Modus Slim 2

TECHNICAL MANUAL

DISCLAIMER

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1 Product Features

Modus Slim 2 is a type 1 gas volume converter, with integrated data-logger and GSM / GPRS modem. It has a PTZ conversion channel through which the impulses from the volume meter, the pressure and the temperature of the gas are acquired and the compressibility factor Z and the conversion coefficient C are calculated at the reference thermodynamic conditions. The heat of combustion Hs is also calculated.

MODUS SLIM2 has been certified for installation in environments with a potentially explosive atmosphere according to the type of protection:

II 1 G Ex ia IIA T3 Ga Tamb = -25°C ÷ +60 °C

The device complies with EN60079-0 and EN60079-11 standards for use at ambient temperatures between -25 ° C and + 60 ° C according to the EU-type examination certificate **TÜV IT 21 ATEX 034 X**.

The pressure and temperature values are acquired through two sensors which are an integral part of the equipment.

An optical interface compliant with CEI EN 62056-21 is available for local communication with the equipment.

MODUS SLIM2 has one pulse input for dedicated for meter and one digital input for anti-tamper. Both inputs must be connected to voltage-free contacts.

Volume corrector information can be viewed on a liquid crystal display. Two digital outputs are available for repeating the volumes at the measurement conditions and at the reference conditions

For non-metrological applications, the equipment is identified as MLog SLIM2: all safety features remain unchanged.

1.1 Conversion Coefficient

The PTZ corrector performs the acquisition of the pulses emitted by the counter meter and calculates the equivalent cubic meters base conditions according to the formula:
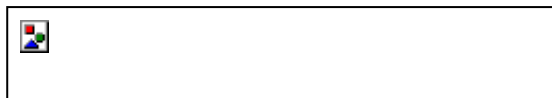
Symbol	Represented quantity	Unit of measure
V_b	Volume at base conditions	m³
V_m	Volume at measurement conditions	m³
P	Absolute pressure at measurement conditions	bar
P_b	Absolute pressure at base conditions	bar
T	Temperature at measurement conditions	K
T_b	Temperature at measurement conditions	K
Z	Compressibility factor at measurement conditions	-
Z_b	Compressibility factor at base conditions	-
C	Conversion factor	-

The compressibility factor takes into account the deviation of behaviour between real and ideal gas. The calculation method can be configured between the followings:

- UNI EN ISO 12213-2 (AGA8-DC92)
- UNI EN ISO 12213-3 (SGERG88)
- AGA-NX19

The conversion factor is calculated according the formula specified into standard UNI EN ISO 12405-1.

1.2 Energy Calculation

The device calculates the energy of gas flown according the standard UNI EN 12405-2:2012
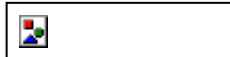
Symbols	Represented quantity	Measuring unit
V_b	Volume at base conditions	m³
E	Energy	J
Hs	Superior calorific value	J/m³

If the compressibility factor configured is AGA8-DC92, the Superior Calorific Value is calculated according the standard UNI EN ISO 6976:2008, otherwise must be configured by user.

The data-logger processes the metric data according to UNI / TS 11291-3 / 4 and makes them available to the central acquisition system (**SAC**) via **GSM / GPRS** data connection.
An optical serial port is available for local communication.

The human-machine interface consists of a liquid crystal display and a keyboard through which it is possible to navigate through the data presentation menus.

2   Certifications

2.1 2014/34/UE ATEX directive

Modus Slim 2 is a very low consumption volume corrector, particularly suitable for all those uses where it is not possible to use the mains as a power source.

The equipment was designed for the monitoring of gas distribution systems and certified, according to Directive **2014/34 / EU (ATEX)** both as intrinsically safe equipment for use in applications in potentially explosive atmospheres.

$$\langle\!\langle \epsilon_x \rangle\!\rangle \text{ II 1 G Ex ia IIA T3 Ga Tamb = -25°C ÷ +60 °C}$$
$$\textbf{TÜV IT 21 ATEX 034 X}$$

⚠ **_Risk of Explosion_**: The installation must be carried out in compliance with the prescriptions contained in this manual

2.2 2014/32/UE MID directive

Modus Slim 2 has been approved MID according EN12405-1:2005+A2:2010. Marking shown below.

IT-024-21-MI002-2213

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3 Safety Installation Requirements

In the case of use in areas with danger of explosion, it must be verified that the type of equipment provided is suitable for the classification of the area and any flammable substances present.

