FLOWIZ®

A COMPLETE RANGE OF BATTERY POWERED INSTRUMENTS



TESTED ISO 17025 COLLAUDATO

CERTIFIED MID MI001 CERTIFICATO

CERTIFIED OIML R49 CERTIFICATO



Battery powered. Internal logger. GPRS wireless transmission.

ISOMAG®
The friendly magmeter

THE FLOWIZ® FAMILY

Flowiz® is a family of battery powered operated converters for electromagnetic flow meters and data logger designed by Isoil Industria for the water industry.

Used in combination with any **Isomag®** sensors it is an ideal solution for all applications in the water industry.

After its launch on the market in 2004, the family and the available features have expanded, reached a range of options and a level of reliability which makes these instruments a reference for the water network management.

The strength of **Flowiz®** family is the wide range of features all integrated in one single housing: flow, pressure level and corrosion potential measuring modules, data logger, batteries, main power supply and 4-bands GPRS modem.

Flowiz® family is by far the most complete range battery converters and data loggers, and by far the most reliable because they reflect experiences and suggestions collected directly from the field from technicians, operators, Utilities and Isoil expertise.

Working installations all over the world prove the efficiency of this products line in all its features, from the accuracy of the measure to the quality of the data transmission.

Flowiz® family represents an evolution also in the technology which allows an increased accuracy level and an increased life time up to 15 years.

Able to drive electromagnetic full-bore sensors from DN3 up to DN 1800 mm and even bigger under specific condition, or insertion sensors, the **Flowiz®** line fulfils all the requirements of the customers in water distribution, District Metering and Bulk Revenue applications as well as irrigation.

The **Flowiz®** has been realized and developed trying to answer to the most important needs of the water market:

high performances also at low flow rates, innovative and unique technology in measuring and managing data, huge data logging capability, versatility and reliability of the meter, integrated software able to perform a check of the complete measuring system and validate the measure, competitive price thanks to the integration of all elements in one single unit.

The **Flowiz®** family instruments have the advantages of an electromagnetic flow meter, with no moving parts inside avoiding all wear and tear and with extremely high accuracy also at low flow rates. The accuracy is granted by individual system calibration on **ISO17025** calibration benches.



ADVANTAGES & BENEFITS:

- High accuracy at low flow rates;
- Compact and separate solutions;
- IP68 version;
- Battery powered and main power supply available;
- Performances reflecting the ISO14154, OIML R49 and MID – 001 standards;
- Powerful Data Logger (2 GBytes and more)
- GSM/GPRS wireless communication protocol;
- Graphical Display;
- Compatibility with all standard loggers on the market;
- Double Pressure input for PRV monitoring;
- Water temperature measure;
- Potential corrosion measure;
- Software and hardware security systems;
- Tele-assistance features;
- Smart Sampling Function;
- Memory card storing sensor and converter data;
- Built in verification tool;
- 4-20 mA (with external supply);
- Anti intrusive alarm (sent via SMS and/or e-mail);
- Relay output able to drive a simple device like solenoid valve;
- Clever solar panel alternative power source.

THE FLOWIZ® FAMILY

ML255 – ML252 – ML145 CONVERTERS



ML255, ML252 and ML145 are all members of the **Flowiz®** family, offering to customers the wanted level of performance based on the real needs they have. Each converter can be connected to any **Isomag®** meter.

In this logic the family starts from the full capability of ML255 which can integrate in his housing the GPRS modem, the measuring module for pressure, level, temperature and corrosion potential (max 2 additional input modules) the antitheft alarm, the built in verificator, the memory card with the sensor data and converter data saved and ready to be restored.

The converter family includes the ML252 which is a blind converter battery operated with integrated data logger with RS 232 and on/off outputs, and the ML145 which is a battery flow meter, with pulse output and optionally 4-20 mA analogue output signal.

