CALEX PCAN21 Output Signal Infrared Temperature Sensor User Guide

CALEX
ELECTRONICS LIMITED
PyroCAN Series
Operators Guide

Contents

PCAN21 Output Signal Infrared Temperature Sensor

PyroCAN infrared temperature sensors measure temperatures from -20°C to 1000°C and transmit the reading digitally via a Raw CAN interface.

SPECIFICATIONS

Temperature Range vs Field-of-View table

Field of View	Model Number
2:1	PCAN21
10:1	PCAN201

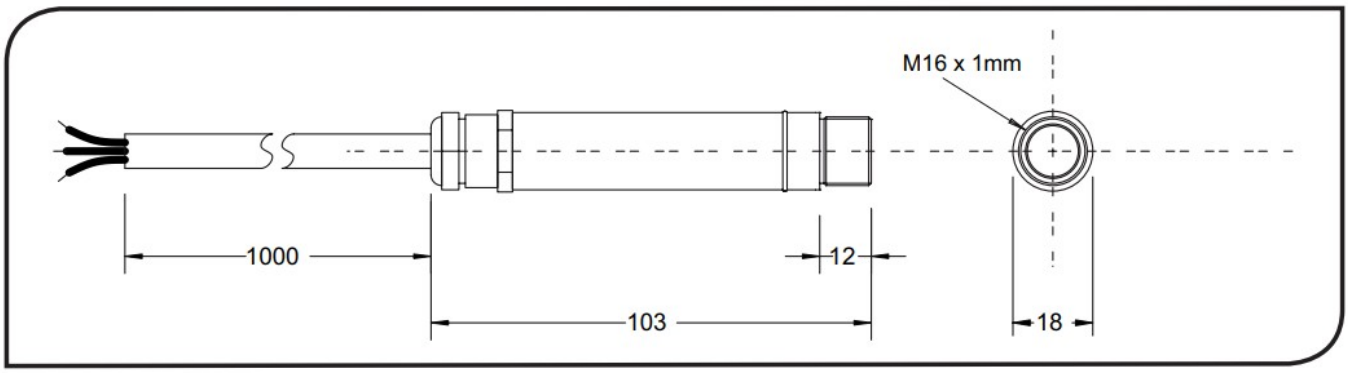
Interface	Raw CAN
Accuracy	±1% of reading or ±1ºC whichever is greater
Repeatability	± 0.5% of reading or ± 0.5ºC whichever is greater
Emissivity	0.2 to 1.0, adjustable via CAN
Response Time, t90	200 ms (90% response)
Spectral Range	8 to 14 µm
Supply Voltage	12 to 24 V DC
Supply Current	50 mA max.
Baud Rate	250 kbps
Format	see PROTOCOL
MECHANICAL	
Construction	Stainless Steel
Dimensions	18 mm diameter x 103 mm long
Thread Mounting	M16 x 1 mm pitch
Cable Length	1 m
Weight with Cable	95 g
ENVIRONMENTAL	
Environmental Rating	IP65
Ambient Temperature	0ºC to 90ºC
Relative Humidity	95% max. non-condensing

ACCESSORIES

A range of accessories to suit different applications and industrial environments is available. These may be ordered at any time and added on-site. The accessories consist of the following parts .
Fixed mounting bracket Adjustable mounting bracket Air purge collar Laser sighting tool Protective plastic window with stainless steel holder Mounting bracket with continuous laser sighting

