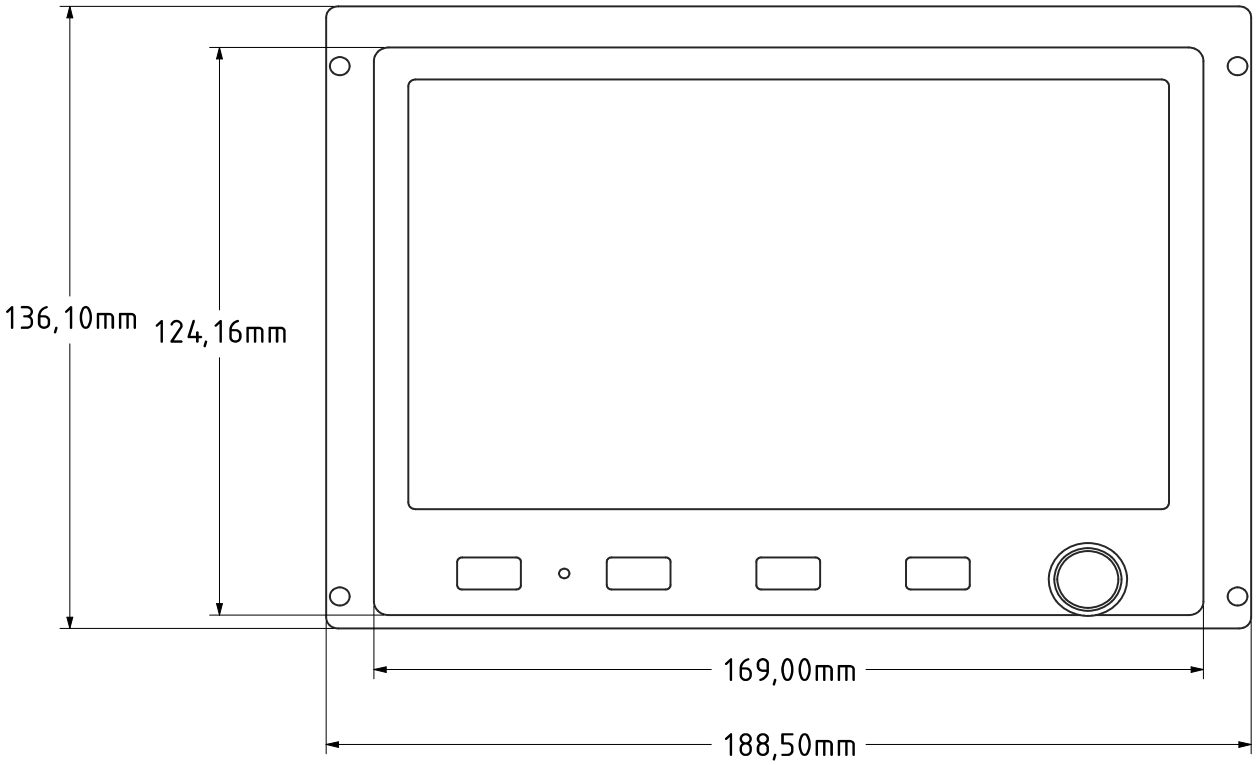
FLYBOX

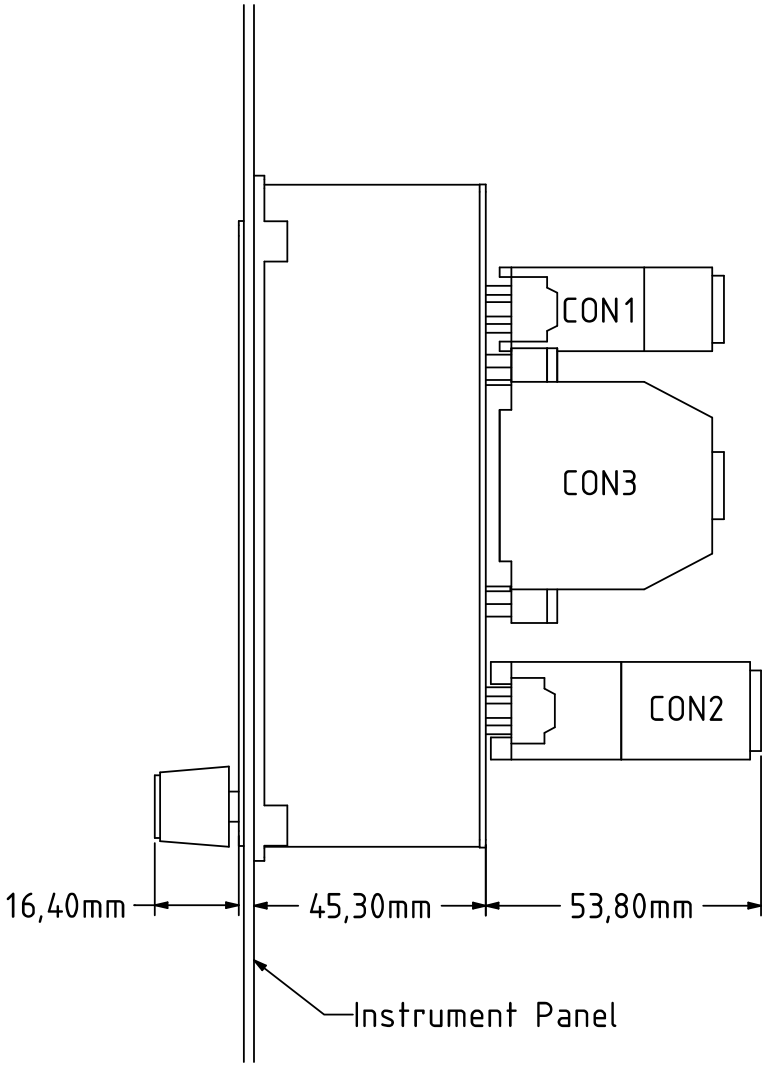
INNOVATIVE AVIONICS

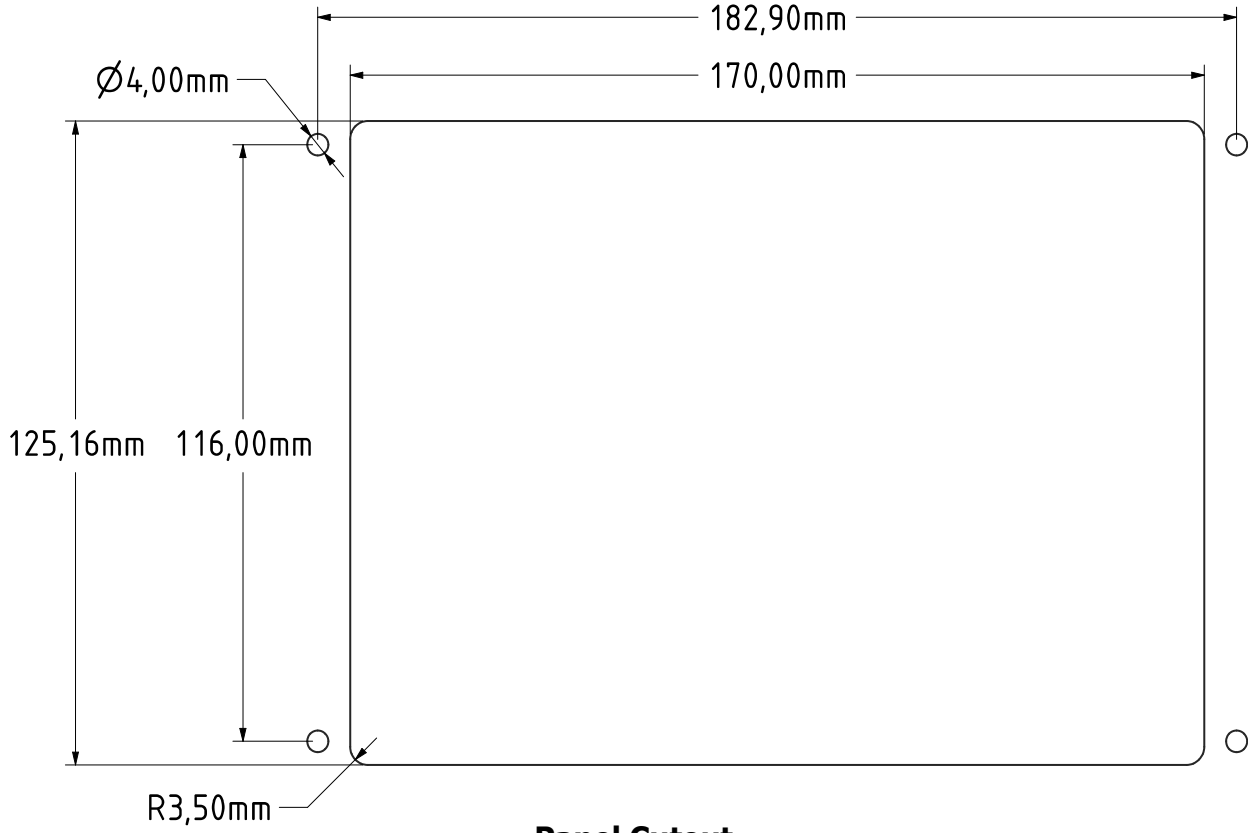
Eclipse NG

Electronic Flight Instrument System

Installation Manual


136,10mm
124,16mm
169,00mm
188,50mm

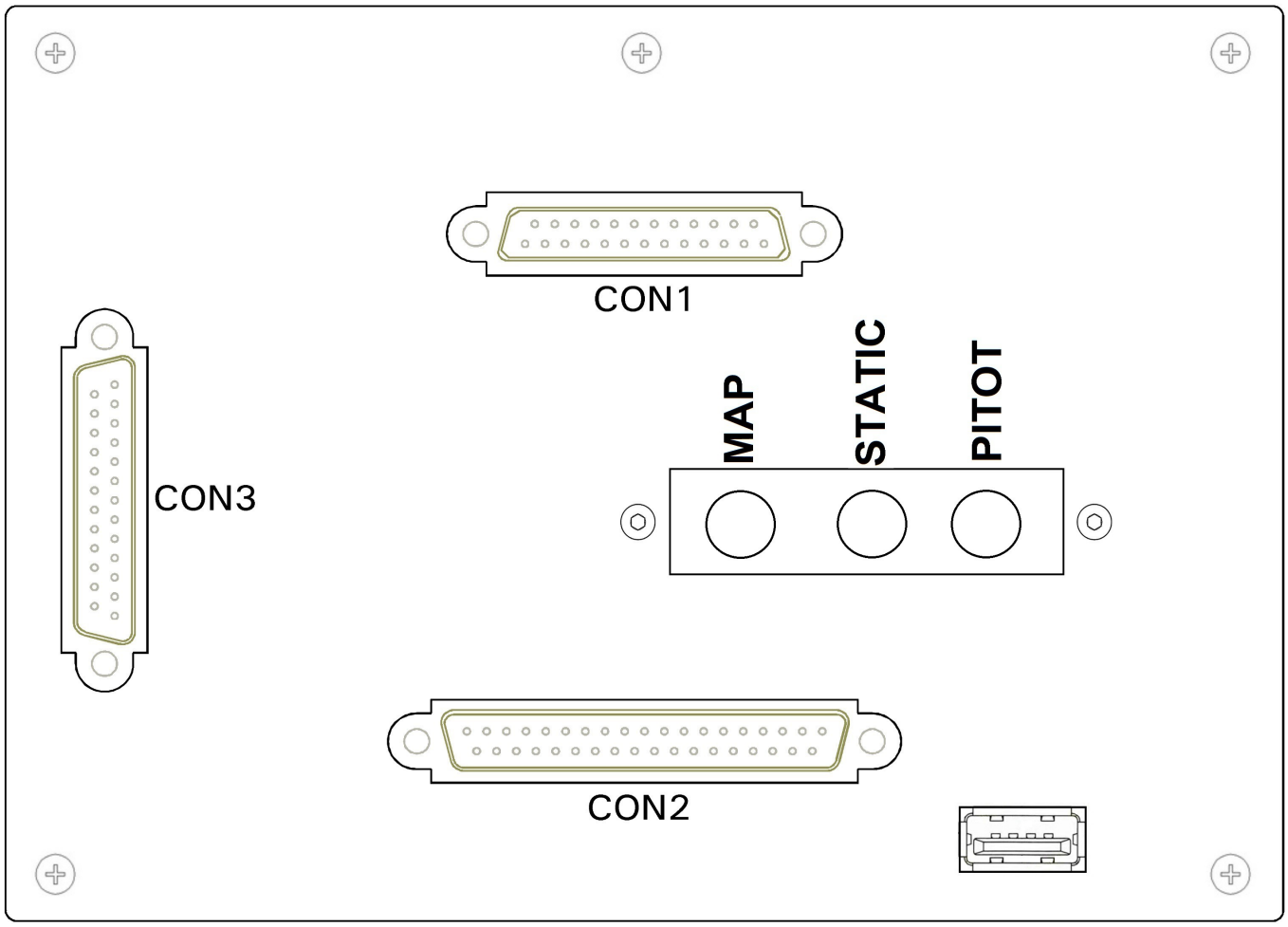

CON1
CON3
CON2
16,40mm
45,30mm
53,80mm
