

THE MOST ACCURATE BATTERY POWERED SYSTEM

ISOMAG ™

The friendly magmeter

FLOWIZ™

(ML 252)



CONVERTER WITH BATTERY SUPPLY

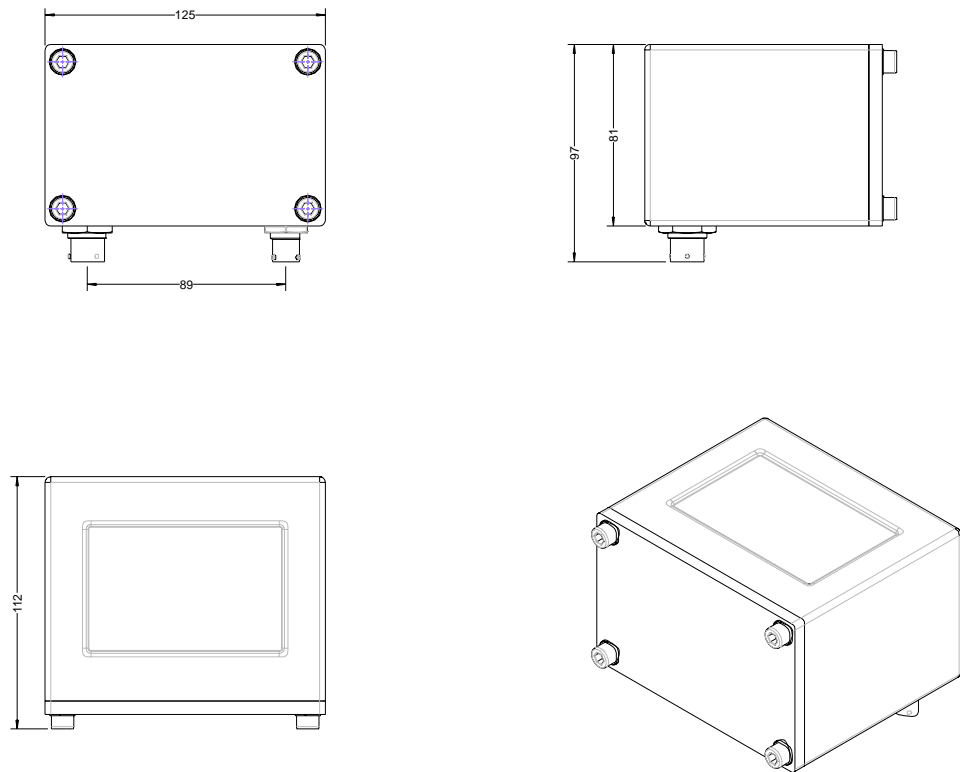
Warranty conditions are available on this website:
www.isomag.eu only in English version

