

Flow measurement

Sensors

		Di	Measuring range	Pressure	Temperature (process)	Materials (wetted parts)	Process connection	Protection	Approvals/Certifications	Measuring accuracy ¹⁾ (best possible accuracy)
Electromagnetic (EMF) Profile	Promag D Water/Wastewater	DN 25 to 100 (1 to 4")	0 to 600 m ³ /h (0 to 2542 gal/min)	PN 16 Class 150 JS 10K	0 to 60 °C (32 to 140 °F)	Polyamide liner	Wafer: EN (DIN), ASME, JIS External thread: G, NPT	IP66/67 (Type 4X)	Drinking water	Liquid: ±0.5%
	Promag W Water/Wastewater	DN 25 to 3000 (1 to 120")	0 to 263 000 m ³ /h (0 to 1 157 954 gal/min)	PN 6 to 40, Class 150 to 300 JS 10 to 20K, ANNA Class D AS Table E, PN 16	-20 to +96 °C (-4 to +194 °F)	Hard rubber liner Polyurethane liner PTFE liner	Flange: EN (DIN), ASME, JIS, ANNA, AS Lap-joint: CRN: 3.1 material; custody transfer, marine approvals	IP66/67 (Type 4X) IP69 (Type 6P)	Drinking water; cGMP (FDA, USP Class IV, TSE/RSE); PED, CRN: 3.1 material; custody transfer, marine approvals; certified corrosion resistance (EN ISO 12944)	Liquid: ±0.2%
	Promag E Chemical/Process Industry Basic applications	DN 15 to 600 (½ to 24")	0 to 9600 m ³ /h (0 to 42 267 gal/min)	PN 10 to 40 Class 150 to 20K JS 10 to 20K	-10 to +110 °C (14 to 230 °F)	PTFE liner	Flange: EN (DIN), ASME, JIS, AS	IP66/67 (Type 4X)	PED; 3.1 material	Liquid: ±0.2%
	Promag P Chemical/Process Industry	DN 15 to 600 (½ to 24")	0 to 9600 m ³ /h (0 to 42 267 gal/min)	PN 6 to 40, Class 150 to 300 JS 10 to 20K AS Table E, PN 16	-40 to +180 °C (-40 to +356 °F)	PFA liner PTFE liner	Flange: EN (DIN), ASME, JIS, AS	IP66/67 (Type 4X) IP69 (Option)	Drinking water; SIL 2/3; PED, CRN: 3.1 material; marine approvals	Liquid: ±0.2%
	Promag H Hygienic	DN 2 to 250 (¼ to 6")	0 to 282 m ³ /h (0 to 1242 gal/min)	PN 16 to 40 Class 150 to 20K JS 10 to 20K	-20 to +150 °C (-4 to +302 °F)	PFA liner	Flange: EN (DIN), ASME, JIS; external thread, internal thread, well connection, clamp-on connection, couplings	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material; marine approvals	Liquid: ±0.2%
Coriolis Profile	Promass S Incompressible fluids High solid content	DN 15 to 600 (½ to 24")	0 to 9600 m ³ /h (0 to 42 267 gal/min)	PN 6 to 40, Class 150 to 300 JS 10 to 20K AS Table E, PN 16	-40 to +180 °C (-40 to +356 °F)	PTFE, PFA, Polyurethane liner Natural rubber liner Hard rubber liner	Flange: EN (DIN), ASME, JIS, AS	IP67/IP68 (Type 4X)	PED, CRN: 3.1 material	Liquid: ±0.2%
	Picomag Pocket-sized device	DN 15 to 25 (½ to 2")	0.4 to 750 l/min (0.1 to 198 gal/min)	16 bar (232 psi)	-10 to +70 °C (14 to 158 °F)	Measuring tube: PEEK Connection: stainless steel Seal: FKM	External thread: G1/2", G1", G1.5", G2" Optional: adapter sets for internal (G) / external (R, NPT) threads, Tri-Clamp, Victaulic	IP66/67 (Type 4)	Drinking water; UL listed; radio approval	Flow: ±0.8% or ± 0.2% o.f.s. Temperature: ±2.5 °C (±4.5 °F)
	Promass F Universal flowmeter	DN 8 to 250 (½ to 10")	0 to 2 200 000 kg/h (0 to 80 840 lb/min)	PN 16 to 100 Class 150 to 600 JS 20 to 63K	-50 to +380 °C (-58 to +662 °F) -196 to +150 °C (-321 to +302 °F)	Measuring tube: 1.4539 (904L), 1.4404 (316/316L), Alloy C22 (2.4602)	Flange: EN (DIN), ASME, JIS; Lap-joint flange; Tri-Clamp; threads; VCO couplings	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material; NACE MR0175/MRO103, PMI, weld seam testing (EN ISO, ASME, NORSOK); custody transfer, marine approvals	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.25%
