

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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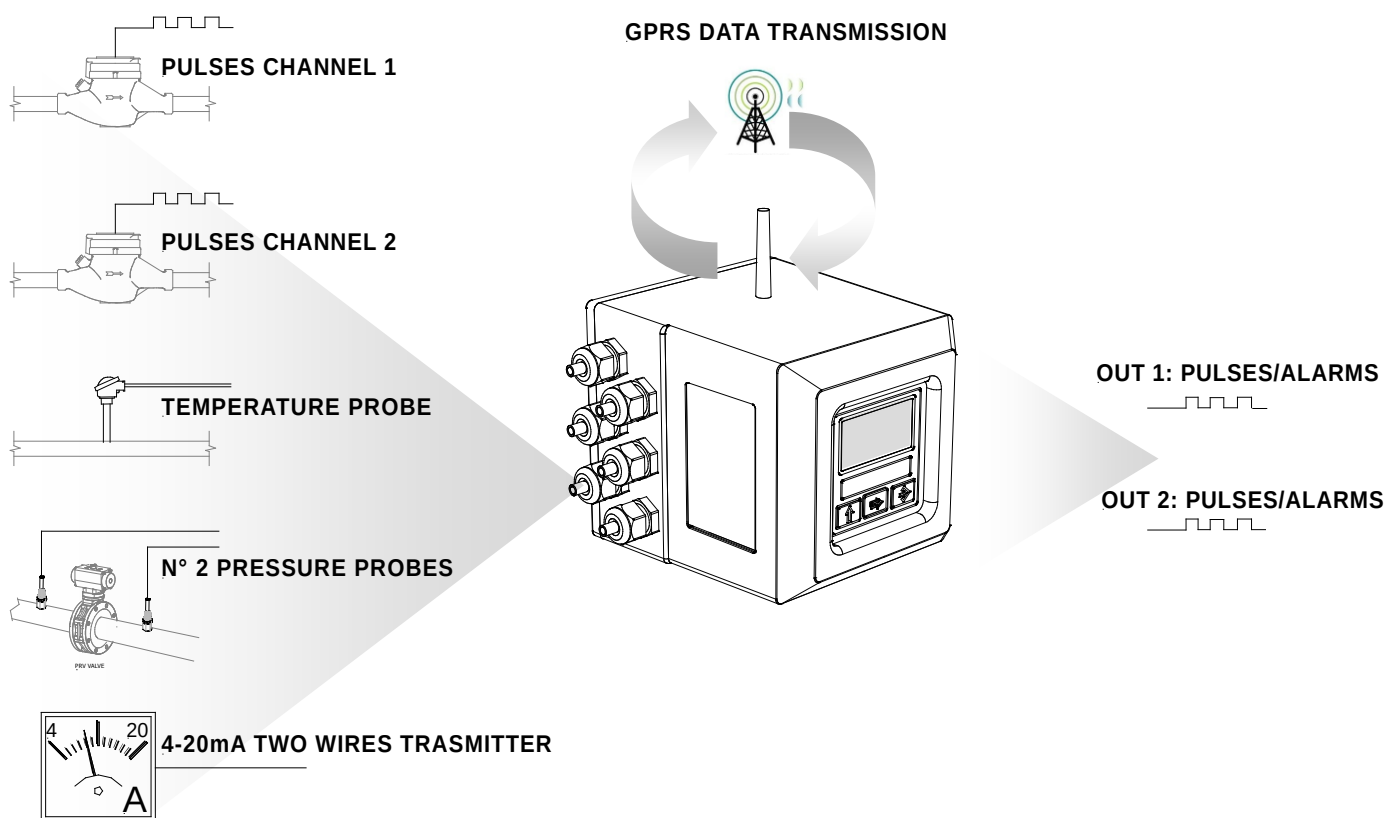
HOW TO ORDER16

