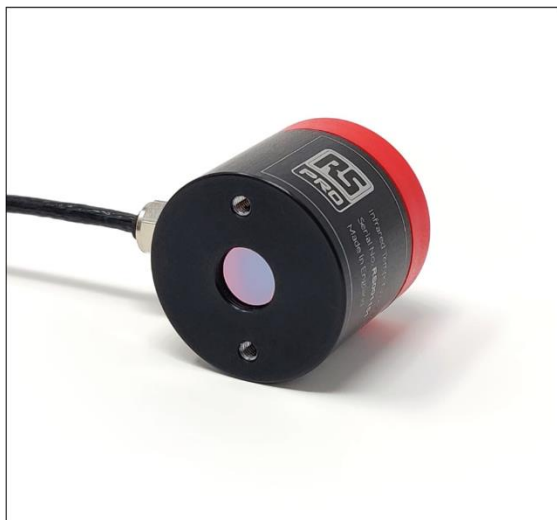# Datasheet

238-7241

Infrared Temperature Sensor with Voltage Output and UART

- **Non-contact industrial temperature sensor, ideal for OEMs and machine builders**
- **Measures surface temperatures from 0°C to 1000°C with a 250 ms response time**
- **Configurable via optional USB interface or UART (Modbus RTU protocol)**
- **Simultaneous voltage and alarm outputs**
- **Extremely small size - just 30 x Ø31 mm**
- **Low cost and high performance**

ENVIRONMENTAL

Environmental Rating	IP65
Ambient Temperature Range	0°C to 70°C
Relative Humidity	95% max. non-condensing

GENERAL SPECIFICATIONS

Measurable Temperature Range	0 to 1000°C
Analogue Output	0-5 V DC, linear with measured temperature
Alarm Output	Open collector with adjustable temperature threshold and hysteresis, configurable via UART
Field of View	15:1 divergent optics
Accuracy	± 1.5% of reading or ± 1.5°C, whichever is greater
Repeatability	± 0.5% of reading or ± 0.5°C, whichever is greater
Response Time	250 ms
Emissivity Setting	Default 0.95, adjustable via UART
Emissivity Setting Range	0.20 to 1.00
Max Temperature Span (Linear Output)	1000°C
Min Temperature Span (Linear Output)	100°C
Spectral Range	8-14 µm
Supply Voltage	24 V DC (max 28 V DC)
Min. Supply Voltage (at Sensor)	6 V DC (voltage output) 5 V DC (UART)
Max Current Draw	30 mA
Open Collector Alarm Output	6 to 24 V DC, 50 mA max (see Connections)

CONFORMITY

Electromagnetic Compatibility (EMC)	EN61326-1, EN61326-2-3 (Electrical Equipment for Measurement, Control and Laboratory Use - EMC Requirements)
RoHS Compliant	Yes

CONFIGURATION

Configurable Parameters	• Temperature range (linear output) • Alarm output threshold and hysteresis • Emissivity setting • Reflected temperature
Temperature Units	°C / °F
Signal Processing	Averaging Period (0.25 to 60 seconds)
Peak / Valley Hold	Hold Period (0.25 to 1200 seconds)

MECHANICAL SPECIFICATIONS

Construction	Black anodised aluminium and red ABS
Cable Length	1 metre
Weight with Cable	65 g

OPTIONS & ACCESSORIES

Mounting bracket (RS Stock No. 905-8777)

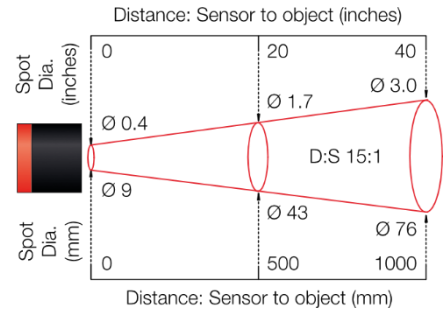Air purge collar (RS Stock No. 905-8770)

