IRN2

Infrared temperature sensor low range
Linear analog and digital output

SN: I########

Texense sensors are designed for data logging. Should the users want to include this sensor in a closed loop system, they must undertake total responsibility from doing so.

Measurement features			
Available ranges		100, 150, 200, 300, or 500	°C
Accuracy (1)		2	%FS
Ambient temperature error		±0.5	°C
Response time (0 to 90%)		50	ms
Sensitive Element		Thermopile with silicon lens	
Wavelength		8 to 14	µm
Measurement distance		20 to 150	mm
Field of view (90% radiation)		4:1 at 50mm	
Calibrator reference		Land P550P	
Calibrator emissivity		99%	
Emissivity and distance tuning		Gain factor from 0.1 to 10	
Electrical features			
Supply Voltage	3V version	3.3 to 30	V
	5V version	5.5 to 30	
	10V version	10.5 to 30	
Supply Current		4	mA
Protection		Reverse voltage and short circuit protections	
Analog output signal	3V version	0…3	V
	5V version	0…5	
	10V version	0…10	
Analog output impedance		47	Ω
Digital output feature		ASCII data at 50Hz	
Mechanical features			
Materials and dimensions		See §Housing options	
Weight wo cable	Al	15	g
	SS 316L	21	g
Environmental features			
Protection		IP65	
Vibration test		20Gpp 5'	
Shock		500	G
Operating temperature		-20 to +120	°C
Storage temperature		-40 to +125	°C

(1) See calibration tables for more details.

Date		Operator	
Customer			
Order			
Ref	IRN2#-###-#		
SW version	V#.##		

Sensor readings	
Calibrator temperature (°C)	Signal output value (V)
25°C	…V
…°C	…V

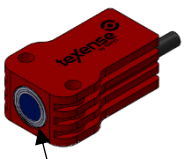
Software setup	
Digital output	OFF
Degree unit	Celsius
Gain factor	1024

Cable version

☒Default 4x26AWG FEP tinned copper braided cable 250V 200°C
☐ Optional EPD117723A
Length: 1000 mm ±10% Tubing: None
Connector: N/A

Color	Function	Pin
Red	Supply	-
Black	0V	-
White	Signal	-
Green	Digital signal	-
Braid (not for EPD 117723A)	-	

"T" version



"TS" version

Warning: the metallic ring around the lens is connected inside the sensor. Avoid any electrical contact.

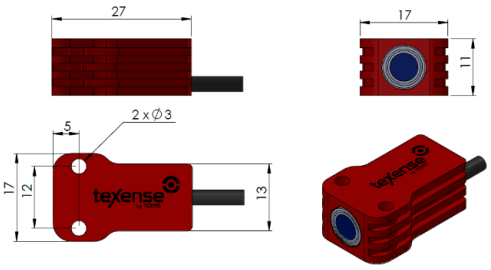
"V" version

Calibration table

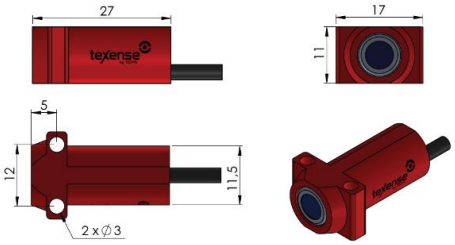
3V output version	Range (°C)	100	150	200	300	500
	Sensitivity (mV/°C)	21.0	15.0	12.0	7.5	5.4
	Offset (mV)	600	450	300	450	150
	-20°C	0.180	0.150	0.060	0.300	0.042
	0°C	0.600	0.450	0.300	0.450	0.150
	25°C	1.125	0.825	0.600	0.638	0.285
	50°C	1.650	1.200	0.900	0.825	0.420
	75°C	2.175	1.575	1.200	1.013	0.555
	100°C	2.700	1.950	1.500	1.200	0.690
	150°C	-	2.700	2.100	1.575	0.960
	200°C	-	-	2.700	1.950	1.230
	300°C	-	-	-	2.700	1.770
	500°C	-	-	-	-	2.850
5V output version	Range (°C)	100	150	200	300	500
	Sensitivity (mV/°C)	35.0	25.0	20.0	12.5	9.0
	Offset (mV)	1000	750	500	750	250
	-20°C	0.300	0.250	0.100	0.500	0.070
	0°C	1.000	0.750	0.500	0.750	0.250
	25°C	1.875	1.375	1.000	1.063	0.475
	50°C	2.750	2.000	1.500	1.375	0.700
	75°C	3.625	2.625	2.000	1.688	0.925
	100°C	4.500	3.250	2.500	2.000	1.150
	150°C	-	4.500	3.500	2.625	1.600
	200°C	-	-	4.500	3.250	2.050
	300°C	-	-	-	4.500	2.950
	500°C	-	-	-	-	4.750
10V output version	Range (°C)	100	150	200	300	500
	Sensitivity (mV/°C)	70.0	50.0	40.0	25.0	18.0
	Offset (mV)	2000	1500	1000	1500	500
	-20°C	0.600	0.500	0.200	1.000	0.140
	0°C	2.000	1.500	1.000	1.500	0.500
	25°C	3.750	2.750	2.000	2.125	0.950
	50°C	5.500	4.000	3.000	2.750	1.400
	75°C	7.250	5.250	4.000	3.375	1.850
	100°C	9.000	6.500	5.000	4.000	2.300
	150°C	-	9.000	7.000	5.250	3.200
	200°C	-	-	9.000	6.500	4.100
	300°C	-	-	-	9.000	5.900
	500°C	-	-	-	-	9.500

