



INDUSTRIAL GAS METERS

Industrial Gas Meters

For fiscal and non-fiscal measures

[Quantometer](#)



ZENNER
All that counts.

Quantometer QA / QAe

Turbine Flow Meters for non-fiscal applications with mechanical (QA) or electronic meter index (QAe)



- Compact Dimensions
- Meter sizes QA/e 10 – QA/e 1000
- Flow ranges 1.6 – 1600 m³/h
- Measuring range up to 1:20
- Meter size DN 25 to DN 150
- Meter body material: Aluminum
- Temperature range:
QA: -10°C to +60°C
QAe: 0°C to +50°C
- Maintenance-free
- Protection class IP52 (QA)
Protection class IP44 (QAe)
- Index: 7-digits
- QAe LCD display showing:
 - totalized actual volume
 - current flow rate
 - main daily values
 - back-flow volume
- High metering accuracy
- Approvals: DVGW, ATEX, PED
- Instant flow rate
 - High resolution volume (decimals)
 - Measurement ratio up to 1:20
 - Overload up to 160% of the maximum flow rate
 - Within a wide measuring range, precision is independent of the physical characteristics of the gas such as density, pressure and temperature

The gas flowing through the meter sets a turbine wheel in motion. The number of revolutions of the wheel is proportional to the volume that has passed through the meter. The volume is registered by either a mechanical (QA) or an electronic (QAe) totalizer in the meter index.

Self-lubricating bearings ensure that the meter operates without the need for any regular maintenance. The metering principle is proven over decades also in fiscal applications. Design, materials and assembly process meet the highest standards.

The measurement principle combined with the high quality of the materials used, ensure the answer to the highest industrial requirements.

In production and heating processes, the quantometers guarantee precise control and optimization of energy. QA quantometers are equipped with a mechanical 7-position numerator that records the amount of V_b gas in m³. QAe quantometers are equipped with an electronic numerator. In addition to the recording of the total volume (V_b / m³) the QAe recorded the display of the instantaneous flow rate (Q_b / m³ / h) and of the volume at a set date.

The user can therefore easily calculate the production costs.

Applications

Medium: Natural gas, Air, Methane, Nitrogen, other non-corrosive gases

Verticals: Heavy and Light Industry, Petrochemicals, Steel, Power, Minerals, Heating

Function: In-plant Allocation Metering, Volume Input for Controls, Consumption Monitoring for Burners, Boilers, Furnaces etc.

Installation

The Elster quantometers install very easily as they can be mounted in any position (horizontal, vertical, etc.)

The flow direction is indicated on the body of the meter with an arrow

Interface / Outputs

QA reed contact E1

QA / QAe Namur E 200 output (according to DIN EN50227)

QAe: optical interface (EN 1434 - ZVEI compatible)

M-Bus interface (EN 14349)

* Non-aggressive gases or inert

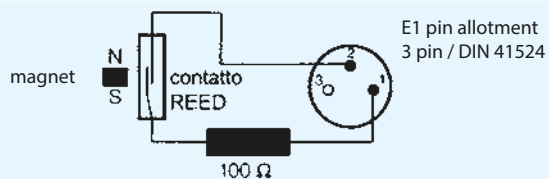
Technical data

		QA/e 10 - QA/e 40 GI	QA/e 40 GFI	QA/e 65 - QA/e 1000 ZI
Pressure medium / maximum	Combustible gases	4 bar	4 bar	20 bar (QAe 4 bar)
	Air, inert and non-corrosive gases	16 bar	16 bar	
Measurement technique	flow m ³ /h	QA/e 10 DN25: 1.6 - 16 QA/e 16 DN25: 2 - 25 QA/e 25 DN25: 2.5 - 40 QA/e 40 DN25: 3.3 - 65	QA/e 40 DN40: 5 - 65	QA/e 65 DN 50 : 6 - 100 QA/e 100 DN 80 : 10 - 160 QA/e 160 DN 80 : 13 - 250 QA/e 250 DN 100 : 20 - 400 QA/e 400 DN 100 : 32 - 650 QA/e 400 DN 150 : 32 - 650 QA/e 650 DN 150 : 50 - 1000 QA/e 1000 DN 150 : 80 - 1600
	Precision 0.1 Q _{min} - 0.2 Q _{max}	≤ 1% (3% v. MW)		
	Precision 0.2 Q _{max} - Q _{max}	≤ 1% (1,5% v. MW)		
	Material	Alluminio		
Diameter	DN mm	25	40	50 80 100 150
	-	1"	1 1/2"	2" 3" 4" 6"
Dimensions	A * mm	159	202	202 225 245 300
	C mm	240	190	60 120 150 180
Custody	C1 mm	185	126,5	- - - -
	G * mm	115	150	150 150 165 190
Weight	Kg	1	2.2	1.4 5.3 6.8 11.4
Mounting		In pipes with second threaded connections DIN-ISO 228 internal thread 1"	In pipes with second threaded connections DIN-ISO 228 internal thread 1 1/2"	Between two flanges PN 10/16 (DIN EN 1092-1 o ANSI 150)
Pulse outputs / values	LF type E1 REED switch	10 imp/m ³	1 imp/m ³	1 imp/m ³
	MF type E200 Inductive prox switch	500 imp/m ³ **	250 imp/m ³	QA 65 : 250 imp/m ³ QA 100 - 650 : 187.5 imp/m ³ QA/e 100 - 1000: 187.5 imp/m ³

