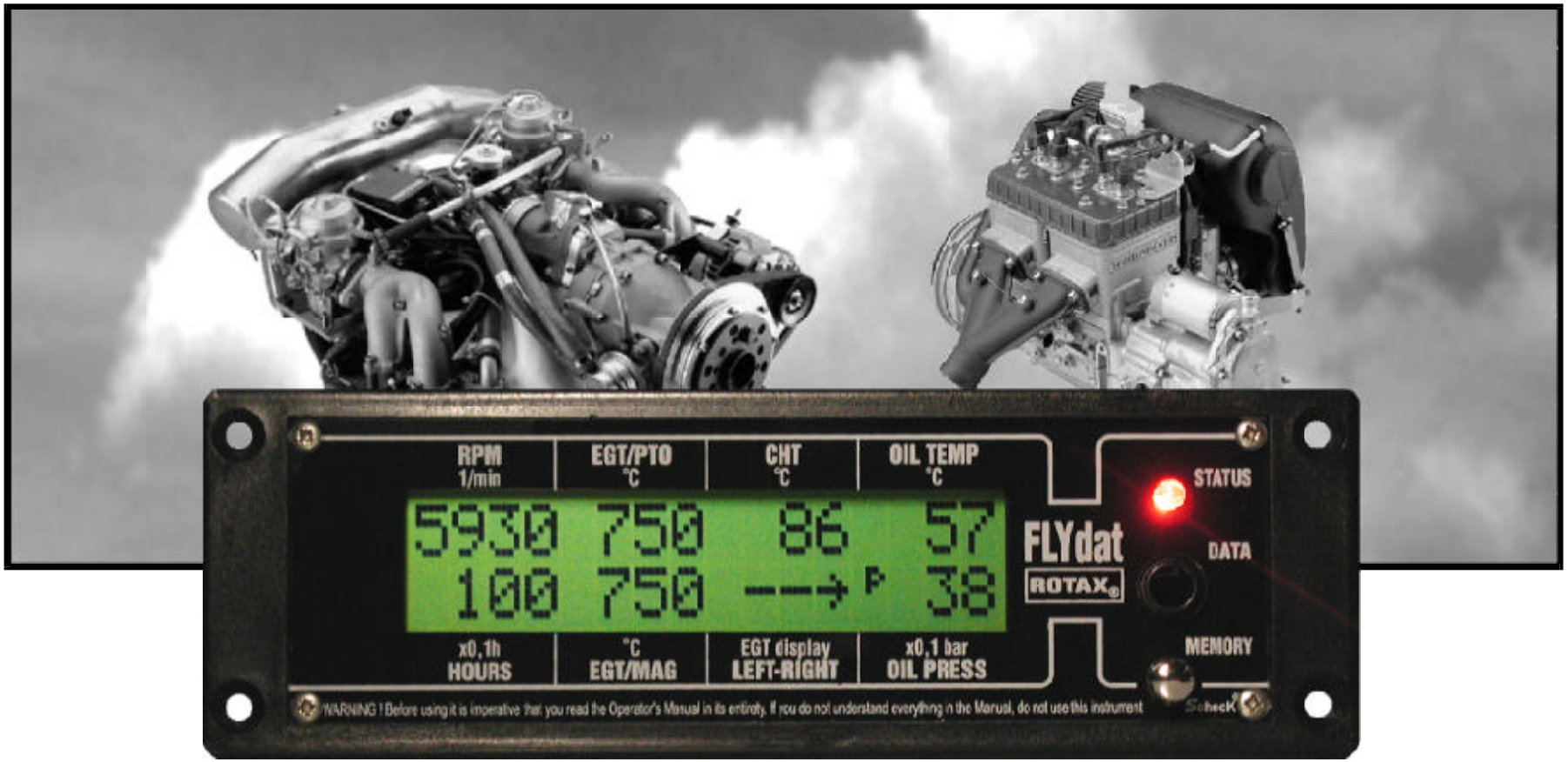


FLYDAT OPERATOR'S MANUAL

ROTAX® ROTAX-BOMBARDIER

Flydat operator's manual
Non TSO approved

Content

CONTENT OF
Operator's manual

ROTAX®

Dear Customer

Section 1

Congratulations to your decision to use the ***FLY*dat**, specially developed for ROTAX Aircraft Engines for indicating and storing engine operation data. Prior to taking the ***FLY*dat** into service, please, read the Operator's Manual carefully, as it will acquaint you with the basic knowledge of technical data, installation and the safe handling of the ***FLY*dat**.

If you do not understand anything in this manual or in case of any question arising, please, contact the nearest authorized ROTAX Distributor or Service Partner.

INTRODUCTION

Thanks

ROTAX®

BOMBARDIER-ROTAX G.m.b.H & Co.Kg
Aircraft engines division
A-4623, Gunskirchen, Austria

Web side address: http://www.rotax-aircraft-engines.com

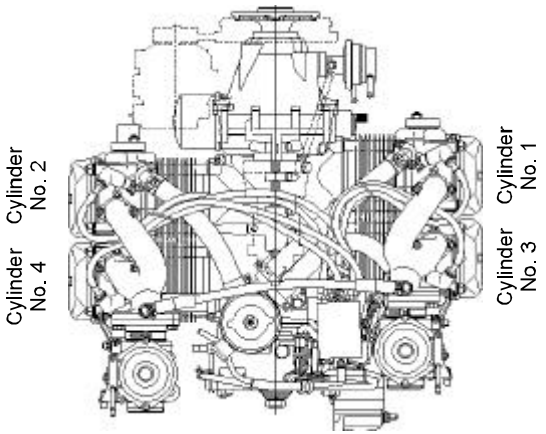
Description

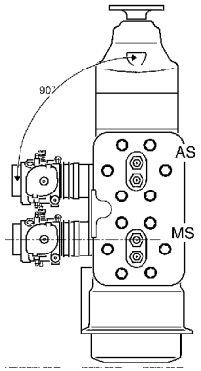
Section 2

The ***FLY*dat** has not undergone any safety and durability examination to the Standards of Civil Aviation, but it does incorporate the latest technical development and has been thoroughly tested.

Despite the ***FLY*dat** being a precise instrument, false indication or misinterpreting of data could occur.
By utilizing the ***FLY*dat**, the user acknowledges a possible danger and responsibility for all risk.

To minimize the risk, study the Operator's Manual carefully. Before the content of the Manual is not understood completely, you may not take the ***FLY*dat** into service.





Please, pay attention to the following symbols throughout the manual, emphasizing particular information.

▲ **WARNING:** Identifies an instruction, that, if not followed, may cause serious injury or even death.

■ **ATTENTION:** Identifies an instruction that, if not followed, may severely damage the engine or other components.

◆ **NOTE:** Information useful for better handling of the ***FLY*dat**

P.T.O. stands for power take off side and M.S. for magneto side throughout the Technical Documentation of Rotax, for precise destination of location

Description of design

Section 3

The ***FLY*dat** represents an instrument specially developed for ROTAX Aircraft engines for the indication and acquisition of engine operating data readily accessible for the pilot.

The ***FLY*dat** is furnished with 8 sensor input ports, which can be occupied variably according to the engine type.

The operating data is being permanently compared with the specific engine operating limit. If the signalled operating data exceeds the stored operating limit, the ***FLY*dat** will warn the pilot.

