ISOIL INDUSTRIA ELECTROMAGNETIC FLOWMETERS

Water is precious. Every drop counts.

ISOMAG®

The friendly magmeter

ISOMAG® KEY FEATURES

- **Alkaline / Lithium** batteries or Mains powered systems
- **MCS:** Meter Checking System for self diagnostic
- **GPRS** wireless communication
- **Wide DN range, between 3 and 8000 mm** (1/8" to 320")
- High Pressure **up to 250 bar** (3625 psi)
- High temperature **up to 180°C** (365 °F)
- Flow profile sensitivity class: **U0D0** according to **ISO 4064 OIML R49 - MID**
- **IP68 protection rating** optionally available across all sensors and most converters

ELECTROMAGNETIC FLOWMETER CHARACTERISTICS

An **electromagnetic flowmeter is made of a sensor**, installed in the pipeline, **and a converter**, energizing the coils and detecting the electrical signal.

FLOWMETER

- **SENSOR** *pag. 4* **+ CONVERTER** *pag. 5*
  - Compact version
  - Separate version
- **COMPACT FLOWMETER** *pag. 6*

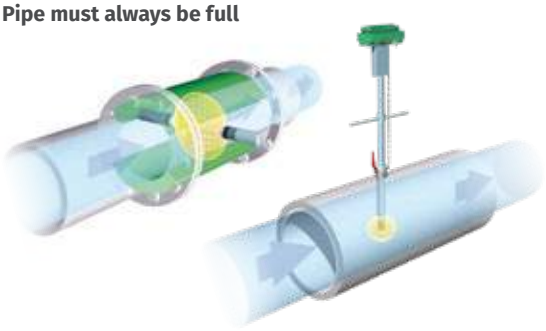
A FEW EXAMPLES

Compact full-bore | Separate full-bore | Compact insertion

The **operating principle** of magnetic flowmeter is based **upon Faraday's Law** of electromagnetic induction, stating that a «voltage will be induced in a conductor moving through a magnetic field».

Full bores and insertion electromagnetic flowmeters need **2 fundamental conditions** to operate accurately:

- **Medium must be conductive**
- **Pipe must always be full**



The main advantages of magmeters are:

- **obstructionless design** causing practically no pressure loss
- **corrosion-resistant wetted parts**
- **high accuracy**
- **linear signal output**

ISOMAG® CERTIFICATIONS AND COMPLIANCES

MATERIALS & PROCESSES	NSF, WRAS, 3-A, DM 174, PED, DNV
COMMUNICATIONS	HART, Modbus, 4G, M-Bus, dnp, BACnet
METROLOGY	MID MI-001, MID MI-004, OIML, PTB

Please refer to the online datasheet for detailed information

THE RIGHT SOLUTION FOR YOUR APPLICATION

WATER

- Distribution and leak detection
- District metering (DMAs, SMAs, Zones)
- Commercial metering
- Non revenue water (NRW)
- Well water metering
- Supply management

WASTEWATER

- Water treatment
- Landfill leachate monitoring
- Additive mixing
- First flush water monitoring
- Effluent discharge monitoring

IRRIGATION

- Irrigation monitoring
- Dosing of fertilizers
- Water billing

HVAC & R

- Energy measurement and distribution
- Energy efficiency
- Custody Transfer
- Co and Tri-generation
- Hot and chilled water
- Data Center
- District heating
- Building Automation

FOOD & BEVERAGE

- Filling machines
- Dosing/Batching
- Blending
- Beverage transfer measurement

GENERAL INDUSTRY

- Mining
- Pulp & Paper
- Chemical
- Additive mixing
- Shipbuilding
- Cement production

