MiniEIS.
Manuale Installazione e operazioni
Rev 0.42 13/01/2018

The MiniEIS is an engine parameter monitoring tool designed for the Rotax 912 series engines.

The instrument is extremely compact and economical, using off-the-shelf components extremely economical and reliable.

The instrument uses, when possible, the standard motor sensors. Additional sensors exist as an option.

The parameters are shown on a backlit LCD display with 4 lines and 20 characters.

The instrument generates alarms in case one of the critical parameters goes out of minimum or maximum margins. The out-of-margin parameter flashes on the display.

It is possible to generate visual and sound alarms of different types.

There is a function that cancels the audible / visual alarm until another alarm is generated. The out-of-bound parameter continues to flash on the display even when the alarm is canceled.

The instrument will monitor the following parameters and generate alarms
if necessary.
- revolutions
- head temperature 1 and 2
- oil temperature
- oil pressure
- supply voltage
it is possible to monitor the following parameters, installing the relative sensors:

- petrol pressure
- MAP
- temperature and air one.

the petrol pressure parameter generates an alarm if the pressure goes out of standard margins.

The minimum and maximum values   of the various parameters that generate alarms are set by firmware and can be customized on request. No initial settings are required.

The current version of the instrument is able to monitor the oil pressure using the old style pressure switch. The new style pressure switch (4-20mA) will be implemented soon.

There is an optional battery that allows operation even in the absence of external power supply. In this case, some sensors will cease to function.

The instrument connects to sensors, displays, power supply, etc. via a DB25 connector.

The 25 pins of the connector have the following functions:

1 - connection to the engine speed pickup.
2 - if grounded, reset the MiniEIS processor
3 - if grounded, cancels the visual / audible alarm
4 - 5V output for audible / visual alarm, maximum 20mA absorption (led and piezo buzzer).
5 - 5V output for audible / visual alarm, maximum 20mA absorption (led and piezo buzzer).
6 - SCL (data bus for connection to sensors and displays)
7 - SDA (data bus for connection to sensors and displays)
8 - optional sensor input temperature and air humidity DHT22 sensor
9 - optional petrol pressure sensor input
10 - connection to oil pressure sensor
11 - connection to oil temperature sensor
12 - connection to temperature sensor tested 1
13 - connection to the tested temperature sensor 2
14 - mass for visual / audible alarm, max 4A.
16 - NC
17 - NC
18 - NC
19 - NC
20 - general mass
21 - general mass
22 - regulated output 5V max 100mA (to be used for display and sensor power
supply) 23 - regulated output 5V max 100mA (to be used for display and sensor
power supply) 24 - input + 12V
25 - input + 12V

