OSD

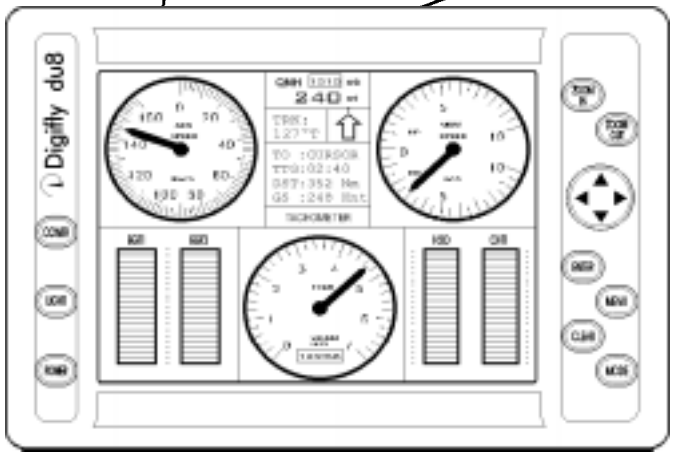
Open System Digifly

Display Unit 8

INSTRUMENTATION

SW 2.02

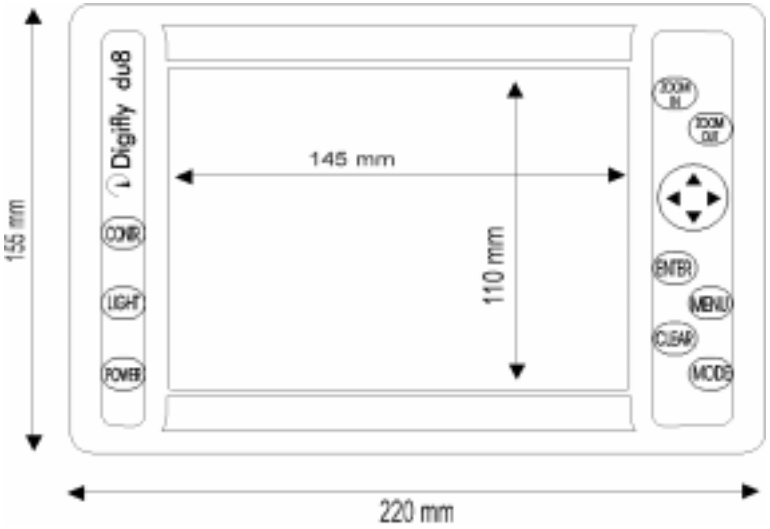
USER MANUAL



DIGIFLY

5.3 - Technical features.

- Monochrome, high resolution, 8", 480 x 640 pixel LCD, backlighted;
- Antiscratch protection;
- Contrast and brightness regolation;
- Lighted keyboard;
- Digifly OSD interface;
- External GPS interface;
- Power source: 10-28 V DC (0.4 Amp);
- Weight 850 gr.;
- Size :



