TESEN wireless temperature sensor

Precision sensing with Texas Instruments TMP117

Monitor temperatures remotely

TESEN combines TMP117 digital temperature sensing with Zigbee wireless connectivity. Connect to a Thermalog gateway for recorded readings and temperature alerts.

For fridges, freezers, coolrooms and ambient storage. Choose the installation location and battery for the temperatures being monitored.

Product specifications

Sensing element	Texas Instruments TMP117
TESEN operating range	-40 °C to 120 °C
Wireless protocol	Zigbee / IEEE 802.15.4 mesh
Wireless range	50 m indoors / 200 m outdoors
Battery	CR2450; 2+ year life
Dimensions / weight	35 × 35 × 12 mm / 50 g
Remote monitoring	Thermalog gateway required
Hardware warranty	2 years

Operating limits: -40 °C to 120 °C. Do not use TESEN outside this range. Use a battery suitable for the installation temperature. Range and battery life depend on placement, radio conditions and use.

Care: Keep the enclosure clean using a damp cloth or soft brush. Do not immerse it. Check wireless communication after installation or relocation.

Accuracy and measurement detail

TMP117 accuracy by temperature

TESEN operating range: -40 °C to 120 °C. The accuracy bands below use TI's TMP117 maximum error specifications, restricted to TESEN's operating range. Use the narrowest listed band that includes the temperature being measured.

Temperature band	Maximum chip error
-20 °C to 50 °C	±0.1 °C
-40 °C to 70 °C	±0.15 °C
-40 °C to 100 °C	±0.2 °C
-40 °C to 120 °C	±0.25 °C

Resolution: The chip produces a 16-bit result in 0.0078125 °C increments. Resolution describes the digital step size; it is not the same as accuracy or the precision shown in the dashboard.

How to interpret these ratings

TI specifies accuracy under the conditions in datasheet section 6.5, including 8 averages and a 1 Hz conversion cycle. The DRV package specification uses an unsoldered thermal pad. Supply and digital-input conditions also apply. These are component specifications, not a separate validation of the complete TESEN assembly.

Do not expose TESEN to temperatures below -40 °C or above 120 °C. Placement, thermal contact, temperature gradients and settling time influence complete-device readings.

Traceability and source

TI tests TMP117 devices using a NIST-traceable production setup. TI also lists ASTM E1112 and ISO 80601-2-56 for the chip. These statements do not constitute an individual TESEN calibration certificate or certification of TESEN as a medical device.

Source: Texas Instruments TMP117 datasheet, Rev. D, section 6.5.
Read the TI TMP117 datasheet