The temperature and air pressure sensor can be installed in the airbox to monitor possible conditions of icing of the carburetor. The sensor must be powered by the regulated 5V coming from feet 22-23. The DATA foot must be connected to pin 8 of the MiniEIS.
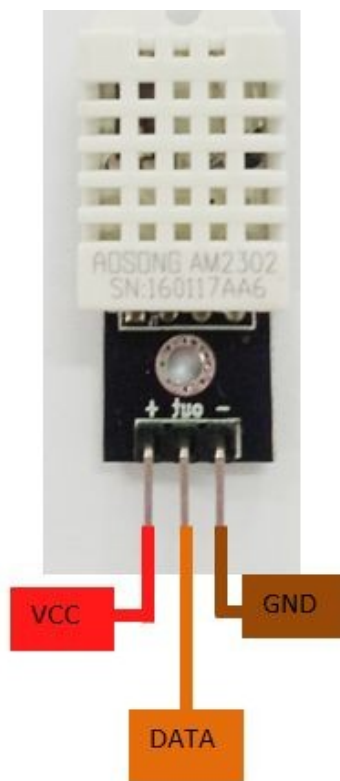
The fuel pressure sensor must be installed on the fuel circuit upstream of the carburettors and must be connected as shown in the diagram. The sensor has a 1/8 NPT thread.
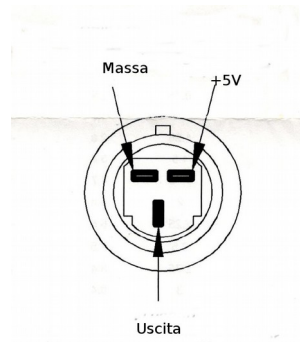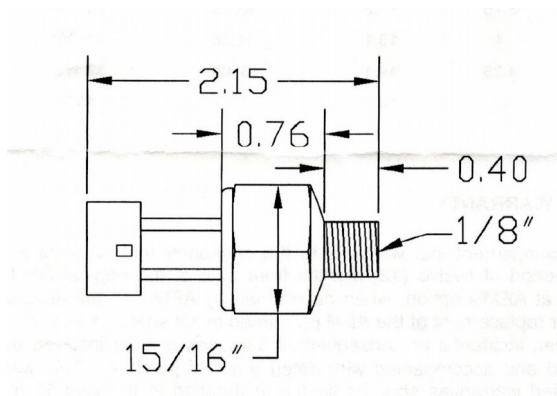
The optional absolute inlet manifold pressure sensor (MAP) must be connected to the intake manifolds using a 6mm tube and connected to the MiniEIS as shown in the diagram.
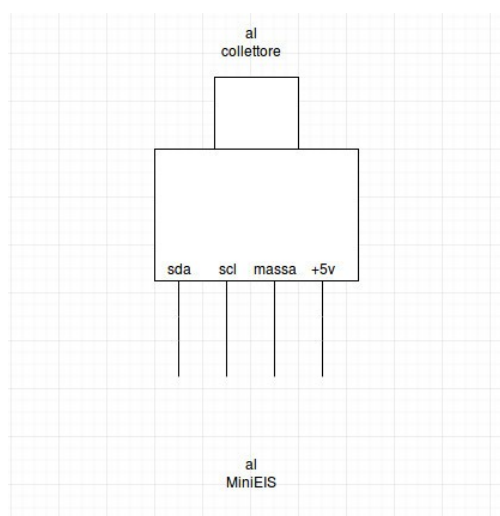
These sensors must be enabled on the Firmware, the simple electrical connection does not produce any reading on the instrument.

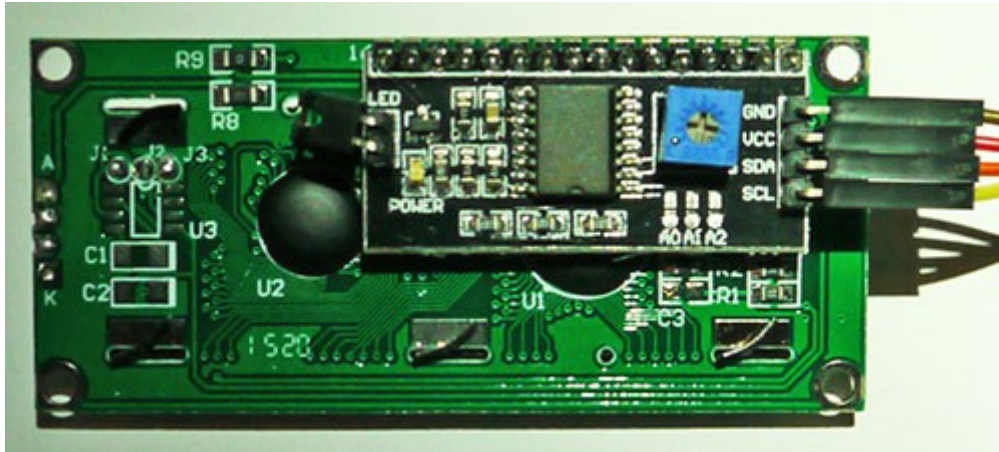The 4x20 display must be installed on the panel and the 4 wires must be connected to the MiniEIS as follows:
GND to ground
VCC to + 5V adjusted MiniEIS (pins 22-23)
SCL to pin 6 of the MiniEIS
SDA DB25 connector to pin 7 of MiniEIS DB25
connector
The potentiometer adjusts the contrast of the display.

The sound / visual alarm cancel button can be installed in any position using a common push-button switch.

It is recommended to install at least one red LED with high visibility to pin 4 or 5. A resistor of suitable value must be installed in series with the LED positive. For red 5mm LEDs, a 330 ohm resistor is recommended. The LED positive must be connected to pin 4 or 5 of the MiniEIS, with the resistance inserted in series, the mass of the LED must be connected to ground.