MATERIAL RECOMMENDATION CHART

		FULL-BORE SENSOR LINING						SENSOR ELECTRODES				
		PTFE	Ebonite	Polypropylene	Rilsan	Abral	PFA / PTFE-HT	AISI316L	Hastelloy C276	Titanium	Tantalum	Platinum
Drinking water		o	+	+	+	o	o	+	+	o	o	o
Sea water		+	+	+	o	o	o	–	+	o	o	o
Wastewater		+	+	+	–	o/+	o	+	+	o	o	o
Abrasives liquids		o	o	o	–	+	o	+	+	o	–	–
Pulp & Paper		+	–	o	–	–	+	o	+	–	+	–
Food & Beverage		+	o	o	o	o	o	+	+	o	o	o
Chemicals	Strong acids	+	–/o	–/o	–/o	–/o	+	–	–	–/o	o/+	+
	Weak acids (no HF)	+	–/o	o/+	–/o	–/o	+	–	–/o	–/o	+	o/+
	Strong bases	+	o	o/+	–/o	o	+	–/o	–/o	o/+	–/o	+
	Weak bases	+	o	o/+	o	o	+	o	o	o/+	o/+	+

"–" Not compatible "o" Compatible "+" Recommended

OUR RANGE OF MEASURING SENSORS

Choose your combination OR

FULL-BORE

Applications	Model		Key technical characteristics	Certifications & Compliance
	MS2500		***- DN:*** 25÷3000 mm (1" to 120") ***- Connection:*** Flanges UNI / ANSI / DIN / JIS / other on request ***- Liner:*** Polypropylene / Ebonite / Rilsan / PTFE / PFA ***- Body:*** Carbon steel / SS AISI 316 / SS AISI 304 ***- Electrodes:*** SS AISI 316 / Hastelloy C276 / Platinum / Tantalum / Titanium ***- Pressure:*** Up to PN250 (3625 psi) ***- Medium temperature range:*** -20÷180°C (-4÷356 °F)	NSF, PED, PTB, MID MI-001, MID MI-004, OIML, DM 174, DNV, WRAS
	MS1000		***- DN:*** 25÷400 mm (1" to 16") ***- Connection:*** Wafer ***- Liner:*** Polypropylene / Ebonite / PTFE ***- Body:*** Carbon steel / SS AISI 316 / SS AISI 304 ***- Electrodes:*** SS AISI 316 / Hastelloy C276 / Platinum / Tantalum / Titanium ***- Pressure:*** Up to PN40 (580 psi) ***- Medium temperature range:*** -20÷110°C (-4÷230 °F)	NSF, WRAS
	MS2410 **MS2420**		***- DN:*** 03÷100 mm (1/8" to 4") ***- Connection:*** DIN11851 / Tri-clamp / Tri-clover / SMS / other on request ***- Liner:*** PTFE ***- Body:*** SS AISI 316 / SS AISI 304 ***- Electrodes:*** SS AISI 316 ***- Pressure:*** PN16 (232 psi) ***- Medium temperature range:*** -20÷150°C (-4÷302 °F)	3-A, DM 174
	MS501		***- DN:*** 3÷20 mm (1/8" to 3/4") ***- Connection:*** Threaded / DIN11851 / Tri-clamp / Tri-clover / SMS ***- Liner:*** PTFE ***- Body:*** SS AISI 304 (MS501) ***- Electrodes:*** SS AISI 316 / Hastelloy C276 / Platinum / Tantalum / Titanium ***- Pressure:*** Up to PN40 (580 psi) ***- Medium temperature range:*** -20÷130°C (-4÷266 °F)	DM 174
	MS600		***- DN:*** 3÷20 mm (1/8" to 3/4") ***- Connection:*** Threaded ***- Liner:*** Polypropylene ***- Body:*** Polypropylene ***- Electrodes:*** SS AISI 316 / Hastelloy C276 / Platinum / Tantalum / Titanium ***- Pressure:*** 16 bar (232 psi) ***- Medium temperature range:*** 0÷60°C (0÷140 °F)	

INSERTION

Applications	Model		Key technical characteristics	Certifications & Compliance
	MS3810		***- DN:*** 80÷8000 mm (3" to 320") ***- Connection:*** 1" G or NPT Threaded end ***- Liner:*** PEEK ***- Body:*** SS AISI 316 ***- Electrodes:*** Hastelloy C276 / SS AISI 316 ***- Pressure:*** Up to PN25 (362 psi) ***- Medium temperature range:*** 0÷100°C (32÷212 °F)	NSF, DM 174, WRAS
	MS3780		***- DN:*** 80÷2000 mm (3" to 80") ***- Connection:*** 1" G or NPT Threaded end ***- Liner:*** PEEK ***- Body:*** SS AISI 316 ***- Electrodes:*** Hastelloy C276 ***- Pressure:*** Up to PN40 (580 psi) ***- Medium temperature range:*** -20÷130°C (-4÷266 °F)	NSF, WRAS