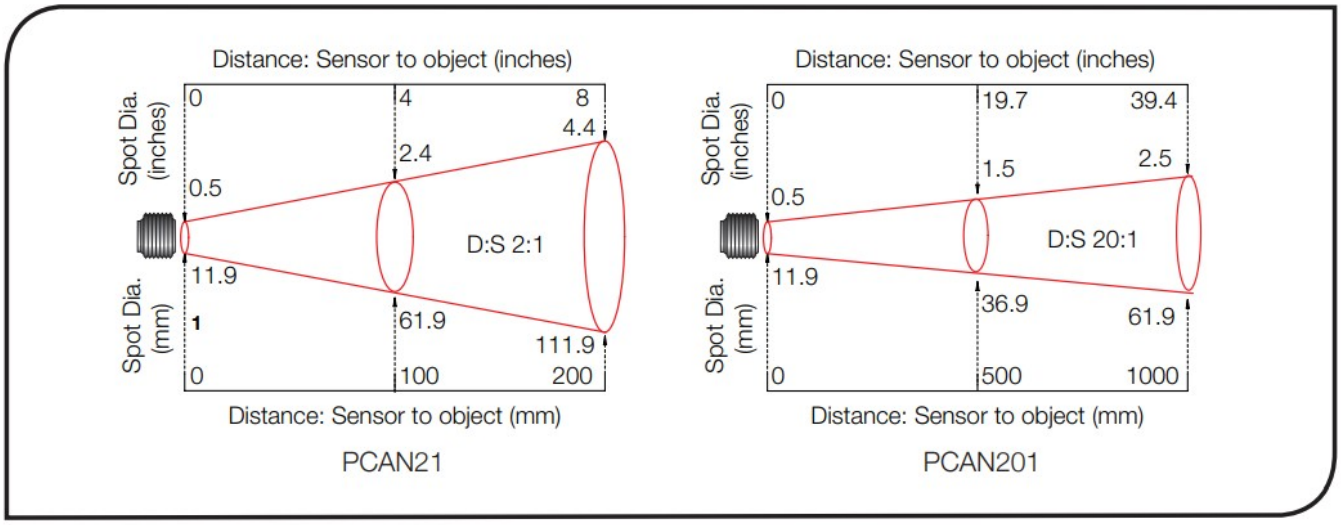
OPTIONS

The following options are available. Options are factory installed and must be ordered with the sensor.
Air/water cooled housing Certificate of calibration Longer cable



OPTICAL CHART

The optical chart below indicates the nominal target spot diameter at any given distance from the sensing head and assumes 90% energy.