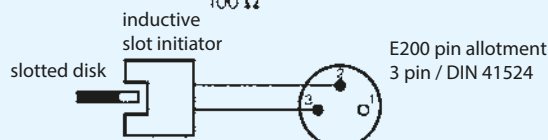
* QAe + 25mm ** Dal 01/01/2002

Pulsers

QA LF pulser E1



QA/QAe MF pulser E200



Voltage: $U_{max} = 24 V$
 Current: $I_{max} = 50 mA$
 Capacity: $P_{max} = 0,25 W$
 Resistance: $R = 100 \Omega + 20\%$

Characteristics of switch version
 according to DIN EN 50227 (Namur):

Standard voltage: $U_v = 8 V DC$
 Internal resistance: $R_i = 1 K \Omega$
 Current consumption: active area free $I \geq 2,1 mA$
 active area covered $I \leq 1,2 mA$



- Economic gas flow meter
- Meter Q/Q75, sizes 65 to 16000
- Flow ranges 6 - 25000 m³/h
- Rangeability up to 1:20
- Nominal width DN 50 - DN 600
- Pressure rates up to 100 bar
- Temperature range -10°C to +60°C (further temperatures on request)
- Flange connections according to EN or ASME
- Short pattern design
- Housing made of spheroidal graphite cast iron, steel or welded steel
- Suitable for outdoor installation (IP67)
- Two low frequency pulsers standard

Quantometer Q / Q75

Short Pattern Turbine Gas Flow Meters

The Q/Q75 series of quantometers are well known in the field of industry and commerce as robust and accurate turbine meters. They have a low price and are particularly suitable for highly-accurate and reliable metering, also in higher flow and pressure ranges. The Q/Q75 quantometers meet the highest industrial standards in terms of quality. Depending on the size of the meter and the conditions of application, the quantometer has self lubricating, maintenance-free bearings or is lubricated by pressure oil (oil pump). It is possible to equip the quantometer with additional devices such as volume correctors or external pulsers. The Q/Q75 quantometers can be used in hazardous areas up to zone 1. They are easy to install in a pipeline and are capable of registering, monitoring and transferring measurement data. With a Q/Q75 quantometer, volume (m³) in production processes can be measured exactly. By constantly controlling and monitoring the gas flow, the use of energy in a production process, for example, can be optimized. The flow meters can be combined with an Elster DS-/DL- data storage device or EK series volume correctors if required.

Operation: Elster-Instromet Q/Q75 quantometers are flow meters for gaseous media which display actual volume. The measurement is made with the help of a turbine wheel, whose revolutions are proportional to the actual volume flowing through the meter (or the volume at actual operating conditions). The revolutions of the turbine wheel are reduced by a gear. The volume is then displayed on an 8-digit mechanical roller counter.

Installation tips: Up to a diameter of DN 150, the quantometer can be installed in any position. From a diameter of DN 200 upwards we recommend a horizontal installation.

The flow direction in the quantometer is marked by an arrow on the housing.

Application

- Media: Natural gas, methane, city gas, oxygen (up to 10 bar*) **
- Branches: Gas industry, chemicals, food-stuffs, industry, ***
- Functions: Controlling, regulation, registration, analysis, ****

* Special version

** Non-aggressive gases and further gases on request

*** District heating, power plants, petrochemicals

**** Monitoring, examining, evaluation

Index variants

S1 ($Q \leq DN150$)

MI-2 ($Q75 \geq DN200$)

- 8-digit mechanical counter
- Index head can be rotated 355°
- Protection class IP67
- Absolute-ENCODER S1 or MI-2 (optional) useable as main meter index



Pulsers

Low frequency: Elster-Instromet Q/Q75 turbine gas meters are fitted with two low-frequency pulsers and one switch for monitoring any attempts at manipulation (PCM). The low-frequency pulses, which are generated by Reed switches in the plug-in pulser IN-S1x, are used to transmit the actual volume in m³ to a volume corrector, for example.

