Eclipse NG

Electronic Flight Instrument System
Installation Manual

136,10mm 124,16mm

169,00mm

188,50mm

CON1

CON3

CON2

16,40mm 45,30mm 53,80mm

Instrument Panel

Ø4,00mm

182,90mm

170,00mm

125,16mm   116,00mm

R3,50mm
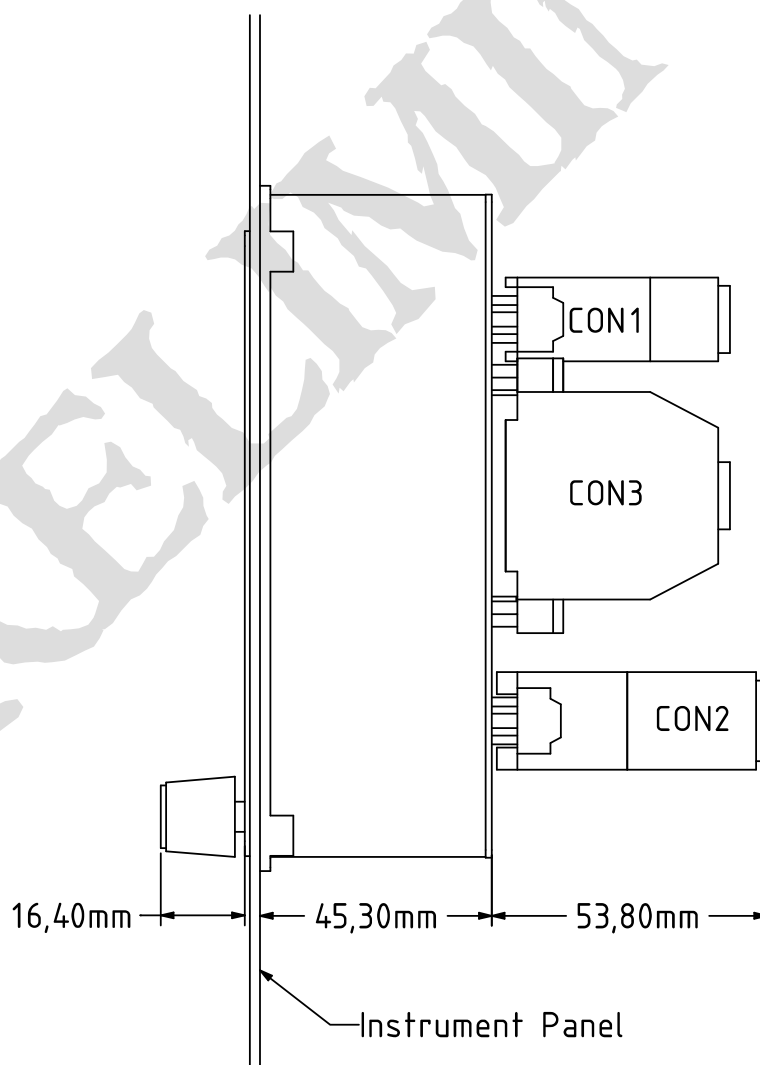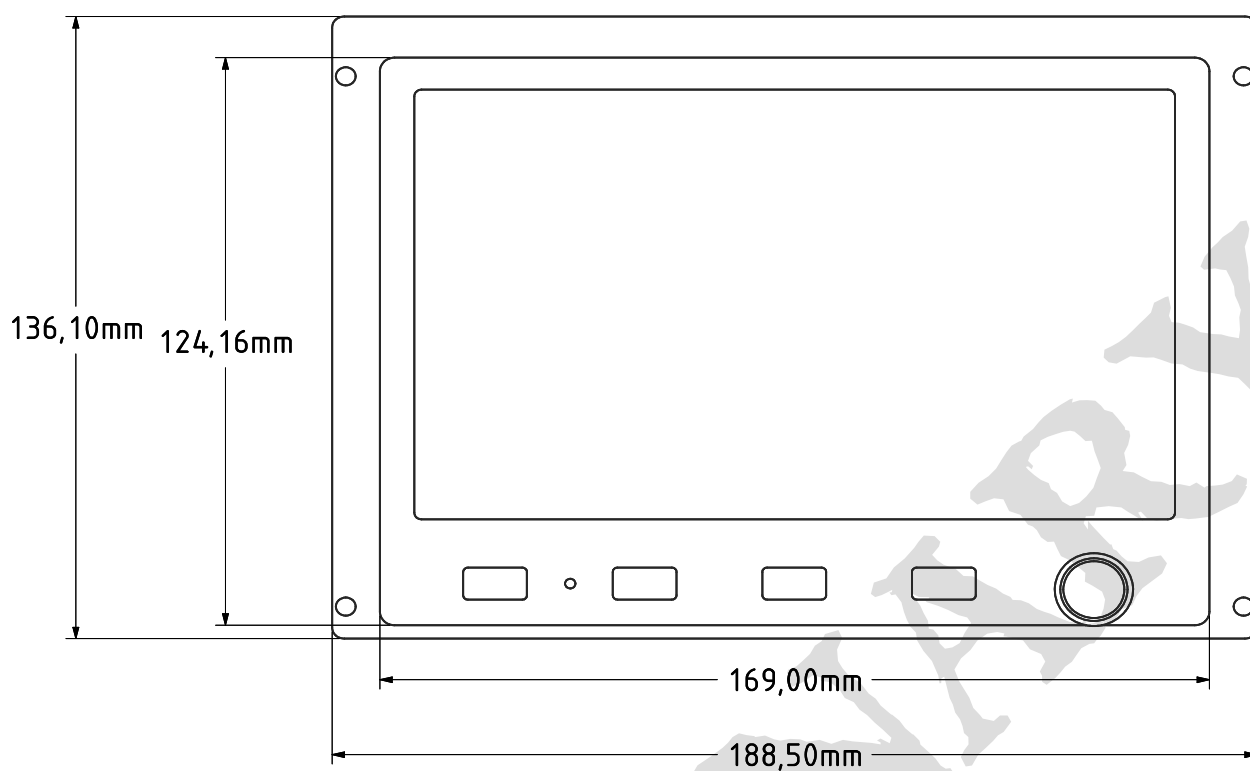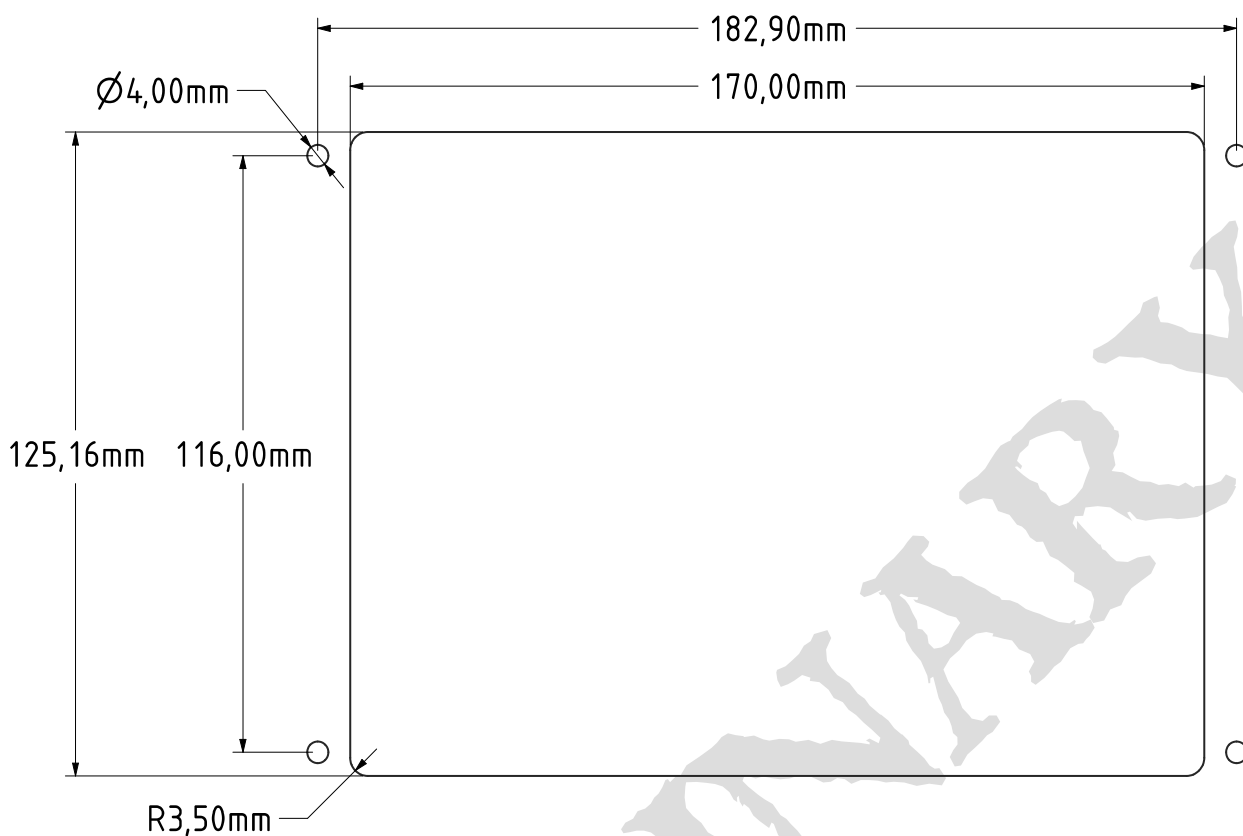
Panel Cutout