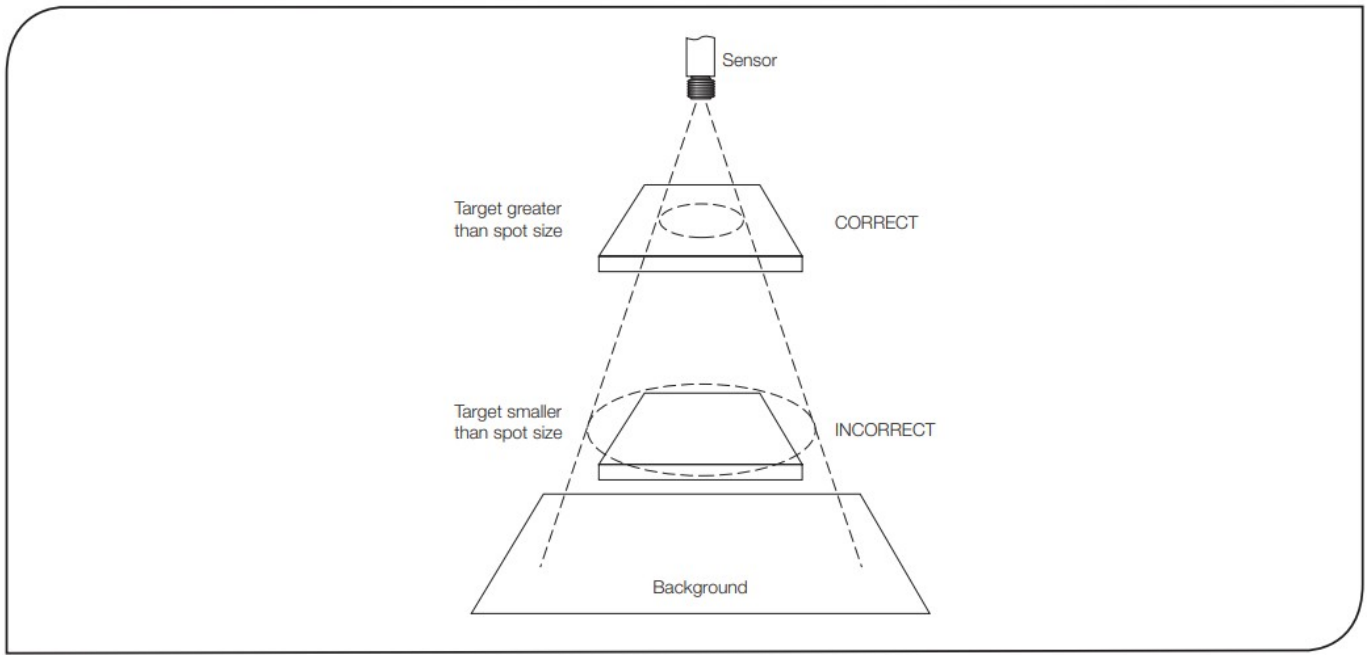


INSTALLATION

The installation process consists of the following stages:
Preparation Mechanical installation Electrical installation Please read the following