The maximum frequency is 0.5 Hz.

Standard version:

- **IN-S10** with a 2.5 m open-ended 6-wire cable

Options:

- **IN-S11/15** with a 6-pin flange plug and a connector socket (Binder 423 system)
- **IN-S12** with two 6-pin flange plugs and two connector sockets (Binder 423 system)

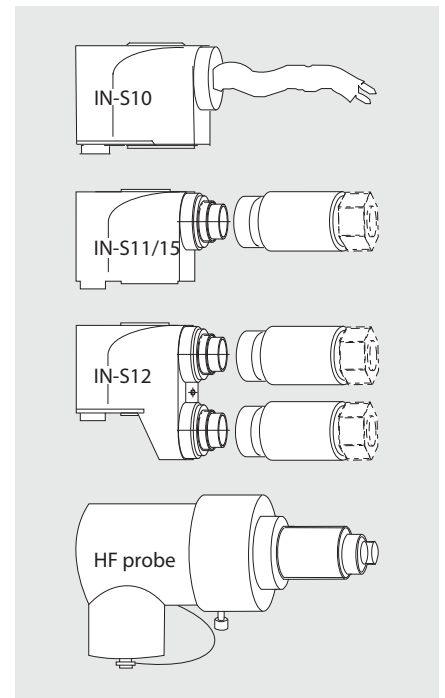
High frequency (optional): If higher pulse rates or a higher resolution is required for control or regulation purposes, the turbine meter can be equipped with high-frequency pulsers:

- **A1R (Q model)** picks up reference markings on the turbine wheel

- **BI-ISM-Y1 (Q75 model)** picks up the blades of the turbine wheel

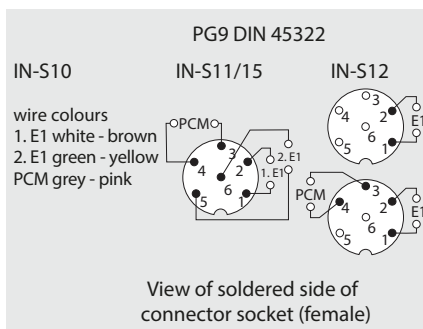
Up to 4 high-frequency pulsers can be ordered for the individual meter models

The plugs for the high-frequency pulsers are designed to save space



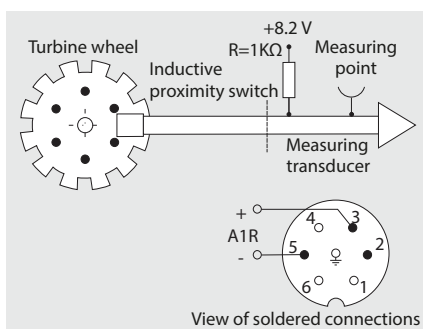
Pin assignment

Low frequency pulser (Q/Q75 model)

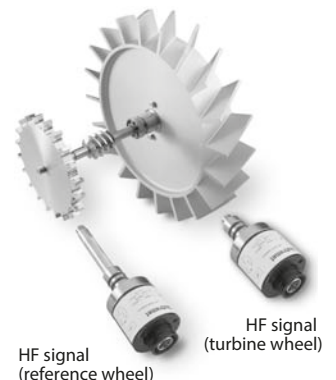
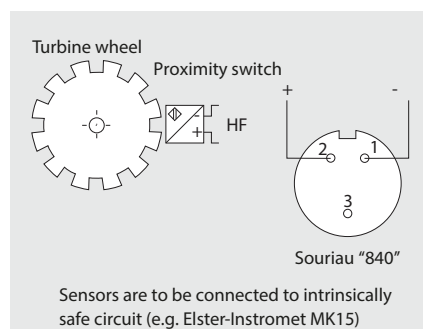


