

MIB-PTP-8GB-E-200-53

Fast micro-bolometer for temperature measurement with Ethernet 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.

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	80 x 60	pixels
Sensitive element	Micro-bolometer matrix	
Wave length	8 to 14	µm
Calibrator	ECN 100 N12 (e=1)	
Horizontal field of view	53	°
Vertical field of view	40	°
Lens protection	Replaceable silicon window	
Internal temperature measurement		
Accuracy	±0.5	°C
Resolution	0.1	°C
Ethernet bus		
Standard	100Base-Tx	
PTP synchronization	IEEE1588 PTP v2	
Output transport layer	UDP	
Configuration interface	Embedded webserver	
Recording		
On-board data storage	8	GB
Max frequency	100	Hz
Max duration	100 Hz	2 h
	1 Hz	237 h
Electrical features		
Supply voltage	6.5 to 30	V
Supply current (at 12V supply)	80	mA
Mechanical features		
Dimensions (without brackets)	65.8x26.2x21.6	mm
Material	Aluminum	
Weight (without brackets)	40	g
Environment		
Protection	IP67	
Vibration test	40Gpp 5'	
Shock	500	G
Compensated temperature	0 to +80	°C
Operating temperature	-20 to +85	°C
Storage temperature	-40 to +125	°C

Date		Operator	
Customer			
Order			
Product Ref	MIB-PTP-8GB-E-200-53-###		
SW version	V#.#		

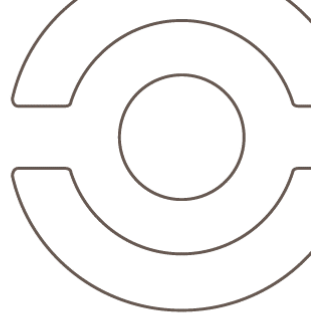
Connector: ASDD006-09PN-HE

Mating connector: ASDD60609SN-HE

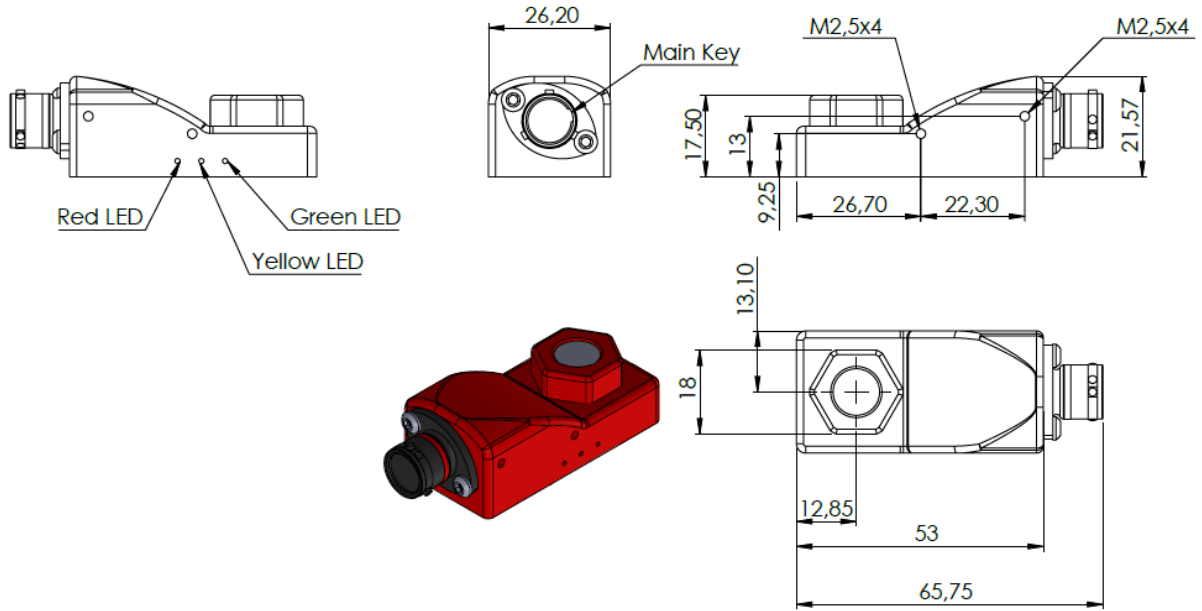
Pinout		
Function	Description	Pin
Supply	Supply	1
	GND	2
Ethernet	TX+	3
	TX-	4
	RX+	5
	RX-	6
Reserved	Reserved – Do not connect	7
	Reserved – Do not connect	8
PTP	PTP sync (TTL output)	9