Instrument Panel



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.



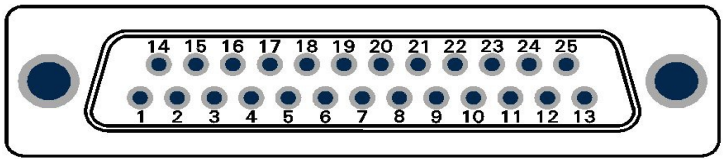
On the backpanel of the ECLIPSE instrument there are 3 D-SUB connectors:

- **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.



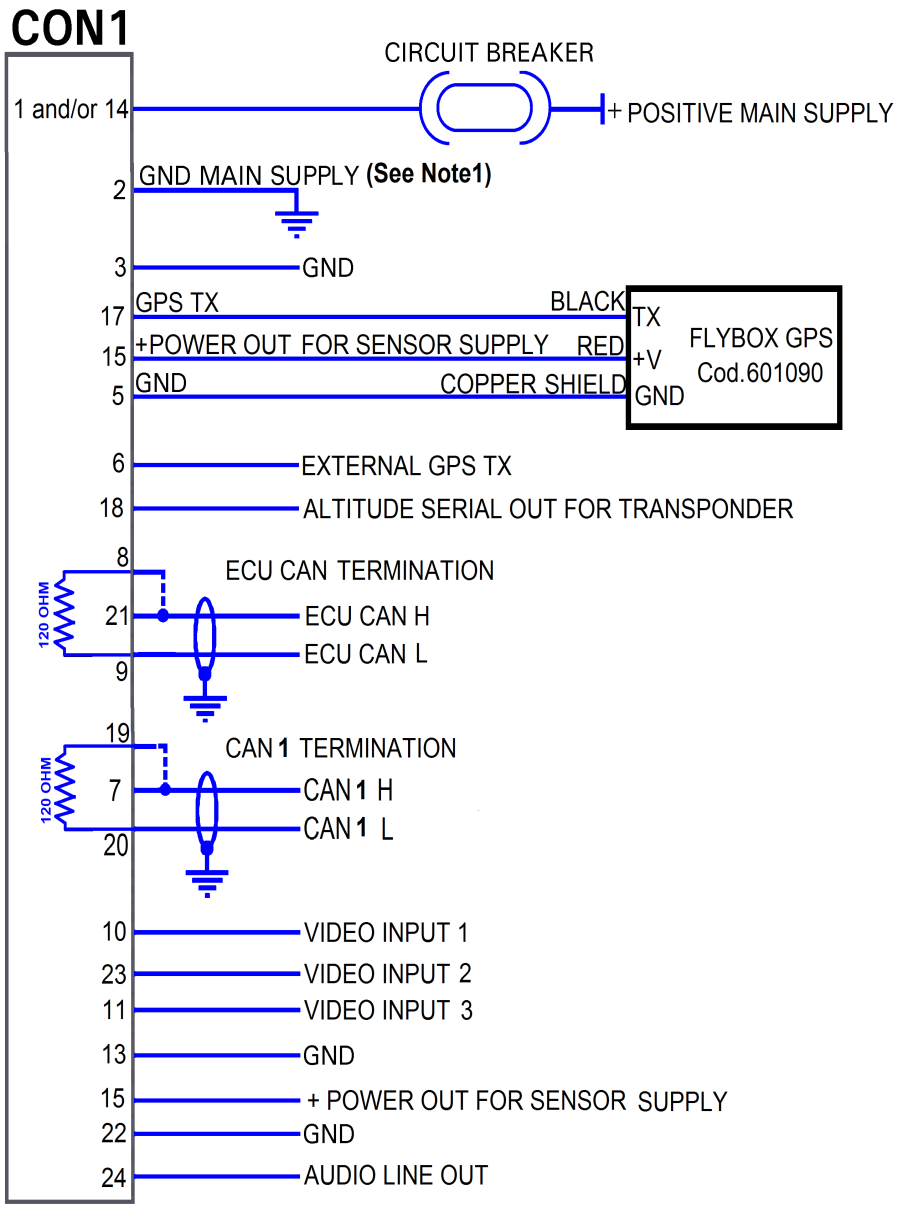
25-pin D-sub plug, view from wiring side

