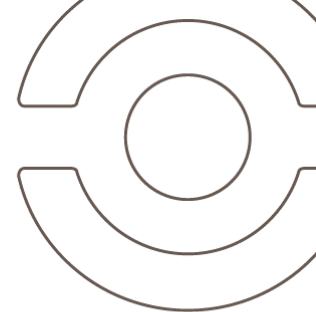




MIB-S-200-73

Fast micro-bolometer for temperature measurement

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.

IR temperature measurement		
Range	0 to +200	°C
Accuracy	See accuracy table	
Response time	20	ms
Sampling frequency	100	Hz
Resolution	0.1	°C
Warm-up time	2	min
Spatial resolution	70 x 4	pixels
Output resolution	70 x 1	pixels
Sensitive Element	Micro-bolometer matrix	
Wave Length	8 to 14	µm
Horizontal field of view	65.84	°
Vertical field of view	4.23	°
Lens protection	PEHD	
Internal temperature measurement		
Accuracy	±0.3	°C
Resolution	0.1	°C
CAN bus		
Standard	2.0A or B	
Termination	Optional 120Ω (must be specified at the order)	
Baudrate	500kbps or 1Mbps	
Output data rate	1Hz to 100Hz, request mode	
Electrical features		
Supply Voltage	6 to 30	V
Supply Current (at 12V)	45	mA
Mechanical features		
Dimensions	40x30.5x18.5	mm
Material	Aluminium	
Weight (without cable)	35	g
Environment		
Protection	IP64	
Vibration test	40Gpp 5'	
Shock	500	G
Operating Temp	-20 to +85	°C
Storage Temp	-40 to +125	°C

Date	Operator
Customer	
Order	
Product Ref	MIB-S-200-73-70-4-###
SW version	V#.#

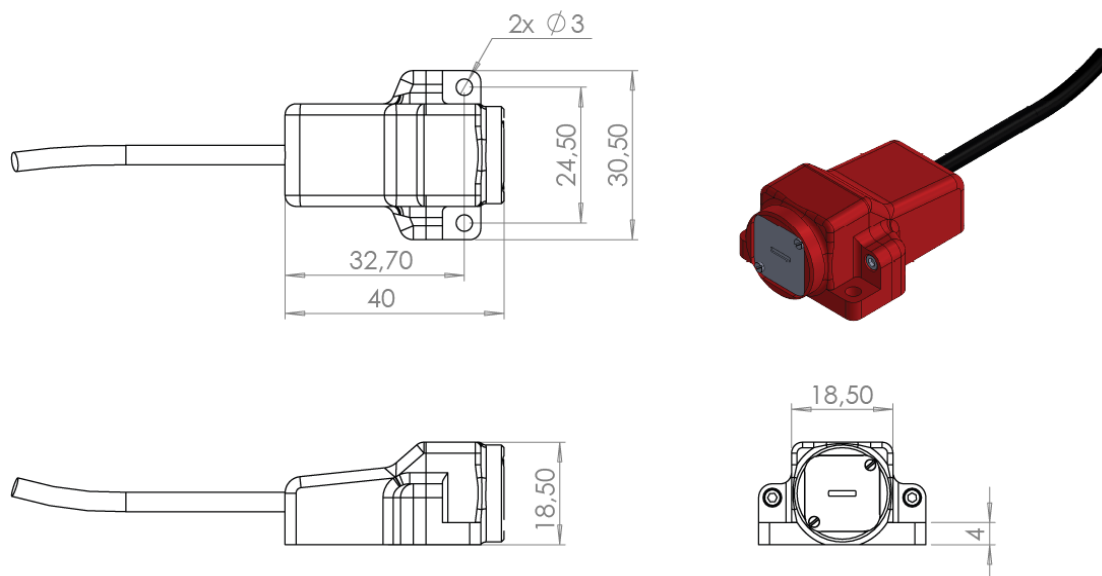
Cable		
4x26 AWG FEP tinned copper braided cable 250V 200°C Length: 1000mm Tubing: 50mm Connector: on request		
Color	Function	Pin
Red	Supply	-
Black	0V	-
Green	CAN High	-
White	CAN Low	-
Braid		-