Software setup	
IP address	192.168.0.1
Netmask	255.255.255.0
Gateway IP address	192.168.0.254
Output transport layer	UDP
Destination address	192.168.0.2
Destination port	55000
Output data rate	100 Hz

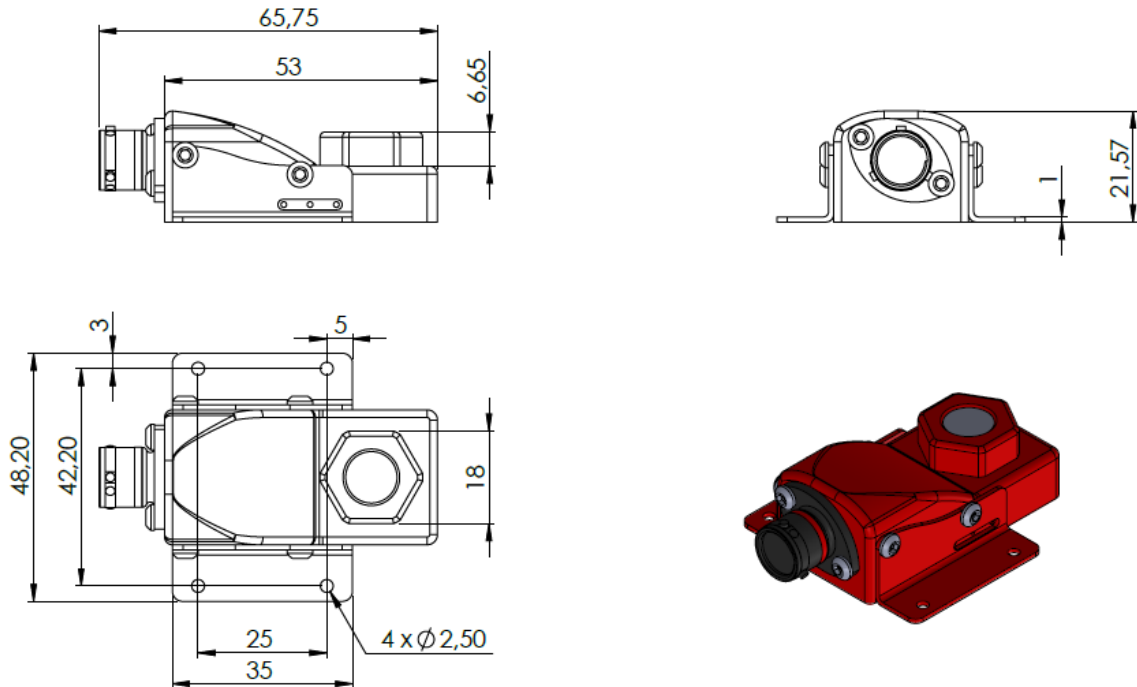
Sensor readings	
Target temperature	Average pixel readings
60°C	... °C
180°C	... °C