Please refer to the online datasheet for detailed information

OUR RANGE OF CONVERTERS

Check-out our tutorials on

MAINS POWERED

Applications	Model	Key technical characteristics	Certifications & Compliance
	MV210	- ***Display:*** Graphic LCD back light display / Blind version - ***Housing:*** Nylon PA6 with fiber glass / Painted aluminum / SS AISI 304 / up to IP68 - ***Analog OUT:*** Up to 2x 0/4...20/22 mA - ***Digital IN/OUT:*** Up to 1x IN / 2x OUT - ***Accuracy:*** ±0,2% of read value - ***Special features:*** High performance; Batching function; Data logger; Built-in-Verificator; Anticondense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	HART, BACnet, Modbus, M-Bus, OIML
	MV110 **MV110W**	- ***Display:*** Graphic LCD back light display / Blind version - ***Housing:*** Nylon PA6 with fiber glass / Painted aluminum / SS AISI 304 / up to IP68 - ***Analog OUT:*** Up to 2x 0/4...20/22 mA - ***Digital IN/OUT:*** Up to 1x IN/ 2x OUT - ***Accuracy:*** Up to ± 0,25% of read value (better on request) - ***Special features:*** Data logger; Built-in-Verificator; Anti-condense cap; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	HART, BACnet, Modbus, M-Bus, OIML, PTB
	MV800	- ***Display:*** LCD Display / Blind version - ***Housing:*** Painted aluminum / SS AISI 304 Raw or Polished / up to IP68 - ***Analog OUT:*** Up to 1x 0/4...20/22 mA - ***Digital IN/OUT:*** Up to 1x IN / 1x OUT - ***Accuracy:*** ± 0,5% of read value detection - ***Special features:*** Bi-directional; Diagnostic; Empty Pipe	MID MI-001, MID MI-004, DNV

BATTERY POWERED

Applications	Model	Key technical characteristics	Certifications & Compliance
	MV254 FLOWIZ **MV255**	- ***Display:*** Graphic LCD back light display / Blind version - ***Housing:*** Nylon PA6 with fiber glass / Painted aluminum / SS304 / up to IP68 - ***Analog IN/OUT:*** Up to 2x IN (pressure or level) / 1x OUT active or passive - ***Digital IN/OUT:*** Up to 3x IN / 4x OUT insulated - ***Accuracy:*** Up to ±0,25% of read value - ***Special features:*** Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verificator; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function, GPRS Transmission	**MV254**: dnp, 4G, ISOD@M **MV255**: dnp, 4G, ISOD@M, MID MI-001
	MV144 FLOWIZ **MV145**	- ***Display:*** Graphic LCD back light display / Blind version - ***Housing:*** Nylon PA6 with fiber glass / Painted aluminum / SS304 / up to IP68 - ***Analog IN/OUT:*** Up to 2x IN (pressure or level) / 1x OUT active or passive - ***Digital IN/OUT:*** Up to 3x IN / 4x OUT insulated - ***Accuracy:*** Up to ±0,25% of read value - ***Special features:*** Alkaline or Lithium batteries: Up to 15 years battery life; HV/LV Mains powered; Built-in-Verificator; Corrosion Protection Module; Encrypted data file, Data logger; Empty pipe detection; Bi-directional; Dual Range; Diagnostic function	**MV144**: – **MV145**: MID MI-001, OIML, Modbus