The essential safety requirements against the risk of explosion in classified areas are established by Directive 2014/34 / EU of the European Parliament and of the Council of 26 February 2014 (as regards equipment) and 1999/92 / EC of 16 December 1999 (as regards the plants).
The criteria for the classification of areas with risk of explosion are given by the EN60079-10 standard.
The technical requirements of electrical systems in classified areas are given by the EN60079-14 standard.
The following table shows the legend of the marking for use in a hazardous area:

II 1 G	Equipment for surface systems with the presence of gas or vapours, category 1 suitable for zone 0 and with redundancy for zones 1 and 2
Ex ia	Intrinsically safe equipment, category ia
IIA	Equipment of group IIA suitable for substances (gases) of groups IIA.
Ga	Equipment Ga protection level
T3	Equipment temperature class (maximum surface temperature)
$C\epsilon$	Conformity marking to applicable European directives
$\langle\!\epsilon x\!\rangle$	Marking of conformity to directive 2014/34 / EU and related technical standards
TÜV IT 21 ATEX 034 X	Number of the EU-type examination certificate. **X** indicates that there are particular conditions of use which are indicated in the manual with safety instructions.
1370	Number of the Notified Body (Bureau Veritas) which carries out the surveillance of the production system.
Tamb	Ambient operating temperature of the equipment

⚠ **WARNING: DANGER OF ELECTROSTATIC DISCHARGE CLEAN WITH A WET CLOTH OR ANTISTATIC PRODUCTS.**

In order to prevent the accumulation of electrostatic charges on the equipment, appropriate procedures must be adopted during installation, maintenance and use

4   Batteries

MODUS SLIM 2 uses two lithium battery packs that guarantee high operating autonomy.

BATTERY CODE	FUNCTION	BATTERY TYPE	FEATURE
LE8-BP	CPU power supply	Lithium	Standard
HP7-BP[1]	Modem power supply	Lithium	Standard

⚠️ The battery packs have been approved by the Notified Body which issued the ATEX type certificate and it is therefore absolutely mandatory to use only the model provided.
 DANGER OF EXPLOSION

⚠️ **Do not** short-circuit the terminals of the battery pack. **Do not** try to open the casing. Keep away from heat sources. **Don't** try to recharge.

⚠️ **DO NOT** connect the HP-7 battery pack directly to the BATT2 connector.

⚠️ Battery packs must always be replaced in the absence of an explosive atmosphere. Check the operating conditions with suitable instruments before proceeding.

Exhausted batteries contain substances that are hazardous to the environment and are subject to mandatory separate collection: dispose of in accordance with the laws in force to allow for recycling. CER code 160605.

4.1   Replacement

⚠️ Replacing a battery pack involves removing the NON-metrological hardware seals.

To minimize the risk of data loss it is advisable to connect a new charged CPU battery before removing the old one.
To replace a battery, simply remove the exhausted pack and replace it with a new one.

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[1] It is possible to equip the **HP6-BP** equivalent battery as an alternative to the standard **HP7-BP**.

Figure 1: MODUS SLIM 2 equipped with HP7-BP

⚠️ After replacing a battery, it is necessary to realign the remaining range indicators.

5 User's Menu

Under normal operating conditions **MODUS SLIM 2** keeps the display off to save energy.
To access the main menu, press the button ↵.
It is possible to navigate in the menu using the keys ↵ (enter), ↓ (scroll), **ESC**.
The button ↵ allows you to access the submenus if available.
The button **ESC** allows you to return to the previous menu.
The button ↓ allows you to scroll through the menu items.

The menu can only be used to view quantities already configured in the equipment or to force predefined actions. It is not possible to edit the configurations set.

The Flowmeter menu can show in the first line one or both of the following special characters listed below

- **σ:** Metrical sealing temporary unlocked

The metrological release button was pressed. The symbol is shown as long as the display remains lit.

- **β:** Volume conversion stopped

Volume conversion is inhibited. The reasons can be different: pressure out of range, temperature out of range, wrong gas parameters etc.