The ***FLY*dat** keeps the pilot informed on the following actual readings:

- Engine speed
- Cylinder head temperature
- Ambient air temperature (not on engines 912/914)
- Temperature of cooling water (only on engines 582UL, 618UL)
- Oil temperature and oil pressure (only on engines 912/914)

Besides the topical data, the ***FLY*dat** shows also the hours of operation.

The separately picked up readings are issued in accordance to display allocation.

For maintenance and analyses of engine shortcomings, the ***FLY*dat** picks up and stores the essential operating data. For the safety's sake, the programmed service date reminds you of the scheduled maintenance of the engine.

The handy unit offers a number of appreciable assets compared to the conventional dial gauge indication. Besides the easy installation, the low weight and compact size are the essential advantages of the ***FLY*dat**.

Possible configuration

Section 4

The ***FLY*dat** is supplied by Rotax with an undefined configuration.

With the standard configuration, all trigger levels for warning and alarm system are set to the **maximum of the measuring range**, i.e. no checks for exceeding the warning limits.

The ***FLY*dat** can be coordinated by the authorized Rotax Distributor with the respective engine type. With this configuration, Warning and Alarm limits are set for the specific channels.

- Undefined
- 447 UL SCDI
- 503 UL DCDI
- 582 UL DCDI
- 618 UL DCDI
- 912 DCDI series
- 912S DCDI series
- 914 DCDI series

By the configuration of the ***FLY*dat,** the engine type, engine number, hours of operation, temperature unit and the respective engine limits are programmed.

◆ **NOTE:** If the ***FLY*dat** is utilized on a used engine, it is possible to set the time of operation

▲ **WARNING:** If using the ***FLY*dat** with the undefined configuration, the indication will work flawless, but as Warning and Alarm limits are set to a high level, there is no warning in case of danger.

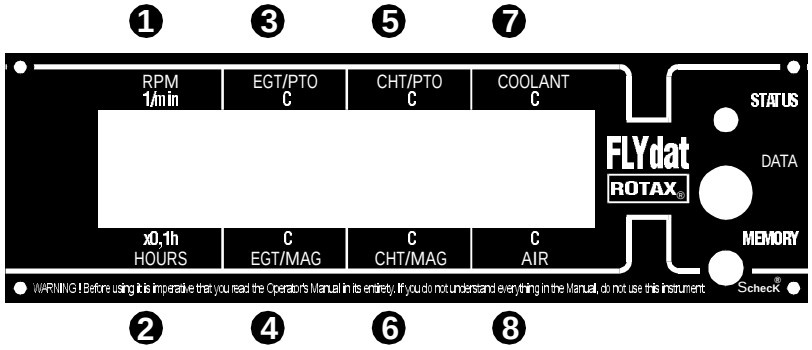
Liquid cooled 2-stroke

***FLY*dat** is always delivered with the front plate for 4-stroke engines but without a defined configuration. By programming the ***FLY*dat**, it will be adapted to the respective engine type.

CONFIGURATION
Display and connection

ROTAX®

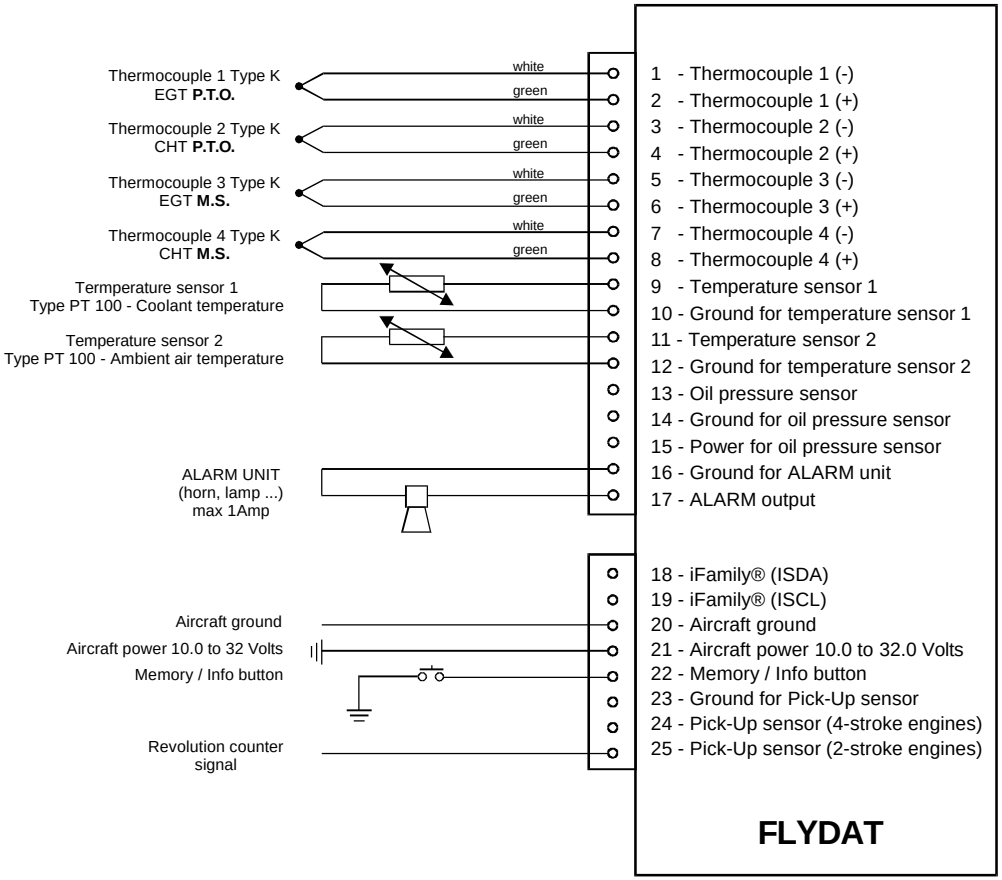
2-stroke liquid cooled engine configuration:



00998

Display field	Designation	Unit	Resolution
1	Engine speed	rpm	1
2	Hours of operation	h	0,1
3	Exhaust gas temp. PTO	°C or °F	1 or 10
4	Exhaust gas temp. MS	°C or °F	1 or 10
5	Cylinder head temp. PTO	°C or °F	1
6	Cylinder head temp. MS	°C or °F	1
7	Coolant temperature	°C or °F	1
8	Ambient air temperature	°C or °F	1

Wiring diagram:



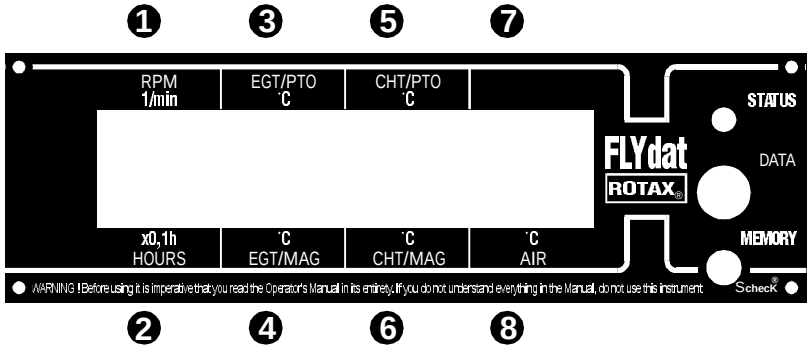
Air cooled 2-stroke

***FLY*dat** is always delivered with the front plate for 4-stroke engines but without a defined configuration. By programming the ***FLY*dat**, it will be adapted to the respective engine type.