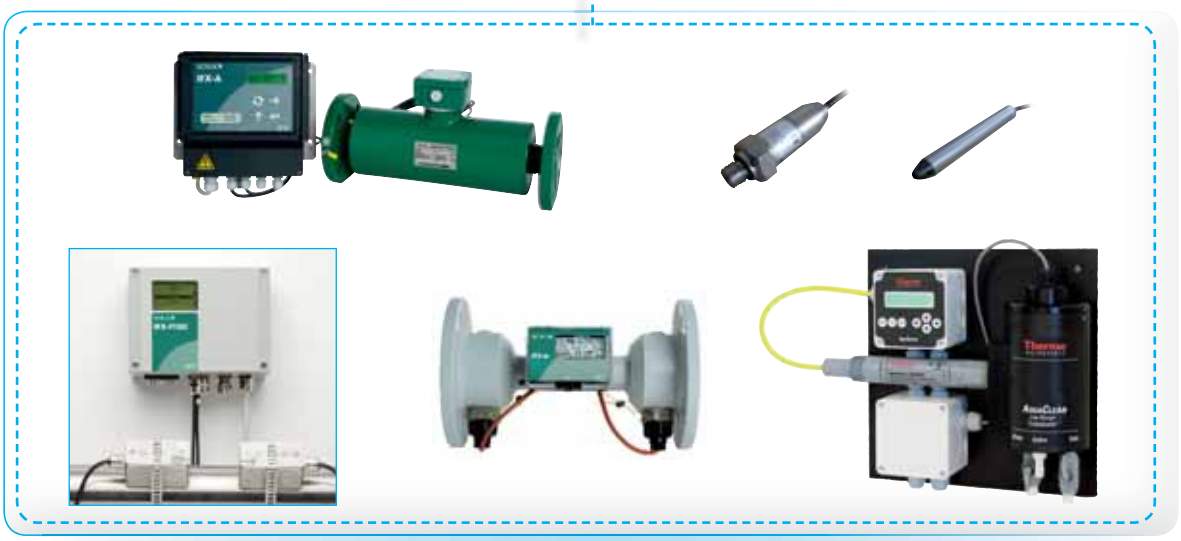
ML155 DATA LOGGER

ML155 is another member of the family which is a battery operated powerful universal data logger with integrated GPRS.

The instrument is designed to be integrated to, or to retrofit, meters which do not have a GPRS transmission. It is a very flexible data logger to be used not only with flow meter, since it is possible to connect a signal from any instrument like quality sensors using the 4-20 mA input channel. The instrument can log up to 3 external signals in different combinations and also drive 2 pressure/level sensors or CPM (Corrosion Protection Module).

Graphic display and micro SD card for data storing are standard features for ML155.





IN FIELD SOLUTIONS

- District Metering (Zones, DMAs, SMAs)
- Distribution, Transmission
- Water Supply management
- Commercial Metering









