

ABB PROCESSMASTER

FEP630

Electromagnetic Flowmeter

Condensed product and selection datasheet



DN3-DN2000

±0.4% standard

IP65/67 | IP68

HART 7.6 | ETHERNET

Manufacturer: ABB | Product family: ProcessMaster

Technical content condensed from ABB DS/FEP630-EN Rev. K (June 2025).

Final specifications depend on size, flange, material, mounting, output, calibration and approval options.

Product overview

A high-functionality electromagnetic flowmeter for demanding industrial and process applications.

ABB ProcessMaster FEP630 combines accurate full-bore flow measurement with broad material choices, hazardous-area configurations, advanced process diagnostics and extensive digital communication.

Key standard capabilities

- Bidirectional liquid measurement across DN3-DN2000.
- Standard 0.4% pulse-output accuracy; options to 0.2%.
- Onboard fingerprint-based sensor and transmitter health check.
- Grounding/noise check and clear-text diagnostic messages.
- Four-button backlit display with Through-the-Glass setup.
- Backwards-compatible wiring and operating philosophy.
- HART standard with fieldbus and industrial-Ethernet options.



Measurement principle

A conductive liquid moving through a magnetic field generates a voltage under Faraday's law. Opposed electrodes detect this voltage, which is proportional to average flow velocity. The transmitter converts it into flow, totalizer, analog and digital values.

FEP630 models

Model	Configuration	Transmitter	Nominal size	Protection
FEP631	Integral mount	Integrated FET632	DN3-DN2000	IP65/IP67
FEP632	Remote sensor	Remote FET632	DN3-DN2000	IP65/IP67/IP68 sensor

Applications

- Chemical and corrosive-liquid service.
- Power, cooling water and lime/coal slurry.
- Mining and abrasive hydraulic transport.
- Pulp and paper stock up to 4%.
- Oil and gas, high-pressure and hygienic duties.

Selection limits

- Minimum conductivity: >5 $\mu\text{S}/\text{cm}$.
- 20 $\mu\text{S}/\text{cm}$ stated for demineralized water.
- Measuring tube must remain completely full.
- Not suitable for gases, steam or non-conductive liquids.
- Verify liner, electrodes, pressure and approvals.

Measuring performance - DN3 to DN300

The configured full-scale flow can be set between $0.02 \times Q_{\max DN}$ and $2 \times Q_{\max DN}$.

Range interpretation: lower and upper columns are configurable limits. $Q_{\max DN}$ is the nominal reference flow at approximately 10 m/s.

DN	Size	Lower range	$Q_{\max DN}$	Upper range
3	1/10 in	0.08 L/min	4 L/min	8 L/min
4	5/32 in	0.16 L/min	8 L/min	16 L/min
6	1/4 in	0.4 L/min	20 L/min	40 L/min
8	5/16 in	0.6 L/min	30 L/min	60 L/min
10	3/8 in	0.9 L/min	45 L/min	90 L/min
15	1/2 in	2 L/min	100 L/min	200 L/min
20	3/4 in	3 L/min	150 L/min	300 L/min
25	1 in	4 L/min	200 L/min	400 L/min
32	1 1/4 in	8 L/min	400 L/min	800 L/min
40	1 1/2 in	12 L/min	600 L/min	1,200 L/min
50	2 in	1.2 m ³ /h	60 m ³ /h	120 m ³ /h
65	2 1/2 in	2.4 m ³ /h	120 m ³ /h	240 m ³ /h
80	3 in	3.6 m ³ /h	180 m ³ /h	360 m ³ /h
100	4 in	4.8 m ³ /h	240 m ³ /h	480 m ³ /h
125	5 in	8.4 m ³ /h	420 m ³ /h	840 m ³ /h
150	6 in	12 m ³ /h	600 m ³ /h	1,200 m ³ /h
200	8 in	21.6 m ³ /h	1,080 m ³ /h	2,160 m ³ /h
250	10 in	36 m ³ /h	1,800 m ³ /h	3,600 m ³ /h
300	12 in	48 m ³ /h	2,400 m ³ /h	4,800 m ³ /h

Accuracy

Standard pulse output: $\pm 0.4\%$ of measured value plus $\pm 0.02\%$ $Q_{\max DN}$. Optional $\pm 0.3\%$ for DN3-DN600 and DN800; optional $\pm 0.2\%$ for DN10-DN600 and DN800.

Dynamic performance

Repeatability: $\leq 0.11\%$ of measured value at $t_{\text{meas}} = 100$ s and $v = 0.5$ -10 m/s.
Current-output response to 99% is at least 200, 400 or 500 ms depending on excitation frequency.

Current-output accuracy equals the applicable pulse-output accuracy plus $\pm 0.1\%$ of measured value and ± 0.01 mA.

Measuring performance - DN350 to DN2000

Large-diameter FEP630 configurable metric flow ranges.