	Promass A Basic applications	DN 8 to 80 (½ to 3")	0 to 180 000 kg/h (0 to 6600 lb/min)	PN 40 to 100 Class 150 to 600 JS 20 to 63K	-40 to +150 °C (-40 to +302 °F)	Measuring tube: 1.4539 (904L) Connection: 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS Tri-Clamp; threads; VCO couplings	IP66/67 (Type 4X)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material; marine approvals	Liquid: ±0.15% (Optional: ±0.10%) Gas: ±0.50%
	Promass K Low flow rates	DN 8 to 80 (½ to 3")	0 to 180 000 kg/h (0 to 6600 lb/min)	PN 40 Class 150 to 300 JS 20 to 40K	-40 to +150 °C (-40 to +302 °F)	Measuring tube: 1.4539 (904L) Connection: 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS Tri-Clamp; threads	IP66/67 (Type 4X)	FCMI (EC) 1935/2004, China FCM GB 4806.1-2016, FDA; PED, CRN: 3.1 material	Liquid: ±0.50% (Optional: ±0.20% / ±0.15%) Gas: ±1.0%
Coriolis Profile	Promass A Low flow rates	DN 1 to 4 (¼ to ¼")	0 to 450 kg/h (0 to 16.5 lb/min)	430.9 bar (6250 psi)	-50 to +205 °C (-58 to +401 °F)	Measuring tube/connection: stainless steel	Flange and lap-joint flange: EN, ASME, JIS; Tri-Clamp; VCO couplings; internal threads	IP66/67 (Type 4X)	3-A, FCMI (EC) 1935/2004; cGMP (FDA) except seals, USP Class IV, TSE/RSE; SIL 2/3; CRN: 3.1 material; NACE MR0175/MRO103, PMI, weld seam testing (EN ISO, ASME, NORSOK)	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.35%
	Cubemass C Low flow rates Compact design	DN 1 to 6 (¼ to ¼")	0 to 1000 kg/h (0 to 37 lb/min)	160/400 bar (232/15801 psi)	-50 to +205 °C (-58 to +401 °F)	Measuring tube: 1.4539 (904L) Connection: 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS VCO couplings	IP66/67 (Type 4X)	SIL 2/3; CRN: 3.1 material	Liquid: ±0.10% Gas: ±0.50%
	Promass I Hygienic, viscosity	DN 8 to 80 (½ to 3")	0 to 180 000 kg/h (0 to 6600 lb/min)	PN 40 to 100 Class 150 to 600 JS 20 to 63K	-50 to +150 °C (-58 to +302 °F)	Measuring tube: titanium Grade 2 Connection: titanium Grade 2	Flange: EN (DIN), ASME, JIS Tri-Clamp; threads	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.25%
	Promass Q Challenging applications	DN 25 to 250 (1 to 10")	0 to 2 400 000 kg/h (0 to 880 185 lb/min)	PN 16 to 100 Class 150 to 600 JS 10 to 63K	-50 to +205 °C (-58 to +401 °F) -196 to +150 °C (-321 to +302 °F)	Measuring tube: 1.4404 (316/316L) Connection: 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material; NACE MR0175/MRO103, PMI, weld seam testing (EN ISO, ASME, NORSOK); custody transfer, marine approvals	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.25%
	Promass G High pressures	DN 8 to 25 (½ to 2")	0 to 1800 kg/h (0 to 661 lb/min)	350 bar (5080 psi)	-50 to +150 °C (-58 to +302 °F)	Measuring tube: 1.4435 (316L) Connection: 1.4404 (316/316L)	Cylindrical internal thread BSPP (G), Clamps (e.g. Tri-Clamp)	IP66/67 (Type 4X)	PED, CRN: 3.1 material	Liquid: ±0.15% Gas: ±0.75%
	Promass S Food and Beverage	DN 8 to 250 (½ to 2")	0 to 70 000 kg/h (0 to 2570 lb/min)	PN 40 Class 150 JS 20K	-50 to +150 °C (-58 to +302 °F)	Measuring tube: 1.4435 (316L) Connection: 1.4435 (316L), 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS; threads	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); SIL 2/3; PED, CRN: 3.1 material	Liquid: ±0.10% Gas: ±0.50%