Alarm activation thresholds:

laps: more than 5800
head temperature: more than 145 degrees
oil pressure: less than 1.5 and more than 7.0
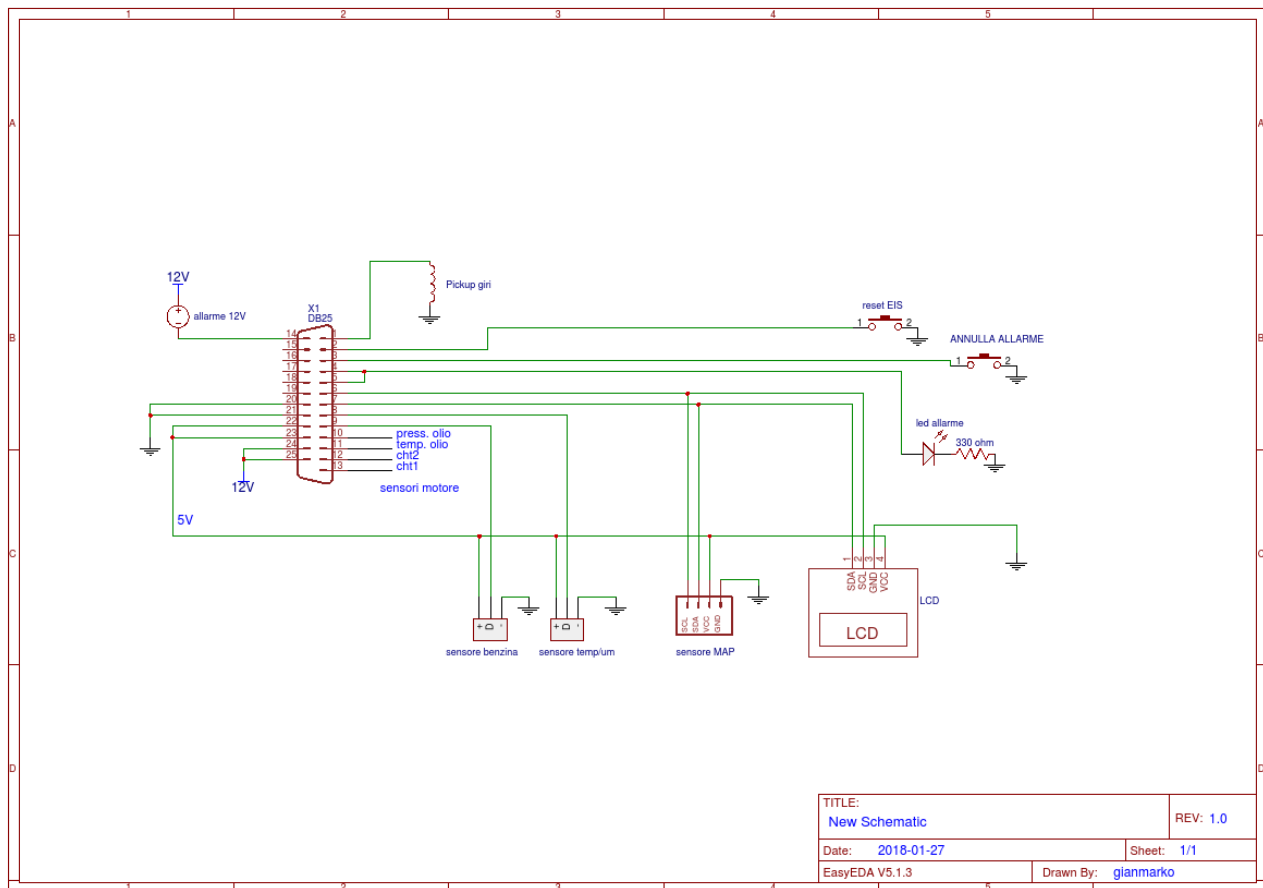bar oil temperature: more than 130 degrees
petrol pressure: less than 2 and more than 7
PSI voltage: less than 11.5 and more than 15
volts
Operating voltage: from 7 to 15 Volts.
Absorption: 150 mA maximum

Wiring diagram of the connections

numbering pins connector side cables, seen from behind