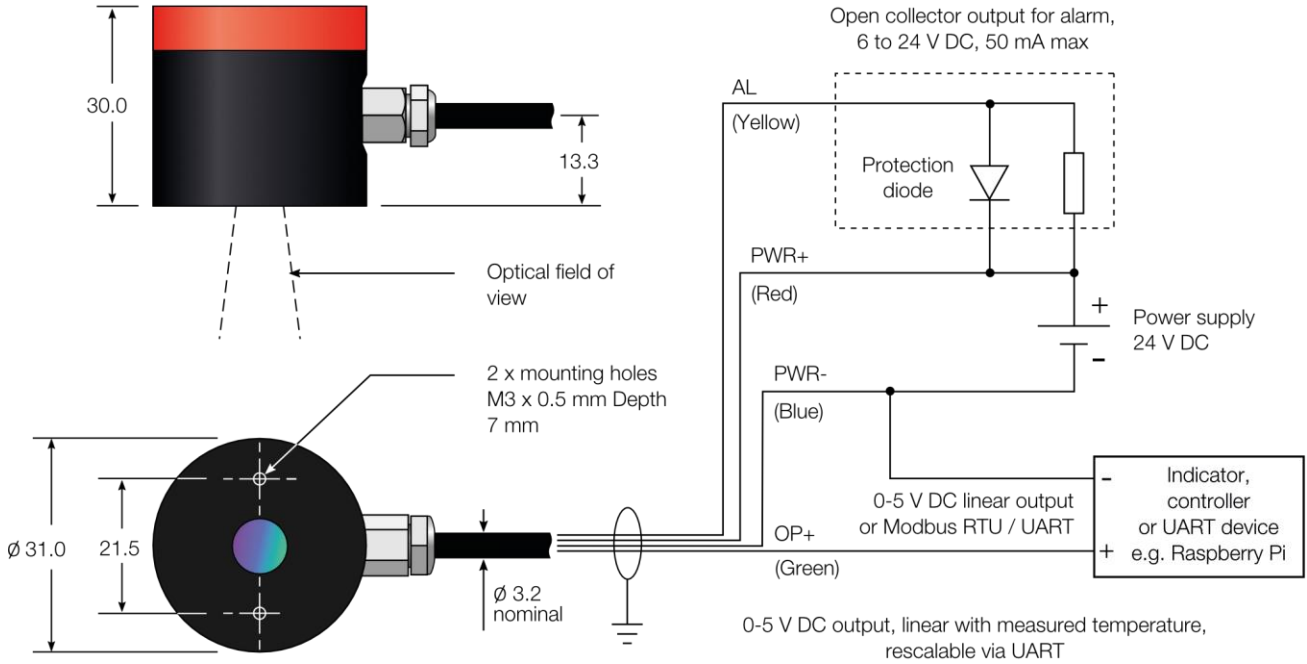FTDI USB Interface (RS Stock No. 687-7786)

OPTICS

The sensor measures the average temperature within a spot. The size of this spot depends on the distance between the sensor and the target surface.

The sensor may be used at longer distances than shown, and will measure a larger spot.

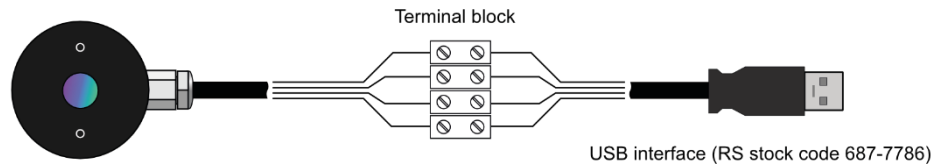The measurement accuracy is not affected by the measurement distance.

Distance: Sensor to object (inches)

Distance: Sensor to object (mm)

DIMENSIONS AND CONNECTIONS

30.0

13.3

Optical field of view

2 x mounting holes
M3 x 0.5 mm Depth
7 mm

Ø 31.0   21.5

Ø 3.2 nominal

Open collector output for alarm,
6 to 24 V DC, 50 mA max

AL (Yellow)

Protection diode

PWR+ (Red)

Power supply
24 V DC

PWR- (Blue)

OP+ (Green)

0-5 V DC linear output
or Modbus RTU / UART

Indicator,
controller
or UART device
e.g. Raspberry Pi

0-5 V DC output, linear with measured temperature,
rescalable via UART

CONNECTIONS (USB ADAPTER - OPTIONAL)

Use FTDI USB Interface (RS Stock No. 687-7786).

Power is provided by the USB connection - no separate power supply is required when using the USB adapter.

Terminal block

USB interface (RS stock code 687-7786)

SOFTWARE

The sensor is easy to configure via the free RS Pro Config software (link to be provided)

Features:

- Temperature display and graph
- Configuration of sensor parameters including emissivity setting, reflected energy compensation and averaging
- Data logging to comma-separated text file