CONFIGURATION
Display and connection

ROTAX®

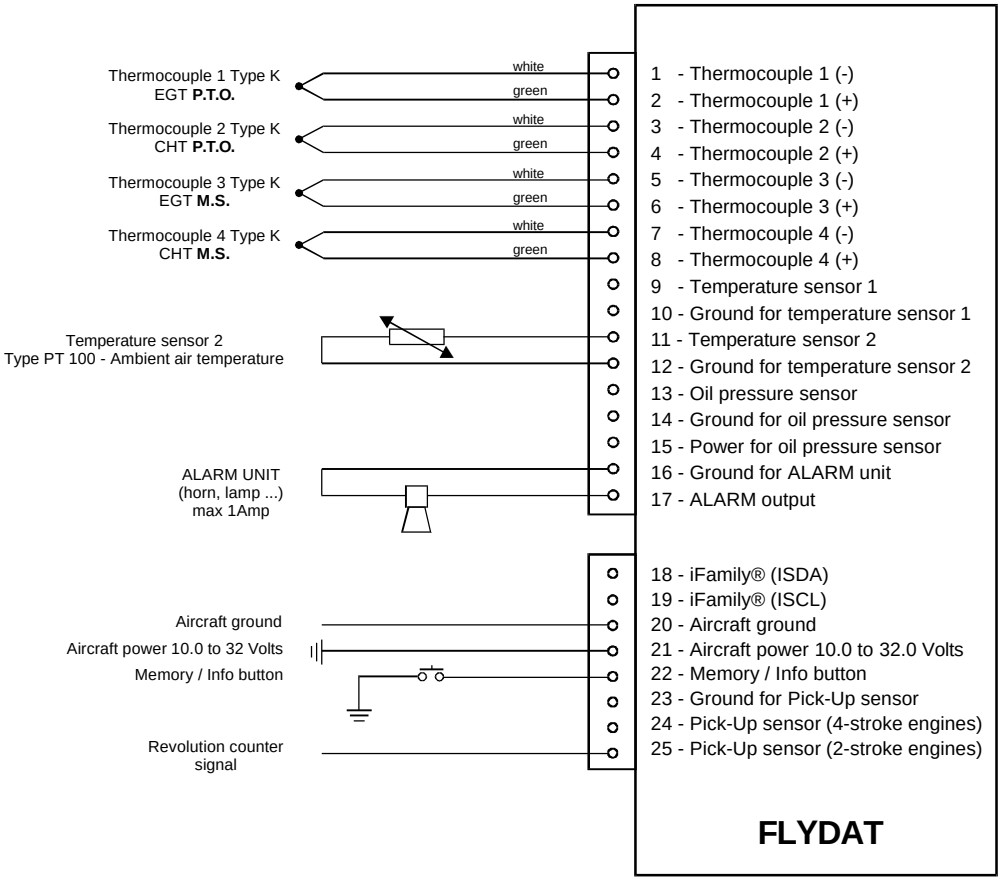
2-stroke air cooled engine configuration:



00999

Display field	Designation	Unit	Resolution
1	Engine speed	rpm	1
2	Hours of operation	h	0,1
3	Exhaust gas temp. PTO	°C or °F	1 or 10
4	Exhaust gas temp. MS	°C or °F	1 or 10
5	Cylinder head temp. PTO	°C or °F	1
6	Cylinder head temp. MS	°C or °F	1
7	empty		
8	Ambient air temperature	°C or °F	1

Wiring diagram:



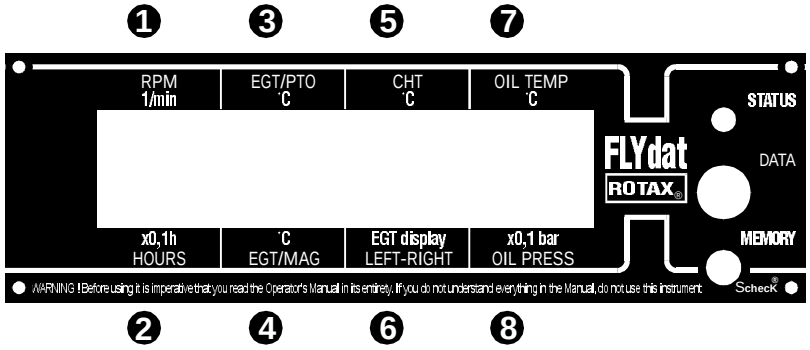
Liquid cooled 4-stroke

***FLY*dat** is always delivered with the front plate for 4-stroke engines but without a defined configuration. By programming the ***FLY*dat**, it will be adapted to the respective engine type.

CONFIGURATION
Display and connection

ROTAX®

4-stroke liquid cooled engine configuration:

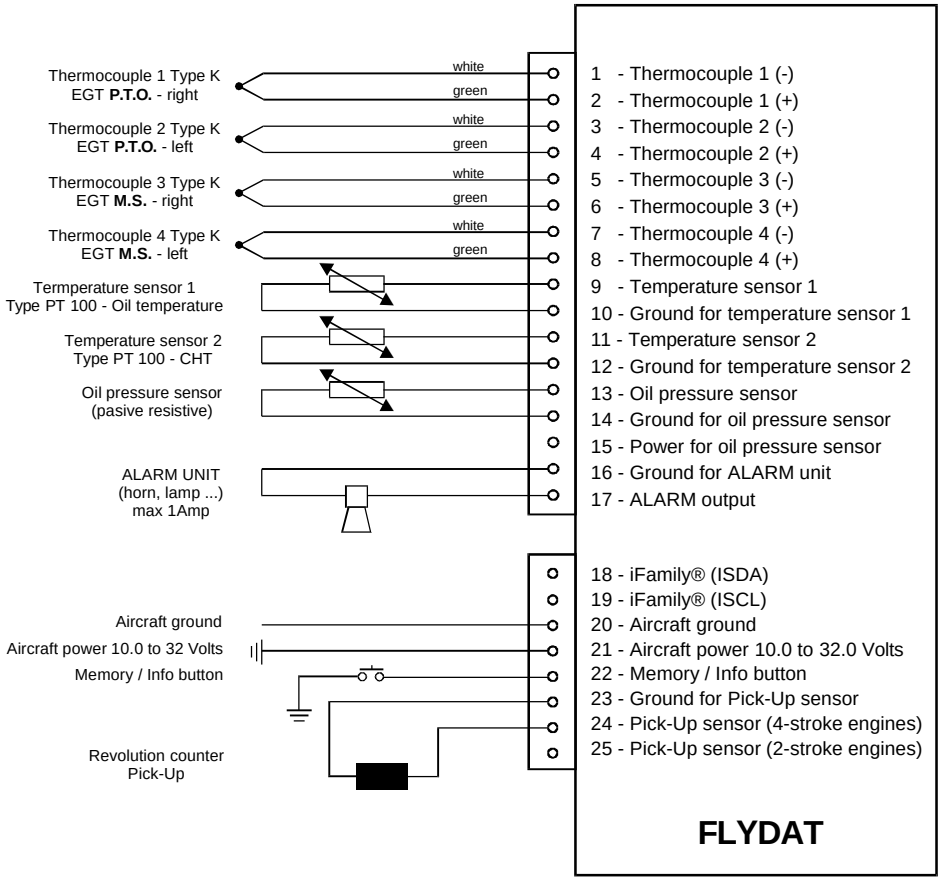


Display field	Designation	Unit	Resolution
1	Engine speed	rpm	1
2	Hours of operation	h	0,1
3	Exhaust gas temp. AS	°C or °F	1 or 10
4	Exhaust gas temp. MS	°C or °F	1 or 10
5	Cylinder head temp	°C or °F	1
6	<- - - >		
7	Oil temeperature	°C or °F	1
8	Oil pressure	bar or PSI	0,1

◆ **NOTE:** Arrow ← denotes left line of cylinder
Arrow → denotes right line of cylinder

The change over of the readings of exhaust gas temperature is every 5 seconds.

