



Type examination certificate

No. CH-MI001-11052-00

Bauartprüfzertifikat

Applicant:
Auftraggeber:

G.GIOANOLA SRL
Strada Alessandria 50
14049 Nizza Monferrato (AT)
Italy

Requirements:
Anforderungen:

Swiss ordinance on measuring instruments (SR 941.210) of February 15, 2006 annex 2 module B;

Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), appendix B, class of measuring instruments MI-001.

Conformity of superseded standard:
EN 14154 Edition 2007

Type of instrument:
Geräteart:

Single-jet impeller meter intended for the metering of hot water

Type designation:
Typenbezeichnung:

**DARC, DARC-P, DALC
DBRC, DBRC-P, DBLC, DBLCR2, DBLCH
DPRC, DPRC-P, DPLC, DPLCR2, DPLCH**

Accuracy class(es):
Genauigkeitsklasse(n):

2 (according to OIML R 49:2006)

Characteristics:
Kenndaten:

MAP 16, DN 15 ... DN 40, T70, T90, Class B
Q₃ 1.6 ... Q₃ 16.0

Certificate valid until:
Zertifikat gültig bis:

August 07, 2021

CH-3003 Bern-Wabern, August 08, 2011

Notified body:
Benannte Stelle:

Certificate authority METAS-Cert
No. 1259

For the test:
Für die Prüfung:

Dr. Hugo Bissig

Jürg Ramseyer, Head of METAS-Cert



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1 Name and Type of the measuring instrument

Single-jet impeller meter intended for the metering of hot water

Type: DARC, DARC-P, DALC
DBRC, DBRC-P, DBLC, DBLCR2, DBLCH
DPRC, DPRC-P, DPLC, DPLCR2, DPLCH

2 Description of the Type

The water meters DARC are single-jet impeller meter with dry registers and the water meters DBRC and DPRC are single-jet impeller meters with wet registers intended for the metering of hot water.

- DARC: DC134, DC135, DC136, DC137, DC138 - General
- DBRC: DC139, DC140, DC141, DC142, DC143, DC144, DC145 - General
- DPRC: DC146, DC148, DC147, DC149, DC150, DC151, DC152 - General

3 Volume sensor

The water enters the meter through a filter, goes through the injection housing and activates the rotation of the impeller by a single jet.

For the type DARC, the pinion of the impeller axis conveys its rotations to the register wheels, which, through a magnetic joint, transmit the impeller rotations to the upper counter

Through a cam the first roll, indicating m³, drags the other rolls, creating a continuous motion.

For the type DBRC, the pinion of the impeller axis conveys its rotation to the register wheels, which transmits the rotations to the numeric rolls

Through a cam the first roll, indicating m³, drags the other rolls, creating a continuous motion.

For the type DPRC, the pinion of the impeller axis conveys its rotation to the register wheels, which transmits the rotations to the rolls inside the liquid filled housing.

Through a cam the first roll, indicating m³, drags the other rolls, creating a continuous motion.

- DARC: TT718, TT719, TT720, TT774, TT721, TT776, TT722, TT777 - scheme of components
- DBRC: TT723, TT724, TT783, TT725, TT726, TT784, TT727, TT778, TT728, TT780, TT729, TT781 - scheme of components
- DPRC: TT730, TT731, TT790, TT732, TT733, TT791, TT734, TT795, TT735, TT787, TT736, TT788 - scheme of components



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4 Indicating device

The indicating device is a dry register for the type DARC and a wet register for the types DBRC and DPRC. Models DARC and DBRC with 4-5-6-8 rolls and model DPRC with 6 rolls. All models are with 1 to 4 pointers depending on model that is chosen.

- DARC: TT737, TT738, TT739, TT740, TT741, TT742, TT743, TT744 – register 4-5-6 rolls and 8 rolls
- DBRC: TT745, TT746, TT747, TT748, TT749, TT750, TT751, TT752 – register 4-5-6 rolls and 8 rolls
- DPRC: TT753, TT754, TT755, TT756, TT757, TT758 – register 4-5-6 rolls

The star index system is described in the following drawings

- DARC: TT759, TT760
- DBRC: TT761, TT762
- DPRC: TT763, TT764

The meter can be adjusted by means of a screw which fixes a sector in the base of the housing.