TABLE 1 CON1 CONNECTIONS

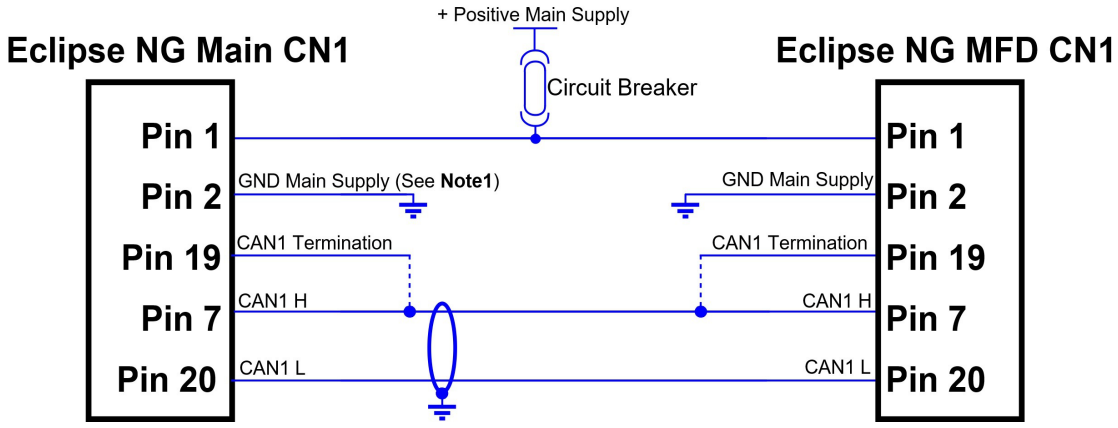
Pin #	Type	Description	Range
1	IN	+V Main supply	10~30 Vdc
2	IN	GND Main supply (**See Note1** on Pag 6)	
3	OUT	GND	
4	-	Not used/Reserved	
5	OUT	GND	
6	IN	External GPS TX (For Autopilot)	
7	I/O	CAN1 **H** signal (For Autopilot system and Eclipse NG MFD)	
8	-	ECU CAN termination (connect to pin#21 to 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 (For Autopilot system and Eclipse NG MFD)	
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.

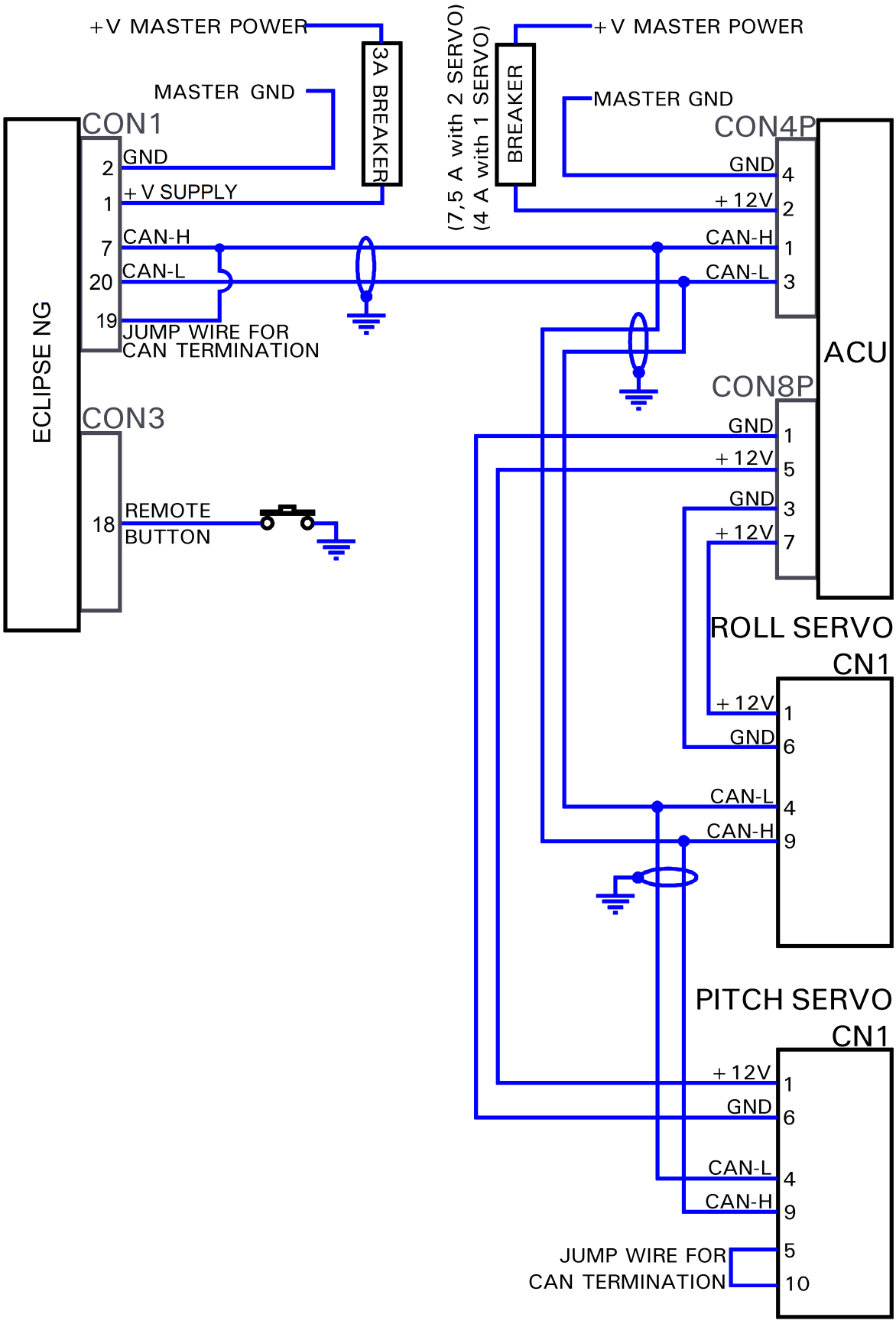


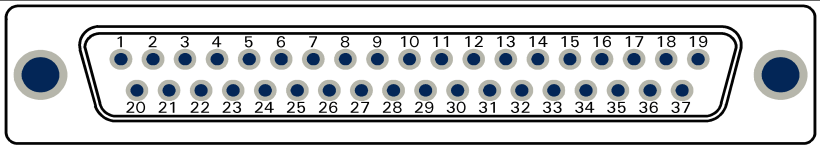
ECLIPSE NG MFD CONNECTIONS



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.

AUTOPILOT SYSTEM CONNECTIONS





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 *	

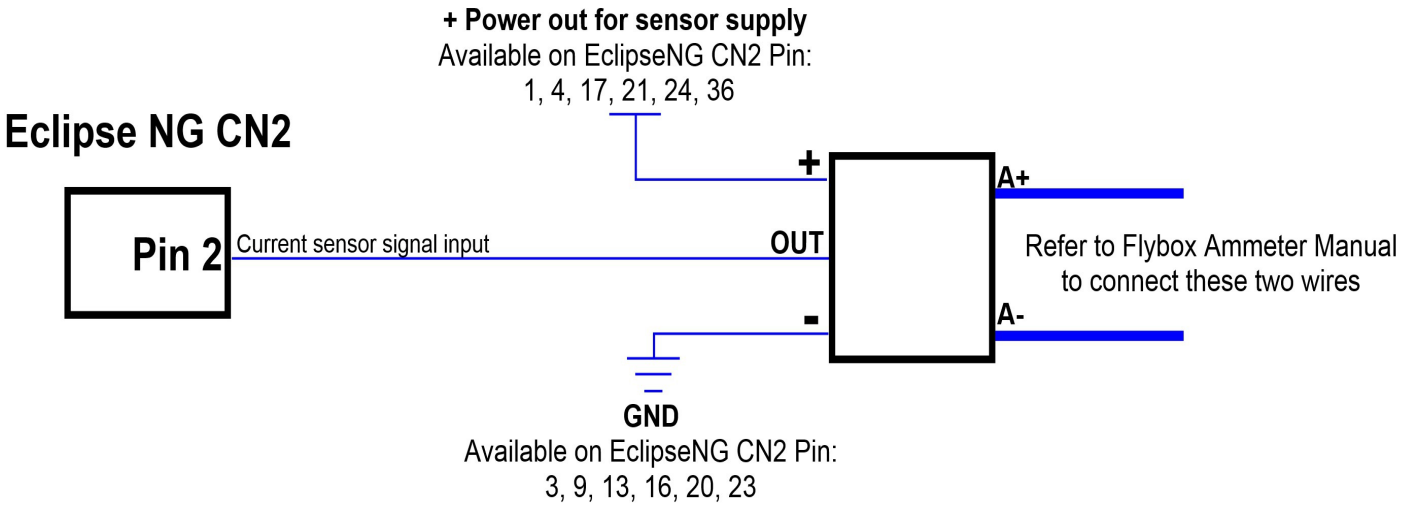
37	IN	Generic RPM input	Range:5-100Vpp; Max frequency 1,7 Khz min. pulse duration: 300uS	