Software setup	
CAN type	2.0A
Baudrate	1Mbps
Frequency	10Hz
Rx trig ID	0x7F0
Tx1 ID	0x5F0
Tx2 ID	0x3F0
Customer gain	1000
Customer offset	0°C

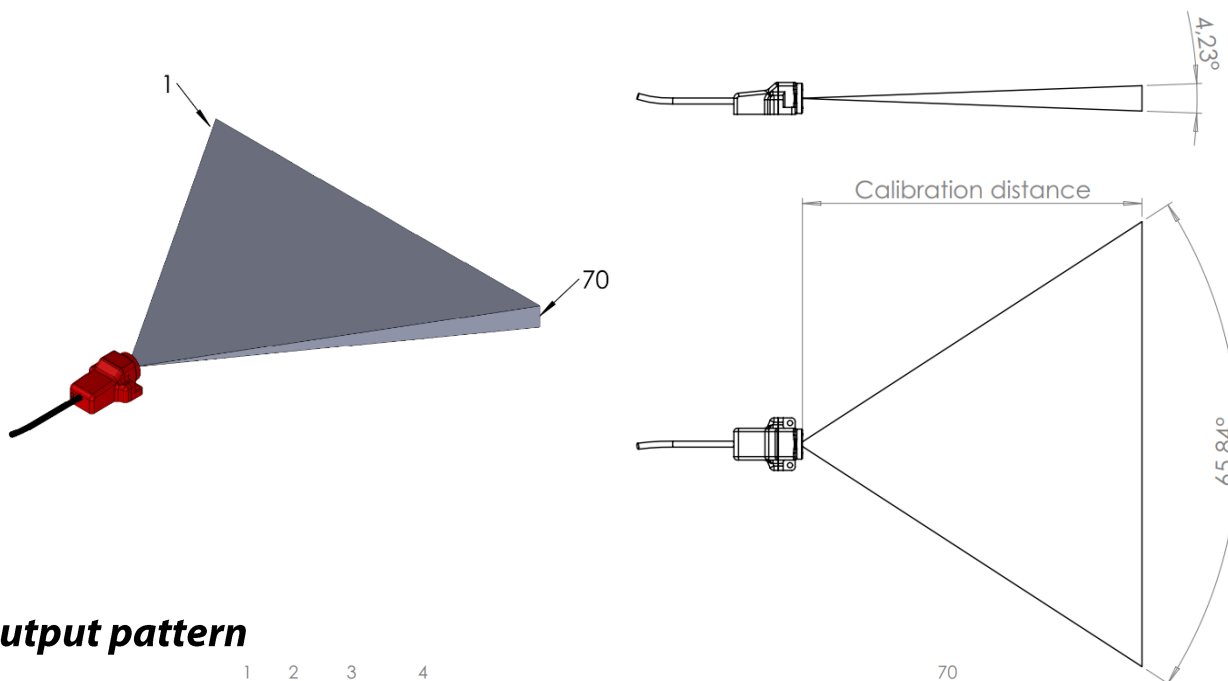
Hardware setup	
CAN termination resistor	Not connected

Sensor readings	
Calibrator	Fluke 418+
	ECN 100 H12
Target temperature	Average pixel readings
60°C	... °C
180°C	... °C

Mechanical drawing

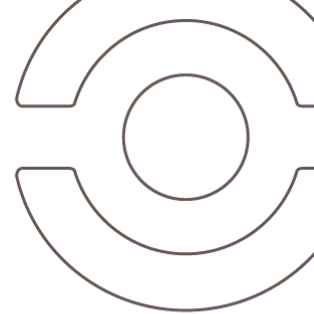


FOV (Field of view)



Output pattern





Accuracy table

Accuracy table (%FS)			
Target temperature	Sensor ambient temperature		
	25°C	60°C	80°C
≤20°	2	2	
30°	1	2	2
80°	1	1	1
100°	1	1	1
200°	1	1	1