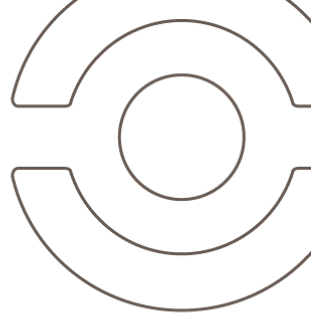


Mechanical drawing
Sensor alone

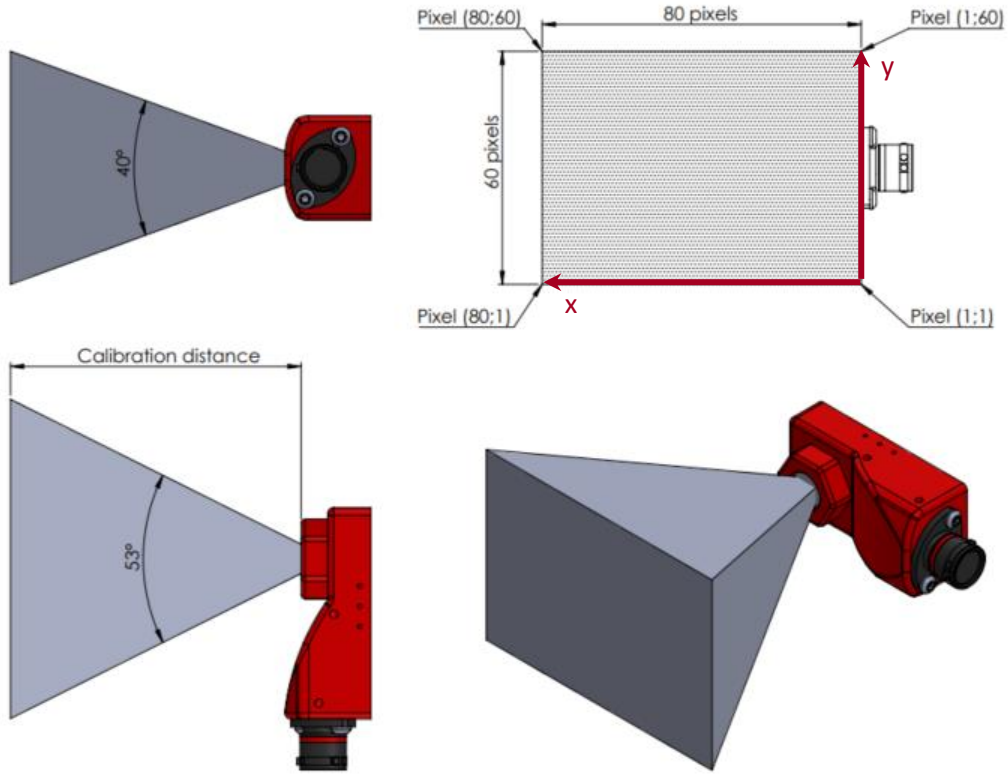


Sensor with mounting brackets (provided)