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

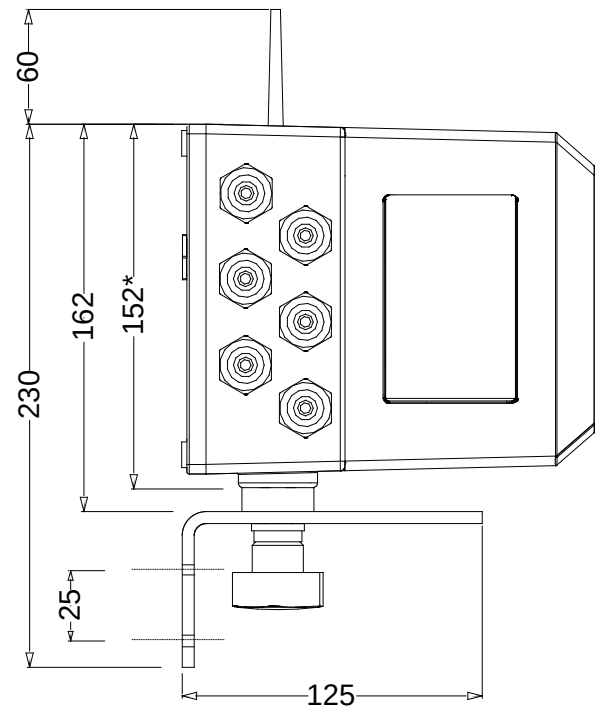
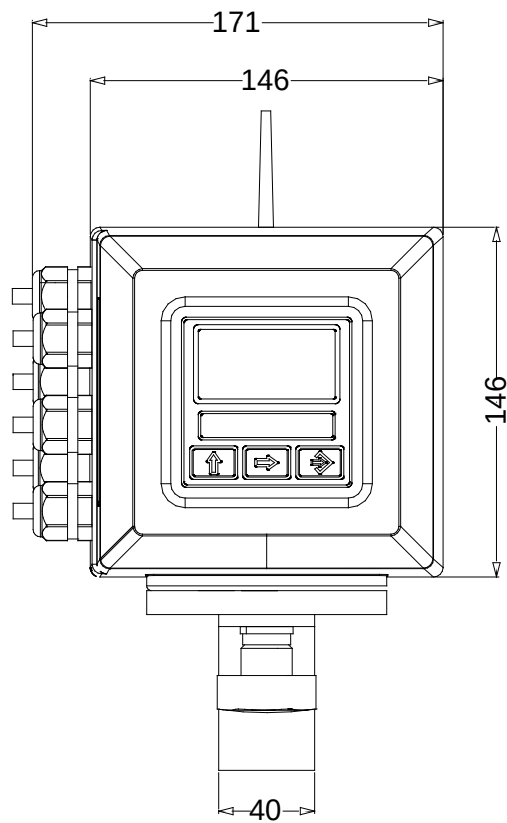
OVERALL FEATURES	
Suitable For	☐ Isomag PRESSURE SENSOR-Pulses from Woltman/Turbine/etc.-Temperature Probe- 4-20 mA transmitters
Power consumption	☐ MAX : 200 mW (Batteries) , 4 W (Main supply)
Altitude	☐ -200 m up to 2000 m
Ambient Temperature	☐ -20... +60°C / -4... +140 °F
Humidity Range	☐ 0÷100% (IP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

