



EU-type examination certificate

Number **T11210** revision 0
Project number 1901604
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Issued by	NMI Certin B.V., designated and notified by the Netherlands to perform tasks with respect to conformity modules mentioned in article 17 of Directive 2014/32/EU, after having established that the Measuring instrument meets the applicable requirements of Directive 2014/32/EU, to:		
Manufacturer	Elster GmbH Steinernstrasse 19–21 D-55252 Mainz-Kastel Germany		
Measuring instrument	A Turbine Gas Meter		
	Type	:	SM-RI-X
	Destined for the measurement of	:	Gas volume
	Accuracy class	:	Class 1,0
	Environment classes	:	M1 / E2
	Temperature range	:	-25 °C / +70 °C
	Further properties are described in the annexes: – Description T11210 revision 0; – Documentation folder T11210-1.		
Valid until	22 December 2027		

Issuing Authority **NMI Certin B.V., Notified Body number 0122**
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C. Oosterman
Head Certification Board

NMI Certin B.V.
Hugo de Grootplein 1
3314 EG Dordrecht
The Netherlands
T +31 78 6332332
certin@nmi.nl
www.nmi.nl

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1 General information about the gas meter

All properties of the gas meter, whether mentioned or not, shall not be in conflict with the legislation.

1.1 Essential parts

Measuring part

The measuring part consists of a cartridge including all metrological essential parts such as turbine wheel, bearings, shafts, primary gears and inlet flow straighteners. The dimensions of the cartridge are presented in the table below (see documentation 11210/0-15).

The number and the appertaining angle of the blades are mentioned in the table below.

Diameter [mm]	Qmax [m ³ /h]	Essential dimensions [mm]						Blade angle [°]	Number of blades
		H	D	E	K	L	M		
50	100	150	33	49	16	32	50	45	12
80	160 / 250 / 400	240	54	74	19	52	76	30 or 45	12
100	250 / 400 / 650	300	75	102	22	75	103	30 or 45	16
150	650 / 1000 / 1600	450	119	152	29	118	156	30 or 45	20
200	1000 / 1600 / 2500	600	154	203	32	152	206	30 or 45	20
250	1600 / 2500 / 4000	750	172	237	35	169	240	30 or 45	24
300	2500 / 4000 / 6500	900	204	280	38	201	284	30 or 45	24
400	4000 / 6500 / 10000	1200	230	348	38	226	348	30 or 45	24
500	6500 / 10000 / 16000	1500	304	437	43	300	436	30 or 45	24
600	10000 / 16000 / 25000	1800	355	527	50	346	526	30 or 45	24
750	25000 / 40000	2250	507	680	57	505	686	30 or 45	24

1.2 Essential characteristics

1.2.1 The meter has the following characteristics:

Q_{\max} [m ³ /h]	minimum Q_{\min} [m ³ /h]	maximum Q_t [m ³ /h]	minimum P_{\min} [bar(a)]	maximum p_{\max} [bar]	diameter [mm]
100	5	20	4	160	50
160	8	32	1	160	80
250	8	50	1	160	80 or 100
400	13	80	1	160	80 or 100
650	20	130	1	160	100 or 150
1000	20	200	1	160	150 or 200
1600	32	320	1	160	150 or 200 or 250
2500	50	500	1	160	200 or 250 or 300
4000	80	800	1	160	250 or 300 or 400
6500	130	1300	1	160	300 or 400 or 500
10000	200	2000	1	160	400 or 500 or 600
16000	320	3200	1	160	500 or 600
25000	500	5000	1	160	600 or 750
40000	800	8000	1	160	750

1.2.2 Reducing adapter

By means of a reducing adapter, it is possible to place a measuring part of a certain diameter in a meter body, which has a bigger diameter (see documentation 11210/0-37).

1.3 Essential shapes

1.3.1 The nameplate is bearing at least, good legible, the following information:

- CE marking including the supplementary metrological marking (M + last 2 digits of the year in which the instrument has been put into use);
- Notified Body identification number, following the supplementary metrological marking;
- EU-type examination certificate no. T11210;
- manufacturer's name, registered trade name or registered trade mark;
- manufacturer's postal address;
- serial number of the meter and year of manufacture;
- mechanical environment class (can also be given in the manual);
- electromagnetic environment class (can also be given in the manual);
- Q_{\max} , Q_t and Q_{\min} ;
- the working pressure range;
- ambient temperature range;
- accuracy class;
- pulse values of HF and LF frequency outputs (if applicable);
- indication of the flow direction, e.g. an arrow (can be marked separately on the meter housing).

An example of the markings is shown in documentation numbers 11210/0-03, 11210/0-04, 11210/0-05 and 11210/0-06.

1.3.2 Sealing: see chapter 2.

1.4 Conditional parts

1.4.1 Construction

In addition to the essential parts as mentioned at 1.1, the meter contains at least the following conditional parts:

- housing;
- inlet flow straightener;
- transmission including the adjustment gears;
- register;
- pressure measuring point.