sections thoroughly before proceeding with the installation.

PREPARATION

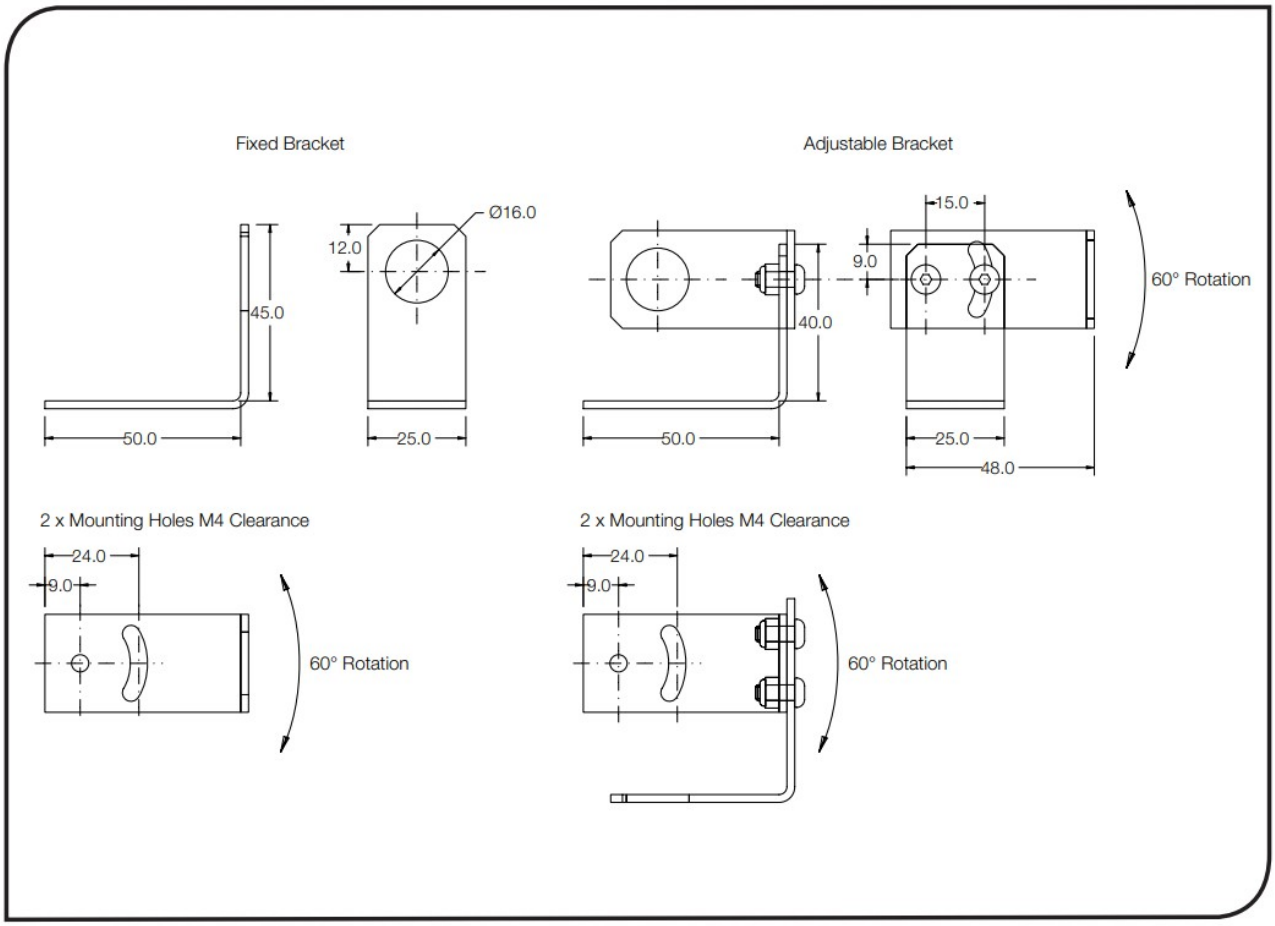
Ensure that the sensor is positioned so that it is focused on the target only.



