MANAGEMENT SYSTEM CERTIFICATE

Certificate no.:
10000364928-MSC-ACCREDIA-ITA

Initial certification date:
04 December 2020

Valid:
04 December 2023 – 03 December 2026

This is to certify that the management system of

G2 MISURATORI S.r.l.

Strada Alessandria, 50 A/B - 14049 Nizza Monferrato (AT) - Italy

has been found to conform to the Occupational Health and Safety Management System standard:
ISO 45001:2018

This certificate is valid for the following scope:

Design and manufacture, through assembly, testing and packaging, of water and heat meters.
(IAF 19)

Place and date:
Vimercate (MB), 18 October 2023

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

SGQ N° 003 A
SGA N° 003 D
SGE N° 007 M
SCR N° 004 F
EMAS N° 009 P
PRD N° 003 B
PRS N° 094 C
SSI N° 002 G

Membro di MLA EA per gli schemi di accreditamento SGQ, SGA, PRD, PRS, ISP, GHG, LAB e LAT, di MLA IAF per gli schemi di accreditamento SGQ, SGA, SSI, FSM e PRD e di MRA ILAC per gli schemi di accreditamento LAB, MED, LAT e ISP

For the issuing office:
DNV - Business Assurance
Via Energy Park, 14, - 20871 Vimercate (MB) - Italy

Claudia Baroncini
Management Representative

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance Italy S.r.l., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy - TEL: +39 68 99 905. www.dnv.it

CERTIFICATO DI SISTEMA DI GESTIONE

Certificato n.:
145962-2013-AE-ITA-ACCREDIA

Data Prima Emissione:
26 novembre 2013

Validità:
28 novembre 2025 – 27 novembre 2028

Si certifica che il sistema di gestione di

G2 MISURATORI S.r.l.

Strada Alessandria, 50 A/B - 14049 Nizza Monferrato (AT) - Italia

È conforme allo Standard:

ISO 14001:2015

Questa certificazione è valida per il seguente campo applicativo:

Progettazione e produzione di contatori per acqua e per calore attraverso le fasi di assemblaggio, collaudo e confezionamento
(IAF: 18)

Valutato secondo le prescrizioni del Regolamento Tecnico RT-09

Luogo e Data:
Vimercate (MB), 18 novembre 2025

MANAGEMENT SYSTEM CERTIFICATION
ACCREDIA
00010

Per l'Organismo di Certificazione:
DNV - Business Assurance
Via Energy Park, 14, - 20871 Vimercate (MB) - Italy

Claudia Baroncini
Management Representative

Il mancato rispetto delle condizioni stabilite nel regolamento di certificazione potrebbe invalidare il certificato.
UNITÀ ACCREDITATA: DNV Business Assurance Italy S.r.l., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy - TEL: +39 039 68 99 905. www.dnv.it

CERTIFICATO DI SISTEMA DI GESTIONE

Certificato n.:
CERT-03154-98-AQ-TRI-SINCERT

Data Prima Emissione:
03 luglio 1998

Validità:
15 dicembre 2024 – 14 dicembre 2027

Si certifica che il sistema di gestione di

G2 MISURATORI S.r.l.

Via San Martino, 38 - 14100 Asti (AT) - Italia

e i siti come elencati nell'Appendice che accompagna questo certificato

È conforme allo Standard:

ISO 9001:2015

Questa certificazione è valida per il seguente campo applicativo:

Progettazione, produzione e commercializzazione di contatori per acqua, di calore, di moduli radio e sistemi radio per la telelettura (IAF: 18, 19, 29)

Luogo e Data:
Vimercate (MB), 28 novembre 2024

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO

SGQ N° 003 A
SGA N° 003 D
SGE N° 007 M
SCR N° 004 F
EMAS N° 009 P
PRD N° 003 B
PRS N° 094 C
SSI N° 002 G

Membro di MLA EA per gli schemi di accreditamento SGQ, SGA, PRD, PRS, ISP, GHG, LAB e LAT, di MLA IAF per gli schemi di accreditamento SGQ, SGA, SSI, FSM e PRD e di MRA ILAC per gli schemi di accreditamento LAB, MED, LAT e ISP

Per l'Organismo di Certificazione:
DNV - Business Assurance
Via Energy Park, 14, - 20871 Vimercate (MB) - Italy

Claudia Baroncini
Management Representative

Certificato n.: CERT-03154-98-AQ-TRI-SINCERT
Luogo e Data: Vimercate (MB), 28 novembre 2024

Appendice al Certificato

G2 MISURATORI S.r.l.

I siti inclusi nella certificazione sono i seguenti:

Nome del sito	Indirizzo del sito	Scopo del Sito
G2 MISURATORI S.r.l.	Strada Alessandria, 50 A/B - 14049 Nizza Monferrato (AT) - Italia	Progettazione, produzione e commercializzazione di contatori per acqua, di calore, di moduli radio e sistemi radio per la telelettura
G2 MISURATORI S.r.l.	Via San Martino, 38 - 14100 Asti (AT) - Italia	Sede legale

Certificato

Reg. № IT-TO-6849-IS/28.08.2024

Il sistema di gestione di

G2 MISURATORI SRL

VIA SAN MARTINO 38 - 14100 ASTI

è valutato ed approvato nel rispetto dei requisiti di

EN ISO/IEC 27001:2022

Scopo della certificazione:

Progettazione, produzione e commercializzazione di contatori per acqua, di calore, di moduli radio e sistemi radio per la telelettura

Dichiarazione di applicabilità: Ed.0 Rev.0 del 14/06/2024

Sito lavorativo:

STRADA ALESSANDRIA 50/A-B - 14049 NIZZA MONFERRATO (AT)

EA: 0

BORIS STOYANOV,
Direttore

Senza l'effettuazione degli audit di sorveglianza, questo certificato è valido fino al: 28.08.2025

Dopo l'esito positivo dell'audit di sorveglianza 1, AQ Cert emette l'Allegato 1 per espandere la validità fino al: 28.08.2026

Dopo l'esito positivo dell'audit di sorveglianza 2, AQ Cert emette l'Allegato 2 per espandere la validità fino al: 28.08.2027

La validità del certificato può essere verificata su italia.aqcert.org/check

Organismo di certificazione per i sistemi di gestione presso Alpha Quality Certification Ltd.
UIC: 200229912, Indirizzo di registrazione: Via Kishinev 8-10, 1407 Sofia, Bulgaria
Accreditamento di EA BAS, № 9 OCC·· +35928628357 · office@aqcert.org · www.aqcert.org
Per informazioni in Italiano, contatto autorizzato per l'Italia +393478797694

ИА "БСА"
Рег. № 9 ОСС
ОРГАН ПО СЕРТИФИКАЦИЯ НА СИСТЕМИ

CERTIFICATO - CERTIFICATION

Si certifica che il Sistema di Gestione per la Parità di Genere:
This is to certify that the Gender Equality Management System:

G2 MISURATORI S.R.L.

Sede Legale / Registered Office: Via San Martino, 38 14100 Asti AT
Sedi Operative / Operational Headquarters: Strada Alessandria, 50 A/B 14049 Nizza Monferrato AT

è conforme ai requisiti della prassi di riferimento – *is compliant against the requirements of the reference practice:*

UNI/PdR 125:2022

per il/i seguente campo di applicazione - *for the following scope of application:*

"Misure per garantire la parità di genere nel contesto lavorativo" per i processi di: Progettazione, produzione e commercializzazione di contatori per acqua, di calore, di moduli radio e sistemi radio per la telelettura

Measures to ensure gender equality in workplace for: Design, production and marketing of water meters, heat meters, radio modules and radio systems for remote reading

Questo certificato è di proprietà di Q-AID ASSESSMENT & CERTIFICATION S.r.l. e dev'essere restituito su richiesta. E' valido (salvo annullamento, sospensione o ritiro da parte di Q-AID S.r.l.) alle condizioni indicate nello schema particolare per la certificazione (QIPP-REG_SIST). La validità del presente certificato è subordinata alla presenza dei sigilli comprovanti l'esito positivo delle verifiche entro la data prevista. Il certificato emesso nella revisione corrente annulla e sostituisce il precedente, se presente. Il numero del certificato non subisce variazioni.
*This certificate is owned by Q-AID ASSESSMENT & CERTIFICATION S.r.l. and must be returned upon request. It is valid (unless canceled, suspended or withdrawn by Q-AID S.r.l.) under the conditions set out in the particular scheme for the certification (*QIPP-REG_SIST).
The validity of this certificate is subject to the presence of the seals assessing the positive outcome of the checks by the scheduled date. The validity of this certificate is subject to the carrying out of periodic annual checks. The certificate issued in the current revision cancels and replaces the previous one, if any. The number of the certificate does not change.

N° QA/019/25

Prima Emissione *First Issue Date*	Scadenza Certificato *Expiry Date*	EMISSIONE CORRENTE *Current Issue*	Spazio Sigillo *Seal Place* Prima Sorveglianza *First Surveillance*	Spazio Sigillo *Seal Place* Seconda Sorveglianza *Second Surveillance*
08/02/2025	**07/02/2028**	**08/02/2025**	**07/02/2026**	**07/02/2027**

ORGANIZZAZIONI UNI

Q-AID ASSESSMENT & CERTIFICATION

ACCREDIA L'ENTE ITALIANO DI ACCREDITAMENTO

N° 0110 MS

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC

Signatory of EA, IAF and ILAC Mutual Recognition Agreements

Stefano Fantini

COO - Chief Operating Officer

Q-AID ASSESSMENT & CERTIFICATION

Per informazioni sulla validità del presente certificato contattare / *For information concerning the validity of the certificate please contact*: **info@q-aid.it**
Q-Aid Assessment & Certification srl – sede legale: Piazza della Repubblica,19 – 20124 Milano (MI) – e-mail: info@q-aid.it – PEC: q-aid@pec.it

DT01469LAT/005

Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC
Signatory of EA, IAF and ILAC Mutual Recognition Agreements

Certificato di Accreditamento
Accreditation Certificate

Accreditamento n. / *Accreditation n.*: **01469 Calibration** REV. **005**

Emesso da / *Issued by*: **Dipartimento Laboratori di Taratura**

Si dichiara che / *We declare that*: **G2 Misuratori s.r.l.**

Sede Principale/Headquarter
Strada Alessandria, 50 A/B 14049 NIZZA MONFERRATO (AT) - Italia

È conforme ai requisiti della norma: UNI CEI EN ISO/IEC 17025:2018

Meets the requirements of the standard: ISO/IEC 17025:2017

Quale: **Laboratorio di taratura**

As: ***Calibration laboratory***

Data di 1ª emissione *1st issue date*	Data di revisione *Revision date*	Data di scadenza *Expiry date*
07-03-2019	**19-01-2025**	**06-03-2027**

L'accreditamento attesta la competenza, l'imparzialità ed il costante e coerente funzionamento del Laboratorio per operare quale Centro di taratura ACCREDIA per le grandezze, i campi e le incertezze di misura riportati nella tabella allegata al presente certificato di accreditamento. Il presente certificato non è da ritenersi valido se non accompagnato dalla tabella allegata, e può essere sospeso, revocato o ridotto in qualsiasi momento nel caso di inadempienza accertata da parte di ACCREDIA. La vigenza dell'accreditamento può essere verificata sul sito web (www.accredia.it) o richiesta al Dipartimento di competenza. I requisiti del sistema di gestione riportati nella norma ISO/IEC 17025 sono scritti in un linguaggio attinente all'attività di laboratorio e sono generalmente in accordo con i principi della norma ISO 9001 (si veda il comunicato congiunto ISO-ILAC-IAF dell'Aprile 2017).Il QRcode consente di accedere direttamente al sito www.accredia.it per verificare la validità del certificato di accreditamento rilasciato al CAB. La data di revisione riportata sul certificato corrisponde alla data di delibera del pertinente Comitato Settoriale di Accreditamento. L'atto di delibera, firmato dal Presidente di ACCREDIA, è scaricabile dal sito www.accredia.it, sezione 'Documenti'.ACCREDIA è l'Ente Unico nazionale di accreditamento designato dal governo italiano, in applicazione del Regolamento Europeo 765/2008.

The accreditation attests competence, impartiality and consistent operation in performing laboratory activities, operating as calibration Centre of ACCREDIA, for the metrological quantities, the range and uncertainty of measurement reported in the table attached to the present accreditation certificate. The present certificate is valid only if associated to the annexed schedule, and can be suspended, withdrawn or reduced at any time in the event of nonfulfillment as ascertained by ACCREDIA. Confirmation of the validity of accreditation can be verified on website (www.accredia.it) or by contacting the relevant Department. The management system requirements in ISO/IEC 17025 are written in language relevant to laboratory operations and generally operate in accordance with the principles of ISO 9001 (refer joint ISO-ILAC-IAF Communiqué dated April 2017).The QRcode links directly to the website www.accredia.it to check the validity of the accreditation certificate issued to the CAB. The revision date shown on the certificate refers to the update / resolution date of the Sector Accreditation Committee. The Resolution, signed by the President of ACCREDIA, can be downloaded from the website www.accredia.it, 'Documents' section.ACCREDIA is the sole national Accreditation Body, appointed by the Italian government in compliance with the application of REGULATION (EC) No 765/2008.

MD-17-DT Rev. 06

SEDE LEGALE
Via Guglielmo Saliceto, 7/9 – 00161 Roma
T +39 06 8440991 / F +39 06 8841199
accredia.it / info@accredia.it
C.F. / P. IVA 10566361001

SEDE OPERATIVA
Strada delle Cacce, 91 – 10135 Torino
T +39 011 328461 / F +39 011 3284630
segreteriadt@accredia.it

SEDE AMMINISTRATIVA
Via Tonale, 26 – 20125 Milano
T +39 02 2100961 / F +39 02 21009637
milano@accredia.it

LoRa Alliance®



LoRaWAN CERTIFIED℠

CERTIFICATE OF COMPLIANCE

LoRaWAN Certified℠ Product

The LoRa Alliance® is pleased to congratulate G2 MISURATORI SRL on the completion of the LoRaWAN Certified℠ certification program for the following product:

Manufacturer	G2 MISURATORI SRL
Type of Device	End-Device/Sensor
Model Identification	G2-RF-SLW
LoRaWAN® Region	EU863-870
Firmware or Software Version	1.94k
Hardware Version	1.1
Certification Date	June 22nd, 2021
LoRaWAN® Specification Version	V1.0.2
LoRaWAN® Regional Parameters Version	NA
Class of Operation (A, B or C)	A
Optional ADR Feature Supported	Yes

This Certificate serves to confirm that the above-mentioned product has passed all relevant tests in conjunction with the LoRaWAN Certified℠ program and is deemed compliant to it. The manufacturer has been granted the right to use the LoRaWAN Certified℠ logo.

The usage of the LoRaWAN Certified℠ logo is limited to the described device and does not encompass any changes, firmware upgrades or subsequent versions and models after the listed test date. All usage guidelines for the LoRa Alliance® also apply to the above.

Congratulations on your compliance to the program!

Sincerely,

Donna Moore, CEO and Chair

5177 Brandin Court, Fremont, CA 94538, USA • Phone +1 510-492-4044 • Fax +1 510-492-4001
www.lora-alliance.org

DVGW
CERT
DVGW CERT ZP 4400

DVGW
CERT

certificate of conformity

OMS-Konformitätsbescheinigung

OG-4467DM0207
Registration Number
Registriernummer

Field of Application ***Anwendungsbereich***	smart metering components *Smart-Metering Komponenten*
Owner of Certificate ***Zertifikatinhaber***	G2 misuratori S.r.l. Via San Martino, 38, I-14100 Asti (AT)
Distributor ***Vertreiber***	G2 misuratori S.r.l. Via San Martino, 38, I-14100 Asti (AT)
Product Category ***Produktart***	OMS-components: Wireless M-Bus (4467)
Product description ***Produktbezeichnung***	OMS-interface for a water meter
Model ***Modell***	G2-IPS-CWMB; G2-RF-SWMB
Test reports ***Prüfberichte***	Supplement test: 20-00147-AB04-464 from 22.04.2026 (EBI) Type testing: 20-00147-464 from 20.04.2021 (EBI)
Test basis ***Prüfgrundlagen***	DVGW CERT ZP 4400 (13.12.2017) DVGW G 5484 (01.09.2016)
Date of Expiry / File No. ***Ablaufdatum / AZ***	20.04.2031 / 26-0074-GOV

70028-04-A-DE

17.06.2026 Cat A-1/2
Date, Issued by, Sheet, Head of Certification Body
Datum, Bearbeiter, Blatt, Leiter der Zertifizierungsstelle

DAkkS
Deutsche
Akkreditierungsstelle
D-ZE-16028-01-00

DVGW CERT GmbH
Josef-Wirmer-Str. 1-3
53123 Bonn
Tel. +49 228 9188-888
info@dvgw-cert.com
www.dvgw-cert.com

Type ***Typ***	**Technical Data** ***Technische Daten***	**Remarks** ***Bemerkungen***
G2-IPS-CWMB-N; G2-RF-SWMB	Protocol: M-Bus Transmission frequency: 868,95	

Type Variation ***Ausführungsvariante***	**Explanations** ***Erläuterungen***
G2-IPS-CWMB	OMS-modul with integrated inductive sensor for water meters
G2-RF-SWMB	OMS-modul for cable connection to external sensors G2-IPS

Hints of Utilization / Remarks
Verwendungshinweise / Bemerkungen

The meter and the measuring unit were not part of the type examination.
The test refers solely to the test of the M-Bus according to the OMS-CT Generation 4 (2016 + 2020); Open Metering Conformance Test; Volume 1-4, OMS Conformance Tester Laboratory issue 4.3.3

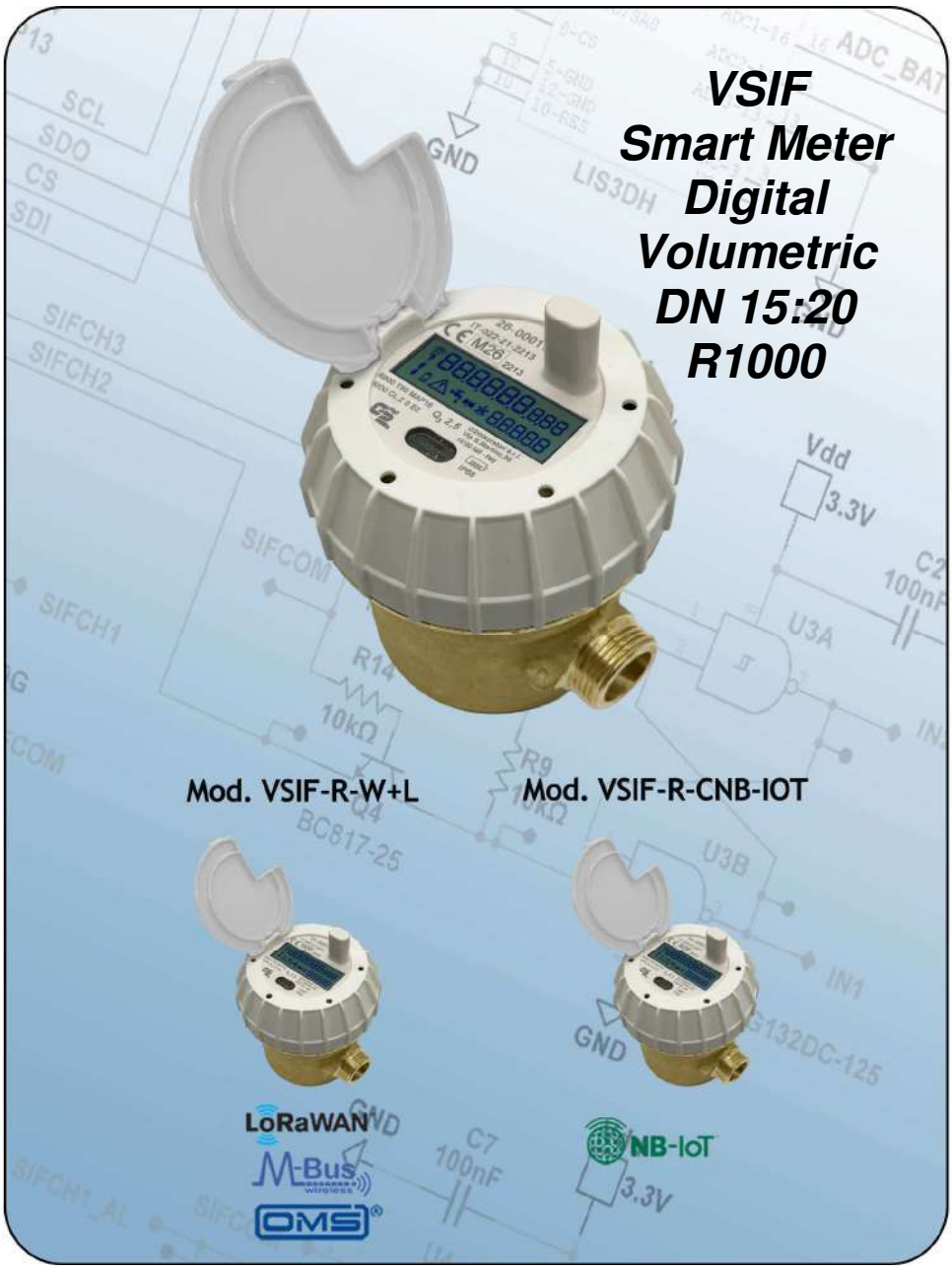
Device type: 0x07; for water
Version 0x01
OMS interface: T1
Frequency: 868.95 MHz
Encryption mode: 5 (Security Profile A)
Transmission rate: 120 s
Installation telegram: no
Static telegram: no
Compact load profile: no
Temperature range: -10 ° C ... +55 ° C
Application class: HT
Power supply: battery 3,6 V
Life time: up to 10 years
Antenna: intergrated
RED (2014/53/EU): TESEO S.P.A.C.E. Test Report Doc. No: 18162 rev 0 dated 17.12.2018