• Irrigation • Well water metering • Mining

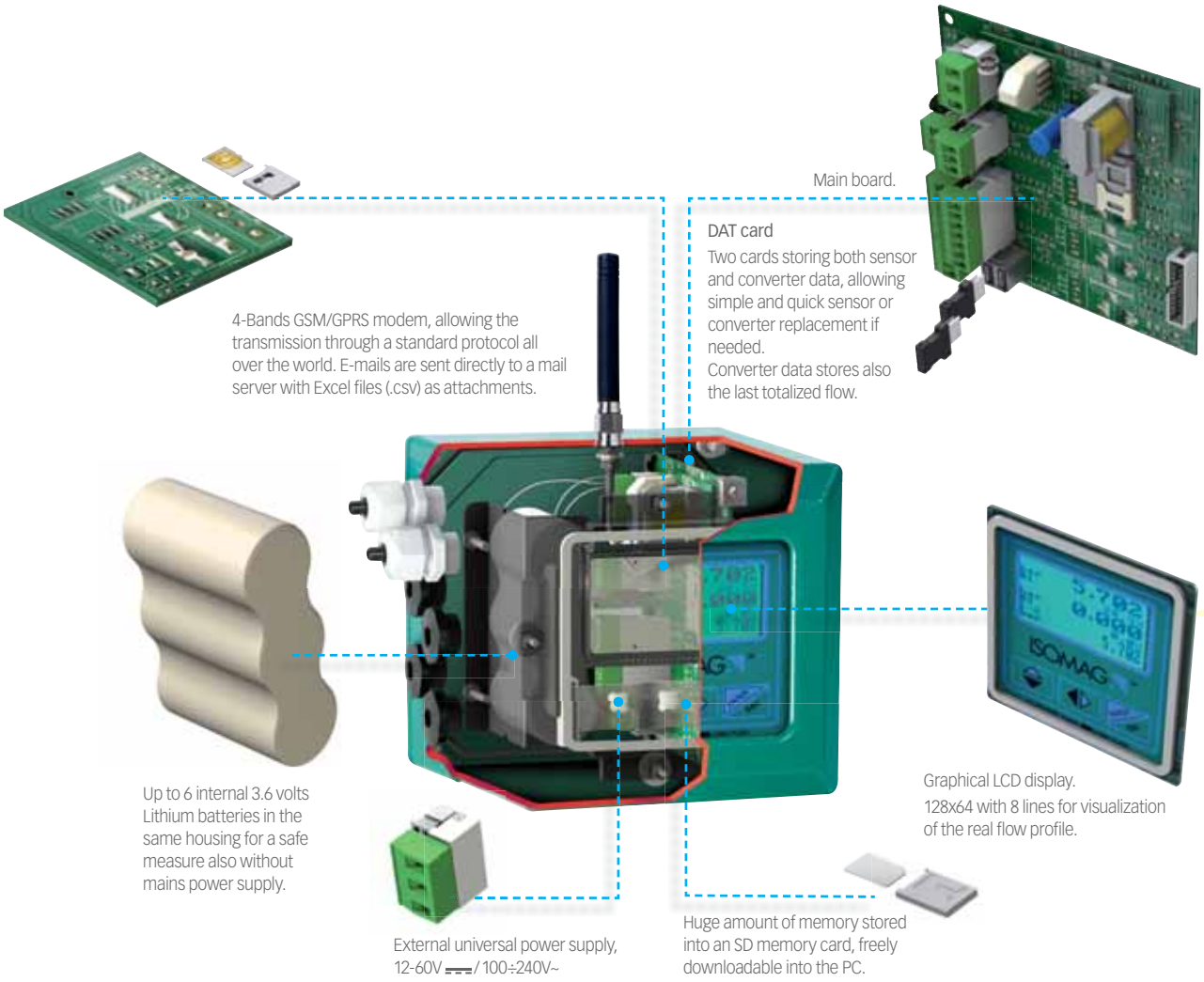






• Conventional EMF applications
• Industrial Metering

INTEGRATED SOLUTIONS



POWER MANAGEMENT

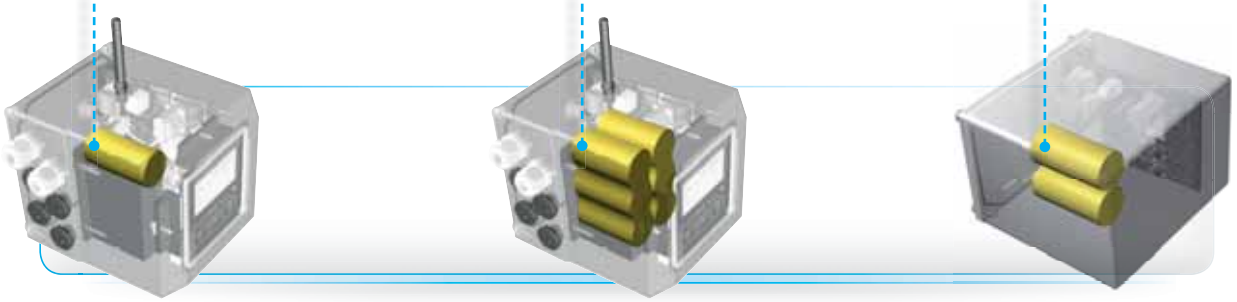
The Flowiz® family take advantage from years of improvements in battery power technology. It results in a perfect mix of high measuring accuracy and performances efficiency:

- An internal set of batteries to allow a lifetime up to 15 years;
- The option of a mains power supply range 12-240 Vac/Dc or DC for ML145 (batteries as back-up);
- Battery replacement without stopping the measure or loosing data
- 3 different settings to configure the sampling frequency and optimize consumption and resolution of the instrument according to the process flow profile.
- The SMART sampling function;
- Situation always under control by a continuous updated status of the batteries visualized on the display and sent by mail. Freely programmable alarms.