The meter can also be provided with low and high frequency impulse outputs respectively a temperature sensor / thermowell or a flow computer read out.

The meters are constructed as indicated in the documentation numbers 11210/0-09, 11210/0-10, 11210/0-11 and 11210/0-12.

Housing

The gas meter has a housing, which has sufficient tensile strength. An example is shown in documentation numbers 11210/0-13 and 11210/0-14.

1.4.2 Inlet flow straightener

At the inlet of the internal cartridge a t flow straightener is built into the meter cartridge housing. An example is shown in documentation numbers 11210/0-13 or 11210/0-16 or 11210/0-17 or 11210/0-18.

1.4.3 Gearbox

The transmission from the internal cartridge to the register is carried out via a magnet coupling (see 11210/0-19 and 11210/0-20). The register is adjustable via adjusting wheels. Examples of the gear transmissions are presented in documentation numbers 11210/0-21, 11210/0-22 and 11210/0-23.

The adjusting wheels of the Multi-Index are mentioned in 11210/0-24.

The adjusting wheels of the MI-2 are mentioned in 11210/0-25.

1.4.4 Register

The measured volume is presented by means of a mechanical register (Multi-index). An example is stated on drawing no. 11210/0-13. The mounting of the register on the meter body is shown in drawing no. 11210/0-21.

A register version for vertical mounting is presented in 11210/0-27.

The meter also can be equipped with Encoder registers as described in the documentation numbers 11210/0-28, 11210/0-29 and 11210/0-36.

The registers are built up as follows:

Q _{max} [m ³ /h]	number of drums		control-element [m ³]
	before the comma	behind the comma	
Until 100	6	2	0,002
160 until 1000	7	1	0,02
1000 until 10000	8	0	0,2
16000 until 40000	8	X10	2

The meter with a Q_{max} of 1000 m³/h, has two possible register configurations as given in the table above.

- 1.4.5 Pressure measuring point
 The housing contains a pressure tapping to determine the reference pressure at the inlet. This pressure tapping is provided with the indication "p_m". Multiple pressure tappings, marked with the indication "p" can be provided optionally.
- 1.4.6 Low and / or high frequency impulse outputs (optional)
 The meter can be provided with low and / or high frequency impulse outputs, at which the appertaining impulse value is stated on the meter.
- 1.4.7 Extension register
 The distance between meter body and Multi-index register can be extended, while using an extension as indicated in documentation numbers 11210/0-30 and 11210/0-20. In any case, the correct functioning of the register shall be guaranteed.
- 1.4.8 Temperature measuring points / thermowells
 Optionally the meter can be provided with a temperature sensor or a thermowell, which is always mounted at the outlet of the measuring part.
- 1.4.9 Drive shaft
 The meter can be provided with a drive shaft. The maximum permissible torque is indicated in the table below. This maximum torque is stated on the meter as well as the direction of the rotation and the constant in the form 1 tr = xx m³.

Q _{min} [m ³ /h]	Maximum torque N.mm
8	0,25
8	0,7
13	1,0
20	0,7
20	0,7
32	5,0
50	13
≥80	20

1.5 Non-essential parts

- 1.5.1 Lubrication system
 The lubrication system can be executed by means of an injection syringe, a manual pump or an automatic pump.
 Optionally the meters can be provided with separated lubrication (see 11210/0-31) or self-lubricating bearings. In the latter possibility, the lubrication is not executed.
 Also continuous lubrication can be applied (see 11210/0-32).
- 1.5.2 Drain
 Optionally at the bottom side of the meter a drain can be mounted to remove condensation (see 11210/0-33).
- 1.5.3 Purge system
 Optionally the meters can have a system to add "purge gas" to the measuring part.
- 1.5.4 Anti-fraud reed contact
 The Multi-index register can be provided with an anti-fraud reed contact.



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- 1.5.5 Reverse stop
Optionally a reverse stop can be added in order to stop the register when the gas flow is in negative direction. An example is given in 11210/0-34.
- 1.5.6 Spin down facility
Optionally the meter can be provided with a spin down facility in order to test the correct functioning of the turbine wheel (see 11210/0-35).

2 Seals

The following items of the meter are sealed:

- the entrance to the register (see 11210/0-08);
- the fitting of the index unit (see 11210/0-08 via main seals);
- the fitting of the internal (see 11210/0-07);
- the impulse outputs (if available) as well as the appertaining marking for the impulse value;
- the flow straightener (see 11210/0-16);
- the outputs of the drive shafts (11210/0-08);
- condensation point, if available (see 11210/0-33);
- the spin down facility, if available (see 11210/0-35).

3 Conditions for conformity assessment

The meter can operate in the following position: vertical up/down, vertical down/up and horizontal flow.

No specific minimum straight inlet pipe is necessary in case of mild and/or severe flow disturbances.