Notes on installing ECLIPSE NG

• Leave at least two centimeter of free space around the instrument for heatsink. Specially on the upper and lower part of the instrument, leave as much space as possible.
• During use the instrument become warm so it's necessary to have some air circulation inside the instrument room, to avoid that the temperature increase over the operating limits.
• Avoid placing in hot locations (for example near heater vents).
• Find a location where the display will always be completely visible.
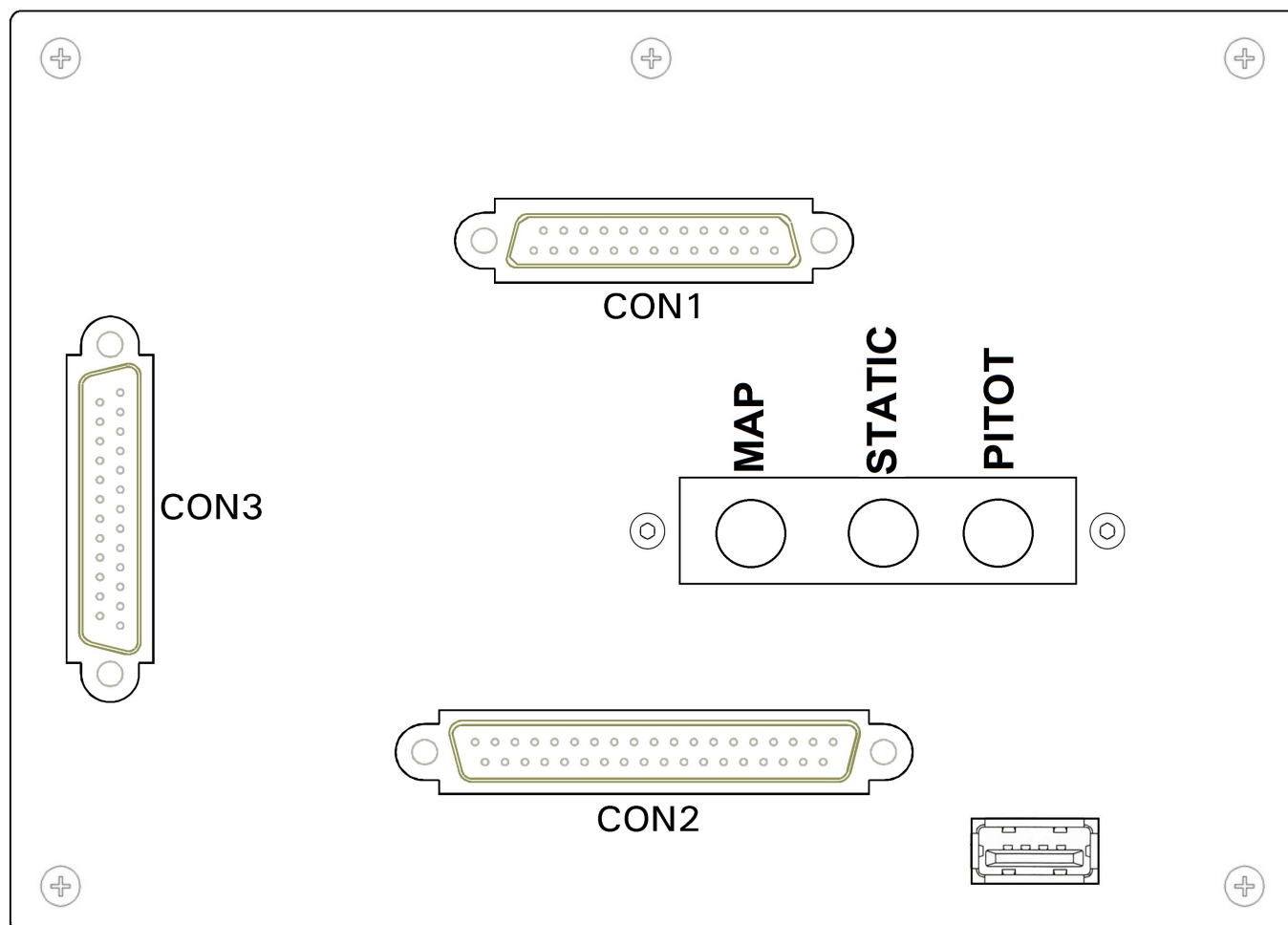
On the backpanel of the ECLIPSE instrument there are 3 D-SUB connectors:

- **CON1:** 25 poles, receptacle
- **CON2:** 37 poli, plug
- **CON3:** 25 poli, plug

- All 3 connectors is supplied with the corresponding connector to be wired (plug 25 poles for CON1, receptacle 37 poles for CON2 and receptacle 25 poles for CON3).
- In the CON3 connector there is the thermocouple input, so all the wires must be crimped and not soldered, using the furnished crimp contacts and connector.
- All the wires to CON1 and CON2 connectors can be soldered.