***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

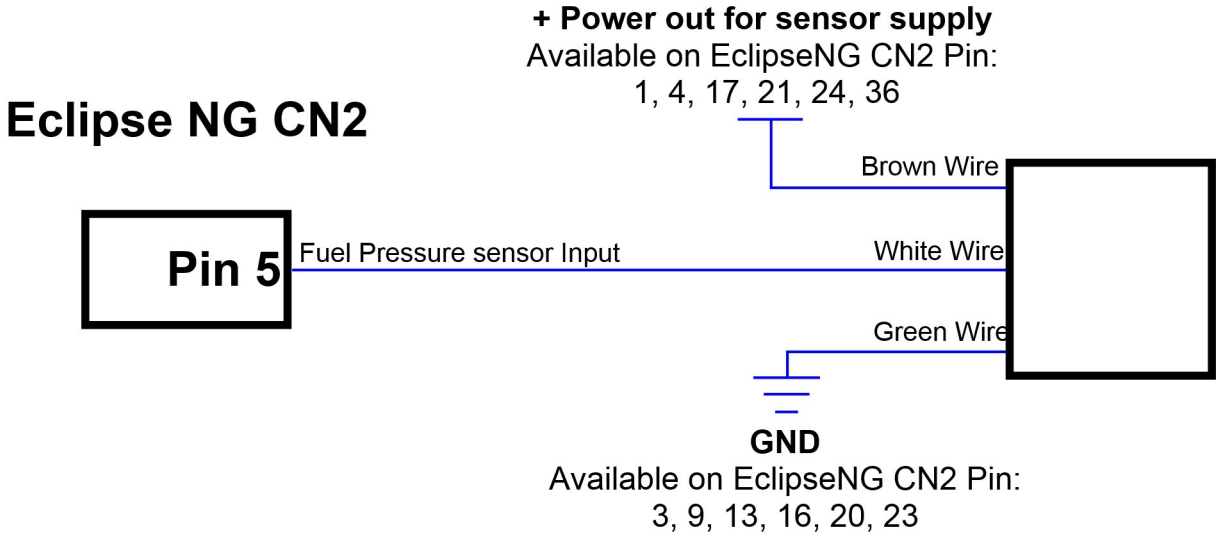
CURRENT SENSOR

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



FUEL PRESSURE SENSOR

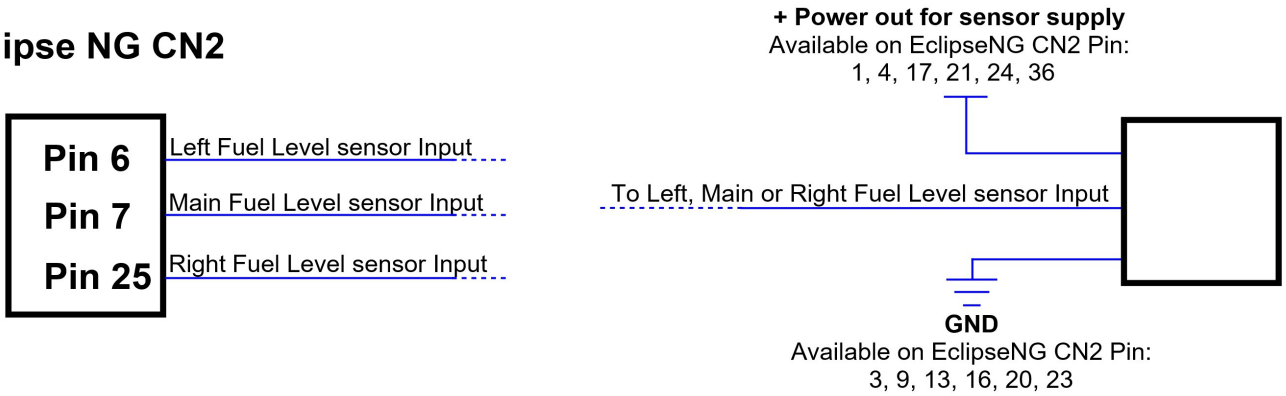
FLYBOX Optional Fuel Pressure Sensor
code: 601040 (**sold separately)**