G2 misuratori

THE VALUE OF METERING

CE MID

SMART METERS



- ❑ Smart meter, a digital volumetric meter with a rotating piston, featuring a 360° rotatable dial, direct reading, and an electronic display with an **LCD screen** and radio data transmission**:**

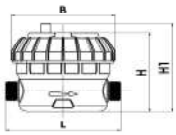
  - meter with readio module mod. **VSIF-R-W+L** protocol **LoRaWAN for fixed network +** protocol **W-Mbus OMS for Walk-by/Drive**: the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol.
  - meter with radio module mod. **VSIF-R-CNB-IOT NB-Iot** with protocol MQTT*

- ❑ Sizes DN 15–20, dry-dial for clean water, temperature class T50
- ❑ All models are **MID**-approved in accordance with the current Directive (Module B+D), in compliance with standards **EN 14154** and **OIML R49**, achieving an R (Q3/Q1) rating of up to **1000**
- ❑ U0-D0: No straight pipe are required upstream or downstream of the meter
- ❑ All models are certified for use with drinking water in accordance with Ministerial Decree **No. 174** of 6 April 2004
- ❑ Transmitted consumption data, net of any reverse flows
- ❑ Multi-layered cryptographic data security
- ❑ Available in a LoRaWAN-only or W-Mbus OMS-only version

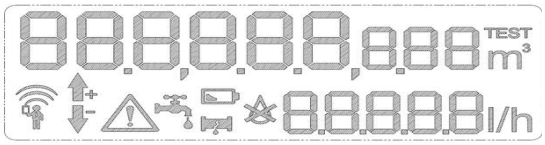
SMART METERS

Technical specifications – DN	*15*	*20*
Permanent flow rate Q_3 (m^3/h)	***2,5***	***4***
Overload capacity Q_4 (m^3/h)	*3,125*	*5*
Transition flow rate Q_2 (l/h)	8	*12,8*
Minimum flow rate Q_1 (l/h)	5	*8*
*Measuring range R (**Other R available on request**)*	*500 HV*	*500 HV*
Strarting flow (l/h)	*0,5*	*0,5*
Pressure loss class ΔP (bar)	*0,63*	*0,63*
Body material	*Composite/Brass*	*Brass*
Operating ambient temperature	*-25° + 55°C*	
Maximum permissible operating pressure MAP (bar)	*16*	*16*
Dial display range min / max (m^3)	*0,0001 / 100.000*	*0,0001 / 100.000*
L) Length of the meter excluding fittings (mm)	*110-115-145-165-170*	*130-190*
Length of the meter, including fittings (mm)	*190-195-210-225-250*	*226-290*
H) Maximum height of standard model (mm)	*106*	*113*
H1) Maximum height when pulses are being emitted (mm)	*140*	*145*
B) Maximum overall diameter (mm)	*98,5*	*98.5*
Weight including fitting (kg)	*1,2*	*1.8*
Weight excluding fittings (kg)	*1*	*1.5*

dimensions



display

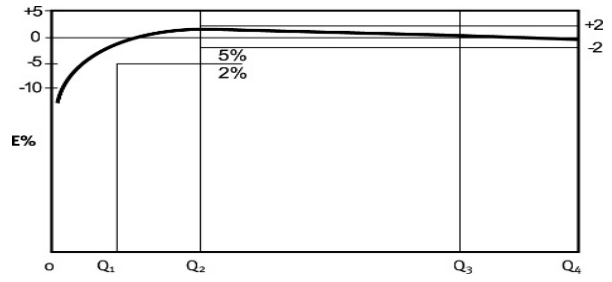




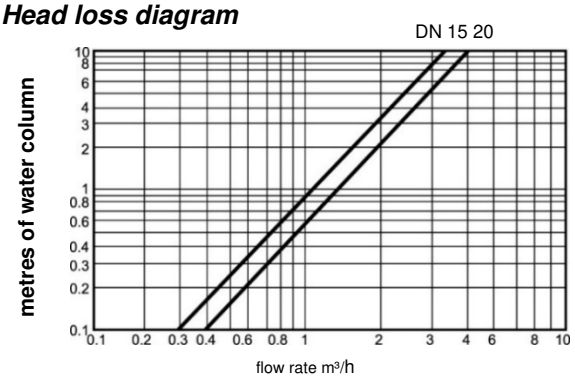
A newly designed model that ensures:
- maximum quietness (<20dB)
- compact dimensions,
- a filtration system designed to withstand high levels of airborne particles

The following options are available on request:
- ❑ Non-return valve built into the outlet pipe
- ❑ Optional duct filter
- ❑ Resin coating on request
- ❑ LoRaWAN protocol operating at 915 MHz (on request)

Typical error curve



Head loss diagram



Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Degree of protection	IP68
Certification	EC, European Directive on Electromagnetic Compatibility

Technical specifications of the OMS-certified Wireless M-Bus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Remote transmission	Up to 500 metres in ideal conditions

Technical specifications of the certified LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

The Company reserves the right to make changes to technical specifications and product illustrations –04/26

Made in ITALY

G2 misuratori S.r.l. -
Via San Martino, 38 – 14100 ASTI (AT) – ITALY
Tel. +39. 0141.721787– Fax +39.0141.702280
E-mail: info@g2misuratori.it
Http://www.g2misuratori.it

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Via Fontanelle, 3 – 00020 RIOFREDDO
Città metropolitana di Roma Capitale – ITALY

ISO 9001 - ISO 14001 - ISO 45001
UNI/PdR 125:2022

AQUA
European Association of Smart Meter Manufacturers

G2 misuratori

THE VALUE OF METERING

CE MID

SMART METERS



- Smart meter: a direct-reading rotary-piston volumetric meter with radio data transmission:

  -meter with radio module Mod. **VSF-R-W+L** protocol **LoRaWAN for fixed network** + protocol **W-Mbus OMS for Walk-by/Drive:** the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol.
  - meter with radio module Mod. **VSF-R-CNB-IOT** with protocol MQTT*
- Sizes DN 15-20, dry-dial, for clean water, temperature class T50
- All models are **MID-**approved in accordance with the current Directive (Module B+D), in compliance with standards **EN 14154** and **OIML R49**, achieving an R (Q3/Q1) rating of up to **1000**
- U0-D0: No straight pipe runs are required upstream or downstream of the meter
- All models are certified for use with drinking water in accordance with Ministerial Decree No. **174** of 6 April 2004
- Transmitted consumption data, net of any reverse flows
- Multi-layered cryptographic data security
- Available in a LoRaWAN-only or W-Mbus OMS-only version

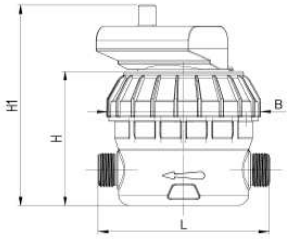
SMART METERS

Technical specifications – DN	15	20
Permanent flow rate Q_3 (m^3/h)	**2,5**	**4**
Overload capacity Q_4 (m^3/h)	3,125	5
Transition flow rate Q_2 (l/h)	8	12,8
Minimum flow rate Q_1 (l/h)	5	8
Measuring range R (**Other R models available on request**)	500 HV	500 HV
Starting flow (l/h)	0,5	0,5
Pressure loss class ΔP (bar)	0,63	0,63
Body material	Composite/Brass	Brass
Operating ambient temperature	-25° + 55°C	
Maximum permissible operating pressure MAP (bar)	16	16
Dial display range min / max (m^3)	0,0001 / 100.000	0,0001 / 100.000
L) Length of the meter excluding fittings (mm)	110-115-145-165-170	130-190
Length of the meter, including fittings (mm)	190-195-210-225-250	226-290
H) Maximum height of standard model (mm)	105	130
H1) Maximum height when pulses are being emitted (mm)	150	170
B) Maximum overall diameter (mm)	98,5	90
Weight including fitting (kg)	0,69	1.8
Weight excluding fittings (kg)	0,49	1.5

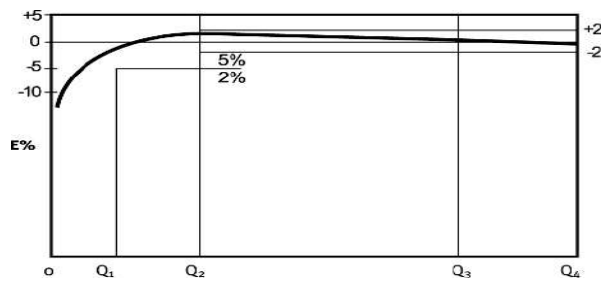
A newly designed model that ensures:
- maximum quietness (<20dB)
- compact dimensions,
- a filtration system designed to withstand high levels of airborne particles

The following options are available on request:

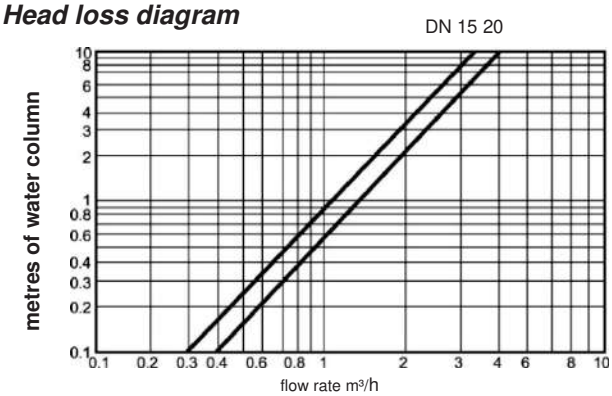
- ❑ Non-return valve built into the outlet
- ❑ Optional duct filter
- ❑ Resin coating on request
- ❑ LoRaWAN protocol operating at 915 MHz (on request)



Typical error curve



Head loss diagram



Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Degree of protection	IP68
Certification	EC, European Directive on Electromagnetic Compatibility

Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications of the Wireless M-Bus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

The Company reserves the right to make changes to technical specifications and product illustrations –04/26

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AQUA European Association of Smart Meter Manufacturers

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THE VALUE OF METERING

CE MID

VOLUMETER



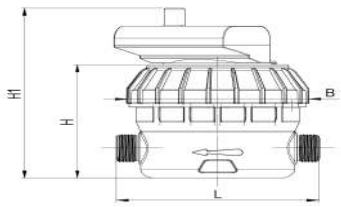
- VOLUMETRIC COUNTER, **rotating piston**, 8-digit-rolls direct reading on 360° rotating dial, preset for inductive sensor k=1
- mineral glass and copper can housing- IP68
- **Newly developed** mod. VSF DN 15, dry dial, for clean water, temperature class T50, ensuring:
  - Maximum quietness (< 20dB)
  - Reduced overall dimensions
  - Filter system for high resistance of suspended particles
- All models are MID approved according to the current Directive (module B+D), in compliance with **UNI EN ISO 4064 and OIML R49**, achieving an R (Q3/Q1) up to 1000
- U0-D0: no straight pipe sections are required upstream and downstream of the meter
- All models are certified for use with drinking water according to **D.M. 174** of 6 April 2004

VOLUMETER

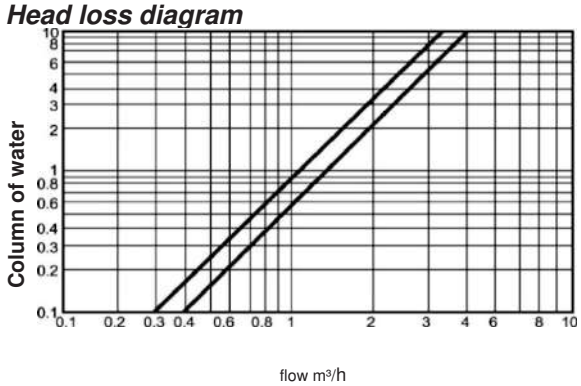
Technical Data – DN-inches	15	20
Continuous flow rate Q3 (m³/h)	**2,5**	**4**
Max. flow rate for short period Q4 (m³/h)	3,125	5
Transitional flow rate Q_2 (l/h)	8	12,8
Minimum Flow rate Q_1 (l/h)	5	8
Mesuring range R **(other R's available on request)**	500HV	500HV
Starting flow (l/h)	0,5	0,5
Pressure loss class ΔP (bar)	0,63	0,63
Body material	Composite/Brass	Brass
Working environmental temperature	-25° +55°C	
Max. allowed working pressure MAP (bar)	16	16
Dial register from/to (m³)	0,0001 / 100.000	0,0001 / 100.000
L) Length without couplings (mm) **(other lengths available on request)**	110	190
Length with couplings (mm)	190	290
H) Maximum height standard model (mm)	105	130
H1) Maximum height with pulse output (mm)	150	170
B) Maximum overall diameter (mm)	98,5	90
Weight with couplings (kg)	0,69	1.8
Weight without couplings (kg)	0,49	1.5

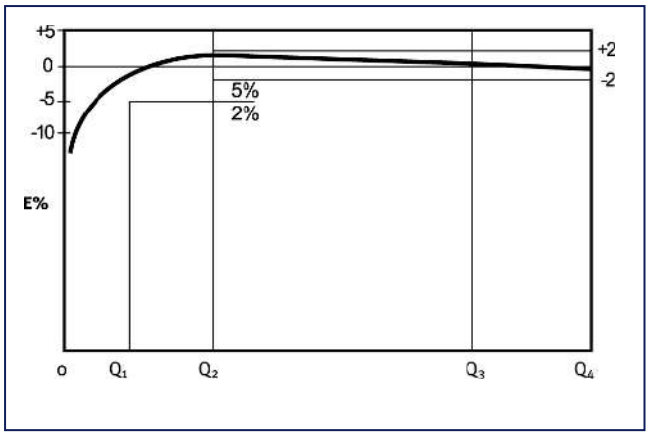
The following options are available on request:

- ❑ Models complete with data transmission via radio frequency 868Mhz with LoRaWAN, W-Mbus OMS or both with **automatic switch,** via NB-Iot with protocol MQTT*
- ❑ On request LoRaWAN protocol with 915mhz frequency
- ❑ Non-return valve built-in in outlet pipe
- ❑ 5-digit-rolls counter
- ❑ Policarbonate glass- IP68



Head loss diagram





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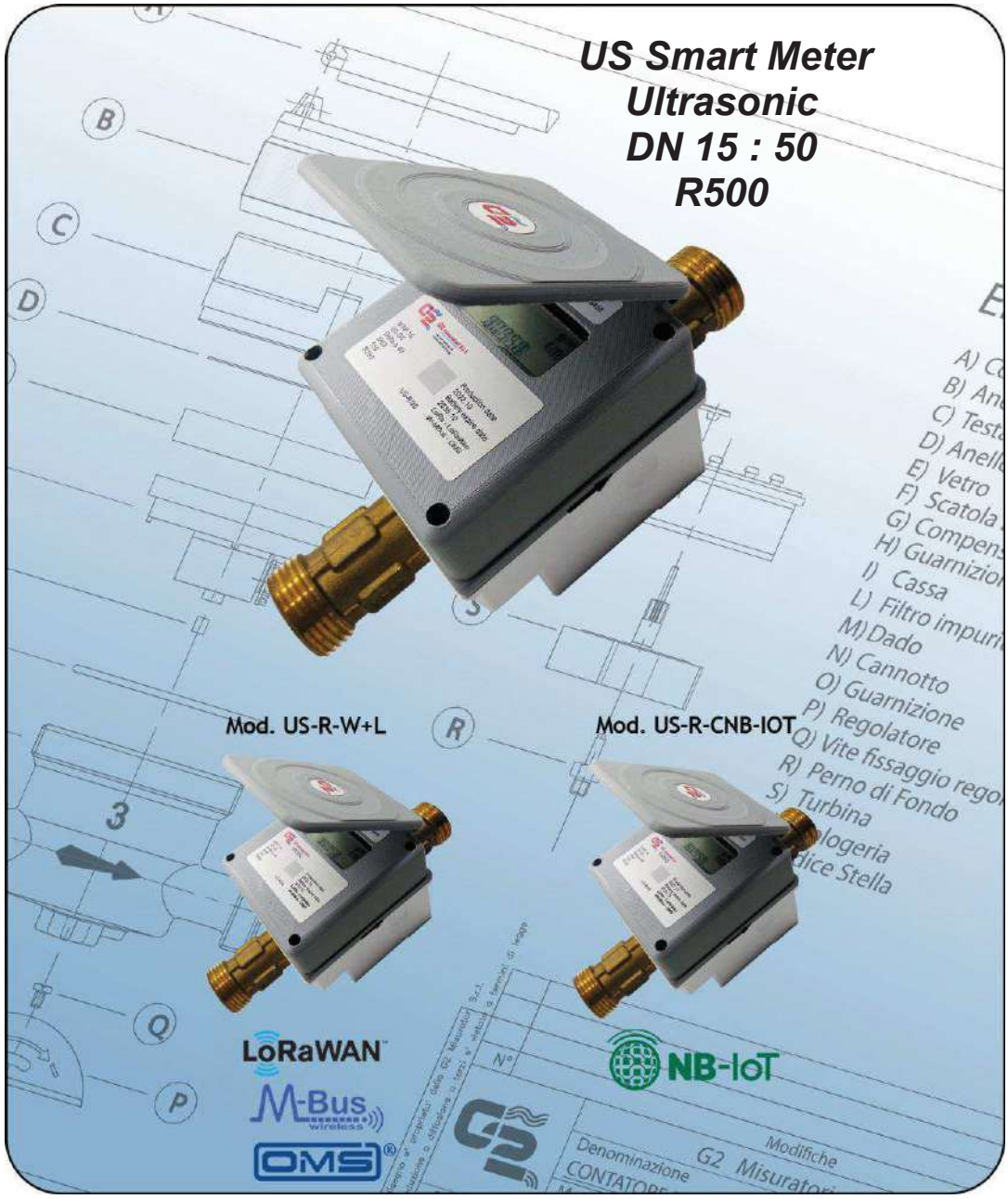
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THE VALUE OF METERING

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SMART METERS



- Ultrasonic meter suitable for domestic and commercial outdoor applications, featuring static measurement technology with no moving parts
- Model US-R-W+L sizes from DN 15 to DN 50, temperature class T30/T50, measuring range in all positions R500 – Protection rating IP68: resin-coated, integrated wireless communication with **LoRaWAN/ OMS W-Mbus protocols** with **automatic switch**
- Model US-R-CNB-IOT with sizes from DN 15 to DN 50, temperature class T30/T50, measuring range in all positions R500 – IP68 protection rating: resin-coated, integrated **NBIoT** wireless communication **with MQTT* protocol**
- Bidirectional measurement
- Large **LCD** display showing total volume, instantaneous flow rate, battery indicator, alarms, flow direction, water temperature and display test
- Display options for the measured volume: net, normal flow only, alternating normal/reverse
- Battery life >13 years, under normal conditions of use, depending on the radio protocol
- Data logger function with optional NFC module
- Local communication: optical portCorpo in ottone resistente nel tempo, attacchi filettati
- U0-D0: No straight pipe runs are required upstream or downstream of the meter
- All models are certified for use with drinking water in accordance with Ministerial Decree **174 of 6 April 2004**
- All models are **MID**-approved in accordance with the current Directive (Module B+D), in compliance with **OIML R49** and **ISO 4064** standards
- Available in a LoRaWAN-only or W-Mbus OMS-only version