- **GENERAL WIRING HINTS:**
- Take care to properly insulate any exposed wire to avoid short circuits.
- Do not solder thermocouple wires terminations.
- Insert an appropriate circuit breaker to the positive main supply, considering the current requirement for the sensor powered by the Eclipse and considering that the instrument only current supply is 0.5 A.
- Use aeronautic cable for the wiring.
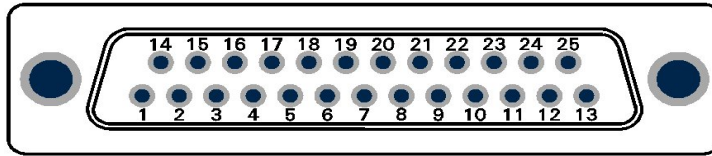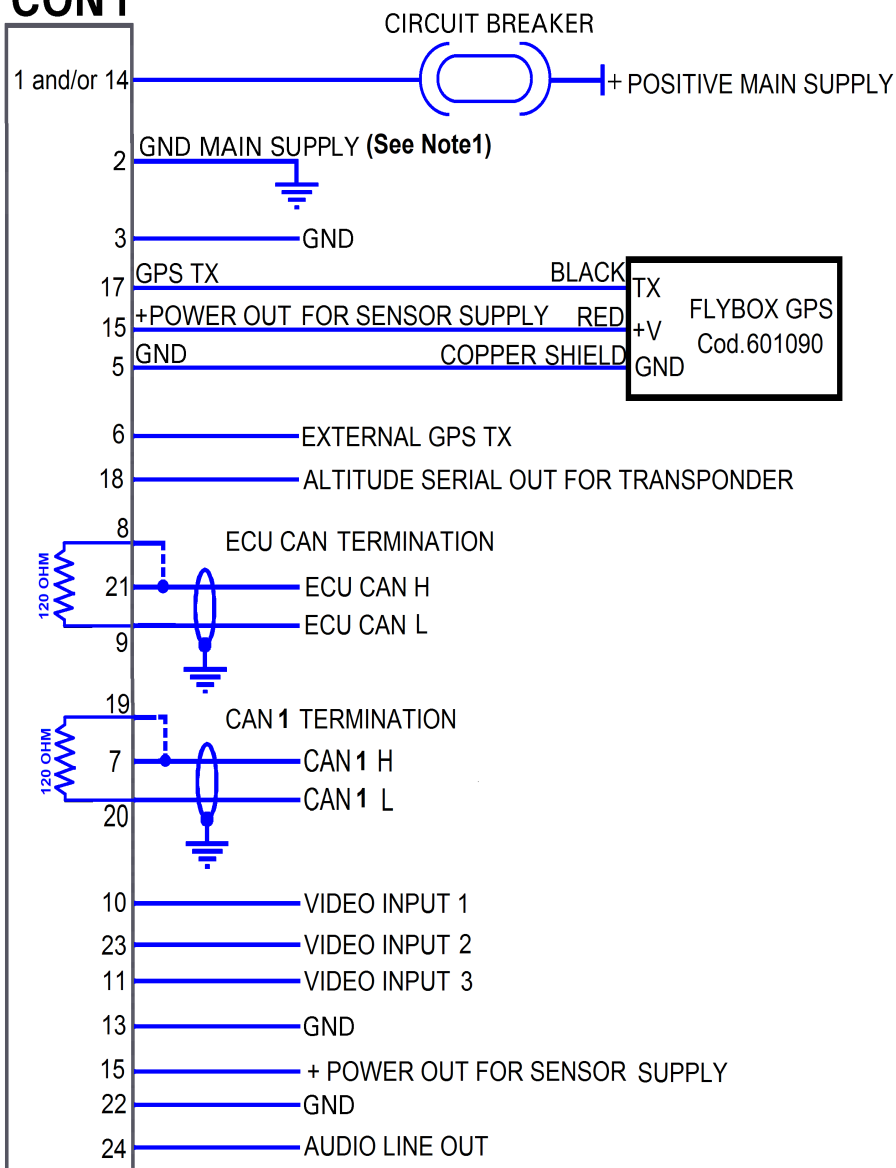
25-pin D-sub plug, view from wiring side

TABLE 1   CON1 CONNECTIONS

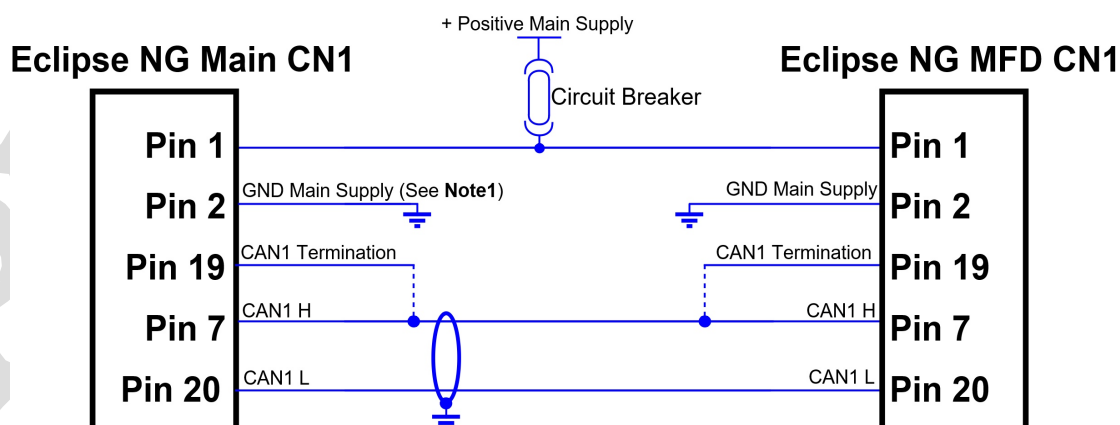| Pin #	Type	Description	Range
1	IN	+V Main supply	10~30 Vdc
2	IN	GND Main supply (**See Note1** on Pag 6)	
3	OUT	GND	
4	-	Not used/Reserved	
5	OUT	GND	
6	IN	External GPS TX (For Autopilot)	
7	I/O	CAN1 **H** signal	
8	-	ECU CAN termination (connect to pin#21 to terminate ECU CAN line)	
9	I/O	ECU CAN **L** signal	
10	IN	Video Input 1	
11	IN	Video Input 3	
12	-	Not used/Reserved	
13	OUT	GND	
14	IN	+V Main supply	10~30 Vdc
15	OUT	+Vout for sensors supply	500 mA*
16	OUT	+5V for sensor supply	300 mA
17	IN	Eclipse GPS TX	
18	OUT	Altitude Serial Out for Transponder	
19	-	CAN1 termination (connect to pin#7 to terminate CAN1 line)	
20	I/O	CAN1 **L** signal	
21	I/O	ECU CAN **H** signal	
22	OUT	GND	
23	IN	Video Input 2	
24	OUT	Audio Line out	
25	-	Not used/Reserved	

CAN bus line needs to be terminated on both ends, so check that also on the control units side the CAN line is terminated.

*NOTE: Pin#15(+Power out for sensors supply) have the same voltage of the power supplied to the instrument, so if you power the instrument with 12Volt, these outputs will be 12 Volt, if you power the instrument with 24Volt, these outputs will be 24 Volt (minus a small voltage drop due to protection diode and PTC fuse). The max current of 500 mA is the total sum of the current supplied by all the pins marked with "+Power out for sensors supply", including Pin#15 of CON1 connector. So, for example, if you sink 500mA on a single pin, no more current can be supplied on the other pins.

