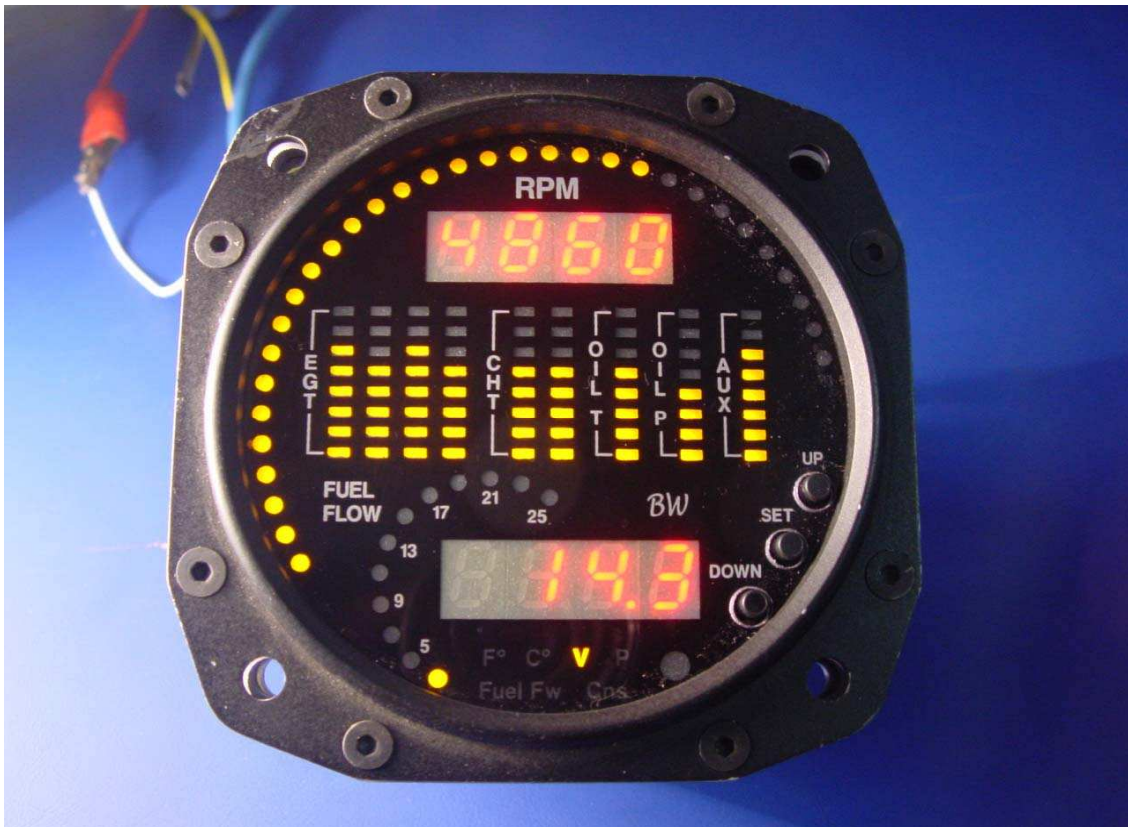


MED80

USERS MANUAL AND ASSEMBLY INSTRUCTIONS



TO ENSURE CORRECT INSTALLATION READ THE MANUAL CAREFULLY

IMPORTANT: to ensure that this equipment works correctly it is imperative to use a 12 Volt 7 Amp battery in good condition and that both the shielded spark plug cables and the resistant pipets are on the motor.

The MED80 cannot be connected in parallel with the exception of the revolution counter (RPM).

Use all the provided probes and/or thermocouples and assemble the MED80 in front of the pilot to enable him to see it clearly also in direct sunlight.

GENERAL DESCRIPTION

The MED80 is a new product that has been designed to replace the MULTI ENGINE DATA unit. One of the characteristics that distinguishes it from the latter is its round form (80mm in diameter) making it suitable for aeronautical use. It has been devised with the aim of reading and controlling your motor parameters.

The MED80's frontal display unit is composed of two highly efficient LED display panels so as to ensure high visibility even in direct sunlight (using photo-resistance it is able to automatically adjust its light intensity level).

The MED80 graphically displays its parameters and displays their numerical values in turn on readout panels. Revolutions are displayed around the edge of the display panel and the upper readout panel displays their numerical value (RPM). The bars in the middle of the display panel show (from the left) the 4 exhaust gas temperatures (EGT), 2 heads temperatures (CHT), oil temperature (OIL T), oil pressure (OIL P) and an auxiliary which can be used to display external air temperature, water temperature or the airbox temperature (AUX).

The last readout (semicircular in shape in the lower part of the display panel) shows fuel consumption in litres per hour (FUEL FLOW).