Wiring diagram:



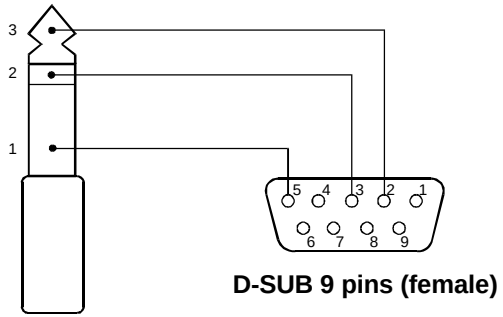
Possible connection

Section 5

The ***FLY*dat** has another input that should be used for programming, communication with other instruments via the iFamily® bus and also for the external switch and signalization unit.

Communication with the PC:

The socket fitted on the front panel is used for programming various engines or data transfer to the PC.
The socket enables the customer the data transfer to the PC via standard RS-232c PC serial communication.



D-SUB 9 pins (female)

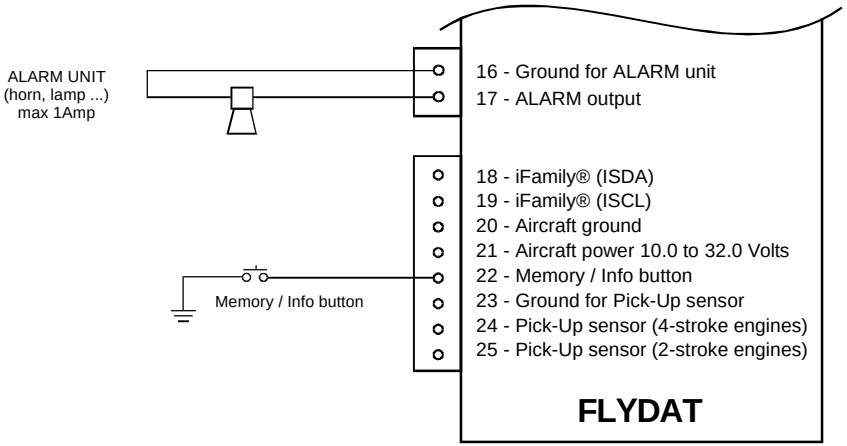
JACK 6,3mm (male)

Description	JACK 6,3mm	D-SUB 9 pins
RS-232 FLYDAT TXD	3	2
RS-232 FLYDAT RXD	2	3
RS-232 GND	1	5

ROTAX®

Alarm lamp and external Push-Button:

When the Push Button on the front panel is out of hand reach, connect the external Push Button into the connector.
The ***FLY*dat** is furnished with an alarm output, which behaves like the position (+) terminal of 12Volts output. If necessary, a lamp and/or some signalling device, acoustic or visual, may be connected.



◆ **NOTE:** The maximum current of alarm output must not exceed 1Amps.

Technical Data

Section 6

For correct working of the ***FLY*dat**, always keep the technical parameters as specified below. Any use of the ***FLY*dat** beyond the range of the technical parameters may cause a damage, to which the guarantee will not be related.
If you use the Flydat above the temperature limits, the warning message "OVER RANGE" will show on the display together with the temperature the ***FLY*dat** has just measured.
The ***FLY*dat** will store this information. In this case, turn the ***FLY*dat** off in order to prevent its damage.

General parameters:

FLYDAT	
Power supply:	10,0 to 32,0 Volts
Current consumption:	0,25 Amp@14Volts (without signalisation)
Alarm Output	1 Amp max. (voltage output in compilance with power supply)
Operating temperature:	-20°C to 70°C (-4°F to 158°F)
Storage temperature:	-30°C to 85°C (-22°F to 185°F)
Relative humidity:	95% without condensating
Load:	+/- 20g
Vibration:	1 to 200 Hz
Weight:	ca 0,5kg (1lbs)
Display:	LCD with green background ilumination 2 x 16 digits, size of type 8 mm
Fuse:	3A, 32 Volts
Design:	Plastic injection molded housing with plexiglass front plate, easy to change

Sensors inputs:

4 x input for thermo couple NiCrNi (type K)	
Measuring range:	-40°C to +1050°C by environmental temperature 25°C
Accuracy:	+/- 5°C
Application:	Exhaust gas temperature (EGT), cylinder head temperature (CHT)
2 x input resistance thermometer (PT-100)	
Measuring range:	-20°C to +270°C
Accuracy:	+/- 2°C
Application:	Air temp., coolant temperature (2-stroke)
	Oil temp., cylinder head temp. (912/914)
1 x input oil pressure pick-up	
Measuring range:	0 to 10 bar
Accuracy:	+/- 0,2 bar
Application:	Oil pressure (912/914)
1 x RPM input	
Measuring range:	500 to 9990 rpm
Accuracy:	+/- 10 rpm
Hour meter	
Measuring range:	0 to 10 bar
Indicating range:	0,0 to 999,9 h (after 999,9 h change to zero)
Accuracy:	+/- 1 sec/h at operation without interuption

Warning and Alarm

Section 7

If the ***FLY*dat** has been configured by a distributor, the following limits are stored.

◆ **NOTE:** Please, pay attention to the limits as specified in the Operator's manual for the engine.

Do not run the engine above these limits.

Engine type 447 and 503UL:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	6800	7000
Exhaust gas temp.	°C	650	680
Cylinder head temp.	°C	250	275
Ambient air tepmperature	°C	40	50

Engine type 582 UL DCDI:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	6800	7000
Exhaust gas temp.	°C	650	680
Cylinder head temp.	°C	165	180
Coolant temperature	°C	85	95
Ambient air tepmperature	°C	40	50

Warning and Alarm

If the ***FLY*dat** has been configured by a distributor, the following limits are stored.

◆ **NOTE:** Please, pay attention to the limits as specified in the Operator's manual for the engine.

Do not run the engine above these limits

.

Engine type 618 UL:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	7000	7300
Exhaust gas temp.	°C	650	680
Cylinder head temp.	°C	165	180
Coolant temperature	°C	85	95
Ambient air tepmperature	°C	40	50

Engine type 912 UL DCDI:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	5800	6000
Exhaust gas temp.	°C	880	900
Cylinder head temp.	°C	135	150
Oil temperature	°C	130	145
Oil pressure max.	bar	6,0	8,0
Oil pressure min.	bar	2,0	1,0

Warning and Alarm

If the ***FLY*dat** has been configured by a distributor, the following limits are stored.

◆ **NOTE:** Please, pay attention to the limits as specified in the Operator's manual for the engine.

Do not run the engine above these limits.