SMART METERS

Technical specifications – DN in mm	15	20	25	32	40	50
Threads	G ¾"	G1"	G 1" ¼	G 1" 1/2	G 2"	G 2.1/2"
Permanent flow rate Q_3 (m^3/h)	2,5	4,0	6,3	10	16	25
Overload capacity Q_4 (m^3/h)	3,125	5,0	7,875	12,5	20	31,25
Transition flow rate Q_2 [MPE ±2%] (m^3/h)	0,008	0,0128	0,02016	0,032	0,0512	0,08
Minimum flow rate Q_1 [MPE ±5%] (m^3/h)	0,005	0,008	0,0126	0,02	0,032	0,05
Electromagnetic Class	E1					
Accuracy class	II					
Operating environmental conditions	-25 °C … +55 °C					
Measuring range R *	500	500	500	500	500	500
Starting flow (m^3/h)	0,002	0,004	0,005	0,009	0,011	0,011
Maximum permissible operating pressure MAP (bar)	16	16	16	16	16	16
Pressure drop ΔP (bar)	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Maximum reading for normal flow (m^3)	99999.99999	99999.99999	99999.99999	99999.99999	99999.99999	99999.99999
Smallest unit of measurement (l)	1	1	1	1	1	1
L (mm) **	110	190	260	260	300	300 Threaded/200 flanged
L1 (mm)	97	97	97	97	97	97
L2 (mm)	204	294	380	380	428	428
H) (mm)	91	91	91	128	139	139
H1 (mm)	31	28	25	29	36	36
W (mm)	90	90	90	90	90	90

* Other R models available on

** Other lengths available on request

*** **Models available with a pulse emitter for connection to a separate radio module, on request**

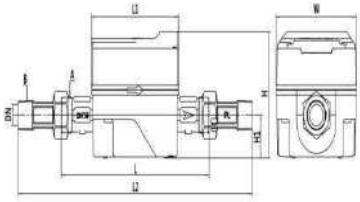
Models:
US-AI-R-W+L
US-AI-R-CNB-IOT
DN 15: 20
R800
with a stainless steel measuring tube



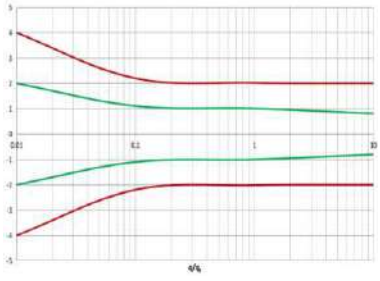
display



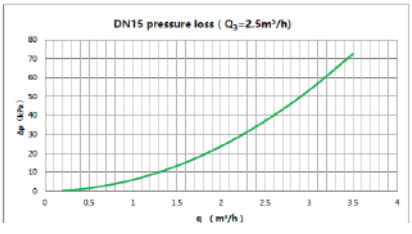
Overall dimensions



Typical error curve



Pressure drop diagram



Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications of the OMS Wireless-Mbus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

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AQUA

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THE VALUE OF METERING

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SMART METERS



- ❑ Direct-reading smart meters with radio data transmission**:**

  - Meter with radio module, model **UNI-R-W+L**, featuring **the LoRaWAN** protocol **for fixed networks** and the **OMS W-Mbus** protocol **for walk-by/drive-by**: the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol
  - Meter with radio module, model **UNI-R-CNB-IOT**, with **MQTT*** protocol

- ❑ Single-jet meter with fully liquid filled sealed counter type, featuring mechanical transmission, available in DN 15–20 **R400H,R200V**, DN 25–32 **R200H,R100V**, and DN 40 **R200H,R40V**, UO-D0, T50
- ❑ Inductive transmission between the mechanical and electronic components. **The radio module can be replaced**
- ❑ All models are **MID**-approved in accordance with the current Directive
- ❑ All models are certified for use with drinking water in accordance with Ministerial Decree **174 of 6 April 2004**
- ❑ Transmitted consumption data, net of any reverse flows
- ❑ Multi-layered cryptographic data security
- ❑ Available in a LoRaWAN-only or W-Mbus OMS-only version

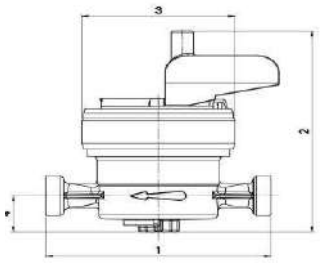
SMART METERS

CE MID

Technical specifications of the mechanical part of the meter DN in mm - inches	*15 - 1/2”*	*20 - 3/4”*	*25 - 1”*	*32 - 1.1/4”*	*40 - 1.1/2”*
Permanent flow rate Q_3 (m^3/h)	***2,5***	***4,0***	***6,3***	***10***	***16***
Overload capacity Q_4 (m^3/h)	*3,125*	*5,0*	*7,875*	*12,5*	*20*
Transition flow rate Q2 with measuring range R200H [MPE ±2%] (l/h)	20	32	*50,4*	*80*	*128*
Minimum flow rate Q1 with measuring range R200H [MPE ±5%] (l/h)	12,5	20	*31,5*	*50*	*80*
Transition flow rate Q2 with measurement range R125V [MPE ±2%] (l/h)	32	51,2	-	-	-
Minimum flow rate Q1 with measuring range R125V [MPE ±5%] (l/h)	20	32	-	-	-
Transition flow rate Q2 with measuring range R100V [MPE ±2%] (l/h)	-	-	*100,8*	*160*	
Minimum flow rate Q1 with measuring range R100V [MPE ±5%] (l/h)	-	-	*63*	*100*	
Transition flow rate Q2 with measuring range R40V [MPE ±2%] (l/h)					*640*
Minimum flow rate Q1 with measuring range R40V [MPE ±5%] (l/h)					*400*
Starting flow (l/h)	*1,5*	*2*	*5*	*7*	*15*
Accuracy class	*2*				
Environmental class	*C (-25°C + 55)*				
Pressure loss class ΔP (bar)	*0,63*				
Maximum permissible operating pressure MAP (bar)	*16*				
1) Length of the meter excluding fittings (mm)	*110-115*	*130*	*160*	*160*	*200*
Length of the meter, including fittings (mm)	*190-195*	*228*	*260*	*280*	*340*
2) Maximum height (mm)	*130*	*130*	*150*	*150*	*165*
3) Maximum overall diameter (mm)	*80*	*80*	*100*	*100*	*110*
4) Distance between the pipe and the meter mounting surface (mm)	*24*	*24*	*34*	*34*	*42*
Weight including fitting kit (kg)	*0,850*	*1,10*	*1,75*	*2,0*	*3,46*
Weight excluding fittings (kg)	*0,690*	*0,86*	*1,28*	*1,33*	*2,42*

The following options are available on request:

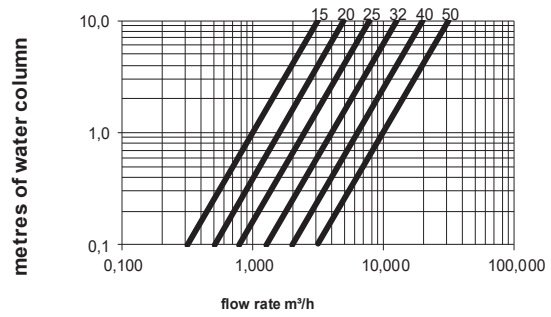
- ❑ Resin coating
- ❑ LoRaWAN protocol operating at 915 MHz



Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Protection rating	IP68
Certification	EC, European Directive on Electromagnetic Compatibility, LoRaWAN-certified product and OMS

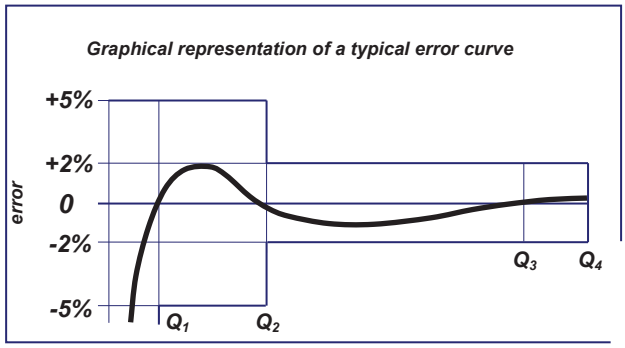
Head loss diagram



Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Graphical representation of a typical error curve



Technical specifications of the OMS Wireless M-Bus

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

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AQUA

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THE VALUE OF METERING

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UNY



- Single jet meter, direct reading, temperature classes T30 and T50
- Mod. UNI-R400H-R200V, DN 15 - 20, protected rollers with FULLY PROTECTED DRY dial, with mechanical transmission, measuring range R400H-R200V, for turbid water
- Mod. UNI-R200H-R100V, DN 25 - 32 , protected rollers with FULLY PROTECTED DRY dial, with mechanical transmission, measuring range R200H-R100V, for turbid water
- Mod. UNI-R200H-R40V- DN 40, with protected rollers and FULLY PROTECTED DRY dial, with mechanical transmission, measuring range R200H-R40V, for turbid water
- U0-D0: no straight pipe sections upstream and downstream of the meter are required
- All models can be fitted with a **serial number and barcode** indelibly engraved on the dial
- All models are **MID**-approved according to the current directive and in compliance with **EN 14154** and **OIML R49**
- All models are certified for use with potable water according to Ministerial Decree **174 of 6 April 2004**

UNY

CE MID

fully protected dry dial model
temperature classes T30 and T50

UNI-PI-R400H-R200V DN 15/20

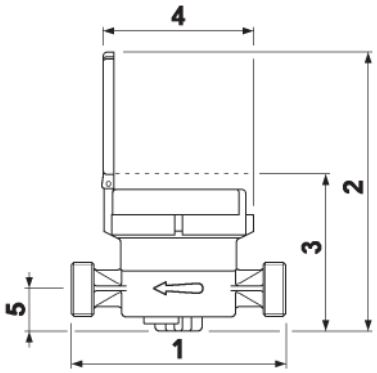
UNI-PI-R200H-R100V DN 25/32

UNI-PI-R200H-R40V DN 40



Model UNI-PI with non-magnetic K=1 arrangement complete with G2-IPS inductive sensor

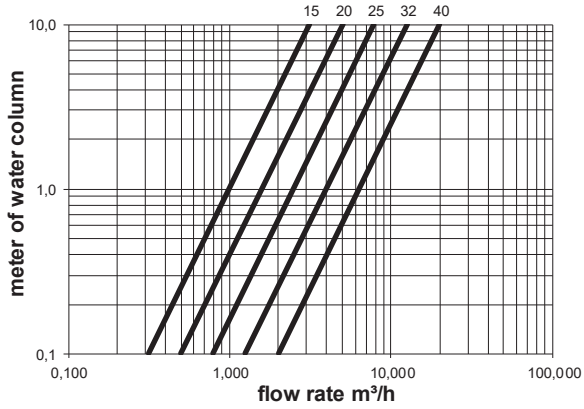
Technical data - DN in mm-inch	*15-1/2*	*20-3/4*	*25-1*	*32-1.1/4*	*40-1.1/2*
Permanent flow rate Q3 (m³/h)	***2,5***	***4,0***	***6,3***	***10***	***16***
Overload flow rate Q4 (m³/h)	*3,125*	*5,0*	*7,875*	*12,5*	*20*
Transitional flow Q2 with measuring range R400H [MPE ±2%] (l/h)	*10*	*16*	-	-	-
Minimum flow Q1 with measuring range R400H[MPE ±5%] (l/h)	*6,3*	*10*	-	-	-
Transitional flow Q2 with measuring range R200V [MPE ±2%] (l/h)	*20*	*32*			
Minimum flow rate Q1 with measuring range R200V [MPE ±5%] (l/h)	*12,5*	*20*			
Transitional flow Q2 with measuring range R200H [MPE ±2%] (l/h)			*50,4*	*80*	*128*
Minimum flow Q1 with measuring range R200H [MPE ±5%] (l/h)			*31,5*	*50*	*80*
Transitional flow Q2 with measuring range R100V [MPE ±2%] (l/h)	-	-	*100,8*	*160*	-
Minimum flow rate Q1 with measuring range R100V [MPE ±5%] (l/h)	-	-	*63*	*100*	-
Transitional flow Q2 with measuring range R40V [MPE ±2%] (l/h)	-	-	-	-	*640*
Minimum flow rate Q1 with measuring range R40V [MPE ±5%] (l/h)	-	-	-	-	*400*
Starting flow (l/h)	*1,5*	*2*	*5*	*7*	*15*
Accuracy class	*2*				
Environmental class	*C (-25°C ..+55°C)*				
Pressure loss class ΔP (bar)	*0,63*				
Maximum permissible operating pressure MA (bar)	*16*				
Min/Max dial display range (m³)	*0,0001 / 100.000*				
1) Length of meter without fittings (mm)	*110-115*	*130*	*160*	*160*	*200*
Meter length including fittings (mm)	*190-195*	*228*	*260*	*280*	*340*
2) Maximum height with open lid (mm)	*150*	*150*	*185*	*185*	*200*
3) Maximum height with closed lid (mm)	*83*	*83*	*103*	*103*	*120*
4) Maximum overall diameter (mm)	*80*	*80*	*100*	*100*	*110*
5) Distance between pipe and meter support surface (mm)	*24*	*24*	*34*	*34*	*42*
Weight with fittings (kg)	*0,850*	*1,100*	*1,750*	*2,000*	*3,460*
Weight without fittings (kg)	*0,690*	*0,860*	*1,280*	*1,330*	*2,420*



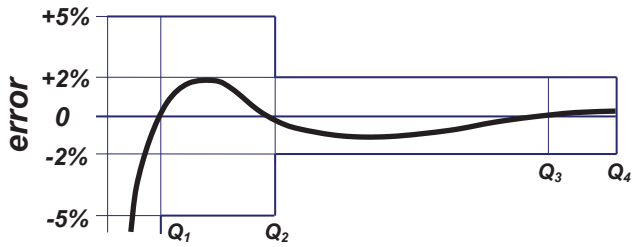
The following options are available on request:

- ❑ Models fitted or complete with reed type emitter
- ❑ Models fitted or complete with static emitter
- ❑ Models complete with radio module with 868Mhz frequency and combined LoRaWAN and W-Mbus OMS protocols with automatic switch, NB-Iot with protocol MQTT*

Head loss diagram



Typical accuracy curve



The Company reserves the right to make changes to technical data and product illustrations – 04/26

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AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

Made in ITALY

SMART METERS



- Direct-reading smart meters with radio data transmission:

  - Meter with radio module, model **QDFM-R-W+L**, featuring the **LoRaWAN** protocol **for fixed networks** and the **OMS W-Mbus** protocol **for walk-by/drive-by**: the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol
  - Meter with radio module, model **QDFM-R-CNBIOT**, with **MQTT protocol***
- Multi-jet counter with **fully liquid sealed counter type**, with mechanical transmission, **R200H R63V,** UO-D0, T50
- All models can be fitted with a serial number and the corresponding barcode or QR code, permanently engraved on the dial and on the radio label
- Inductive transmission between the mechanical and electronic components. **The radio module can be replaced**
- All models are **MID**-approved in accordance with the current Directive
- All models are certified for use with drinking water in accordance with Ministerial Decree **174 of 6 April 2004**
- Transmitted consumption data, net of any reverse flows
- Multi-layered cryptographic data security
- Available in a LoRaWAN-only or W-Mbus OMS-only version

SMART METERS

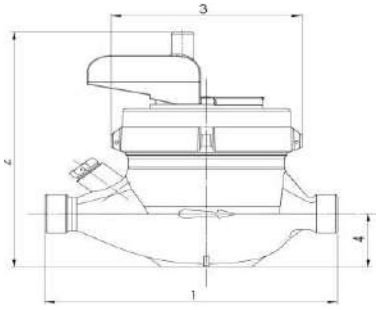
CE MID

Technical specifications for the mechanical part of the meter DN in mm - inches	15 - 1/2"	20 - 3/4"	25 - 1"	32 - 1.1/4"	40 - 1.1/2"	50 - 2"
Permanent flow rate Q_3 (m^3/h)	**2,5**	**4,0**	**6,3**	**10**	**16**	**25**
Overload capacity Q_4 (m^3/h)	3,125	5,0	7,875	12,5	20	31,25
Transition flow rate Q2 with measurement range R200H [MPE ±2%] (l/h)	20	32	50,40	80	128	200
Minimum flow rate Q1 with measuring range R200H [MPE ±5%] (l/h)	12,50	20	31,50	50	80	125
Starting flow with R200H measurement range (l/h)	3	5	8	8	15	18
Accuracy class	2					
Environmental class	C (-25°C + 55 °C)					
Pressure loss class ΔP (bar)	0,63					
Maximum permissible operating pressure MAP (bar)	16 (25 on request)					
1) Length of the meter excluding fittings (mm)	110-115-130 145-165-170 190	130-160-165 190	160-220-260	160-220-260	200-300	300
Length of the meter, including fittings (mm)	190-195-210 225-245-250 270	260-265 290	320-360	320-360	440	460
2) Maximum height with lid open (mm)	162	162	177	177	187	197
3) Maximum overall diameter (mm)	96	96	100	100	136	136
4) Distance between the pipe and the meter mounting surface (mm)	35	35	40	40	60	70
Weight including fitting kit (kg)	1,650	1,800	3,200	3,500	6,100	9,700
Weight excluding fittings (kg)	1,500	1,550	2,750	2,800	5,100	7,400

From R40H to R315H, from R40V to R63V – to be specified when ordering –

The following options are available on request:

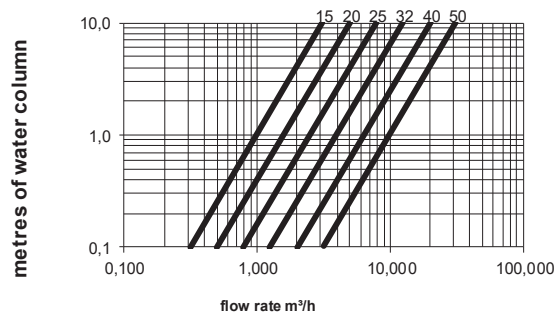
- ❑ Non return valve incorporated in the oulet duct
- ❑ Resin coating
- ❑ LoRaWAN protocol operating at 915 MHz



Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Protection rating	IP68
Certification	EC, European Directive on Electromagnetic Compatibility, LoRaWAN-certified product and OMS

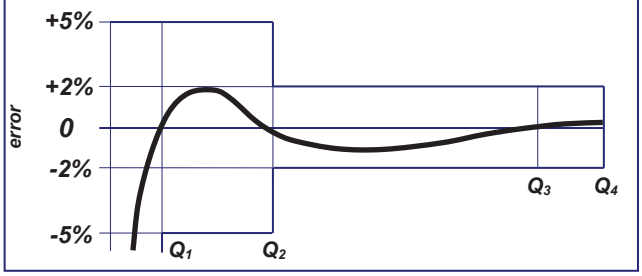
Head loss diagram



Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Graphical representation of a typical error curve



Technical specifications of the Wireless M-Bus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

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AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

Made in ITALY

MULTY



- Multi-jet turbine straight reading meter, temperature classes T30 and T50
- Mod. QDFM-R200H,R63V, LIQUID FILLED SEALED counter, FULLY PROTECTED DRY dial, mechanical transmission, measuring range R200H,R63V, for turbid water
- U0-D0: straight pipe not required upstream or downstream the meter
- All models can be customised with a **serial number and its relevant barcode indelibly engraved on the dial**
- All models are **MID** approved according to the current European Directive (module B+D) and in compliance with the norms **EN 14154, ISO 4064** and **OIML R49**, reaching an **R (Q_3/Q_1) ≤ 315H/63V**
- All models are certified for use with water for human consumption, according to the **D.M. 174** of 6/4/ 2004 in compliance with European Directive 98/83 CE (Drinking Water Directive)
- All models, on request, can be supplied pulsed output **or preset for remote reading**

MULTY

CE MID

Liquid filled sealed counter, fully protected dry dial

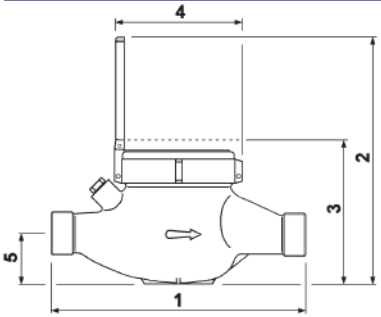
temperature classes T30 & T50

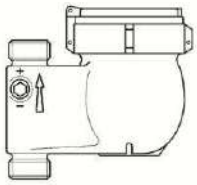
QDFM
DN 15 / 20 / 25 / 32 / 40 / 50
R from 40H to 315H
R from 40V to 63V
to be specified when ordering