CAN data output: Standard mode

Pixel and ambient temperatures are coded as follow:

- Unsigned integer 12bits
- MSB first
- Resolution: 0.1°C/bit

Frame #1 (default Tx1 Frame ID: 0x5F0) Output rate: 10Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
0x05F0	Ambient temperature	Status bits ⁽¹⁾	Serial Number 32 bits unsigned integer (MSB first)			

Frame #2 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Pixel 1 temp.	Pixel 2 temp.	Pixel 3 temp.	Pixel 4 temp.	Pixel 5 temp.	Pixel 6 temp.	Pixel 7 temp.	-

Frame #3

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F1	Pixel 6 temp.	Pixel 7 temp.	Pixel 8 temp.	Pixel 9 temp.	Pixel 10 temp.	Pixel 11 temp.	Pixel 12 temp.	-

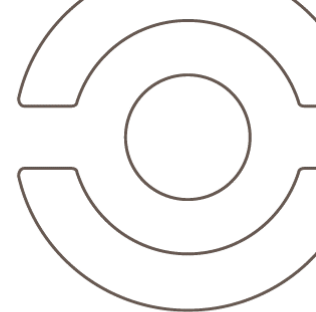
...

Frame #15

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3FD	Pixel 66 temp.	Pixel 67 temp.	Pixel 68 temp.	Pixel 69 temp.	Pixel 70 temp.	Pixel 71 temp.	Pixel 72 temp.	-

(1): Status bits definition:

Bit	3	2	1	0
Name	Not used	Not used	Warm-up	Reset
Description	-	-	Set to 1 during 130 seconds after power up	Set to 1 during 10 seconds after power up



CAN data output: Mux 1 mode

Diagnostic frame:

Frame #1 (default Tx1 Frame ID: 0x05F0) Output rate: 10Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
0x05F0	Unsigned int 12 bits		Unsigned int 32 bits			
	Ambient temperature		Status bits ⁽¹⁾	Serial number		
	0.1°C/bit					

IR data frame:

Frame #0 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 1 temp.	Pixel 2 temp.	Pixel 3 temp.	Pixel 4 temp.	Pixel 5 temp.	Pixel 6 temp.	Pixel 7 temp.
	0	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

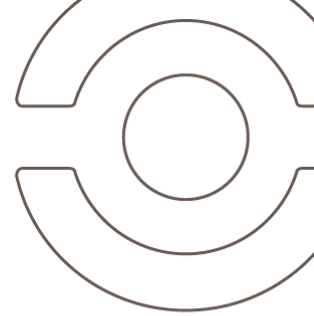
Frame #1 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 6 temp.	Pixel 7 temp.	Pixel 8 temp.	Pixel 9 temp.	Pixel 10 temp.	Pixel 11 temp.	Pixel 12 temp.
	1	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

...

Frame #13 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 66 temp.	Pixel 67 temp.	Pixel 68 temp.	Pixel 69 temp.	Pixel 70 temp.	Pixel 71 temp.	Pixel 72 temp.
	13	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit



CAN data output: Mux 2 mode

Frame #0 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 1 temp.	Pixel 2 temp.	Pixel 3 temp.	Pixel 4 temp.	Pixel 5 temp.	Pixel 6 temp.	Pixel 7 temp.
	0	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #1 (default Tx2 Frame ID+1: 0x3F1) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F1	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 6 temp.	Pixel 7 temp.	Pixel 8 temp.	Pixel 9 temp.	Pixel 10 temp.	Pixel 11 temp.	Pixel 12 temp.
	1	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #2 (default Tx2 Frame ID+2: 0x3F2) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F2	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 11 temp.	Pixel 12 temp.	Pixel 13 temp.	Pixel 14 temp.	Pixel 15 temp.	Pixel 16 temp.	Pixel 17 temp.
	2	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #3 (default Tx2 Frame ID+3: 0x3F3) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F3	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 16 temp.	Pixel 17 temp.	Pixel 18 temp.	Pixel 19 temp.	Pixel 20 temp.	Pixel 21 temp.	Pixel 22 temp.
	3	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #4 (default Tx2 Frame ID: 0x3F0) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F0	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 21 temp.	Pixel 22 temp.	Pixel 23 temp.	Pixel 24 temp.	Pixel 25 temp.	Pixel 26 temp.	Pixel 27 temp.
	4	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #5 (default Tx2 Frame ID+1: 0x3F1) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F1	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 26 temp.	Pixel 27 temp.	Pixel 28 temp.	Pixel 29 temp.	Pixel 30 temp.	Pixel 31 temp.	Pixel 32 temp.
	5	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

...