	Promass P Life Sciences Pharma, biotechnology	DN 8 to 50 (¼ to 2")	0 to 70 000 kg/h (0 to 2570 lb/min)	PN 40 Class 150 JS 20K	-50 to +205 °C (-58 to +401 °F)	Measuring tube: 1.4435 (316L) Connection: 1.4435 (316L), 1.4404 (316/316L)	Flange: EN (DIN), ASME, JIS Hygienic clamps, couplings and threads	IP66/67 (Type 4X) IP69 (Option)	3-A, EHEDG, FCMI (EC) 1935/2004, China FCM GB 4806.1-2016; cGMP (FDA, USP Class IV, TSE/RSE); ASME BPE, ISPE; SIL 2/3; PED, CRN: 3.1 material	Liquid: ±0.10% Gas: ±0.50%
	Promass H Chemically aggressive fluids	DN 8 to 50 (¼ to 2")	0 to 70 000 kg/h (0 to 2570 lb/min)	PN 40 Class 150 to 300 JS 20K	-50 to +205 °C (-58 to +401 °F) -50 to +150 °C (-58 to +302 °F)	Measuring tube: Zirconium 702/R 60702, Tantalum 2.5W; Connection: Tantalum, Zirconium 702/R 60702	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN: 3.1 material	Liquid: ±0.10% Gas: ±0.50%
	Promass O High pressures Oil and Gas	DN 80 to 150 (3 to 6")	0 to 800 000 kg/h (0 to 29 395 lb/min)	PN 16 to 250 Class 150 to 1500	-40 to +205 °C (-40 to +401 °F)	Measuring tube: Super Duplex, 1.4410 Connection: 25Cr Duplex (Super Duplex), 1.4410	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN: 3.1 material; NACE MR0175/MRO103, PMI, weld seam testing (EN ISO, ASME, NORSOK); custody transfer, marine approvals	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.35%
	Promass X High flow rates Oil and Gas	DN 300 to 400 (12 to 16")	0 to 4 100 000 kg/h (0 to 150 649 lb/min)	PN 10 to 100 Class 150 to 600	-50 to +180 °C (-58 to +334 °F)	Measuring tube: 1.4404 (316/316L) Connection: 1.4404 (316/316L)	Flange: EN (DIN), ASME	IP66/67 (Type 4X)	SIL 2/3; PED, CRN: 3.1 material; NACE MR0175/MRO103, PMI, weld seam testing (EN ISO, ASME, NORSOK); custody transfer, marine approvals	Liquid: ±0.10% (±0.05% PremiumCall) Gas: ±0.35%
	Prosonic Flow W Clamp-on sensor Standard applications	DN 15 to 4000 (½ to 160")	0 to 6 785 500 m ³ /h (0 to 2 987 656 gal/min)	No limit Non-invasive	-40 to +130 °C (-40 to +266 °F)	Not wetted (Clamp-on sensor)	Clamp-on sensor	IP66/67 (Type 4X) Optional: IP68 (Type 6P)	-	Liquid: typically <2% (on site) down to min. 2" DN straight inlet run with FlowCare
	Prosonic Flow I Insertion sensor Standard applications	1-path: DN 200 to 4000 (8 to 160") 2-path: DN 400 to 4000 (16 to 160")	0 to 6 713 760 m ³ /h (0 to 2 957 670 gal/min)	PN 16	-40 to +80 °C (-40 to +176 °F)	Transducer: 1.4404 (F316L) Transducer holder: 1.4301 (F304)	Welding connector	IP68 (Type 6P)	-	Liquid: <2.0% (on site) ±0.5% (under reference conditions)
	Prosonic Flow P Clamp-on sensor Process applications	DN 15 to 4000 (½ to 160")	0 to 6 785 500 m ³ /h (0 to 2 987 656 gal/min)	No limit Non-invasive	-40 to +170 °C (-40 to +338 °F)	Not wetted (Clamp-on sensor)	Clamp-on sensor	IP68 (Type 6P)	-	Liquid: typically <2% (on site) down to min. 2" DN straight inlet run with FlowCare
	Prosonic Flow E Energy consumption Water in utilities	DN 50 to 150 (2 to 6")	0 to 6360 dm ³ /min (0 to 1680 gal/min)	DN 50 (2"): PN 40 (Class 150) DN 80 to 150 (3 to 6"): PN 25 (Class 150)	0 to 150 °C (32 to 302 °F)	Measuring tube: 1.4301 (F304) Connection: 1.4571, 1.4404 (F316L), 1.0028 (F2539), 1.4306 (F304L), 1.4307 (F304L), carbon steel A105	Flange and lap-joint flange: EN (DIN), ASME	IP66/67 (Type 4X)	PED; 3.1 material	Liquid: ±0.5%
