

EMS-TL-SFU

Ultrasonic transit-time flow meter, low-conductivity loops

Clamp-on or in-line ultrasonic flow instrument for de-ionised and low-glycol loops that sit below the electromagnetic conductivity floor

EMS-TL-SFU exists because the electromagnetic meter needs 5 $\mu\text{S}/\text{cm}$ and ASHRAE's technology-cooling conductivity band reaches down to 0.2 $\mu\text{S}/\text{cm}$, so a de-ionised loop can sit under that floor and read near zero without a fault. It uses ultrasonic transit-time measurement with no minimum conductivity requirement, and the in-line build gives better low-flow performance than the clamp-on build. The failure it exists to catch is a flow channel on a DI loop that reports a plausible number while the fluid is outside the principle's operating window.

ORDERING INFORMATION

Part number	EMS-TL-SFU
Principle	Ultrasonic transit-time
Variants	Clamp-on and in-line
Line size family	DN25–DN600
Minimum medium conductivity	None specified
Accuracy	Quoted on request against the supplier data sheet
Turndown	Quoted on request against the supplier data sheet
Enclosure rating	Quoted on request against the supplier data sheet

MEASUREMENT

Parameter	Value	Notes
Principle	Ultrasonic transit-time	Time-of-flight difference between upstream and downstream paths
Minimum medium conductivity	None specified	This is the reason the model exists beside the 5 $\mu\text{S}/\text{cm}$ floor of the electromagnetic instrument EMS-TL-SF
Variants	Clamp-on and in-line	Clamp-on is non-invasive; in-line is a full-bore build
Low-flow behaviour	In-line transit-time gives better low-flow performance than clamp-on	The clamp-on path crosses the pipe wall twice, which costs signal at low velocity
Line size family	DN25–DN600	Outside this family, flow is quoted on request
Flow accuracy	Not published in the retrieved material	Quoted on request against the supplier data sheet. No figure is estimated here, and whether a quoted figure is percent of reading or percent of full scale is stated with the quotation
Turndown	Not published in the retrieved material	Quoted on request against the supplier data sheet
Repeatability	Not published in the retrieved material	Quoted on request against the supplier data sheet
Fluid temperature range	Not published in the retrieved material	Quoted on request against the supplier data sheet, against the loop's fluid temperature

INSTALLATION

Parameter	Value	Notes
Clamp-on prerequisites	Acoustic coupling, a known wall thickness and a known sound speed	The instrument cannot compute flow without all three; pipe material and schedule must be confirmed on site
In-line prerequisites	Full-bore spool piece in the line	The pipe must be opened, so this build is chosen at build time rather than at retrofit
Retrofit	Clamp-on needs no pipe opening	The in-line build gives better low-flow performance where the pipe can be opened
Straight runs	Specified upstream and downstream runs apply to both builds	The figures are quoted on request against the supplier data sheet
Mounting position	Per the supplier installation instructions	Upstream disturbances and air pockets are the two installation conditions that move the reading

ELECTRICAL AND MATERIALS

Parameter	Value	Notes
Output	Not published in the retrieved material	Quoted on request against the supplier data sheet
Supply	Not published in the retrieved material	Quoted on request against the supplier data sheet
Enclosure rating	Not published in the retrieved material	Quoted on request against the supplier data sheet
Wetted materials, in-line build	Not published in the retrieved material	Quoted on request against the supplier data sheet; 316L stainless steel is the loop's baseline wetted material
Turndown and the fluid	Turndown and low-flow cut-off move with glycol concentration	Viscosity at 20 °C runs 1.68 mPa·s at 15 % propylene glycol, 2.48 mPa·s at 25 % and 8.20 mPa·s at 55 %

LOOP COMPATIBILITY

Parameter	Value	Notes
Loop type this instrument suits	De-ionised or low-glycol technology cooling loop	Conductivity 0.2–20 µS/cm and pH 8.0–9.5 on this loop type
Loop type it also serves	Glycol-premix loop where the conductivity floor is already met	The electromagnetic instrument EMS-TL-SF remains the tighter specification above 5 µS/cm
Companion loop fluid	EMS-CL-DIW, de-ionised water for flush and low-conductivity duty	The DI loop is the case the electromagnetic meter cannot cover
Instrument pairing	Wire to the same gateway point list as ΔT and differential pressure	Capacity cannot be computed from ΔT alone or flow alone

APPLICATIONS

- De-ionised and low-glycol loops that sit below the electromagnetic conductivity floor
- Retrofit flow measurement where the pipe cannot be opened, using the clamp-on build
- Loops where the low-flow end of the range matters more than the top end, using the in-line build

COMPATIBLE WITH

- EMS-TL-K100, EMS-TL-K300, EMS-TL-K800 and EMS-TL-K2300 kits, as the flow run in place of EMS-TL-SF
- EMS-TL-G10, EMS-TL-G25 and EMS-TL-G50 gateways
- EMS-TL-SDP differential-pressure transmitter
- EMS-CL-DIW de-ionised water

SCOPE

- Flow instrument only: coolant distribution units and cold plates are outside this scope

FLOW INSTRUMENT LADDER

Parameter	Value	Notes
EMS-TL-SF	Electromagnetic, DN10–DN1000 family	Needs $\geq 5 \mu\text{S/cm}$; $\pm 0.5 \%$ of reading standard
EMS-TL-SFU	Ultrasonic transit-time, DN25–DN600 family	No minimum conductivity; clamp-on or in-line
EMS-TL-SDP	Differential-pressure transmitter	1 kPa to 10 MPa nominal ranges; $\pm 0.075 \%$ FS standard

NOTES

- Rows beyond the principle, the line size family and the low-conductivity rationale are quoted on request against the supplier data sheet, because the retrieved material does not carry verified figures for them.
- No accuracy figure is published on this datasheet. When a figure is quoted, it states whether it is percent of reading or percent of full scale.
- Clamp-on installation requires acoustic coupling and a known wall thickness and sound speed; without them the instrument cannot compute flow.
- Turndown and low-flow cut-off move with glycol concentration, so the blend the loop will finally run must be stated at order.
- 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-Trade Cooling · ems-cool.com Typical lead time confirmed on order acknowledgement.	EMS-TL-SFU Rev. A 2026-09-19
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