

# EMS-TL-K800

## Loop telemetry kit, row up to 800 kW

Matched pair, flow, two differential-pressure ranges, point and analogue level, and leak channels for a row-class loop

K800 keeps the matched, calibrated temperature pair on one record as one part number, because two unmatched sensors at  $\pm 1$  °F put almost 50 % uncertainty on a 5–10 °F supply-to-return difference at any loop size. It covers the 90 GPM ( $\approx 340$  L/min) secondary-flow class with an electromagnetic flow run, carries both the 0–100 kPa filter range and the 0–400 kPa loop range, and adds analogue reservoir level beside the optical point switch. The failure it exists to catch is a level trend that a point switch cannot see until the reservoir is already empty.

### ORDERING INFORMATION

|                              |                                                          |
|------------------------------|----------------------------------------------------------|
| Part number                  | EMS-TL-K800                                              |
| Loop class                   | Row, up to 800 kW                                        |
| Loop flow covered            | 90 GPM secondary class ( $\approx 340$ L/min)            |
| Differential-pressure ranges | 0–100 kPa filter duty and 0–400 kPa loop duty            |
| Level channels               | Optical point switch plus analogue reservoir level       |
| Temperature range            | –40 to +150 °C                                           |
| Flow accuracy                | $\pm 0.5$ % of reading standard, over 20–100 % of flow   |
| Gateway                      | Ordered separately: EMS-TL-G10, EMS-TL-G25 or EMS-TL-G50 |

### KIT IDENTIFICATION AND LOOP SIZING

| Parameter                     | Value                                         | Notes                                                                      |
|-------------------------------|-----------------------------------------------|----------------------------------------------------------------------------|
| Kit part number               | EMS-TL-K800                                   | One part number; every channel below ships as one delivered set            |
| Loop class                    | Row, up to 800 kW                             | Sized from the loop class, then from the flow it must cover                |
| Loop flow range to be covered | 90 GPM secondary class ( $\approx 340$ L/min) | Taken from published CDU secondary-flow classes                            |
| Kit boundary                  | Instruments and consumables for the loop      | No coolant distribution units and no cold plates                           |
| Gateway                       | Not included on this code                     | Add EMS-TL-G10, G25 or G50 where the loop has no BMS point list of its own |

### TEMPERATURE CHANNEL (MATCHED PAIR)

| Parameter                            | Value                                                                                | Notes                                                                                                             |
|--------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| Temperature channel                  | Matched supply-and-return pair, thin-film PT100                                      | Both elements calibrated together on one record and shipped as one pair                                           |
| Temperature accuracy                 | IEC 60751 Class A element tolerance, class name only                                 | The class tolerance in degrees is not published: the research did not verify it from a retrieved primary document |
| Differential-temperature uncertainty | Two unmatched $\pm 1$ °F sensors put almost 50 % uncertainty on a 5–10 °F difference | Pairing is the specification, not the element class                                                               |
| Temperature measuring range          | –40 to +150 °C                                                                       | Industrial envelope of the element                                                                                |

| Parameter        | Value                                             | Notes                                     |
|------------------|---------------------------------------------------|-------------------------------------------|
| Channel naming   | <b>Supply and return as two separate channels</b> | Matches production CDU channel practice   |
| Replacement rule | <b>Order the pair, not one sensor</b>             | One replacement sensor breaks the pairing |

## FLOW CHANNEL

| Parameter                  | Value                                                                               | Notes                                                                                                         |
|----------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Flow channel               | <b>Electromagnetic flow run drawn from the DN10–DN1000 family, DN25 kit default</b> | Line size is selected so the loop's flow lands inside the velocity band                                       |
| Flow range at DN25         | <b>0.5–18 m³/h (≈8–300 L/min), turndown ≈36:1</b>                                   | The 90 GPM class sits above a single DN25 run's upper limit, so the run is drawn larger and quoted on request |
| Flow accuracy              | <b>±0.5 % of reading standard; ±0.2 % of reading special</b>                        | Percent of reading, not percent of full scale. Specified over 20–100 % of flow at 10 m/s                      |
| Minimum fluid conductivity | <b>5 µS/cm</b>                                                                      | Below the floor the meter reads near zero without raising a fault; use EMS-TL-SFU on a de-ionised loop        |
| Velocity band              | <b>0.3–10 m/s; low-flow cut-off about 0.1 m/s</b>                                   | Optimal accuracy near 2–4 m/s                                                                                 |
| Straight-run requirement   | <b>5× DN upstream and 3× DN downstream</b>                                          | Omitting the runs adds about 1.5 % of reading                                                                 |
| Flow accuracy basis        | <b>ISO 20456:2020-03</b>                                                            | Reference basis stated by the meter documentation                                                             |