The numerical values of the nine display bars, the voltmeter's fuel consumption and the MAP (optional), can be displayed in the lower readout window by pressing the UP and DOWN buttons. To automatically display all numerical values hold the SET button down for two seconds.

The MED80 is equipped with a portal for reading the Voltmeter and can also be used for reading the Manifold air pressure (optional).

GENERAL SPECIFICATIONS:

Container :	Aluminium with rear plate for wire attachment and dissipation cables
Display:	Screen-printed Lexan Two red display units (high luminosity) Led readout (high luminosity)
Functions :	- Motor timer from zero to 9999 (hours shown on the upper readout, minutes on the lower). The timer is linked to the rev. counter and is only displayed upon ignition of the MED 80 - Four EGT temperatures K type thermocouple with INSULATED JOINT - Four temperatures (2 CHT,1 OIL, 1 AUX) for NTC probes - Oil pressure

	- Fuel consumption (litres per hour and total litres consumed)
	- Voltmeter
	- Manifold Air Pressure - MAP (optional)
Thermal limit control:	- Optical alarm (the relevant bar should flash together with its numerical value)
	- Acoustical warning system, linked by radio and intercom to the headset.
Weight :	312 grams (weight inclusive of the 3 junction boxes)
Dimensions :	Ø 80mm and 83mm deep
Voltage:	12 V continuous current (min 11 - max15)
Current:	0,6 A max
Operating temperature :	from -20 to 60 C°
Storage temperature:	from -20 to 85 C°
Vibration limits:	Amplitude 0,5 mm
	Max acceleration 5g
	Frequency from 10 to 500 Hz
Portals	4 for EGT thermocouples from 10°C to 1000°C
	4 for NTC from 0°C to 150°C
	1 for oil pressure
	1 for rev. counter with programmable settings
	1 for fluxmeter
	1 for voltmeter
	1 for MAP (optional)

INSTALLATION

EGT Thermocouples (exhaust gasses) : the emission gas thermocouples provided are of the K type with an insulated joint, a cable and tightening screws. To start installation firstly tighten the wire to the discharge and then insert the thermocouple. This should still not be connected to the green removable junction box so as to avoid the cable becoming twisted back on itself whilst taking into account that the end of the thermocouple should overlap the centre of the discharge cable by 3-4 mm. Once this has been done the positioning screws can be gently inserted. Unravel the cable to the point where the MED80 will be placed, leaving some slack, and stick it down with the plastic clips taking care not to place the cable where it may be damaged. If the metal edge of the thermocouple gets in the way, it's possible to fold it over as long as you don't fold it any less than 12 mm.

If you have the YELLOW thermocouple in front of you, the yellow wire is the positive and the red wire is the negative.

If you have the GREEN thermocouple in front of you, the red wire is the positive and the green wire is the negative.

CAUTION: if all the EGT portals on the junction box are not used a jumper should be used.

NTC x CHT Sensors (heads) : after removing the sensors from the head of the Rotax 912/912S/914 motor screw in the new NTC sensors provided but don't connect them to the green junction box so as to avoid the cable becoming twisted on itself. Unravel the cable to the point at which the MED80 will be installed and fix it in to position (on to the motor's support unit), leaving some slack, using the plastic clips, taking care not to place it anywhere it may be damaged.
The NTC probes provided for use with the 912/912S/914 motor are non polar.

CHT Thermocouples (spark plug base) : for the Rotax 503\582 motors the probes provided should be inserted, between the spark plug and the head, into the green removable junction box.

The CHT thermocouples provided for the 503/582 motor are distinguishable by their green and grey shielded braided covering. The red wire is the positive and the green is the negative.

CAUTION: if all the CHT portals on the green removable junction box are not used, a jumper should be used.

OIL Temp. sensor (oil temperature) : after having removed the sensor from the Rotax 912 motor's oil pump, screw in the new NTC sensor provided without connecting it to the adapter so as to avoid the cable becoming twisted back on itself.

Unravel the cable to the point at which the MED80 will be installed and fix it in to position (on to the motor's support unit), leaving some slack, using the plastic clips, taking care not to place it anywhere it may be damaged.

OIL Press. sensor (oil pressure) : attach a wire from the oil pressure sensor that you will find on the motor to the correct portal on the removable green junction box.

Rev. counter : for Rotax 912\912S\914 motors: connect two wires to link the appropriate pick up on the rev. counter making sure they are able to reach the MED80.

For Rotax 532\503\462 motors mono ignition : connect two wires to the green and green/black wires ensuring they are able to reach the MED80.

For Rotax 618\582\503 motors: insert the grey wire, to the motor's earth as well as two wires ensuring these are able to reach the MED80.

**UNDER NO CIRCUMSTANCES SHOULD YOU TOUCH
THE LIVE COILS OR THEIR PORTALS!!!**

Voltage : ensure that the battery's earth is correctly connected to the motor's earth. Once this has been done, connect an interrupter to the battery and fix the cables in position so that they are able to reach the MED80 .