LF type		Terminal connection pins		
		Reed 1	Reed 2	PCM
IN-S1	incl. 2.5 m cable (with open ends)	white - brown	green - yellow	grey - pink
IN-S11	incl. 1x sealed 6-pinBINDER - plug (male), plus 1x clutch socket acc. DIN 45322	1 + 2	5 + 6	3 + 4
IN-S11F	incl. 1x sealed 6-pinBINDER - plug (male), plus 1x clutch socket acc. DIN 45322	4 + 6	3 + 5	1 + 2
IN-S12	incl. 2x sealed 6-pinBINDER - plug (male), plus 2x clutch socket acc. DIN 45322	1 + 2 (plug 1)	1 + 2 (plug 2)	3 + 4 (plug 2)
IN-S12F	incl. 2x sealed 6-pinBINDER - plug (male), plus 2x clutch socket acc. DIN 45322	4 + 6 (plug 1)	3 + 5 (plug 2)	1 + 2 (plug 1)
IN-S15	incl. 1x sealed 6-pinBINDER - plug (female), plus 1x clutch plug acc. DIN 45322	1 + 4	2 + 5	3 + 6

High frequency pulser A1R (Q model)



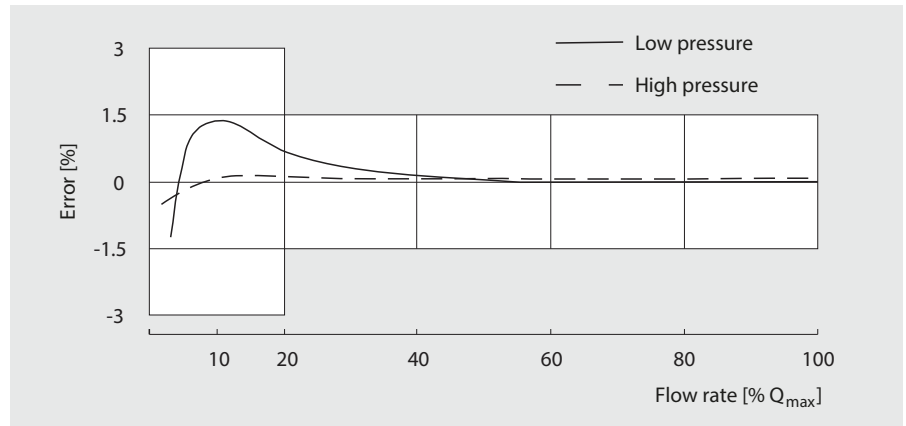
High frequency pulser BI-ISM-Y1 (Q75 model)



Accuracy

Limits

± 1.5% for 0.2Q_{max} to Q_{max}
 ± 3.0% for Q_{min} to 0.2Q_{max}



Pressure loss

The average pressure loss of the Q/Q75 flow meters, using atmospheric natural gas with a density of 0.8 kg/m³, is measured on a straight pipe of the same size as the meter.

Measuring range

The Q/Q75 turbine gas meter has a typical measuring range of 1:20 with air at atmospheric conditions. At higher operating densities, the range of the turbine meter will increase since more kinetic energy is available to overcome mechanical friction of bearings.

The following equation may be used for a rough estimate of the minimum flow rate of the meter for various operating conditions. The equation assumes ambient temperature and ideal gas behaviour (Z = 1)

$$Q = Q_m \sqrt{\frac{1.013}{p} \cdot \frac{1.29}{\rho}}$$

Q = Minimum capacity under operating conditions
 Q_m = Minimum capacity for meter accuracy
 p = Operating pressure of the meter in bar absolute
 ρ = Density of gas at atmospheric pressure