CON1

CIRCUIT BREAKER

1 and/or 14 ———————————( )————| + POSITIVE MAIN SUPPLY

2 — GND MAIN SUPPLY (See Note1)

3 — GND

17 — GPS TX   BLACK | TX
15 — +POWER OUT FOR SENSOR SUPPLY   RED | +V | FLYBOX GPS
5 — GND   COPPER SHIELD | GND | Cod.601090

6 — EXTERNAL GPS TX

18 — ALTITUDE SERIAL OUT FOR TRANSPONDER

8
120 OHM — ECU CAN TERMINATION
21 — ECU CAN H
       ECU CAN L
9

19
120 OHM — CAN **1** TERMINATION
7 — CAN **1** H
       CAN **1** L
20

10 — VIDEO INPUT 1
23 — VIDEO INPUT 2
11 — VIDEO INPUT 3
13 — GND
15 — + POWER OUT FOR SENSOR SUPPLY
22 — GND
24 — AUDIO LINE OUT

ECLIPSE NG MFD CONNECTIONS

+ Positive Main Supply

Circuit Breaker

Eclipse NG Main CN1   **Eclipse NG MFD CN1**

Pin 1 ————————————————————— **Pin 1**

GND Main Supply (See **Note1**)   GND Main Supply
Pin 2   **Pin 2**

CAN1 Termination   CAN1 Termination
Pin 19   **Pin 19**

CAN1 H   CAN1 H
Pin 7   **Pin 7**

CAN1 L   CAN1 L
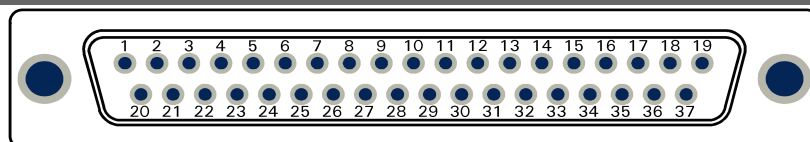**Pin 20**   **Pin 20**

Note1: *It is important that the ground terminal connection is routed in as short as possible manner to the engine block.*
The engine block must have a connection to the GND of the battery.
Normally this connection is provided in the form of a heavy duty cable to allow for the considerable currents of an electric starter motor.

37-pin d-sub receptacle, view from wiring side

TABLE2   CON2 CONNECTIONS

Pin	Type	Description	Range	NOTE
1	OUT	+Vout for sensors supply	500 mA *	
2	IN	Current sensor signal input	0~5 V	
3	OUT	GND		
4	OUT	+Vout for sensors supply	500 mA *	
5	IN	Fuel pressure sensor input	0~5 V	
6	IN	Left Fuel Level sensor input	Res: max 10 KOHM; Volt:0~5 V	
7	IN	Main Fuel Level sensor input	Res: max 10 KOHM; Volt:0~5 V	
8	IN	Gearbox Temperature sensor input	Res: max 10 KOHM; Volt:0~5 V	
9	OUT	GND		
10	IN	Oil temperature sensor input	Res: max 10 KOHM; Volt:0~5 V	
11	IN	OAT sensor input	0~5 V	
12	IN	Coolant Temperature sensor input	Res: max 10 KOHM; Volt:0~5 V	
13	OUT	GND		
14	IN	RPM Low voltage Input	Range:2-20Vpp; Max frequency 1,7 Khz min. pulse duration: 300uS	
15	IN	Digital input 2	Range: 5-30Vpp; frequency range 2Hz-10Khz, min. pulse duration: 50uS	Front Gear down indicator
16	OUT	GND		
17	OUT	+Vout for sensors supply	500 mA *	
18	OUT	Alarm Out 1	NPN. 500 mA MAX	
19	IN	RPM High voltage Input	Range:5-100Vpp; Max frequency 1,7 Khz min. pulse duration: 300uS	
20	OUT	GND		
21	OUT	+Vout for sensors supply	500 mA *	
22	IN	Fuel Flow1 sensor input	Range: 5-30Vpp; frequency range 2Hz-10Khz, min. pulse duration: 50uS	
23	OUT	GND		
24	OUT	+Vout for sensors supply	500 mA *	
25	IN	Right Fuel Level sensor input	Res: max 10 KOHM; Volt:0~5 V	
26	IN	Fuel Flow2 sensor input	Range: 5-30Vpp; frequency range 2Hz-10Khz, min. pulse duration: 50uS	
27	-	Not used/Reserved		
28	IN	Oil Pressure sensor input	Res: max 10 KOHM; Volt:0~5 V ; Amp: min 4 max 20 mA (internal 200 ohm)	
29	IN	CAT Sensor input	Res: max 10 KOHM; Volt:0~5 V	
30	IN	Trim Actuator Potentiometer	Res: max 10 KOHM	
31	IN	Volt Sense Input	10~30 Vdc	
32	IN	Digital input 1	Range: 5-30Vpp; frequency range 2Hz-10Khz, min. pulse duration: 50uS	Left Gear down indicator
33	IN	Rotor input	Range:2-20Vpp; Max frequency 1,7 Khz min. pulse duration: 300uS	
34	IN	Digital input 3	Range: 5-30Vpp; frequency range 2Hz-10Khz, min. pulse duration: 50uS	Right Gear down indicator
35	OUT	Alarm Out 2	NPN, 500 mA MAX	
36	OUT	+Power out for sensors supply	500 mA *	

| 37 | IN | Generic RPM input | Range:5-100Vpp; Max frequency 1,7 Khz
min. pulse duration: 300uS | |

*NOTE: Pin#1,4,17,21,24,36(+Power out for sensors supply) have the same voltage of the power supplied to the instrument, so if you power the instrument with 12Volt, these outputs will be 12 Volt, if you power the instrument with 24Volt, these outputs will be 24 Volt (minus a small voltage drop due to protection diode and PTC fuse). The max current of 500 mA is the total sum of the current supplied by all the pins marked with "+Power out for sensors supply", including Pin#15 of CON1 connector. So, for example, if you sink 500mA on a single pin, no more current can be supplied on the other pins.

CON2 connections

CURRENT SENSOR
Optional Ammeter sensor
Flybox code: 601061 (**sold separately)**

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Eclipse NG CN2

+

A+

Pin 2 Current sensor signal input **OUT**
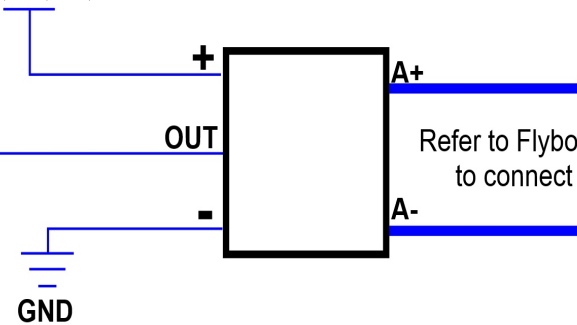
Refer to Flybox Ammeter Manual to connect these two wires

- **A-**

GND
Available on EclipseNG CN2 Pin:
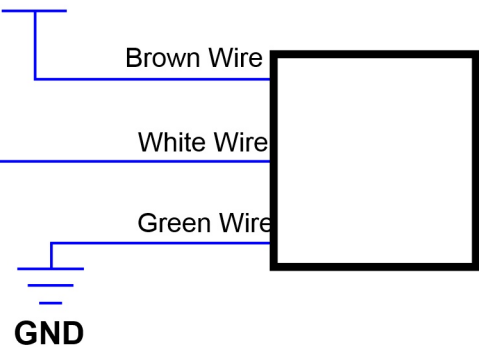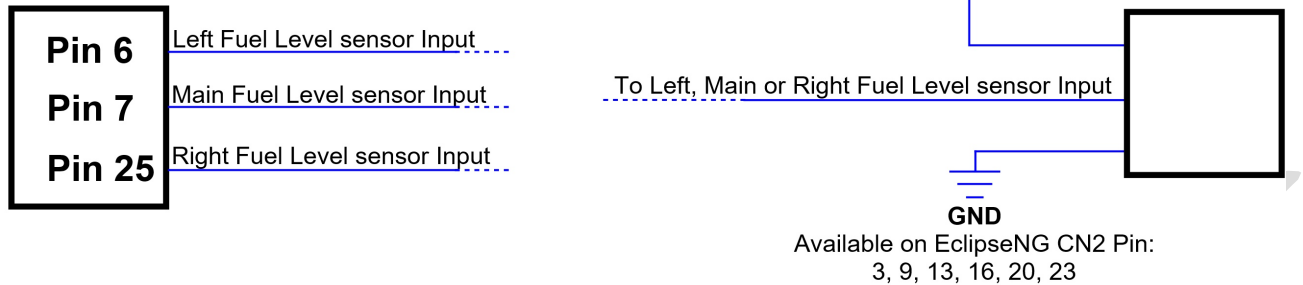3, 9, 13, 16, 20, 23