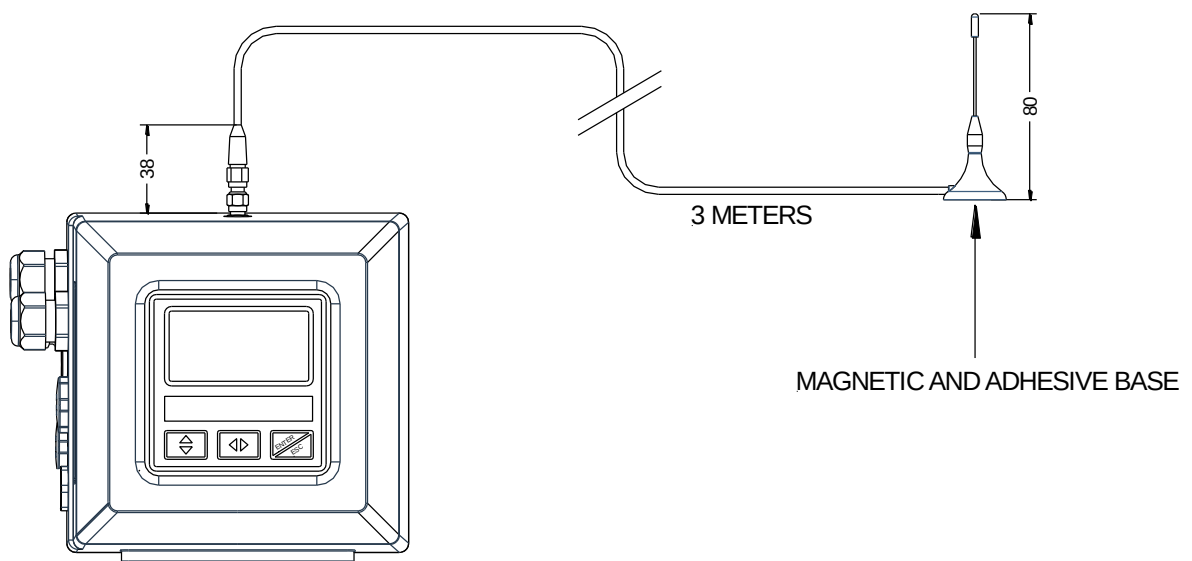
OPTIONAL FEATURES (CHECK HOW TO ORDER, AT LAST PAGE, FOR MORE DETAILS)	
Housing materials	☐ AISI304
Protection Rate	☐ IP 68
Wires connections	☐ IP 68 Connectors
LCD Display	☐ Graphic display WSTM 128x64 pixels, 3 membrane keys
Power Supply	☐ Mixed System Main Power Supply and Batteries as Backup
Pulses/ 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) = $\pm 0,1\%$ v.l. ☐ Out 4/20 mA = $\pm 0,5\%$ v.l. ☐ Frequency Out = $\pm 0,1\%$ v.l.