## DIFFERENTIAL PRESSURE, LEVEL AND LEAK CHANNELS

| Parameter                       | Value                                                                      | Notes                                                                                                                                                                                       |
|---------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Differential-pressure channels  | <b>0–100 kPa filter duty and 0–400 kPa loop duty</b>                       | Filter health and loop pressure drop move on different scales                                                                                                                               |
| Differential-pressure accuracy  | <b>±0.075 % FS standard; ±0.05 % FS high accuracy</b>                      | Percent of full scale, not percent of reading                                                                                                                                               |
| Static-pressure effect          | <b>±1 % URL per 6.9 MPa on the lowest range; ±0.25 % on most others</b>    | A range that reads well on a rack loop can under-perform on a high-static facility loop Stated as a percent of the upper range limit and as a percent of span, not as a percent of reading. |
| Differential-pressure stability | <b>±0.1 % of maximum range per 12 months</b>                               | Transmitter drift only                                                                                                                                                                      |
| Level channels                  | <b>Optical reflective-prism point switch plus analogue reservoir level</b> | Reservoir, condensate and leakage level are three separate jobs and stay on three separate channels                                                                                         |
| Analogue level accuracy         | <b>Not published in the retrieved material</b>                             | Quoted on request against the supplier data sheet; no figure is estimated here                                                                                                              |
| Leak channels                   | <b>2 channels</b>                                                          | 2-wire rope detects; 4-wire rope detects and locates                                                                                                                                        |
| Alarm logic                     | <b>Two-of-two for automatic intervention</b>                               | Either sensor alone alarms; both together permit intervention                                                                                                                               |

## MATERIALS, SUPPLY AND ENVIRONMENT

| Parameter                       | Value                                                                              | Notes                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Wetted materials                | <b>316L stainless steel, peroxide-cured EPDM</b>                                   | Brass only where dezincification resistance is verified to ISO 6509 at $\leq 100 \mu\text{m}$ depth 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. |
| Supply                          | <b>24 VAC/DC at the gateway; 10–36 V DC or 90–260 V AC at the flow transmitter</b> | Two supplies because the devices are separate                                                                                                                                                                                                                                    |
| Gateway operating envelope      | <b>–20 to 60 °C, 5–95 % RH non-condensing</b>                                      | Applies to the EMS-TL-G enclosure; no enclosure IP rating is published for it                                                                                                                                                                                                    |
| Fluid this kit is specified for | <b>Glycol-premix or facility-water loop</b>                                        | Conductivity 50–300 $\mu\text{S/cm}$ and pH 7.0–9.0 on this loop type                                                                                                                                                                                                            |

## APPLICATIONS

- Row instrumentation where the reservoir is large enough to trend rather than to switch
- Filter health and loop pressure-drop control on two separate ranges
- Make-up water accounting: fill-pump activity longer than 5 s after commissioning raises alarm A30, Check fluid Make up Level
- Leak supervision across a row manifold

## CHANNELS DELIVERED

- Temperature: matched supply-and-return PT100 pair on one calibration record
- Flow: electromagnetic run, DN25 default range 0.5–18  $\text{m}^3/\text{h}$
- Differential pressure: 0–100 kPa and 0–400 kPa ranges,  $\pm 0.075 \%$  FS standard
- Level: optical point switch plus analogue reservoir level
- Leak: two channels, 4-wire rope detects and locates

## COMPATIBLE WITH

- EMS-TL-ST and EMS-TL-STC temperature pairs
- EMS-TL-SF and EMS-TL-SFU flow instruments
- EMS-TL-SDP differential-pressure transmitter
- EMS-TL-SL level devices and EMS-TL-SK leak channel input module
- EMS-TL-G10, EMS-TL-G25 and EMS-TL-G50 gateways

## SCOPE

- Instrumentation for the loop: coolant distribution units and cold plates are outside this scope

## KIT LADDER BY LOOP CLASS

| Parameter    | Value                                                                                         | Notes                                                                        |
|--------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| EMS-TL-K100  | <b>Single rack, up to 100 kW · 10–100 L/min</b>                                               | Matched pair, one flow run, DP 0–100 kPa, level point switch, 1 leak channel |
| EMS-TL-K300  | <b>Row, 100–300 kW · 20 GPM (<math>\approx 75 \text{ L/min}</math>) secondary class</b>       | Adds DP 0–400 kPa and a second leak channel                                  |
| EMS-TL-K800  | <b>Row, up to 800 kW · 90 GPM (<math>\approx 340 \text{ L/min}</math>) secondary class</b>    | Adds analogue reservoir level                                                |
| EMS-TL-K2300 | <b>Room, 2.3 MW class · up to 340 GPM (<math>\approx 1300 \text{ L/min}</math>) secondary</b> | Adds 4 leak channels and a second flow run                                   |

NOTES

- The kit is our own configuration of the documented sensor, transmitter and gateway models listed under Compatible with.
- Analogue level accuracy is not published in the retrieved material and no figure is estimated on this datasheet; it is quoted on request.
- Flow accuracy is percent of reading and differential-pressure accuracy is percent of full scale; the two bases are labelled separately.
- A flow instrument specified at 15 % propylene glycol does not behave the same at 55 %: viscosity at 20 °C runs 1.68 mPa·s at 15 % against 8.20 mPa·s at 55 %, which moves turndown and the low-flow cut-off.
- Certification names are published on the badge cards; approval documents are shown on request.
- Scope: no coolant distribution units and no cold plates.

|                                                                     |                    |
|---------------------------------------------------------------------|--------------------|
| <b>Full specification sheet and current pricing</b>                 | <b>EMS-TL-K800</b> |
| EMS-Trade Cooling · <a href="https://ems-cool.com">ems-cool.com</a> | Rev. A             |
| Typical lead time confirmed on order acknowledgement.               | 2026-09-19         |