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FLOWMETER ↵

↓	**Vb**			Volume Counter at base conditions
↓	**Vm-I**			Volume Counter at measurement conditions
↓	**Ve**			Volume Counter at measurement conditions when conversion is stopped
↓	**Energy**			Energy counter
↓	**Instant. Val.**	↵	**Pgas**	Absolute pressure at the measurement conditions
		↓	**Tgas**	Absolute temperature at measurement conditions
		↓	**Z**	Gas compression factor at the measurement conditions
		↓	**Zb/Z**	Compression factor ratio
		↓	**C**	Volume conversion factor
		↓	**Qb**	Flow at basic conditions
		↓	**Qm**	Flow at the measurement conditions
↓	**Parameters**	↵	**CO2**	Current CO2 concentration
		↓	**H2**	Current H2 concentration
		↓	**DRel**	Density relative to air
		↓	**PCS**	Higher Caloric Power
		↓	**Temp. Rifer.**	Reference temperature
		↓	**Tcb**	PCS combustion temperature
		↓	**Tpcs**	Reference temperature of the PCS measurement
		↓	**Press. Rif.**	Reference pressure
		↓	**N2**	Current N2 (Nitrogen) concentration
		↓	**CO**	Current CO (carbon monoxide) concentration
		↓	**CH4**	Current CH4 (Methane) concentration
		↓	**C2**	Current C2H6 (Ethane) concentration
		↓	**C3**	Current C3H8 (Propane) concentration
		↓	**H2O**	Current H2O (water) concentration
		↓	**H2S**	Current H2S (Hydrogen sulfide) concentration
		↓	**O2**	Current O2 (Oxygen) concentration
		↓	**iC4**	Current Isobutan concentration
		↓	**nC4**	Current Neobutan concentration
		↓	**iC5**	Current Isopentane concentration
		↓	**nC5**	Current neopentane concentration
		↓	**nC6**	Current Neo-C6 concentration
		↓	**nC7**	Current Neo-C7 concentration
		↓	**nC8**	Current Neo-C8 concentration
		↓	**nC9**	Current Neo-C9 concentration
		↓	**nC10**	Current Neo-C10 concentration
		↓	**He**	Current helium concentration
		↓	**Ar**	Current Argon concentration

↓	State	↵	Diagn.			See Table 2
		↓	Alarms			Display of any active alarms
		↓	Residual Battery			Percentage of residual EVCD battery
		↓	Contat. Att.			Display of weight and pulse divider
↓	System	↵	S/N Conv.			Display of the flowmeter serial number
		↓	S/N Press.			Display of the serial number of the pressure transducer
		↓	S/N Temp.			Display of the serial number of the temperature transducer
		↓	Vers. FW			Firmware version
		↓	Crc FW			Display of the flowmeter firmware CRC
			Vers. Bootloader			Display of bootloader firmware revision
			Crc. Bootloader			Display of the bootloader firmware CRC
			Z calcul.			Calculation formula of the compressibility factor Z
			C calcul.			Calculation formula of the conversion coefficient C
↓	Events Buffer	↵	Number of events	↵	Event List	Number and list of events with time stamp
		↓	Absolute Count.			Absolute Event counter
		↓	Reset			See chapter "Machine reset"
↓	Date & Time	↵				Display of the current date and time

Table 1: Flowmeter menu

NOT CONFIGURED	Factory condition. The machine is **NOT** operational.
CALIBRATION	Non-operating machine update functions can be performed
NORMAL	Standard operating condition
MAINTENANCE	The equipment is operational but does not store data or events