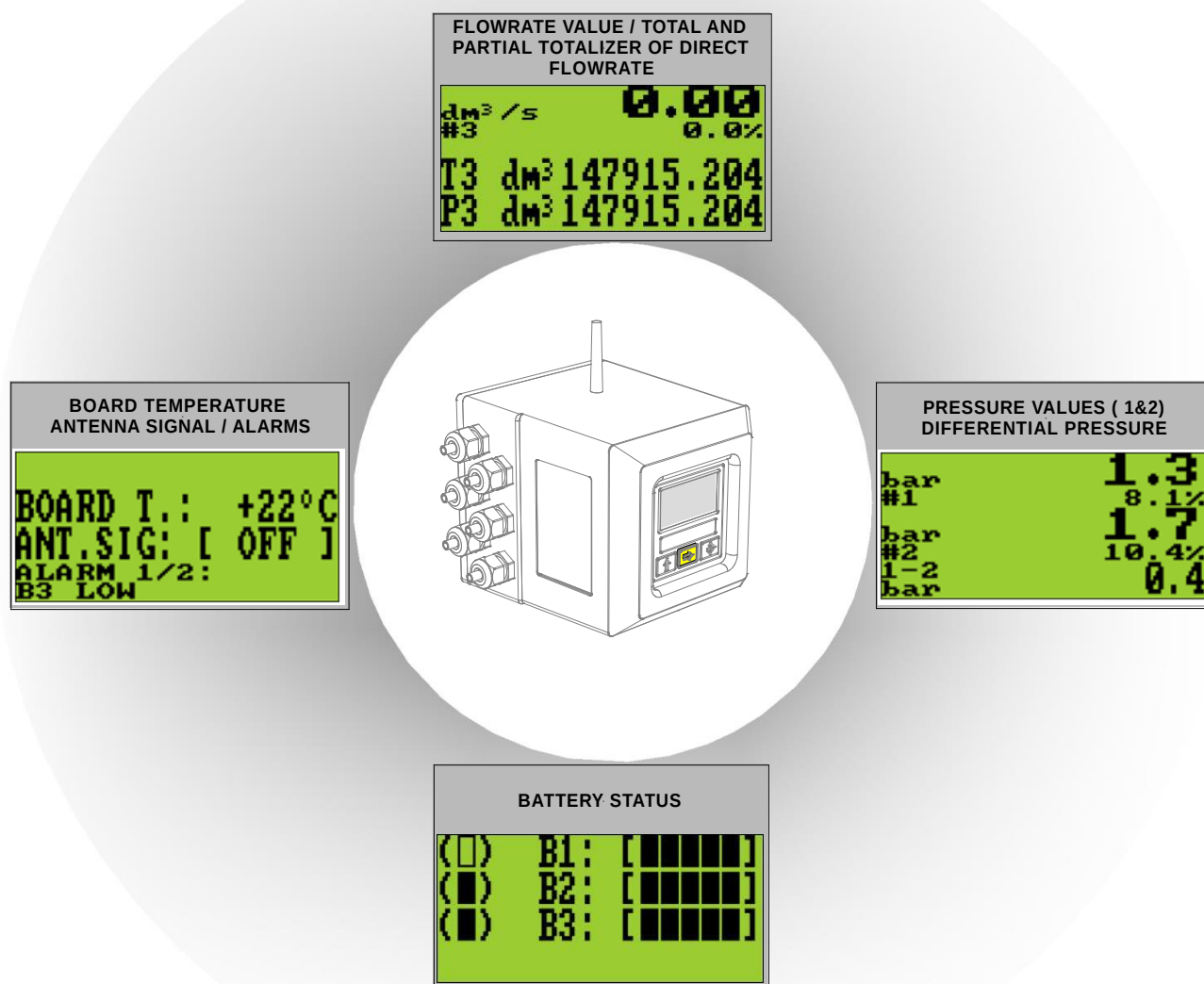
OVERALL DIMENSIONS



VERSION WITH 3 METERS CABLE ANTENNA

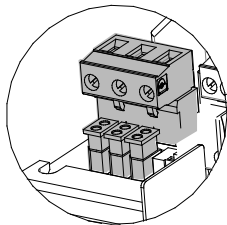


Different visualisation possibilities with the simple press of a key

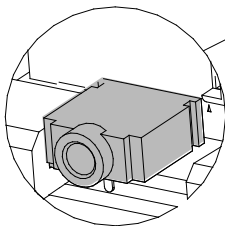


PCB LAYOUT

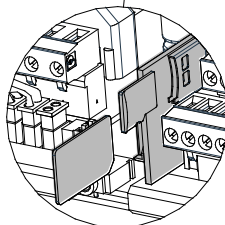
Terminal block M3 (OPT.)
And battery connections