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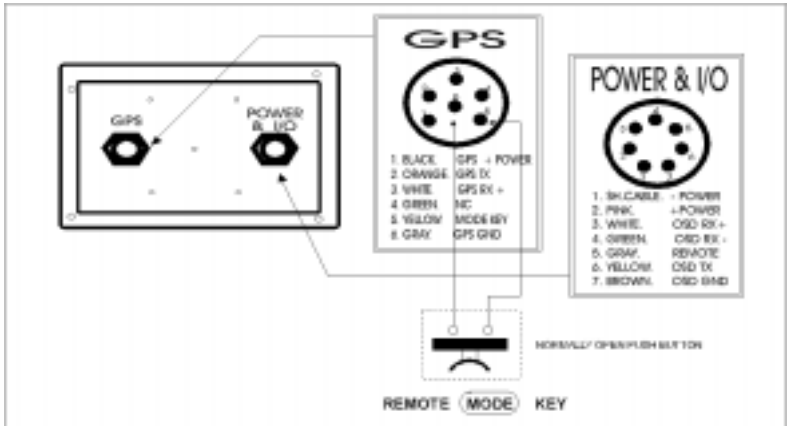
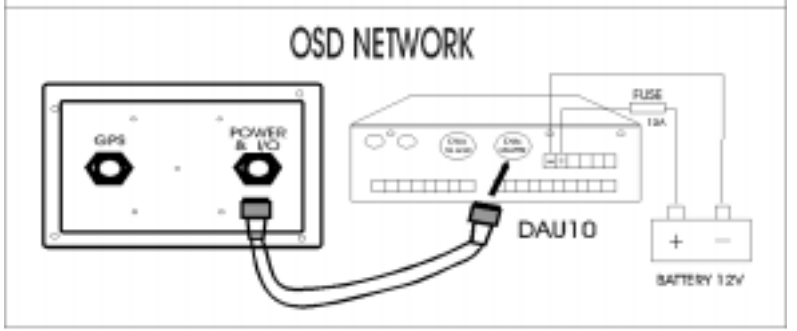
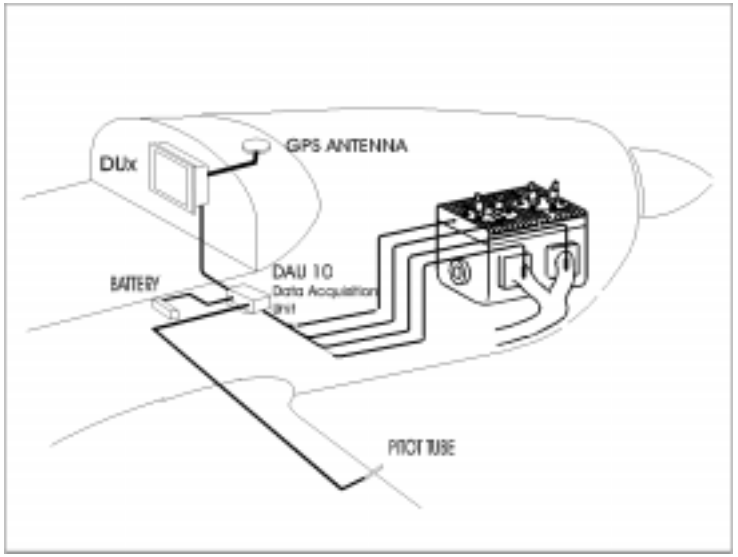
chapter 1
INTRODUCTION (Open System Digifly)

The Digifly viewing units were designed also to co-operate with each other in the same system. This is known as “multiscreen” system and it is made up of different Display Units (DU7-DU8) linked to the flight recorder. Among all the connected units, only one must be set up in MASTER mode, whereas all the others must be set up in SLAVE mode. In this manner, the viewing device (MASTER) will direct data transmission operations and one or more devices (SLAVE) will operate only as viewers. Only the MASTER device will be capable of adjusting the flight-recorder settings. The MASTER/SLAVE mode can be set in Set Up.
Therefore the Digifly Open System is now even more advanced and complete in order to meet any need of pilots and flight enthusiasts, significantly increasing the precision and safety standards supplied by the instruments presently available in the market.

5.2 - Electrical wiring.







chapter 5
INSTALLATION

5.1 - General warnings.

IMPORTANT NOTICE

GENERAL WARNING

In order to avoid any possible disturbances from your ignition system, here is some important information useful to help you install your Digifly instrument correctly.

We ask that you pay particular attention to the items below.

IGNITION SYSTEM

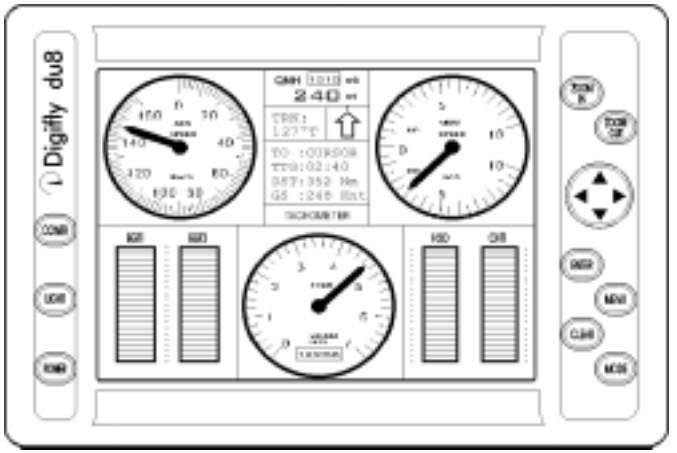
The ignition system (AC generator, ignition coils and spark plugs) is a powerful electromagnetic noise generator, able to interfere with the regular working of your instruments. To avoid any negative effects of your ignition system noise we strongly suggest that you observe these important warnings:

1. Use only metal or properly sheilded caps for the sparking plugs.
2. Never tape together probe cables and high-voltage ignition coils
3. Route all cables as far away as possible from high-voltage ignition coils.
4. Use a rectifier and battery in full working order and be sure that the out-put voltage does not exceed 15 volts for 12V system and 28 volts for 24V system, when the engine reaches it's maximum Rpm's.
5. Be sure that the power-supply cable from your Digifly instrument is directly connected with the battery by a fused on/off switch.

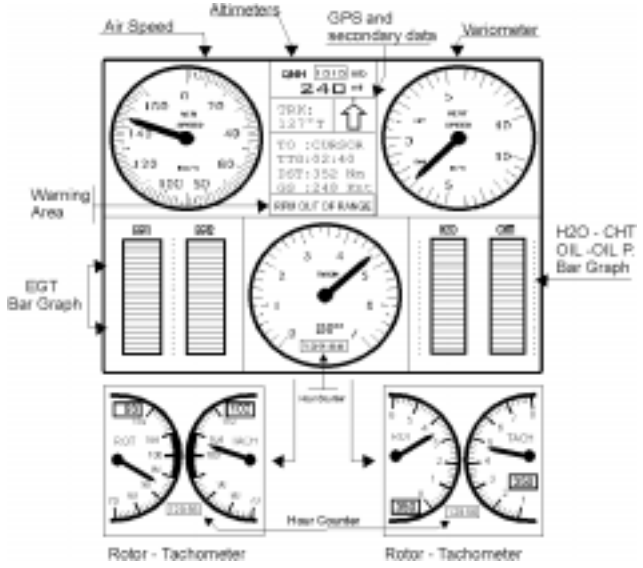
FOLLOWING THE ABOVE GUIDE LINES DURING INSTALLATION WILL ENSURE TROUBLE FREE USE OF YOUR INSTRUMENT.

chapter 2
GETTING STARTED

2.1 - Front panel.

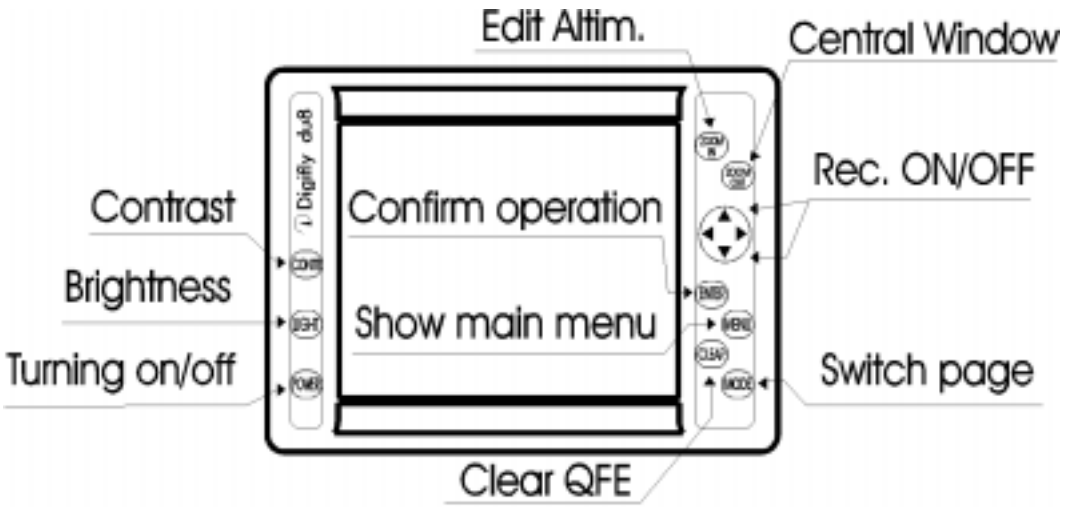


2.2 - The display.



2.3 - The keyboard.

