THE MOST FLEXIBLE FLOW AND PRESSURE BATTERY POWERED SYSTEM

ISOMAG™

The friendly magmeter

FLOWIZ™

(ML 155)

STAND ALONE CONVERTER FOR FLOW AND PRESSURE MANAGEMENT

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

ISOIL INDUSTRIA
The solutions that count

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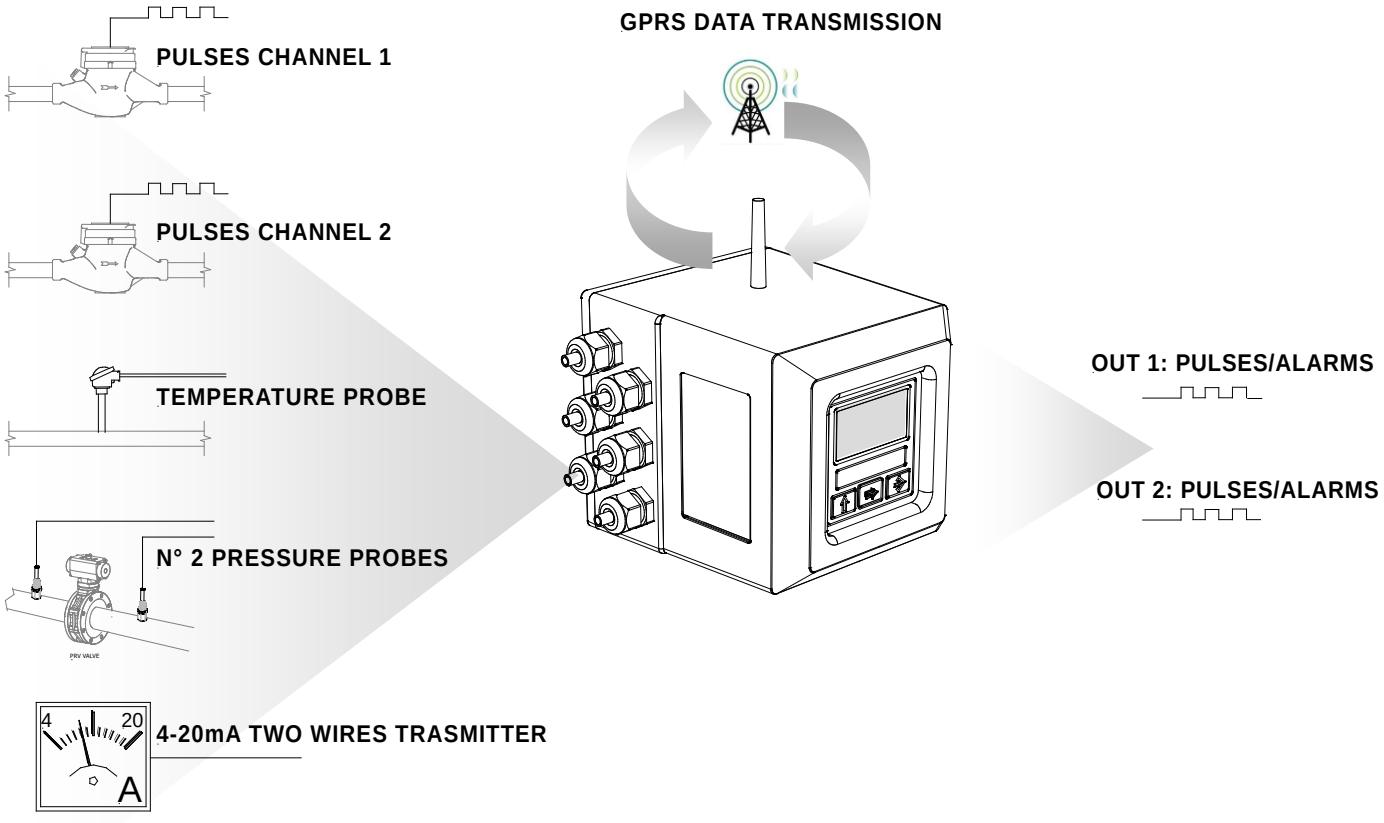
GENERAL DESCRIPTION

Stand-alone converter for flow and pressure management .

It allow to measure :

- Two flow rate coming from pulses emitter
- One temperature (PT500)
- Two pressure
- 4/20 mA from transmitter (like level transmitter)