Model preset with non-magnetic index for IPS inductive sensor K=1

Technical data- DN in mm-inches	*15-1/2*	*20-3/4*	*25-1*	*32-1.1/4*	*40-1.1/2*	*50-2*
Permanent Flow Rate Q_3 (m^3/h)	***2,5***	***4,0***	***6,3***	***10***	***16***	***25***
Max. flow rate for short period Q_4 (m^3/h)	*3,125*	*5,0*	*7,875*	*12,5*	*20*	*31,25*
Transitional flow rate Q_2 at measuring range R200H [MPE ±2%] (l/h)	*20*	*32*	*50,40*	*80*	*128*	*200*
Min. flow rate Q_1 with measuring range R200H [MPE ±5%] (l/h)	*12,50*	*20*	*31,50*	*50*	*80*	*125*
Starting flow at measuring range R200H (l/h)	*3*	*5*	*8*	*8*	*15*	*18*
Accuracy class	*2*					
Environmental class	*C(-25°C +55°C)*					
Pressure loss class ΔP	*0,63*					
Max allowed working pressure MAP (bar)	*16*					
Dial register from /to (m^3)	*0,0001 /100.000*			*0,0001/100.000-or-1.000.000*		
1) Length without couplings (mm)	*110-115-130145-165-170-190*	*130-160-165-190*	*160-220-260*	*160-220-260*	*300*	*300*
Length with couplings (mm)	*190-195-210-225-245-250-270*	*260-265-290*	*320-360*	*320-360*	*440*	*460*
2) Height with open lid (mm)	*185*	*185*	*200*	*200*	*210*	*220*
3) Height with closet lid (mm)	*105*	*105*	*120*	*120*	*130*	*140*
4) Max. diameter (mm)	*96*	*96*	*100*	*100*	*136*	*136*
5) Height of tube (mm)	*35*	*35*	*40*	*40*	*60*	*70*
Weight with couplings (kg)	*1,650*	*1,800*	*3,200*	*3,500*	*6,100*	*9,700*
Weight without couplings (kg)	*1,500*	*1,550*	*2,750*	*2,800*	*5,100*	*7,400*



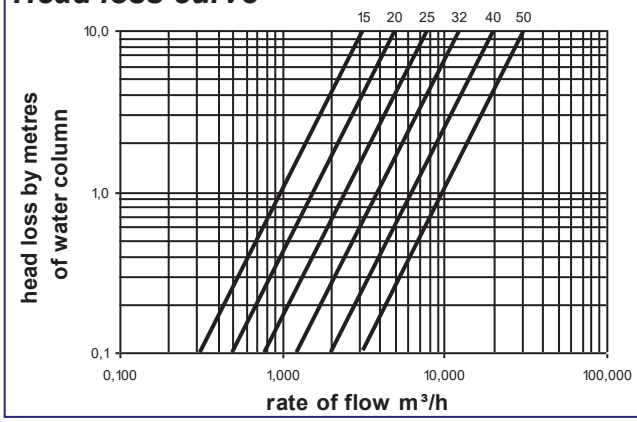


The following options are available upon request:

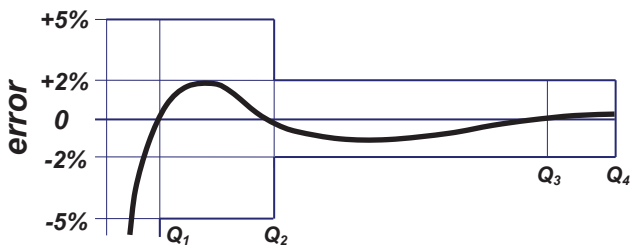
- ❑ Mod. QDFM DN 15 high pressure version (40 bar)
- ❑ MAP 25 bar **MID** approved model
- ❑ Curved plexiglass glass, **to ease distance reading**
- ❑ Non- return valve fitted on the outlet nipple
- ❑ Vertical riser body for vertical installation
- ❑ Models preset or fitted with single or double reed for pulse readout system
- ❑ Models preset or fitted with static sensor
- ❑ Model fitted with radio module, frequency 868Mhz and combined LoRaWAN and W-Mbus OMS protocols with automatic switch, NB-Iot with protocol MQTT*

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Head loss curve



Tipical accuracy curve



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AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

Made in ITALY

MULTY



- Mod. AFMS-PI-R160H, SUPER-DRY 360° rotating dial, measuring range R160H, environmental class C, for turbid and calcareous water, **preset K=1 for inductive sensor IPS**
- All models are **MID** approved according to the current European Directive (module B+D) and in compliance with the norms **EN 14154, ISO 4064** and **OIML R49**, reaching an **R (Q_3/Q_1) ≤200H**
- Multi-jet turbine straight reading meter, temperature classes T30 and T50
- U0-D0: straight pipe not required upstream or downstream the meter
- All models can be customised with a **serial number and its relevant barcode indelibly engraved on the dial**
- All models are certified for use with water for human consumption, according to the **D.M. 174** of 6/4/ 2004 in compliance with with European Directive 98/83 CE (Drinking Water Directive)

MULTY

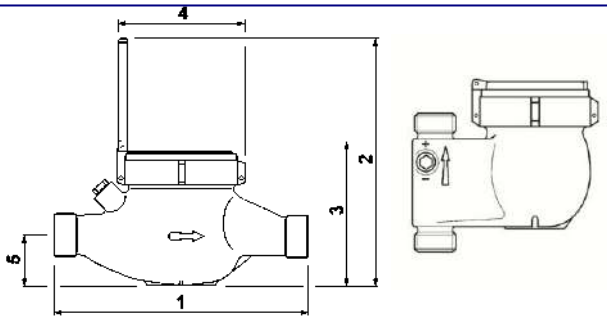
CE MID

Dry dial model
Temperature classes T30 & T50
AFMS-PI DN 15/20
R from R40H to R200H
R from R40V to R50V
to be specified when ordering



Inductive sensor IPS

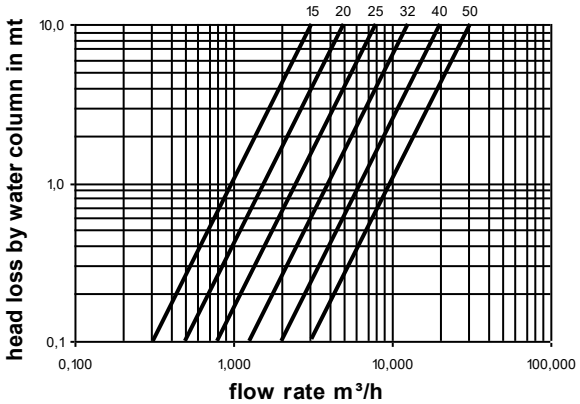
Technical Data – DN in mm-inches	*15-1/2*	*20-3/4*
Permanent Flow Rate Q_3 (m^3/h)	***2,5***	***4,0***
Max. flow rate for short period Q_4 (m^3/h)	*3,125*	*5,0*
Transitional flow rate Q_2 at measuring range R160H [MPE ±2%] (l/h)	*25*	*40*
Min flow rate Q_1 with measuring range R160H [MPE ±5%] (l/h)	*15,63*	*25*
Starting flow at measuring range R 160H (l/h)	*3*	*5*
Accuracy class	*2*	*2*
Environmental Class	*C(-25°C +55°C)*	
Pressure loss class ΔP	*0,63*	*0,63*
Max allowed working pressure MAP (bar)	*16*	*16*
Dial register from/to (m^3)	*0,0001/100.000*	*0,0001/100.000*
1) Length without couplings (mm)	*110-115-130 145-165-170 190*	*130-160-165 190*
Length with couplings (mm)	*190-195-210 225-245-250 270*	*260-265 290*
2) Height with open lid (mm)	*195*	*195*
3) Height with closet lid (mm)	*115*	*115*
4) Max. diameter (mm)	*96*	*96*
5) Height of tube (mm)	*35*	*35*
Weight with couplings (kg)	*1,650*	*1,800*
Weight without couplings (kg)	*1,500*	*1,550*



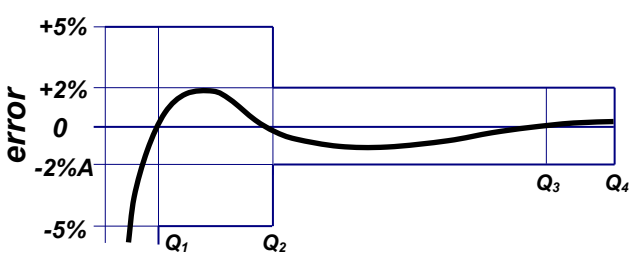
The following options are available upon request:

- ❑ Non- return valve fitted on the outlet nipple
- ❑ Models without presetting
- ❑ Models with mineral glass
- ❑ Vertical riser body for vertical installation
- ❑ Models preset or fitted with reed for pulse readout system
- ❑ Models fitted with static sensor
- ❑ Models fitted with radio module, frequency 868Mhz and combined LoRaWAN and W-Mbus OMS protocols with automatic switch, NB-Iot MQTT protocol
- ❑ LoRaWAN protocol with 915mHz frequency

Head loss curve



Typical accuracy curve



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AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

Made in ITALY

MULTY



- Multi-jet turbine straight reading meter, DRY dial, for turbid and calcareous water
- Mod. AFM-R100H, measuring range R100H, temperature classes T30 and T50
- Mod. ACM-R100H, measuring range R100H, temperature classes T70 and T90
- U0-D0: straight pipe not required upstream or downstream the meter
- All models can be customised with a **serial number and its relevant barcode indelibly engraved on the dial**
- All models are **MID** approved according to the European Directive **2014/32/CE** (module B+D) and in compliance with the norms **EN 14154, ISO 4064** and **OIML R49**, reaching an **R (Q_3/Q_1) ≤ 100H**
- All models are certified for use with water for human consumption, according to the **D.M. 174** of 6/4/ 2004 in compliance with European Directive 98/83 CE (Drinking Water Directive)

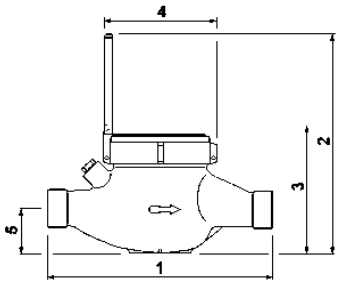
MULTY

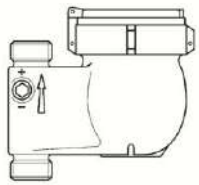
Dry dial model

Temperature classes T30 & T50
AFM DN 15 / 20 / 25 /32 / 40 / 50
R from 40H to 100H
R from 40V to 50V
to be specified when ordering

Temperature classes T70 & T90
ACM DN 15 / 20 / 25/ 32 / 40 / 50
R from 40H to 100H
R from 40V to 50V
to be specified when ordering

Technical data- DN in mm-inches	15-1/2	20-3/4	25-1	32-1.1/4	40-1.1/2	50-2
Permanent Flow Rate Q_3 (m^3/h)	**2,5**	**4,0**	**6,3**	**10**	**16**	**25**
Max. flow rate for short period Q_4 (m^3/h)	3,125	5,0	7,875	12,5	20	31,250
Transitional flow rate Q_2 at measuring range R100 [MPE ±2%]	40	64	100,8	160	256	640
Min flow rate Q_1 with measuring range R100 [MPE ±5%] (l/h)	25	40	63	100	160	400
Starting flow at measuring range R 100 (l/h)	8	10	19	19	40	40
Accuracy class	2	2	2	2	2	2
Environmental class	C (-25°C +55°C)					
Pressure loss class ΔP (bar)	0,63	0,63	0,63	0,63	0,63	0,63
Max allowed working pressure MAP (bar)	16	16	16	16	16	16
Dial register from /to (m^3)	0,0001 / 100.000	0,0001 / 100.000	0,0001 / 100.000	0,0001 / 100.000	0,0001 / 100.000 o 1.000.000	
1) Length without couplings (mm)	110-115-130 145-165-170 190	160-165 190	220-260	220-260	300	300
Length with couplings (mm)	190-195-210 225-245-250 270	260-265 290	320-360	320-360	440	460
2) Height with open lid (mm)	185	185	200	200	210	220
3) Height with closet lid (mm)	130	130	145	145	155	165
4) Max. diameter (mm)	96	96	100	100	136	136
5) Height of tube (mm)	35	35	40	40	60	70
Weight with couplings (kg)	1,650	1,800	3,200	3,500	6,100	9,700
Weight without couplings (kg)	1,500	1,550	2,750	2,800	5,100	7,400

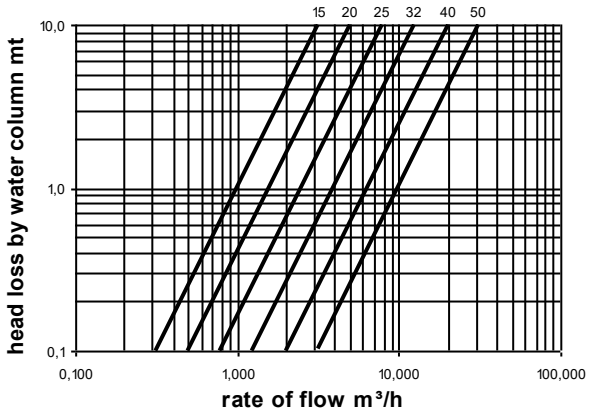




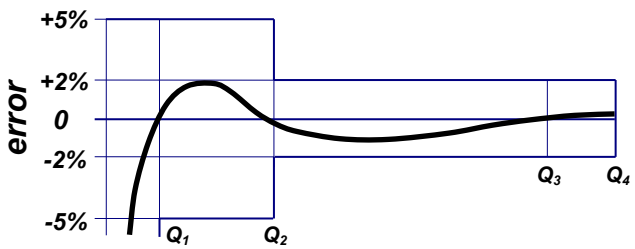
The following options are available upon request:

- ❑ MAP 25 bar **MID** approved model
- ❑ Non- return valve fitted on the outlet nipple
- ❑ Red painted body
- ❑ Vertical riser body for vertical installation
- ❑ Models preset or fitted with reed for pulse readout system
- ❑ Models preset or fitted with static sensor
- ❑ Models fitted with radio module, frequency 868Mhz and combined LoRaWAN and W-Mbus OMS protocols with automatic switch, NB-Iot MQTT protocol
- ❑ LoRaWAN protocol with 915Mhz frequency

Head loss curve



Tipical accuracy curve



Continuous development of our products may necessitate changes in details without prior notice – 04/26

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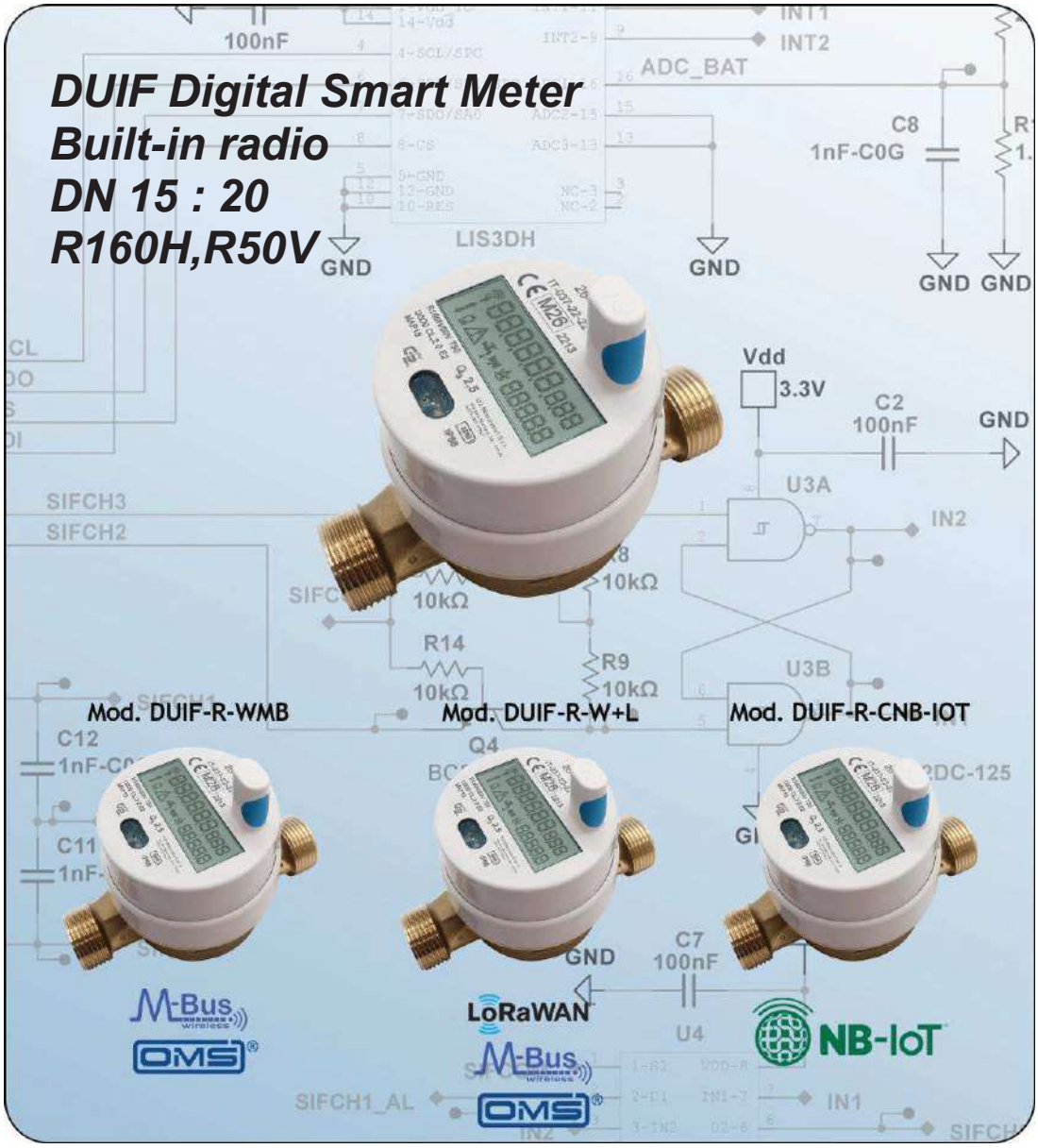
AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

SMART METERS



- Smart meter, single-jet meter, direct reading, with a 360° rotating electronic counter and **LCD** display, featuring radio data transmission:

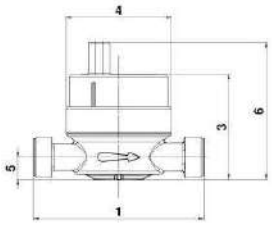
  -meter with radio module mod. **DUIF-R-WMB** protocol **W-Mbus OMS for Walk-by/Drive**
  -meter with radio module mod. **DUIF-R-W+L** protocol **LoRaWAN for fixed network** + protocol **W-Mbus OMS for Walk-by/Drive:** the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol
  -water meter with radio module mod. **DUIF-R-CNB-IOT NB-Iot** with **protocol MQTT***

- Available in sizes DN 15-20, dry-dial, for clean water, temperature class T50
- All models are **MID**-approved in accordance with the current Directive (Module B+D), in compliance with standards **EN 14154** and **OIML R49**, achieving an R (Q3/Q1) rating of up to **160H50V**
- U0-D0: No straight sections of pipework are required upstream or downstream of the meter
- All models are certified for use with drinking water in accordance with Ministerial Decree No. **174 of 6 April 2004**
- Transmitted consumption data, net of any reverse flows
- Multi-layered cryptographic data security
- Available in a LoRaWAN-only version

SMART METERS

Technical specifications – DN	*15*	*20*
Permanent flow rate Q_3 (m^3/h)	***2,5***	***4***
Overload flow rate Q4 (m^3/h)	*3,125*	*5*
Transition flow rate Q_2 (l/h)	*25*	*40*
Minimum flow rate Q1 (l/h)	*15,6*	*25*
Measuring range R	*160*	*160*
Starting flow (l/h)	*4*	*8*
Pressure loss class ΔP (bar)	*0,63*	*0,63*
Maximum permissible operating pressure MAP (bar)	*16*	*16*
Dial display range min / max (m^3)	*0,0001 / 100.000*	*0,0001 / 100.000*
1) Length of the meter excluding fittings (mm)	*≥80*	*≤130*
4) Maximum height of standard model (mm)	*68*	*68*
6) Maximum height including the antenna (mm)	*88,6*	*93,6*
3) Dial height (mm)	*67,6*	*71,7*
Weight including fitting kit (kg)	*1,2*	*1.8*
5) Height to the pipe (mm)	*16*	*16*
Weight excluding fittings (kg)	*0,5*	*0,6*
Weight including fitting kit (kg)	*0,66*	*0,84*

