empty the tank then fill it in ten steps; in each step the amount to be added is equal to 1/10 of the maximum capacity (defined in the arcs setup)

4.2.8. ARCS SETUP

In the arcs setup it is possible to configure the operating areas of the sensors.
Up to 5 intervals can be configured:





By adjusting the parameters, it is possible to obtain various combinations useful for the description of various types of measurement.For example, in the case of fuel level sensor with 80Lt tank, setting:

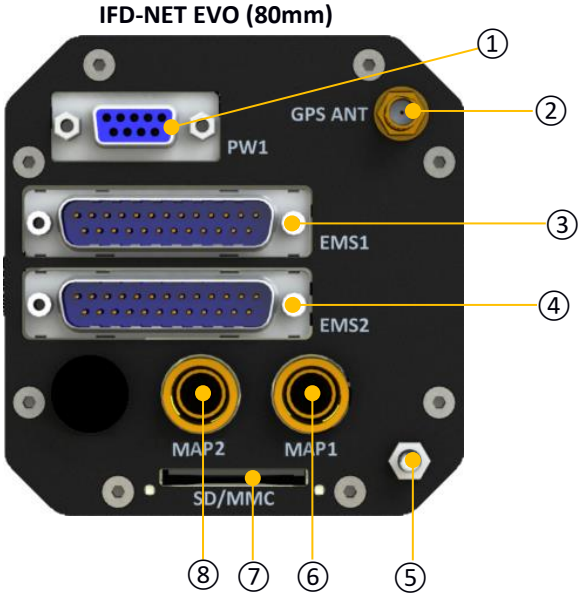
MIN	0
ALARM LO	10 Lt
WARN LO	15 Lt
WARN HI	80 Lt
ALARM HI	80 Lt
MAX	80 Lt

you get the classic Fuel Level indication RED YELLOW GREEN

5. CONNECTIONS

5.1. REAR CONNECTORS VIEW AND DESCRIPTION

IFD-NET EVO (80mm)



The power connector is explained in the section "7.1 POWERING AND EXPANSION BUS". Pneumatic inlets, MAP1 and MAP2* pressures, are provided by two brass 1/8 NPT female plugs. **Use adequate adapters with rubber O-rings and do not turn hoses with too much force in order to avoid damage to unit's internal parts.**

① Power Connector
② GPS Antenna (Not Used, Not present)
③ Expansion connector 1
④ Expansion connector 2
⑤ Ground chassis
⑥ MAP1 connector
⑦ Slot for SD-Card
⑧ MAP2 connector

IMPORTANT NOTES ON MAP CONNECTION

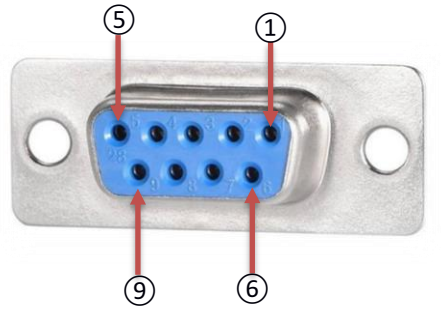
Ensure that during installation the MAP tubes doesn't develop any twist and/or kinks, otherwise the MAP indications will not work correctly.

When fixing the MAP pipes to the instrument, please be particularly careful to not twist the 1/8 NPT female adapters on the back of the unit, if a too strong torque is applied, these adapters may rotate and twist the internal rubber pipes, causing a malfunction.

We suggest to use hose adapters with rubber O-Ring in order to avoid pressure leaks, and in any case don't lock the assembly too strongly.

*MAP2 available only on dual engine version

5.2. POWER CONNECTOR



INSTRUMENT CONNECTOR PINOUT:

- **Pin 1**: Input 10-28 Vdc
- **Pin 2**: Not used
- **Pin 3**: Not used
- **Pin 4**: RS485 A+ signal for FLY BUS®
- **Pin 5**: GND
- **Pin 6**: Input 10-28 Vdc (internally connected to pin 1)
- **Pin 7**: Not used
- **Pin 8**: GND
- **Pin 9**: RS485 B- signal for FLY BUS®

5.3. EXPANSION CONNECTORS

5.3.1. EXP. CONNECTOR (EMS1)

- **Pin 1**: TCp1
- **Pin 2**: TCp2
- **Pin 3**: TCp3
- **Pin 4**: TCp4
- **Pin 5**: TCp5
- **Pin 6**: TCp6
- **Pin 7**: TCp7
- **Pin 8**: TCp8
- **Pin 9**: TCp9
- **Pin 10**: TCp10
- **Pin 11:** TCp11
- **Pin 12:** TCp12
- **Pin 13: GND**
- **Pin 14:** TCn1
- **Pin 15:** TCn2
- **Pin 16:** TCn3
- **Pin 17:** TCn4
- **Pin 18:** TCn5
- **Pin 19:** TCn6
- **Pin 20:** TCn7
- **Pin 21:** TCn8
- **Pin 22:** TCn9
- **Pin 23:** TCn10
- **Pin 24:** TCn11
- **Pin 25:** TCn12