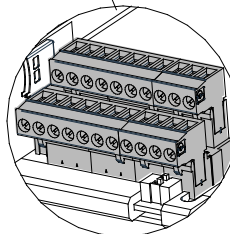
IF2X socket



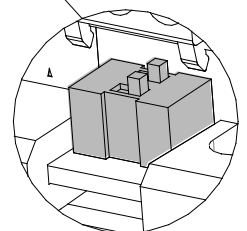
SIM GSM and SD
memory card



Terminal block M1

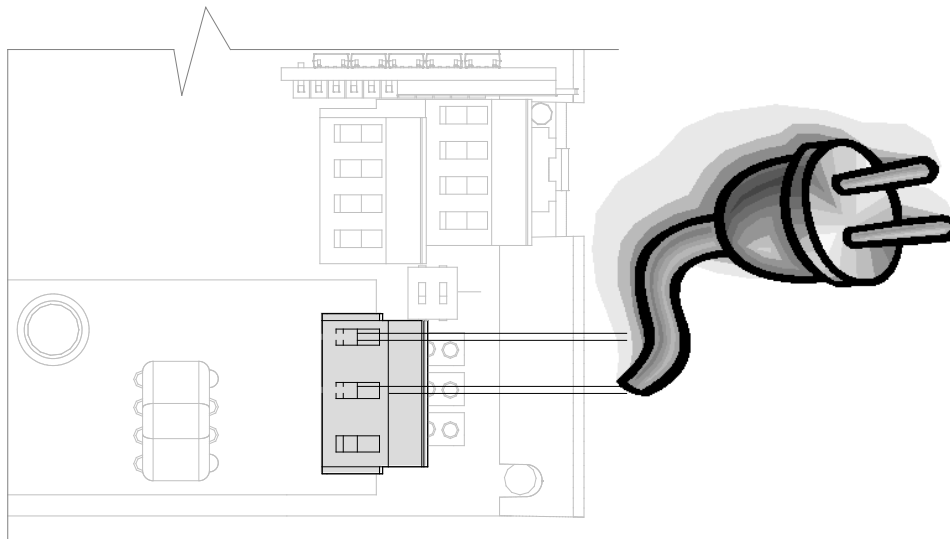


Key pad block



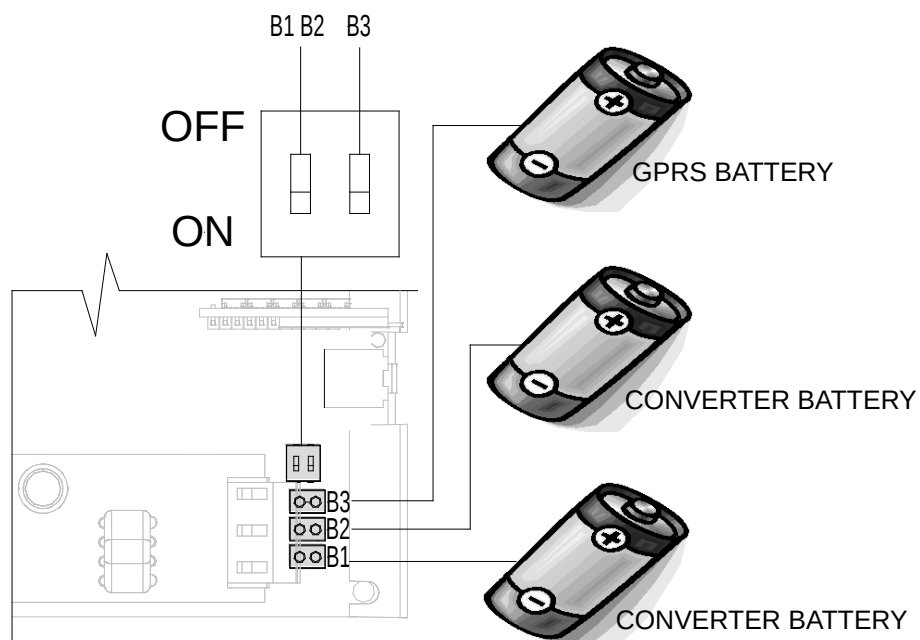
POWER SUPPLY

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).