MINIMUM CONFIGURATION
1 battery
or 1+1 batteries (for MID devices)
Standard uses, where no transmission is required

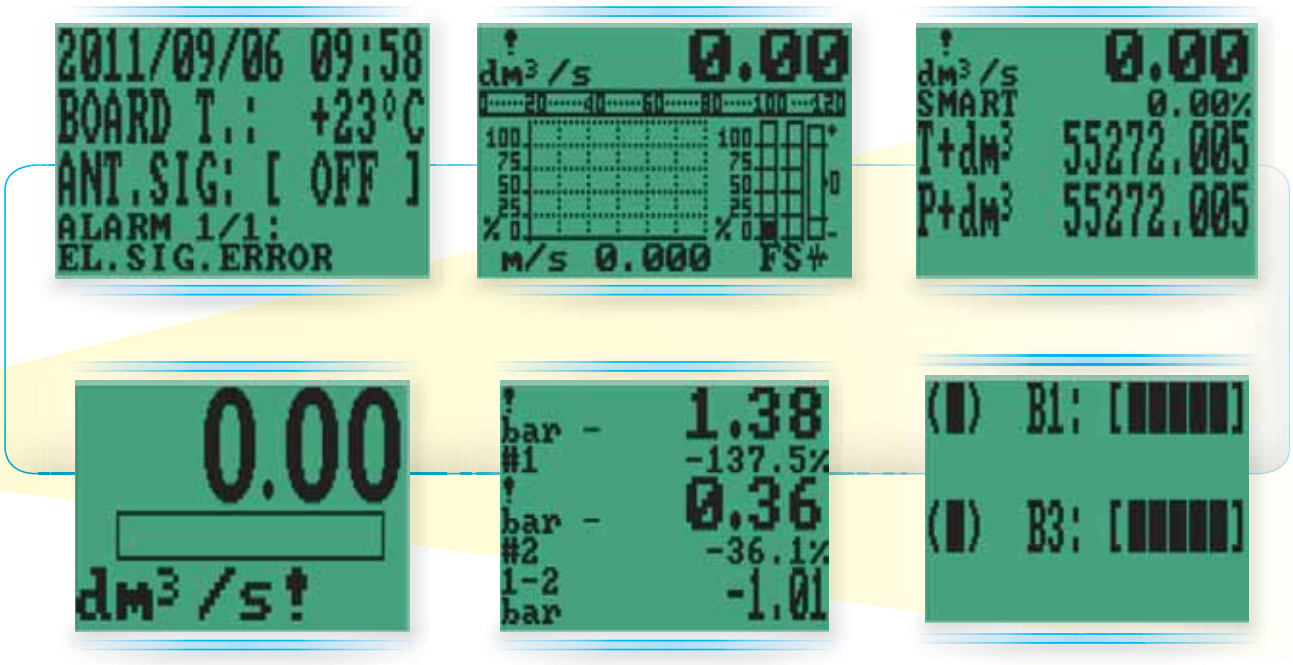
MAXIMUM CONFIGURATION
6 batteries
3 batteries for GPRS needed if transmission is activated

ML252
2 batteries
Compact unit with pulse outputs

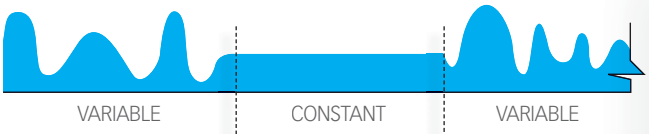


Graphical Display

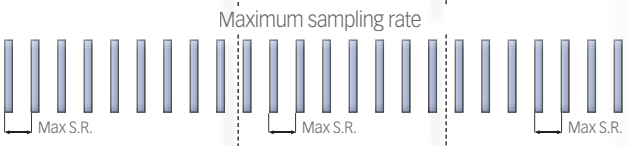
A complete visualization of data locally makes sure you can always have the situation under control.