TCp(n): thermocouple n positive pin
TCn(n): thermocouple n negative pin

5.3.2. EXP. CONNECTOR (EMS2)

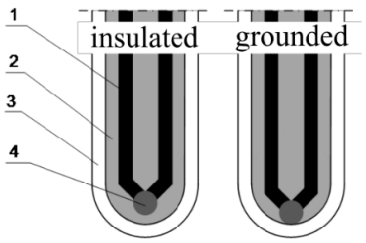
- **Pin 1**: **GND**
- **Pin 2**: SE2
- **Pin 3**: SE4
- **Pin 4**: SE6
- **Pin 5**: SE7
- **Pin 6**: SE9
- **Pin 7**: SE11
- **Pin 8**: R2D
- **Pin 9**: **GND**
- **Pin 10**:REV1
- **Pin 11:GND**
- **Pin 12:**CANBUS L
- **Pin 13:5V Out**
- **Pin 14:** SE1
- **Pin 15:** SE3
- **Pin 16:** SE5
- **Pin 17: GND**
- **Pin 18:** SE8
- **Pin 19:** SE10
- **Pin 20:** SE12
- **Pin 21:** R1D
- **Pin 22:** REV0
- **Pin 23:** REV2
- **Pin 24:** CANBUS H
- **Pin 25: GND**

SE(n): Sensor n input
R(n)D: Clear contact n (closes to GND)
REV(n): Impulsive input
CANBUS H/L: can-bus lines

5.4. SENSORS AND THERMOCOUPLES WIRING

5.4.1. THERMOCOUPLES

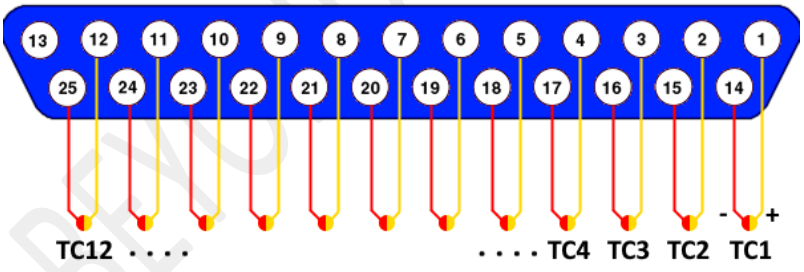
IFD-NET EVO EMS can read various type of thermocouples. Isolated thermocouples are better, but also not isolated thermocouples can be used; not isolated thermocouples can be affected by ground-common-mode noise while isolated thermocouples haven't this problem and provide a better signal. IFD-NET EVO EMS has a differential input who limits this effects.



1 – conductor 2 – insulation
3 – sheathing 4 – hot junction (welding)

Thermocouple configuration type

5.4.2. THERMOCOUPLE WIRING EXAMPLE

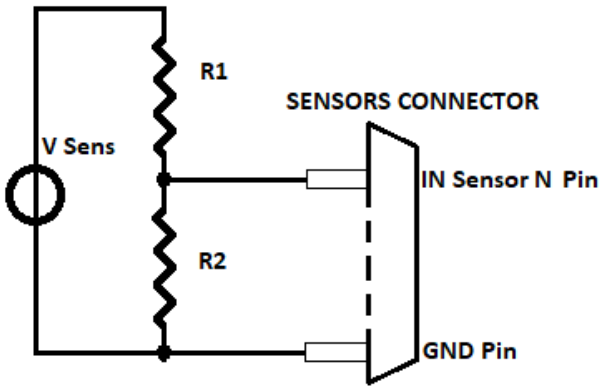


Thermocouple grade type K
Wire color according to ANSI MC96.1

As described in section 4.2.2 THERMOCOUPLES SETUP, it is possible to link the physical input of the thermocouple to its logical function.