Fluxmeter (optional) : this should be installed on the fuel feeder line AFTER THE PUMP AND ANY ANTI VAPOUR LOCK OUTPUT LINES.

The fluxmeter can be installed in one position:

- ensuring that the fuel flow of only one carburetor goes through the fluxmeter. It is necessary to follow the instructions set out below.

IMPORTANT : The fluxmeter should be installed with the electric cable in a downward position to ensure that air bubbles don't interfere with its reading ability.

CAUTION: ALWAYS FOLLOW THE ARROWS SHOWING THE DIRECTION OF FUEL FLOW ON THE FLUXMETER PROVIDED !



JUNCTION BOX PORTALS FOR ROTAX 912/912S/914 MOTORS:

1	2	3	4	5	6	7	8	9	10	11	12

13	14	15	16	17	18	19	20	21	22	23	24

25	26	27	28	29	30

1. CHT 1 (non polar)
2. CHT 1 (non polar)
3. CHT 2 (non polar)
4. CHT 2 (non polar)
5. Oil temperature (non polar)
6. Oil temperature (non polar)
7. AIR BOX or AUX (non polar)
8. AIR BOX or AUX (non polar)
9. MAP Portal (optional)
10. MAP Earth (optional)
11. ALARM for intercom or radio
12. N.O. Alarm contact (see n°24)
13. EGT1 +
14. EGT1 -
15. EGT2 +
16. EGT2 -
17. EGT3 +
18. EGT3 -
19. EGT4 +
20. EGT4 -
21. Oil pressure
22. + VOLTAGE
23. - Earth
24. N.O. Alarm contact (see n°12)
25. Fluxmeter - shielded braided wire (optional)
26. Fluxmeter - blue wire (optional)
27. Fluxmeter - red wire (optional)
28. Free
29. REV. COUNTER (non polar)
30. REV. COUNTER (non polar)

JUNCTION BOX PORTALS FOR ROTAX 503 MOTORS:

1	2	3	4	5	6	7	8	9	10	11	12

13	14	15	16	17	18	19	20	21	22	23	24

25	26	27	28	29	30

1. Free
2. Free
3. Free
4. Free
5. Free
6. Free
7. AIR BOX or AUX (non polar)
8. AIR BOX or AUX (non polar)
9. MAP Portal (optional)
10. MAP Earth (optional)
11. ALARM for intercom or radio
12. N.O. Alarm contact (see n°24)
13. EGT1 +
14. EGT1 -
15. EGT2 +
16. EGT2 -
17. + spark plug base thermocouple CHT1
18. - spark plug base thermocouple CHT1
19. + spark plug base thermocouple CHT2
20. - spark plug base thermocouple CHT2
21. Free
22. + VOLTAGE
23. - Earth
24. N.O. Alarm contact (see n°12)
25. Fluxmeter - shielded braided wire (optional)
26. Fluxmeter - blue wire (optional)
27. Fluxmeter - red wire (optional)
28. Free
29. REV. COUNTER (non polar)
30. REV. COUNTER (non polar)

JUNCTION BOX PORTALS FOR ROTAX 582 MOTORS :

1	2	3	4	5	6	7	8	9	10	11	12

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13	14	15	16	17	18	19	20	21	22	23	24
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25	26	27	28	29	30

1. Free
2. Free
3. Free
4. Free
5. Free
6. Free
7. Water temperature (non polar)
8. Water temperature (non polar)
9. MAP Portal (optional)
10. MAP Earth (optional)
11. ALARM for intercom or radio
12. N.O. Alarm contact (see n°24)
13. EGT1+
14. EGT1 -
15. EGT2+
16. EGT2-
17. + spark plug base thermocouple CHT1 (optional)
18. - spark plug base thermocouple CHT1 (optional)
19. + spark plug base thermocouple CHT2 (optional)
20. - spark plug base thermocouple CHT2 (optional)
21. Free
22. + VOLTAGE
23. - Earth
24. N.O. Alarm contact (see n°12)
25. Fluxmeter - shielded braided wire (optional)
26. Fluxmeter - blue wire (optional)
27. Fluxmeter - red wire (optional)
28. Free
29. REV. COUNTER (non polar)
30. REV. COUNTER (non polar)

ASSEMBLY

Make a hole (80 mm in diameter) with the four flank holes suitable for M4 screws. Proceed to connect the probes to the green removable junction boxes whilst ensuring that the latter are not attached to the MED80 by following the indications you will find on the following pages and on the green removable junction themselves.

SET UP

Ensure that all the probes are correctly inserted and that the green removable junction box **is correctly connected**. Then start the MED80 and wait for a short time to allow it to automatically check its led values. The display unit should also display hours on the upper readout unit and minutes on the lower readout unit.