ISOIL 
INDUSTRIA
The solutions that count

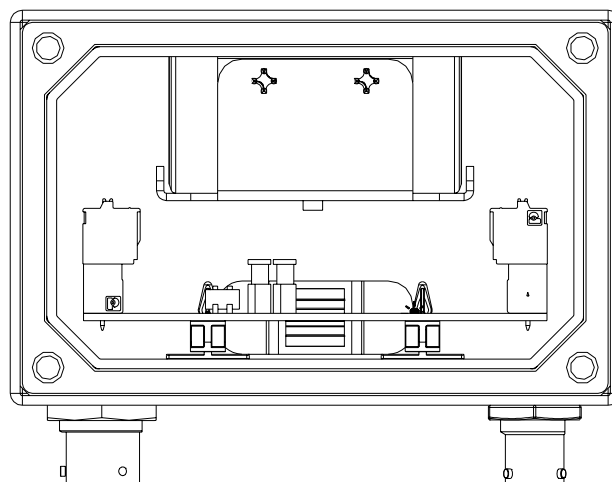
TECHNICAL DATA

Suitable for	<input type="checkbox"/> All the ISOMAG sensors
Minimum conductivity	<input type="checkbox"/> 5 μ S/cm
Housing materials	<input type="checkbox"/> AISI 304
Dimensions	<input type="checkbox"/> See Drawing
Protection rate	<input type="checkbox"/> IP 68
Electrical connections	<input type="checkbox"/> Connectors IP 68
Ambient temperature	<input type="checkbox"/> -20...+60°C
Additional Modules	<input type="checkbox"/> n°2 On/Off out + n°1 On/Off input, RS232 Serial Communication,
Data Logger	<input type="checkbox"/> Two Sets (1 Mbit). <ul style="list-style-type: none"> ▪ 8192 records collected at intervals of 1, 5, 10,30 min. ▪ 256 records collected at the Measure Sample Rate ▪ Note: both sets of records contain Date/Time reference, Flow Rate, Positive and Negative volumes <input type="checkbox"/> Recording of the last 64 alarm Events
Bi-directional	<input type="checkbox"/> Yes
Full Scale value	<input type="checkbox"/> 0,4... 10 m/s
Diagnostic functions	<input type="checkbox"/> Yes
Empty Pipe Detection	<input type="checkbox"/> Yes
Galvanic Isolation	<input type="checkbox"/> all the digital Inputs/Outputs are galvanically isolated from Power Supply ; the RS232 is NOT insulated
Data storage	<input type="checkbox"/> EEprom, battery backup RAM
Programming plug in	<input type="checkbox"/> Protected plug in for connection to PC (IF2)
CE certification	<input type="checkbox"/> Instrument with CE certificate
Accuracy	<input type="checkbox"/> See table below
Power Supply (see details on Page 5)	<input type="checkbox"/> Standard: n°1 Lithium Battery size D not rechargeable, Life Time 2 Years using 15s Sampling Rate, 1 month with Continuous Sampling <ul style="list-style-type: none"> <input type="checkbox"/> Optional: n° 1 Lithium batteries (up to 10 years)