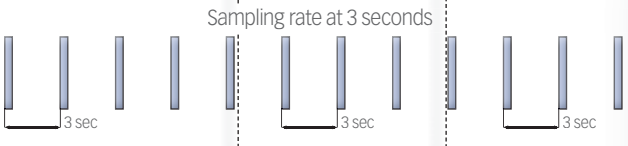
REAL FLOW PROFILE



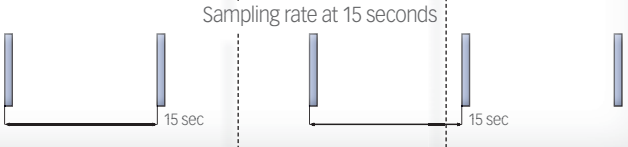
1 CONTINUOS SAMPLING



2 AVERAGE SAMPLING

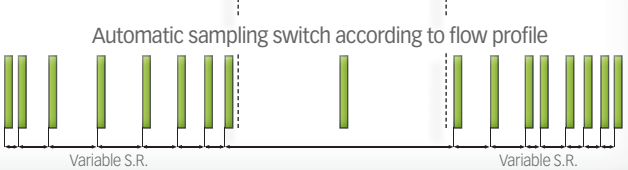


3 MAX LIFE SAMPLING



4 **The Smart Sampling Function**

An internal algorithm allows the unit to automatically detect flow rate variations in the process. This capability determines the automatic setting of the sampling frequency. No variations means lower sampling frequency, with less power consumption; high variations means higher frequency to better follow the changes in the process.



APPLICATION SOLUTIONS

Flow measure
and level control
in a tank

Irrigation control of single
delivery point based on flow
value or timing.



Typical installation including flow
and pressure measurements to
control PRV valve

Installation with flow, with pressure
and temperature measure



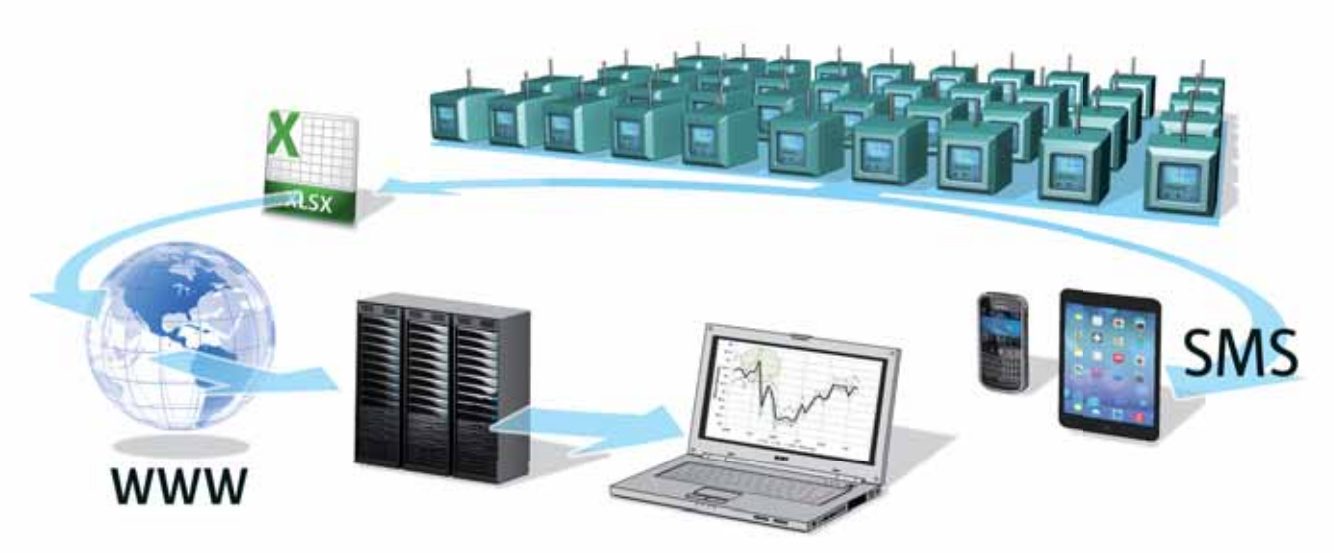
Remote alarm from relay input

Antitheft alarm

The instrument is able to deliver an alarm signal in case the box is opened.

The alarm is sent immediately to the customer via e-mail or SMS.

COMMUNICATION MANAGEMENTS



Flowiz® EXTRACTOR

FREE SOFTWARE

Every day, at preset intervals, each installed unit sends an e-mail through the **GPRS** protocol to a dedicated e-mail account. These e-mails have excel files as attachments which contain all process data collected during the day and saved into the instruments logger according to the preset interval.