	Prosonic Flow E Heat Energy consumption Custody transfer	DN 50 to 150 (2 to 6")	0.15 to 300 m ³ /h (0.66 to 1320 gal/min)	DN 50 (2"): PN 40 (Class 150) DN 80 to 150 (3 to 6"): PN 25 (Class 150)	0 to 150 °C (32 to 302 °F)	Measuring tube: 1.4301 (F304) Connection: 1.4571, 1.4404 (F316L), 1.0028 (F2539), 1.4306 (F304L), 1.4307 (F304L), carbon steel A105	Flange and lap-joint flange: EN (DIN), ASME	IP66/67 (Type 4X)	PED; 3.1 material; custody transfer acc. to MI, D04, EN 1434 (accuracy class II), DMI, RPS Class 2	MI-D04 accuracy class II (2%)
Prosonic Flow G Process gas	DN 25 to 300 (1 to 12")	0.5 to 9426 m ³ /h (17.7 to 332 890 ft ³ /h)	PN 16 to 100 Class 150 to 600	-50 to +110 °C (-58 to +302 °F)	Measuring tube: stainless steel 1.4408/1.4409 (CF3M); Connection: temperature/pressure sensors: 1.4404 (316, 316L); Transducer: stainless steel (316, 316L), titanium Grade 2	Flange: EN (DIN), ASME	IP66/67 (Type 4X)	SIL 2; PED, CRN: 3.1 material; NACE MR0175/MRO103; weld seam testing (EN ISO, ASME)	Standard: ±1.0% or, at 3 to 40 m/s (9.84 to 131.2 ft/s) Option: ±0.5% or, at 3 to 40 m/s (9.84 to 131.2 ft/s)	
Prosonic Flow F In-line sensor Chemical industry	DN 25 to 250 (1 to 12")	0 to 7400 m ³ /h (0 to 10 567 gal/min)	PN 16 to 40 Class 150 to 300 JS 10 to 20K	-40 to +200 °C (-40 to +392 °F)	DN 25 to 100 (1 to 4"): CF3M/316/316L DN 150 to 300 (6 to 12"): A105/A106/316/316L	Flange: EN (DIN), ASME, JIS	IP67 (Type 4X) Optional: IP68 (Type 6P)	PED, CRN, AD 2000; 3.1 material; NACE MR0175/MRO103; marine approvals	Liquid: ±0.5% (2 or 3 paths) ±0.3% (4 paths)	
Prosonic Flow B Methane/Biogas measurement	DN 50 to 200 (2 to 8")	9 to 3925 m ³ /min (39 to 17283 gal/min)	PN 10	0 to 80 °C (32 to 176 °F)	Measuring tube: 1.4404 (316L), 1.4435 (316L) Connection: 1.4301 (304), 1.4306 (304L), S235JR, A105	Flange: EN (DIN), ASME	IP66/67 (Type 4X)	PED; 3.1 material	Methane content: ±2.0% o.f.s.	
Vortex Profile	Prowirl D Water sensor	DN 15 to 150 (½ to 6")	Liquid: 0.23 to 625 m ³ /h Gas: 0.34 to 123 238 Nm ³ /h Steam: 0.007 to 92.6 v/h (-328 to +842 °F)	PN 10 to 40 Class 150 to 20K JS 10 to 20K	-40 to +260 °C (-40 to +500 °F) -200 to +450 °C (-328 to +842 °F)	Meter body: 1.4408 (CF3M) DSC sensor: 1.4435 (316/316L)	Wafer: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN: 3.1 material; NAMUR NACE MR0175/MRO103; cleaned from oil/grease (BS-IEC-60877:1999)	Liquid: ±0.75% Vol., ±0.85% Mass Steam, gas: ±1.0% Vol., ±1.7% Mass
	Prowirl F Versatile standard device Wet steam measurement	DN 15 to 300 (½ to 12")	Liquid: 0.2 to 2364 m ³ /h Gas: 5.9 to 465 970 Nm ³ /h Steam: 0.005 to 350 v/h (-40 to +500 °F) -200 to +450 °C (-328 to +842 °F)	PN 10 to 100 Class 150 to 600 JS 10 to 20K	-40 to +260 °C (-40 to +500 °F) -200 to +450 °C (-328 to +842 °F)	Meter body: 1.4408 (CF3M) DSC sensor: 1.4435 (316/316L) Connection: 1.4404 (F316/316L), Alloy C22	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN, AD 2000; 3.1 material; NAMUR NACE MR0175/MRO103; PMI, weld seam testing (EN ISO, ASME, NORSOK); cleaned from oil/grease (BS-IEC-60877:1999)	Liquid: ±0.75% Vol., ±0.85% Mass (PremiumCall: ±0.65% Vol., ±0.75% Mass) Steam, gas: ±1.0% Vol., ±1.5% Mass (PremiumCall: ±0.9% Vol., ±1.4% Mass)
