

New: Ultrasonic gas meter with MID approval

Ultrasonic gas meter Q.Sonic – ideal for custody transfer measurements

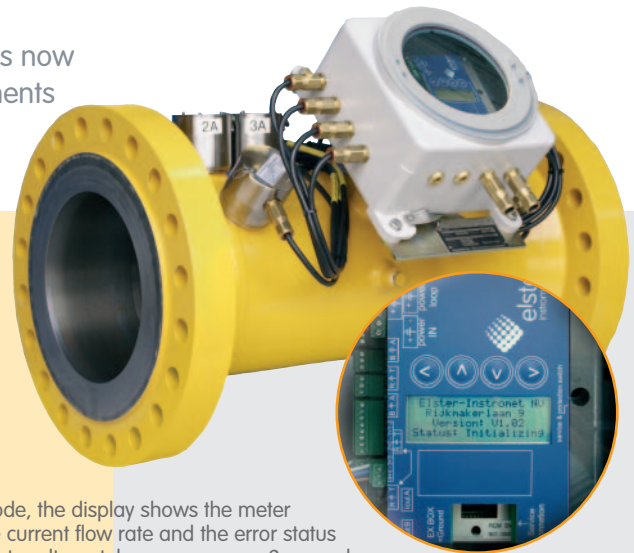
The successful Q.Sonic series of ultrasonic gas meters is now approved pursuant to the European Measuring Instruments Directive 2004/22/EC (MID) and can now be used in all countries of the European Union.

The patented arrangement of measuring paths in conjunction with sophisticated ultrasonic transducers and digital signal processing account for maximum measurement accuracy with excellent long-term stability. The flow profile analysis of the meter allows the otherwise conventional use of a flow conditioner to be dispensed with in many applications.

The Q.Sonic multi-path ultrasonic gas meter is thus ideally suited for custody transfer measurements of natural gas. The MID approval of the Q.Sonic series of ultrasonic gas meters covers meter sizes from 4" (DN 100) to 48" (DN 1200) for all designs with three to five measuring paths, subdivided into two double reflection paths and 1, 2 or 3 single reflection paths. Different ultrasonic transducers, with frequency ranges of 100 kHz or 200 kHz, allow coverage of pressure ranges between 1 bar and maximum 500 bar.

The MID-approved version is, on a general basis, supplied with the new Series IV.a electronic circuitry, including display unit. This means that the use of an approved, external display facility, prescribed in the national PTB approval, does not apply for instance. The Q.Sonic 'MID' can be connected to any approved volume corrector or flow computer via pulse outputs or, if supported by the unit, via a serial data interface. In this case, it must be noted that the explosion-protection concepts of the devices must be intermatched.

In order to comply with the MID requirements, each ultrasonic gas meter must be calibrated on an approved high-pressure test rig. Individual acceptance testing (pursuant to MID module F) is conducted within the framework of the high-pressure test by the NMI (Nederlands Meetinstituut) as the notified body.



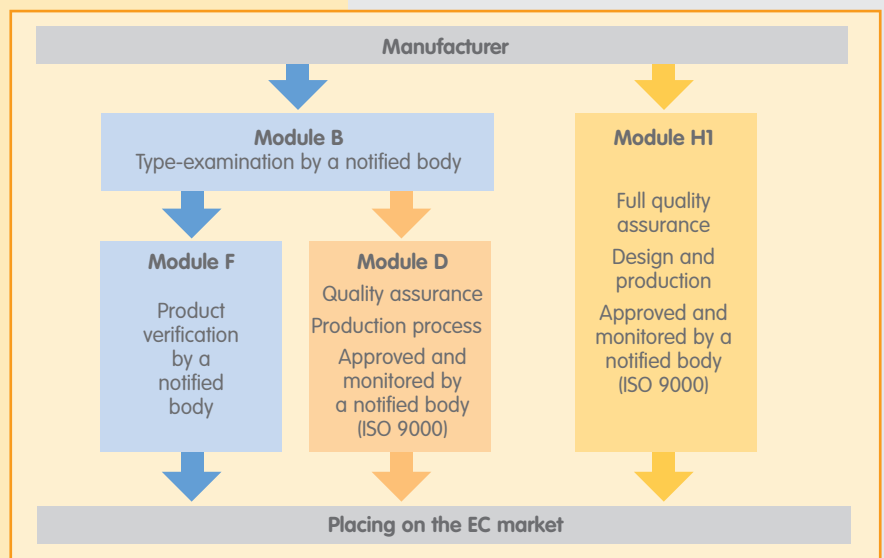
In normal mode, the display shows the meter readings, the current flow rate and the error status of the gas meter alternately, every approx. 2 seconds.