FUEL PRESSURE SENSOR
FLYBOX Optional Fuel Pressure Sensor
code: 601040 (**sold separately)**

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Eclipse NG CN2

Brown Wire

Pin 5 Fuel Pressure sensor Input White Wire

Green Wire

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

FUEL LEVEL SENSOR

Capacitive Sensor Fuel Level

Eclipse NG CN2

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Pin 6	Left Fuel Level sensor Input
Pin 7	Main Fuel Level sensor Input
Pin 25	Right Fuel Level sensor Input

To Left, Main or Right Fuel Level sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

Resistive Sensor Fuel Level

Eclipse NG CN2

Pin 6	Left Fuel Level sensor Input
Pin 7	Main Fuel Level sensor Input
Pin 25	Right Fuel Level sensor Input

To Left, Main or Right Fuel Level sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

GEARBOX TEMPERATURE SENSOR

P1K Gearbox Temperature Sensor

Eclipse NG CN2

Pin 8 Gearbox Temperature sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

VDO Gearbox Temperature Sensor

Eclipse NG CN2

VDO Gearbox Temperature Sensor:
-ROTAX 956415

Pin 8 Gearbox Temperature sensor Input

Engine Block
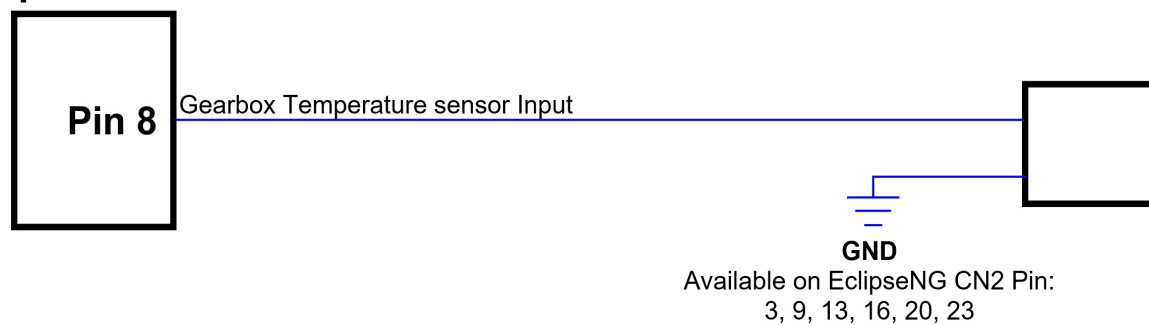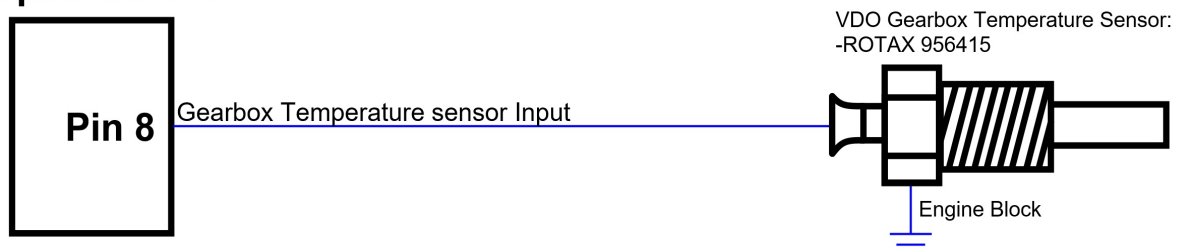
OIL TEMPERATURE SENSOR

P1K Oil Temperature Sensor

Eclipse NG CN2

Pin 10 | Oil Temperature sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

VDO Oil Temperature Sensor

Eclipse NG CN2

VDO Oil Temperature Sensor:
-ROTAX 956415

Pin 10 | Oil Temperature sensor Input

Engine Block
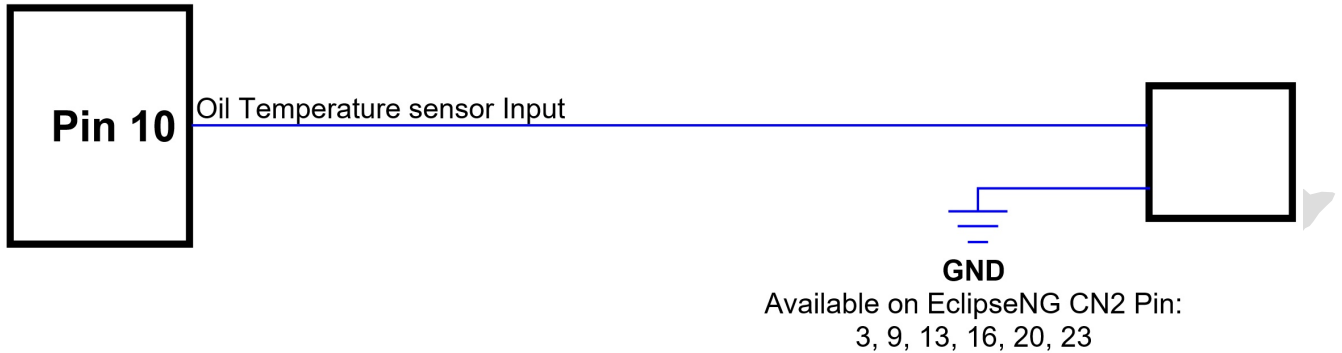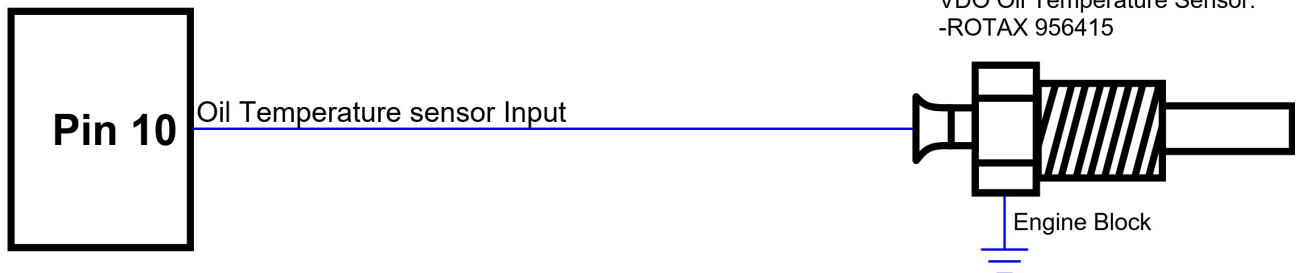
OAT SENSOR