	Prowirl R With reduced bore options	DN 25 to 250 (1 to 10")	Liquid: 0.16 to 545 m ³ /h Gas: 5.9 to 107 354 Nm ³ /h Steam: 0.005 to 80.6 v/h (-40 to +260 °F) -200 to +450 °C (-328 to +842 °F)	PN 10 to 40 Class 150 to 300 JS 10 to 20K	-40 to +260 °C (-40 to +500 °F) -200 to +450 °C (-328 to +842 °F)	Meter body: 1.4408 (CF3M) DSC sensor: 1.4435 (316/316L) Connection: 1.4404 (F316/316L)	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN, AD 2000; 3.1 material; NAMUR NACE MR0175/MRO103; PMI, weld seam testing (EN ISO, ASME, NORSOK); cleaned from oil/grease (BS-IEC-60877:1999)	Liquid: ±0.75% Vol., ±0.85% Mass (PremiumCall: ±0.65% Vol., ±0.75% Mass) Steam, gas: ±1.0% Vol., ±1.5% Mass (PremiumCall: ±0.9% Vol., ±1.4% Mass)
Prowirl O High pressures	DN 15 to 150 (½ to 6")	Liquid: 0.16 to 545 m ³ /h Gas: 11.4 to 179 504 Nm ³ /h Steam: 0.005 to 158 v/h (-40 to +260 °F) -200 to +450 °C (-328 to +842 °F)	PN 160 to 250 Class 900 to 1500 JS 40K	-200 to +400 °C (-328 to +752 °F)	Meter body: 1.4408 (CF3M), 1.4571 DSC sensor: UNS N07718, Alloy 718 Connection: 1.4408 (CF3M), 1.4571, F316/F316L	Flange: EN (DIN), ASME, JIS	IP66/67 (Type 4X)	SIL 2/3; PED, CRN, AD 2000; 3.1 material; NAMUR NACE MR0175/MRO103; PMI, weld seam testing (EN ISO, ASME, NORSOK); cleaned from oil/grease (BS-IEC-60877:1999)	Liquid: ±0.75% Vol., ±0.85% Mass Steam, gas: ±1.0% Vol., ±1.5% Mass	
Thermal Profile	t-mass A In-line version Basic applications	DN 15 to 50 (½ to 2")	0.5 to 1365 kg/h (1.1 to 3003 lb/h)	PN 10 to 40 Class 150 to 300	-40 to +100 °C (-40 to +212 °F)	1.4404 (316L)	Lap-joint flange, flange: EN (DIN), ASME R external thread (EN) NPT external thread (ASME)	IP66/67 (Type 4X)	PED, CRN	±3% o.f.s. (15 to 100% o.f.s.) ±0.4% o.f.s. (1 to 15% o.f.s.)
	t-mass B Insertion sensor Basic applications	DN 80 to 1500 (3 to 60")	20 to 720 000 kg/h (45 to 1 587 600 lb/h)	20 bagg (290 psi)	-40 to +100 °C (-40 to +212 °F)	1.4404 (316L)	Thread: G1A, G1A NPT, ½" NPT	IP66/67 (Type 4X)	CRN	±3% o.f.s. (15 to 100% o.f.s.) ±0.4% o.f.s. (1 to 15% o.f.s.)
	t-mass F In-line version High-end	DN 15 to 100 (½ to 4")	0.475 to 3570 kg/h (1 to 7860 lb/h)	PN 40 Class 300	-40 to +180 °C (-40 to +356 °F)	1.4408 (CF3M) 1.4404/1.4435 (316/316L), Alloy C22	Flange: EN (DIN), ASME, JIS Thread: EN 10226-1/ISO 7-1, ASME MNPT	IP66/67 (Type 4X) Optional: IP68 (Type 6P)	PED, CRN, AD 2000; 3.1 material; NACE MR0175/MRO103	±1% o.f.s. (10 to 100% o.f.s.) ±0.1% o.f.s. (1 to 10% o.f.s.)
	t-mass I Insertion sensor High-end	DN 80 to 1500 (3 to 60")	20 to 721 500 kg/h (45 to 1 600 000 lb/h)	PN 40 Class 300	-40 to +180 °C (-40 to +356 °F)	1.4404/1.4435 (316/316L), Alloy C22	Compression fittings G / NPT (¼", ½", 1")	IP66/67 (Type 4X) Optional: IP68 (Type 6P)	PED, CRN, NACE MR0175/MRO103	±1% o.f.s. (10 to 100% o.f.s.) ±0.1% o.f.s. (1 to 10% o.f.s.)
	t-mass T Insertion sensor Liquid monitoring	DN 40 to 1000 (1½ to 40")	226 to 14 100 000 kg/h (497 to 1 100 000 lb/h)	40 bagg (580 psi)	-20 to +100 °C (-4 to +212 °F) SIP: -130 °C (-266 °F)	1.4404 (316/316L) Alloy C22	Standard: G1/4", N" NPT Hygienic: Tri-Clamp, DIN 11851, DIN 11864 / Form A	IP66/67 (Type 4X)	3-A, EHEDG; CRN: 3.1 material; drinking water	±5% o.f.s. (2.5 to 5 m/s / 8.2 to 16.4 ft/s) ±2.5% o.f.s. (0.05 to 2.5 m/s / 0.16 to 8.2 ft/s)