TECHNICAL DATA

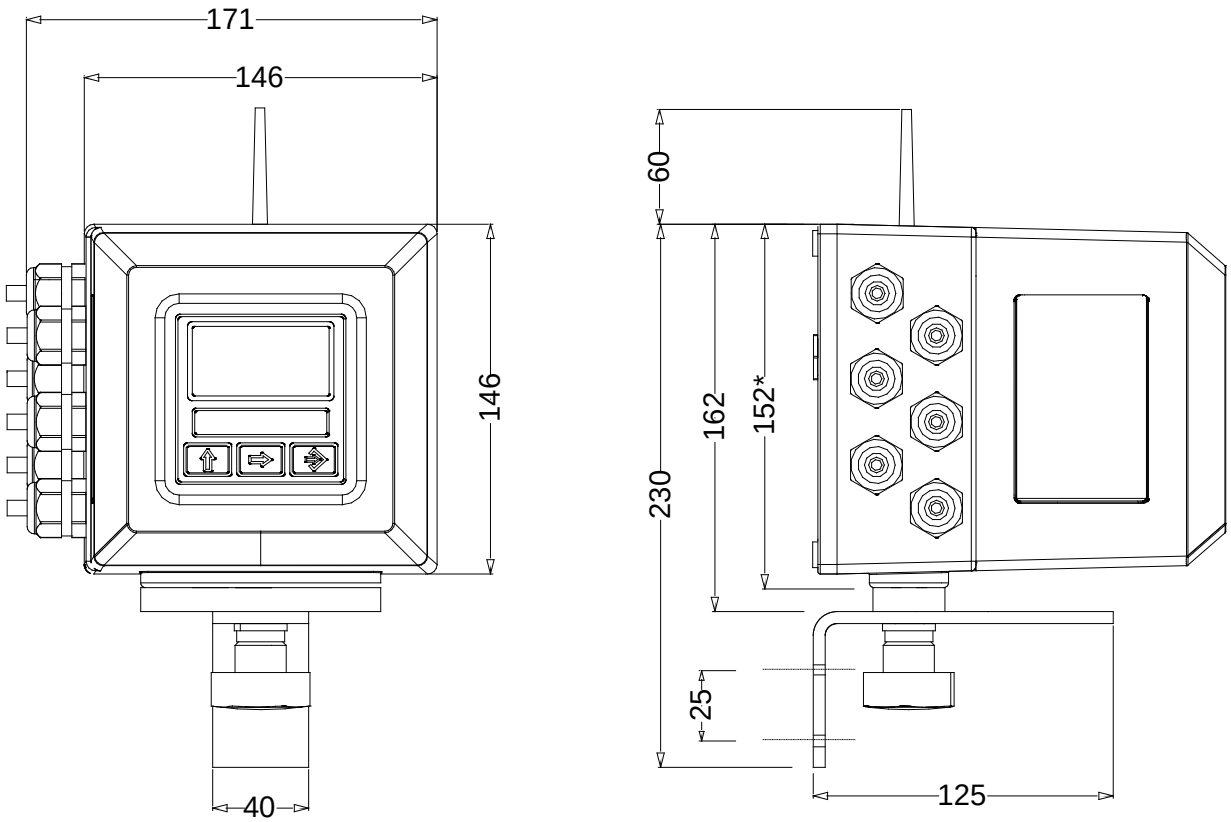
OVERALL FEATURES	
Suitable For	❑ **Isomag PRESSURE SENSOR-Pulses from Woltman/Turbine/etc.-Temperature Probe- 4-20 mA transmitters**
Power consumption	❑ **MAX : 200 mW (Batteries) , 4 W (Main supply)**
Altitude	❑ **-200 m up to 2000 m**
Ambient Temperature	❑ **-20... +60°C / -4... +140 °F**
Humidity Range	❑ **0÷100% (IP 67)**

STANDARD FEATURES	
Housing materials	❑ **Painted Aluminium die casting**
Protection Rate	❑ **IP 67**
Data Logger	❑ **MicroSD Memory Card 2 GBytes**
Data storage	❑ **F-Ram**
Protocols	❑ **ETP**
Galvanic Isolation	❑ **All the outputs are galvanically insulated from power supply up to 500 V**
Programming Plug In	❑ **Protected plug in for the connection to PC (IF2X interface)**
Diagnostic Functions	❑ **Yes**
Digital Input	❑ **N°1 for totalizer reset, system wake-up**
CE Certification	❑ **Yes**

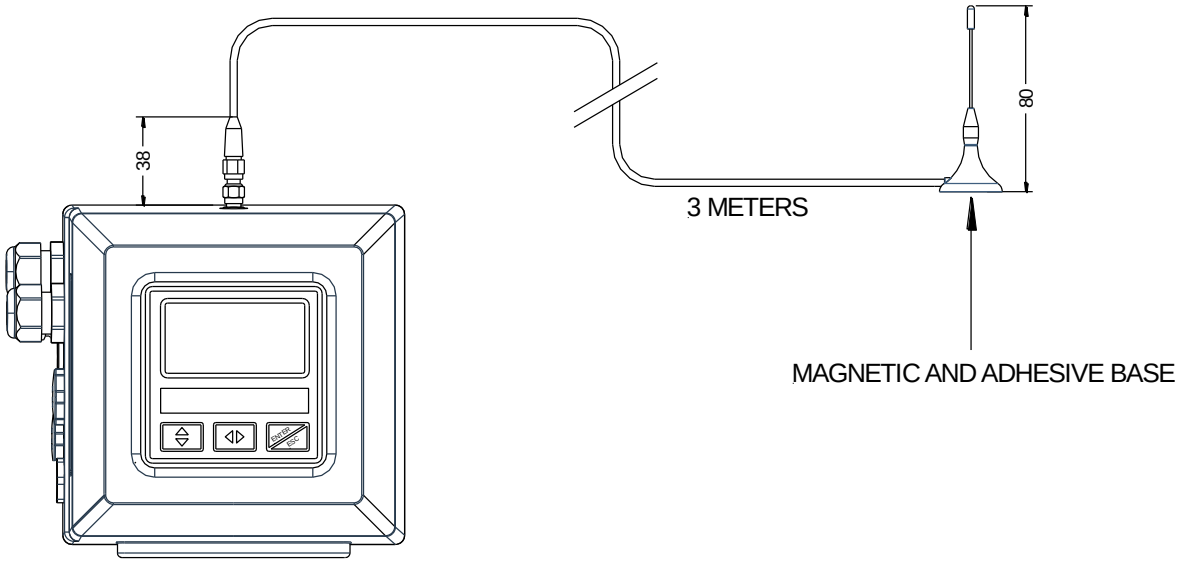
OPTIONAL FEATURES *(CHECK HOW TO ORDER, AT LAST PAGE, FOR MORE DETAILS)*	
Housing materials	❑ **AISI304**
Protection Rate	❑ **IP 68**
Wires connections	❑ **IP 68 Connectors**
LCD Display	❑ **Graphic display WSTM 128x64 pixels, 3 membrane keys**
Power Supply	❑ **Mixed System Main Power Supply and Batteries as Backup**
Pulses/ Alarm Outputs	❑ **N°2 , 50 Hz, 100mA, 40 Vdc , N°1 On/Off Input**
Additional Modules	❑ **Communication, GSM /GPRS (SMS/CSD System)**
Communication port	❑ **RS232 (DPP/HTP protocols)**
Additional measures	❑ **UP to 2 Pressure Sensors** ❑ **ONE Temperature Sensor** ❑ **N°2 Pulses inputs from remote flow sensor (32Hz)** **Note: for temperature measure Two Wires PT500 must be used ; check last page for possible combinations of the above.**