5.4.3. VOLTAGE SENSORS NOTE

In case of voltage sensors, the maximum sensor output must be 5V.
if the maximum sensor output exceeds 5 volts, a divider must be connected to the input pins, as shown below

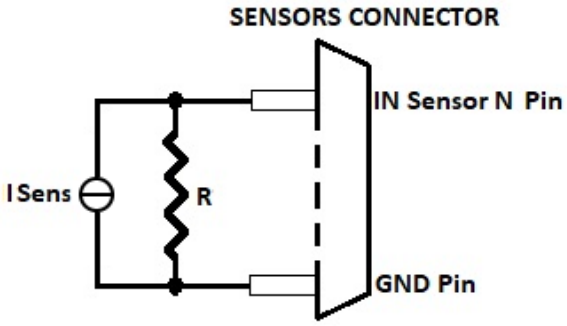


Typical values :

Sensor Max Value	R1 Value	R2 Value
5V	No needed	No needed
10V	1.5K Ω 1%	1.5K Ω 1%

5.4.4. CURRENT SENSORS NOTE

In case of current sensors, connect an electrical resistance in parallel to the sensor, the value of which must be set in the setting table of the corresponding sensor.



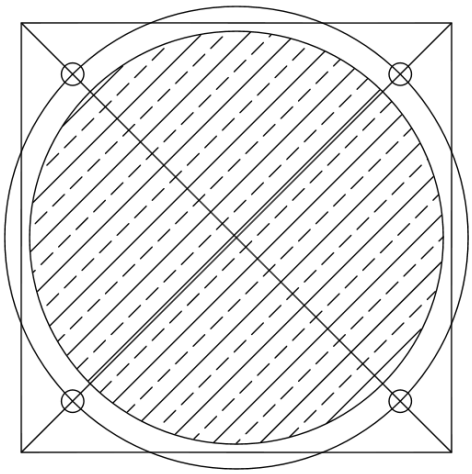
Typical values :

Sensor Output	Resistor Value
4...20 mA	240 Ω
0...10 mA	480Ω

6. INSTALLATION GUIDE

The IFD-NET EVO EMS model has a standard 80mm aeronautical shape and is intended to be installed into a standard 80mm hole (3.125'').

This means the installer should observe the standard way in order to obtain a correct installation on the unit. Refer to the hole templates below in case your aircraft doesn't have 80mm holes already prepared.



3 1/8 (80mm) Instrument Hole

1. Draw a 3.25" X 3.25" Square
2. Scribe 2 diagonal lines corner to corner
3. Using the center of the lines, scribe a 3.5" diameter circle.
4. At the intersection of the diagonals and the 3.5" dia circle drill 4 holes to clear #8 screw (.170" dia.)
5. Using the center of the diagonal lines cut a hole with a hole saw 3.125" dia.

To lock the IFD-NET EVO EMS (80mm) unit on your cockpit use the three black screws provided in the purchase box, otherwise select different screws with same dimension of 4MA x 10mm MAX.

The IFD-NET EVO (80mm) is installable in a standard hole, keeping in account that the lower-right screw hole shall be enlarged to a diameter of 7.5 mm to accommodate the rotary knob.

The screws on the remaining three holes shall be tightened with appropriate torque, in a way to keep the instrument fixed and not introduce any vibration.

Remove the aluminum knob by turning on the little screw. This is because the encoder shaft needs to pass throw the 7.5mm diameter hole in the bottom right corner of the 80mm hole.

After putting the instruments in the reworked slot, install the aluminum knob and turn its screw to lock it; use a plastic profile to obtain a thickness of about 1mm between the cockpit surface and the bottom part of the aluminum knob.

Use the provided 4mm MA black screws (length 10mm) to fix the instrument to the panel. Do not over-tighten the screws in order to avoid damage to the IFD-NET chassis. Use a medium thread locker to ensure screws will not come off due to vibrations.