¹⁾ Depending on the transmitter (see reference options)

Transmitters

	Combinable with	Housing	Display/Operation	Temperature (Ambient)	Power supply	Galvanic isolation	Inputs	Outputs	Communication	Ex approvals	Protection	
Electromagnetic (EMF) Profile	10 Basic	Sensor P, H, D, W	Compact Alu, Polycarbonate Remote Alu, Polycarbonate	LCD with touch screen and operation via SmartBlue app for smartphone or tablet (Bluetooth) and various operating tools (HART, FieldCare, DeviceCare)	-40 to +60 °C (-40 to +140 °F)	AC 100 to 230 V (50/60 Hz) / DC 24 V	Inputs/Outputs/Power supply	-	4-20 mA, pulse/frequency/switch output	HART, Modbus RS485	ATEX, IECEx, cCSAus, JPN, NEPSI, INMETRO, EAC	IP66/67 (Type 4X)
	55 Special applications	Sensor S	Compact Alu Remote Alu Compact SS	Four-line, backlit LCD/touch control Operation via FieldCare	-40 to +50 °C (-40 to +122 °F)	AC 20 to 260 V (45 to 65 Hz) DC 20 to 64 V	Inputs/Outputs/Power supply	Status input, current input (4-20 mA)	0/4-20 mA, pulse/frequency (10 Hz, active/passive), relays, switch outputs	HART, PROFIBUS PA/DP, FOUNDATION Fieldbus	ATEX, IECEx, cCSAus, JPN, NEPSI, INMETRO, EAC	IP67 (Type 4X)
	100 Compact design	Sensor E, P, H	Compact Alu									