The following figure show the keyboard's main functions.



2.3.1 - Turning on / off.

Before turning on the instrument make sure that all connections were made correctly. Make sure the engine is turned on before the instrument.
To turn on the DUx, press the **POWER** button. After a few seconds, the Moving Map or Instrumentation page is viewed to search for the connection and for the initial internal tests.
To turn off the DUx, press (and keep pressed for at least 2 seconds) the **POWER** button again.

2.3.2 - Contrast.

To regulate contrast keep the button **CONTR** pressed until the contrast menu appears. Now the regulation is executed with the **UP-DOWN ARROW** buttons. Press **CONTR** again to quit the menu.
N.B. In the System Test page, contrast is regulated just pressing the **CONTR** button.

chapter 4
SYSTEM TEST

To enter in the System Test Page press and keep pressed the key **POWER** together with any other key. As soon as the key is released, the following menu will appear on the screen:

SYSTEM TEST
(software version)
KEYBOARD TEST
INPUT DATA DISPLAY
INSTRUMENTATION
EEPROM TEST
CONNECTOR TEST
CLEAR RAM
CHOOSE PORT 1
RESERVED TEST

Pressing the **UP-DOWN ARROW** keys, the desired entry will be selected. Activate it with the **RIGHT ARROW** key.
Pressing the **ZOOM IN** o **ZOOM OUT** keys, will be activated the variometer or anemometer reset.

1) KEYBOARD TEST
This test verifies keyboard misfunctioning.
2) INPUT DATA DISPLAY
In this operation mode, the DUx screen becomes a terminal displaying input data.
3) INSTRUMENTATION.
Allows to qualify the intrumentation page.
4-5) EEPROM TEST - CONNECTOR TEST.
Not usable by the user.
6) CLEAR RAM
Selecting this function, it is possible to delete DUx's internal memory. By a submenu you can clear alle the DATABASE or all the SETTINGS
7-8) CHOOSE PORT - RESERVED TEST
Not usable by the user.

3.5.2 - Measure units.

There are four presettable measure units:
Temperature (temp. unit) : °C or °F
Altitude (unit 1) : mt. or ft.
Speed (unit 2) : Km/h or MPH or Knots
Pressure (unit 3) : mb or iHg

3.5.3 - Warnings.

For each in line it is possible to fix minimum and maximum limits not to be exceeded.

CHANNEL	MIN.	MAX.	UNIT
1		√	°C - °F
2		√	°C - °F
3		√	°C - °F
4		√	°C - °F
5		√	°C - °F
6		√	10 RPM
7	√	√	1/10 BAR
8		√	°C - °F
9		√	°C - °F
10	√	√	°C - °F
11		√	10 RPM
AIR SPEED	√	√	Km/h - MPH - Knots

It is possible to preset 11 engine limits (in lines from 1 to 11), and 1 flight limit (speed) can be preset (minimum speed will be stall speed, maximum speed will be VNE).
Limits on bar indicators are represented by little arrows on their side, limits on round instruments are represented by a tally on the scale.
When a preset limit is exceeded the relative warning appears in the specific window.
At the same time the bar indicator starts blinking.

2.3.3 - Brightness.

To regulate backlighting press the **LIGHT** button. Each time the button is pressed, light will be increased.

2.3.4 - Page toggle.

To toggle pages between Instrumentation and Moving Map pages, press the **MODE** button in the main screen.

2.3.5 - Basic functions.

The key 

- Allows to enter/exit to/from "Edit Altimeters" mode.

The key 

- Allows to switch the centrale window (GPS - Sec. Instruments).

The key 

- Allows to activate the recorder.

The key 

- Allows to deactivate the recorder.

The keys 

- Allow to (in "Edit Altimeters" mode) change the current Altimeter.

The key 

- Confirm the operation on recorder (On - Off).