Engine type 912 ULS DCDI:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	5800	6000
Exhaust gas temp.	°C	880	900
Cylinder head temp.	°C	135	150
Oil temperature	°C	130	145
Oil pressure max.	bar	6,0	8,0
Oil pressure min.	bar	2,0	1,0

Engine type 914 UL DCDI:

Display field	Unit	Warn limit	Alarm limit
Engine speed	rpm	5800	6000
Exhaust gas temp.	°C	950	1000
Cylinder head temp.	°C	135	150
Oil temperature	°C	130	145
Oil pressure max.	bar	6,0	8,0
Oil pressure min.	bar	2,0	1,0

Installation

Section 8

Prior to the installation of the ***FLY*dat,** look for a suitable location in the cockpit, taking the following into consideration:

⇨ Protection against too high temperatures.

◆ **NOTE:** The unit operates flawless up to the max. operating temperature of 70°C.

⇨ Protection against excessive vibrations and shock loads (see Technical Data for permissible values). For certain conditions, it might be necessary to install the vibration damper for keeping within the specifications.

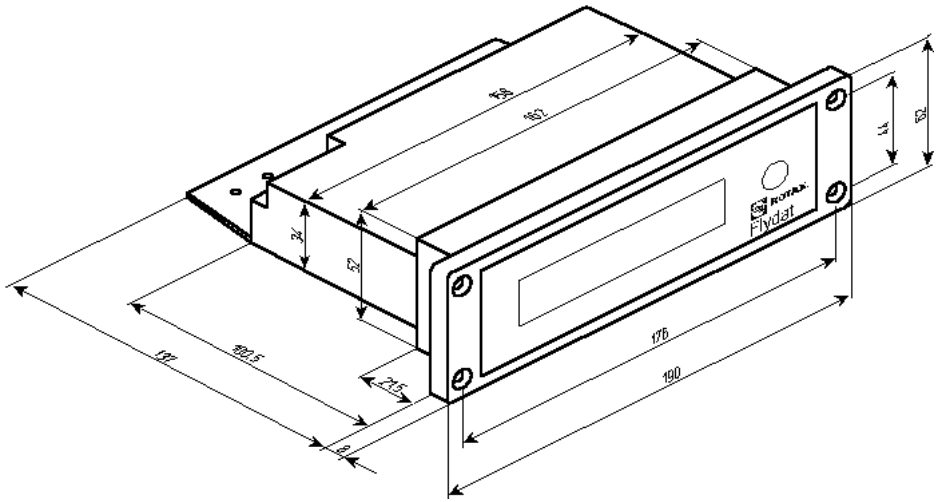
⇨ Protection against dampness and any kind of gasoline and oil wetting.

⇨ Ensure clear and distinct visibility, direct and without glare.

⇨ Easy maintenance.

With regard to reliability and durability, try to meet all these conditions.

Outline dimensions of the Flydat



Sensors kits

Section 9

3 different sensor kits, specially assembled for every engine type, are offered from Bombardier-Rotax.

Version LC (liquid cooled 2-stroke engines)

Version AC (air cooled 2-stroke engines)

- ⇨ 2 sensors for exhaust gas temperature (EGT)
- ⇨ 2 spark plug seat sensors for cylinder head temperature (CHT)
- ⇨ 2 temperature pick-ups for air and coolant temperature

(version AC with 1 air temperature sensor only)

- ⇨ 2 sealing rings for EGT sensors
- ⇨ 2 support angles for CHT sensors
- ⇨ 2 cable straps
- ⇨ 2 front plates alternatively with temperature display in °C or °F
- ⇨ 2 stickers with wiring diagram

Version 912, 912S or 914

- ⇨ 4 sensors for exhaust gas temperature (EGT)
- ⇨ 2 temperature pick-ups, for cylinder head and oil temperature
- ⇨ 1 pick-up for oil pressure
- ⇨ 4 sealing rings for EGT sensors
- ⇨ 4 welding collars M8x1 for EGT sensors
- ⇨ 1 front plate, alternatively with temperature display in °C or °F
- ⇨ 1 sticker with wiring diagram

Electric connections

The plug receptacles with interlocking for the connection of the sensors and power supply are located on the backside. For wiring the sensors and terminals, consult the wiring diagram.

◆ **NOTE:** Use the original connectors delivered with the ***FLY*dat**.

■ **ATTENTION:** Connect the cables into the connector and use the contracting strip to attach them to the connector cover. Secure the incoming leads to prevent their effect on the connector in the vertical direction.

Installation of the sensors

Section 10

At installation of the sensors, take the following into consideration:

- ⇨ Route sensor lines must be protected against excessive temperatures.
- ⇨ Route sensor lines must be free of vibrations, but with some flexibility.
- ⇨ Sensor lines must be without kinks and must not chafe.
- ⇨ The threads of the EGT sensors and pick-up of the coolant must be greased with Loctite ANTI-SEIZE to ensure a trouble-free removal (see the tightening torque chart).

Shortcomings in these points can result in false readings, interruption of lines or the ruin of pick-up lines and sensors.

◆ **NOTE:** The sensors are furnished by the supplier with the pick-up lines of 2m (6.5 foot) length, but can be extended to the max. length of 4m (13.1 foot).

Thermocouples NiCrNi (type K) must be extended with NiCrNi thermocouple extension cable only.
Connections must be soldered and insulated, preferably by a shrink tube.

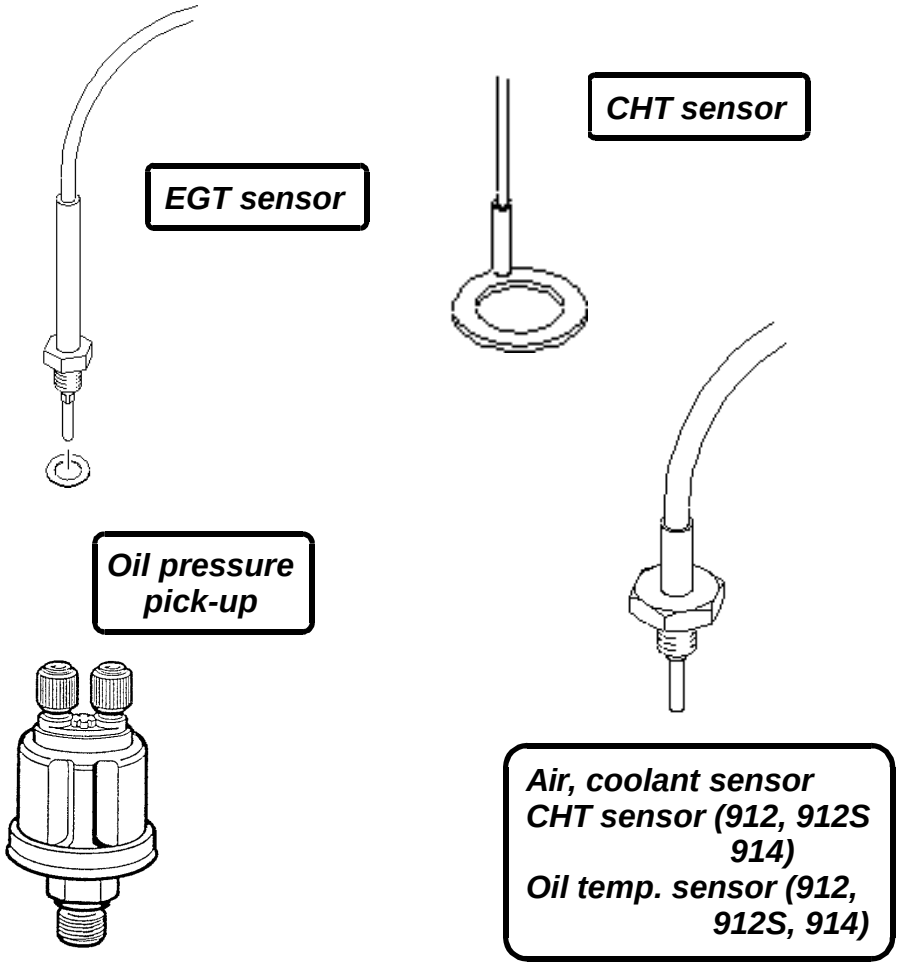
Never establish the connections by clamping, otherwise there is a danger of false readings due to the higher contact resistance. NiCrNi thermocouple cables are available in a specialist store or from your local Bombardier-Rotax dealer.