P1K OAT Sensor

Eclipse NG CN2

Pin 11 | OAT sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
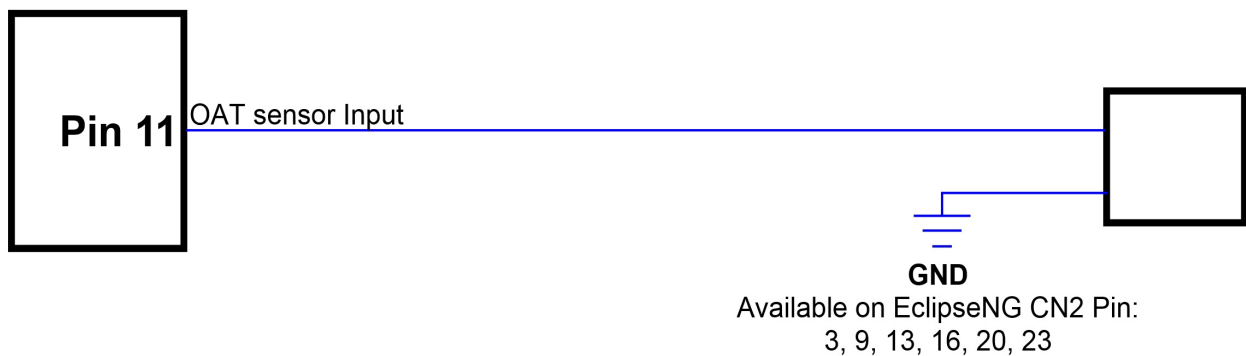
COOLANT TEMPERATURE SENSOR

P1K Coolant Temperature Sensor

Eclipse NG CN2

Pin 12 — Coolant Temperature sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
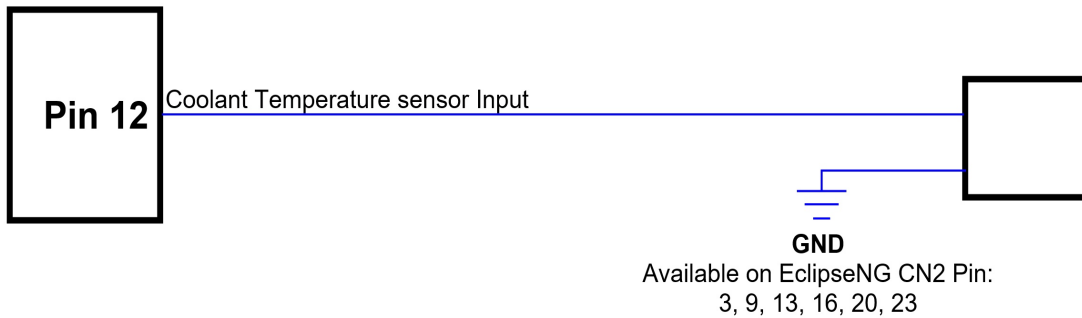
VDO Coolan Temperature Sensor
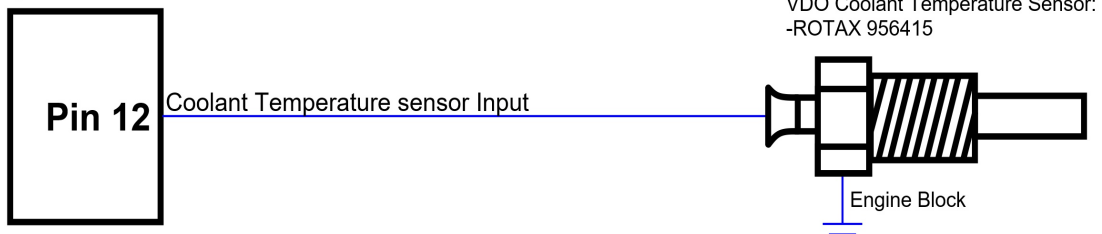
Eclipse NG CN2

Pin 12 Coolant Temperature sensor Input

VDO Coolant Temperature Sensor:
-ROTAX 956415

Engine Block

RPM SENSOR

Optional Inductive Sensor
Flybox code: 105897 (**sold separately)**

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Eclipse NG CN2

Brown Wire

Pin 14 RPM Low Voltage Input

Black Wire

10KOHMS
resistance

Blue Wire

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
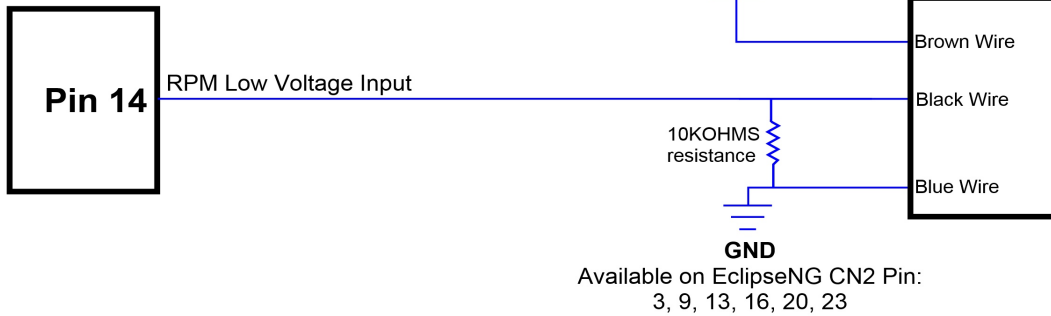
ROTAX REVOLUTION COUNTER PICKUP

Eclipse NG CN2

Rotax 912-914 Pickup

Pin 19 RPM High Voltage Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
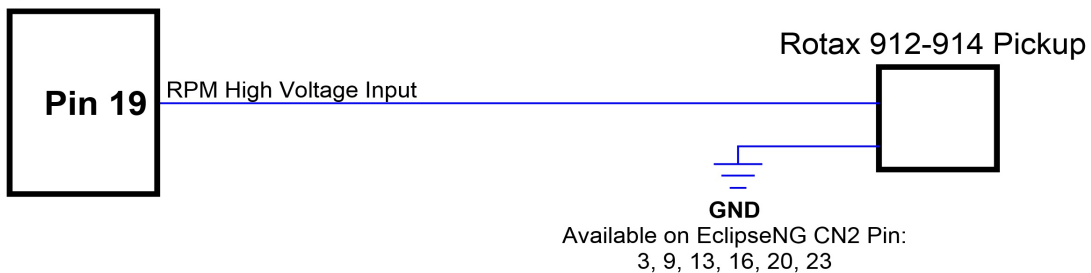
DIGITAL INPUT

Eclipse NG CN2

Pin 32	Digital input 1
Pin 15	Digital input 2
Pin 34	Digital input 3

To Digital Input 1, 2 or 3

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
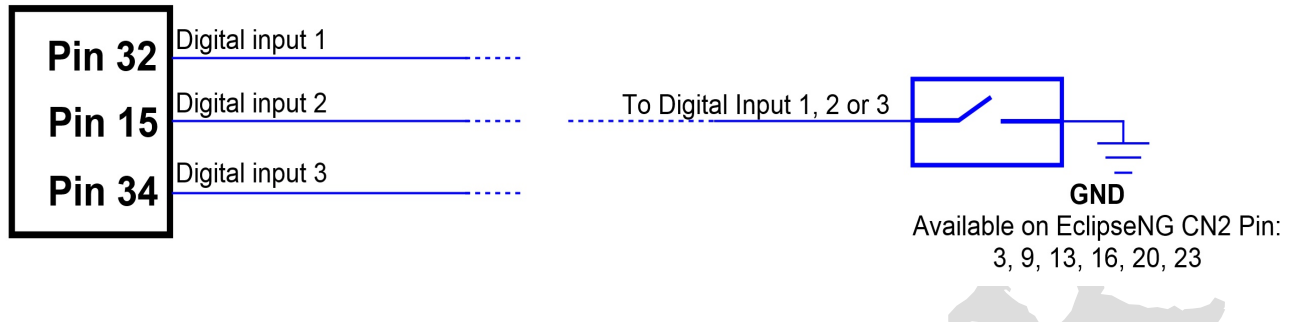
FUEL FLOW SENSOR