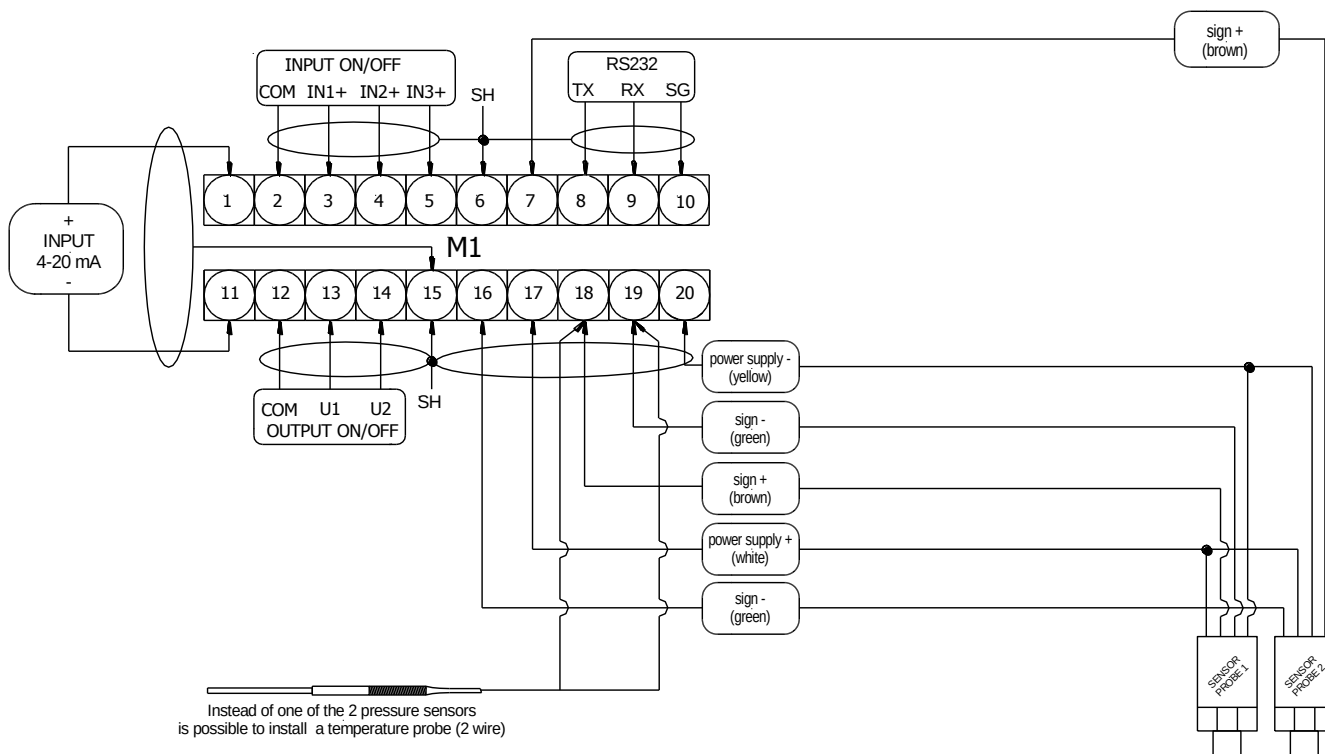
BY BATTERIES



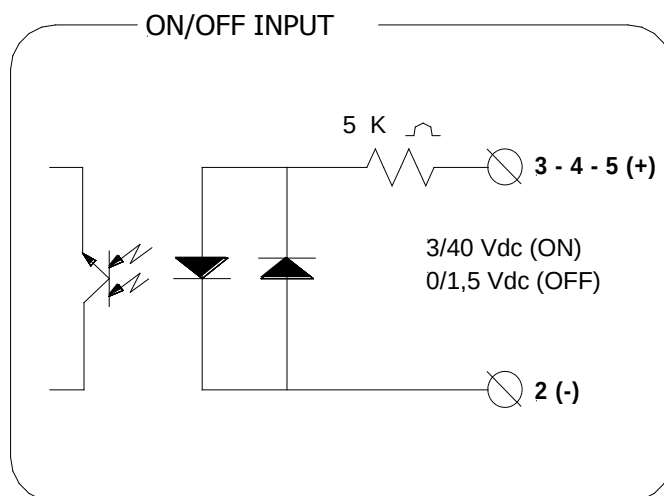
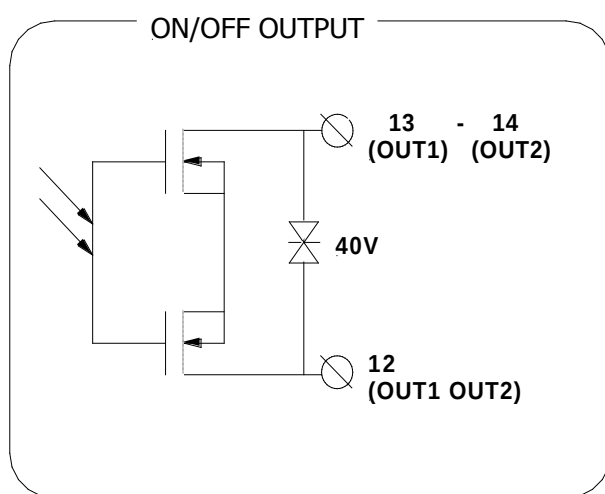
Note : Lithium batteries are subject to special transportation regulations according to "Regulation of Dangerous Goods, UN3090 and UN 3091". Special documentation is required to observe there regulations. This may influence both, transportation time and costs.