ACCURACY	
Measurements tolerance	❑ **Flow rate (volume) = ±0,1% v.l.** ❑ **Out 4/20 mA = ± 0,5 % v.l.** ❑ **Frequency Out = ± 0,1% v.l.**

OVERALL DIMENSIONS



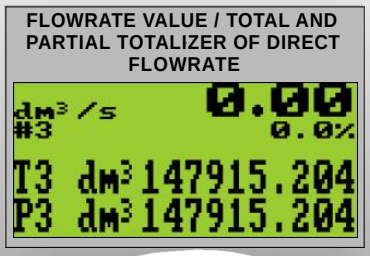
VERSION WITH 3 METERS CABLE ANTENNA



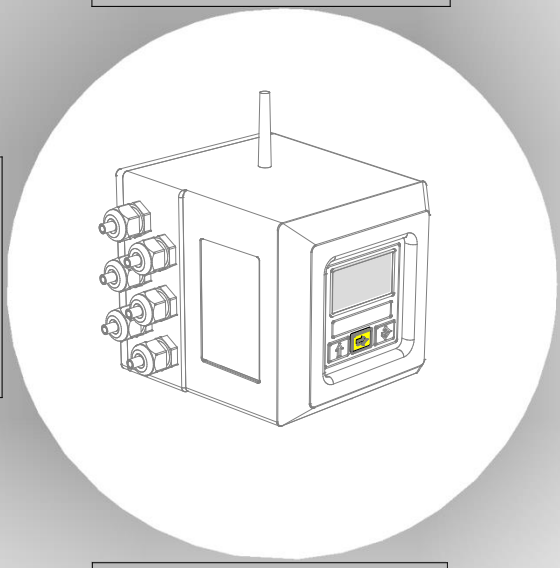
VISUALIZATION PAGES

Different visualisation possibilities with the simple press of a key

FLOWRATE VALUE / TOTAL AND PARTIAL TOTALIZER OF DIRECT FLOWRATE

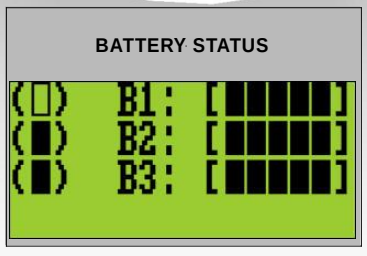


BOARD TEMPERATURE
ANTENNA SIGNAL / ALARMS

