

# TEMPERATURE SENSOR

## INFRA RED – BRAKE 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 (based on emissivity of 0.98)  
±53°C max (object temp 250°C to 850°C)  
±118°C max (object temp 850°C to 1150°C)
- Typical output voltages at an ambient sensor temperature of 25°C for a target which fills the entire field of view and has an emissivity of 0.98 are shown below

Target temp(° C)	Typical output (V)
200	1.405
300	1.621
350	1.726
400	1.837
450	1.956
500	2.084
550	2.220
600	2.362
700	2.645
800	2.920
900	3.210
1000	3.515
1100	3.744
1200	3.884

$$\text{Target temp} = (49.907095x^6 - 757.591078x^5 + 4691.379611x^4 - 15128.065163x^3 + 26684.745161x^2 - 23906.112709x + 8552.401105) * (1 + (0.98 - \epsilon))$$

Where

x = Output voltage

ε = Emissivity of customer target

0.98 = Emissivity of MESL black body reference

- Carbon emissivity = 0.75
- Steel emissivity = 0.52
- Response time after power up 30ms (typ), 1 sec (max)

### 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

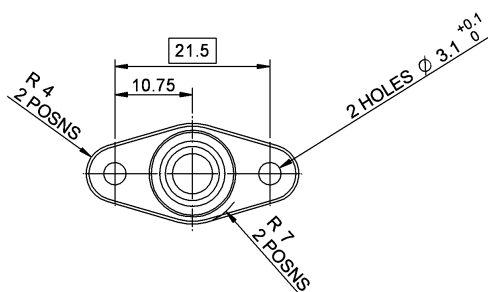
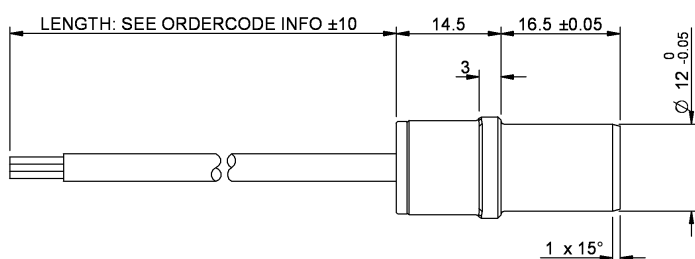
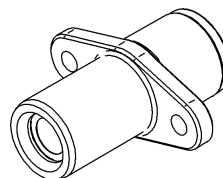
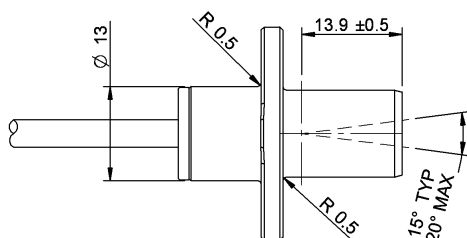
- Weight less than 40g
- Aluminium alloy body hard anodised and dyed black
- Field of view 15° typ, 20° max
- Optical axis ± 2° max
- Polyester boss for strain relief to the sensor body

### Environmental

- Resistant to oil, standard fuel, hydraulic fluid and water. Aggressive cleaning agents should not be used, for example freon or trichloroethylene. Pure ethanol or 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.
- Target temperature +200 to +1200° C.
- Storage temperature -40° to 125°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.

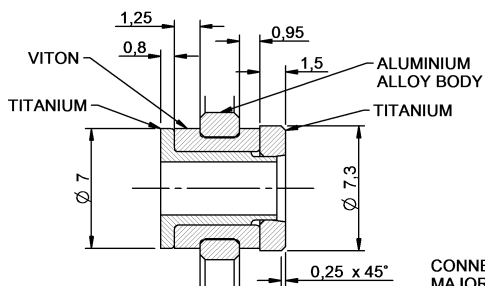
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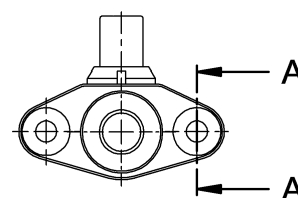
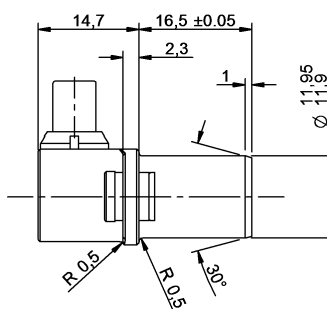
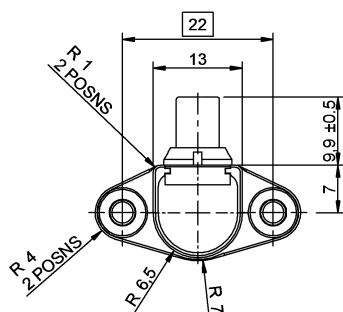
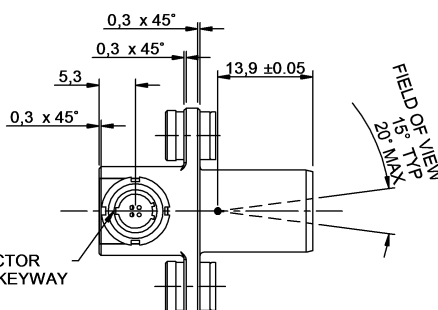


**Cable Length**  
1000mm

**Order Code**  
O 030 300 030 021



**SECTION A-A**  
5:1



**Cable Length**  
1000mm

**Order Code**  
O 030 300 030 043