FUEL LEVEL SENSOR

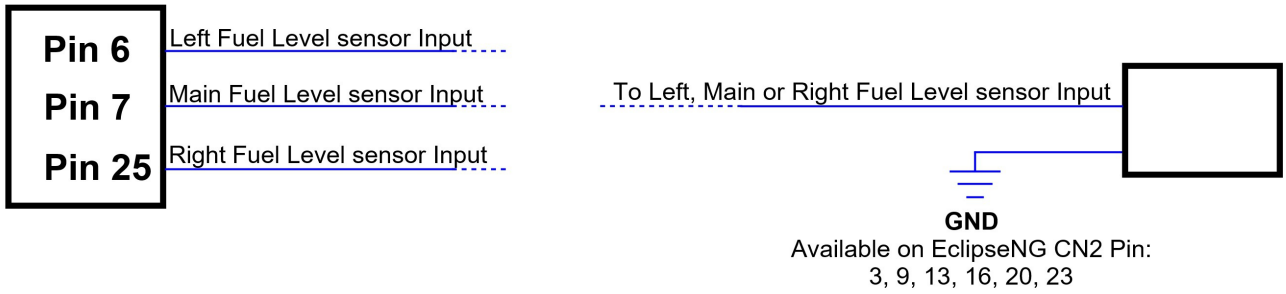
Capacitive Sensor Fuel Level

Eclipse NG CN2



Resistive Sensor Fuel Level

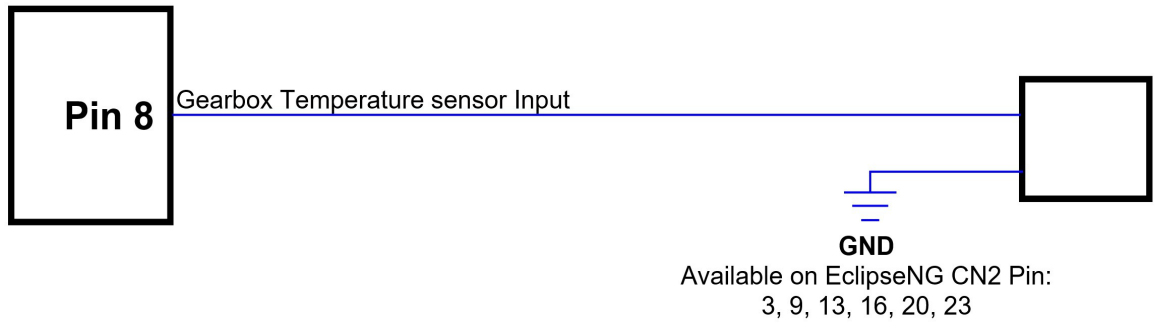
Eclipse NG CN2



GEARBOX TEMPERATURE SENSOR

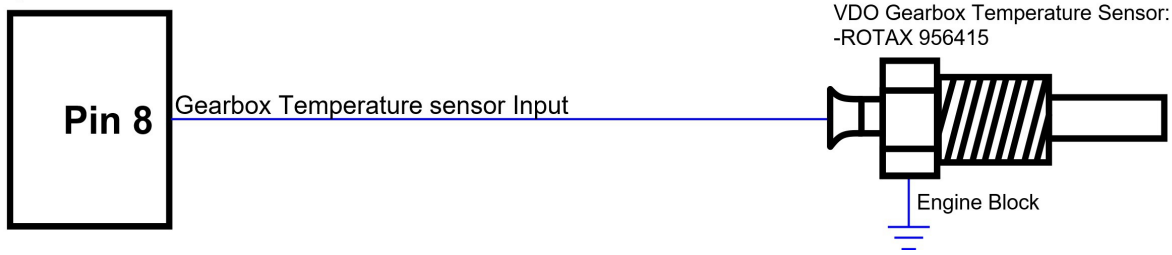
P1K Gearbox Temperature Sensor

Eclipse NG CN2



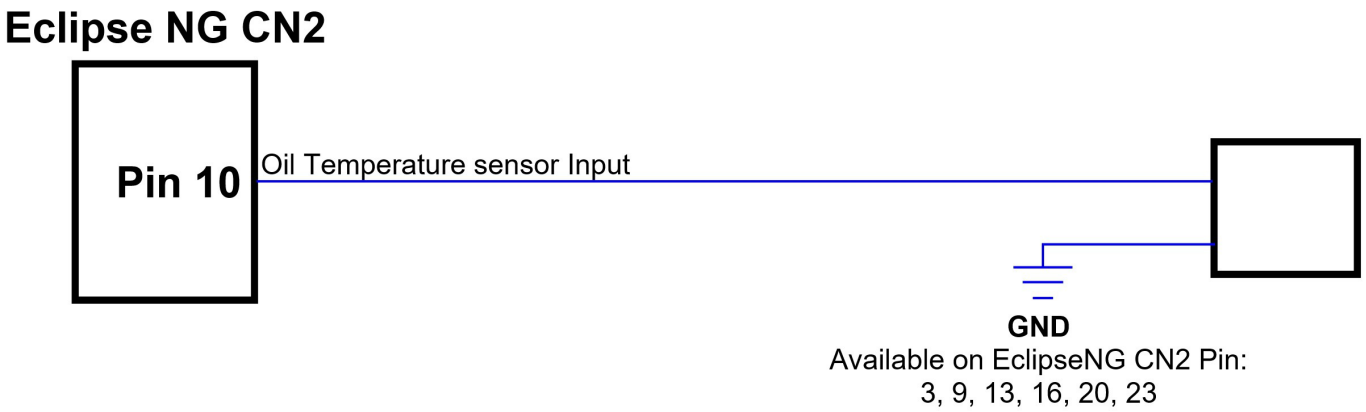
VDO Gearbox Temperature Sensor

Eclipse NG CN2

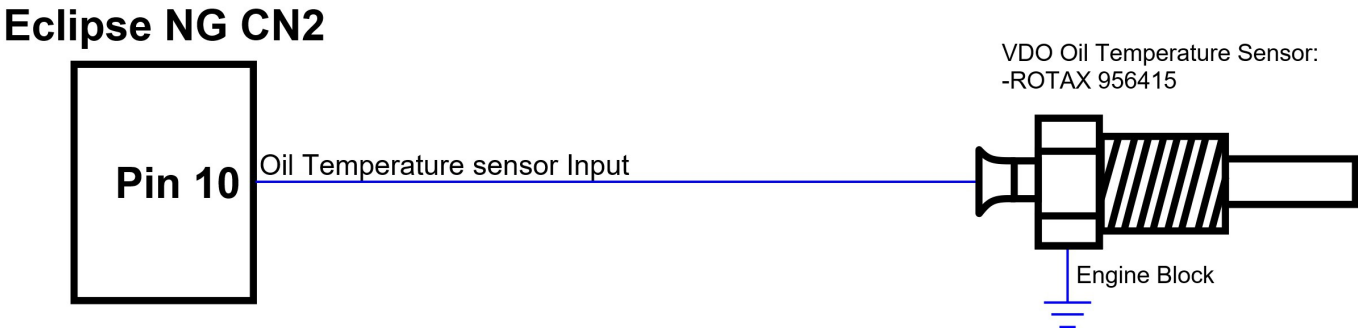


OIL TEMPERATURE SENSOR

P1K Oil Temperature Sensor

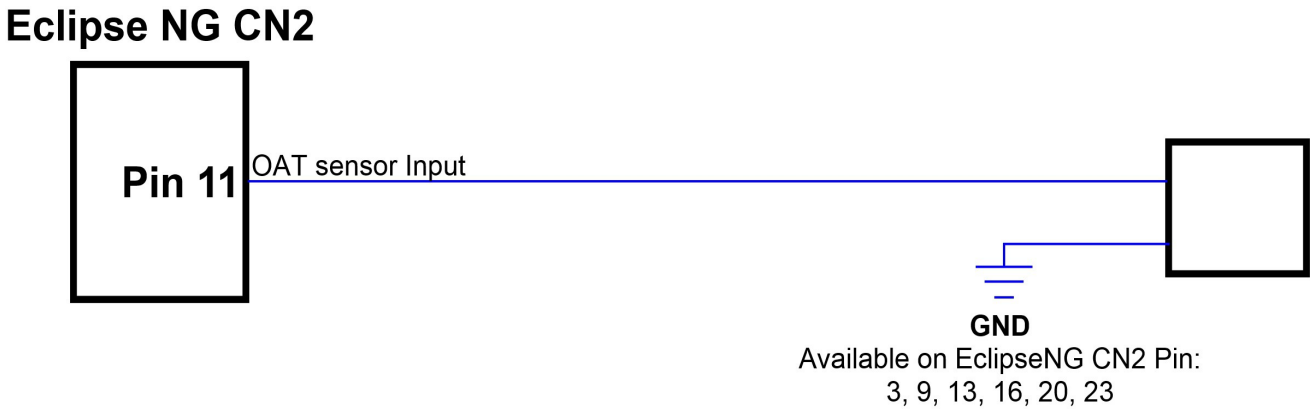


VDO Oil Temperature Sensor



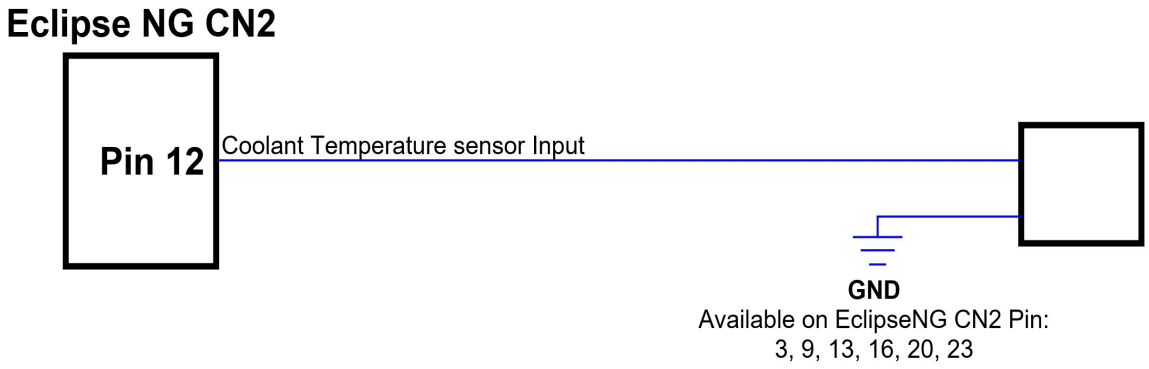
OAT SENSOR

P1K OAT Sensor

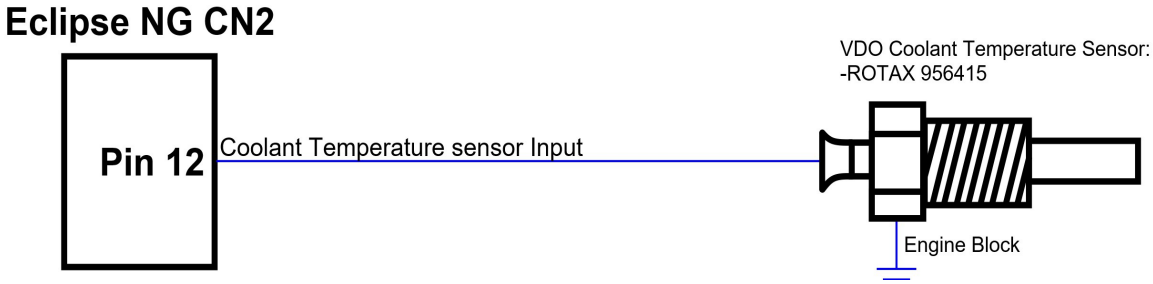