DISTANCE AND SPOT SIZE
The size of the area (spot size) to be measured determines the distance between the sensor and the target. The spot size must not be larger than the target. The sensor should be mounted so that the measured spot size is smaller than the target.
AMBIENT TEMPERATURE
The sensor is designed to operate in ambient temperatures from 0°C to 90°C.. For ambient temperatures above 90°C, an air/water-cooled housing will be required.
Avoid thermal shock. Allow 20 minutes for the unit to adjust to large changes in ambient temperature.
ATMOSPHERIC QUALITY
Smoke, fumes or dust can contaminate the lens and cause errors in temperature measurement.
In these types of environment the air purge collar should be used to help keep the lens clean.
ELECTRICAL INTERFERENCE
To minimise electromagnetic interference or ‘noise’, the sensor should be mounted away from motors, generators and such like.
WIRING
Check the distance between the sensor and the connected instrumentation. If necessary, the sensor can be ordered with a longer cable attached.
POWER SUPPLY
Be sure to use a 12 to 24 V DC (50mA max.) power supply.

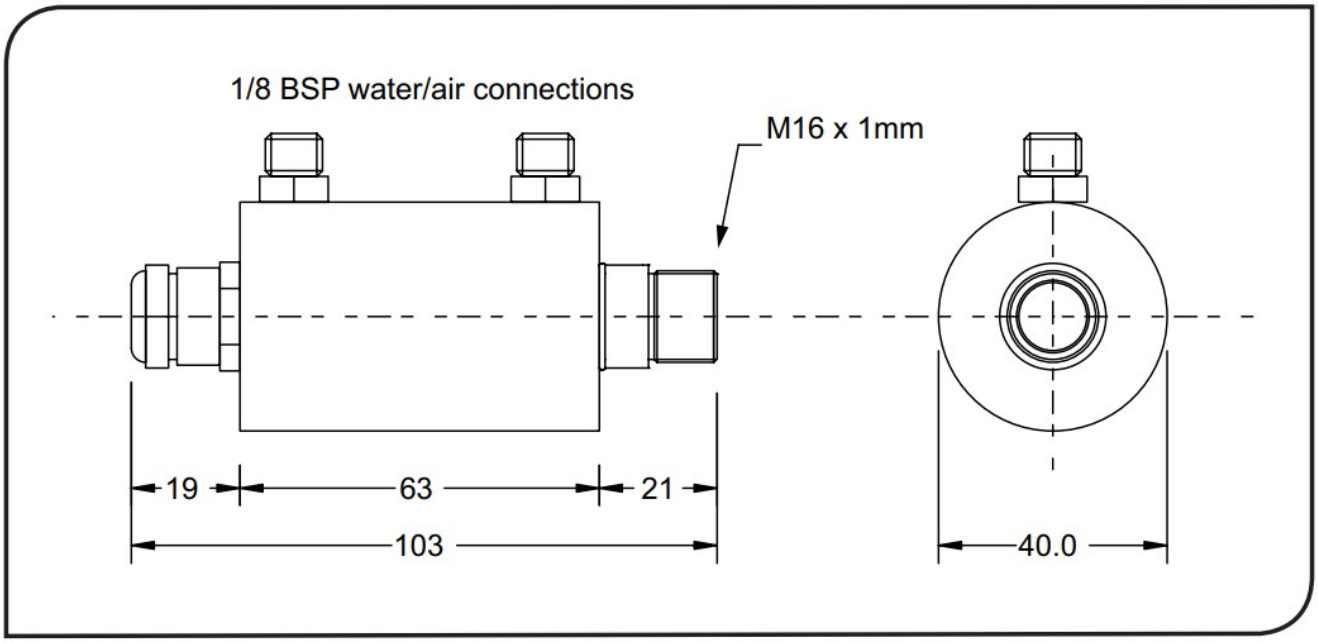
MECHANICAL INSTALLATION

All sensors come with a 1m cable and a mounting nut. The sensor can be mounted on brackets or cut outs of your own design, or you can use the fixed and adjustable mounting bracket accessories which are shown below.
Note: The sensor must be grounded at only one point, either the cable shield or the sensor housing.