To activate the set up procedure press all three buttons at the same time.

A ZERO should appear on the upper display panel, in the lower display unit a number from 0-2 should be selected, using the UP and DOWN keys.

The number you select in the lower display unit corresponds to the type of motor you wish to use:

- 0 (zero) Rotax 912 \ 912S \ 914 motor
- 1 (one) Rotax 503 \ 447 motor
- 2 (two) Rotax 618 \ 582 \ 532 \ 462 motor

Once you have selected the appropriate motor press the SET button.

As soon as the number ONE appears in the upper display unit the fluxmeter multiplication coefficient should be selected depending on where this has been positioned. If the impeller is before the Y junction which leads to the carburetor use the UP and DOWN keys to display the number TEN in the lower readout.

If fuel of only one carburetor crosses the impeller again use the UP and DOWN keys to display the number TWENTY in the lower readout, so as to allow the MED80 to automatically multiply the coefficient by 2 to enable it to display the total quantity of fuel consumed.

If, several hours into a flight, you notice a slight error in the readings, you can take action by changing the multiplication coefficient from 0,5 (which corresponds to 5 on the lower readout) to 2,5 (which corresponds to 25 on the lower window) depending on whether a higher or lower rate is required.

Once this has been done press the SET button.

When you see the number TWO on the upper display unit the revolution drive rate should be selected:

- 1 for Rotax 912 \ 912S \ 914 motors;
- 2 for Rotax two cycle mono ignition 532 \ 503 \ 462 motors;
- 6 for Rotax two cycle Ducati double ignition 618 \ 582 \ 503 motors.

Once this has been done press the SET button.

When the number 3 is displayed on the upper readout turn off the MED80 and then turn it back on. (**DO NOT CONTINUE THE SET UP PROCEDURE!**). All settings will be memorised. The set up procedure is now complete.

ATTENTION: to reset the consumed litres, it is necessary to go to the readout you wish to change and press the UP and DOWN buttons at the same time.

ATTENTION: to change any of these values, repeat all the above instructions.

TO ENABLE THE **MED80** TO FUNCTION CORRECTLY:

- 12 Volt battery in a good state
- shielded spark plug cables
- resistant pipets
- Motor attached to the earth on the battery

NEVER place the MED80 near heat sources

CAUTION!!!!

THE MED80'S PERFORMANCE MAY BE AFFECTED BY HIGH POWERED TRANSMITTING RADIO EQUIPMENT !!!!!

OPERATING PROCEEDURE

When the MED80 is switched on the readouts should come on for a couple of seconds. This is to allow them to carry out a LED TEST. Following this the upper and lower readouts should display the motor timer for a period of five seconds (hours on the upper readout and minutes on the lower).

Once the timer has been displayed the rev. counter should then appear in the upper readout and oil temperature on the lower. You should be able to see this by a flashing light at the bottom of the relative LED display bar.

To read other values use the UP and DOWN keys or hold the SET button down for two seconds and the MED80 will show all values for two seconds each indicating what is being shown by a flashing light on the LED readout.

When all parameters have been set correctly the levels should be more or less at the same level - half way up the scale.

Codes are shown under the lower readout depending on the information displayed. These are as follows (from the left):

F°:	temperature in degrees Fahrenheit (US version)
C°:	temperature in degrees centigrade
V :	Voltmeter
P :	Pressure
Fuel Fw:	Fuel consumption (litres per hour)
Cns:	Litres consumed

ALARMS : when an alarm goes off, the relative indicators will flash as well as the relative numerical value. The machine will generate a modulated signal to the headset via intercom or radio.

ERRONEOUS DISPLAYS

Temperatures :

- if one of the thermocouples should stop, the MED80 will display a temperature of 1190°C. The bars will be fully illuminated. However, if the thermocouple's short circuit take place near the joint, the temperature displayed will indicate where the problem lies.

- if the NTC sensors for CHT1, CHT2, OIL temp. or Aux should stop the lower display readout will show 0 (zero), but in the case of a short circuit taking place the lower display readout will be 255°C.

CONDITIONS OF GUARANTEE

Each MED80 is guaranteed against all material defects and/or manufacturer's error for a period of **36 months from the date of purchase**.

Appliances will not be accepted without written warning informing of the suspected defect found by the customer.

Each appliance sent for repair must be sent to CELIER Aviation or the place of purchase in appropriate packaging. CELIER Aviation and/or the retailer accept no responsibility for loss or damage that may occur during transportation or may be caused due to inappropriate packaging.

The guarantee is subject to the following conditions:

- The appliance must always have been used in accordance with the users manual.
- The appliance must be sent to CELIER Aviation or to the retailer at the senders expense.
- The guarantee is not applicable if defects occur due to improper use, accident, interference or negligence.

RETAILER