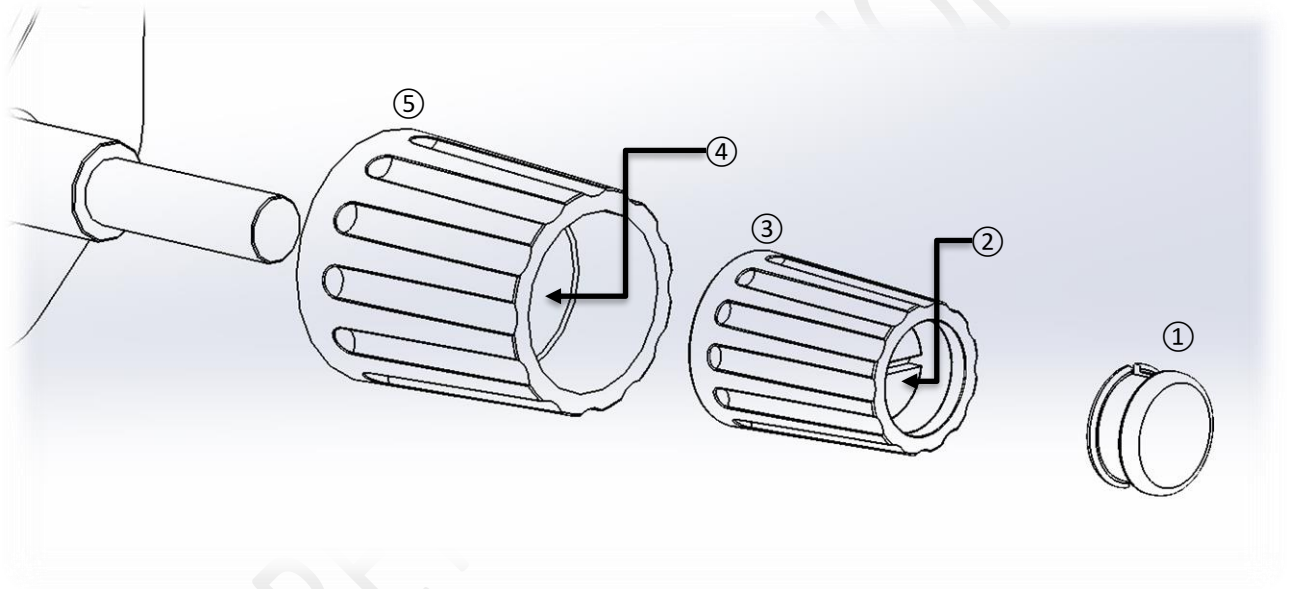
6.1. DISASSEMBLY/ASSEMBLY THE KNOBS

To disassembly/assembly the knobs it need:

- flat screwdriver (blade 4 x 0.8mm)
- socket hex screwdriver (6mm)

6.1.1. DISASSEMBLY STEPS

1. Using a thin blade or fingernail, remove frontal cap ①
2. With a flat blade screwdriver unscrew (not completely, half turn) the screw ② under the cap ① and remove the little knob ③
3. With a socket hex screwdriver unscrew the hex nut ④ (not completely, about half turn) and remove the big knob ⑤



It is not recommended to completely unscrew the nuts and screws of the knob as reassembly may be difficult.

6.2. SELECTING AN APPROPRIATE INSTALLATION POSITION

IFD-NET EVO EMS is a multi-sensor system based on a variety of sophisticated transducers. Every sensor has a sensitive element which measure a different physical quantity

- Avoid installing the equipment near hot surfaces. A good idea could be to ventilate the rear of the cockpit in order to protect instruments from overheating during exposure of the aircraft to direct sunlight.

There is plenty of documentation available that explains how to correctly install avionic instruments. Please refer to technical literature for more information.

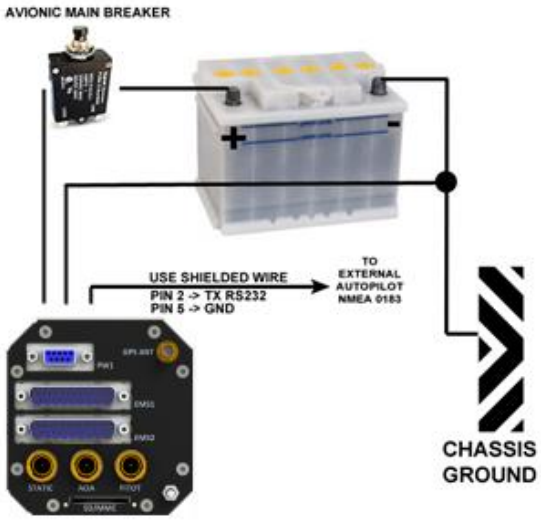
7. ELECTRICAL CONNECTIONS

7.1. POWERING AND EXPANSION BUS

The electrical connection of the EMS models is very simple. As all of the sensors are inside the metal aluminum housing, the only electrical connection it needs is the main power line (10 to 28Vdc using an aeronautical safety breaker) and an optional connection to the expansion BUS. Please contact vendor in order to find out more details on the expansion accessories designed for this unit.

On the right is a simple wiring diagram for electrical connection of the IFD-NET EVO.

Use wires with a cross section not less than 1.5 square millimeters. Keep connections as short as possible.