All other sensors can be extended with a suitable stranded copper wire.

■ **ATTENTION:** While installing the sensors, always bear in mind that you are dealing with measuring devices, and handle these sensitive components carefully.
For any question, please contact your local Bombardier-Rotax distributor.

Installation of the sensors

These sensors are offered by Bombardier-Rotax:



Tightening torques:

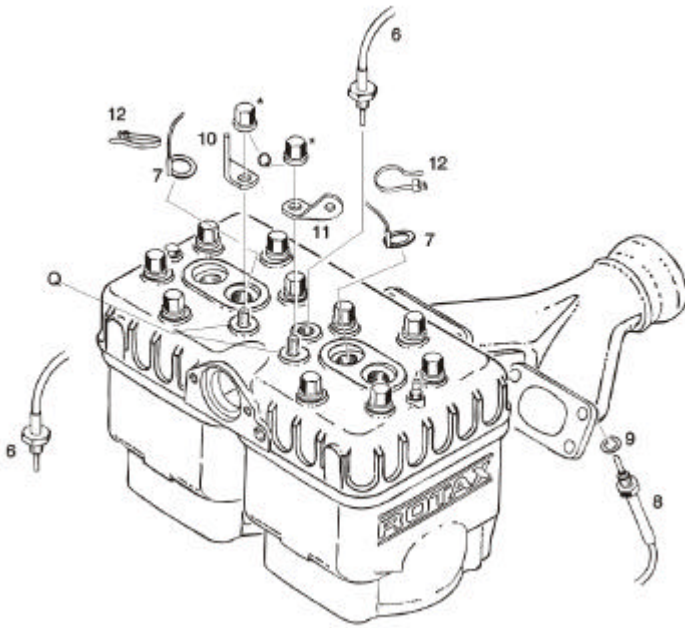
Sensor	Torque	Tightening
EGT sensor	20Nm 177in.lb.	LOCTITE Anti Seize
Oil pressure pick-up	15Nm 133in.lb.	LOCTITE 603
CHT sensor (912, 912S / 914)	15Nm 133in.lb.	LOCTITE 221
Oil temp. sensor (912, 912S / 914)	15Nm 133in.lb.	LOCTITE 603
Coolant temeprature sensor	6Nm 53in.lb.	LOCTITE Anti Seize
Air temperature sensor	6Nm 53in.lb.	LOCTITE 221

■ **ATTENTION:** All components, liable to come of during operation,
have to be secured against loss !

Installation of the sensors

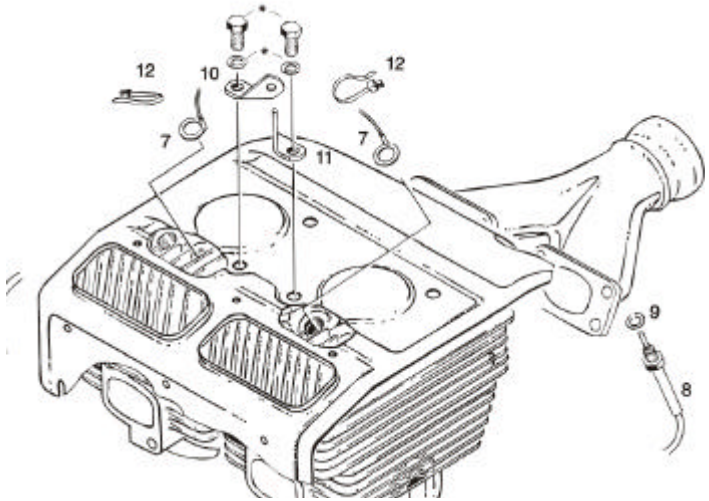
Installation plan for the individual sensor kits

liquid cooled 2-stroke engines
(Illustration shows the engine type 582 UL)



Index	Description
1	Sensor at spark plug seat (CHT)
2	Air temperature sensor
3	EGT sensor
4	Sealing ring

Air cooled 2-stroke engines
(Illustration shows the engine type 503 UL)

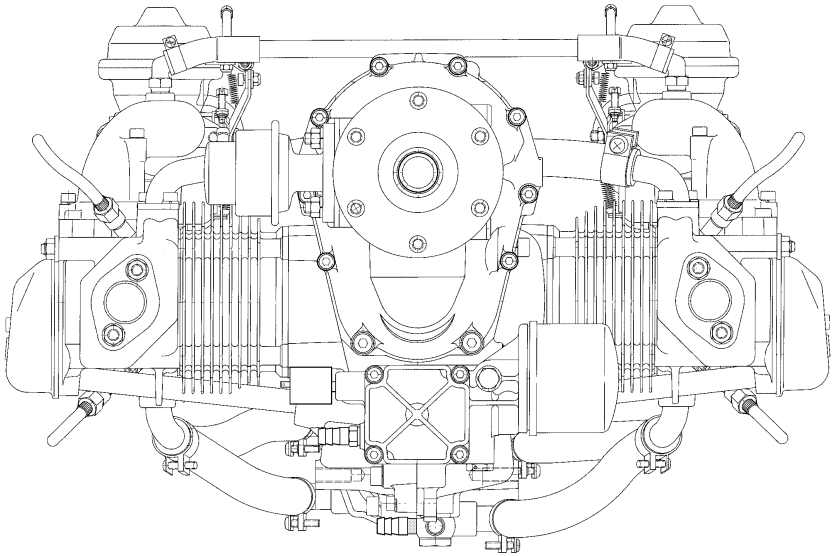


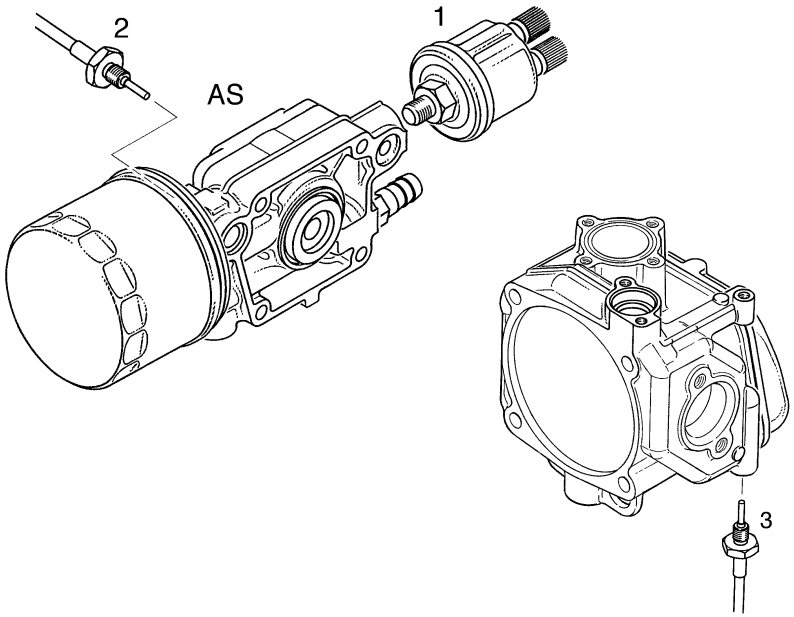
Index	Description
1	Sensor at spark plug seat (CHT)
2	Air and liquid temperature sensor
3	EGT sensor
4	Sealing ring