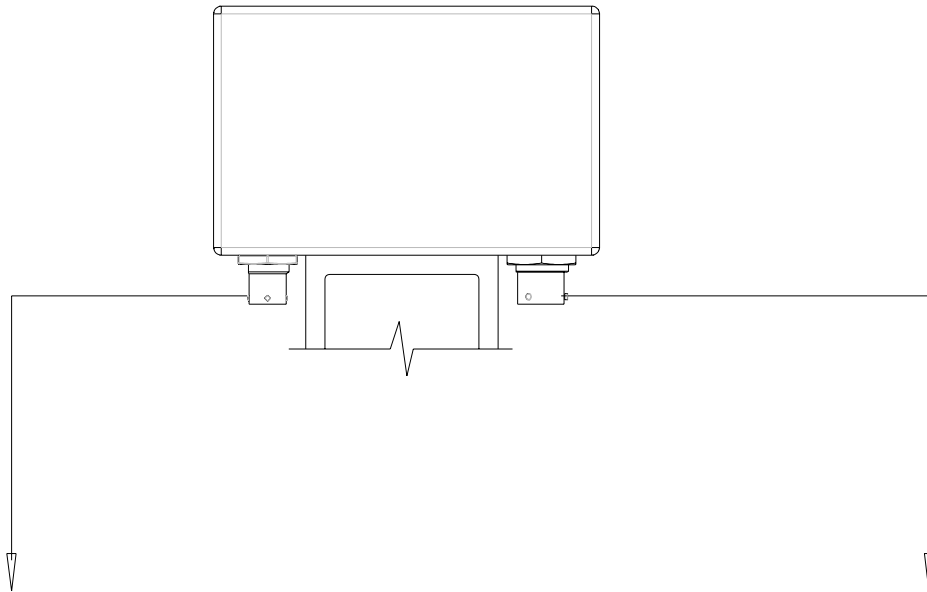
OVERALL DIMENSIONS



INTERNAL VIEW

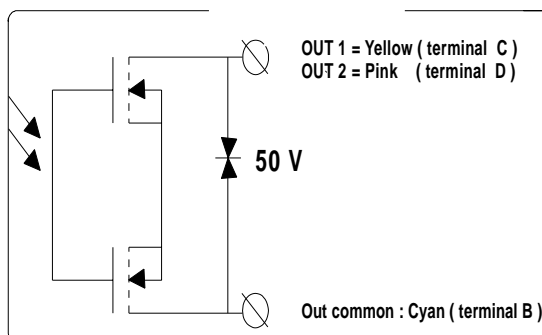


ELECTRICAL CONNECTIONS



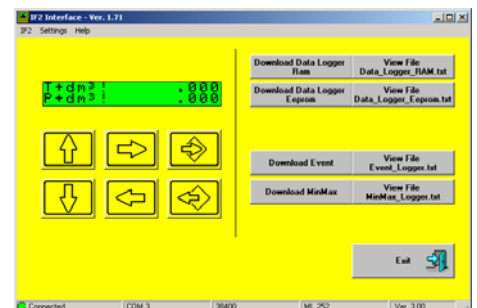
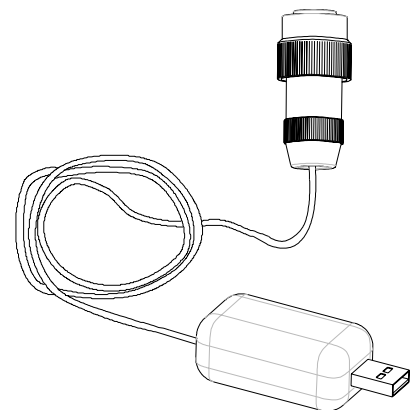
4 POLES IP68 MIL CONNECTOR
(DIGITAL OUT)

6 POLES IP68 MIL CONNECTOR
(IF22/RS232)



Technical characteristics

- Opto-insulated output (Opto- MOS)
- Maximum switching voltage: 40 Vdc
- Maximum switching current: 100mA
- Maximum Ron = 70 Ohm
- Maximum switching frequency
(loadRL=240Ω, VOUT=24Vdc): 32 Hz
- Insulation from other secondary
circuits: 500 Vdc



FUNCTIONS

MAIN MENU 1-Sensor

```

1-SENSOR
ND=mm      00025
KA=        +00.9900
Sens.type= 000
Ins.Position= 0
KL=[0] +00.0000
KL=[0] +00.0000
E.P.detect= OFF
E.P.thr.= 100
Autozero cal.
Autozero res.
  
```

- 1.1 Insert ND of sensor (0-3000)
- 1.2 Calibration data of sensor visualized on sensor's label
- 1.3 Sensors model: Enter the first two characters of the serial number of the sensor
- 1.4 Position for insertion sensors: 0=1/8DN, 1=1/2DN, 2=7/8DN
- 1.5 Factory parameter
- 1.6 Enables the empty pipe detection function
- 1.7 Value of empty pipe sensibility detection
- 1.8* Enables the automatic zero calibration system
- 1.9 Reset the preceding value

MAIN MENU 2-Scales

```

2-SCALES
Fs1=dm³/s 05.000
Fs2=dm³/s 05.000
Tot.MU=dm³ 1.000
Pls1=dm³ 01.0000
Pls2=dm³ 01.0000
Tpus1=s 0.01
Tpus2=s 0.01
  
```

- 2.1* Full scale value set for range N.1
- 2.2* Full scale value set for range N.2
- 2.3* Unit of measure and number of decimal totalizes
- 2.4* Pulse value on channel 1
- 2.5* Pulse value on channel 2
- 2.6* Duration of the pulse generated on channel 1
- 2.7* Duration of the pulse generated on channel 2

MAIN MENU 3-Measure

```

3-MEASURE
Tconst=s 0001.0
Cut-off=% 01.0
Autocal.= OFF
Autorange= OFF
E.saving= OFF
S.time=s 003
Max.saving= OFF
  
```

- 3.1* Time constant
- 3.2 Low flow zero threshold: 0-25% of full scale value
- 3.3 Enable every hour an internal cycle of calibration. The measure it's stopped for 8-15 sec.
- 3.4* Automatic change of scale
- 3.5* Energy saving
- 3.6 Interval of time among a measure and the other (see page 6)
- 3.7 Amplifiers switch-off to save more energy