COOLANT TEMPERATURE SENSOR

P1K Coolant Temperature Sensor

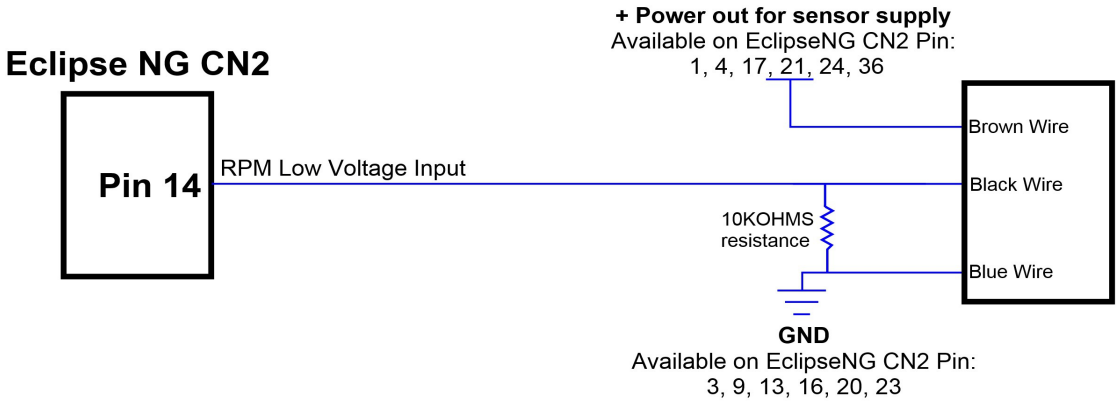


VDO Coolan Temperature Sensor

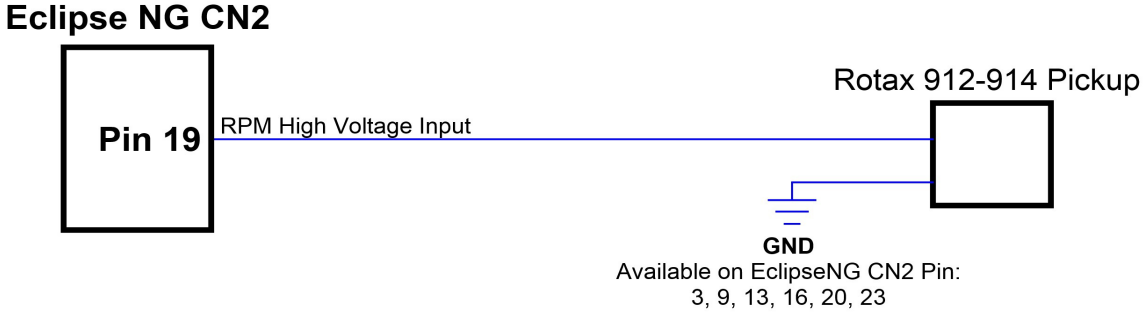


RPM SENSOR

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

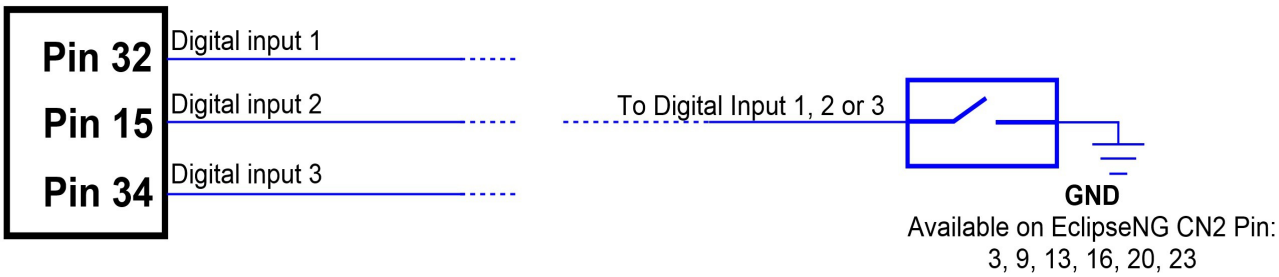


ROTAX REVOLUTION COUNTER PICKUP



DIGITAL INPUT

Eclipse NG CN2

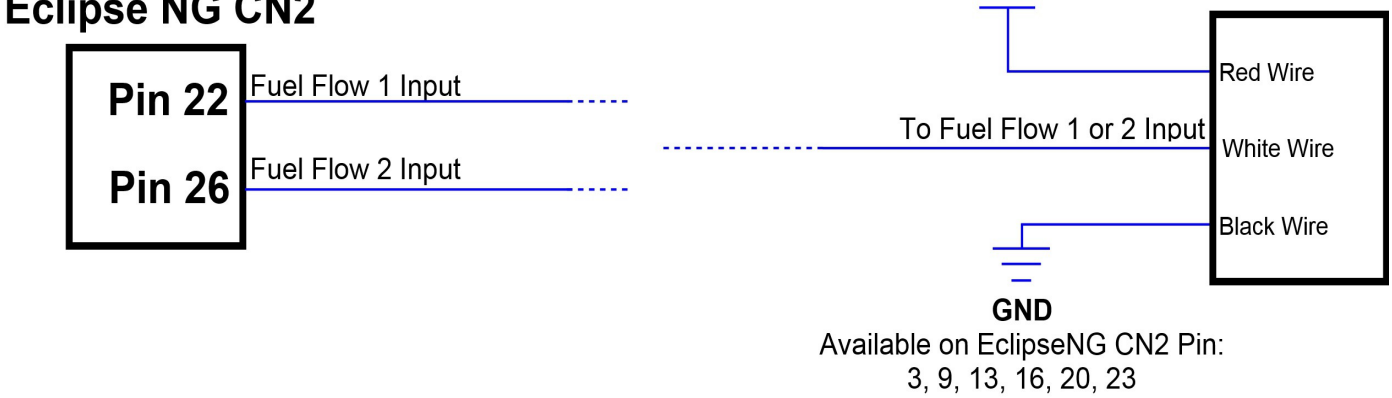


FUEL FLOW SENSOR

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

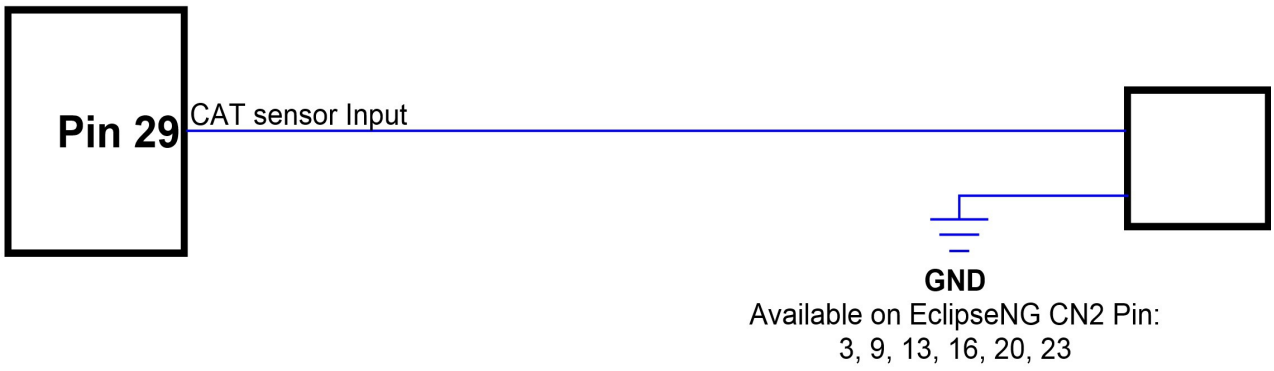
Eclipse NG CN2



CAT SENSOR

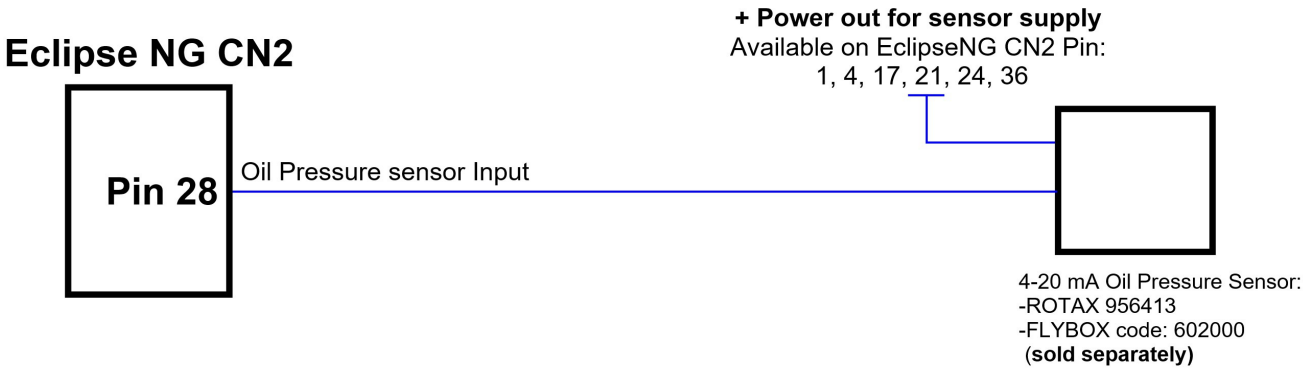
P1K CAT Sensor

Eclipse NG CN2

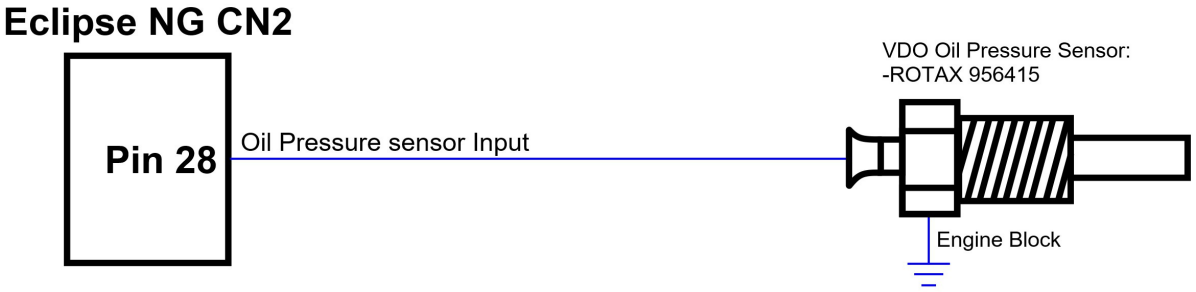


OIL PRESSURE SENSOR