IFD-EVO wiring diagram

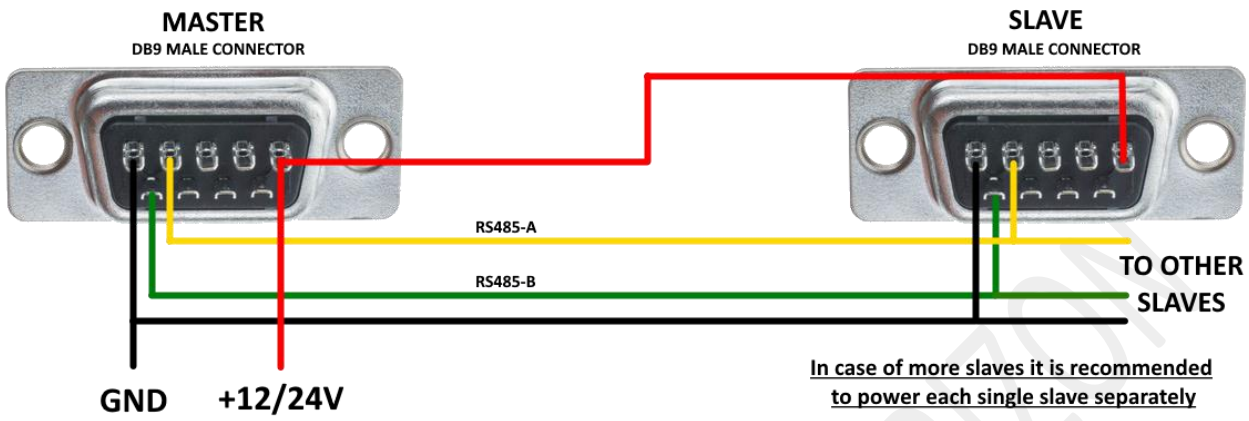
7.2. EMS POWER CONNECTOR

1. Main power supply (acceptable voltages 10 - 28Vdc).
2. Not Used.
3. Not Used.
4. (A) Pole of RS485 BUS.
5. Ground. Connect to Ground chassis of aircraft or to negative pole of electric circuit.
6. Main power supply (acceptable voltages 10 - 28Vdc).
7. Not used.
8. Ground. Connect to Ground chassis of aircraft or to negative pole of electric circuit.
9. (B) Pole of RS485 BUS.

Pins 1 and 6 must be connected both to the positive pole of aircraft electric circuit. Pins 5 and 8 must be connected both to negative pole of aircraft electric circuit.

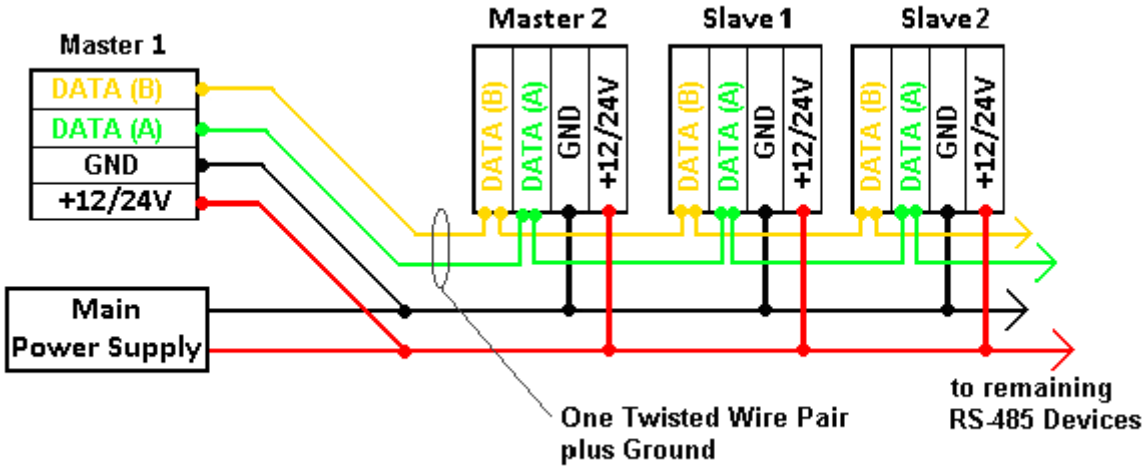
Is strictly recommended to connect the dedicated GROUND shaft on the rear of the instrument directly to the metal ground chassis of the aircraft by an adapt “ring faston terminal” and by a black cable with 2.5 square millimeters section. This practice may decrease radio frequency noises generated by the device and improve the filtering efficiency of internal electronic components.