DN	Size	Lower range	QmaxDN	Upper range
350	14 in	66	3,300	6,600
400	16 in	90	4,500	9,000
450	18 in	120	6,000	12,000
500	20 in	132	6,600	13,200
600	24 in	192	9,600	19,200
700	28 in	264	13,200	26,400
760	30 in	312	15,600	31,200
800	32 in	360	18,000	36,000
900	36 in	480	24,000	48,000
1000	40 in	540	27,000	54,000
1050	42 in	616	30,800	61,600
1100	44 in	660	33,000	66,000
1200	48 in	840	42,000	84,000
1400	54 in	1,080	54,000	108,000
1500	60 in	1,260	63,000	126,000
1600	66 in	1,440	72,000	144,000
1800	72 in	1,800	90,000	180,000
2000	80 in	2,280	114,000	228,000

Sizing item	FEP630 guidance
Units	All flow values in the table above are m ³ /h.
Configuration	Range is configurable from $0.02 \times Q_{\max DN}$ to $2 \times Q_{\max DN}$.
Velocity guide	The lower, nominal and upper references are approximately 0.2, 10 and 20 m/s.
Large-meter body	DN450-DN2000 uses a painted welded-steel sensor housing.
Support	Devices above DN400 require a strong foundation with edge-positioned supports.
Installation length	Sensor length is based on ISO 13359; confirm exact selected configuration.

Sensor and process specifications

FEP630 limits depend on selected size, pressure class, liner, electrodes, temperature and approval.

Functional specification

Parameter	FEP630 specification
Nominal diameter	DN3-DN2000
Measuring medium	Conductive liquids
Minimum conductivity	>5 µS/cm; 20 µS/cm for demineralized water
Process temperature	Standard range to 130 °C; high-temperature options to 180 °C
Sensor ambient	Configuration-dependent; generally -10 to -25 °C minimum and 60 °C maximum; low-temperature options to -40 °C
Pressure rating	PN6-PN100; ASME Class 150-2500 plus listed regional standards
Process connection	Flanged connections to DIN/EN, ASME, JIS, AS2129 and AWWA
Flow direction	Bidirectional; forward is factory default
Protection	Integral IP65/IP67; remote sensor IP65/IP67/IP68; NEMA 4X

Materials of construction

Component	Standard / option
Hard / soft rubber	Hard DN25-DN2000; soft DN50-DN2000
PTFE / PFA	PTFE DN10-DN600; PFA DN3-DN200
ETFE	DN25-DN600
Special liners	Ceramic Carbide DN25-DN1000; Linatex DN50-DN600
Electrodes	Stainless steel, Hastelloy B/C, Pt-Ir, tantalum, titanium and tungsten carbide
Process connection	Steel or stainless steel
Sensor housing	Cast aluminium DN3-DN400; welded steel DN450-DN2000
Meter tube	Stainless steel
Terminal box	Painted aluminium; plastic or stainless-steel options

Process connections

Connection family	Available FEP630 ratings / standards
EN / DIN	PN6 to PN100
ASME	Class 150 to Class 2500
JIS	5K to 20K
AWWA C207	Classes B, D and E
Australian	AS2129 Table D / E and listed AS flanges

Approvals and certificates

Approval / document	Availability
Pressure equipment	PED 2014/68/EU, Category III, fluid group 1
Explosion protection	ATEX / IECEx Zones 1, 2, 21 and 22
North America	FM / cFM Division and Zone configurations
CRN	Available on request
Inspection	EN 10204 3.1 ordering option
Functional safety	SIL2 certificate ordering option

Temperature capability varies by liner, flange material, integral/remote design and hazardous-area approval. Confirm the complete selected code before ordering.

Transmitter, outputs and diagnostics

FET632 functionality is integrated in FEP631 and remotely mounted with FEP632.

Power and outputs

Item	Specification
AC supply	100-240 V AC (-15%/+10%), 47-64 Hz, <20 VA
DC supply	16.8-30 V DC, ripple <5%, <20 W
Current output	4-20 mA active or passive; site configurable
Current load	Active 250-300 Ω ; passive 250-600 Ω
Digital output 1	Passive pulse, frequency or binary output
Digital output 2	Passive pulse or binary output
Digital ratings	16-30 V DC, up to 30 mA; frequency to 10.5 kHz
Pulse width	0.05-2000 ms

Display and setup

- High-contrast graphical LCD.
- Current and totalized flow display.
- Two configurable operator pages.
- Four-button menu and Easy Set-up.
- Through-the-Glass configuration with housing closed.

Communication

Interface	Specification
HART	Version 7.6; 1200 baud; active or passive current loop
Modbus RTU	Optional RS485; 2,400 to 115,200 baud
PROFIBUS	Optional DP or PA
Industrial Ethernet	EtherNet/IP, PROFINET and Modbus TCP options
Ethernet-APL	PROFINET, Modbus TCP and webserver communication
Remote signal cable	Maximum 200 m; 5 m included with remote design
Expansion	Two slots for optional input, output, power or bus cards

Diagnostics and verification

- Fingerprint-based onboard health check.
- Grounding/noise and sensor-coil checks.
- Empty or partially filled pipe detection.
- Optional gas-bubble and conductivity monitoring.
- Electrode impedance and temperature monitoring.