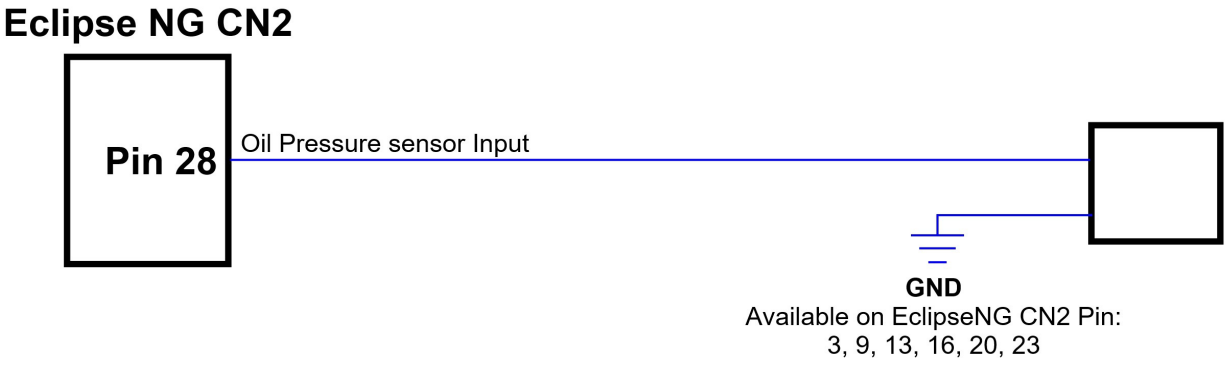
4-20mA Oil Pressure Sensor



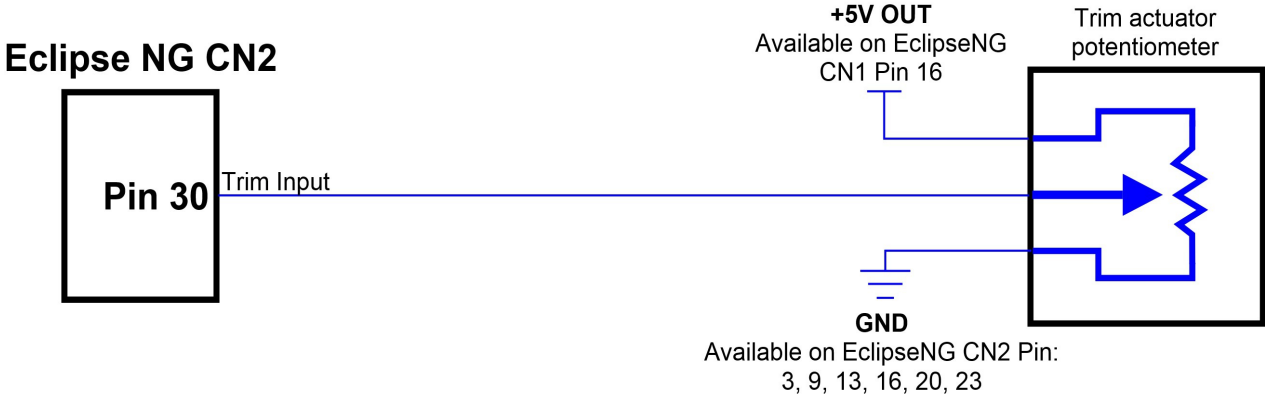
VDO Oil Pressure Sensor



Jabiru Oil Pressure Sensor

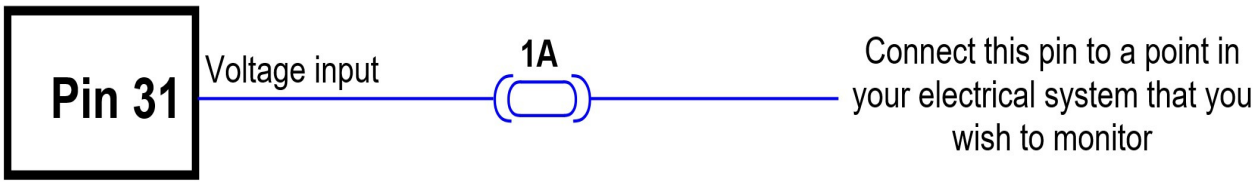


TRIM INPUT



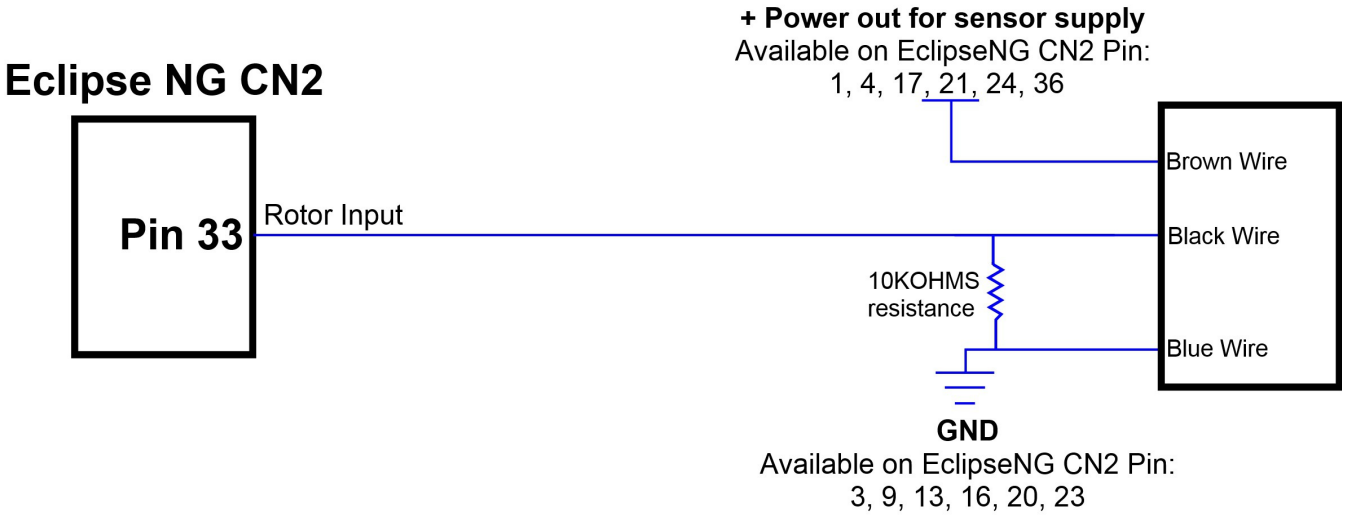
VOLTAGE INPUT

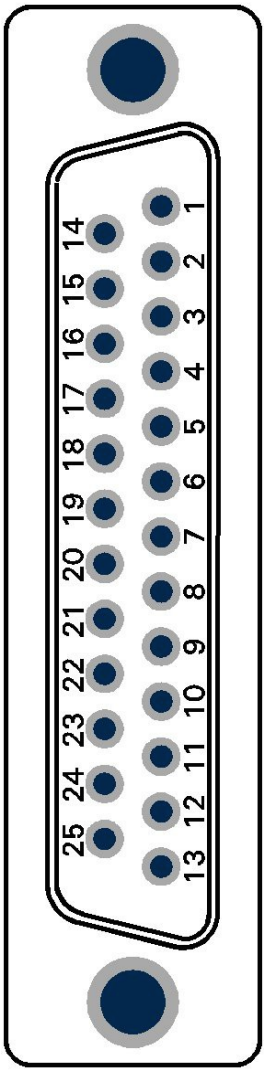
Eclipse NG CN2



ROTOR SENSOR

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



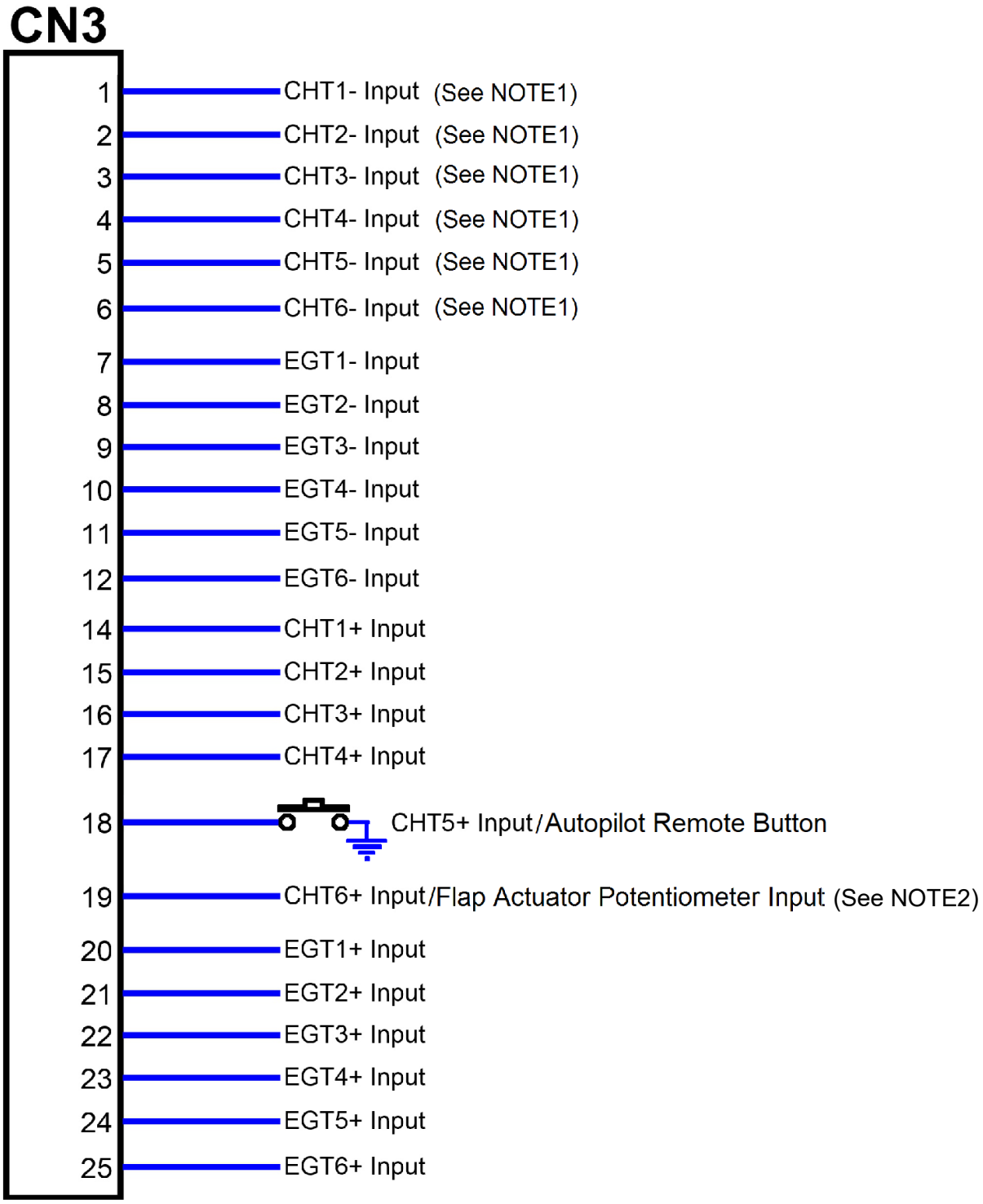


25-pin d-sub receptacle,
view from wiring side

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

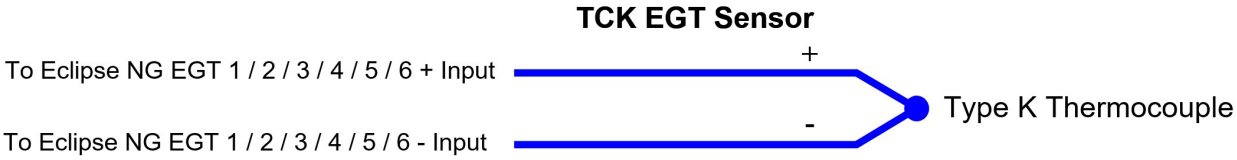
NOTE1: If a Resistive Probe is used, connect to GND or preferably directly on the engine block where the probes are installed