The free **Flowiz® EXTRACTOR** software automatically extracts all the received files and creates folders with the name of the different instruments. The operation of extraction is performed at preset intervals by the operator. All data can now be organized and the operator only needs to open the required folders in the proper directory.

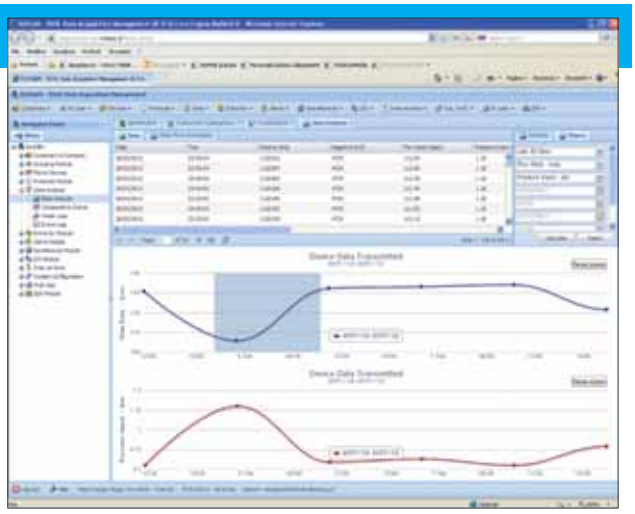
ISOD@M

Data acquisition and management

ISOD@M Data Acquisition and Management Software provide an easy solution to monitor your instruments in the field, easy collect, store and analyze all of your data and events.

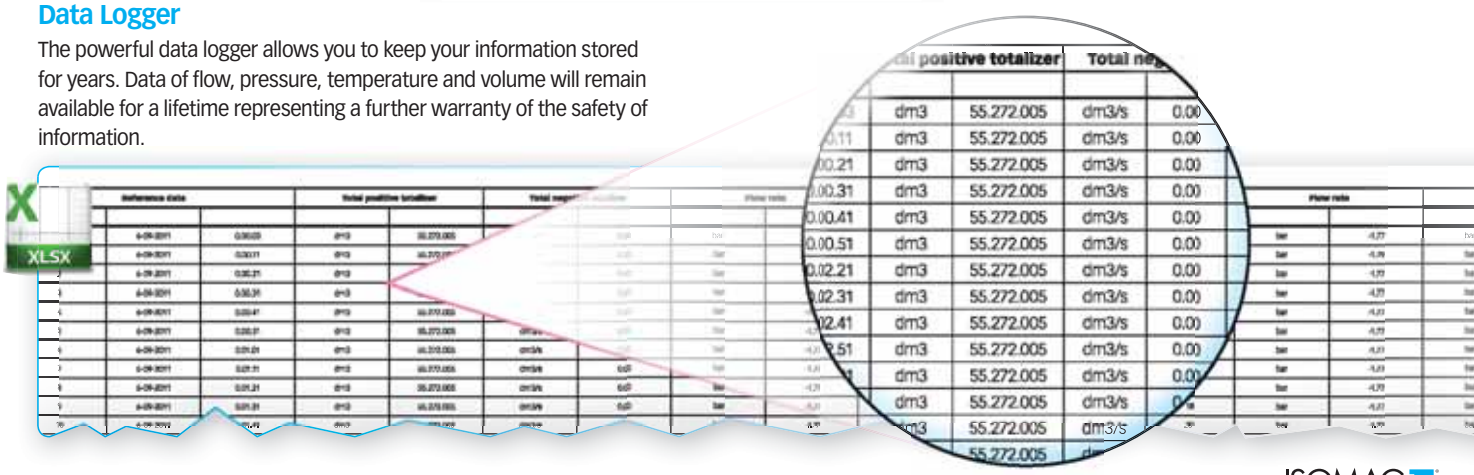
Easily accessible from the WEB it provide fast connection with your processes, no matter where you are, in your office, travelling or at home.

Software for Data Acquisition and Management is also available to enhance the Flowiz Performance.

