

# TEMPERATURE SENSOR

## TRIPLE INFRA RED – TYRE TEMPERATURE



The infra-red sensor measures temperature at a distance without contacting the target. The three channel infra-red sensor incorporates three independent thermopile modules, this enables the spread of temperature across the surface of a tyre to be measured

### Electrical

- Supply voltage 7.5 to 16V
- Supply current 15mA (max)
- Capacitive load 1000pF
- Resistive load 10kΩ
- Output resistance 50Ω
- Accuracy<sup>1</sup>: +2.5/-7°C
- Output drift due to ambient temperature variations ±0.25°C max from 45 to 105°C (±4°C outside of this range)
- 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 below<sup>2</sup>:

Target Temp	Typical Output	Target Temp	Typical Output
-20°C	0.953V	160°C	2.860V
0°C	1.057V	170°C	3.028V
25°C	1.225V	180°C	3.201V
40°C	1.346V	190°C	3.379V
60°C	1.531V	200°C	3.563V
80°C	1.745V	210°C	3.753V
100°C	1.985V	220°C	3.947V
120°C	2.251V	230°C	4.147V
130°C	2.394V	240°C	4.351V
140°C	2.544V	250°C	4.561V
150°C	2.699V		

- Target Temp Transfer Function =  $(-0.521508x^6 + 9.59684x^5 - 72.27712x^4 + 286.6215x^3 - 641.638x^2 + 849.76x - 442.17) * (1 + [0.98 - \epsilon])$   
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 +250°C
- Response time after power up 30ms typ, 1sec max

<sup>1</sup>Accuracy based on emissivity of 0.98.

### Cable and Connection Definition

- 28AWG cable
- Cable length is shown on the order details but any length is available on request
- Connection:
 

Red	Supply	White	Signal Snr3
Blue	Signal Snr1	Green	Ground
Grey/White	Signal Snr2	Blackx2	NC

### Mechanical

- Weight less than 140g
- DR 25 jacketed cable
- Aluminium alloy body hard anodised and dyed black
- Polyester cable boss for strain relief to sensor housing
- AV Mount kit (fitted):  
4 x Viton 70 shore AV mounts  
4 x Titanium eyelets  
4 x Titanium retaining caps
- Field of view 15° typ, 20° max per sensor 9° spread between sensors
- Optical axis ±2° max

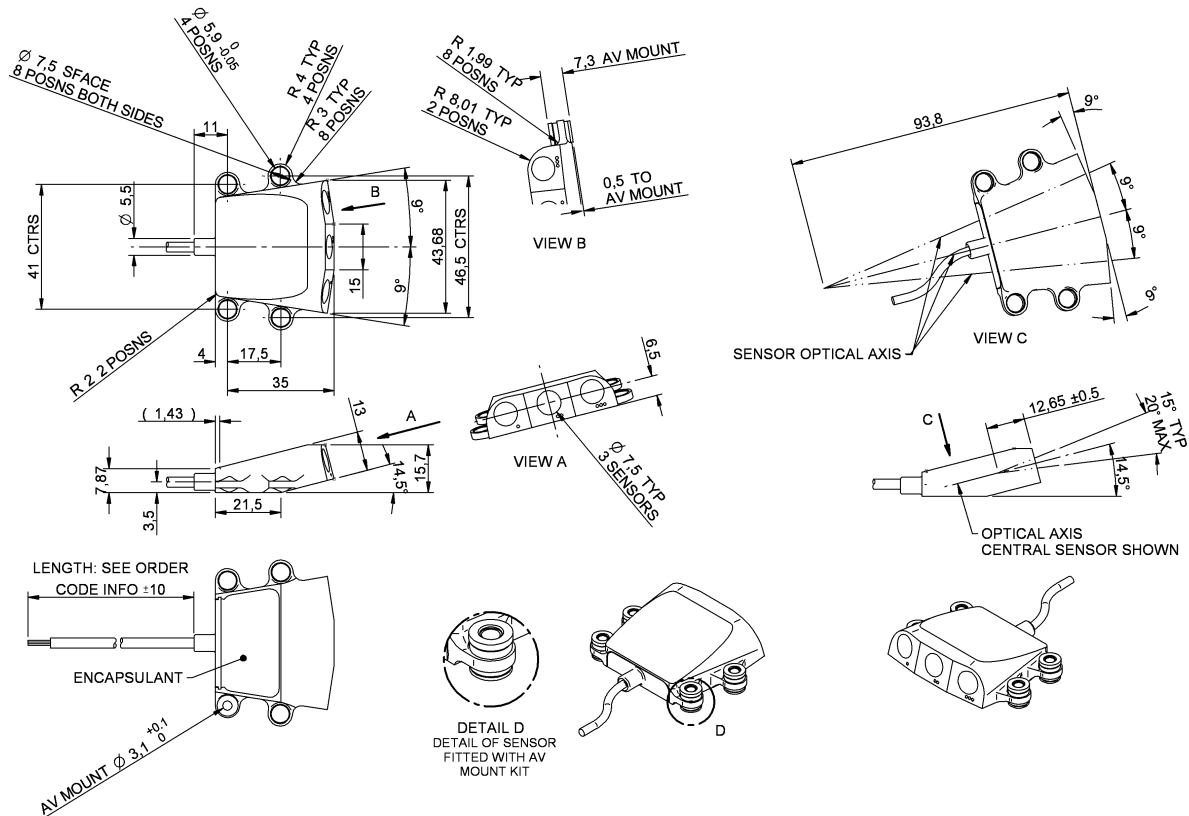
### Environmental

- Resistant to oil, standard fuel, hydraulic fluid and water. Aggressive cleaning agents should not be used, for example freon or trichloroethylene. Alcohol/pure ethanol and a cotton swab can be used for cleaning the lens.
- Maximum humidity 100%
- Operating temperature -25 to +105°C.
- Storage temperature -40° to 120°C.
- Vibration 500 to 2000Hz, 20g Peak acceleration, 5mins in all directions
- Shock 1000g peak acceleration, 0.7ms pulse length, 6 directions.

<sup>2</sup>The sensor reading will change if the lens becomes scratched or dirty

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Cable Length 1000mm	Order Code O 030 300 030 031
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