FLYBOX Optional Fuel Flow Sensor
Flybox code: 503030 (**sold separately)**

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Eclipse NG CN2

Pin 22	Fuel Flow 1 Input
Pin 26	Fuel Flow 2 Input

To Fuel Flow 1 or 2 Input

Red Wire

White Wire

Black Wire

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
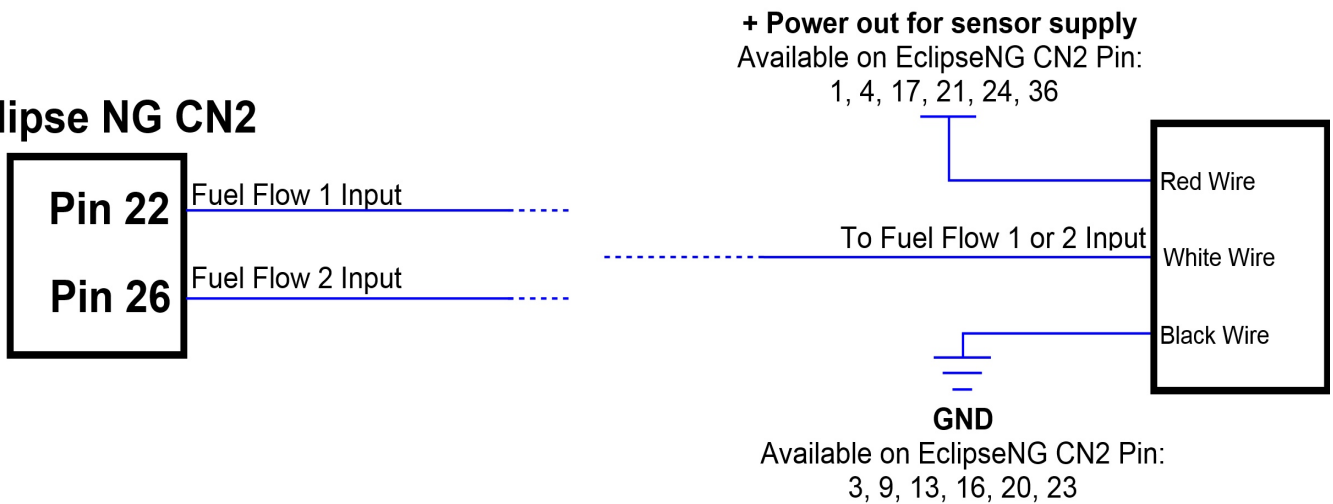
CAT SENSOR

P1K CAT Sensor

Eclipse NG CN2

Pin 29	CAT sensor Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23
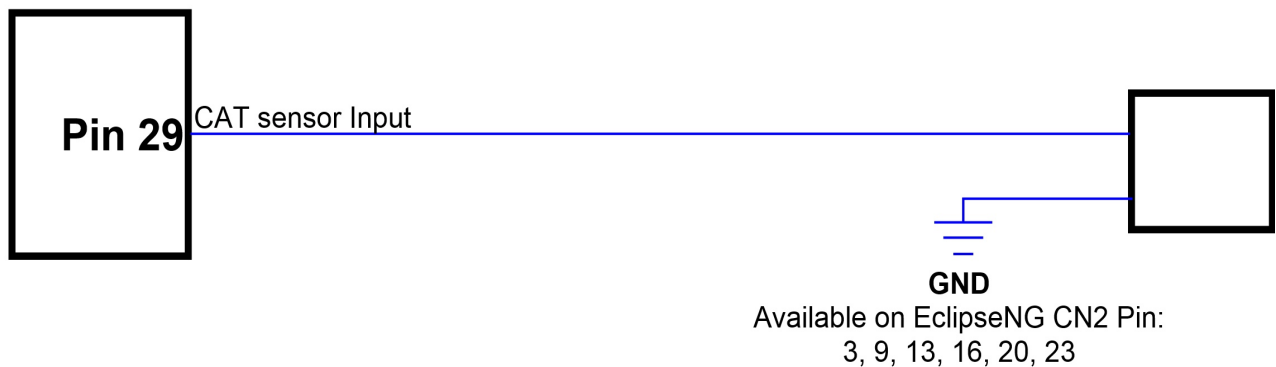
OIL PRESSURE SENSOR

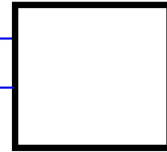**4-20mA Oil Pressure Sensor**
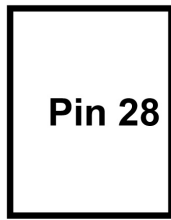
Eclipse NG CN2

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Pin 28   Oil Pressure sensor Input

4-20 mA Oil Pressure Sensor:
-ROTAX 956413
-FLYBOX code: 602000
(**sold separately**)

VDO Oil Pressure Sensor

Eclipse NG CN2

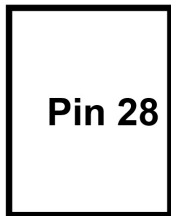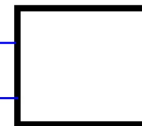VDO Oil Pressure Sensor:
-ROTAX 956415

Pin 28   Oil Pressure sensor Input

Engine Block
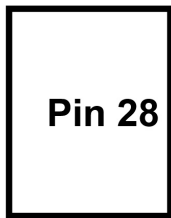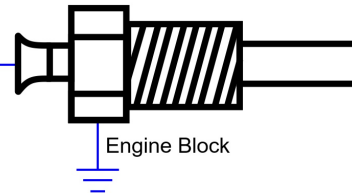
Jabiru Oil Pressure Sensor

Eclipse NG CN2

Pin 28   Oil Pressure sensor Input

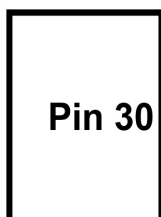**GND**
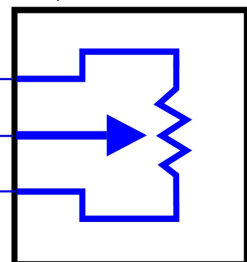Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

TRIM INPUT

+5V OUT
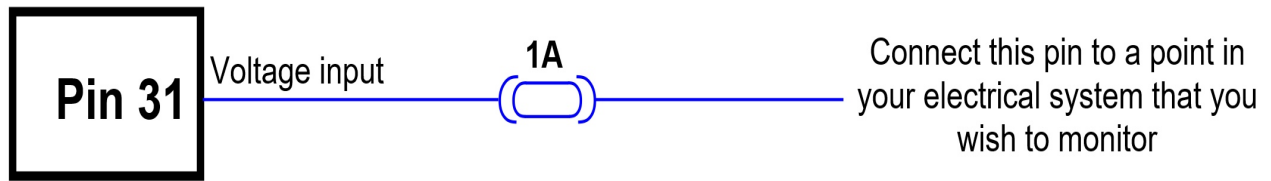Available on EclipseNG
CN1 Pin 16

Trim actuator
potentiometer

Eclipse NG CN2

Pin 30   Trim Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

VOLTAGE INPUT

Eclipse NG CN2

| Pin 31 | Voltage input |

1A

Connect this pin to a point in your electrical system that you wish to monitor

ROTOR SENSOR

Optional Inductive Sensor
Flybox code: 105897 (**sold separately)**

+ Power out for sensor supply
Available on EclipseNG CN2 Pin:
1, 4, 17, 21, 24, 36

