

EMS-TL-ST

Matched supply-and-return temperature pair, PT100, thermowell mounting

Two thin-film elements calibrated together on one record, for the supply and return channels of a loop

Two sensors bought separately carry two tolerances, and each ± 1 °F tolerance puts almost 50 % uncertainty on the 5–10 °F difference a loop capacity calculation depends on, so EMS-TL-ST is supplied as one matched pair calibrated together on one record. The element is a thin-film PT100 with an IEC 60751 Class A tolerance named by class, and the measuring range is the –40 to +150 °C industrial envelope. The failure it exists to catch is a correct loop reported as unverifiable because the two temperature channels never agreed.

ORDERING INFORMATION

Part number	EMS-TL-ST
Supplied as	One matched pair, two sensors on one calibration record
Element	Thin-film PT100
Tolerance class	IEC 60751 Class A, class name only
Measuring range	–40 to +150 °C
Mounting	Thermowell or compression fitting
Wetted material	316L stainless steel
Replacement	Order the pair, not one sensor

MEASUREMENT

Parameter	Value	Notes
Element	Thin-film PT100	Platinum resistance element, 100 Ω at 0 °C
Tolerance class	IEC 60751 Class A	Class name only
Temperature accuracy	Stated as an IEC 60751 class, not as a $\pm$ °C figure and not as a percent of range	The class tolerance in degrees is not published: the research did not verify it from a retrieved primary document
Measuring range	–40 to +150 °C	Industrial envelope of the element
Pairing	Both sensors calibrated together on one record and shipped as one pair	Same bath, same reference, same session, two serials on one sheet
Differential-temperature uncertainty	Two unmatched ± 1 °F sensors put almost 50 % uncertainty on a 5–10 °F difference	This row is the reason the pair exists; separate tolerances add
Channel naming	Supply and return as separate channels	Production CDU practice carries water-inlet and water-return as two plug-in channels
Quantity per part number	2 sensors	One supply channel and one return channel

INSTALLATION

Parameter	Value	Notes
Mounting	Thermowell or compression fitting	Wetted installation, so the pipe must be open at installation

Parameter	Value	Notes
Insertion length	Set by pipe DN	Confirmed against the pipe size and the thermowell depth on order
Wetted material	316L stainless steel	Free iron and plain carbon steel are excluded from the loop
Seal material	Peroxide-cured EPDM	Sulfur-cured EPDM is discouraged: the seal choice appears as sulfate in the fluid long before it appears as a drip
Brass rule	Brass only where dezincification resistance is verified to ISO 6509 at $\leq 100 \mu\text{m}$ depth	Brass above 15 % zinc carries annual ICP zinc analysis where it is wetted The $100 \mu\text{m}$ figure is a dezincification penetration depth under ISO 6509: it is not a protection rating, a commissioning staging step or an inlet strainer rating.
Ambient envelope of the unit it serves	0–40 °C operating, –40 to 70 °C storage	Published CDU envelope, quoted for context; the sensor's own measuring range is wider

CALIBRATION RECORD AND REPLACEMENT

Parameter	Value	Notes
Calibration record	One record covering both sensors	Two serial numbers on one sheet; the record travels with the pair
Record contents	Bath, reference and session, common to both sensors	The record does not carry a class tolerance in degrees
Replacement rule	Replacing one sensor of a pair breaks the pairing	Order the pair, not the sensor
Traceability of the reading	Both channels read on the same gateway and the same reference	Mixing pairs across two records returns the loop to two independent tolerances

APPLICATIONS

- Supply and return temperature channels on a rack, row or room loop
- ΔT and capacity verification, where the difference is the measurement of record
- Loops where the two temperature channels must be auditable against one document

COMPATIBLE WITH

- EMS-TL-K100, EMS-TL-K300, EMS-TL-K800 and EMS-TL-K2300 kits
- EMS-TL-G10, EMS-TL-G25 and EMS-TL-G50 gateways, universal input channels
- EMS-TL-SDP, EMS-TL-SF, EMS-TL-SFU, EMS-TL-SL and EMS-TL-SK instruments

SCOPE

- Sensors and their calibration record: coolant distribution units and cold plates are outside this scope

TEMPERATURE INSTRUMENT LADDER

Parameter	Value	Notes
EMS-TL-ST	Matched supply-and-return pair, wetted	Thermowell or compression fitting
EMS-TL-STC	Matched clamp-on surface pair	Retrofit where the pipe cannot be opened

NOTES

- The element tolerance class is named as IEC 60751 Class A. The class tolerance in degrees is not published because the research did not verify it from a retrieved primary document.
- A pair is two sensors off one calibration record. Buying one replacement sensor returns the loop to two independent tolerances and the differential uncertainty goes back above 50 % on a 5–10 °F difference.
- An IP rating is not specified for this product class; the sensing element is a wetted probe and the enclosure rating of the connection head is not published in the retrieved material.
- Certification names are published on the badge cards; approval documents are shown on request.
- Scope: no coolant distribution units and no cold plates.

Full specification sheet and current pricing	EMS-TL-ST
EMS-Trade Cooling · ems-cool.com	Rev. A
Typical lead time confirmed on order acknowledgement.	2026-09-19