Installation of the sensors

Installation plan for the individual sensor kits

liquid cooled 4-stroke engines
(Illustration shows the engine type 912 UL)





Index	Description
1	Oil pressure pick-up
2	Oil temperature sensor
3	CHT sensor

Operation

Section 11 *Initial Start-up*

Prior to putting the ***FLY*dat** into operation, make sure that all the sensor lines and the supply cable are connected correctly. Consult the wiring diagram and the chapter about the electric connections for the particular type of engine.
Until all the connections are checked, do not supply the ***FLY*dat** with voltage.

With adequate voltage and correctly connected supply,
- ⇨ the background illumination must glow, and
- ⇨ the readings are indicated on the ***FLY*dat**.

If any of the temperature sensors or the pressure sensor /in a 4-stroke engine/ is not connected, three dashes [---] will show on the display instead of the measured value.

Reaction at start

After connecting the unit on power, it will perform an autotest. With no errors detected, the logo shows on the display.
First, the display will show the logo, then the date and time in UTC.
Then the firmware version and the units of temperature (°C/°F) and pressure (Bar/PSI) are shown. At showing the firmware version, the alarm output is activated for 1 second.

If the message "SERVICE" is shown after the date and time, it means that one of the measured quantities has been exceeded. After pushing the button on the panel or the external button connected to the pin 7 on the backside of the instrument, the ***FLY*dat** will show you which quantity has been exceeded.

◆ **NOTE:** If the information on the date and time is incorrect or if there is "Err" instead of the month, it means that the internal battery does not have sufficient capacity. In this case, contact a service, where the battery will be replaced.

Operation

Section 12 ***Delete "SERVICE" message***

To delete this message, turn the instrument off. Then, while keeping the pressed button on the panel or the external button connected to the pin 7 of the connector on the backside of the instrument, turn the instrument on.

◆ **NOTE:** If this message is shown, we recommend downloading the data to your PC (see page 23) and undertaking the precautions that would prevent another warning message.

■ **ATTENTION:** Any engine operation beyond the limit values assessed by the company ROTAX may cause abating the engine durability.

Signalization unit

The signalling control lamp on the panel of the instrument shows three possible conditions of the ***FLY*dat**.

⇨ After turning the instrument on and at showing the firmware version, the lamp control lights up red for 1 second. As soon as the measured values are shown on the display, the lamp control turns off providing the engine is at a standstill. As soon as you start the engine and reach the oil operating temperature (in 4-stroke engines), the lamp control lights up green to inform you that the engine has reached the operating temperature.

⇨ If you press the button on the front panel or the external button connected to the pin 7 of the connector on the back-side of the instrument, the memory of the maximum measured values will show. In this case, the control lamp keeps flashing in the interval of 0.5 second.

⇨ If some of the measured values has been exceeded, the control lamp will light up red and will keep flashing in the interval of 0.5 second and simultaneously with the alarm output.

Possible display

Section 13 ***Indication of engine speed***

The r.p.m. reading is in 4 digits and shows on the display from 300 r.p.m. onwards. Recording of the speed down to 1000 r.p.m. ending with last input memory.

◆ **NOTE: If the rotation speed has exceeded the value of 9999r.p.m., three dashes [- - -] will show on the display.**

Indication of operating time

The number of operating hours is in 4 digits with the resolution of 0,1 hour on the display.

As only 4 digits are at disposal, the time of operation is indicated up to 999,9 hours followed by starting at 0,0 hours again.

Recording of the time of operation is at the engine speed down to 1000 r.p.m.

◆ **NOTE:** The ***FLY*dat** is capable of total running time of up to 9999,9 hours.

Temperature indication

(Exhaust gas, cylinder head, oil and air temperature)
The temperature display is in 3 digits with the resolution to 1°C or 10°F.

◆ **NOTE: As stated previously in configuration, the temperature indication is either in °C or °F. As only 3 digits are at disposal, the indication of the exhaust gas temperature in °F shows only 1/10 of its actual value on the display, i.e. indication °F x 10 = actual exhaust gas temp.**

Indication of oil pressure

(On engine 912, 912S and 914 only)
Display of the oil pressure is in 3 digits with a resolution of 0,1 bar. The oil pressure gauge is furnished, besides the generally fitted max. limit control, additionally with the minimum pressure control.

The control of the minimum oil pressure is linked to the circuit 5 sec. after (for physical reasons) reaching the engine speed of at least 1000 r.p.m.

The control of the max. oil pressure is without a time-delay.

Flydat status

Section 14

The ***Fly*dat** can be programmed by an authorized dealer for different Warning and Alarm limits, depending on the engine type.

Distinguish three ranges of the status:

- **green range** (standard operation)
  All readings are below or above (min. oil pressure) the programmed Warning limits.

- **yellow range** (exceeding of Warn limits)
  If one or more readings exceed the programmed Warning limit, then the reading shows flashing on the display, and simultaneously the control lamps are flashing and the alarm output is periodically (0,5sec.) switching on and off, until the limit stops to be exceeded.

- **red range** (exceeding of Alarm limits)
  If one or more readings exceed the programmed Alarm limit, then the reading shows flashing on the display, and simultaneously the control lamps are flashing and the alarm output is periodically (0,5sec.) switching on and off, until the limit stops to be exceeded.

■ **WARNING:** Ignoring of the Warning and Alarm signal may cause injures or endanger the life of the operator or the third party.

◆ **NOTE:** The reading operation of the ***FLY*dat** remains active, even when exceeding the limits, as long as it is supplied with the required voltage.

The control of the limits responds if the pick-up readings are at or above or below (oil pressure) the programmed limits.

Data recording in operation

Section 15

The ***FLY*dat** stores the current measured values (the values you can see on the display of the instrument) in the interval of 5 seconds. The values are stored in the ScheckK® memory, which has:

- **4-hour rolling memory,** where the measured values are being stored in the interval of 5 seconds
- **20 cases** for storing a 3-minute record of the exceeded values; the line where the value has been exceeded is placed in the centre, so the user may look through the history of the values both before and after the excess
- **60 lines** for storing the absolute maximums, which are stored whenever some of the measured values has been exceeded; in this way, the user may find out which maximum operating values have been exceeded since the last alarm.

Signalization unit

The ***FLY*dat** also stores in the memory the information on the date and time when some of the measured values has been exceeded.