Frame #13 (default Tx2 Frame ID+1: 0x3F1) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F1	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits	Unsigned int 12 bits
	Msg. ID	Pixel 66 temp.	Pixel 67 temp.	Pixel 68 temp.	Pixel 69 temp.	Pixel 70 temp.	Pixel 71 temp.	Pixel 72 temp.
	13	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit	0.1°C/bit

Frame #14 (default Tx2 Frame ID+2: 0x3F2) Output rate: 1 to 100Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x3F2	Unsigned int 4 bits	Unsigned int 12 bits	Unsigned int 8 bits		Unsigned int 32 bits			
	Msg. ID	Ambient temperature	Status bits ⁽¹⁾		Serial number			
	14	0.1°C/bit	0.1°C/bit		-			

The following table present interframe timings for MUX 2 mode:

CAN ID	CAN frequency (Hz)	Interframe time (ms)		
		Min	Typical	Max
0x3F0, 0x3F1, 0x3F2	10	24	25	26
	50	4.7	5.0	5.2
	100	2.2	2.5	3.2
0x3F3	10	24	25	52
	50	4.7	5.0	10.4
	100	2.2	2.5	6.4

Interframe times are specified for each CAN ID, at 1Mbps baudrate and without bus load except the MIB-S.

Changing parameters

Must be setup according to Texense CAN protocol, or by using the tWist* software (texense Windows software tool) with the tSIB (texense Smart Interface Box).

Address	Parameter	Raw values	Values	Comments	
0x00	CAN type	0x00	CAN 2.0A (std. 11bits)	default	
		0x01	CAN 2.0B (ext. 29bits)		
0x01	Baudrate	0x00	1 Mbps	default	
		0x01	500 Kbps		
0x02	Emission frequency	0x00	Rx frame trig	On request - 10Hz max.	
		0x01	1 Hz	Integration time =1s Noise ⁽¹⁾ ≤ 0.1°C	
		0x02	5 Hz	Int. Time = 200ms Noise ⁽¹⁾ ≤ 0.1°C	
		0x03	10 Hz	Int. Time = 100ms Noise ⁽¹⁾ ≤ 0.1°C (Default)	
		0x04	50 Hz	Int. Time = 20ms Noise ⁽¹⁾ ≤ 0.15°C	
		0x05	100 Hz	Int. Time = 10ms Noise ⁽¹⁾ ≤ 0.15°C	
0x03	Rx frame ID	if CAN2.0A: 0x1 to 0x7FF		MSB	Default 0x07F0
0x04		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	
0x05	Tx1 frame ID	if CAN2.0A: 0x1 to 0x7FF		MSB	Default 0x05F0
0x06		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	
0x07	Tx2 frame ID	if CAN2.0A: 0x1 to 0x7FF		MSB	Default 0x03F0
0x08		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	
0x09	Customer gain	500 to 2000	1/1000 (0.5 to 2)	MSB	Default 1000
0x0A				LSB	
0x0B	Customer offset	-500 to 500	0.1°C/bit (-50°C to +50°C)	MSB	Default 0°C
0x0C				LSB	

For complete information, contact us at info@texense.com

⁽¹⁾Noise is calculated as the standard deviation (one sigma).

Ordering information

Ordering ref:

MIB-S-200-73-70-4-~~Distance~~-MUX#.

Calibration distance in mm

MUX1 or MUX2 (Optional)

Standard output if nothing specified

ex: MIB-S-200-73-70-4-610