OUR RANGE OF COMPACT FLOWMETERS

FULL-BORE AND INSERTION

Applications	Model	Key technical characteristics		Certifications & Compliance
	CS8100	***- DN:***	10 mm (3/8") (Connection 1/2" or 3/4")	
		- Housing:	Noryl +30% Fiber Glass	
		- Electrodes:	Hastelloy C276	
		- Analog OUT:	1x 0/4...20/22 mA	
		- Digital OUT:	2x on/off for pulses or Volume or Alarms	
		- Accuracy:	±1% of read value	
		- Medium temperature range:	-20÷85°C (-4÷185 °F)	
		- Special features:	Diagnostic function; Bi-directional; PN10 (145 psi)	
	CS3900	***- DN:***	10÷50 mm (3/8" to 2")	
		- Housing:	PTFE coated Zinked Steel	
		- Electrodes:	SS AISI 316L	
		- Analog OUT:	1x 0/4...20/22 mA	
		- Digital OUT:	2x on/off or pulses or Volume or Alarms	
		- Accuracy:	Up to ±0,5 of read value	
		- Medium temperature range:	-10÷100°C (14÷212 °F)	
		- Special features:	Temperature measurement; Diagnostic function; Bi-directional; PN16 (232 psi)	
	CS3795	***- DN:***	80÷2000 mm (3" to 80")	NSF WRAS
		- Sensor body:	SS AISI 316 (lining Peek)	
		- Electrodes:	Hastelloy C276	
		- Analog OUT:	1x 0/4...20/22 mA	
		- Digital OUT:	2x for volume/pulse	
		- Accuracy:	±2% of read value	
		- Medium temperature range:	-10÷100°C (14÷212 °F)	
		- Special features:	Diagnostic function; Bi-directional; Up to PN40 (580 psi)	
	CS3820	***- DN:***	80÷8000 mm (3" to 320")	Modbus NSF DM 174 WRAS
		- Sensor body:	SS AISI 316 (lining Peek)	
		- Electrodes:	Hastelloy C276 / SS AISI 316	
		- Connection:	1" G or NPT threated end	
		- Digital OUT:	1x on/off	
		- Accuracy:	±2% of read value	
		- Medium temperature range:	0÷100°C (32÷212 °F)	
		- Special features:	Battery powered; Bi-directional; Data Logger; IP68; Built-In-Verificator; Up to PN25 (362 psi)	

VERIFICATION TOOLS & ACCESSORIES

	What is it?	How can it be helpful?
MCS	**Meter Checking System** is the integrated self diagnostic system.	The MCS allows the **continuous verification of the main electrical parameters** of the flowmeter, and allows users to generate and print a report stating the meter's conditions. BIV (Built In Verificator) allows the recording of all the results provided by MCS.
ISOCALmaster	**ISOCALmaster** is the external verification tool.	Reference sample that reproduces known and **metrologically referable** values to national samples to be used for **system calibration**.
MCP	**Software interface** for MV converters.	Allows user friendly and easy **access to all meters programmable functions**. A mini USB cable is required to connect the instrument to the a PC, alternatively a Wifi connection can be used.
ISOBOX	**Remote connection device.**	**ISOBOX allows a quick remote connection with our service department** for all the MV series (ISOMAG and ISONRG) and CS series flowmeters, by connecting to a wired or wireless network.
GROUNDING RINGS	Metal rings to be installed between sensor and pipeline.	Used to **ground unwanted electrical signals and provide a grounding pathway around the flowmeter** to safely eliminate accumulated voltage or induced current in the flowing conductive fluid. Helpful in presence of non conductive pipelines materials.

TEST BENCH AND ISO17025 CALIBRATION LABORATORY LIBRA

All ISOMAG® meters are subject to wet calibration on ISO17025 certified benches before leaving our factory.

The original accuracy is granted over the life time of the meter when is working within its specifications.

Thanks to the **Accredited Calibration Laboratory LIBRA, conforming to UNI EN ISO/IEC17025** (ACCREDIA Certificate LAT 01021), ISOIL Industria can also offer a calibration service for liquid flowmeters in volume, flow and mass and for thermal energy meters.

Instruments of manufacturers other than ISOIL can also be tested and calibrated by LIBRA Laboratory.

Production Center with Calibration tower in the background.

Pipes at the base of Calibration tower.