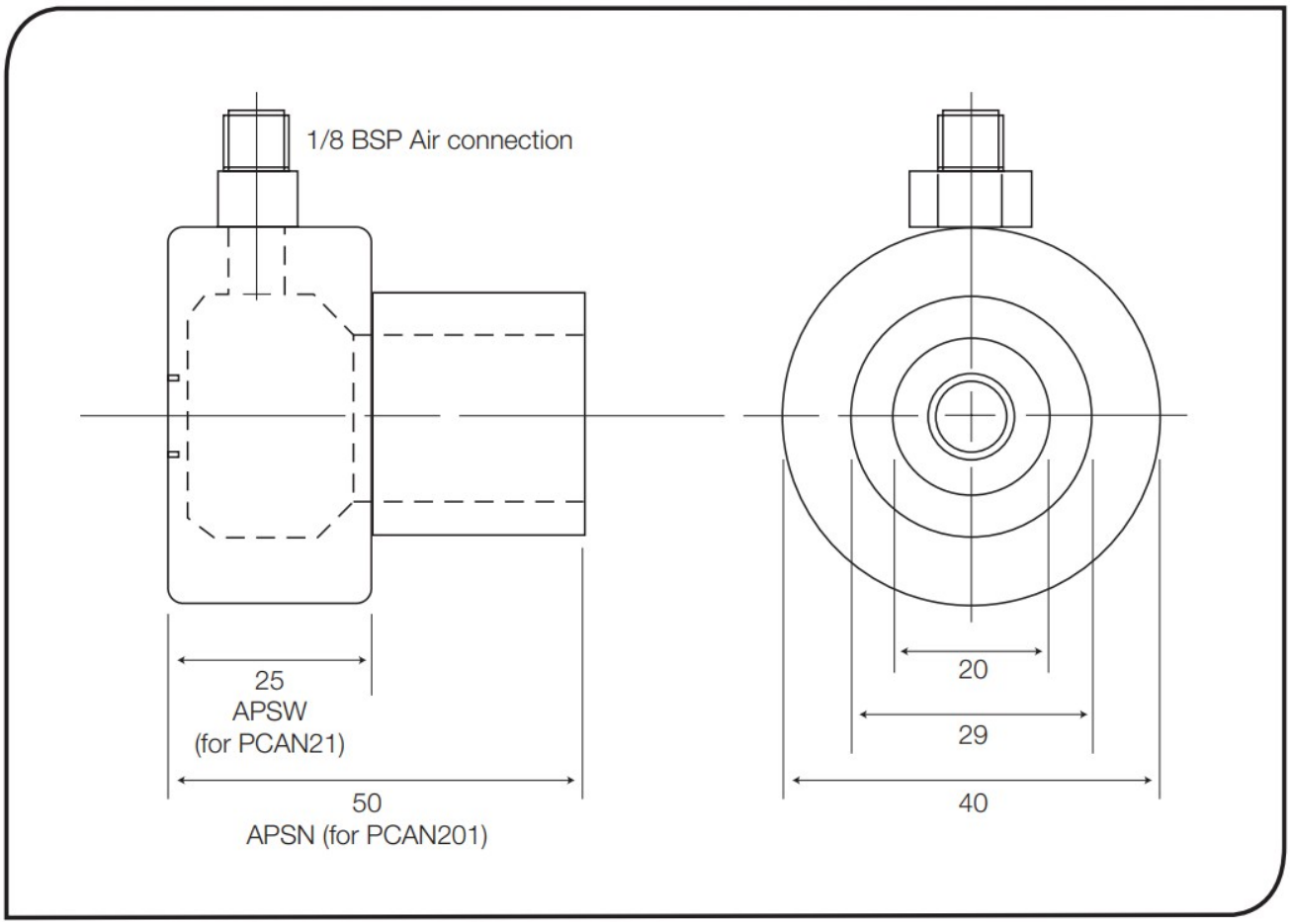
AIR/WATER COOLED HOUSING

The air/water cooled housing shown below allows the sensor to withstand high ambient temperatures.
It is equipped with two 1/8” BSP fittings. Water temperature should be 10°C to 27°C for efficient cool- ing. Chilled water below 10°C is not recommended. To avoid condensation, the air purge collar should be used with the water-cooled housing. Water flow rate should not be more than 0.5 to 1.5 litres/min.