MAIN MENU 4-Alarms

```

4-ALARMS
Max thr+=% 000
Max thr-=% 000
Min thr+=% 000
Min thr-=% 000
Hyst.=% 03
E.P.thr.= 075
  
```

- 4.1 Maximum value alarm set for direct flow rate
- 4.2 Maximum value alarm set for reverse flow rate
- 4.3 Minimum value alarm set for direct flow rate
- 4.4 Minimum value alarm set for reverse flow rate
- 4.5 Hysteresis threshold set for the minimum and maximum flow rate alarms
- 4.6 Empty pipe detection threshold. It's automatically set by the function 1.9

MAIN MENU 6-Outputs

```

6-OUTPUTS
Out1= IMP1
Out2= OFF
  
```

- 6.1* Output 1 functions
- 6.2* Output 2 functions

MAIN MENU 7-Communication

```

7-COMMUNICATION
IF2 Prot.= DPP
Address= 000
RS232 bps= 19200
RS232 Prot.= DPP
  
```

- 7.1 Choice of the communication protocol for the IF2 device
- 7.2 Address value of converter (range 0 - 255)
- 7.3 Speed of the RS232 output (possible choices: 2400, 9600, 19200, 38400 bps)
- 7.4 Choice of the communication protocol for the RS232 port

MAIN MENU
8-Display

```

8-DISPLAY
Language=      EN
T+ reset
P+ reset
T- reset
P- reset
D.time=s      060
Quick start=  OFF
Net total.=   OFF
Currency=     OFF
Curr.decim.=  2
EUR/dm³+     01.0000
EUR/dm³-     01.0000

```

- 8.1 Choice of the language: En= English, It=italian, Fr= French, Sp= Spanish
- 8.2* Total direct (positive) flow totalise reset from keyboard
- 8.3* Partial direct (positive) flow totalise reset from keyboard
- 8.4* Total reverse (negative) flow totalise reset enable from keyboard
- 8.5* Partial reverse (negative) flow totalise reset enable from keyboard
- 8.6 Time for switch off display (shown with function 3.7 enabled)
- 8.7 Visualization of "Quick start menu"
- 8.8 Enable the page of net totalizer (difference between direct and reverse)
- 8.9 Visualizes the values of the partial totalise in the unit of selected currency
- 8.10 Choice of the numbers of decimals for the visualization currency value: From 0 to 3
- 8.11* Value of conversion/currency for direct totalizer
- 8.12* Value of conversion/currency for reverse totalizer

MAIN MENU
9-Data logger

```

9-DATA LOGGER
Acquisition=  ON
Interval=m    1
1992/01/06 23:14
Disp.dyn.data
Display data
Display events
Disp.min/max
Clear dyn.data
Clear data
Clear events
Reset min/max

```

- 9.1* Automatic data logger enable
- 9.2* Interval time for the data logging function: 1, 2, 3, 5, 15, 30, 60 minutes
- 9.3* Date and time set
- 9.4* Display dynamic data
- 9.5 Displaying of the data stored in the data logger
- 9.6 Displaying of the last 64 alarms stored in the data logger
- 9.7 Visualization function of minimum and maximum peak of flow rate
- 9.8 Logged dynamic data cancel function
- 9.9 Logged data cancel function
- 9.10 Reset all alarm events
- 9.11 Reset all minimum and maximum peak of flow rate stored

MAIN MENU
10-Diagnostic

```

10-DIAGNOSTIC
Calibration
Self test
Simulation=  OFF
Stand-by

```

- 10.1* Enable the calibration of the converter
- 10.2* Converter auto-test
- 10.3* Flow rate simulation enabling
- 10.4* Stand-by function

MAIN MENU
11-Internal data

```

11-INTERNAL DATA
L2 keycode=00000
Load fact.pres.
Load user pres.
Save user pres.
Hours=      000015
Ks=        +1.0000

```

- 11.1 Level 2 access code enter
- 11.3 Load factory data pre-set
- 11.4 Load user data saved
- 11.5 Save user data
- 11.6 Visualisation of the total operation hours of the converter (function not editable)
- 11.7 Ks Coefficient