Overall dimensions



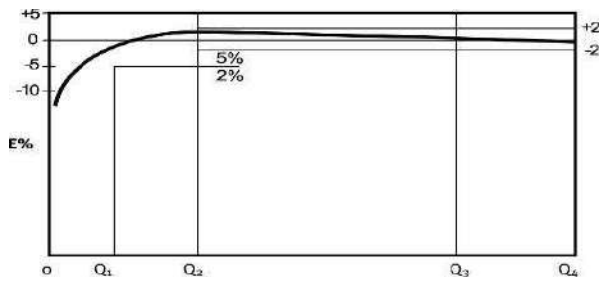
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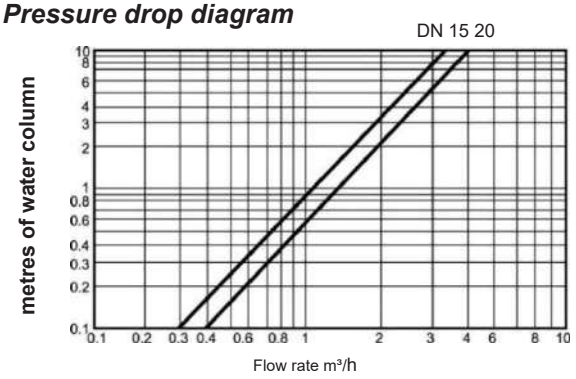
Available options on request:

- ❑ **DUIC model for hot wate**
- ❑ LoRaWAN protocol operating at 915 MHz

Typical error curve



Pressure drop diagram



Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Protection rating	IP68
Certification	EC, European Directive on Electromagnetic Compatibility

Technical specifications of the OMS-certified W-Mbus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications of the certified LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications NB-IoT protocol

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

The Company reserves the right to make changes to technical specifications and product illustrations –04/26

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AQUA

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THE VALUE OF METERING

CE MID

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SMART METERS



- Direct-reading smart meters with radio data transmission:

  -water meter with radio module Mod. **DUF-R-WMB** protocol **W-Mbus OMS for Walk-by/Drive-by**
  -water meter with radio module Mod. **DUF-R-W+L** protocol **LoRaWAN for fixed network** + protocol **W-Mbus OMS for Walk-by/Drive-by:** the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol
  - water meter with radio Mod. **DUF-R-CNB-IOT** with **protocol MQTT***
- Single-jet meter, with a 360° rotatable dry dial for turbid and highly calcareous water, featuring magnetic drive, with DN 15-20 **R80H**, UO-D0, T50
- Inductive transmission between the mechanical and electronic components. The radio module can be replaced
- All models are **MID**-approved in accordance with the current Directive
- All models are certified for use with drinking water in accordance with **Ministerial Decree 174 of 6 April 2004**
- Transmitted consumption data, net of any reverse flows
- Multi-layered cryptographic data security
- Available in a LoRaWAN-only version

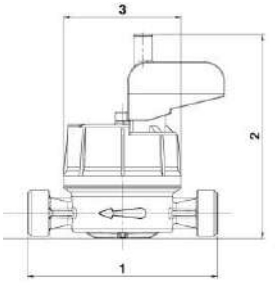
SMART METERS

CE MID

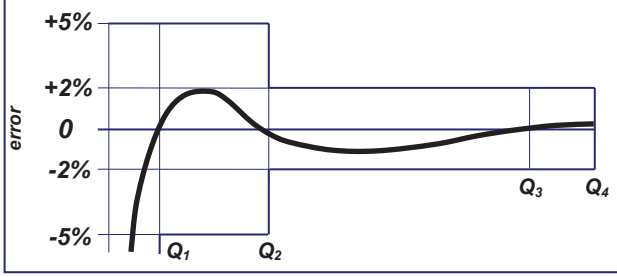
Technical Specifications - DN in mm- inches	*15-1/2*	*20-3/4*
Permanent Flow Rate Q_3 (m^3/h)	***2,5***	***4,0***
Overload capacity Q_4 (m^3/h	*3,125*	*5,0*
Transition flow rate Q_2 with measuring range R80H [MPE ±2%] (l/h)	*50*	*80*
Minimum flow rate Q_1 with measuring range R80H [MPE ±5%] (l/h)	*31,25*	*50*
Starting flow with measurement rangeR80H (l/h)	*6*	*11*
Accuracy class	*2*	*2*
Pressure drop class ΔP (bar)	*0,63*	*0,63*
Maximum permissible operating pressure MAP (bar)	*16*	*16*
Dial display range min/max (m^3)	*0,0001 / 100.000*	*0,0001 / 100.000*
1) Length of the meter excluding fittings (mm)	*110-80 115-170*	*130*
Length of the meter including fittings (mm)	*190-160 195-250*	*228*
2) Maximum height when the lid is open (mm)	*138*	*143*
3) Maximum height when the lid is closed (mm)	*70*	*74*
4) maximum overall diameter (mm)	*72*	*72*
5) Distance between the pipe and the meter mounting surface (mm)	*16*	*19*
Weight including fittings (kg)	*0,660*	*0,840*
Weight excluding fittings (mm)	*0,500*	*0,600*

Available options on request:

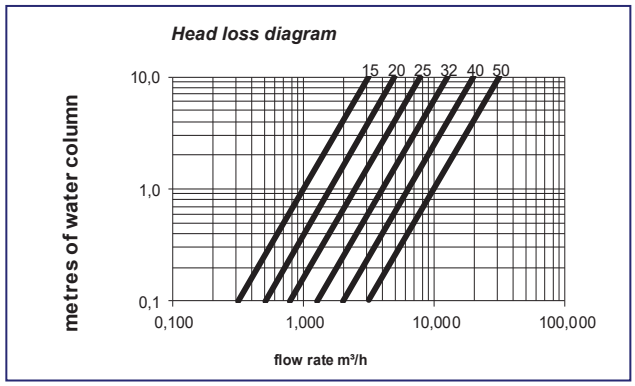
- ❑ **DUIC model for hot water**
- ❑ Resin coating
- ❑ LoRaWAN protocol operating at 915 MHz



Graphical representation of a typical error curve



Head loss diagram



The Company reserves the right to make changes to technical specifications and product illustrations – 04/26

Technical specifications of the radio module

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Degree of protection	IP68
Certification	EC, European Directive on Electromagnetic Compatibility, LoRaWAN-certified product, and OMS

Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications of the Wireless M-Bus protocol

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery

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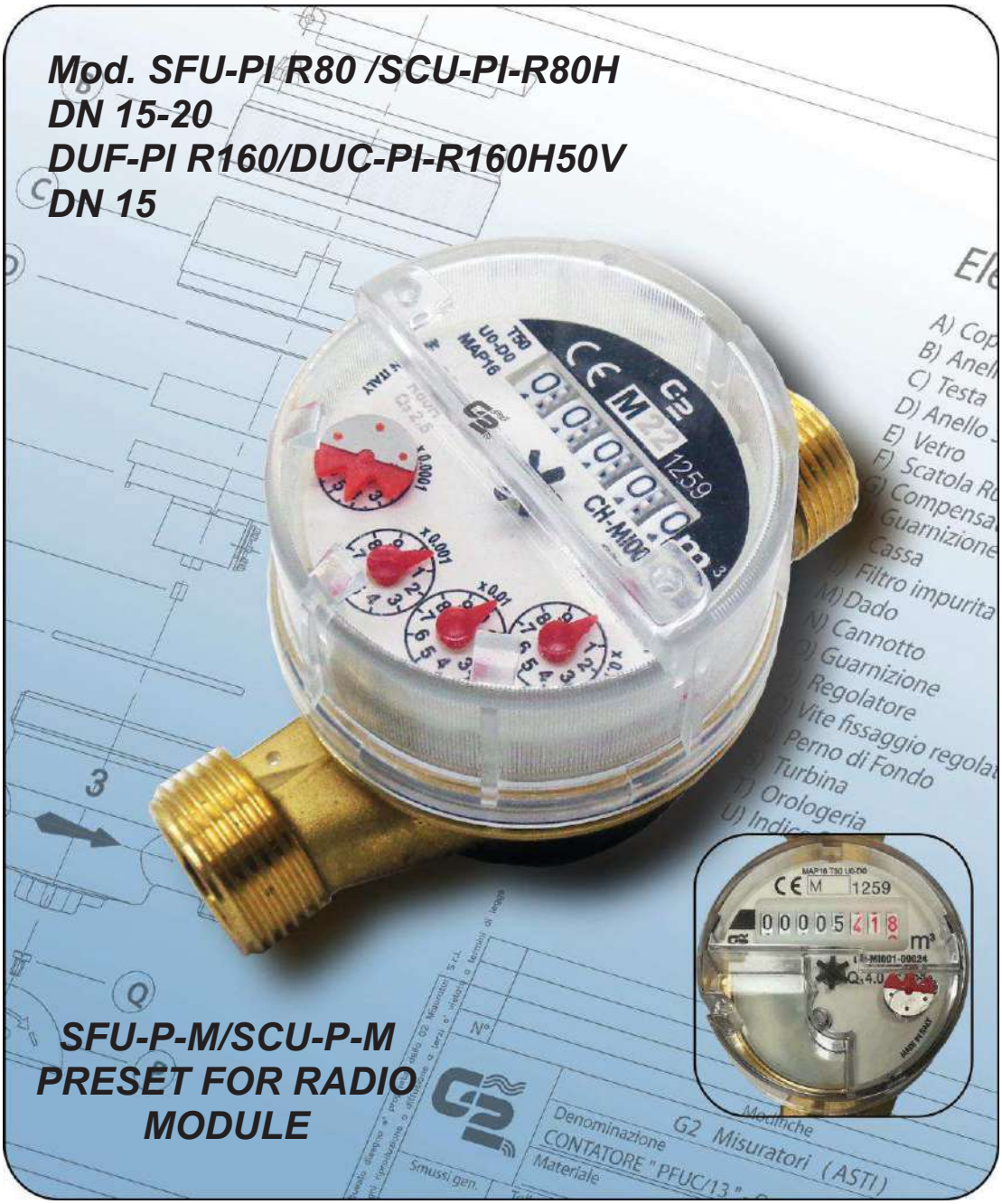
AQUA

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THE VALUE OF METERING

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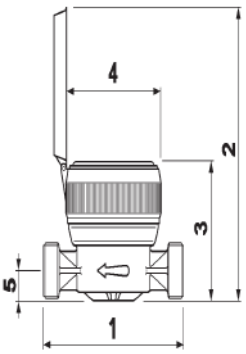
- Single jet, dry dial
- **Presetting for not-magnetic inductive sensor IPS K=1-DRY dial,** for turbid and greatly calcareous water, magnetic transmission.
- Mod. SFU-PI R80, DN 15 – 20, temperature classes T30 and T50, measuring range R80H
- Mod. SCU-PI R80, DN 15 – 20, temperature classes T70 and T90, measuring range R80H
- Mod. DUF-PI R160, DN 15 , temperature classes T30 and T50, measuring range R160H50V
- Mod. DUC-PI R160, DN 15, temperature classes T70 and T90, measuring range R160H50V
- 360° rotating dial. On request, available with or without lid, with or without glass wiping
- U0-D0: straight pipe not required upstream or downstream the meter
- All models can be customised with **its serial number and its relevant barcode permanently engraved on the dial**
- All models are **MID** approved according to current European Directive (module B+D) and in compliance with the norms **EN 14154** and **OIML R49**, reaching an **R (Q_3/Q_1) ≤ 160**
- All models are certified for use with water for human consumption, according to the **D.M 174** of 6 april 2004 in compliance with European Directive 98/83 CE (Drinking Water Directive)
- All models, on request, can be supplied fitted with pulse output or only **preset for remote reading**

UNY

CE MID

Dry dial
Temperature classes T30 & T50
SFU/ DN 15 / 20
DUF/

Dry dial
Temperature classes T70 e T90
SCU/ DN 15 / 20
DUF/ DN 15



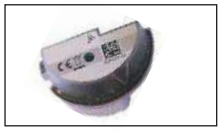
Technical data- DN in mm-inches	*15-1/2”*	*20-3/4”*
Permanent flow rate Q_3 (m^3/h)	***2,5***	***4,0***
Max. flow rate for short period Q_4 (m^3/h	*3,125*	*5,0*
Transitional flow rateQ_2 at measuring range R80H [MPE ±2%] (l/h)	*50*	*80*
Minimum flow rate Q_1 at measuring range R80H [MPE ±5%] (l/h)	*31,25*	*50*
Transitional flow rateQ_2 at measuring range R160H [MPE ±2%] (l/h)	*25*	*-*
Minimum flow rate Q_1 at measuring range R160H [MPE ±5%] (l/h)	*15,625*	*-*
Starting flow with measuring range R80H (l/h)	*6*	*11*
Accuracy class	*2*	*2*
Pressure loss class ΔP (bar)	*0,63*	*0,63*
Max. allowed working pressure MAP (bar)	*16*	*16*
Dial register from/to (m^3)	*0,0001 / 100.000*	*0,0001 / 100.000*
1) Length without couplings (mm)	*110-80 115-170*	*130*
Length with couplings (mm)	*190-160 195-250*	*228*
2) Height with open lid (mm)	*138*	*143*
3) Height with closed lid (mm)	*70*	*74*
4) Max. diameter (mm)	*72*	*72*
5) Height of tube (mm)	*16*	*19*
Weight with couplings (kg)	*0,660*	*0,840*
Weight without couplingsi (mm)	*0,500*	*0,600*



Inductive sensor IPS
(suitable for SFU-PI/SCU-PI)

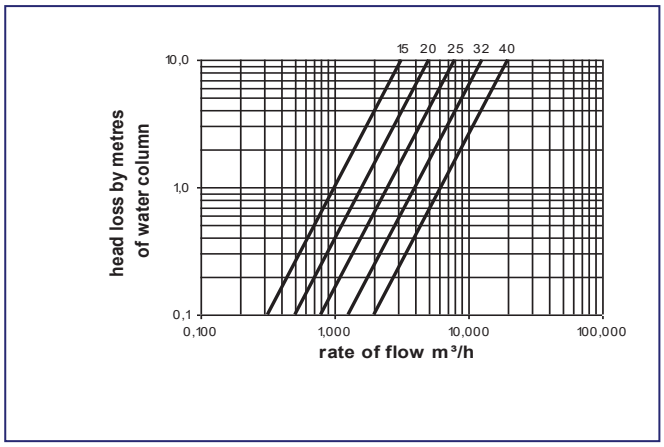


Model MBC: Wired M-Bus module
(suitable for SFU-P-M/SCU-P-M)



Mod WMBR Wireless radio module **M-Bus** (OMS)
Mod. B-it RML Radio module **LoraWan**
(suitable for SFU-P-M/SCU-P-M)

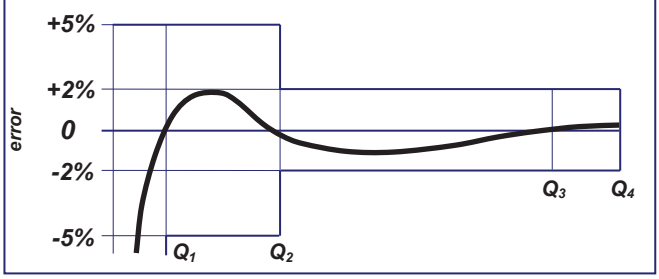
Head loss diagram



The following options are available on request:

- ❑ Complete with radio module operating at 868 MHz with combined LoRaWAN and W-Mbus OMS protocols and an automatic switch, NB-Iot with protocol MQTT*
- ❑ LoRaWAN protocol operating at 915 MHz
- ❑ Models SFU-P-M e SCU-P-M with provision for wired Mbus and for Wireless M-Bus (OMS) radio module
- ❑ Models SFU-MB and SCU-MB fitted with wired M-Bus module
- ❑ Models SFU-M-R-WMB and SCU-M-R-WMB fitted with Wireless M-Bus (OMS) radio module

Typical error curve



L’Azienda si riserva di apportare modifiche a dati tecnici e alle illustrazioni dei prodotti -04/26

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AQUA

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THE VALUE OF METERING

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- Single-jet meter, direct reading
- DRY dial for turbid and greatly calcareous waters (mod.SFU/SCU are fitted with 360° rotating dial for easy reading, and on request, available with or without lid, with or without glass wiping)
- Mod. SFU-R80, DN 15 – 20, temperature classes T30 and T50, measuring range R80
- Mod. SCU-R80, DN 15 – 20, temperature classes T70 and T90, measuring range R80
- Mod. UND-R80, DN 25 – 32 – 40, temperature classes T30 and T50, measuring range R80
- Mod. ACU-R80, DN 25 – 32 – 40, temperature classes T70 and T90, measuring range R80
- U0-D0: straight pipe not required upstream or downstream the meter
- All models can be customised with **a serial number and its relevant barcode indelibly engraved on the dial**
- All models are **MID** approved according to the current European Directive (module B+D) and in compliance with the norms **EN 14154** and **OIML R49**, reaching an **R (Q_3/Q_1) ≤ 125**
- All models are certified for use with water for human consumption, according to the **D.M. 174** of 6/4/ 2004 in compliance with European Directive 98/83 CE (Drinking Water Directive)

UNY

CE MID

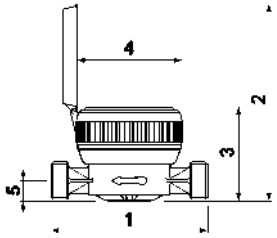
dry dial
temperature classes T30 & T50
SFU-R80 DN 15 / 20

UND-R80 DN 25 / 32 / 40

dry dial
temperature classes T70 e T90
SCU-R80 DN 15 / 20

ACU-R80 DN 25 / 32 / 40

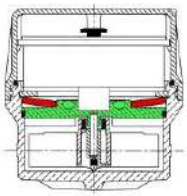
Different R available upon request (from R40 to R125)



Technical data- DN in mm-inches	*15-1/2*	*20-3/4*	*25-1*	*32-1.1/4*	*40-1.1/2*
Permanent Flow Rate Q_3 (m^3/h)	***2,5***	***4,0***	***6,3***	***10***	***16***
Max. flow rate for short period Q_4 (m^3/h	*3,125*	*5,0*	*7,875*	*12,5*	*20*
Transitional flow rate Q_2 at measuring range R80 [MPE ±2%] (l/h)	*50*	*80*	*126*	*200*	*320*
Min flow rate Q_1 with measuring range R80 [MPE ±5%] (l/h)	*31,25*	*50*	*78,75*	*125*	*200*
Starting flow at measuring range R80 (l/h)	*6*	*11*	*20*	*20*	*25*
Accuracy class	*2*	*2*	*2*	*2*	*2*
Pressure loss class ΔP (bar)	*0,63*	*0,63*	*0,63*	*0,63*	*0,63*
Max allowed working pressure MAP (bar)	*16*	*16*	*16*	*16*	*16*
Dial register from /to (m^3)	*0,0001 / 100.000*	*0,0001 / 100.000*	*0,0001 / 100.000*	*0,0001 / 100.000*	*0,0001 / 100.000*
1) Length without couplings (mm)	*110-80 115-170*	*130*	*160*	*160*	*200*
Length with couplings (mm)	*190-160 195-250*	*228*	*260*	*280*	*340*
2) Height with open lid (mm)	*138*	*143*	*185*	*185*	*195*
3) Height with closet lid (mm)	*70*	*74*	*128*	*128*	*142*
4) Max. diameter (mm)	*72*	*72*	*100*	*100*	*110*
5) Height of tube (mm)	*16*	*19*	*34*	*34*	*42*
Weight with couplings (kg)	*0,660*	*0,840*	*1,850*	*2,150*	*3,540*
Weight without couplings (mm)	*0,500*	*0,600*	*1,380*	*1,440*	*2,500*

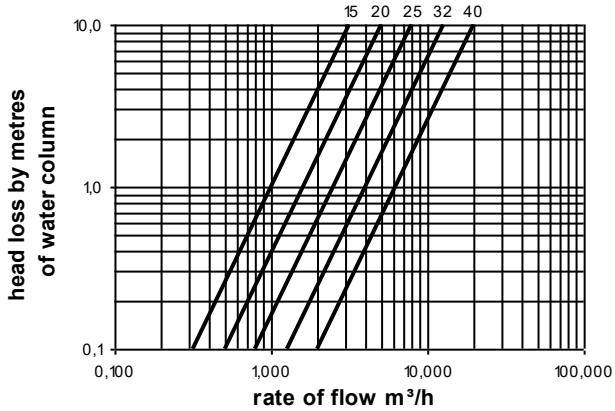


Meter with a reed switch
K: 0,25 0,5 1
2,5 5 10
25 50 100
250 500 1000

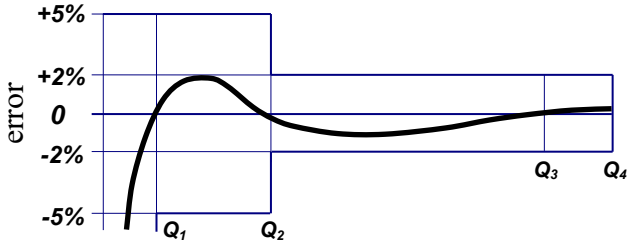


Mod SFU-SG Frost compensation system

Head loss diagram



Typical error curve



The following options are available on request:

- ❑ SFU model, 8-digit version (5 black rollers for cubic metres, 3 red rollers for litres)
- ❑ SFU model with a system to compensate for the increase in water volume in the event of freezing
- ❑ Mod. SFU Q_3 1,6 R80
- ❑ Red painted body
- ❑ SFU-P and SCU-P models, either pre-fitted with or complete with reed switch
- ❑ UND models that can be connected to an M-Bus network via the optional IMPULSI AI03 adapter
- ❑ Complete solution with RF radio module operating at 868Mhz with combined LoRaWAN and W-Mbus OMS protocols and an automatic switch, NB-Iot with protocol MQTT

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AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

SMART METERS



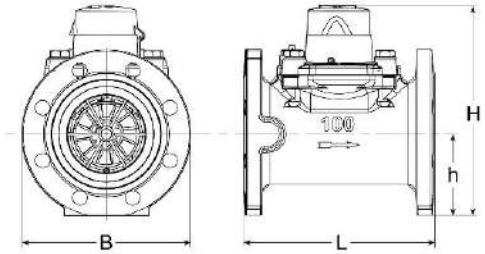
- ❑ Direct-reading smart meters with radio data transmission.