Diameter	Model	Meter size		Q _{min} -Q _{max} [m ³ /h]	Pressure loss* [mbar]	LF** [Imp/m ³]	MF*** [Imp/m ³]	HF **** [Imp/m ³]	MF*** [Hz at Q _{max}]	HF **** [Hz at Q _{max}]
		G-rate	type							
DN50 2"	Q	65	100	6 - 100	12	10	-	28500	-	792
DN80 3"	Q	100	160	10 - 160	2	1	-	10500	-	467
		160	250	13 - 250	5.3	1	-	10500	-	729
		250	400	20 - 400	13.6	1	-	10500	-	1167
DN100 4"	Q	250	400	20 - 400	5.8	1	-	6630	-	733
		400	650	32 - 650	13.1	1	-	6630	-	1192
DN150 6"	Q	400	650	32 - 650	2.6	1	-	2560	-	451
		650	1000	50 - 1000	6.5	1	-	2560	-	694
		1000	1600	80 - 1600	16.8	1	-	2560	-	1111
DN200 8"	Q75	650	1000	100 - 1000	1.5	0.1	109	770	30	214
		1000	1600	80 - 1600	2.5	0.1	106	1180	47	524
		1600	2500	130 - 2500	5.5	0.1	66	1060	46	736
DN250 10"	Q75	1000	1600	80 - 1600	1.5	0.1	109	825	49	367
		1600	2500	130 - 2500	3.5	0.1	111	1320	77	917
		2500	4000	200 - 4000	8.5	0.1	62	1200	69	1333
DN300 12"	Q75	1600	2500	130 - 2500	1.5	0.1	38	810	26	563
		2500	4000	200 - 4000	4	0.1	38	1270	42	1411
		4000	6500	320 - 6500	9	0.1	21	1175	39	2122
DN400 16"	Q75	2500	4000	200 - 4000	1.5	0.1	79	660	88	733
		4000	6500	320 - 6500	4	0.1	78	1055	141	1905
		6500	10000	500 - 10000	9	0.1	44	890	121	2472
DN500 20"	Q75	4000	6500	320 - 6500	1.5	0.1	40	530	72	957
		6500	10000	500 - 10000	4	0.1	42	865	116	2403
		10000	16000	800 - 16000	9	0.1	24	770	105	3422
DN600 24"	Q75	6500	10000	500 - 10000	1.5	0.01	10	470	26	1306
		10000	16000	800 - 16000	4	0.01	9	720	41	3200
		16000	25000	1300 - 25000	9	0.01	5	650	38	4514

* at Q_{max} natural gas = 0.8 kg/m³

** LF from IN-S pulser

*** MF from MI-2 Slot disc

**** ≤DN150 from Reference (A1R); >DN200 from turbine wheel

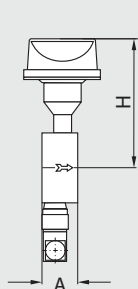
Dimensions and weights Q/Q75

Diameter	Model	Body material	Dimensions							Pressure rate [ASME class]	Weight [kg]
			A	B	C	D	E	F	H		
50 (2")	Q	Cast iron/**	60 / 150	As per flange class dimension	75	-	-	143	170	150 / - / -	4 / - / -
		Steel	150		75	75	198	134	165	150 / 300 / 600	14 / 15 / 16
80 (3")	Q	Cast iron**	120		52	-	-	158	190	150 / - / -	13 / - / -
		Steel*	120		52	74	185	180	193	150 / 300 / 600	24 / 27 / 26
100 (4")	Q	Cast iron**	150		57	-	-	170	200	150 / - / -	15 / - / -
		Steel*	150		57	104	217	211	230	150 / 300 / 600	38 / 48 / 53
150 (6")	Q	Cast iron**	175 / 180		76	-	-	195	225	150 / - / -	28 / - / -
		Steel*	175 / 180		73	138	260	253	272	150 / 300 / 600	56 / 77 / 96
200 (8")	Q75	Cast iron	200		69	100	338	-	353	150 / - / -	42 / - / -
		Steel*	200		69	100	338	-	353	150 / 300 / 600	90 / 120 / 152
250 (10")	Q75	Steel	375	140	167	327	-	315	150 / 300 / 600	74 / 110 / 200	
300 (12")	Q75	Steel	450	172	224	352	-	338	150 / 300 / 600	136 / 182 / 264	
400 (16")	Q75	Steel	600	221	280	394	-	380	150 / 300 / 600	250 / 310 / 430	
500 (20")	Q75	Steel	750	335	365	445	-	431	150 / 300 / 600	412 / 562 / 742	
600 (24")	Q75	Steel	900	350	380	495	-	482	150 / 300 / 600	657 / 907 / 1107	

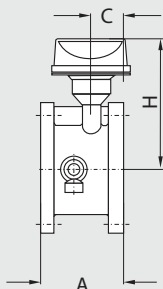
* Sandwich design

** No oil lubrication possible

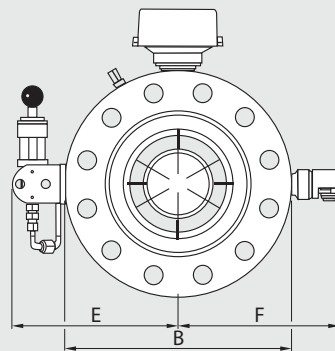
Model Q



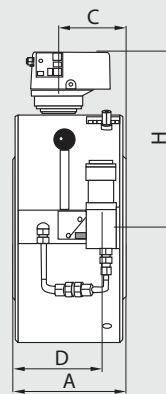
DN 50 (cast iron)