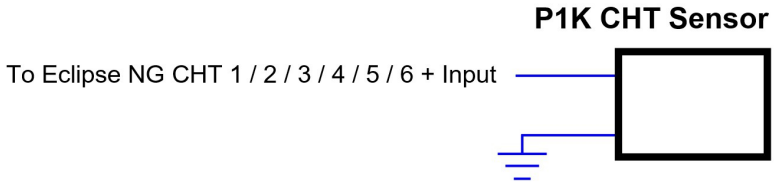
NOTE1: If a Resistive Probe is used, connect to GND or preferably directly on the engine block where the probes are installed.

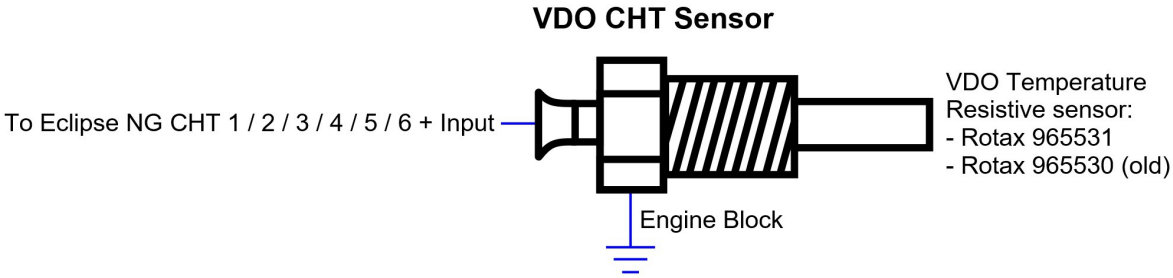
NOTE2: Input voltage range is 0-2.5V. If the transducer output voltage is higher than 2.5V, add a resistive divider to adjust the voltage.

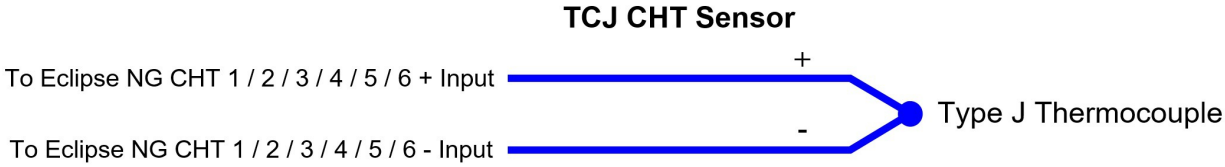
EGT SENSOR



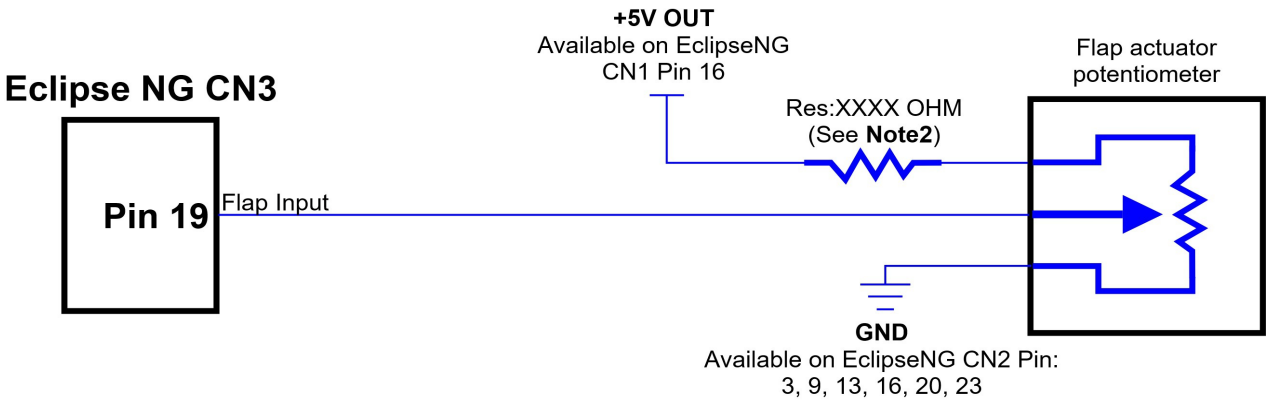
CHT SENSOR







FLAP INPUT



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**
29/04/26	12	Added references to connections with the autopilot system

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