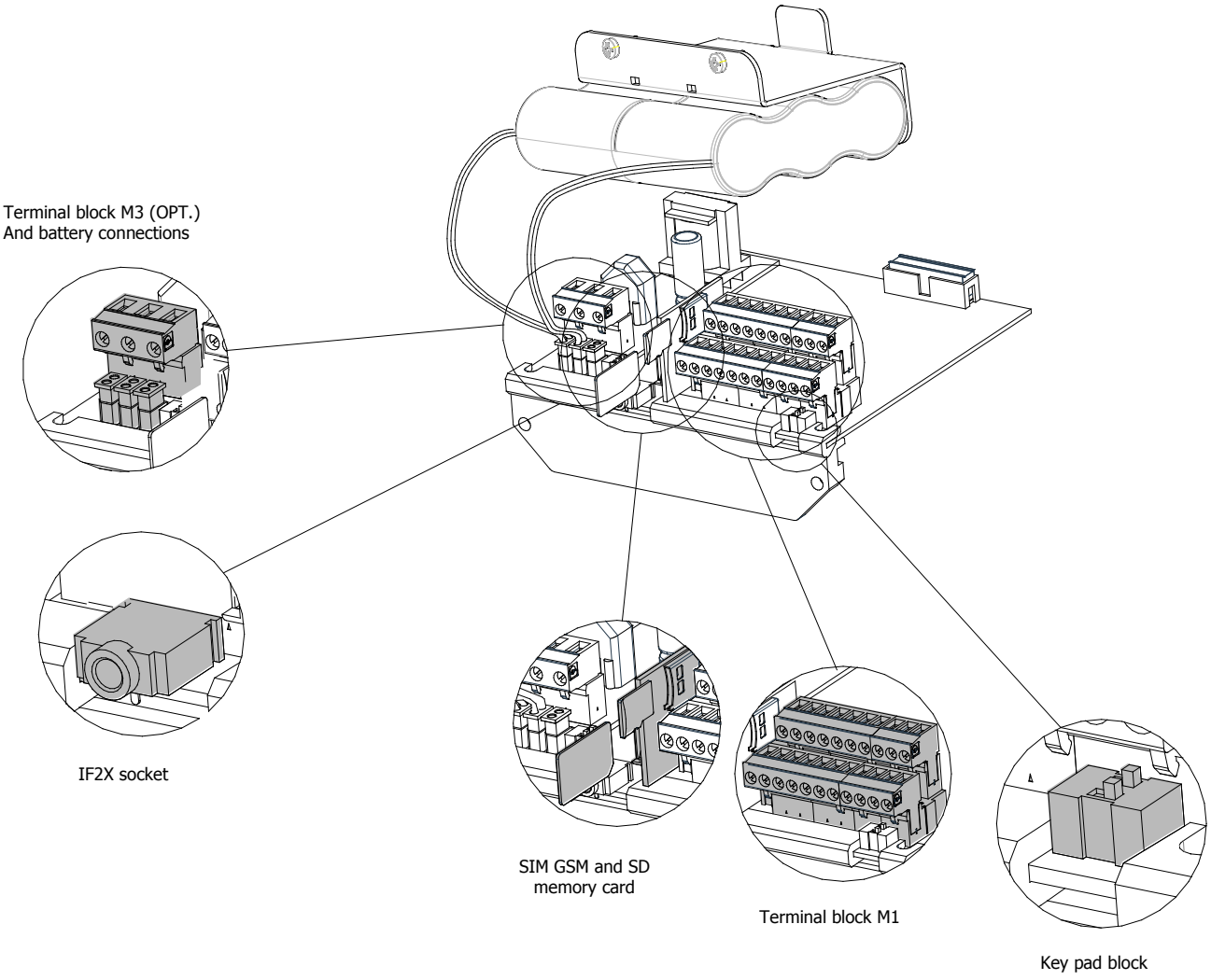


PRESSURE VALUES (1&2)
DIFFERENTIAL PRESSURE

BATTERY STATUS

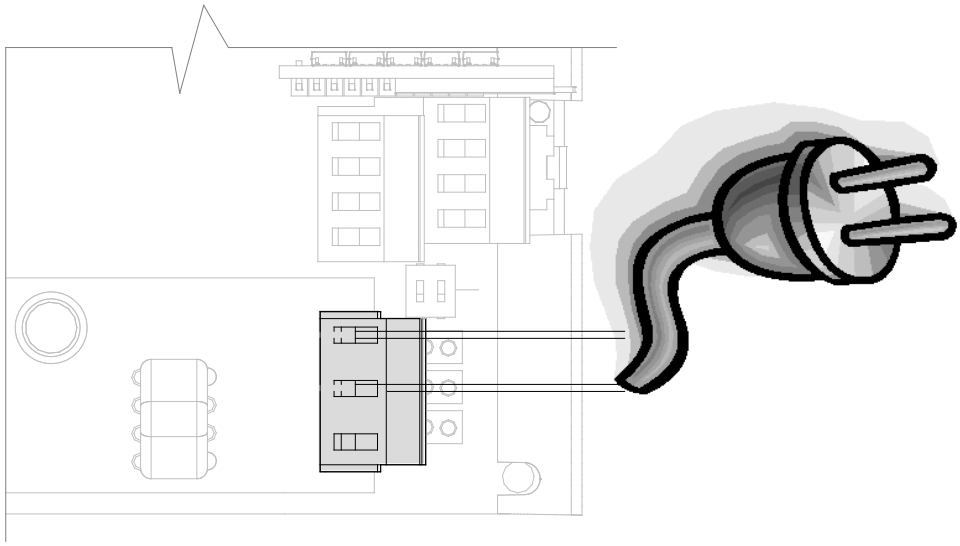


PCB LAYOUT


Terminal block M3 (OPT.)
And battery connections
IF2X socket
SIM GSM and SD
memory card
Terminal block M1
Key pad block

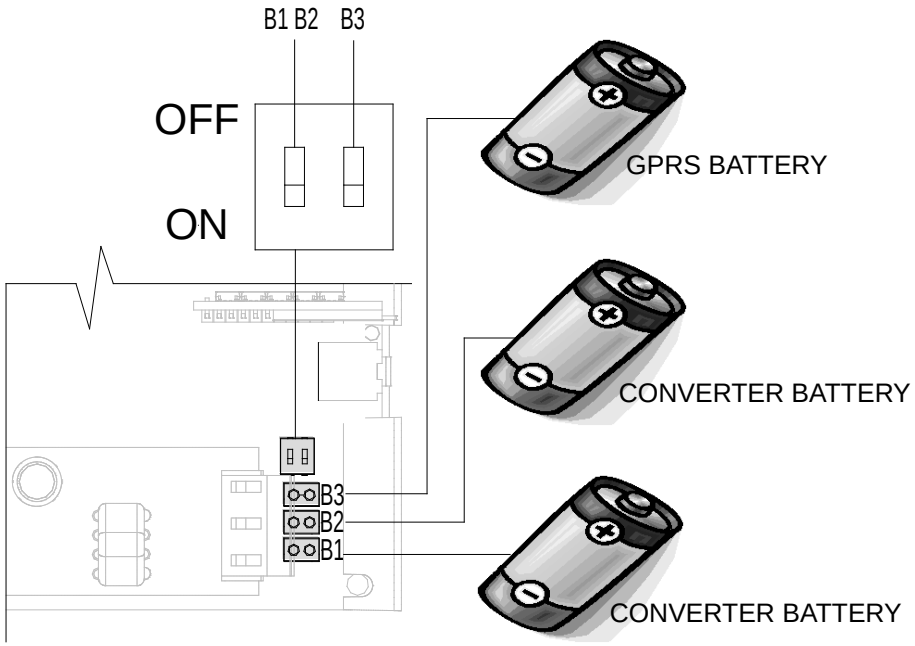
POWER SUPPLY

BY MAIN VOLTAGE



Auto detection of converter power source: batteries are automatically excluded if still main power; it always works at the maximum sampling rate (continuous sampling).