Housing options

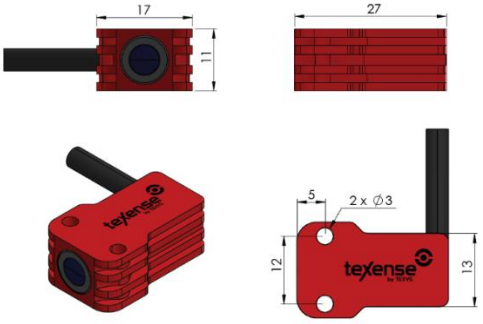
"T" Aluminium shape housing



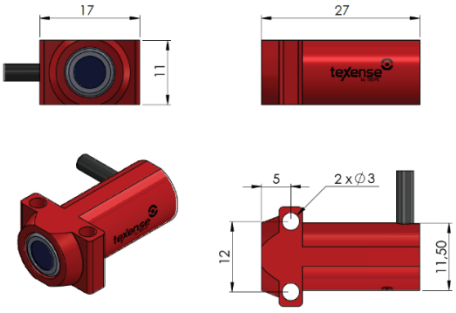
"TS" Aluminium shape housing



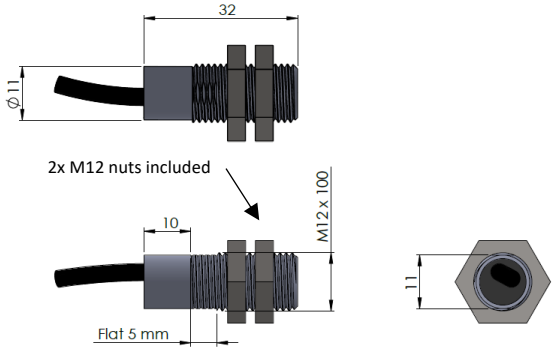
"T-RA" Aluminium shape housing



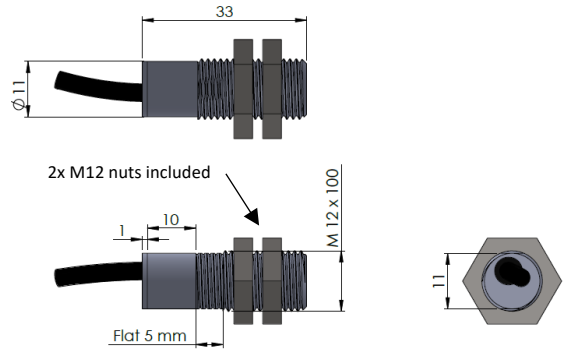
"TS-RA" Aluminium shape housing



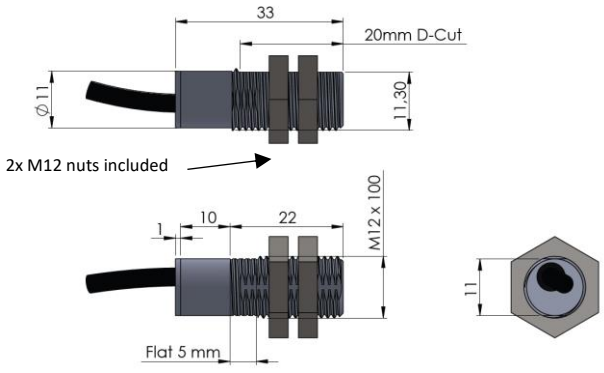
"V": Aluminium M12 housing



"V-I": SS 316L M 12 housing

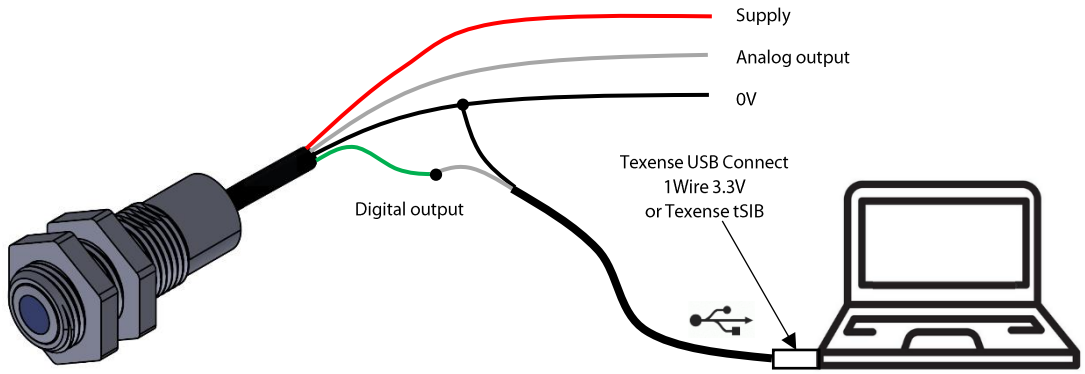


"VD-I": SS 316L housing with a D cut shape



Digital Output

Connections



Drivers

It is necessary to download a VCP driver (Virtual Com Port) FTR232R to convert the USB port in Serial COM Port at the following address: https://ftdichip.com/drivers/vcp-drivers/ .See information at https://ftdichip.com/document/installation-guides/