Environmental and operating data

Transmitter / environmental item	Specification
Ambient temperature	Standard -20 to 60 °C; optional -40 to 70 °C
Storage temperature	-20 to 70 °C
Enclosure	IP65/IP67, NEMA 4X
Housing	Painted cast aluminium, RAL 9002
Vibration	0.15 mm max at 10-58 Hz; 2 g max at 58-150 Hz
Damping	0.04 to 100 s configurable
Low-flow cut-off	0 to 20% for current and pulse outputs

Empty-pipe detection requires conductivity $\geq 20 \mu\text{S/cm}$ and nominal diameter $\geq \text{DN}10$. Extended diagnostics have additional size, conductivity and installation conditions.

Installation and commissioning guidance

Correct full-pipe installation, grounding and straight-run practice are essential for stable measurement.

Mechanical installation

- Match the flow-direction marking; the meter measures both directions.
- Install without torsion, bending or unacceptable pipe forces.
- Use compatible gaskets and keep them out of the flow cross-section.
- Do not use graphite process-connection gaskets.
- Keep the electrode axis horizontal where possible, or within 45° of horizontal.
- For horizontal installation, keep the tube full and provide a slight incline for degassing.
- For abrasive liquids, prefer vertical installation with upward flow.
- Support meters above DN400 on a strong foundation at the housing edges.

Location and straight runs

- Typical straight run: 3 × DN upstream and 2 × DN downstream.
- Reference test conditions: 10 × DN upstream and 5 × DN downstream.
- Do not install fittings, manifolds or valves immediately upstream.
- Put shut-off devices in the outlet section where practical.
- Avoid a free outlet at the pipe high point; keep the measuring tube full.
- Maintain about 1 m from electromagnetic sources and adjacent meters.
- Maintain at least 100 mm from steel mounting parts.
- Use sun protection and locate remote transmitters away from vibration.

Grounding

Grounding situation	Required practice
General	Connect sensor ground to the measuring-medium potential.
Metal pipe	Bond the sensor ground terminal to the pipe/flange ground.
Plastic / insulated pipe	Install grounding rings to establish medium potential.
Stray potentials	Use a grounding ring at both ends of the sensor.

Connection overview

Terminal	Function
L / N / PE	AC power and protective earth
1+ / 2- / PE	DC power and protective earth
Uco/32 or 31/32	Active or passive 4-20 mA / HART
41/42; 51/52	Passive digital outputs 1 and 2
V1/V2; V3/V4	Optional plug-in card slots
UFE/GND/A/B	Remote-sensor power and signal cable

Commissioning check

Confirm pipe fullness, flow direction, grounding, supply voltage, selected range, output scaling, damping, low-flow cut-off, totalizer units, communication and alarm settings. Run the onboard health and grounding/noise checks.

Ordering and selection checklist

Complete these application details before requesting a quotation or final ABB order code.

Ordering field	Required customer selection
Model	FEP631 integral / FEP632 remote with FET632 transmitter
Meter size	DN3-DN2000; confirm minimum, normal and maximum flow
Process liquid	Identity, conductivity, solids, temperature and chemical compatibility
Connection	Flange standard, pressure class, installation length and gasket
Wetted materials	Liner, electrode and grounding-ring selections
Calibration	Standard 0.4% or optional 0.3% / 0.2% where available
Power	100-240 V AC or 16.8-30 V DC
Outputs	Active/passive 4-20 mA, digital outputs and optional plug-in cards
Communication	HART, Modbus, PROFIBUS, EtherNet/IP, PROFINET or Ethernet-APL
Installation	Integral/remote, cable length, housing, IP and ambient conditions
Approvals	Hazardous area, pressure, inspection, SIL and regional requirements

Transmitter plug-in modules

Plug-in function	ABB order code
Passive 4-20 mA output	3KQZ400029U0100
Passive digital output / input	3KQZ400030U0100 / 3KQZ400032U0100
24 V DC loop power / Modbus RTU	3KQZ400031U0100 / 3KQZ400028U0100
PROFIBUS DP / PA	3KQZ400027U0100 / 3KQZ400061U0100
Ethernet / PoE / Ethernet-APL	3KQZ400037U0100 / 3KQZ400039U0100 / 3KQZ400067U0100

Common accessories

Accessory	Order code / availability
FZA100 infrared service adapter	FZA100
NPT cable-gland installation set	3KXF081300L0001
M20 × 1.5 to 1/2 in NPT adapter	D365B269U01
Data-link cable	3KXS360040L0003
Remote signal cable	5, 10, 15, 20, 25, 30, 35, 40, 50, 80, 100, 150 or 200 m
ABB Ability Verification Tool	SRV500; available from ABB Service

Final selection check

Before ordering, verify that the selected DN operates inside the required velocity range, the pipe remains full, the liquid meets conductivity limits, and the chosen liner, electrodes, pressure class, temperature and approvals are compatible.

Important: This condensed selection datasheet is based on ABB DS/FEP630-EN Rev. K. It does not replace the current manufacturer datasheet, certified dimensional drawing, approval certificate, calibration certificate or final order code.