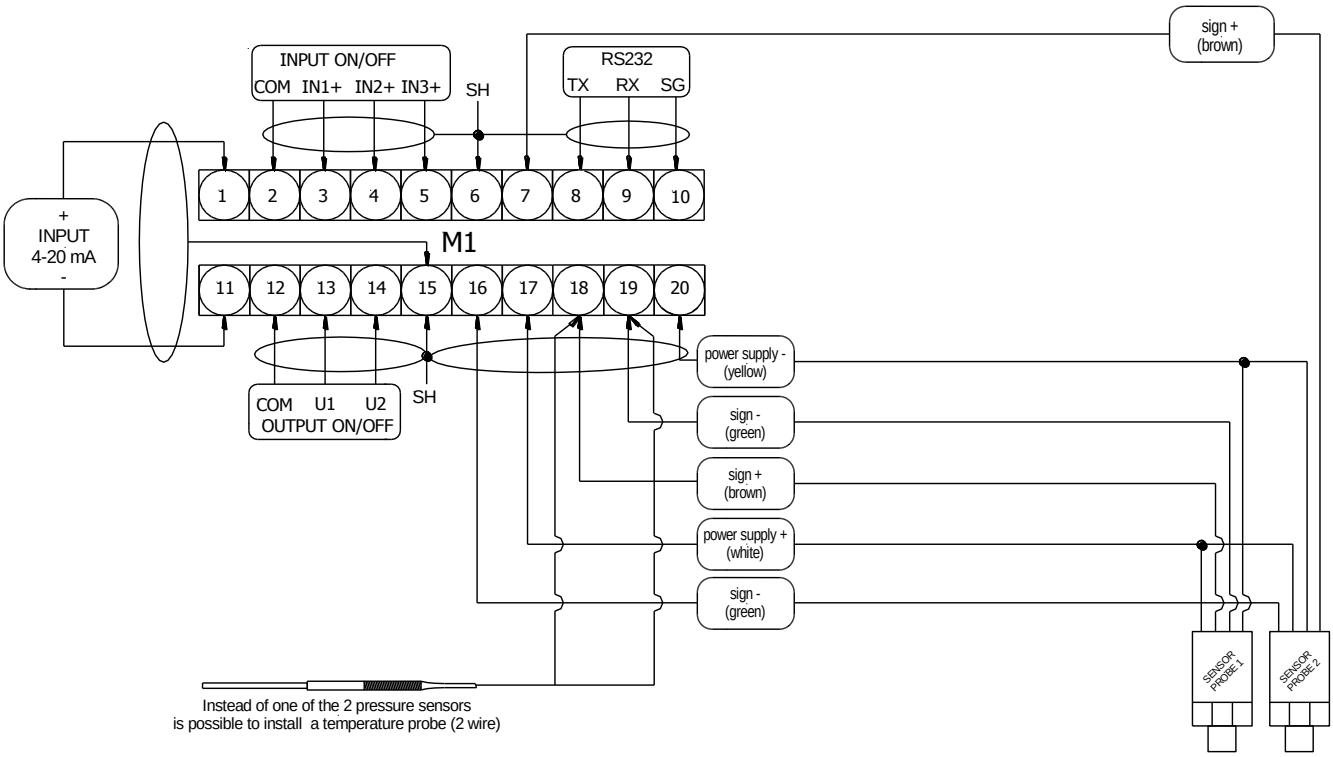
BY BATTERIES



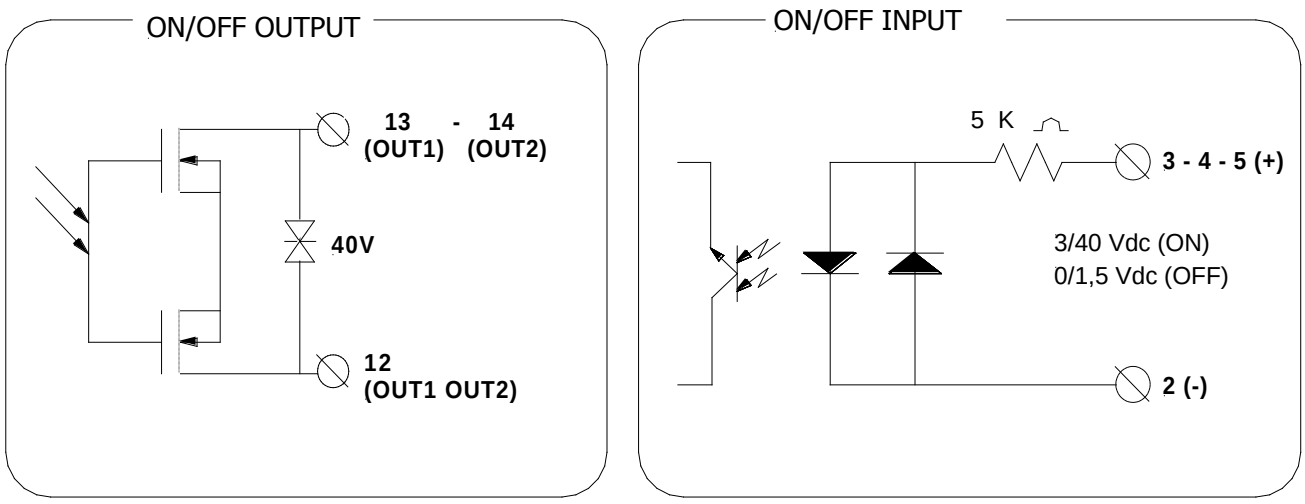
Note : Lithium batteries are subject to special transportation regulations according to "Regulation of Dangeroug Goods, UN3090 and UN 3091". Special documentation is required to observe there regulations. This may influence both, transportation time and costs.