Table 2:Possible states for the flowmeter section

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DATALOGGER ↵

↓	**Id (PDR)**					Point of Delivery identifier
↓	**Billing**	↵	**Current**	↵	**ID PT**	Tariff plan identifier
				↓	**Vb**	Cubic meters counter at standard conditions
				↓	**Vb F1**	Cubic meters counter at standard conditions F1
				↓	**Vb F2**	Cubic meters counter at standard conditions F2
				↓	**Vb F3**	Cubic meters counter at standard conditions F3
				↓	**Vm**	Cubic meters counter at the measurement conditions
				↓	**Vm F1**	Cubic meters counter at the measurement conditions F1
				↓	**Vm F2**	Cubic meters counter at the measurement conditions F2
				↓	**Vm F3**	Cubic meters counter at the measurement conditions F3
				↓	**Vme**	Cubic meters counter in error
				↓	**Vme F1**	Cubic meters counter in error F1
				↓	**Vme F2**	Cubic meters counter in error F2
				↓	**Vme F3**	Cubic meters counter in error F3
		↵	**Previous**	↵	**ID PT**	Tariff plan identifier
				↓	**Reason**	Reason for period closure - see table 6
				↓	**Vb**	Cubic meters counter at standard conditions
				↓	**Vb F1**	Cubic meters counter at standard conditions F1
				↓	**Vb F2**	Cubic meters counter at standard conditions F2
				↓	**Vb F3**	Cubic meters counter at standard conditions F3
				↓	**Vm**	Cubic meters counter at the measurement conditions
				↓	**Vm F1**	Cubic meters counter at the measurement conditions F1
				↓	**Vm F2**	Cubic meters counter at the measurement conditions F2
				↓	**Vm F3**	Cubic meters counter at the measurement conditions F3
				↓	**Vme**	Cubic meters counter in error
				↓	**Vme F1**	Cubic meters counter in error F1
				↓	**Vme F2**	Cubic meters counter in error F2
				↓	**Vme F3**	Cubic meters counter in error F3
↓	**Meter ID**	↵				Gas Meter serial number
↓	**Modem**	↵	**Call SAC**			Force call to the configured remote management center
		↓	**SMS Test SAC**			Force sending test SMS
		↓	**Turn on GSM Dati**			Force power on modem in GSM data mode
		↓	**Turn on GPRS**			Force modem power on in GPRS data mode
		↓	**Gprs DCE IP**			Displays the last IP assigned by the network
		↓	**GSM Field**			Displays the intensity of the GSM field
		↓	**Local echo Modem**			Enable modem echo on local serial port
		↓	**Last connection**			Date and time of the last connection occurred
			Message SAC	↵		
				↓	**P0**	Text message from SAC profile 0
				↓	**P1**	Text message from SAC profile 1
				↓	**P2**	Text message from SAC profile 2
				↓	**P3**	Text message from SAC profile 3
				↓	**P4**	Text message from SAC profile 4
↓	**SW REV. BLD CCA**					Non-Metrological Firmware Revision
↓	**Service**	↵	**Local**	↵	**Modbus**	Communication protocol on local port
				↵	**CTR**	
				ESC		Leave setup
		↵	**Remote**	↵	**Modbus**	Communication protocol on remote port
				↵	**CTR**	
				ESC		Leave Setup

5.1 Diagnostic

The diagnostic information shown on the display reports the status of each diagnostic bit in hexadecimal format. Each bit equal to 1 indicates a specific anomaly.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
0 - 4				**0 - F**				**0**				**0**				**0 - 2**				**0 - 3**				**0 - F**				**0 - E**			
DISPLAY																															

FUNCTION	BIT	FUNCTION	BIT	FUNCTION	BIT	FUNCTION	BIT
GENERAL ALARM	1	RESERVED	9	RESERVED	17	CONVERSION STOPPED	25
STATUS NOT OPERATIONAL	2	RESERVED	10	RESERVED	18	UNALIGNED CLOCK	26
PRESSURE ERROR	3	RESERVED	11	RESERVED	19	EVENTS QUEUE FULL	27
TEMP. ERROR	4	RESERVED	12	RESERVED	20	TAMPER ALARM	28
ERR. CAICULATION Z	5	RESERVED	13	RESERVED	21	GENERIC ALARM	29
ERR. CONFIGURATION	6	RESERVED	14	Q ALARM	22	EVENTS QUEUE 90%	30
PRESSURE UNCALIBRATED	7	RESERVED	15	PRESSURE OUT OF RANGE	23	LOW BATTERY	31
TEMP. UNCALIBRATED	8	RESERVED	16	TEMP. OUT OF RANGE	24	RESERVED	32

Table 3:Flowmeter Diagnostic Section

5.2 Events

N	DISPLAY	DESCRIPTION	N	DISPLAY	DESCRIPTION
1	GENERIC	Generic Event	14	EVT. RESET	Event Queue Reset
2	OUT OF LIM S	Out of Limit Start	15	EVT. FULL	Event Queue Full
3	OUT OF LIM E	Out of Limit End	16	CONF BP	Changed Billing Period
4	OUT OF RANGE	Out of Range	17	START BP	Start New Billing Period
5	MOD PARAM	Modified CTR Object	18	CONF SW	New Firmware Downloaded
6	FAILURE	Generic Failure	19	START SW	New Firmware Active
7	NO SUPPLY	No 230V	20	REBOOT	Reboot/Attempt Fraud
8	LOW BATT	Low Battery	21	STATUS NORM	Status Changed to Normal
9	MOD DATA	Date and Time Mod.	22	STATUS UNCO	Status Changed to Unconfigured
10	CALC ERROR	Calculation Error	23	STATUS MNT	Status Changed to Maintenance
11	RESET MEM	Factory Reset	24	STOP CONV	Stop Conversion
12	BROK. SEAL	Unlocked Software Seal	25	BATT.REPL.	Battery Replaced
13	SYNC ERR.	Date or Time Error	26	MOD SECUR	Modified security parameter