Eclipse NG CN2

| Pin 33 | Rotor Input |

Brown Wire

Black Wire

10KOHMS resistance

Blue Wire

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

TABLE3   CON3 CONNECTIONS

Pin #	Type	Description	Range
1	IN	CHT1 thermocouple - (not used for other sensors type)	**See Note1**
2	IN	CHT2 thermocouple - (not used for other sensors type)	**See Note1**
3	IN	CHT3 thermocouple - (not used for other sensors type)	**See Note1**
4	IN	CHT4 thermocouple - (not used for other sensors type)	**See Note1**
5	IN	CHT5 thermocouple - (not used for other sensors type)	**See Note1**
6	IN	CHT6 thermocouple - (not used for other sensors type)	**See Note1**
7	IN	EGT1 type K thermocouple -	
8	IN	EGT2 type K thermocouple -	
9	IN	EGT3 type K thermocouple -	
10	IN	EGT4 type K thermocouple -	
11	IN	EGT5 type K thermocouple -	
12	IN	EGT6 type K thermocouple -	
13	-	Not used/Reserved	
14	IN	CHT1: Rotax, KTY, PT1000 or thermocouple +	
15	IN	CHT2: Rotax, KTY, PT1000 or thermocouple +	
16	IN	CHT3: Rotax, KTY, PT1000 or thermocouple +	
17	IN	CHT4: Rotax, KTY, PT1000 or thermocouple +	
18	IN	CHT5: Rotax, KTY, PT1000 or thermocouple +/ Autopilot remote button	
19	IN	CHT6: Rotax, KTY, PT1000 or thermocouple +/ Flap actuator potentiometer Input	Res: max 10 KOHM; 0~2.5 V
20	IN	EGT1 type K thermocouple +	0~2.5 V
21	IN	EGT2 type K thermocouple +	0~2.5 V
22	IN	EGT3 type K thermocouple +	0~2.5 V
23	IN	EGT4 type K thermocouple +	0~2.5 V
24	IN	EGT5 type K thermocouple +	0~2.5 V
25	IN	EGT6 type K thermocouple +	0~2.5 V
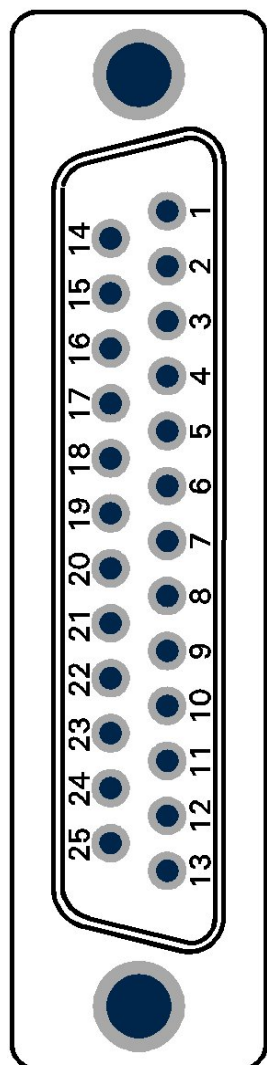
25-pin d-sub receptacle,
 view from wiring side

NOTE1: If a Resistive Probe is used, connect to GND or preferably directly on the engine block where the probes are installed

CN3

Pin	Connection
1	CHT1- Input (See NOTE1)
2	CHT2- Input (See NOTE1)
3	CHT3- Input (See NOTE1)
4	CHT4- Input (See NOTE1)
5	CHT5- Input (See NOTE1)
6	CHT6- Input (See NOTE1)
7	EGT1- Input
8	EGT2- Input
9	EGT3- Input
10	EGT4- Input
11	EGT5- Input
12	EGT6- Input
14	CHT1+ Input
15	CHT2+ Input
16	CHT3+ Input
17	CHT4+ Input
18	CHT5+ Input/Autopilot Remote Button
19	CHT6+ Input/Flap Actuator Potentiometer Input (See NOTE2)
20	EGT1+ Input
21	EGT2+ Input
22	EGT3+ Input
23	EGT4+ Input
24	EGT5+ Input
25	EGT6+ Input

NOTE1: If a Resistive Probe is used, connect to GND or preferably directly on the engine block where the probes are installed.

NOTE2: Input voltage range is 0-2.5V. If the transducer output voltage is higher than 2.5V, add a resistive divider to adjust the voltage.
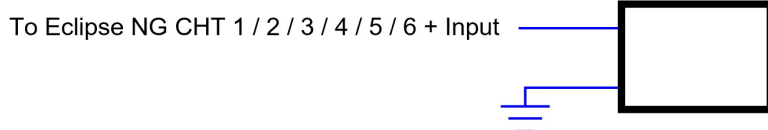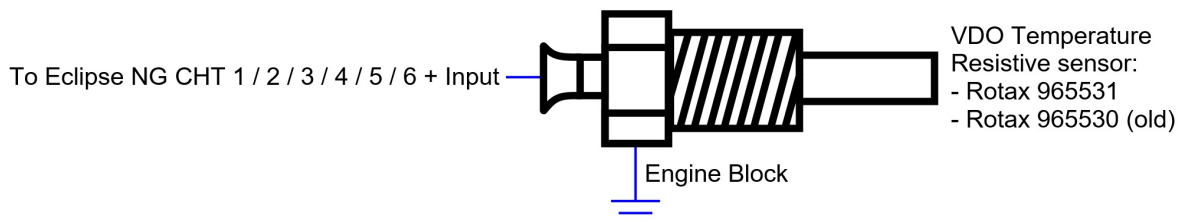
EGT SENSOR

TCK EGT Sensor

To Eclipse NG EGT 1 / 2 / 3 / 4 / 5 / 6 + Input   +

To Eclipse NG EGT 1 / 2 / 3 / 4 / 5 / 6 - Input   -

   Type K Thermocouple

CHT SENSOR

P1K CHT Sensor

To Eclipse NG CHT 1 / 2 / 3 / 4 / 5 / 6 + Input

VDO CHT Sensor

To Eclipse NG CHT 1 / 2 / 3 / 4 / 5 / 6 + Input

VDO Temperature
Resistive sensor:
- Rotax 965531
- Rotax 965530 (old)

Engine Block

TCJ CHT Sensor

To Eclipse NG CHT 1 / 2 / 3 / 4 / 5 / 6 + Input   +

To Eclipse NG CHT 1 / 2 / 3 / 4 / 5 / 6 - Input   -

   Type J Thermocouple

FLAP INPUT

+5V OUT
Available on EclipseNG
CN1 Pin 16

Flap actuator
potentiometer

Eclipse NG CN3

Res:XXXX OHM
(See **Note2**)

Pin 19 Flap Input

GND
Available on EclipseNG CN2 Pin:
3, 9, 13, 16, 20, 23

Note2: The value of this resistor must be equal to the value of the potentiometer used to read the flap position. For example, if the potentiometer used is 10kOHM, this resistor must be 10kOHM.

Date	Revision	Description
20/12/19	1	First release
10/01/20	2	General revision
23/12/20	3	Swapped ECU CAN and CAN1 Signals
18/02/21	4	Added: **CON2 Pin8** OILT2, **CON2 Pin12** Coolant temperature, **CON2 Pin15** Digital Input 2, **CON2 Pin18** Alarm out 1, **CON2 Pin30** Analog input, **CON2 Pin32** Digital input 1, **CON2 Pin33** Rotor input, **CON2 Pin34** Digital input 3, **CON2 Pin35** Alarm out 2, **CON2 Pin37** Rotor 2 input
23/02/21	5	Updated CON2 and CON3 Connections Scheme
12/03/21	6	Added: +5VOUT connections on Trim and Flap Potentiometers
06/05/21	7	changed the description of where to connect the voltage input pin
11/05/21	8	Added External GPS TX connection indications Update GPS TX connections
16/07/21	9	Added mechanical installation drawings
31/08/21	10	Improved VDO connection drawing, Added NOTE1 for **CON1 Pin2**

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