7.3. EMS MASTER SLAVES CONNECTION



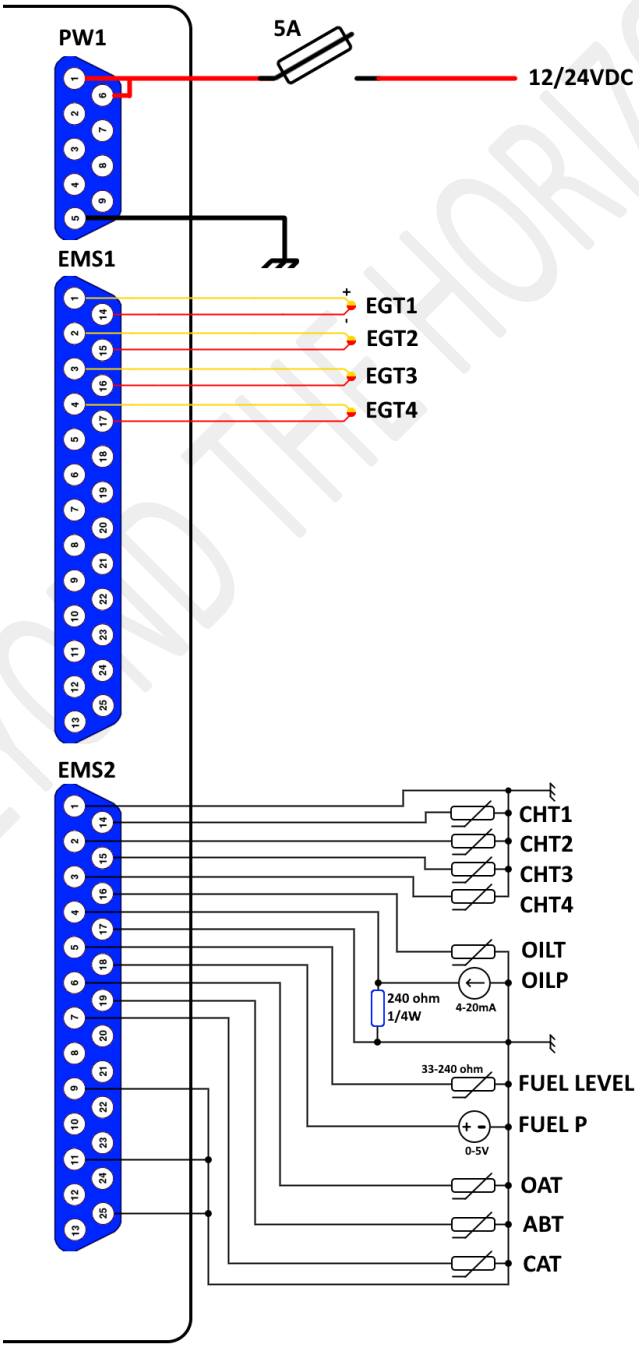
7.3.1. WIRING SPECIFICATION

The MASTER-SLAVE connection has to be made by shielded cable with at least 4 conductors with a section equal to or greater than 0.5mm^2 (20AWG) and less than 1 meter in length.
In case of lengths greater than 1 meter it is recommended to increase the cable section to 1 mm^2 (17AWG).
If several SLAVE units are to be connected, it is recommended to separate the bus cable from the power supply (see image below).



8. WIRING EXAMPLE

- 4 EGT (thermocouples)
- 4 CHT (thermocouples)
- 1 OilT (R sensor)
- 1 OilP (I sensor 4 -20 mA, need external resistor 240ohm 1/4w)
- 1 F Lev (R sensor)
- 1 FuelP (V sensor 0-5V)
- 1 OAT (R sensor)
- 1 ABT (R sensor)
- 1 CAT (R sensor)



See next for parameter configuration.

9. SYSTEM CONFIGURATION EXAMPLE

Sensors list to read:

- 4 EGT (thermocouples)
- 4 CHT (R sensor)
- 1 OilT (R sensor)
- 1 OilP (I sensor 4 -20 mA)
- 1 F Lev (R sensor)
- 1 FuelP (V sensor 0-5V)
- 1 OAT (R sensor)
- 1 ABT (R sensor)
- 1 CAT (R sensor)
- 1 MAP