Table 4:Events

5.3 End Of Billing

Code	Description
1	Changed provider
2	New contract
3	New user
4	Changer distributor
5	End of billing period
6	New billing period

Table 5: Reasons for closing billing period

6 Installation

⚠️ It is not sufficient for a device to be intrinsically safe to be connected to associated equipment. It is necessary that a qualified technician or a body in charge proceed with the verification of the system and issue of suitable certification proving the compatibility between the electrical safety parameters possessed by both devices.

6.1 Clamps

⚠️ **The replacement of the pressure or temperature transducer is not allowed**.

⚠️ Opening the lid involves removing the metrological seals.

An example of connection is shown below: the connection of the pressure sensor cables depends on the sensor technology.
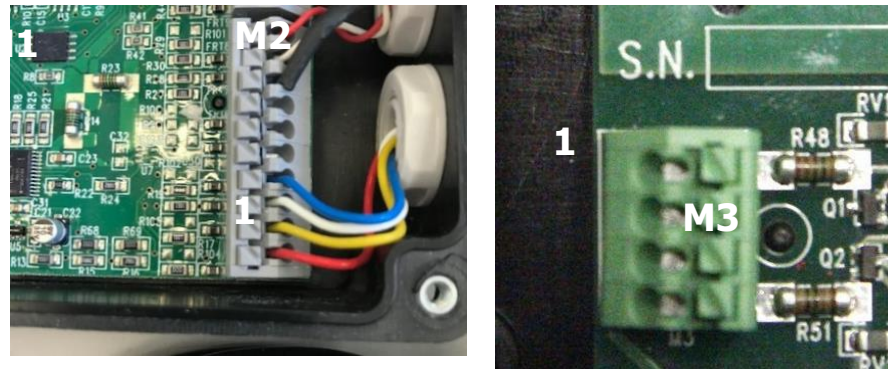
Figure 2: MODUS SLIM 2 clamps

MORS.	POS	FUNZIONE	COLORE CAVO
M1	1	ANALOG PRESSURE TRANSDUCER– IN+	PRESS-RED
M1	2	ANALOG PRESSURE TRANSDUCER– OUT+	PRESS-YELLOW
M1	3	ANALOG PRESSURE TRANSDUCER– OUT-	PRESS-WHITE
M1	4	ANALOG PRESSURE TRANSDUCER– IN-	PRESS-BLUE
M1	5	DIGITAL PRESSURE TRANSDUCER – GND	PRESS-WHITE
M1	6	DIGITAL PRESSURE TRANSDUCER – POWER SUPPLU	PRESS-BROWN
M1	7	DIGITAL PRESSURE TRANSDUCER – OUTPUT	PRESS-GREEN
M1	8	SCREEN	TEMP-BLACK
M1	9	PT1000 – NEGATIVE	TEMP-RED
M1	10	PT1000 – POSITIVE	TEMP-WHITE
M2	1	IMPULSIVE INPUT 2 - CLEAN CONTACT	
M2	2	IMPULSIVE INPUT 2 - CLEAN CONTACT/SCREEN	
M2	3	IMPULSIVE INPUT 1 - CLEAN CONTACT	
M2	4	IMPULSIVE INPUT 1 - CLEAN CONTACT/SCREEN	
M3	1	DIGITAL OUT 1 - PULSE REPEAT – COLLECTOR	
M3	2	DIGITAL OUT 1 - PULSE REPEAT – EMITTER	
M3	3	DIGITAL OUT 2 - PULSE REPEAT – COLLECTOR	
M3	4	DIGITAL OUT 2 - PULSE REPEAT – EMITTER	