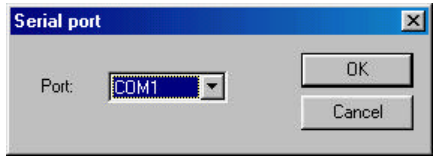
This information is always shown in the beginning of the memory print of the particular case, together with the total time and the serial number.

Data downloading

Section 16

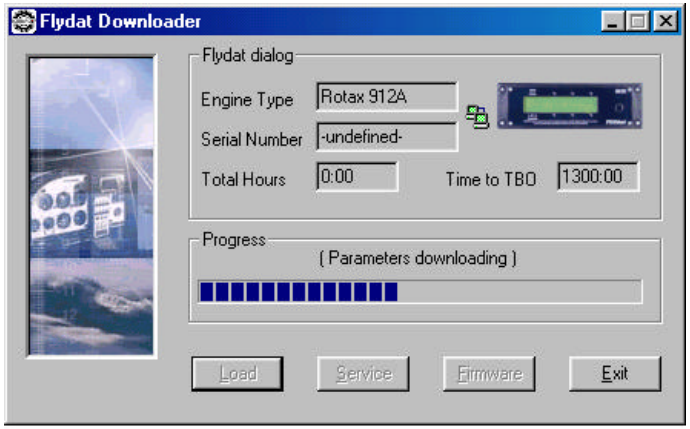
The ***FLY*dat** is also delivered with the connecting cable for connecting the instrument with your PC. The communication is via the serial cable RS-232, which is a standard part of desktop computers. In portable PCs, there is usually a USB port and, therefore, it is necessary to purchase a USB/RS-232 reduction, which is available in every shop with PC accessories.
After the installation of the programme, which is delivered on a disc or CD, and after connecting the ***FLY*dat** with the PC, you may get unique information about the operation of your engine.

After activating the programme, a dialogue is shown where you have to select, to which socket the ***FLY*dat** is connected. In the scrollable list, select COM1-4.



Flydat down loader

This dialogue enables you downloading the data or recording the firmware.



Firmware Update

Section 17

The ***FLY*dat** offers the possibility of firmware update by means of a PC and the programme, which is delivered on a disc or CD and which is a part of the ***FLY*dat** delivery.

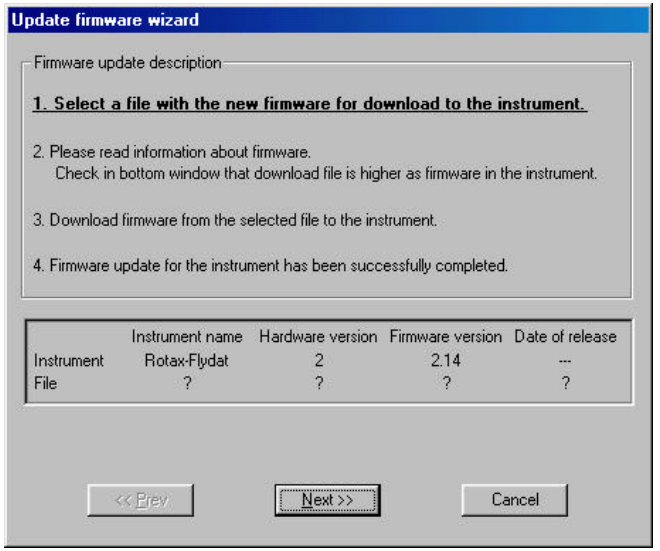
Since the firmware for your ***FLY*dat** is to be improved and completed with other functions, you may download the latest firmware version with the detailed description of the updated features and other functions on the address:

http://www.rotax-aircraft-engines.com

REQUEST

Having any suggestion about the Flydat's functions, firmware or software, please contact the local distributor of the company Rotax.

To undertake the firmware update, first, download the latest version of the file with the "tls" ending on your disc.
Then press the button "Firmware" and follow the process shown in the dialogue.



iFamily® bus

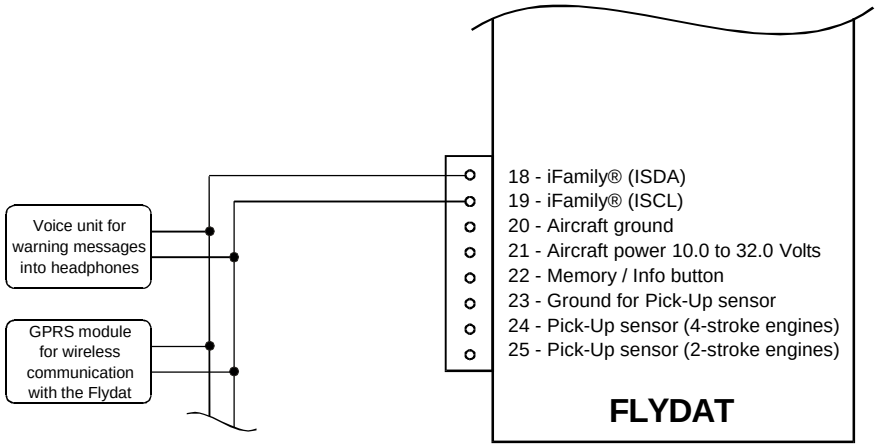
Section 18 The ***FLY*dat** offers a wide range of possibilities by connecting with other instruments by means of the iFamily bus. One of these possibilities is e.g. connecting with the wireless communication module GPRS for data transfer from the ***FLY*dat** to your PC anywhere in the world; connecting the voice module for voice warning (on Warning or Alarm value) directly to your headphones or speaker.

In case of connecting with other instruments that support the iFamily®, you may get e.g. a synchronised record of the values measured by the ***FLY*dat**, but also the information on the altitude from the altimeter etc.

The iFamily® bus is fully supported by the products of the company TL elektronic. The list of the companies (instruments) that support the iFamily® can be found on the producer page:

http://www.tl-elektronic.com/ifamily.htm

iFamily® bus:



▲ **WARNING:** Do not connect Aircraft power to the iFamily® ISDA and ISCL pins.

Messages and Report of Errors

Section 19

Warning message "COLD ENGINE"

If the oil temperature in a 4-stroke engine does not reach the operating value and, at the same time, the rotation speed has exceeded the set value, the warning message "COLD ENGINE" will show on the display and the lamp control on the panel of the instrument will light up red.

Message "ENGINE READY"

If the oil temperature in a 4-stroke engine reaches the operating value, the message "ENGINE READY", which informs you that the engine has run warm, will show on the display.

Warning message "OUT OF RANGE"

If you use the ***FLY*dat** over the limit temperature assessed in the technical parameters of the instrument, the warning message "OUT OF RANGE" will show on the display, together with the temperature the ***FLY*dat** has just measured.

The ***FLY*dat** is always delivered with the front plate for 4-stroke engines, but without a defined configuration.

Report of Errors

Test of memories

Starting the ***FLY*dat** operation, the data composition of the integrated non-volatile memories is checked first. If the check proves negative, the "ERROR" message will be shown on the display.

◆ **NOTE:** If "ERROR" message is shown on the display, inform your local service immediately.

EGT sensors connection

If the EGT sensor is disconnected, the three dashes [- - -] will be shown on the display. If the EGT sensor has selected the polarity, the "Err" message will be shown on the display.

Other sensors

If the sensor is disconnected, the three dashes [- - -] will be shown on the display.

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