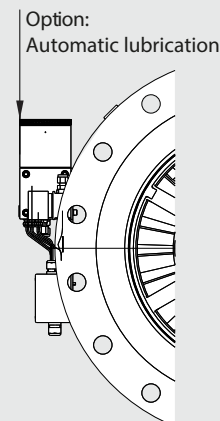
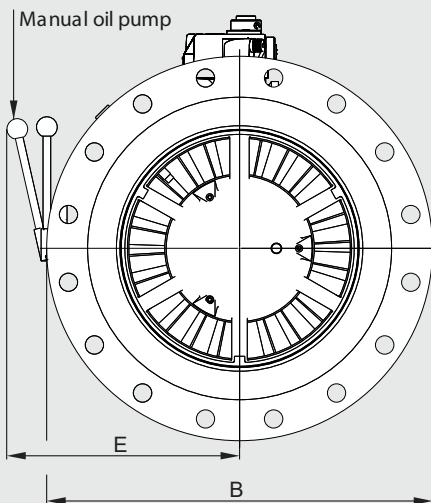
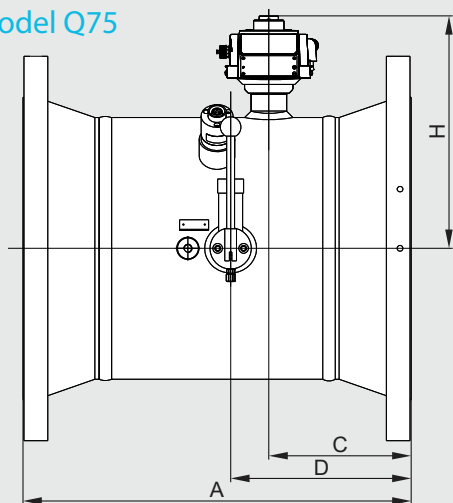
DN 80 -150 (cast iron)



DN 50 - 150 (steel)



Model Q75



Attention: Q75 DN 200, steel in sandwich design (see Model Q DN 50 – 150, steel)



3,200

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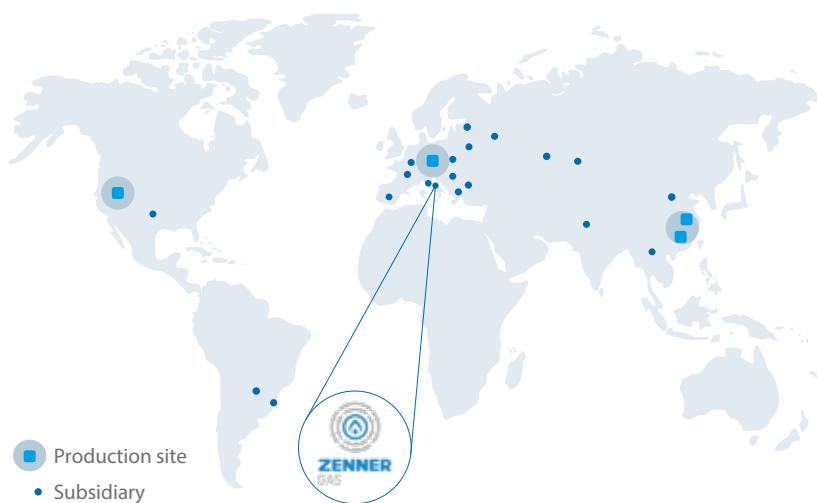
Locations in Europe

- Germany: Saarbrücken, Mulda, Mannheim
- Bulgaria: Sofia
- France: Limoges
- Italy: Bologna, Pescara
- Kasakhstan: Aktobe
- Poland: Warsaw
- Romania: Bucharest
- Russia: St. Petersburg, Moscow, Tjumen
- Spain: Madrid
- Hungary: Budapest
- Belarus: Minsk

We export our products in

90

countries.



- Production site
- Subsidiary

20

locations worldwide with four production sites in Europe, Asia and the US.

Locations worldwide

- Brazil: Novo Hamburgo
- Paraguay: Asunzion
- China: Fuzhou, Beijing, Shanghai
- Vietnam: Hanoi
- India: Faridabad
- USA: Banning, CA, Addison, TX

Innovative measuring equipment for global markets for over

110

years. Est. in 1903.

The data shown in the catalogs, the illustrations and the drawings are indicative and do not commit the ZENNER Gas Srl. It is also reserved the faculty to make to the models those changes that experience and technical advances suggest.

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