  - Meter with radio module (Model WEF-R-W+L) featuring the **LoRaWAN** protocol **for fixed networks** and the **W-Mbus OMS** protocol **for walk-by/drive-by**: the system **automatically** switches between the fixed-network protocol and the walk-by/drive-by protocol
  - Meter with Mod **WEF-R-CNB-IOT** radio module and **MQTT protocol** *
- ❑ water meter, sizes DN 50 to DN 200, temperature class T50, measuring range R100HV. Internal measuring mechanism can be inspected without the need to remove the meter from the system with a DRY dial for turbid and highly calcareous water.
- ❑ Inductive transmission between the mechanical and electronic components. **The radio module can be replaced**
- ❑ All models are **MID**-approved in accordance with the current Directive (Module B+D), in compliance with standards **EN 14154, OIML R49** and **ISO 4064**
- ❑ Requirements for straight sections of piping: U0/D0
- ❑ May be installed in any position (for non-horizontal installations, the flow must be upwards).
- ❑ Transmitted consumption data, net of any reverse flows
- ❑ Multi-layered cryptographic data security
- ❑ Available in a LoRaWAN-only or W-Mbus OMS-only version

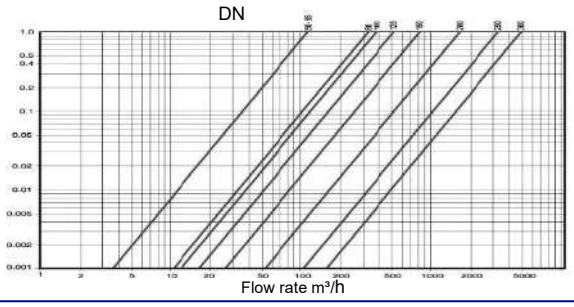
SMART METERS

Technical specifications – DN in mm	50	65	80	100	125	150	200
Permanent flow rate Q_3 (m^3/h)	**40**	**63**	**100**	**160**	**160**	**250**	**400**
Overload capacity Q_4 (m^3/h)	50	78,75	125	200	200	312,5	500
Transition flow rate Q_2 R80 [MPE ±2%] (m^3/h)	0,8	1,26	2	3,2	3,2	5	8
Minimum flow rate Q_1 R80 [MPE ±5%] (m^3/h)	0,5	0,7875	1,25	2	2	3,125	5
Starting flow (m^3/h)	0,15	0,15	0,25	0,30	0,5	0,8	2
Measuring range R *	80H	80H	80H	80H	80H	80H	80H
Maximum permissible operating pressure (MAP) (bar)	16	16	16	16	16	16	16
Maximum reading (m^3)	10^6	10^6	10^6	10^6 / 10^7	10^6	10^6 / 10^7	10^8
Minimum reading increment (l)	0,5	0,5	0,5	5	0,5	5	50
Inductance rating *	K10	K10	K10	K10	K10	K100	K1000
L) Length (mm)	200	200	225	250	250	300	350
H) Height (mm)	239	254	259	275	297	344	377
B) Maximum overall diameter (mm)	165	185	200	220	250	285	340
h) Distance between the pipe and the support surface of the meter (mm)	70	85	90	106	120	140	172
Weight (kg)	13	15,5	16	19,5	22,5	40	41,5

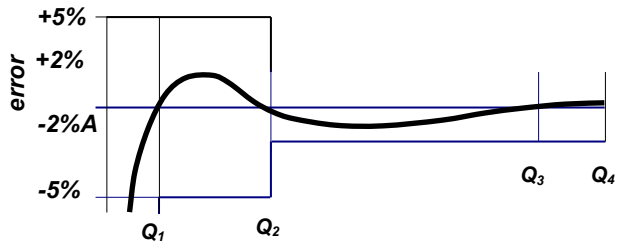
The following options are available on request::
* Other K models
* Other R models (horizontal and vertical)
-Resin coated ,
- LoRaWAN protocol operating at 915 MHz



Head loss diagram



Typical error curve



The Company reserves the right to make changes to technical specifications and product illustrations – 04/26

Technical specifications of the radio

Meter reading	Inductive sensor
Battery life	13 years
Operating environmental conditions	-10 °C … +55 °C
Enable radio transmission	Via an actuator integrated into the instrument body
Storage temperature	-20 °C … +60 °C
Protection grade	IP68
Certification	EC, European Directive on Electromagnetic Compatibility, LoRaWAN, OMS

Technical specifications of the LoRaWAN protocol

	Fixed network
Network type	Frequency: 868 MHz, LoRaWAN certified protocol (915 MHz frequency on request)
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible from remote or via a radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 daily reading and 2 daily history reports
Transmission distance	Up to 14 km in ideal conditions

Technical specifications of the OMS Wireless M-Bus

	Walk-by/Drive-by
Network type	Frequency 868 MHz, W-MBus compliant with OMS
Data transmitted	Sensor ID, consumption data, hardware status, battery level, alarms: tampering (removal), reverse flow, low battery, leaks, on-site temperature, on request
Edit configuration data	Possible via radio terminal
Transmission distance	Up to 500 metres in ideal conditions

Technical specifications for NB-IoT transmission

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

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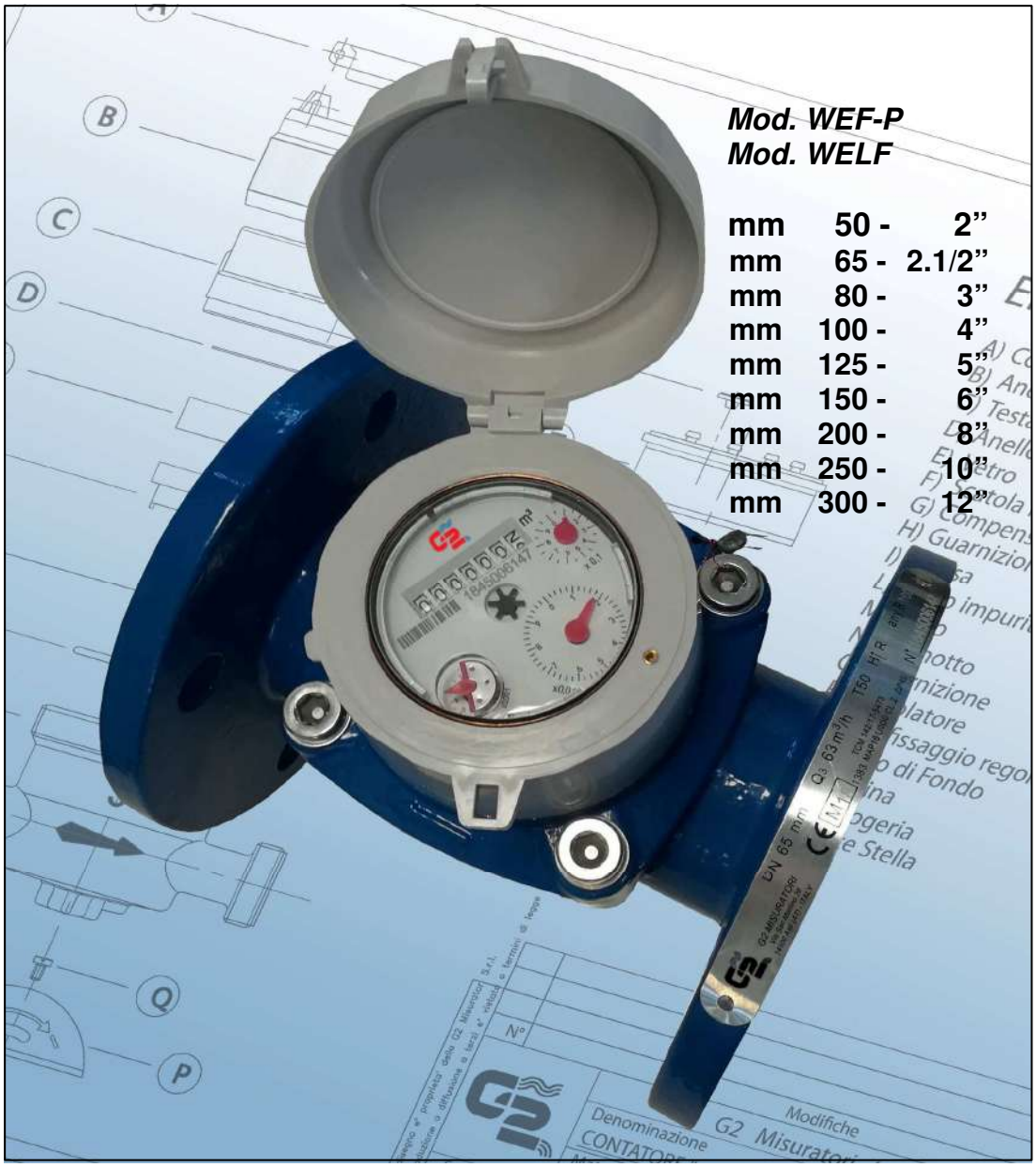
AQUA

G2 misuratori

THE VALUE OF METERING

CE MID

WOLTMANN MID



- Helical vane Woltmann meter, direct reading
- Mod. **WEF-REMOVABLE** sizes from DN 50 to DN 300, temperature class T50, measuring range R80H and R50H, **preset** for remote reading.
- Mod. **WEF-REMOVABLE** sizes from DN 50 to DN 300, temperature class T50, measuring range R80H and R50H, **preset** for remote reading.
- Prepared for reed and inductive remote reading and for radio modules with **LoRaWAN** protocol for fixed network and **LoRA** for walk-by/drive-by, **W-Mbus OMS** 868Mhz, **NB-Iot**
- Measuring insert replaceable without removing the water meter from the pipeline
- IP68 DRY dial to use with hard, turbid and very calcareous waters
- All models are MID approved according to current Directive (module B+D), in compliance with **EN 14154**, **OIML R49** and **ISO 4064 norms**
- Requirements for upstream and downstream straight pipelines: U5/D3
- Installation in any position (for non horizontal installation, flow must be upwards); in any case, the meter must be always full of water to ensure a correct functioning

WOLTMANN MID

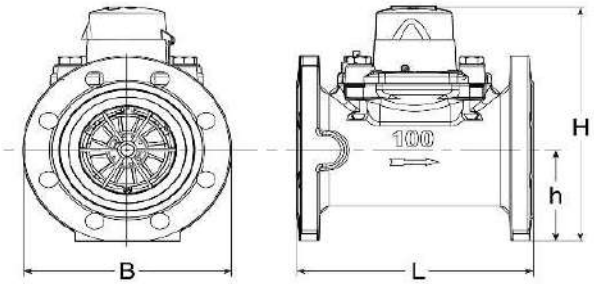
model WEF
temperature class T50
DN50 / 65 / 80 /100 /125/200
R from 80H
Other R in H and V position available
Other Q3 available on request
Other K available on request

WEF
Temperature Class T50
DN 250 / 300
R50H

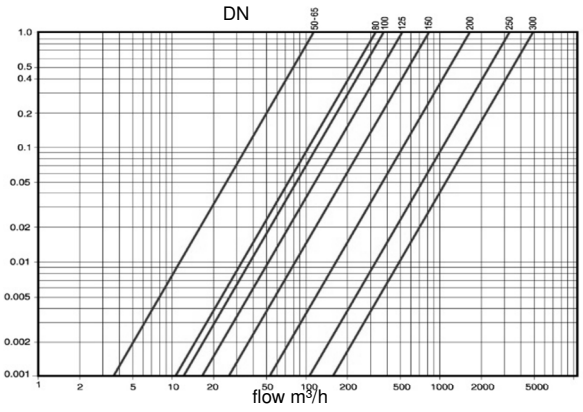
Technical data – DN in mm	50	65	80	100	125	150	200	250	300
Permanent Flow Rate Q_3 (m^3/h)	**40**	**63**	**100**	**160**	**160**	**250**	**400**	**630**	**1000**
Max flow rate for short period Q_4 (m^3/h)	50	78,80	125	200	200	312,5	500	787,5	1250
Transitional Flow rate Q_2 R80 [MPE ±2%] (m^3/h)	0,80	1,26	2	3,2	3.2	5	8	20,16	32
Minimum Flow rate Q_1 R80 [MPE ±5%] (m^3/h)	0,50	0,7875	1.25	2	2	3.125	5	12,6	20
Starting flow (m^3/h)	0,15	0,15	0,25	0,30	0,5	0,8	2	2	3
Measuring Range R	80H	80H	80H	80H	80H	80H	80H	50H	50H
Max allowed working pressure MAP (bar)	16	16	16	16	16	16	16	16	16
Max. possible reading (m^3)	10^6	10^6	10^6	10^6 / 10^7	10^6	10^6 / 10^7	10^8	10^8	10^8
Minimum reading unit (l)	0,5	0,5	0,5	5	0,5	5	50	50	50
Pulse rate For reed switch *	K100	K100	K100	K100	K100	K1000	K1000	K1000	K1000
Pulse rate for inductive sensor *	K10	K10	K10	K10	K10	K100	K100	K100	K100
L) Length (mm)	200	200	225	250	250	300	350	350	450
H) Height (mm)	209	218	249	258	271	316	345	370	463
B) Max diameter (mm)	165	185	200	220	250	285	340	340	405
h) Length between tube -water meter supporting area (mm)	77	86	95	104	117	133	162	172	203
Weight (kg)	10	11,2	15,2	17,2	22,4	29	42,6	41	80



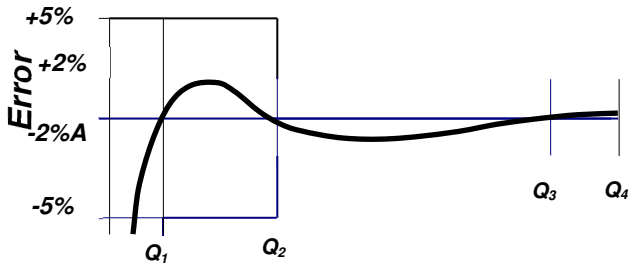
Inductive sensor IPS



HEAD LOSS DIAGRAM



Typical accuracy curve



Continuous development of our products may necessitate changes of details and pictures without prior notice-05.20

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AQUA European Association of Smart Water Manufacturers

G2 misuratori

THE VALUE OF METERING

WEI Woltmann meter for not filtered water, at free passage, for irrigation applications

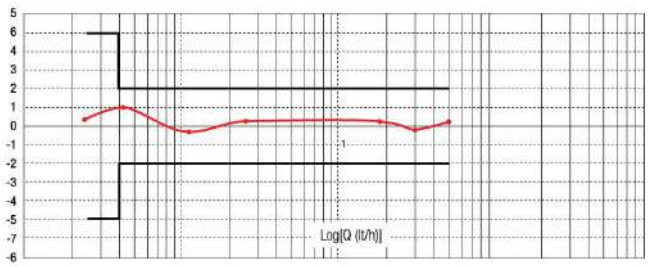


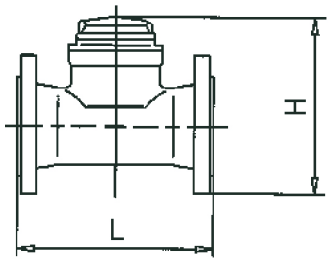
- Model WEI DN 50...300, version with cast iron internal and external epoxy painted body, flanges PN 10 or PN 16
- Designed for use with irrigation water, not filtered water, even with small suspended particles, directly from reservoir, canals, rivers and artesian wells
- Transmission of movement through a magnetic joint
- 360° rotating dumpproof dial - direct reading on numbered drums
- The water flow through the meter at free passage, reduces head losses at their lowest; the small straight wings turbin, of tangential type, is only partially submerged in water
- Removable measuring insert
- Temperature class T30
- Horizontal, inclined and vertical installation
- Pre-arranged counter for reed pulse generator
- Locable metallic lid
- Available on request models with MID approval from DN 50 to DN 200 R40 HV

Technical data	***50***	***65***	***80***	***100***	***125***	***150***	***200***	***250***	***300***
Permanent Flow Rate Q_3 (m^3/h)	*40*	*63*	*63*	*100*	*160*	*250*	*400*	*630*	*1000*
Max. flow rate for short period Q_4 (m^3/h)	*50*	*78,8*	*78,8*	*125*	*200*	*313*	*500*	*788*	*1250*
Transitional flow rate Q_2 at measuring range R40 [MPE ±2%] (l/h)	*1,6*	*2,52*	*2,52*	*5,0*	*6,4*	*10,0*	*16,0*	*25,2*	*64*
Min flow rate Q_1 with measuring range R40 [MPE ±5%] (l/h)	*1,0*	*1,58*	*1,58*	*3,13*	*4,0*	*6,25*	*10,0*	*15,8*	*25*
Dial register from/to (m^3)	*0,002 / 10^7*	*0,002 / 10^7*	*0,002 / 10^7*	*0,002 / 10^7*	*0,002 / 10^7*	*0,02 / 10^8*	*0,02 / 10^8*	*0,02 / 10^8*	*0,02 / 10^8*
L) Length (mm)	*200*	*200*	*225*	*250*	*250*	*300*	*350*	*450*	*500*
H) Maximum height to extract measuring insert (mm)	*250*	*264*	*280*	*292*	*312*	*338*	*378*	*440*	*500*
Pre-arrangement reed	*100*	*100*	*100*	*100*	*100*	*1000*	*1000*	*1000*	*1000*
Weight (kg)	*10,9*	*12,7*	*14,0*	*16,2*	*21,5*	*29,1*	*42,6*	*63*	*86*



Tipical accuracy curve





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AQUA

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THE VALUE OF METERING

RPmagG2

Electromagnetic flow meter



- Electromagnetic flow meter comprising a sensor and a transmitter
- Used to measure the volumetric flow rate of conductive fluids and wastewater
- Various types of output signals available
- Mainly used in the following sectors: chemical industry, energy sector (generation and distribution), mining, water treatment, paper industry, pharmaceutical industry, food sector and environmental protection
- The measurement is independent of the density, viscosity, temperature, pressure and conductivity (>5µS/cm) of the fluid being measured
- Available upon request **MID** approved version
- Battery-powered version (not MID-approved) available on request

The main feature of this flow meter is that it contains no moving parts, as it is a full-bore design. The advantages are therefore considerable:
- no pressure drop or mechanical wear
- capable of measuring fluids with high solid content
- fluid measurement is independent of viscosity, density, pressure and temperature

Tabella Range Portate DN10 ÷ 250	
DN (mm)	Range minimo (0,5 m/s) / massimo (10 m/s)
10	0,0625 ÷ 2,5 m3/h
15	0,1575 ÷ 6,3 m3/h
20	0,25 ÷ 10 m3/h
25	0,4 ÷ 16 m3/h
32	0,625 ÷ 25 m3/h
40	1 ÷ 40 m3/h
50	1 ÷ 40 m3/h
65	1,575 ÷ 63 m3/h
80	4 ÷ 160 m3/h
100	6,25 ÷ 250 m3/h
125	6,25 ÷ 250 m3/h
150	10 ÷ 400 m3/h
200	15,75 ÷ 630 m3/h
250	15,75 ÷ 630 m3/h

Technical specifications

Flow rate range	*Processing of signals from fluids with flow rates of up to 787.5 m³/h in both directions (bidirectional flow meter).*
Size range	*PTFE DN10 ÷ DN250 / GOMMA DN65 ÷ DN250*
Measuring range	*<0,6 m3/h ÷ >70000 m3/h*
Fluid conductivity	*> 5 microsiemens/cm. (>20 microsiemens for demineralised water)*
Sensor material	*SS 321*
Coating material	*PTFE; rubber*
Material of the electronic case	*alluminio verniciato epoxy*
Electrode material	*AISI316L - Hastelloy C - Titanium – Tantalum – Platinum*
Operating temperature (remote version)	*rubber-10 ÷ +80°C; PTFE -40 ÷ +150°C*
Operating temperature (compact version)	*rubber-10 ÷ +80°C; PTFE -40 ÷ +100°C*
Maximum accuracy	*Class II*
Maximum repeatability	*±0,1%*
Output signals	*4÷20mA: 0÷500Ω / Frequency: 0.1÷10000Hz Pulsed output: 24V galvanically isolated or open collector galvanically isolated 24V, 20mA (opz.)*
Communication protocol	*Modbus RTU*
Alarm output	*2 relè, 3A 230Vac N.O*
Power supply	*85÷265Vac, 24Vac/dc, 12Vdc*
Consumption	*Typical 6W, max. 8W.*
Compact version protection	*IP67*
Remote version protection	*Sensor IP67 / IP68 (on request); converter IP67*

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AQUA

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THE VALUE OF METERING

CE MID

ULTRASONIC

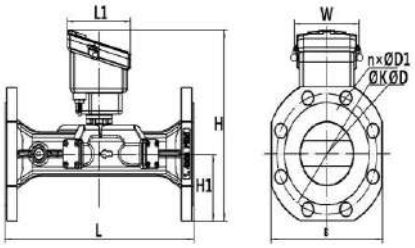


- Ultrasonic water meter.
- Mod. UDF with gauges from DN 50 to DN 200, temperature class T50, measuring range R500 with pulse output (see attached table).
- Very low start-up flow rate and 70% lower minimum flow rate than conventional meters.
- Temperature detection, fault indication and abnormal water consumption.
- No moving mechanical parts, very low wear and tear and very high durability.
- Liquid crystal display with IP68 protection rating and magnetic button.
- Certified according to Directive 2014/32/EU.
- Installation allowed in any position: in any case, the meter must always be filled with water in order to operate correctly.