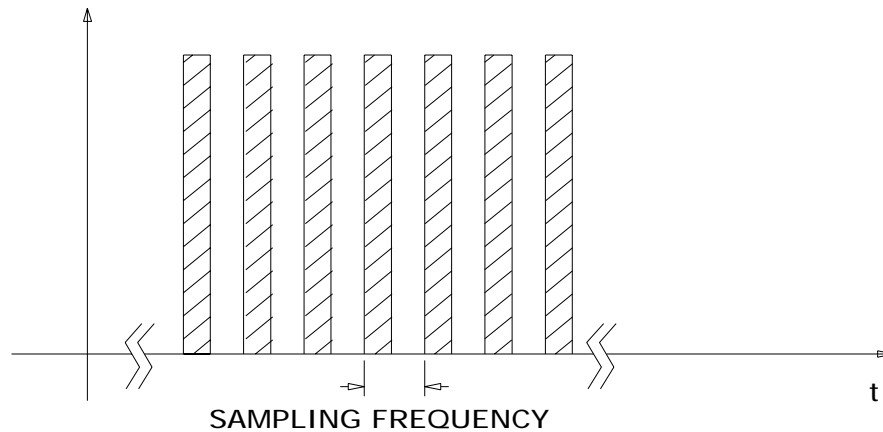
Note : all page number references are to the operating manual .

MEASURE / SAMPLING FREQUENCY

The ML 252 converter can measure in two different modes:

CONTINUOUS SAMPLING

In this mode the converter measures according to the classic mag meter scheme; the system consumption, for any sensor diameter, is 0,1 W; the battery life is 1 month with 1 battery ; 1 month * N (N = number of additional battery). The system accuracy is defined according to this operation mode.