The key 

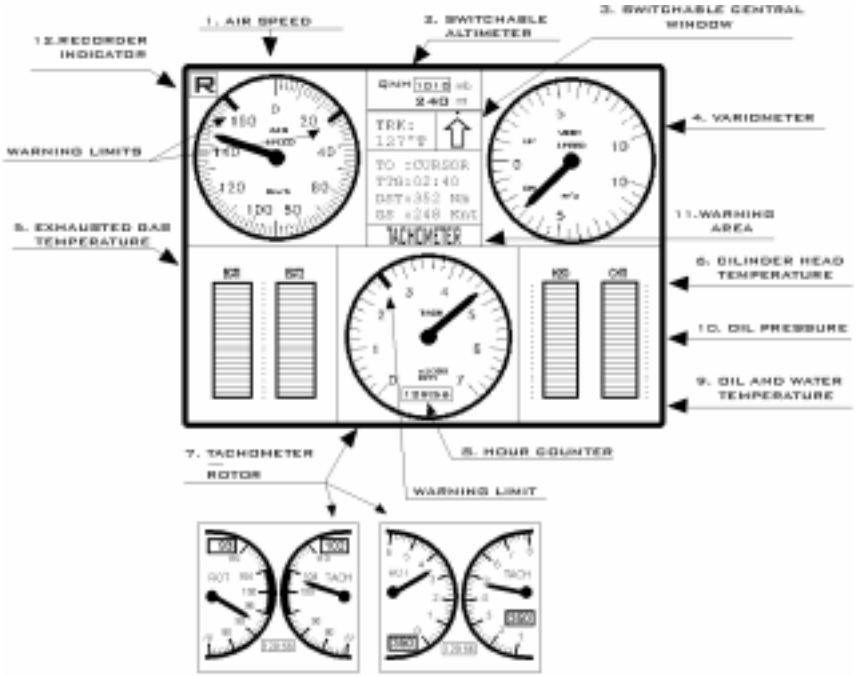
- Show the main menu' in the center of the screen.

The key 

- Allows to (in "Edit Altimeters" mode) clear the QFE.

chapter 3
INSTRUMENTATION

3.1- Main functions.



The upper part of the screen includes the flight instrumentation, the lower one engine data. We will distinguish 2 areas: flight area and engine area.

Flight area

1.anemometer.It is an analog instrument with presettable unit of measure (Km/h)-MPH-Knots), presettable end of scale (120-240-360 Km/h or 80-120-240 MPH/Knots), presettable alarms (min. speed and max speed-VNE-).

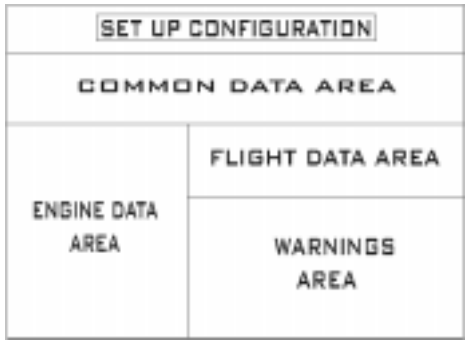
Flight data area
in this area it is possible to set up:
- measure unit of variometer and altimeter (mt/ft)
- measure unit of anemometer (Km/h or MPH or Knots)
- measure unit of altimeter's reference pressure (mb or iHg)
- delay of variometer arrow
- delay of anemometer arrow
- sampling rate (recording frequency from 1 to 50 secs.)
- end of scale anemometer (160 or 240 or 320 in Km/h- 80 or 160 or 240 in MPH or Knots)

Warnings area
In this area it is possible to set up warnings.
There are 11 presettable engine warnings, and 1 presettable flight warning (anemometer).

3.5.1 - In lines set up.

For each in line is possible to define the type of probe connected.
None means that no probe is connected.

CHANNEL	POSSIBILE CONFIGURATIONS	NOTES
1	EGT1 - CHT4 - NONE	Thermocouple TC n. 1
2	EGT2 - CHT3 - CHT4 - NONE	Thermocouple TC n. 2
3	EGT3 - CHT2 - CHT3 - CHT4 - NONE	Thermocouple TC n. 3
4	EGT4 - CHT1 - CHT2 - CHT3 -NONE	Thermocouple TC n. 4
5	H2O - CHT2 - NONE	PTC n. 1
6	RPM1 - NONE	
7	OIL P - NONE	
8	OIL T - NONE	PTC n. 2
9	CHT1 - NONE	PTC n. 3
10	CRB T - NONE	
11	ROT - RPM2 - NONE	



Common data area

in this area it is possible to set up:

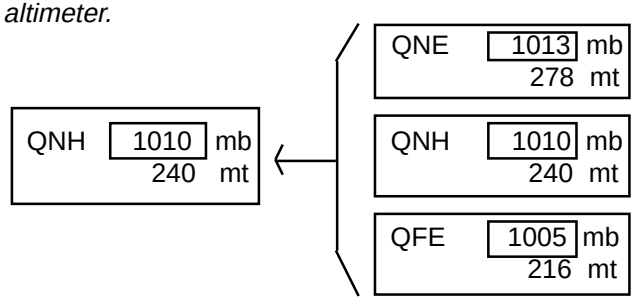
- type of DAU10 (it can not be modified by the user)
- type of engine (ENGINE 1 - ENGINE 2 - ENGINE 3)
  of this setting depends the bar graphics :
  1. *ENGINE 1* : 4 EGT - H20 - OIL temp. - OIL press.
  2. *ENGINE 2* : 2 EGT - 2 CHT
  3. *ENGINE 3* : 2 EGT - H20 - 1 CHT
- date and time
- mode (master/slave) (see Chapter 1)
- aircratf type (AIRPLANE - HELICOPTER - GYROCOPTER)
  of this setting depends the instrument Tachometer/Rotor(7):
  1.*AIRPLANE*: tachometer in absolute value
  2.*HELICOPTER*: tachometer and rotor in percent value
  3.*GYROCOPTER*: tachometer and rotor in absolute value
- outside air temperature OAT (yes/no)
- voltmeter (yes/no)
- temperature measure unit (°C or °F)
- Egt top scale (Low = 800÷1600 °F / Hi = 1200÷2000 °F)
- hourcounter (hours and minutes)

Engine data area

in this area it is possible to set up:

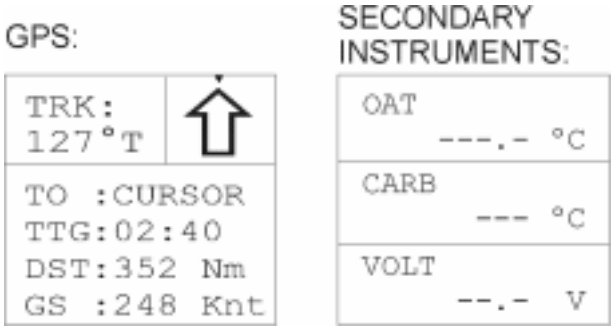
- number of engine poles (from 2 to 16)
- delay of RPM arrow
- step of digital indication of RPM (50/100)
- end of scale RPM (4000/8000)
- reference value (100%) for tachometer and rotor (if aircraft type is set up as HELICOPTER)
- chanell from 1 to 11 (see par. 3.5.1 *In lines Set Up*)

2. *altimeter.*



It is a digital instrument that indicates a quote related to a reference pressure.
It is possible to switch the three altimeters (QNE-QNH-QFE) this way: by pressing key **ZOOM IN** you enter the -edit altimeter- mode; now pressing **UP ARROW** or **DOWN ARROW** you change the reference pressure (except QNE), pressing keys **LEFT ARROW** or **RIGHT ARROW** you modify the altitude.
If you select QFE you can zero the altitude by pressing **CLEAR**.
Press **ZOOM IN** or **ZOOM OUT** to exit from -edit altimeter-.

3. *central window* (GPS - SECONDARY INSTRUMENTS).



It is a window switchable by pressing **ZOOM OUT**.
GPS indications are:

- ADF (Automatic Direction Finder) indicator
- track (TRK)

- name of the next waypoint
- flight time to the next waypoint (TTG)
- distance to the next waypoint (DST)
- ground speed (GS)

