

TEMPERATURE SENSOR

INFRA RED – TYRE TEMPERATURE



The infra-red sensor measures temperature at a distance without contacting the target. The integrated infra-red module senses the thermal radiation emitted by objects and converts this to an analogue voltage.

Electrical

- Supply voltage 7.5 to 16V
- Supply current 1.5mA (typ), 5mA (max)
- Capacitive load 1000 pF
- Resistive load 10kΩ
- Output resistance 50Ω
- Accuracy +2.5 / -7°C from 80 to 180°C (based on emissivity of 0.98)
- Typical output voltages (@25°C±2°C) for a target which fills the entire field of view and has an emissivity of 0.98 are shown below¹

Target temp (° C)	Typical output (V)
-20	0.803
0	0.880
10	1.062
20	1.168
25	1.225 (Vref)
30	1.285
40	1.413
50	1.552
60	1.703
70	1.867
80	2.042
90	2.230
100	2.431
110	2.645
120	2.872
130	3.111
140	3.364
150	3.630
160	3.909
170	4.201
180	4.506

- Target Temp Transfer Function = $(-0.211955x^6 + 3.81157x^5 - 28.16153x^4 + 110.6794x^3 - 252.319x^2 + 373.85x - 204.12) * (1 + [0.98 - \epsilon])$
Where
x = Output Voltage
ε = Emissivity of customer object
0.98 = Emissivity of MESL black body reference.
- Tyre emissivity = 0.95
- Target temperature range -20 to + 180°C
- Response time after power on 30ms (typ) 1sec (max)

¹ The sensor reading will change if the lens becomes scratched or dirty

Cable and Connection Definition

- 24AWG unscreened cable
- Cable length is shown on the order details but any length is available on request
- Various automotive and military standard connectors are available
- Connections:

Red Wire	Supply
White Wire	Signal
Green Wire	Ground

Mechanical

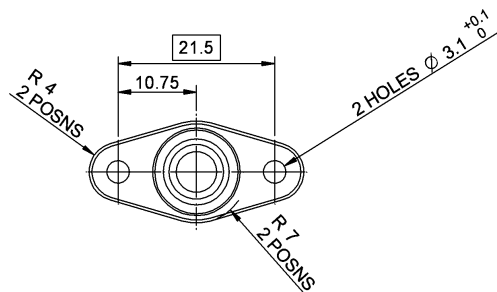
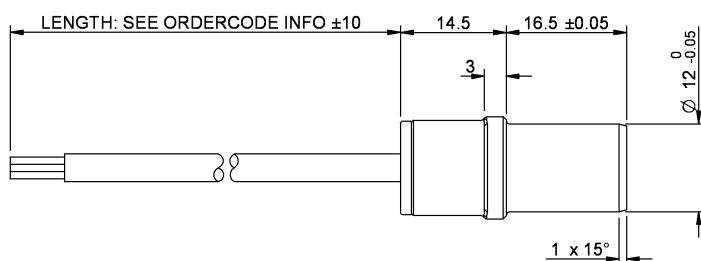
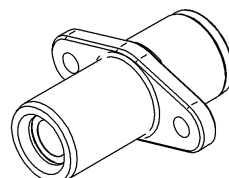
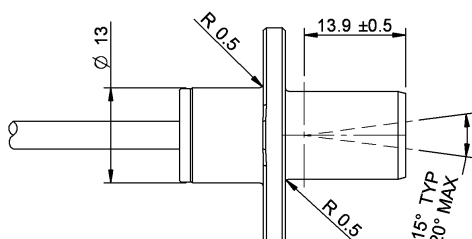
- Weight less than 40g (including cable)
- Aluminium alloy body hard anodised and dyed black
- Field of view 15° (typ), 20° (max)
- Optical axis ± 2° max
- Polyester boss for strain relief to the sensor body

Environmental

- Resistant to oil, standard fuel, hydraulic fluid and water. Aggressive cleaning agents should not be used, for example freon or trichloroethylene. Alcohol and a cotton swab can be used for cleaning the lens.
- The sensor reading will change if the lens becomes scratched or dirty
- Maximum humidity 100%
- Ambient operating temperature -25 to +105°C
- Storage temperature -40 to 120°C
- Viton jacketed cable (200°C)
- Vibration
500 to 2000 Hz, 20g peak acceleration, 5 mins in all directions
- Shock
1000g peak acceleration, 0.7ms pulse length, 6 directions.

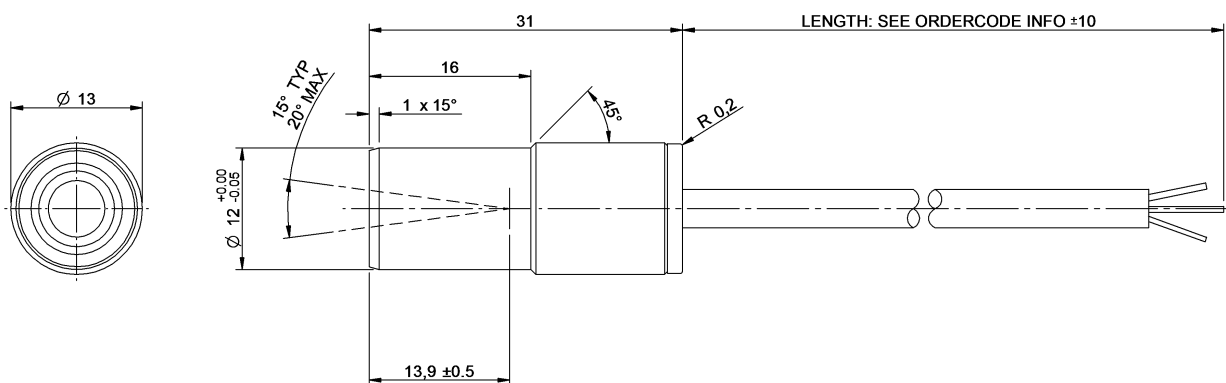
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Cable Length
1000mm

Order Code
O 030 300 030 037



Cable Length
1000mm

Order Code
O 030 300 030 044