Software

Use HyperTerminal (for Windows): www.hilgraeve.com/htpe/download.html or Teraterm: https://tera-term.en.softonic.com/ or any other COM port management software.

Settings

If cable length ≤1.5m, please consider a baudrate of 115200 bauds
If cable length >1.5m, please consider a baudrate of 38400 bauds
8 bits data, no parity, 1 bit stop, no flow control, recommended font Courrier New.

Operating Modes

At power up, the sensor sends the following header:

```
TEXYS(r)    IRN2 200   V1.0   SN00000000

'u': digital output on/off         OFF
'd': degree         C / F          Celsius
'e': gain factor    =              1024
```

To change a parameter, press a key:

Parameter	Key	Description
Digital output	'u'	Toggle between active (ON) or not (OFF) for the digital output (default: OFF)
Degree	'd'	Toggle between Celsius and Fahrenheit (default: Celsius)
Gain factor	'e' + number from 100 to 10000. (in 1024th)	Factor from 0.098 to 9.76, intended to adjust the output signal versus target emissivity or distance (default: 1024, equivalent to factor 1)

If the digital output is active (digital output ON), **the header is not displayed**. Instead, the temperature value is sent with following features:

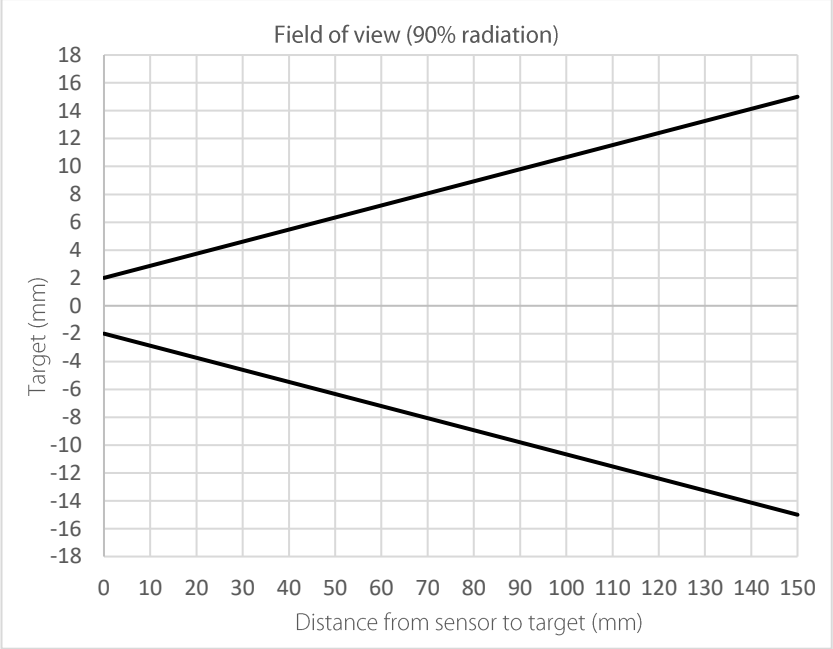
- Data rate 50Hz
- Coded with line feed (0x0A) + carriage return (0x0D) + 5x ASCII characters.
- The temperature value is given in tenths of degree.

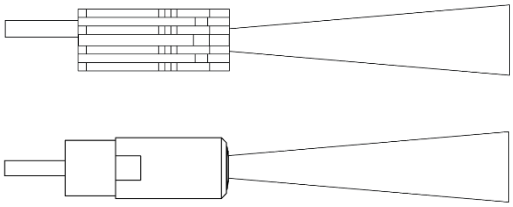
Examples:

```
01456
01456   <-- Temperature = 145.6°C
01457
01458
.....

-0056
-0057   <-- Temperature = -5.7°C
-0058
.....
```

FOV (field of view)





Ordering information

Ordering ref:

IRN2 *Housing* – *Range* – *Output*

T: T shape
T-RA: T shape with right angle cable output
TS: TS shape
TS-RA: TS shape with right angle cable output
V: M12 shape, Aluminium material
V-I: M12 shape, SS316L material
VD-I: M12 shape w D cut, SS316L material

100: -20°C…100°C range
200: -20°C…200°C range
300: -20°C…300°C range
500: -20°C…500°C range

3: 0…3V signal
5: 0…5V signal
10: 0…10V signal

ex: IRN2V-300-5