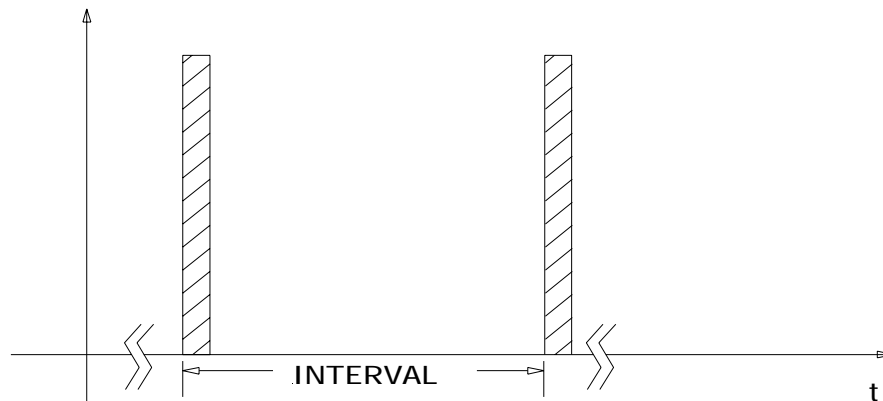


SAMPLING AT PROGRAMMED INTERVAL

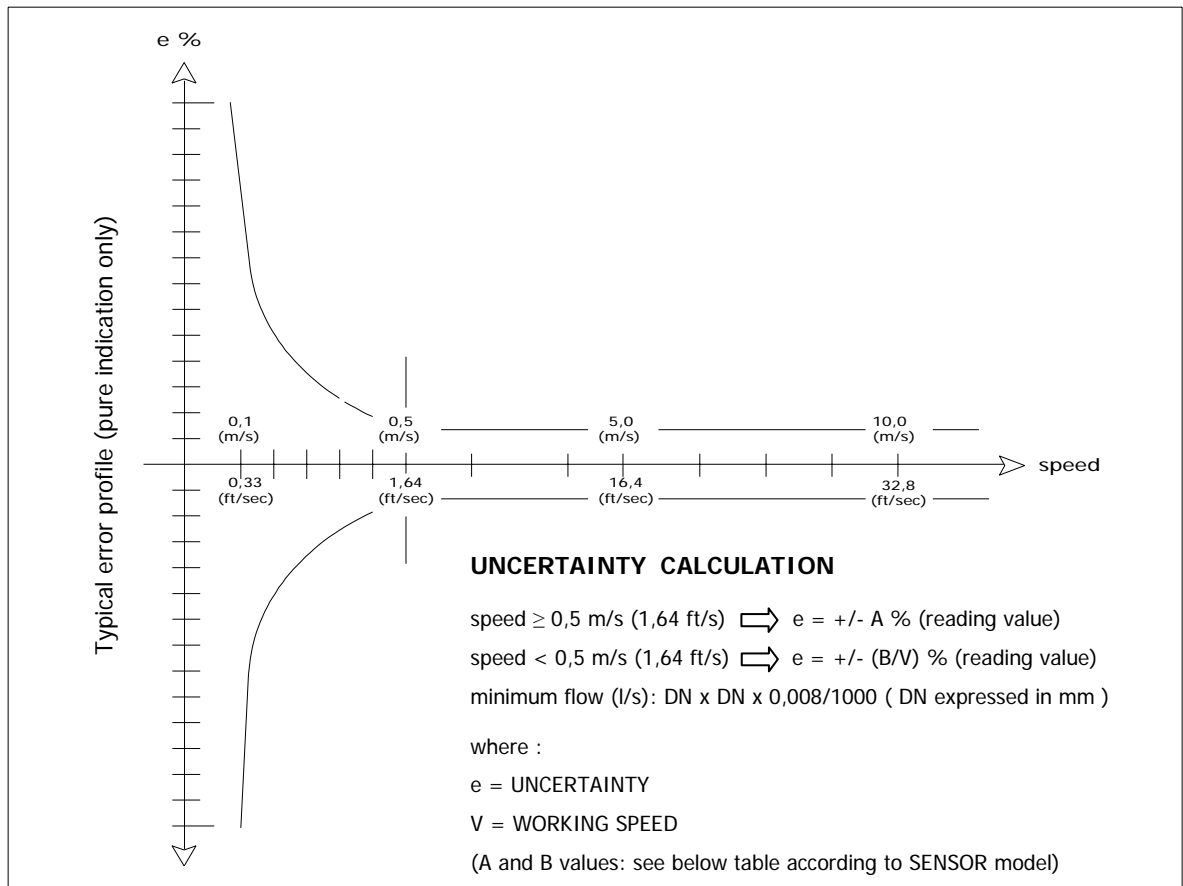
The mode to sample at intervals allows for large battery power savings; the consumption is the following:

Sampling time (s)	Battery life - n° 1 battery (years)	Battery life - " N " batteries (years)
1	0,7	0,7 * N
2	1.3	1.3 * N
5	2.1	2.1 * N
10	2.7	2.7 * N
15	3.0	3.0 * N

Regardless of the number of batteries, the maximum operating time is limited to 10 years



ACCURACY TABLE



FULL BORE SENSORS

MS501			MS1000			MS2500			MS5000		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
0,5	0,25	0,82	0,5	0,25	0,82	0,5	0,25	0,82	2	0,25	0,82

INSERTION SENSORS

MS3770			MS3800		
A	B(m/s)	B(ft/s)	A	B(m/s)	B(ft/s)
2	1	3,28	2	1	3,28

Reference conditions :

- constant flow rate during the test
- Pressure: >30 Kpa
- Flow condition : fully developed flow profile
- zero stability +/- 0,005 %

HOW TO ORDER

ML 252	Display
A	Blind version without display and keyboard
Housing material - Protection rate	
1	Stainless Steel AISI 304 , protection rate IP67
Version	
A	Compact version with sensor MS.... (liquid maximum temperature 100 °C)
Power supply	
1	Power supply : n° 1 Lithium Battery
2	Power supply : n° 2 Lithium Battery
Additional module	
A	Without additional module
B	ME 42 : n. 1 input ON / OFF + 2 out ON/OFF
C	ME 43 : RS 232 communication port
D	ME 46 :option of module ME42+ME43 (DIGITAL IN/OUT+RS 232)

ML 252	A	1	A	1	B
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EXAMPLE OF CODE FOR ORDER

The manufacturer reserves the right to make design improvements without notice.