Flow measurement Selection guide



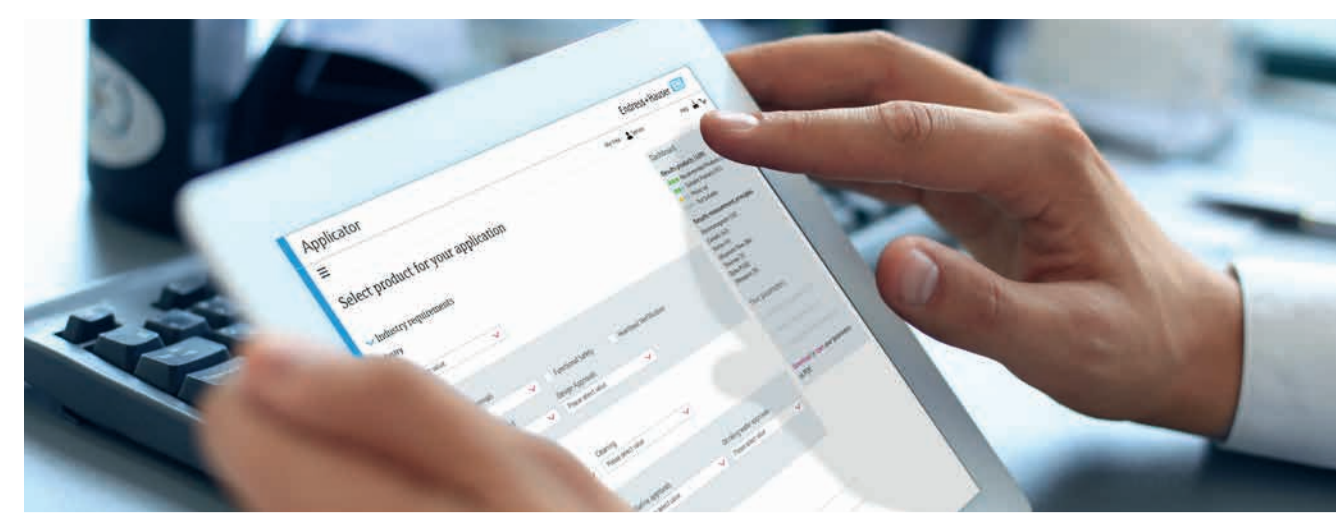
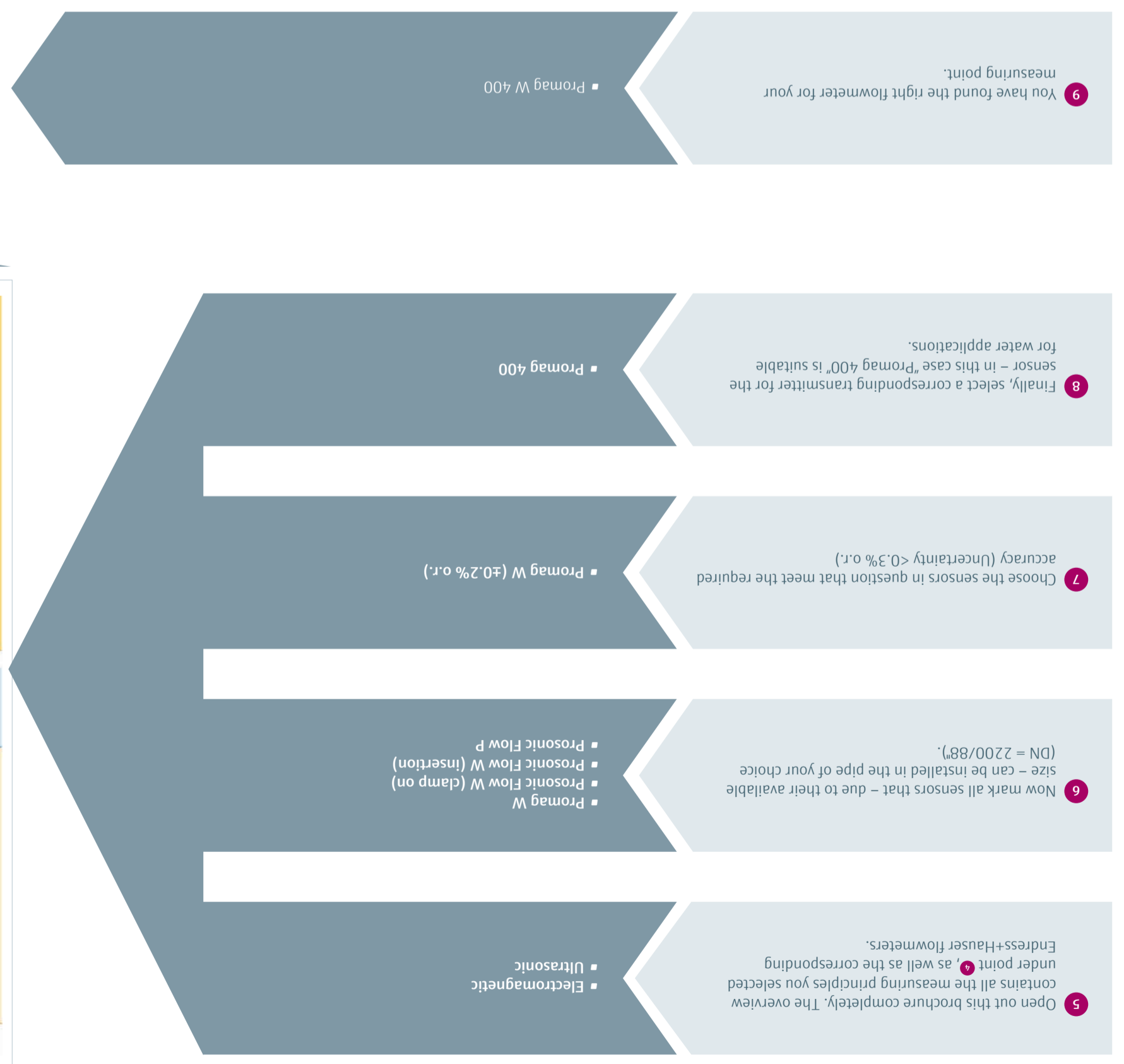
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How to use this Selection Guide

Selecting the measuring principle (1-4)



Selecting the flowmeter (5-9)



Applicator

Fast planning and dependable sizing



The first steps are always the most important when it comes to planning metering points. An optimally dimensioned meter at the right location will invariably save time and money in the long run. Applicator is a proven selection and sizing software application from Endress+Hauser. Applicator is built around 30 years of industry experience and expert knowledge:

- Targeted product search by industry, measured variable, process data, approvals, communication, etc.
- Dependable sizing without specialized knowledge
- Display and depiction of important parameters such as optimal nominal diameter, pressure loss, etc.
- Direct link to Product Configurator and online shop
- Cost-saving administration and documentation of plant projects (project module)
- Language versions: English, German, French, Spanish, Russian, Chinese and Japanese

- Selection and sizing**
- Selective check of requirements: approvals and certificates (industry-specific); metering task, measured variables, type of fluid, process data, etc. (application-oriented); communication (interfaces)
 - Automatic proposal of best-fit meters and solutions
 - Display and computation of important parameters: optimum line size, pressure loss, accuracy, material load, compliance with Pressure Equipment Directive, corrosion resistance, etc.
 - Viewing/printing of results in tabular or graph form
 - Comprehensive databases that include more than 400 fluids

The Applicator program is also available online and as a download version for local installation. Moreover, our Applicator newsletter with its reports on all the latest updates can be subscribed to: <http://www.endress.com/applicator>

www.addresses.endress.com

Netilion – the multi-brand ecosystem

Netilion is a cloud-based IIoT ecosystem, designed for industrial processes. It connects the physical and digital worlds to send valuable information from the field straight to your phone, tablet or other devices. Netilion empowers you to improve efficiency and drive innovation.



- Multi-brand ecosystem**
- You have equipment from various vendors in your installation. An IIoT solution should provide data from as many assets as possible, and Netilion can do that. This multi-brand ecosystem brings transparency into a plant regardless of device type or manufacturer.
- Legal compliance thanks to automation**
- Continuous measurement of quantitative and qualitative parameters
 - Generation of legally compliant documentation thanks to integrated reporting systems
- Data access around the clock**
- Complete data access independent of time and place
 - Numerous options to analyze and visualize ratios, amounts, thresholds, time series and trends, as well as balances
 - Everything at a glance thanks to the web-based visualization of networks with optimized depiction for highly diverse terminal devices
- Security and privacy**
- Your facility's information is valuable and needs protection. Netilion allows users to access data digitally because it meets internationally recognized standards of cloud-platform security. It's a safe harbor for your data.
- Decentralized processes monitored efficiently**
- Reduction of routine checkup tours through comprehensive visualization of essential process variables, e.g. flow quantities, limit values, levels, temperature, pressure or physicochemical quality parameters
 - Low operating costs through fast reaction in case of failure

More about Netilion: www.netilion.endress.com



Please note: The selection table above provides a general overview and is used for quick clarification of suitable measuring principles. The table is not exhaustive. If further clarification is required, feel free to contact Endress+Hauser any time. We'll be glad to be of assistance.

Measuring principle	Fluids (examples)	Requirements
Thermal	Water	Liquids in general
Ultrasonic	Water, Admixtures, flavours	Flow rates < 2 l/h Non-conductive liquids Oil, hydrocarbons Viscous liquids > 500 mPa·s Cryogenic fluids Liquid O ₂ , Ar, N ₂ Water, milk, solvents
Electro-magnetic	Water, milk, solvents	Volume flow Mass flow
Coriolis	Water	Measuring uncertainty ≤ 0.2% o.r. Nominal pipe diameter DN > 500 (20") Operable flow range > 1:30 Low pressure loss
	Foods, shower gel	Density, concentration, viscosity metering Process temperature > 200 °C (392 °F) Process pressure > 100 bar (1450 psi)
	Crude oil	Gas flow in general Natural gas, air biogas, exhaust gas Volume flow Mass flow
	Exhaust gas, CO ₂	Measurement accuracy ≤ 0.5% o.r. Nominal pipe diameter DN > 300 (12") Operable flow range > 1:30 Low pressure loss
	Air	Compressed Natural Gas (CNG) Volume flow Mass flow
	Exhaust gas	Process pressure > 100 bar (1450 psi)
	Superheated steam	Process temperature > 300 °C (572 °F) Process pressure > 100 bar (1450 psi)
	Thick sludge	Hygienic applications (SIP/CFP) Milk, beer
	Oil/water emulsions	Sturtes, suspended solids Liquids/liquid mixtures
	Oil slurry	Bidirectional metering (forward/reverse) Measurement from outside without process interruption/retrofitting/temporary metering
		Filling applications/Gas refuelling applications
		sec flow measurement OEM (inside)

Electromagnetic (EMF)	Ultrasonic
<p>Promag D (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag E (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag H (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag P (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag S (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag F (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag E (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag F (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
<p>Promag E (clamp on)</p> <p>■ Electromagnetic</p> <p>■ Ultrasonic</p>	<p>Promag W (insertion)</p> <p>■ Promag W (+0.2% o.r.)</p> <p>■ Promag 400</p>
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