ULTRASONIC

CE MID

Modello UDF
Temperature class T50
DN50 / 65 / 80 /100 /125/200
R 500



The following options are available on request:

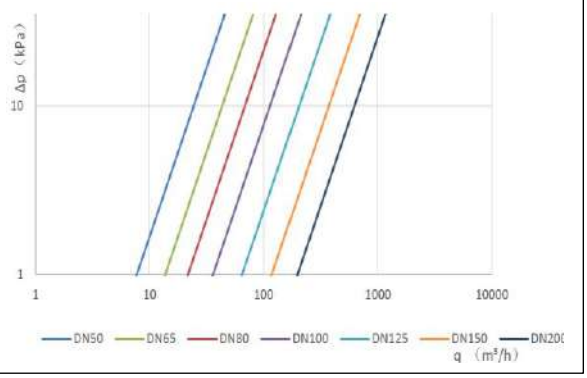
- *DN 125 and DN 200: steel body (other versions have a cast iron body)
- Complete RF radio module solution operating at 868Mhz with combined LoRaWAN and W-Mbus OMS protocols and an automatic switch, NB-Iot with protocol MQTT

Technical data – DN in mm	*50*	*65*	*80*	*100*	*125**	*150*	*200**
Permanent flow rate Q3 (m^3/h)	*25*	*40*	*63*	*100*	*160*	*250*	*400*
Overload flow rate Q4 (m^3/h)	*31,25*	*50,00*	*78,75*	*125,00*	*200,00*	*312,50*	*500,00*
Transitional flow rate Q2 (m^3/h)	*0,080*	*0,128*	*0,202*	*0,320*	*0,512*	*0,800*	*1,280*
Minimum flow rate Q1 (m^3/h)	*0,050*	*0,080*	*0,126*	*0,200*	*0,320*	*0,500*	*0,800*
Pressure drop	*25*	*25*	*25*	*25*	*25*	*25*	*25*
Measuring range R (Q3 / Q1)	*500*	*500*	*500*	*500*	*500*	*500*	*500*
Pulse value	*K10*	*K10*	*K10*	*K10*	*K100*	*K100*	*K100*
Pulse duration (ms)	*100*	*100*	*100*	*100*	*100*	*100*	*100*
L) Length (mm)	*200*	*200*	*225*	*250*	*250*	*300*	*350*
L1	*120*	*120*	*120*	*120*	*123*	*120*	*120*
H) Height (mm)	*245*	*250*	*275*	*290*	*380*	*400*	*470*
H1) Distance between pipe and counter support surface (mm)	*65*	*70*	*90*	*100*	*125*	*130*	*170*
W	*123*	*123*	*123*	*123*	*123*	*123*	*123*
B) Maximum overall diameter (mm)	*172*	*190*	*205*	*230*	*250*	*285*	*340*
D	*165*	*185*	*200*	*220*	*250*	*285*	*340*
K	*125*	*145*	*160*	*180*	*210*	*240*	*295*
n×ΦD1	*4×Φ18*	*4×Φ18*	*8×Φ18*	*8×Φ18*	*8×Φ18*	*8×Φ22*	*8×Φ22*

Hydraulic performance

Maximum reading m^3/h	**DN 50-DN 100**	9999999.99999
	DN 125-DN 200	99999999.99999
	1,6 MPa (1,0 MPa on demand)	
	T50 (T30 on demand)	
	U0-D0	
	IP68 (IP65 by external power supply)	
	3.6 V lithium battery (220 V ac, 24 V dc on request)	
	13 years	
	Class C (class B, class I on request)	
	Class E1 (class E2)	
	Water	
	Any	

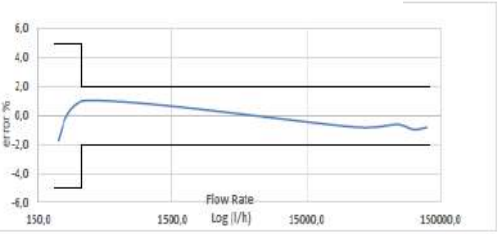
Head loss diagram



Connections

Conductor	Signal	Description
White	Pulses	Signal with both forward and reverse flow
Yellow	Direction	Closed contact = reverse flow
Green	Tampering	Contact open = tampering
Brown	Mass	Common
Grey	Forward pulse count	In case of reverse flow the counter records the volume internally. When normal flow is restored, no pulses will be generated until the previously totalled volume value is reset.

Typical error curve



L'Azienda si riserva di apportare modifiche ai dati tecnici e alle illustrazioni dei prodotti – 04/26

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AQUA

G2 misuratori
THE VALUE OF METERING

G2-IPS INDUCTIVE SENSOR for water meters AFMS /BFM/PFM/QDFM BFU/PFU/QDFU/UNI/SFU/DUF WEF-HV/VSF preset for inductive sensor

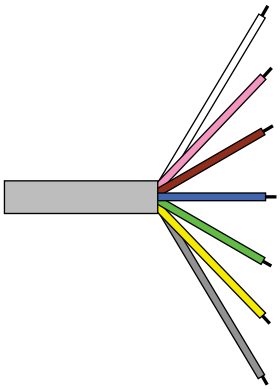


Inductive sensor model G2-IPS for multi and single jet meters, MID approved, preset for pulse output, volumetric, superdry dial, wet dial, liquid filled sealed counter type and fully protected dry dial and Woltmann type. The measure of delivered water is done by conveying the flow of the water into a rotation of a star index fitted with an amagnetic metallic sector and placed on the water meter dial; the electronic device detects the number of rotations and calculates the volume of water delivered.

- The emitting device model **G2-IPS** is completely waterproof and sealed (IP68); its lining is made of a atossic polymer resistant to normal working conditions;
- Totally proof from external interferences made by static or variable magnetic fields;
- **Presetting on liter index: K1;** for turbine meters and K10 (from DN 50 to DN 125) and K100 (from DN 150) for Woltmann
- **Battery life more than 10 years in standard conditions;**
- **Detection of flow direction;**
- Counting resolution (for turbine) 1 pulse/1 litre: programmable, on request, with higher values (e.g. 10/100 litres) Counting resolution (for Woltmann) 1 pulse/10 litre (DN 50-125), 1 pulse/100 litre (DN150-200): programmable, on request, with higher values

- Detection of cable cutting;
- Detection of emitting device removal and fraud alarm.

Length cable 0,5 m - 7 poles



WHITE	C1
PINK	C2
BROWN	C3
BLUE	⏚
GREEN	RX
YELLOW	⏚
GREY	TX


QDFM


VSF


AFMS


WEF HV


SFU/DUF


QDFU/UNI

The system provides 3 operating modes:

- **Mode # 1 (as *standard default*)**

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- **Contact C1**: Net volume; by detecting the flow direction, the device sends pulses only when the difference between forward and reverse flow is positive);
- **Contact C2**: Instantaneous flow direction (Open = forward; Closed = reverse);
- **Contact C3**: Tamperproof/Alarm (closed in normal working conditions, open in case of tampering/anomalies).

- **Mode # 2**
  - **Contact C1:** Forward/reverse volume without compensation (the device does not take into account the flow direction and generates pulses at all times, both with forward and reverse flow);
  - **Contact C2:** Instantaneous flow direction (Open = forward; Closed = reverse);
  - **Contact C3:** Tamperproof /alarm (closed in normal working conditions, open in case of tampering/anomalies).
- **Mode # 3**
  - **Contact C1:** Forward only;
  - **Contact C2:** Reverse only;
  - **Contact C3:** tamperproof /alarm (closed in normal working conditions, open in case of tampering/anomalies).

Each operating mode can be set on request.

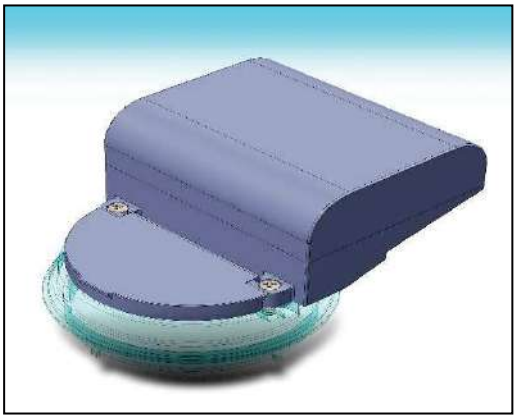
Besides the three contacts meant for the standard operation, the electronic card **G2-IPS** is endowed with a RS232 connection at TTL 3.3V level. This connection is normally used during production, but on request it could be used by the user to obtain more detailed information about the system and to set up some operating parameters.

RX: GREEN wire
GND: YELLOW wire
TX: GREY wire

TECHNICAL FEATURES common to every version of G2-IPS

Type	Microprocessor device
Supply	Lithium battery 3,6 V
Max entrance voltage	24 V
Internal resistance	120 Ohm
Approvals	CE, EMC (electromagnetic compatibility)
Max output frequency	10 Hz
Environmental operating conditions	-10 °C … +55 °C
Storage temperature	-20 °C … +60 °C
Protection grade	IP68
Pulse features (C1)	Pulse duration 50 ms

full view of device before sealing



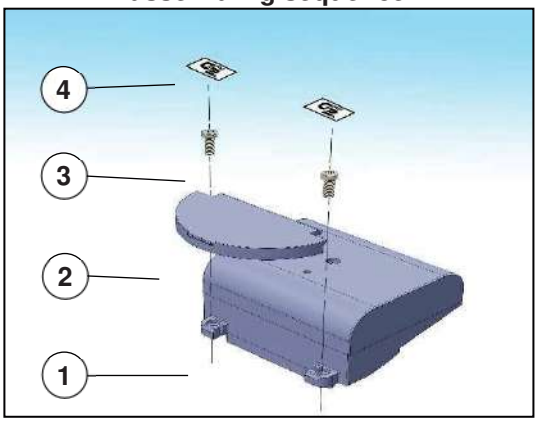
SPARE PART LIST

1. G2-IPS sensor
2. Dial cover
3. Closing screws (n. 2)
4. Sealing labels (n. 2)

ISO 9001 - ISO 14001 - ISO 4
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AQUA

Scheme of components with assembling sequence



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G2 misuratori

THE VALUE OF METERING

Made in ITALY

SMART READING



Separated radio modules with 868 Mhz frequency, LoRaWAN and W-Mbus OMS transmission protocols, with the possibility of simultaneously transmitting data from 1 or 2 counters, 2 sensors and activating a device such as a solenoid valve or LED.

-Separated radio module Mod- G2-RF-SLW operating at 868 Mhz with certified LoRaWAN protocol for fixed network
-Separated radio module Mod. G2-RF-W+L operating at 868 Mhz with certified LoRaWAN protocol for fixed network and W-Mbus OMS protocol for Walk-by/Drive-by with automatic switch.
-Separated radio module Mod. G2-RF-SNBIOT with MQTT protocol

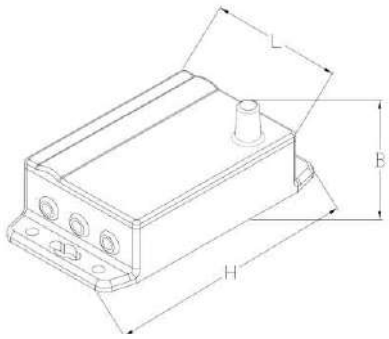
Inputs and outputs for all models:
-2 digital channels for 2 counters with Inductive or Reed or Hall cable
-2 analogue inputs for 2 sensors (e.g. temperature, level, pressure sensors)
-2 digital outputs for 1 or 2 actuators (e.g. 1 solenoid valve or 2 leds)

Indoor and outdoor installation
Data security via multi-level encryption
Modification of configuration data possible remotely from landline and/or via radio terminal
Transmitted alarms: mechanical fraud (removal, cable cut), reverse flow, battery low
IP 67 module for indoors and IP 68 resined for outdoors
Available in a LoRaWAN-only version or a WMBUS OMS-only version

SMART READING

Technical specifications separated radio module G2-RF

Counter detection	Pulsed input (Inductive or Reed or Hall cable)
Battery life	Up to 13 years under standard configuration conditions
Power supply	3.6 V lithium battery
Maximum pulse frequency	10 Hz
Environmental operating conditions	-10 °C ... +55 °C
Radio transmission activation	Via actuator on instrument body
Storage temperature	-20 °C ... +60 °C
Degree of protection	IP 67 (IP 68 resin coated)
Certification	CE, EMC (electromagnetic compatibility)



Overall Dimensions	
Width L (mm)	60
Height B (mm)	43
Length H (mm)	113

LoRaWAN protocol specifications

	Fixed Network
Network type	Freq. 868 Mhz prot. LoRaWAN certified (915Mhz frequency on request)
Transmitted data	Sensor ID, consumption data, hardware status, battery level, alarms: mechanical fraud (removal), reverse flow, battery low,temperature on site on request
Change configuration data	Possible from remote or via radio terminal
Flexibility	On request the system automatically switches between the protocols LoRaWAN and W-Mbus OMS
Activation	OTAA-ABP
Transmission interval	1 single reading daily and 2 daily history transmissions
Transmission distance	Up to 14 km in ideal conditions

Technical characteristics of Wireless OMS M-Bus protocol

	Walk-by/Drive-by
Network type	Freq. 868 Mhz W-MBus OMS approved
Transmitted data	Sensor ID, consumption data, hardware status, battery level, alarms: mechanical fraud (removal), reverse flow, low battery, temperature on site on request
Change configuration data	Possible via radio terminal
Transmission distance	Up to 500mt in optimal conditions

Technical specifications NB-Iot protocol

Transmission	Two-way communication over a fixed network using the NB-IoT cellular standard
Transmission interval	Each 3 days (customisable)
Communication protocol	MQTT
Edit configuration data	Available via remote access and/or local NFC
Data transmitted	Sensor ID, consumption data, hardware status, alarms,
Alarms transmitted	Mechanical tampering (removal), reverse flow, low battery, etc..
Communication interface	NFC for installation, configuration and data recovery
Data-logger	via NFC, with data recovery with mobile App

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AQUA

G2 misuratori
THE VALUE OF METERING

Made in ITALY

INDUCTIVE SENSOR COMPLETE WITH 169 WIRELESS M-BUS RADIO MODULE MODEL G2-IPS-C169WMB for inductive water meters models AFMS/BFM/QDFM/BFU/PFU/QDFU/UNI/ SFU/DUF/VSF/WEF-HV



Inductive sensor complete with 169 Mhz Wireless M-Bus radio module available in compact version, for multi-jet, single-jet, volumetric meters with K1 inductive predisposition and Woltmann meters with K10 inductive predisposition. The water quantity measurement is realised by translating the water flow into the rotation of a non-magnetic semi-metallic disc placed on the meter dial; by detecting the number of rotations, the electronic device calculates the volume of water transited.

- Transmission	Two-way on 169Mhz frequency over WMbus protocol
- Transmission interval	Daily with 12-hour history (configurable)
- Type of installation	Indoor e outdoor
- Consumption data	Net offset by possible reverse flows
- Data Security	Multilevel cryptography
- Activation of transmission	Via instrument-body magnet
- Changing configuration data	Possible remotely
- Data transmitted	Sensor ID, consumption data, hardware status, alarms
- Alarms transmitted	Mechanical fraud (removal, reverse flow, low battery)

model G2-IPS-C169WMB TECHNICAL SPECIFICATIONS

Type	Microprocessor device
Power supply	3.6V lithium battery
Certifications	CE, EMC (electromagnetic compatibility)
Max pulse frequency	10 Hz
Environmental conditions of operation	-10 °C … +55 °C
Storage temperature	-20 °C … +60 °C
Grade of protection	IP68
Battery life	Up to 13 years

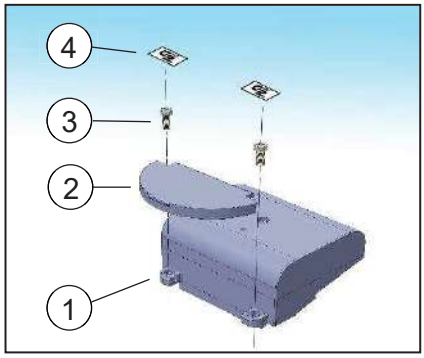
radio module assembly before



LIST OF COMPONENTS

1. G2-IPS Sensor
2. Dial lid
3. Fixing screws (n. 2)
4. Seal labels (n. 2)

exploded view drawing with assembly sequence



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THE VALUE OF METERING

169 WIRELESS M-BUS RADIO MODULE MODEL G2-RF-S169WMB WITH SEPARATE SENSOR INPUTS

Radio module complete with WMbus 169 protocol available in a separate version, to be connected via cable to the **G2-IPS** inductive sensor or Hall effect sensor, or to a reed contact.