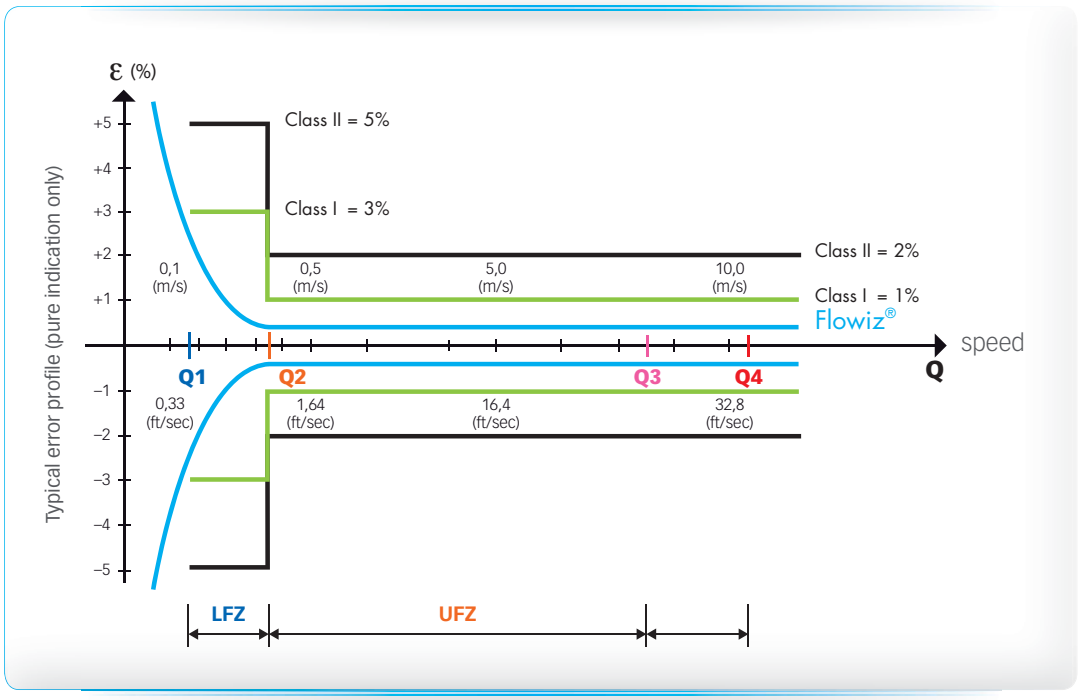


Data Logger

The powerful data logger allows you to keep your information stored for years. Data of flow, pressure, temperature and volume will remain available for a lifetime representing a further warranty of the safety of information.



METROLOGY



Uncertainty calculation

speed ⩾ 0,5 m/s (1,64 ft/s) ⇨ e = ± A% (read value)
speed < 0,5 m/s (1,64 ft/s) ⇨ e = ± (B/V)% (read value)
minimum flow (l/s): DN x DN x 0,008/1000 (DN expressed in mm)

where:
e = uncertainty
V = working speed
(A and B values: see below table according to SENSOR model)

FULL BORE SENSORS					
MS501/ MS1000/MS2500			MS5000		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
0,4	0,2*	0,66	2,0	1,0	3,28
INSERTION SENSORS					
See technical data sheet					

Reference conditions:
- Constant flow rate during the test
- Pressure: >30 Kpa
- Flow condition: fully developed flow profile
- Zero stability +/- 0,005 %

*Special accuracy on request

Custody transfer & bulk metering

The OIML R49 recommendation sets out the conditions to which water meters shall comply to meet the requirements of the services of legal metrology in Countries where these instruments are subject to state controls.

The measuring range of the water meter is determined by Q3 (nominal flow rate) and "R" (ratio).

Flowiz® meets the requirements for water meters of accuracy class 2.

		SENSOR SIZE										
	mm	**25**	**32**	**40**	**50**	**65**	**80**	**100**	**125**	**150**	**200**	**250**
	inch	*1*	*1¼*	*1½*	*2*	*2½*	*3*	*4*	*5*	*6*	*8*	*10*
Q3	m³/h	**16,00**	**25,00**	**40,00**	**63,00**	**100,00**	**160,00**	**250,00**	**400,00**	**630,00**	**1000,00**	**1600,00**
Q1, R=100	m³/h	0,16	0,25	0,40	0,63	1,00	1,60	2,50	4,00	6,30	10,00	16,00
Q1, R=400	m³/h	0,04	0,06	0,10	0,16	0,25	0,40	0,63	1,00	1,58	2,50	4,00

Q2/Q1 = 1,6 Q4/Q3 = 1,25

Accuracy and Reliability

Isoil flow meters are tested on ISO 17025 certified bench when leaving the factory, the original accuracy can be granted for years when the meter is working within its specifications.