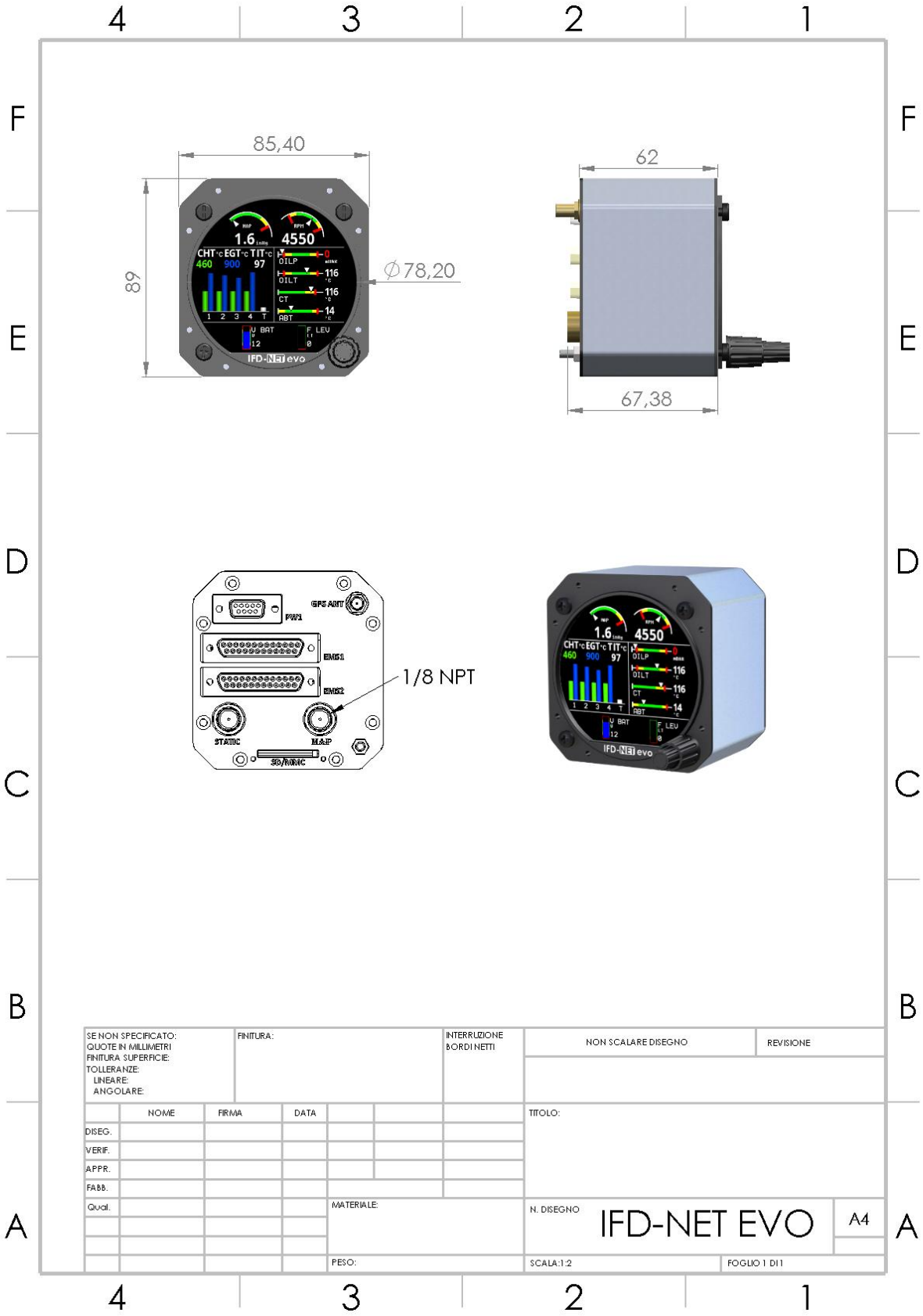
It is mandatory to set :

- Thermocouple 1,2,3,4
  - PARAMETER EGT
  - TC TYPE K
  - TC TRIM (if needed)
  - ARC
- Sensors 1,2,3,4
  - PARAMETER CHT
  - TYPE R
  - SENS ROTAX CHT L or ROTAX CHT R
  - ARC
- Sensor 5
  - PARAMETER OilT
  - TYPE R
  - SENS Rtx OilT
  - ARCS
- Sensor 6
  - PARAMETER OilP
  - TYPE I
  - SENS K456180
  - ARCS
- Sensor 7
  - PARAMETER FLev
  - TYPE R
  - SENS L E240F33
  - ARCS
- Sensor 8
  - PARAMETER FuelP
  - TYPE V
  - CURVE (Set curve 0-5V/0-10PSI)
  - ARCS
- Sensor 9,10,11
  - PARAMETER OAT/ABT/CAT
  - TYPE R
  - SENS (set according to the sensor installed)
  - ARCS
- MAP
  - ARCS