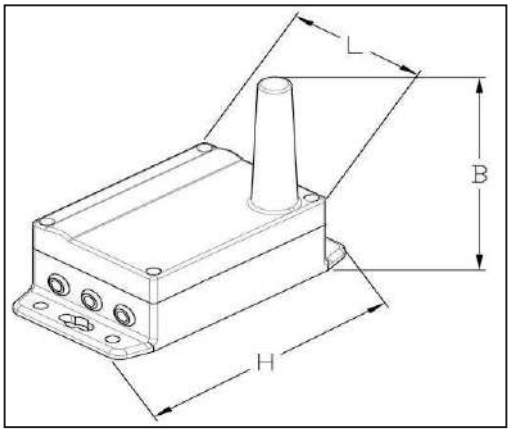
- Transmission	Two-way on 169Mhz frequency over WMbus protocol
- Transmission interval	Daily with 12-hour history (configurable)
- Type of installation	Indoor e outdoor
- Consumption data	net pulse
- Data Security	Multilevel cryptography
- Transmission activation	Via instrument body magnet
- Change configuration data	Possible remotely
- Transmitted data	Sensor ID, consumption data, hardware status, alarms,
- Transmitted alarms	Mechanical fraud (removal, cable cutting), reverse flow, battery low level

modell G2-RF-S169WMB TECNICAL SPECIFICATIONS

Type	Microprocessor-based device
Power supply	3.6 V lithium battery
Battery life	13 years
Certifications	CE, EMC (electromagnetic compatibility)
Activation of transmission	Via instrument-body magnet
Environmental conditions of operation	-10 °C … +55 °C
Storage temperature	-20 °C … +60 °C
Grade of protection	IP67 (IP68 resin coated)
Width L (mm)	61
Thickness B (mm)	70-80
Height H (mm)	114

CONNECTIONS

Digital pulse inputs (direction and anti-fraud) for 2 water meters
2 analog inputs (e.g., temperature or pressure sensor)
2 open collector digital outputs for remote device activation (e.g., solenoid valve, sensors)



ISO 9001 - ISO 14001 - ISO 45001
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AQUA

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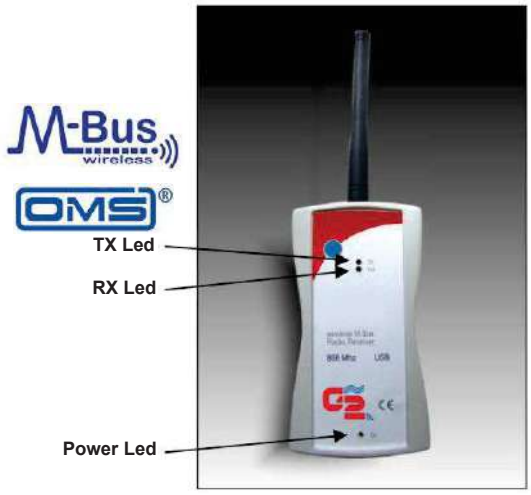
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THE VALUE OF METERING

PORTABLE RECEIVER
WIRELESS M-BUS RPWMB

- Walk-by/drive-by RECEIVER
- Range up to 100 mt free field/20mt in buildings (depending from the building type and electromagnetic polluting conditions)
- USB interface to connect via cable to a portable notebook
- Communication via COM virtual gate
- Compliance to Wireless M-Bus EN 13757-4:2013 standard
- Supporting OMS standard (Opening Metering System)
- It can manage bidirectional transmission of specifically pre-set devices
- It can manage an AES 128 data cryptography



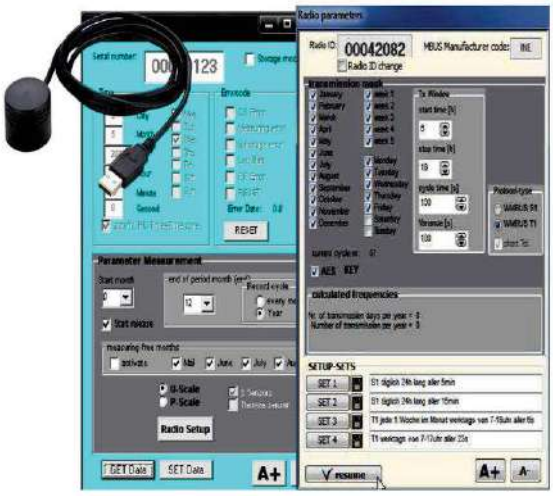
Technical data	
Frequency / protocol	868 MHz / Wireless M-Bus
PC interface	USB with FTDI-Chip
Required driver	VCP driver - http://www.ftdichip.com/Drivers/VCP.htm
Display led	1 x power - 1 x transmit - 1 x receive
Dimensions	120 x 65 x 25 mm without antenna
Weight	100 g
Cable length	1 m



SOFTWARE WIRELESS M-BUS 1.1

- Working with Windows programs (Xp/Vista/7/8/10)
- Windows minimum requirements: 1 MB RAM/13 MB free space on hard-disk
- Suitable hardware:
  - Receiver USB RPWMB to receive/analyse wireless protocols coming from:
    - Heat cost allocator
    - Compact radio
    - Super-Dry with radio M-Bus module
    - Ultrasonic radio
  - Optical head with OT-USB cable for local I/O set up and reading:
    - Heat cost allocator
    - Compact radio
    - Super-Dry with radio M-Bus module
    - Ultrasonic radio
- Automatic search of wireless devices
- The software manages personal water meter information and number of reading rounds
- It is possible to set up search criteria for single network, for reading analysis
- Generation of reading reports in .CSV format

OPTICAL HEAD USB
OT-USB



The company's policy is one of continuous product improvement and the right is reserved to modify the specifications herein contained without notice – 08/23

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THE VALUE OF METERING

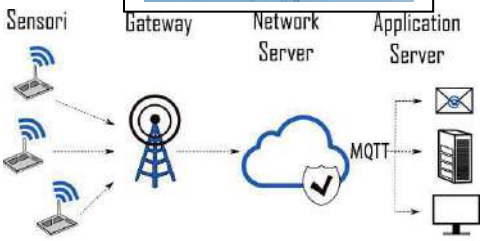
REMOTE READING SYSTEM FOR WATER METERS EQUIPPED WITH **LoRaWAN** ™ INTERFACE RADIO MODULE **FOR FIXED TYPE INFRASTRUCTURE**





FIXED TYPE RADIO SYSTEM

- Transmission of data from various meters installed in manholes, niches, flats, etc.
- Radio communication interface on 868Mhz free frequency and LoRaWAN transmission protocol
- Dual communication
- Fixed system of collection and transmission via Gateway/Concentrator of data coming from the devices at regular intervals to the Network Server with dual and multicast communication
- Transmission distance about 15 km in open field (2-3 km in high populated towns), at the location of the gateway (distances may have variations in excess or defect due to natural obstacles from environmental conditions and electromagnetic pollution)
- Transmission data package including:
  - Instant consumption data
  - Historic reading of consumption per hour of previous 24 hours period
  - Low Battery
  - Possible alarms (general, fraud, reverse flow, low battery level,)
  - Leakage (loss report)



NETWORK SERVER FOR FIXED TYPE INFRASTRUCTURE

- Control layers, authentication, and quality of data received in the LoRaWAN network
- Receiving and storing the data transmitted by each device and elimination of unwanted or duplicate packets
- Dual and multicast communication to all covered devices
- Battery life optimized via Adaptive Data Rate (ADR) mechanism that modulates the output RF power of each individual node
- Through the application of the data management platform each data can be monitored and retrieved constantly and periodically via MQTT communication protocol



GATEWAY
LoRaWAN

DATA MANAGEMENT PLATFORM FOR FIXED TYPE INFRASTRUCTURE

- Web interface accessible from any consultation and export of data collected during reading internet location with monitoring,shifts , analysis.
- Data synchronizing between back office operators and operations personnel on the field. Processing of reading shifts, user profiles, data reference
- Map representation of where the meter is located
- Analysis tools and statistical charts
- Import/export tools compatible with the BILLING CRM format
- Network analysys of the devices installed in the field
- It also supports infrastructure of fixed type with LoRaWAN communication protocol
- Cloud data storage at multiple levels of data security and data privacy
- Scheduled back up storage



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THE VALUE OF METERING

Portable testing bench to check water meters installed in plumbing networks

- **For cold water, temperature class T30**

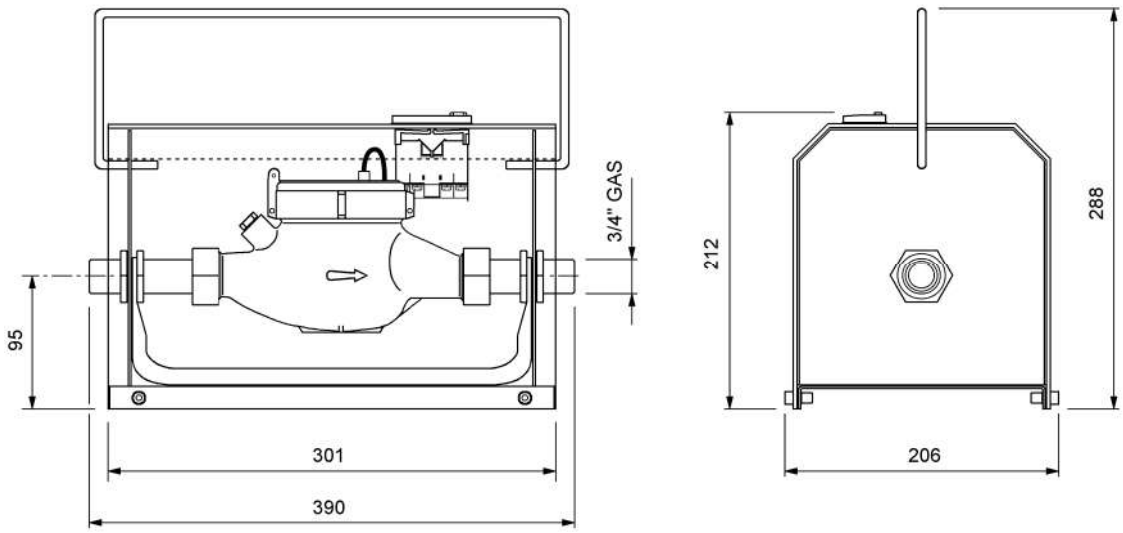
  Approvals:
  - water meter: CE MID MI001
  - electronic counter: UL508, CSA C22.2 No. 14, Lloyd
- Water meter master Mod. PFML/20 for cold water, temperature class T30, Q_3 4,0 m³/h, measuring range R160, fully equipped with reed pulse emitter, with pulse value of 1 pulse / 1 litre
- Electronic counter with an 8 digit display, with external and manual resetting for litres reading ,self powered by a 7 years long life lithium pad battery
- Upper housing made of shockproof lexan, sides and bottom made of metal with handle to carry
- Threaded male fittings 3/4" GAS
- Clear plastic cover allows direct master meter reading of m³ and its submultiples



Technical data

Permanent Flow Rate Q_3 (m³/h)	***4,0***
Max. flow rate for short period Q_4 (m³/h)	*5,0*
Transitional flow rate Q_2 R160 [MPE ±2%] (l/h)	*40*
Min. flow rate Q_1 R160 [MPE ±5%] (l/h)	*25*
Starting flow R160 (l/h)	*5*
Accuracy class	*2*
Environmental class	*C*
Pressure loss class ΔP (bar)	*0,63*
Max allowed working pressure MAP (bar)	*16*
Master meter dial register from (m³)	*0,0001*
Master meter dial register to (m³)	*99 999*
Electronic counter dial register from (l)	*1*
Electronic counter dial register to (l)	*99 999 999*
Weight without packing (kg)	*5,500*

N.B. – THE CARRYING HANDLE CAN BE RECLINED



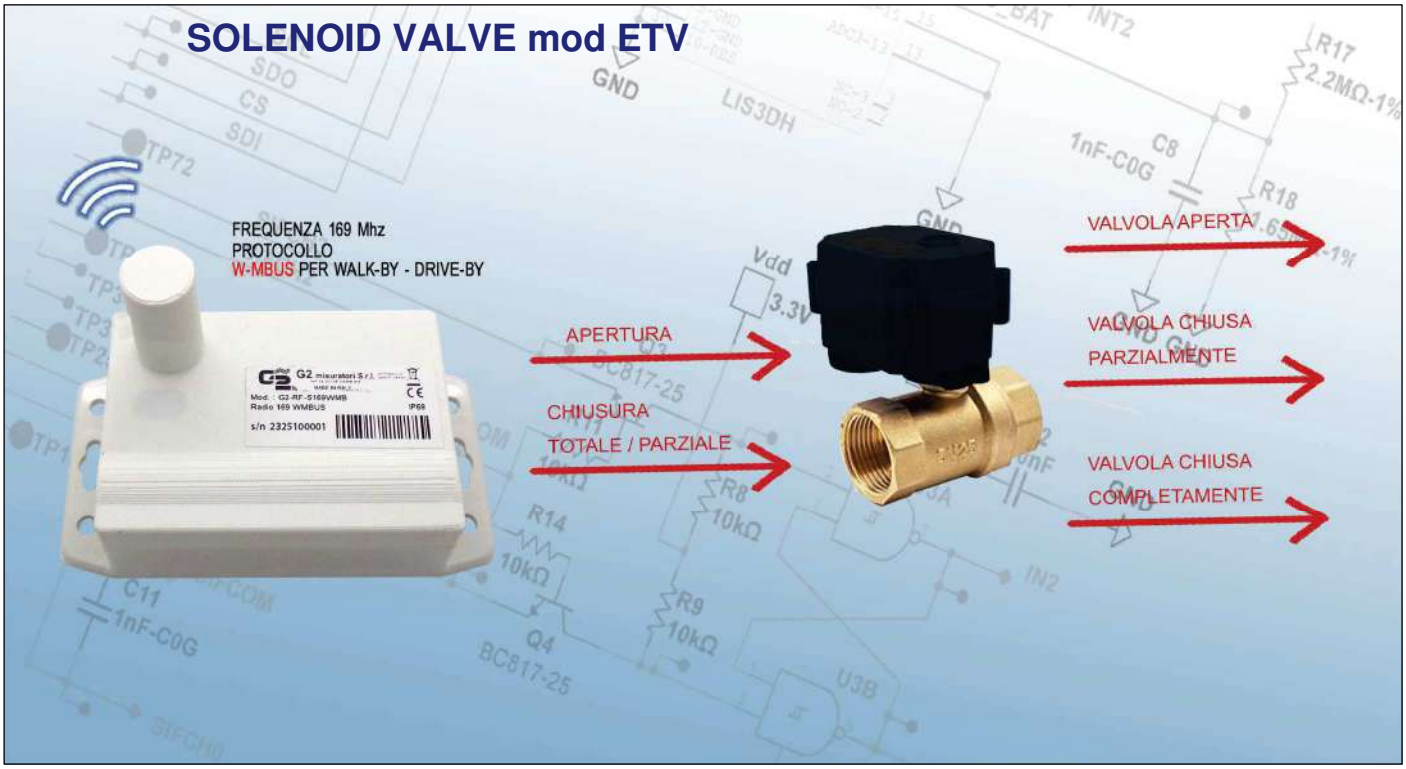
The company's policy is one of continuous product improvement and the right is reserved to modify the specifications herein contained without notice – 04/18

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G2 misuratori
THE VALUE OF METERING



- The ETV solenoid valve, controlled via the two digital outputs sent by the following G2-RF-SLW 868Mhz and G2-RF-SNB-Iot radio modules, allows the user to interrupt or partialise the water supply downstream of the meter
- The ETV solenoid valve is available in DN 15 and 20 sizes.
- Partial or total opening and closing of the solenoid valve can be controlled remotely.
- Connection between solenoid valve and radio module is via cable
- Information on the status of the solenoid valve, (open, partially closed, fully closed) in addition to being an output of the system as external connections, is accepted by the radio module as input, which in turn can transmit it via radio.
- The system is designed to consume power only during opening and closing transitions
- The solenoid valve is separately powered

TECHNICAL FEATURES

Power supply	3,6V
Maximum power	140 mW
Opening/closing transition time	12 seconds
Possible number of transitions	10000
Max. pressure	10 bar
Water operating temperature	0 – 90°C
Ambient operating temperature	10 - 55°C
Connection to Radio module	cable
Protection grade	IP65
External outputs	Open valve (NO) Partially closed valve (NO) Fully closed valve (NO)

The Company reserves the right to make changes to technical data and product illustrations -07-23

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G2 misuratori

THE VALUE OF METERING

WMBR RADIO MODULE WIRELESS M-BUS



- **WMBR Radio Module Wireless M-Bus 868 MHz for Super-Dry SFU-SCU water meters**
- Transmission mode T1 on 868 MHz frequency
- Supporting OMS standard (Opening Metering System)
- It can manage an AES 128 data cryptography
- Battery life 12 years + back up power (depending on operating conditions)
- Radio module protection grade: IP 54 (alternatively IP67 available on request)
- Radio module can be pre-set for inductive pulse output
- In compliance with Wireless Mbus EN 13757-4 standards
- Radio module operating temperature (min/max): 0 … 60 °C
- Radio module storage temperature (min/max): -20 … 50 °C

MBC WIRED MODULE M-BUS



- **MBC Wired Module M-Bus with 0,90 m long cable for Super-Dry SFU-SCU water meters**
- Power supply with wired Bus network (if connected)
- Around 2 years of functioning/data storage with Bus network not connected, thanks to back up battery
- M-Bus module protection grade: IP 65
- Reverse flow detection up to 255 pulses
- Primary and secondary address pre-set or programmable via software and hardware (es. Micromaster) Primary 0-250/Secondary 8 digit
- Processor with 2 sensor to detect pulses and processing time
- In compliance with M-Bus EN 13757-3 standards
- Wired module operating temperature (min/max): 0 … 70 °C
- Wired module storage temperature (min/max): -25 … 70 °C

B-i RML BUILT-IN RADIO MODULE LoRaWAN™



- **B-i RML Built-in Radio Module for Super-Dry SFU-SCU water meters**
- **Trasmission to LoRaWAN™ network and in wM-Bus C1 or T1 mode**
- Dual radio LoRaWAN™ and wM-Bus
- LoRaWAN™ ready in wM-Bus mode (automatic switchover)
- Bidirectional, battery powered, long range transceiver with low power consumption
- Long range wireless data transmission
- Pre-installed long-life battery
- NFC
- Configurable reporting interval
- Easy installation
- Average life 8 years (dipending on device location and reporting interval)
- Secure communication
- Diameter 64.0 mm
- Height 39,2 mm
- Weight 60 g
- IP Rating IP68
- Operating temperature -5 ° C ... + 65 ° C
- Tx power up to + 20 dBm
- Rx sensitivity: -140 dBm
- Activation type OTAA
- LoRaWAN™ version: 1.0. *3ª*

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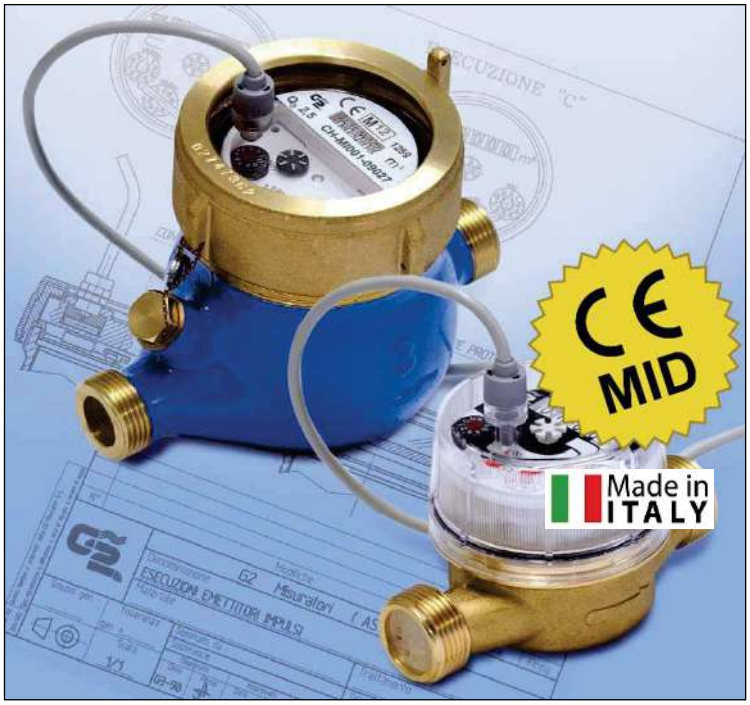
THE VALUE OF METERING

WATER METERS EQUIPPED WITH AN IMPULSE-EMITTING DEVICE

All models can also be supplied just with pre-arrangement for impulse-emitting device

- Pulse emitter reed switch with vertical clap-in system
- Accuracy class: 2
- **BFUL model** from DN. 15 to DN. 40
  single jet – wet dial – temp. classes T30 e T50
- **PFUL model** from DN. 15 to DN. 40
  single jet – liquid-filled sealed counter – temp. classes T30 e T50
- **SFUL and AFUL models** from DN. 15 to DN. 40
  single jet – dry dial – temp. classes T30 e T50
- **SCUL and ACUL models** from DN. 15 to DN. 40
  single jet – dry dial – temp. classes T70 e T90
- **BFML model** from DN. 15 to DN. 50
  multi jet – wet dial – temp. classes T30 e T50
- **PFML model** from DN. 15 to DN. 50
  multi jet – liquid-filled sealed counter – temp. classes T30 e T50
- **AFML model** from DN. 15 to DN. 50
  multi jet – dry dial – temp. classes T30 e T50
- **ACML model** from DN. 15 to DN. 50
  multi jet – dry dial – temp. classes T70 e T90
- **WELF model** from DN. 50 to DN. 300
  helical vane (Woltmann) – dry dial – cold water up to 50°C
- **WELC model** from DN. 50 to DN. 300
  helical vane (Woltmann) – dry dial – hot water up to 130°C

For hydraulic performances and tecnica data please refer to the cencerned water meter sheet.



multi jet and single jet pulse rates (pulse value must be stated when ordering):											
0,25	0,5	1	2,5	5	10	25	50	100	250	500	1000

Helical vane (Woltmann) pulse rates (pulse values must be stated when ordering)	
WELF model from DN. 50 to DN. 125 – cold water	**WELF model from DN. 150 to DN. 300 – cold water**
Reed switch sensor: K10 – K100 – K1000	**Reed switch sensor**: K100 – K1000 – K10000
WELC model from DN. 50 to DN. 125 – hot water	**WELC model from DN. 150 to DN. 300 – hot water**
Reed switch sensor: K100 – K250	**Reed switch sensor**: K1000 – K2500



Pulse emitter reed switch, available on request, with side clap-in system for reduced space needs

Continuous development of our products may necessitate changes in details without prior notice – 10/22

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