Isoil offers different ways to verify the status of the meter assuring the required level of reliability.

OPTIONAL, FEATURES AND ACCESSORIES



ISOCAL – Completely automatized flow meter advanced check up, measures the electrical conditions of the sensor and compares the results with the reference stored.
Full verification of all converter I/O.
Emission of report with reference and actual data.

ISOCHECK – Flow simulator is a simple device to be connected to sensors replacing the converter, making a check of the electrical characteristics of the sensors.

BIV – Built in verificator consists in a software that automatically and periodically makes a check of the vital electrical characteristics of the sensor, sending an alarm in case of result outside specification and generating a printable report.
This feature answers to users that need to have evidence that the meter is properly working.





CPM – Corrosion Protection Module additional measuring module able to continuously monitor the electrical potential of the line, giving to user real time information on cathodic protection if in use on the line or the corrosion potential, preventing any possible change in potential that could lead into pipe corrosion and then in water leakage.
The CPM is driven by the Flowiz® and the measured data are shown on display and transmitted together with the flow data, in case of change in potential an alarm is promptly sent via SMS or Email.

APL – Solar panel with external accumulator and electronic for power management.
It is a clever solar panel with integrated electronic able to optimize the use of the power saving the internal battery pack. When the solar panel is powering the instrument, the internal battery are for back up only and the instruments works in continuous measuring method as well as the GPRS transmission.

SP / SL – A complete range of pressure and level sensors which can be integrated into the Flowiz® converter, to control the line pressure or the level in the thank. A maximum of two pressure / level sensors can be integrated into the ML255 or ML155 Flowiz converter.

ISOCON SW – Interface SW when used with the USB adaptor connected to a PC allows simple configuration of the Flowiz® directly from a lap top PC. Configuration can be checked and saved, and quickly restored if requested.

DAT CARD – Available only for ML255 converter this feature consists of 2 memory cards in which are stored the all sensor and converter data, allowing very simple and fast replacement.

ANTITHEFT ALARM – The optional digital input of ML255 or ML155 can be connected to the door switch and programmed to report an alarm when the switch is opened.

TECHNICAL CHARACTERISTICS

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	ML255	ML252	ML145	ML155
GPRS Modem	●			●
MID001- OIMLR49 Certification	●			
Graphic display	●			●
Dual line display			●	
Without display		●		
Universal External power supply	●			●
External power supply DC			●	
Solar panel	●		●	●
Pressure/Level sensor	●			●
Corrosion Protection Module	●			●
4-20 mA output (with DC supply)			●	
For full bore up to DN18000	●	● (DN600)	●	
For insertion flow meter	●	●	●	
Data logger	●		●	●
IP68 Protection (under request)	●		●	●
Up to 6 internal batteries	●		●	●
Full stainless construction (optional)	(●)	●	(●)	(●)
Bidirectional measure	●	●	●	
Empty pipe detection	●	●	●	
Diagnostic functions	●	●	●	

TECHNICAL FEATURES



- Conductivity ≥ 20 µS/cm
- Accuracy ± 0.4%
- Repeatability > 0,5%
- Housing Painted Aluminium die casting; AISI304
- IP68/67 compact and separate version
- Data Logger
- Bi-directional
- Diagnostic functions
- Universal power supply
- Up to 6 internal batteries
- Empty Pipe Detection
- Galvanic Isolated Outputs
- Configuration software

- Additonal modules:
  - n° 2 On/Off Outputs
  - n° 1 On/Off Input
  - RS232 Serial Communication
  - GSM/GPRS (SMS/CSD System)
  - Pressure sensor Inputs (0÷2000, 0÷4000 Kpa)
  - Temperature sensor input
  - DAT card
  - BIV Built in Verificator
  - CPM Corrosion Protection Module
  - 4-20 mA output signal

• WORLDWIDE SALES AND SERVICE ASSISTANCE •

THE MANUFACTURER RESERVES THE RIGHT TO MAKE DESIGN IMPROVEMENTS WITHOUT NOTICE.

- FLOWIZ® -

COMPANY WITH QUALITY SYSTEM CERTIFIED BY DNV
=ISO 9001=

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