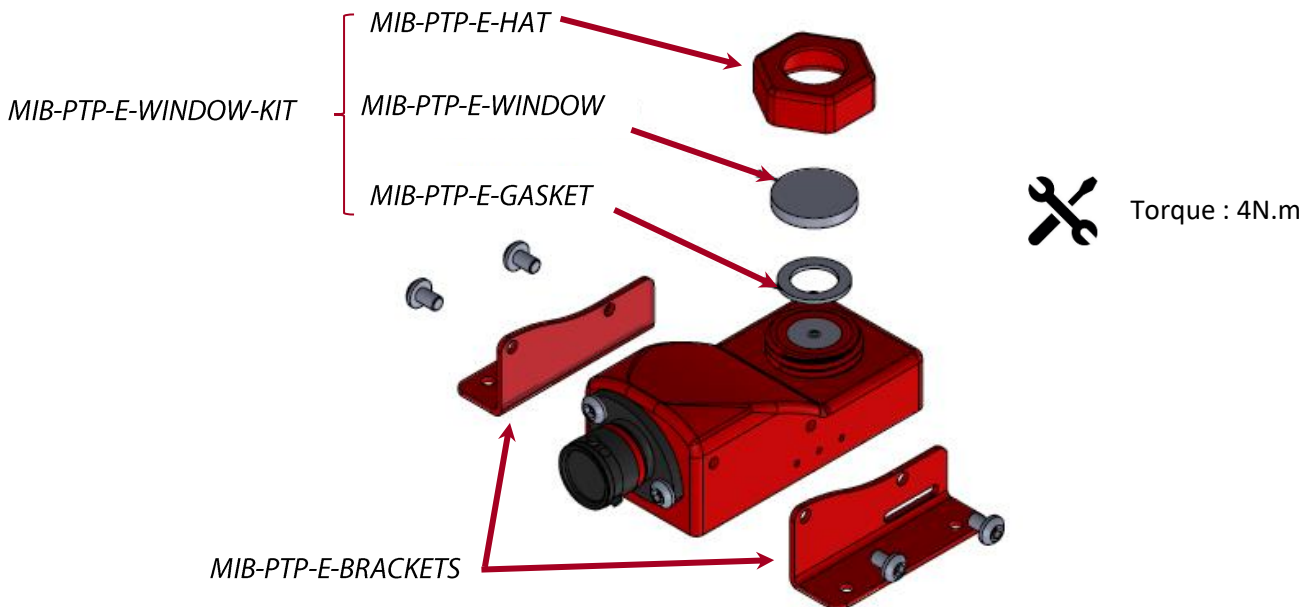


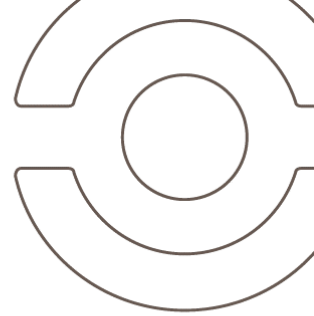


FOV (Field of view)



Replaceable window





Accuracy table

Accuracy table (%FS)			
Target temperature	Sensor ambient temperature		
	25 °C	40 °C	70 °C
≤20 °C	±2	±2	
30 °C	±1	±2	
80 °C	±1	±1	±2
100 °C	±1	±1	±1
180 °C	±1	±1	±1

Homogeneity (1σ spatial standard deviation °C)			
Target temperature	Sensor ambient temperature		
	25 °C	40 °C	70 °C
≤20 °C	1	1	
30 °C	0.5	0.5	
80 °C	0.5	0.5	0.5
100 °C	0.5	0.5	0.5
180 °C	1	1	1

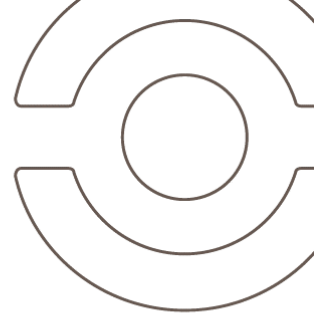
UDP output

Each frame can be sent over UDP protocol. Payload of the ethernet packet is detailed below. Each packet consists of a header containing timestamp of the frame, frame number, ambient temperatures and diagnostics. The raw content of the frame is separated from the header by a fixed unsigned int 32 bits value called "start of data delimiter". Then the raw image is inserted in the packet, pixel by pixel, scanning the image row by row. Each pixel is located thanks to two coordinates (x,y), where x represents the column coordinate and y represents the row coordinate. The overall size of the packet is 9632 Bytes, not counting TCP/IP header.