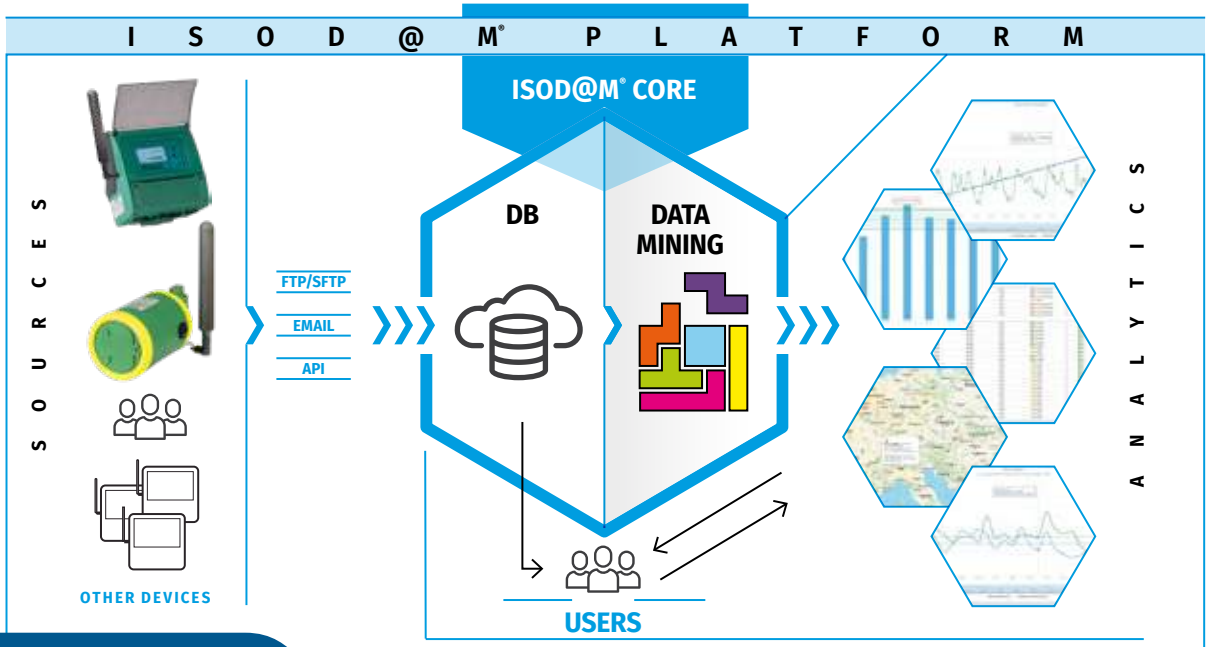
The 45 meters (147 feet) high piezometric tower makes Libra **one of the biggest calibration laboratories worldwide**.

The laboratory consists of 8 fully automated calibration lines running on static weight based method (Lines 1 to 6), direct comparison with a master meter (Lines 1 to 7) or with a master volume (Line 8).

Currently, **Libra calibrates sensors up to DN3000** (120") **with an impressive max flow of 4 m³/s** (63400 GPM).

ISOD@M®: DATA ACQUISITION AND MANAGEMENT SOFTWARE

ISOD@M® allows users to easily retrive data from field devices, reducing time and efforts for data analysis. Based on the latest technological architecture, the platform provides high level results thanks to advanced data mining capabilities. Users can create their own target to improve system knowledge and control, enhancing accuracy and diagnostic.



ISOD@M® Key features

- Acquisition Platform System (SaaS)
- Cloud and Local installation
- Responsive software
- Multi User and Multi Level Access
- Full Data Protection
- Water Loss and District Analysis
- Preventive Maintenance Management
- Geo-Localization
- Graphic and Analytic Data Analysis

ISOMAG - ENG 03/2026 gandini communication

ISOIL Industria is a worldwide leading supplier of electromagnetic flowmeters.
On the market since 1958, the company has been concentrating its efforts and expertise through the years towards the evolution of the electromagnetic flowmeters technology.
It is worldwide recognized and present in all Countries through distributors and agents, and with branch offices in Brazil and Hong Kong.

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www.isoil.it

ISOIL INDUSTRIA
The solutions that count