ELECTRICAL CONNECTIONS

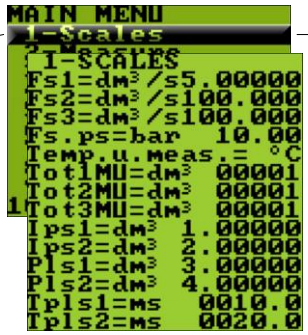
TERMINAL BLOCK



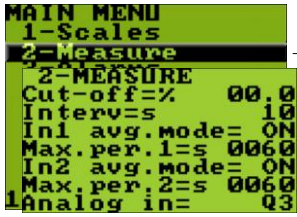
DIGITAL INPUT / OUTPUT



FUNCTION'S LIST

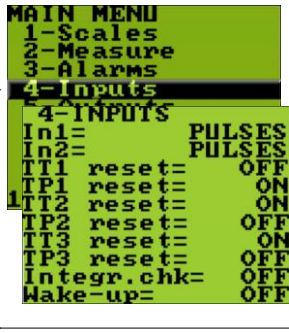


1.1* Full scale 1 value (ON/OFF input)
1.2* Full scale 2 value (ON/OFF input)
1.3* Full scale 3 value (4-20mA input)
1.4 Full scale value set for pressure measure
1.5 Unit of measure of temperature
1.6* Unit of measure and number of decimal totalizer 1
1.7* Unit of measure and number of decimal totalizer 2
1.8* Unit of measure and number of decimal totalizer 3
1.9* Pulse value on input 1
1.10*Pulse value on input 2
1.11*Pulse value on output 1
1.12*Pulse value on output 2
1.13*Pulse duration on input 1
1.14*Pulse duration on input 2

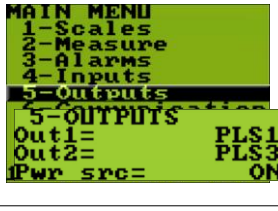


2.1 Low flow zero threshold: 0-25% of full scale value
2.2 Interval time between 2 measure
2.3 Enable average mode input 1
2.4 Maximum period for input 1
2.5 Enable average mode input 2
2.6 Maximum period for input 2
2.7 Analog input for flow rate or level

3.1 Maximum value alarm set for flow rate input 1
3.2 Minimum value alarm set for flow rate input 1
3.3 Maximum value alarm set for flow rate input 2
3.4 Minimum value alarm set for flow rate input 2
3.5 Maximum value alarm set for flow rate input 3
3.6 Minimum value alarm set for flow rate input 3
3.7 Maximum value alarm set for pressure 1
3.8 Minimum value alarm set for pressure 1
3.9 Maximum value alarm set for pressure 2
3.10 Minimum value alarm set for pressure 2
3.11 Maximum value alarm set for differential pressure
3.12 Minimum value alarm set for differential pressure
3.13 Hysteresis threshold set for the minimum and maximum flow rate alarms



4.1* Digital input 1 mode
4.2* Digital input 2 mode
4.3* Total flow totaliser 1 reset enable
4.4* Partial flow totaliser 1 reset enable
4.5* Total flow totaliser 2 reset enable
4.6* Partial flow totaliser 2 reset enable
4.7* Total flow totaliser 3 reset enable
4.8* Partial flow totaliser 3 reset enable
4.9 Integrity check enable
4.10* Auto-switch on command



5.1* Output 1
5.5* Output 2
5.6 Power supply of pressure probes

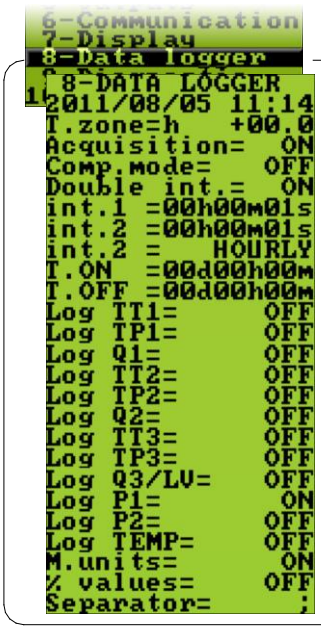
5.1* Output 1 set on DIRECT. DR. function
5.2 Frequency of output drive
5.3 Interval time of output switch on
5.4 Interval time of output switch off