One further step currently in preparation is certification of the quality assurance system pursuant to MID module D for the Q.Sonic ultrasonic gas meters. Discussions with operators of the test rigs are currently underway in order to anchor high-pressure testing as a part of quality assurance in the production process within MID module D.

Inclusion of high-pressure testing offers maximum safety and an ultra-precise gas meter matched to the relevant application.

National approvals (PTB, NMI, ...)

The Q.Sonic ultrasonic gas meters can still also be constructed pursuant to the national approvals. In this case, it is necessary to note the information given in the relevant approval in relation to the measuring range and the operating conditions. For instance, only the Series IV signal processing unit without display can be used for the version pursuant to the PTB type approval. In this case, it is necessary to use a volume corrector that has



Conformity assessment procedure

been approved for this ultrasonic meter, e.g. Elster-Instromet's gas-net, as the display unit.

Previous approvals can still be used until their expiry date, with the latest possible date for their validity being 30 October 2016. Measuring instruments pursuant to the national approval may, however, be modified only slightly. Major modifications can be conducted only within the framework of MID approval.



Certificate of the type-examination (MID module B)

Display

The most apparent new feature of the MID version is the display. Without the display, the Q.Sonic could not have been approved as an independent measuring instrument as defined by MID.

In normal mode, the display shows the meter readings, the current flow rate and the error status of the gas meter in rolling fashion, every approx. 2 seconds. Further

MID version: flow ranges (m³/h) as a function of pipe wall thickness (schedule)

Nominal diameter	SCH40			SCH60			SCH80		
	Q _{min}	Q _t	Q _{max}	Q _{min}	Q _t	Q _{max}	Q _{min}	Q _t	Q _{max}
4" (DN 100)	13	98	980	-	-	-	13	89	890
6" (DN 150)	32	222	2220	-	-	-	30	200	2000
8" (DN 200)	32	384	3840	32	368	3680	31	351	3510
10" (DN 250)	50	605	6050	50	573	5730	50	551	5510
12" (DN 300)	78	781	7810	73	740	7400	70	708	7080
16" (DN 400)	120	1232	12320	115	1181	11810	110	1121	11210
20" (DN 500)	190	1937	19370	180	1848	18480	175	1761	17610
24" (DN 600)	280	2801	28010	265	2664	26640	250	2545	25450

Higher values may be selected for Q_{min} and lower values may be selected for Q_{max}. However, the measuring range must be at least 1:20.

Q_t depends on the measuring range and is as follows: Measuring range 1:20 : 0.2 Q_{max}
 1:30 : 0.15 Q_{max}
 ≥ 1:50 : 0.1 Q_{max}

information can be retrieved and settings can be made during the course of commissioning or if the device requires servicing, with the electronic circuitry box open. It is possible to navigate in a menu structure using four buttons.

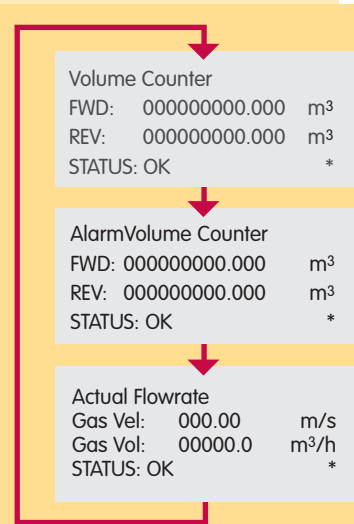
The display keypad is used for programming the passive 4 – 20 mA analogue outputs on the display board.

Measuring ranges

The measuring ranges have also been redefined within the framework of MID approval. Since ultrasonic gas meters are flow metering devices, it is the inside diameter of the meter, at a given gas velocity, which determines the flow rate. The table above shows the effects of the pipe wall thickness on the maximum possible measuring range.

Converting 'old to new'

Basically, most ultrasonic gas meters of less recent years of construction can be converted technically to a new construc-



Alternating display views

tion stage. If national approvals do not forbid this, such a conversion is frequently also possible 'on site'. Extensive tests have shown that the electronic circuitry unit, e.g. Series IV or IV.a to replace Series III, can be exchanged without any appreciable influence on the measurement accuracy and thus without recalibration. However, in order to turn such meters into MID-compliant meters, it is necessary to comply with the general framework of the MID in relation to compliance of the meter with the type-examination (module B) and appropriate quality assurance (module F or module D). At present, this can be done only by conversion at the manufacturing plant followed by high-pressure testing. Whatever you decide, we will be pleased to advise you to find an optimum solution.