ELECTRICAL CONNECTIONS

TERMINAL BLOCK



DIGITAL INPUT / OUTPUT



FUNCTION'S LIST

```

MAIN MENU
1-Scales
1-SCALES
Fs1=dm³/s5.00000
Fs2=dm³/s100.000
Fs3=dm³/s100.000
Fs.ps=bar 10.00
Temp.u.meas.= °C
Tot1MU=dm³ 00001
Tot2MU=dm³ 00001
1 Tot3MU=dm³ 00001
Ips1=dm³ 1.00000
Ips2=dm³ 2.00000
Pls1=dm³ 3.00000
Pls2=dm³ 4.00000
Tpls1=ms 0010.0
Tpls2=ms 0020.0

```

- 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

```

MAIN MENU
1-Scales
2-Measure
2-MEASURE
Cut-off=% 00.0
Interv=s 10
In1 avg.mode= ON
Max.per.1=s 0060
In2 avg.mode= ON
Max.per.2=s 0060
1 Analog in= Q3

```

- 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

```

MAIN MENU
1-Scales
2-Measure
3-Alarms
3-ALARMS
Al.maxQ1=% 000
Al.minQ1=% 000
Al.maxQ2=% 000
Al.minQ2=% 000
1 Al.maxQ3=% 000
Al.minQ3=% 000
Al.maxP1=% 000
Al.minP1=% 000
Al.maxP2=% 000
Al.minP2=% 000
Al.maxDP=% 000
Al.minDP=% 000
Hyst.= % 03

```

- 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

```

MAIN MENU
1-Scales
2-Measure
3-Alarms
4-Inputs
4-INPUTS
In1= PULSES
In2= PULSES
TI1 reset= OFF
TP1 reset= ON
1 TI2 reset= ON
TP2 reset= OFF
TI3 reset= ON
TP3 reset= OFF
Integr.chk= OFF
Wake-up= OFF

```

- 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

```

MAIN MENU
1-Scales
2-Measure
3-Alarms
4-Inputs
5-Outputs
5-OUTPUTS
Out1= PLS1
Out2= PLS3
1 Pwr src= ON

```

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

```

MAIN MENU
1-Scales
2-Measure
3-Alarms
4-Inputs
5-Outputs
5-OUTPUTS
Out1= DIRECT.DR.
Out1= HOURLY
1.ON =00d00h00m
1.OFF =00d00h00m
Out2= PLS3
Pwr src= ON

```

- 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

```

4-Inputs
5-Outputs
6-Communication
6-COMMUNICATION
IF2 prot.= DPP
1.RS232 prot.= DPP
Address= 101
RS232 bps= 38400
Min.ant.s.=% 10
Send DL= mail
Send DL=PERIODIC
Send DL= HOURLY
Time =00d00h59m
Send PD= OFF
Send AL= mail
1.min AL =00m00s
Chk SMS= OFF
Ck mail= OFF
Clock s= OFF
Send events= OFF
Roaming= OFF
Send DL
Send events
Send config.
Clock s
Ck mail
Chk SMS

```

- 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

```

5-Outputs
6-Communication
7-DISPLAY
7-DISPLAY
Language= EN
1.D.time=s 020
Quick start= OFF
Disp.lock= OFF
TT1 reset
TP1 reset
TT2 reset
TP2 reset
TT3 reset
TP3 reset

```

- 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

```

6-Communication
7-Display
8-Data logger
1 8-DATA LOGGER
2011/08/05 11:14
T.zone=h +00.0
Acquisition= ON
Comp.mode= OFF
Double int.= ON
int.1 =00h00m01s
int.2 =00h00m01s
int.2 = HOURLY
T.ON =00d00h00m
T.OFF =00d00h00m
Log TT1= OFF
Log TP1= OFF
Log Q1= OFF
Log TT2= OFF
Log TP2= OFF
Log Q2= OFF
Log TT3= OFF
Log TP3= OFF
Log Q3/LV= OFF
Log P1= ON
Log P2= OFF
Log TEMP= OFF
M.units= ON
% values= OFF
Separator= ;

```

- 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

```

7-Display
8-Data logger
9-Diagnostic
1 9-DIAGNOSTIC
Self test
Simulation= OFF
Stand-by
Gprs test
Read SDC info
Firmware rev.

```

- 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

```

8-Data logger
9-Diagnostic
10-Internal data
10-INTERNAL DATA
L2 code= *****
Load fact.pres.
Load user pres.
Save user pres.