10. SENSORS LIST

NAME	IFD-EMS CODE	PARAMETER	TYPE	MAX VAL	OPERATIONAL NOTES
DYNON 100434-000	DY100434-000	MAP	V	5V	---
GRT MAP 01/02	GRTMAP 01/02	MAP	V	5V	---
ROTAX 912 100411-002	R912100411-002	OIL PRESS	R	240Ω	---
GRT HPS-01	GRT HPS-01	OIL PRESS	R	240Ω	---
JABIRU OIL PRESS INSTALLED	Jabiru OilP	OIL PRESS	R	400Ω	---
Rotax P/N 956413	RtxP/N 956413	OIL PRESS	R	1800 Ω	---
Dynon 100409-001	Dyn100409-001	OIL TEMP	R	2000 Ω	---
Dynon 100409-000	Dyn100409-000	OIL TEMP	R	2000 Ω	---
ROTAX OIL TEMP INSTALLED	Rtx OilT	OIL TEMP	R	2000 Ω	---
JABIRU OIL T INSTALLED	Jab OilT	OIL TEMP	R	2000 Ω	---
Chevrolet LS7 INSTALLED	ChevLS7 OilT	OIL TEMP	R	3000 Ω	---
Dynon 100411-000 (carb)	Dy100411-000	FUEL PRESS	R	3000 Ω	---
Dynon 100411-001 (inj)	Dy100411-001	FUEL PRESS	R	200 Ω	---
GRT LPS-02	GRT LPS-02	FUEL PRESS	R	2000 Ω	---
Dynon P/N 100413-000	Dy100413-000	CARB TEMP	R	100K Ω	---
GRT CARB-01	GRT CARB-01	CARB TEMP	R	30K Ω	---
Dynon P/N 100468-000	Dy100468-000	CARB TEMP	R	500K Ω	---
ROTAX CHT L	ROTAX CHT L	CHT	R	10K Ω	---
ROTAX CHT R	ROTAX CHT R	CHT	R	10K Ω	---
Rotax 801-10-1	Rotax 801-10-1	CHT	R	2000 Ω	---
Dynon P/N 100409-001	Dy100409-001	COOL T	R	80K Ω	---
Chevrolet LS7	Chevrolet LS7	COOL T	R	500K Ω	---
Dynon P/N 100409-000	Dy100409-000	COOL T	R	300K Ω	---
Rotax 801-10-1	Rotax 801-10-1	COOL T	R	150K Ω	---
Dynon P/N 100411-000	Dy100411-000	FUEL PRESS	R	3000 Ω	---
Dynon P/N 100433-000	Dy100433-000	OAT	R	500K Ω	---
Dynon P/N 100433-001	Dy100433-001	OAT	R	500K Ω	---
GRT OAT-01	GRT OAT-01	OAT	R	500K Ω	---
Dynon P/N 100433-000	Dy100433-000	G P TEMP	R	60000 Ω	---
Dynon P/N 100433-000	Dy100433-000	G P TEMP	R	60000 Ω	---
ROTAX 965530	RTX 965530	CHT,Oil T	R	1800 Ω	---
ROTAX 965531	RTX 965531	CHT,Oil T	R	1800 Ω	---
ROTAX 966385	RTX 966385	CHT,Oil T	R	800 Ω	---
KELLER 456180	K456180	OilP, FuelP	I	4-20mA	---
VDO360003	VDO360003	OilP, FuelP	R	180 Ω	---
VDO360004	VDO360004	OilP, FuelP	R	150 Ω	---
FUEL LEVEL	L E240F33	FUEL LEVEL	R	33-240 Ω	---

11. MECHANICAL DIMENSIONS DIAGRAM



12. ORDERING INFORMATION

IFD-NET EVO is part of a large range of products. Because of their differing internal electronic configuration, is not possible to switch between the different models after final testing. Please select the model keeping in account your exact needs or talk to our technical department for guidance to meet your aircraft configuration.

Below you'll find the ordering codes for different versions of the EMS and its optional tools/spare:

- IFD-NET EVO EMS BASE
- IFD-NET EVO EMS FULL
- IFD-NET EVO EMS DUAL ENGINE
- IFD-NET EVO EMS SLAVE
- 1/8 NPT MALE to RUBBER PIPE HOSE ADAPTERS
- (T) RUBBER PIPE HOSE ADAPTER
- SD CARD Extension.

Note (*):

- Please contact vendor for more information about this product and other commercial offers.
- This equipment is not certified and was developed for ultralight and experimental aircraft. Must be observed VFR policy during your flight.
- The manufacture doesn't respond for any problem or damage generated by a not properly use of the product.
- Images on this manual are just for explication porpoises and may be different in some details to the final product the end user bought. Contact vendor for more information.
- The internal magnetometer works fine only if in case of the unit results correctly installed. Any improper installation detail could generate a malfunction of the magnetometer and the other embedded sensors or receivers. Keep in a great account all the hints reported in the present manual. Consult our representatives to learn more on how to obtain the perfect unimodality of the instruments described in the present manual.