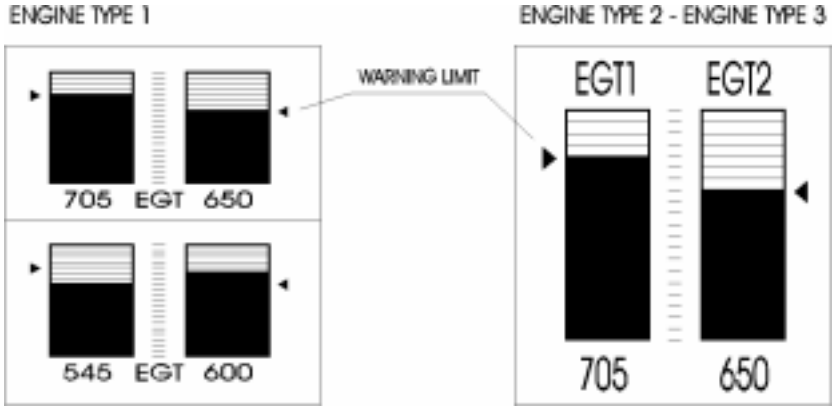
Secondary instruments are:
- outside air temperature -in °C or °F- (OAT)
- carburettor temperature -in°C or °F- (TCARB)
- voltmeter (VOLT)

4.variometer. It is an analog instrument able to indicate values from -10mt/sec to +10mt/sec. The measure unit (mt/sec or ft/min) is presettable in the Set Up.

Engine area

The bar graphics area has 3 different configurations for 3 engine types. The engine type is settable by the SetUp page (ENGINE TYPE):
- TYPE 1 : 4 cylinders - liquid cooled (eg. ROTAX 912)
- TYPE 2 : 2 cylinders - air cooled (eg. ROTAX 503)
- TYPE 3 : 2 cylinders - liquid cooled (eg. ROTAX 582)

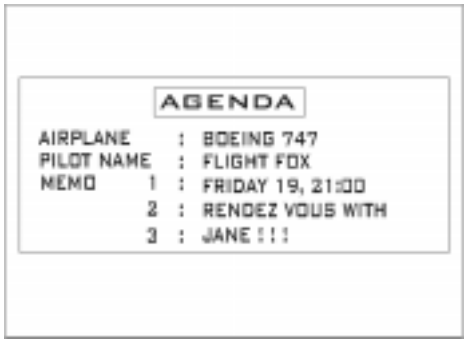
5.exhausted gas temperatures (EGT1-2-3-4).



Are represented in the left part of the bar graphics.Measure unit (°C or °F) and alarms are presettable.
Scale: Engine type 1 - LOW (800÷1600 °F) / HIGH (1200÷2000 °F)
Engine type 2/3 - 400÷2000 °F

3.4 - Agenda.

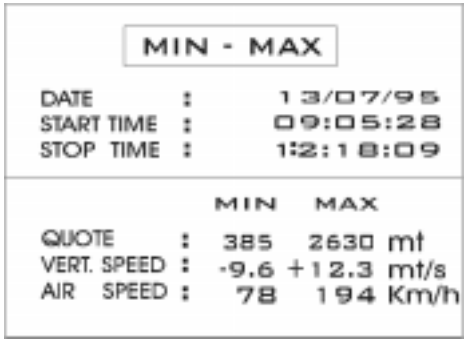
Use **UP-DOWN ARROW** to select a letter.
Use **LEFT-RIGHT ARROW** to move the cursor.
Press **MENU** to exit.



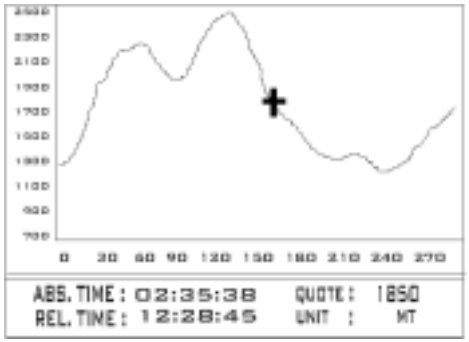
3.5 - Set Up.

Parameters can be increased by pressing **UP ARROW** or decreased by pressing **DOWN ARROW**.
To move the cursor from a parameter to another press **LEFT ARROW** or **RIGHT ARROW**.
Press **MENU** to exit.
The main areas are indicated in the following figure.