```

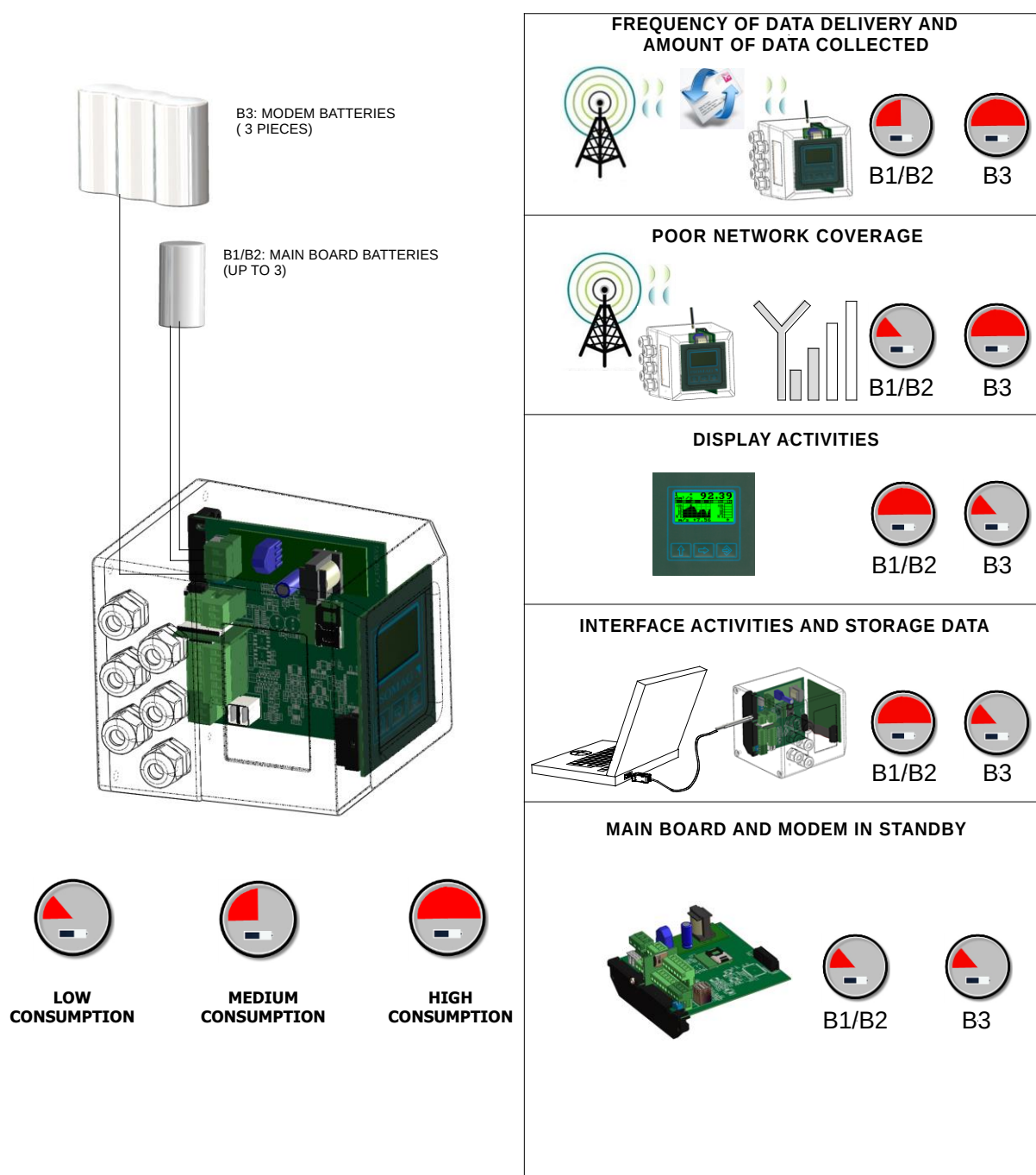
- 10.1 Level 2 access code enter
- 10.2 Load factory data pre-set
- 10.3 Load user data pre-set
- 10.4 Save user data pre-set

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.



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
O	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.