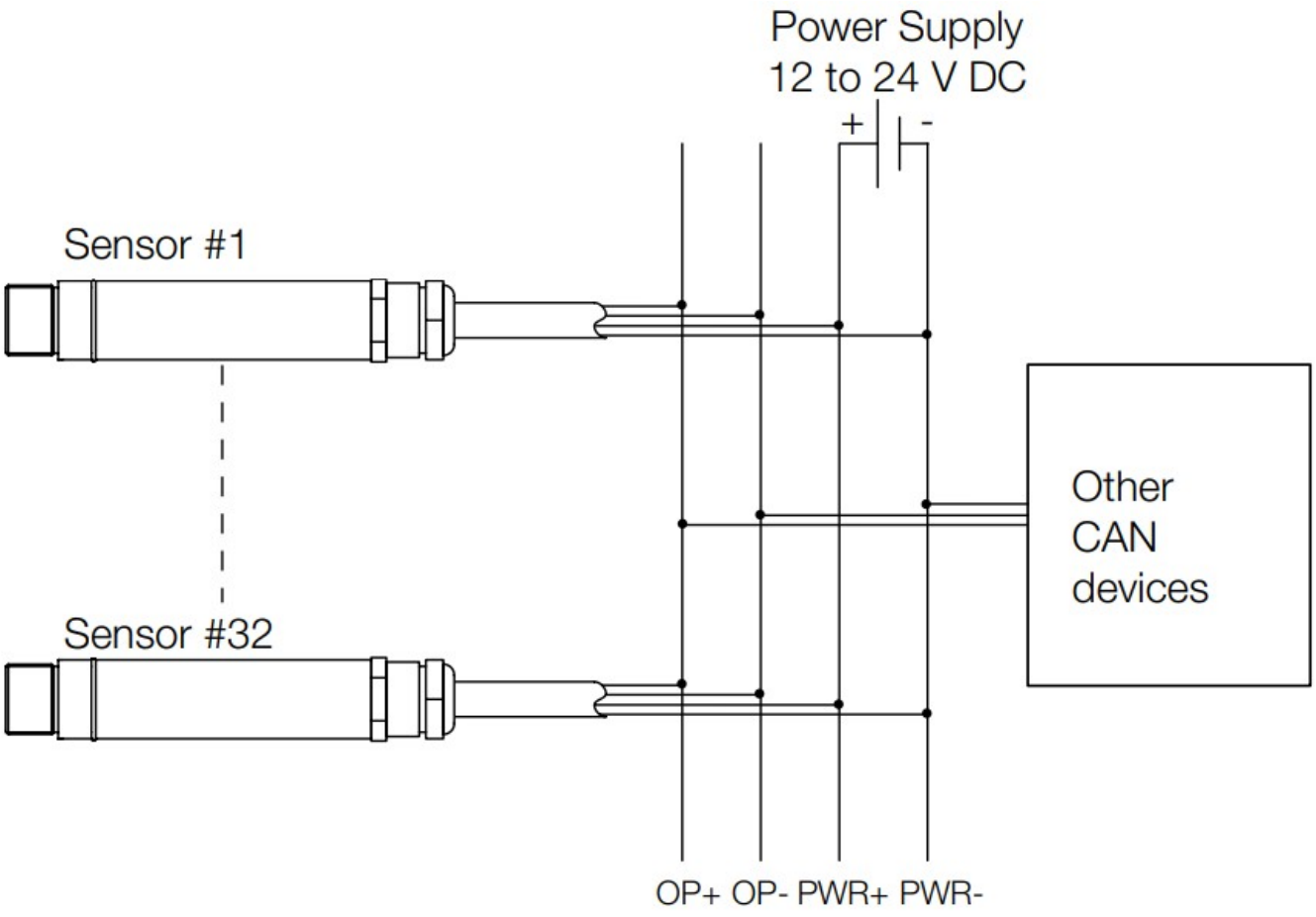


AIR PURGE COLLAR

The air purge collar below is used to keep dust, fumes, moisture, and other contaminants away from the lens. It must be screwed in fully. Air flows into the 1/8” BSP fitting and out of the fraperture. Air flow should be no more than 5 to 15 litres/min.
Clean or ‘instrument’ air is recommended.



ELECTRICAL INSTALLATION



Wire colour codes:

Brown	PWR+	+12 to +24 V DC
White	PWR-	0 V
Yellow	OP+	CAN output +
Green	OP-	CAN output –

PROTOCOL

- The sensor transmits an 8-byte message every 200 ms containing the ambient and object temperatures in °C.
- The first 4-bytes are the object temperature encoded as a floating-point.
- The second 4-bytes are the ambient temperature encoded as a floating-point.
- This message is sent to the CAN ID stored in non-volatile memory. The ID is persistent between power cycles.
- The CAN ID may be set to a value from 0 to 2048 (0x0 to 0x800) as a 4-byte unsigned integer.
- The emissivity setting may be set to a value from 0.2 to 1.0 as a 4-byte floating-point.
- These floating-point values can be decoded simply using an IEEE 754 binary-to-decimal converter.

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Documents / Resources

	CALEX PCAN21 Output Signal Infrared Temperature Sensor [pdf] User Guide PCAN21 Output Signal Infrared Temperature Sensor, PCAN21, Output Signal Infrared Temperature Sensor, Signal Infrared Temperature Sensor, Infrared Temperature Sensor, Temperature Sensor, Sensor

References

- Pyrometer & Non Contact Thermometer Specialists
- User Manual