Bytes	Data	Type	Resolution / Value	
0->3	Frame header	Start of frame delimiter	0xFFFFFFFF	
4->7		Timestamp_s	Unsigned int 32bits	1 second per bit
8->11		Timestamp_ns	Unsigned int 32bits	1 nanosecond per bit
12->15		Reserved	2x Signed int 16bits	
16->17		Bolometer temperature	Signed int 16bits	0.1°C per bit
18->19		Microcontroller temperature	Signed int 16bits	0.1°C per bit
20->23		Diagnostics	Unsigned int 32bits	See "Diagnostic definition"
24->27		Frame_number	Unsigned int 32bits	1 frame per bit
28->31		Start of data delimiter	Unsigned int 32bits	0xEEEEEEEE
32->33	Frame data	Pixel(1;1)	Signed int 16bits	0.1°C per bit
34->35		Pixel(2;1)	Signed int 16bits	0.1°C per bit
...	
9630->9631		Pixel(80; 60)	Signed int 16 bits	0.1°C per bit

Timestamp of the frame can be calculated with the following formula:

$$\text{Timestamp (s)} = \text{Timestamp_s} + \text{Timestamp_ns} \times 10^{-9}$$



Diagnostics definition

Diagnostics flags are sent into the 32bits unsigned value with respect to the following table:

31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
															REC
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
											WCR			WRM	RST

Bit(s) name	Bit(s) position(s)	Description
REC	16	Recording flag, set when sensor is recording.
WCR	4	Internal flash is corrupted, sensor needs to be serviced.
WRM	1	This bit is set during warm-up phase at start-up for 20 seconds. Temperature readings accuracy during warm-up is not guaranteed.
RST	0	This bit is set during 10s after a reset.

Webserver

The sensor can be configured through the embedded webserver. To access the webserver, just type in sensor's IP on a computer connected to the same network in a web browser. The following features are available on the interface:

- Network parameters
- PTP state
- Bolometer state
- Visualize bolometer live stream
- Manage on-board data storage:
 - Start a recording
 - Change recording settings
 - Download a record from on-board data storage

MIB-PTP-E
SN I23118774

Version: 0.14

Network parameters

DHCP:

Address:

Netmask:

Gateway:

Send frame:

ODR:

To: -

Save

PTP state

Master clock_id : 8CA6-83FF-FEE0:0004

Sync clocked : Thu 1970-01-01 02:00:00 GMT

State : listening

Path delay : 0 ns

Offset : 0 ns

Drift : 0.000 ppm

PTPd : E2E P2P

TTL :

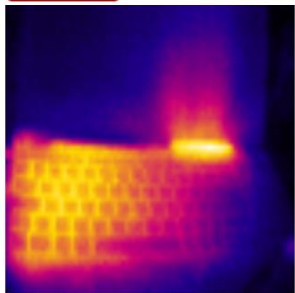
Save

Bolometer state

Description	Value
Recording	No
Bolometer temperature	28.3°C
Microcontroller temperature	38.5°C
Elapsed time	21min 32s
Frame size	80x60
Frame per second	99.9
Frames #	129036
Min.	25.0°C
Max.	47.5°C
Avg.	33.3°C
Homogeneity	22.5°C

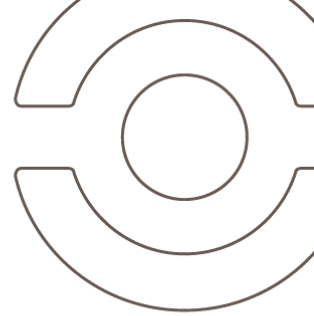
Start recording

Bolometer live stream



Zoom : 0%

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



Ordering information

Ordering ref:

MIB-PTP-8GB-E-200-53 - Distance

Calibration distance in mm

ex: MIB-PTP-8GB-E-200-53-150

Accessories

MIB-PTP-E-WINDOW: protective silicon window

MIB-PTP-E-LOOM-1M: 1 meter loom with RJ45 connector and flying leads for other pins

MIB-PTP-E-HAT: aluminum hat

MIB-PTP-E-GASKET: gasket placed between protective window and mechanical housing

MIB-PTP-E-WINDOW-KIT: kit composed of protective window, aluminum hat and gasket.

MIB-PTP-E-BRACKETS: kit of two mechanical brackets

Each product is delivered with a window kit fitted and 2 brackets to ease installation.