

EMS-CF-FP-FL

Full-bore electromagnetic flow meter, DN25–DN600, $\pm 0.75\%$ of rate

Loop flow verification at the pump discharge or on the main header

A full-bore electromagnetic flow meter covering 1–24 in (DN25–DN600) with an accuracy of $\pm 0.75\%$ of rate, a minimum fluid conductivity of 5 $\mu\text{S}/\text{cm}$, a velocity ceiling of about 20 m/s and a 290 psi (≈ 20 bar) pressure rating. Output is 4–20 mA plus pulse, the body is carbon steel with 150# ANSI flanges and a chloroprene liner, and the liquid temperature range is -25 to 80°C (-13 to 176°F). It exists to show that the loop is delivering the flow the schedule calls for, and it will not read a de-ionised line that sits below its conductivity floor.

ORDERING INFORMATION

Part number	EMS-CF-FP-FL
Instrument	Full-bore electromagnetic flow meter
Line sizes	1–24 in (DN25–DN600)
Accuracy	$\pm 0.75\%$ of rate
Minimum fluid conductivity	5 $\mu\text{S}/\text{cm}$
Pressure rating	290 psi (≈ 20 bar)
Output	4–20 mA plus pulse
Turndown ratio	Open — confirmed at order

MEASUREMENT

Parameter	Value	Notes
Measurement principle	Electromagnetic (magnetic) flow measurement	Needs a conductive fluid; the minimum conductivity below is the selection gate
Line sizes	1–24 in (DN25–DN600)	Published range across the full-bore family
Accuracy	$\pm 0.75\%$ of rate	Percent of reading, not percent of full scale. The figure applies to a meter installed to the specified upstream and downstream straight pipe runs
Measuring range	Open — not published	The source research publishes no measuring span for this meter; the accuracy figure and the velocity ceiling are the published rows
Minimum fluid conductivity	5 $\mu\text{S}/\text{cm}$	The meter needs at least this conductivity to read at all
Loop types against the conductivity floor	Glycol-premix or facility-water loop: 50–300 $\mu\text{S}/\text{cm}$, clears the floor. De-ionised technology cooling loop: 0.2–20 $\mu\text{S}/\text{cm}$, straddles it	On a de-ionised technology cooling loop the meter can sit at or below its detection floor and read zero; the loop type decides whether a magnetic meter is the right instrument
Velocity	Up to about 20 m/s	Published ceiling; a derived check puts 1.66 L/s through a DN25 bore at about 3.4 m/s
Turndown ratio	Open — not published	No turndown figure is published for this meter; confirmed against the supplier document at order
Calibration interval	Open — not published	No interval is published in the source research; confirmed at order
Installation condition	Specified straight pipe runs upstream and downstream	A meter installed without them loses more accuracy than its own specification claims; run lengths confirmed at order

PROCESS, MATERIALS AND SIGNAL

Parameter	Value	Notes
Pressure rating	290 psi (≈20 bar)	Published rating for the meter body
Liquid temperature	–25 to 80 °C (–13 to 176 °F)	Published process temperature range
Wetted materials	Carbon steel body, 150# ANSI flanges, chloroprene liner, 316 stainless-steel grounding rings	Full published wetted-material list
Process connection	150# ANSI flanges	Flange class published; the line size sets the flange size
Output signal	4–20 mA plus pulse	Published output set
Protocol	Pulse output; no digital bus protocol published	A bus protocol is not published for this meter; confirmed at order
Supply voltage	Open — not published	The source research publishes no supply figure for this meter; confirmed at order
Ingress protection	IP65, with an IP68 sensor option	Published rating and option

FLUID CONDITION THAT CHANGES THE READING

Parameter	Value	Notes
Glycol concentration effect on viscosity	Roughly 1.7 to 8.2 mPa·s between 15% and 55% propylene glycol at 20 °C	Viscosity rises steeply with glycol concentration, so a meter's behaviour at 55% is different from its behaviour at 15%; verify the mix before judging a flow reading
Design basis to check against	25% v/v propylene glycol (PG25)	Verified with EMS-CF-WQ-G
Differential-pressure measurement pairing	Flow shows the symptom; differential pressure shows the cause	Differential pressure moves first on a loading element, which is why the two instruments are specified together
Element change-out trigger served	35 psid (2.4 bar)	The ΔP point this meter's reading is read against

BANDS THIS INSTRUMENT IS READ AGAINST, BY LOOP TYPE

Parameter	Value	Notes
Conductivity band, glycol-premix or facility-water loop	50–300 μS/cm	Clears the 5 μS/cm floor with margin; the loop type is named because the floor is a selection gate
Conductivity band, de-ionised technology cooling loop	0.2–20 μS/cm	Straddles the floor: the top of this band clears 5 μS/cm and the bottom does not
pH band, glycol-premix or facility-water loop	7.0–9.0 pH	Set by the metallurgy of the loop
pH band, de-ionised technology cooling loop	8.0–9.5 pH	The technology cooling side of the ASHRAE split loop
Side-stream divert figure this meter verifies	5–15% of circulating loop volume	Full-bore metering on the header and compact metering on the branch are read together

APPLICATIONS

- Loop flow verification at the pump discharge
- Main header flow at ±0.75% of rate

- Branch balancing where a published accuracy is required
- Flow trend read beside an element differential pressure

COMPATIBLE PRODUCTS

- EMS-CF-FP-FC compact meter on the side-stream branch
- EMS-CF-FP-DP liquid-service element differential-pressure monitor
- EMS-CF-FP-K filter performance monitoring installation kit
- EMS-CF-WQ-G glycol refractometer to confirm the mix behind the reading

FLOW AND DIFFERENTIAL-PRESSURE LADDER

Parameter	Value	Notes
EMS-CF-FP-FL	Full-bore magnetic flow meter	1–24 in (DN25–DN600); ±0.75% of rate
EMS-CF-FP-FC	Compact magnetic flow meter	DN 4, 8, 15, 25; 0.14–1.66 L/s
EMS-CF-FP-D1	Low-range ΔP transmitter	±125 Pa; does not span a liquid element window
EMS-CF-FP-D5	Low-range ΔP transmitter	±500 Pa; does not span a liquid element window
EMS-CF-FP-DP	Liquid-service element ΔP monitor	2 psid clean to 60 psid maximum
EMS-CF-FP-K	Filter performance monitoring installation kit	Static pressure tip, connector, valve

NOTES

- Accuracy is published as percent of reading, not percent of full scale, and it holds only for a meter installed with the specified straight pipe runs.
- A magnetic flow meter needs at least 5 μS/cm. The glycol-premix or facility-water band (50–300 μS/cm) clears that floor; the de-ionised technology cooling loop band (0.2–20 μS/cm) straddles it, so the loop type decides whether this meter can read at all.
- Turndown ratio, measuring range, supply voltage and calibration interval are not published in the source research. Those rows stay open and are confirmed against the supplier document at order.
- Viscosity rises from roughly 1.7 to 8.2 mPa·s between 15% and 55% propylene glycol at 20 °C, so the glycol concentration is verified before a flow reading is judged.

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