The function DIRECT. DR. can be assigned to all outputs

6.1 Choice of the IF2 communication protocol
6.2 Choice of the RS232 communication protocol
6.3 Address RS232 port
6.4 RS232 port speed
6.5 Minimum antenna signal strength to send e-mail*
6.6 Choice of how to send data logger*
6.7 Choice of when send data logger*
6.8 Interval of data logger sending if 6.7 is set on "PERIODIC"*
6.9 Interval of sending DATA LOGGER*
6.10 Enables send Process data*
6.11 Enables send Alarm*
6.12 Minimum time to send Alarm*
6.13 Enables check INCOMING SMS*
6.14 Enables check INCOMING E-MAIL*
6.15 Enables clock synchronization with a specified server via the HTTP protocol*
6.16 Enables send EVENTS*
6.17 Roaming enable*
6.18 Send Data Logger, instant command*
6.19 Send EVENTS, instant command*
6.20 Send configuration through e-mail immediately*
6.21 Clock synchronization, immediately, with a specified server via the HTTP protocol*
6.22 Check INCOMING E-MAIL, instant command*
6.23 Check INCOMING SMS, instant command*

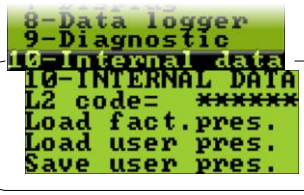
* (Communication function group only) = see wireless specific manual supplied for more details

7.1 Choice of the language: EN= English, IT=Italian, FR= French, SP= Spanish
7.2 Time for switch off display
7.3 Visualization of "Quick start menu"
7.4 Lock of DISPLAY in ONE SPECIFIC visualization page
7.5* Total flow totalizer 1 reset from keyboard
7.6* Partial flow totalizer 1 reset from keyboard
7.7* Total flow totalizer 2 reset from keyboard
7.8* Partial flow totalizer 2 reset from keyboard
7.9* Total flow totalizer 3 reset from keyboard
7.10*Partial flow totalizer 3 reset from keyboard



8.1* Date and time set
8.2 Set of Time Zone (Against GMT -12 to +12 hours)
8.3* Automatic data logger enable
8.4 Data formatted like ML250 (see ML250 manual)
8.5 Choice of single (off) or double (on) logging interval
8.6 Interval time 1 for the data logging function
8.7 Interval time 2 for the data logging function
8.8 Interval period 2 for the data logging function
8.9 Interval 2 start logging time
8.10 Interval 2 stop logging time
8.11 Enables the logging of total totalizer 1
8.12 Enables the logging of partial totalizer 1
8.13 Enables the logging of flow rate 1
8.14 Enables the logging of total totalizer 2
8.15 Enables the logging of partial totalizer 2
8.16 Enables the logging of flow rate 2
8.17 Enables the logging of total totalizer 3
8.18 Enables the logging of partial totalizer 3
8.19 Enables the logging of flow rate/level input 3
8.20 Enables the logging of pressure 1
8.21 Enables the logging of pressure 2
8.22 Enables the logging of temperature
8.23 Enables the sending of measure units (technical units)
8.24 Enables the sending of measure units (%)
8.25 Symbol used as separator on CSV files

9.1* Converter auto-test
9.2* Flow rate simulation enabling
9.3* Stand-by function
9.4 Test of GPRS connections
9.5 SD card status/info
9.6 Firmware revision/version

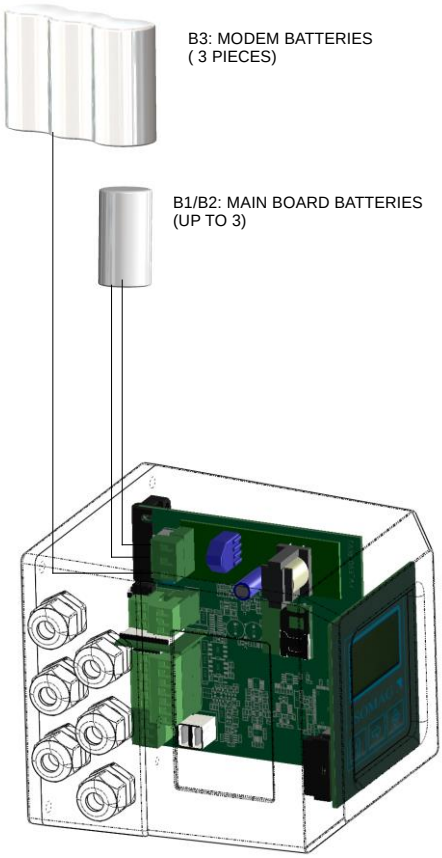


10.1 Level 2 access code enter
10.2 Load factory data pre-set
10.3 Load user data pre-set
10.4 Save user data pre-set

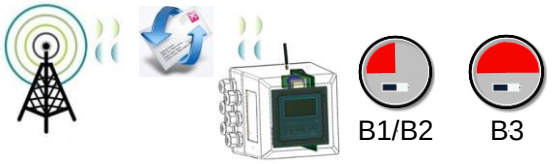
Note : all references to page number are linked to the operating manual .

BATTERIES CONSUMPTION

The batteries consumption depends from the setting of the followings elements: main board, sampling interval (measure profile), sensor diameter, modem wireless link condition, frequency of data delivery, amount of data collected, interface activities (display/modem activities).
Special software to calculate the consumption is available; here below a simple scheme to evaluate the different "weight" consumption's of each element.