Pulsed read out versions

The indication device on the meter remains the primary indication device and the pulsed read out can be used for a secondary indication device. The primary indication device is metrologically controlled and this measurement result serves as the basis for the transaction (according to the Directive 2004/22/EC of the European Parliament and Council of March 31, 2004 on measuring instruments (MID), annex I, clause 10)

The option denoted with –P is the water meter equipped for pulsed read-out system.

- DARC-P: TT765
- DBRC-P: TT768, TT769, TT766, TT767
- DPRC-P: TT768, TT769, TT766, TT767

Pulsed output with reed cable

The types DALC, DBLC and DPLC are the water meters DARC, DBRC and DPRC equipped with reed cable pulsed read-out system.

- DALC: TT775
- DBLC: TT782, TT779
- DPLC: TT789, TT779

Pulsed output with double reed cable

The types DBLCR2 and DPLCR2 are the water meters DBRC and DPRC equipped with double reed cable pulsed read-out system.

- DBLCR2: TT794, TT793
- DPLCR2: TT794, TT793



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Pulsed output with Hall effect

The types DBLCH and DPLCH are the water meters DBRC and DPRC equipped with Hall effect pulse read-out system

- DBLCH: TT800, TT799
- DPLCH: TT800, TT799

5 Technical specifications

Mounting		H / V
Pressure loss class ΔP		63
Calibration value	(l)	0.05
Nominal pressure MAP	MPa	1.6
Temperature class		T70: $0.1\text{ °C} < T \leq 70\text{ °C}$ T90: $0.1\text{ °C} < T \leq 90\text{ °C}$
Accuracy class ($Q_1 \leq Q < Q_2$) ($Q_2 \leq Q \leq Q_4$)		2 (according to OIML R 49:2006) $\pm 5\%$ $\pm 2\%$, at $T \leq 30\text{ °C}$ $\pm 3\%$, at $T > 30\text{ °C}$
Environmental class		Class B 5 °C to 55 °C
Electromagnetic environment		N/a
Flow profile sensitivity class		U0/D0

DN 15 / 20

Q_3	(m^3/h)	1.6	2.5	2.5	4.0
Q_4	(m^3/h)	2	3.125	3.125	5.0
Q_2/Q_1		1.6	1.6	1.6	1.6
Nominal Diameter Threaded connector		DN 15 3/4" G	DN 15 3/4" G	DN 20 1" G	DN 20 1" G
Measuring range R (Q_3/Q_1) (According to EN 14154-1:2007, 7.2)	H	DARC R50 ... R10 DBRC/DPRC R100 ... R10	DARC R80 ... R10 DBRC/DPRC R160 ... R10	DARC R50 ... R10 DBRC/DPRC R100 ... R10	DARC R80 ... R10 DBRC/DPRC R160 ... R10
	V	DARC R50 ... R10 DBRC/DPRC R80 ... R10	DARC R80 ... R10 DBRC/DPRC R125 ... R10	DARC R50 ... R10 DBRC/DPRC R80 ... R10	DARC R80 ... R10 DBRC/DPRC R125 ... R10



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Overall length	(mm)	80, 110, 115, 130, 145, 160, 165, 170	130
Star index - cyclic volume		0,02867 l / full round	0,04459 l / full round

DN 25 / 32

Q ₃	(m ³ /h)	4.0	6.3	6.3	10.0
Q ₄	(m ³ /h)	5.0	7.8	7.8	12.5
Q ₂ /Q ₁		1.6	1.6	1.6	1.6
Nominal Diameter Threaded con- nector		DN 25 1.1/4" G	DN 25 1.1/4" G	DN 32 1.1/2" G	DN 32 1.1/2" G
Measuring range R (Q ₃ /Q ₁) (According to EN 14154-1:2007, 7.2)	H	DARC/DBRC /DPRC R100 ... R10	DARC/DBRC /DPRC R160 ... R10	DARC/DBRC /DPRC R100 ... R10	DARC/DBRC /DPRC R160 ... R10
	V	DARC/DBRC /DPRC R25 ... R10	DARC/DBRC /DPRC R40 ... R10	DARC/DBRC /DPRC R25 ... R10	DARC/DBRC /DPRC R40 ... R10
Overall length	(mm)	160			
Star index - cyclic volume		0,08403 l / full round		0,08403 l / full round	