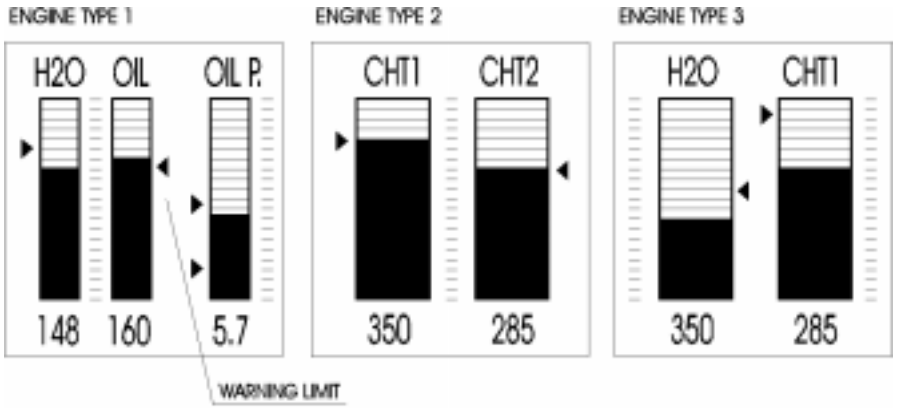
Entering this functions allows to see the latest recording.
The recorded data are those of the flight: minimum and maximum values are displayed as shown in the drawing below.



Recorder altimetric data are represented in a graphic form :



To zoom press **ZOOM IN** or **ZOOM OUT** keys.
The **ENTER** key change the measure unit of the graphic from meters to feet and viceverse.
The **CLEAR** key reset the graphic to maximum zoom out.
The **MENU** key exits.



6. *cilinders temperature* (CHT 1-2-3-4).
Are represented in the right part of the bar graphics. Measure unit (°C or °F) and alarms are presettable.Scale: 0÷700 °F.
7.*tachometer* (RPM).It is an analog instrument with presettable end of scale (4000 or 8000) and presettable alarm. If the aircratf type is set as HELICOPTER the value of this instrument is express in percent.
7b.*rotor.* It is an analog instrument with presettable alarm. It is displaied if the aircraft type is set up as HELICOPTER or GYROCOPTER. In the first case the value is express in percent, in the second case the value is express in absolute.
8.*hourcounter*.It is a digital instrument presettable in the Set Up.It indicates the working hours of the engine.
9.*oil and water temperatures*. It is a bar (right part) instrument with presettable unit of measure and presettable alarms. Scale: 0÷300 °F.
10.*oil pressure*. It is a bar (right part) instrument with presettable minimum and maximum limit. Scale: 0÷15 Bar.

<u>Warning area.</u>
11.*warnings window*.It is the window where appear warning messages when one or more preset limits are exceeded.
Together with the message, the warning is indicated by the blinking of the value out of range.
If no values are exceeded, date and present time are displayed.

Next paragraphs explain the main functions of the instrumentation page.

3.1.1 - Altimeters.

This function allows the commutation of the displayed altimeter (QNE or QNH or QFE): it is activated by pressing **ZOOM IN**.
When you enter this mode the window (2) of the altimeter is high lighted; with **UP ARROW** and **DOWN ARROW** keys it is possible to change the reference pressure (by pressing for a very short time the variation, indicated by a beep, is a 1/10 of Millibar or relative inches of Hg).
If QFE is evidenced you zero the altitude by pressing **CLEAR**.
By pressing **LEFT ARROW** and **RIGHT ARROW** you change the indication of altitude.
Press **ZOOM IN** or **ZOOM OUT** to exit.

3.1.2 - Recorder.

It records flight data between two time intervals.To activate the recording press **UP ARROW** and a blinking “R” will appear (12) on the upper left-hand corner of the screen.
If you push **ENTER** within 5 seconds, the recording is activated, if not, the recorder will not start working.
To stop the recording press **DOWN ARROW** and **ENTER** within 5 seconds.
The recording is automatically interrupted when the maximum recording time is exceeded.
The maximum recording time is related to the Sampling rate, that is the frequency of recording of the instrument (from 1 to 50 secs).
This frequency is presettable in the Set Up.
When you activate the recorder the previous recorded flight will be completely deleted.

3.1.3 - Switching the central window.

By pressing the **ZOOM OUT** key the central window switches from GPS data to secondary instruments and viceversa.

3.2 - Functions menu.

Press **MENU** to enter it. Press key **DOWN ARROW** or **UP ARROW** to select the submenu.
After selecting a submenu, press **RIGHT ARROW** to enter it.
Press **MENU** to exit.

3.3 - Replay.