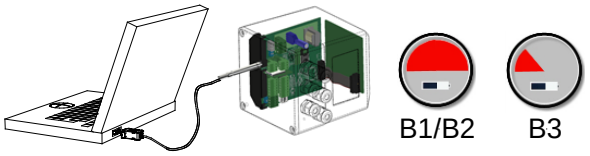
FREQUENCY OF DATA DELIVERY AND AMOUNT OF DATA COLLECTED



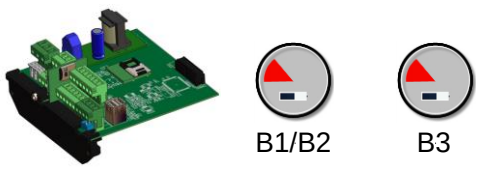
POOR NETWORK COVERAGE

DISPLAY ACTIVITIES

INTERFACE ACTIVITIES AND STORAGE DATA



MAIN BOARD AND MODEM IN STANDBY



BATTERIES LIFE

Power tool software

Power tool is a software which allows to evaluate the converter battery life.
The estimation is done with an easy guided procedure

HOW TO ORDER

CODE		
	DISPLAY	
B	**A**	Blind execution (without display and programming keys)
	B	Graphic LCD WSTN 128 x 64, 8 line each of 16 characters and 3 programming keys
	HOUSING MATERIAL / PROTECTION RATE	
0	**0**	Painted aluminium die casting , protection rate IP 67
	1	AISI304 Stainless Steel housing, protection rate IP67 **(DISPLAY NOT ROTABLE)**
	2	Painted aluminium die casting **IP 68 1,5 meters under water**
	VERSION	
B	**B**	Separate version for wall mounting, complete with mounting accessories in **Aluminium** (painted RAL6028)
	D	Separate version for wall mounting, complete with mounting accessories in **AISI304**
	POWER SUPPLY	
1	**0**	n° 1 LITHIUM BATTERY **- WITHOUT UNIVERSAL POWER SUPPLY**
	1	n° 1 LITHIUM BATTERY**- WITH UNIVERSAL POWER SUPPLY**
	2	n° 4 LITHIUM BATTERY (1 + 1 OF 3 ELEMENTS PACK **NECESSARY FOR GPRS) - WITH UNIVERSAL POWER SUPPLY**
	4	n° 6 LITHIUM BATTERY (N° 2 X 3 ELEMENTS PACK) **- WITHOUT UNIVERSAL POWER SUPPLY**
	5	N° 3 LITHIUM BATTERY (N° 1 OF 3 ELEMENTS PACK) - **WITHOUT UNIVERSAL POWER SUPPLY**
	6	n° 4 LITHIUM BATTERY (1 + 1 OF 3 ELEMENTS PACK **NECESSARY FOR GPRS) - WITHOUT UNIVERSAL POWER SUPPLY**
	7	WITHOUT BATTERY **WITH** UNIVERSAL POWER SUPPLY
	8	WITHOUT BATTERY **WITHOUT** UNIVERSAL POWER SUPPLY
	9	n° 6 LITHIUM BATTERY (N° 2 X 3 ELEMENTS PACK) **- WITH UNIVERSAL POWER SUPPLY**
	a	n° 2 LITHIUM BATTERY **(1+1) - WITHOUT UNIVERSAL POWER SUPPLY**
	b	n° 5 LITHIUM BATTERY **(1+1 +1 OF 3 ELEMENTS PACK) - WITHOUT UNIVERSAL POWER SUPPLY**
	INPUT	
B	**B**	N° 1 Pressure probe (to be specified the pressure span) for REMOTE PROBE VERSION (ADD THE PRICE, SEE "XXACCREV00GEN-PRESSURE GAUGE" OF PRICE LIST)
	C	N° 1 Pressure probe (to be specified the pressure span) complete of 1/8" QUICK CONNECTOR FOR RUBBER TUBE MOUNTED ON CONVERTER HOUSING
	D	n° 2 Pulses input (Max 32 Hz) from passive contact
	E	OPTION C + D
	F	OPTION B+D (ADD THE PRESSURE PROBE PRICE, SEE "XXACCREV00GEN-PRESSURE GAUGE" OF PRICE LIST)
	G	N° 2 Pressure probe (to be specified the pressure span) for REMOTE PROBE VERSION (ADD THE PRICE, SEE "XXACCREV00GEN-PRESSURE GAUGE" OF PRICE LIST)
	H	OPTION G + D
	I	N° 1 Sensor Temperature (2 Wire - PT500)
	L	N° 1 Sensor Temperature (2 Wire - PT500) + N° 1 Pressure probe (to be specified the pressure span) for REMOTE PROBE VERSION (ADD THE PRICE, SEE "XXACCREV00GEN-PRESSURE GAUGE" OF PRICE LIST)
	M	4/20 mA input for LEVEL/FLOW RATE (TWO-WIRE, PASSIVE)
	ADDITIONAL MODULE	
1	**1**	NONE
	3	N° 2 on/off out (max 50 Hz - max 100 mA)
	4	Port RS232
	5	GPRS module (COMPLETE OF : ETP ; FLOWIZ SERVICE) **WITH ANTENNA ON THE HOUSING**
	7	GPRS module (COMPLETE OF : ETP ; FLOWIZ SERVICE) **WITH 3 METERS CABLE LENGT OF MAGNETIC ANTENNA (NECESSARY WITH IP 68 VERSION)**
	8	Options 3 + 4 **(DIGITAL IN/OUT + RS 232)**
	f	GPRS module(COMPLETE OF : ETP ; FLOWIZ SERVICE)**WITH 3 METERS CABLE LENGT OF MAGNETIC ANTENNA(NECESSARY WITH IP 68 VERSION) + 2 on/off OUT**
	SPECIAL FEATURES	
A	**A**	NONE
	B	WITH ANTICONDENSE CAP
	E	N° 1 IP 68 CONNECTOR FOR IF22 INTERFACE

ML155-B0B1B1A (Complete code, example for order)

Due to the constant technical development and improvements of its products, the manufacturer reserves the right to make changes and / or modify the information contained in this document without notice. Information contained herein is not binding.

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