DN 40

Q ₃	(m ³ /h)	10.0	16.0
Q ₄	(m ³ /h)	12.5	20.0
Q ₂ /Q ₁		1.6	1.6
Nominal Diameter Threaded con- nector		DN 40 2" G	DN 40 2" G
Measuring range R (Q ₃ /Q ₁) (According to EN 14154-1:2007, 7.2)	H	DARC/DBRC /DPRC R100 ... R10	DARC/DBRC /DPRC R160 ... R10
	V	DARC/DBRC /DPRC R25 ... R10	DARC/DBRC /DPRC R40 ... R10
Overall length	(mm)	200	
Star index - cyclic volume		0,22624 l / full round	



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6 Requirements for manufacturing, putting into use and utilization

Requirements for the manufacturing

The water meter shall be tested at the end of the manufacturing process according to the EN 14154-1:2007 with a water temperature of (50 ± 5) °C for the temperature class T70 and T90 at the following flow rates:

$$1.0 Q_1 \leq Q \leq 1.1 Q_1$$

$$1.0 Q_2 \leq Q \leq 1.1 Q_2$$

$$0.9 Q_3 \leq Q \leq 1.0 Q_3$$

The errors of indication determined at each of the above flow rates shall not exceed the maximum permissible errors.

Requirements for the putting into use

There is no requirement for installation lengths of straight pipe upstream and downstream of the meter.

User instructions

There are no special user instructions.

7 Instructions for the examination of devices in use

Documents for the verification

Type approval certificate and technical documentation

Testing equipment

The verification can be done by means of volumetric or gravimetric measurement principle or by comparison with secondary standards (calibrated water meters). The measurement principle has to cover the range of flow rates mentioned in section 6.

Metrological verification

The metrological verification has to be performed at rated operation conditions.

8 Terms of placing on the market

The water meter shall be clearly and indelibly marked with the following information:

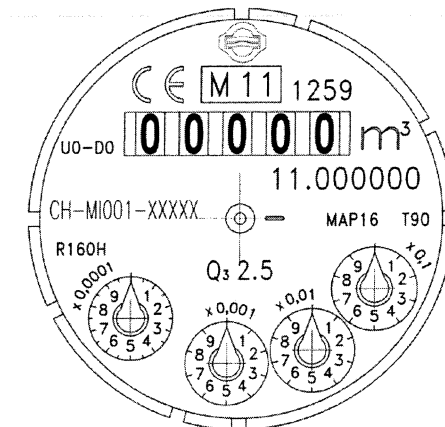
- Unit of measurement: cubic meter
- Q_3
- R Class
- No. of the type examination certificate
- Name or trademark of the manufacturer
- Year of manufacture and serial number
- Direction of flow
- Maximum admissible pressure (MAP) if it exceeds 1 MPa
- Temperature class if it differs from T30



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- class of flow disturbance sensitivity (These declarations can be on a separate data sheet which has to be assigned to the meter by means of an unambiguous identification)

Example:

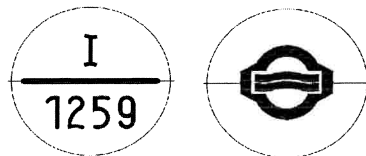


- DARC: TT804, TT805, TT806, TT807, TT808, TT809
- DBRC: TT804, TT805, TT812, TT813, TT814, TT815
- DPRC: TT816, TT817, TT818

9 Sealing and conformity markings

The measuring sensor and the register are tightly interconnected. The sealing is made through an antifraud protective plastic cap.

Instead of the antifraud protective cap, meters can be also sealed with a filament that is set through an eyelet on the register body and through the adjustment-screw and is fixed by means of a small seal. Such seal is marked -in this case only- according to the drawing TT712:



- DARC: TT819, TT827, TT820, TT821, TT822 – sealing
- DBRC: TT823, TT829, TT824, TT825, TT826 – sealing
- DPRC: TT823, TT829, TT824, TT825, TT826 – sealing

The CE-code, the metrology M and the number of the certificate authority (Module D) have to be on the identification plate of the water meter.



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10 History of certificate

Edition	Date	Description
CH-MI001-11052-00	August 08, 2011	First type examination certificate