Table 6:Description of available clamps
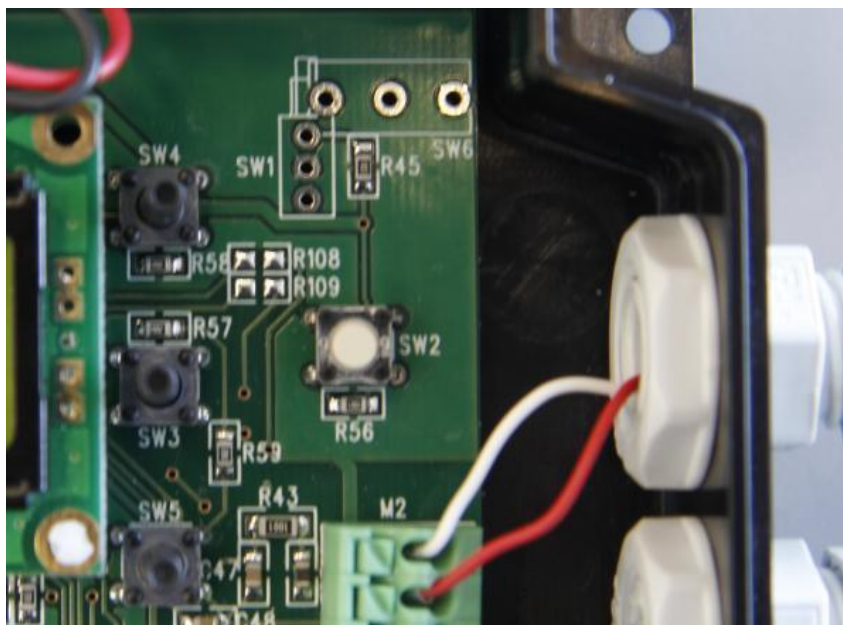
6.2 Metrological Unlock Button

The Metrological unlock button is accessed removing main cover, protected by Metrological seals. After pressing Metrological Unlock Button the software Metrological seals are unlocked and Metrological parameters can be modified. The software Metrological seals return to locked status when display switch off after 30 seconds of keyboard activity.
During the period the Metrological seals are unlocked the display shows symbol σ as first character of first line.

When the Metrological seal is unlocked the following parameters, can be modified:
- Vm – Volume at measure conditions
- Vb – Volume at base conditions
- Ve – Volume in error conditions
- Energy
- Pulse configuration
- Device Status
- Erase Events Queue

Lock/Unlock Metrological seals and parameters modifications are registered into events queue.

Figure 3: Metrological Unlock Button

6.3 Metrological sealing

The metrological sealing is carried out by sealing which prevents the opening of the main cover. The sealing wire is inserted into the holes located in the upper part of the lid as shown in the following illustration.
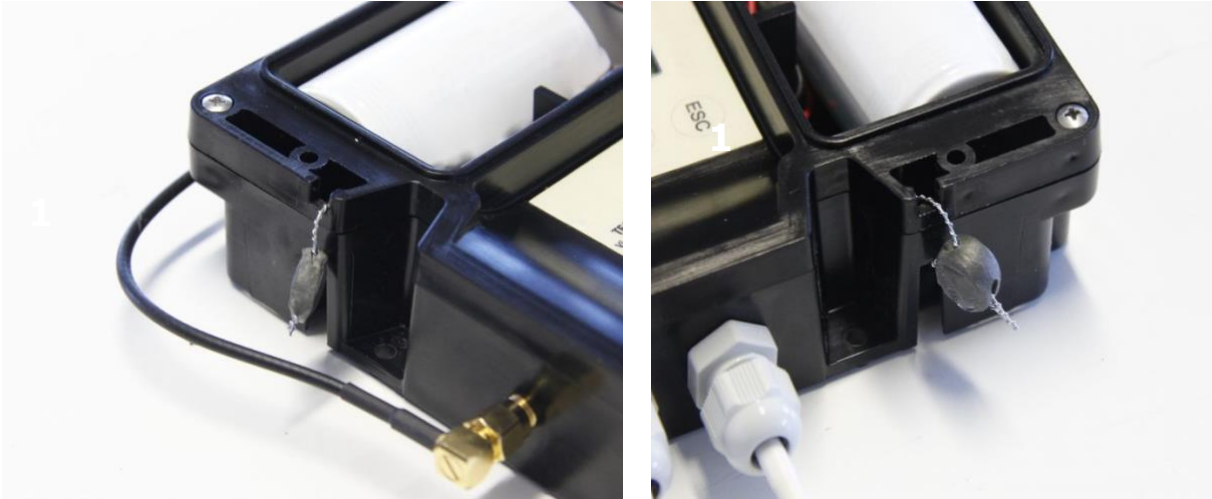

Figure 4: Metrological sealing

6.4 Non-Metrological sealings

Two adhesive Non-Metrological sealings protect the battery cover as shown in the following figure 5.
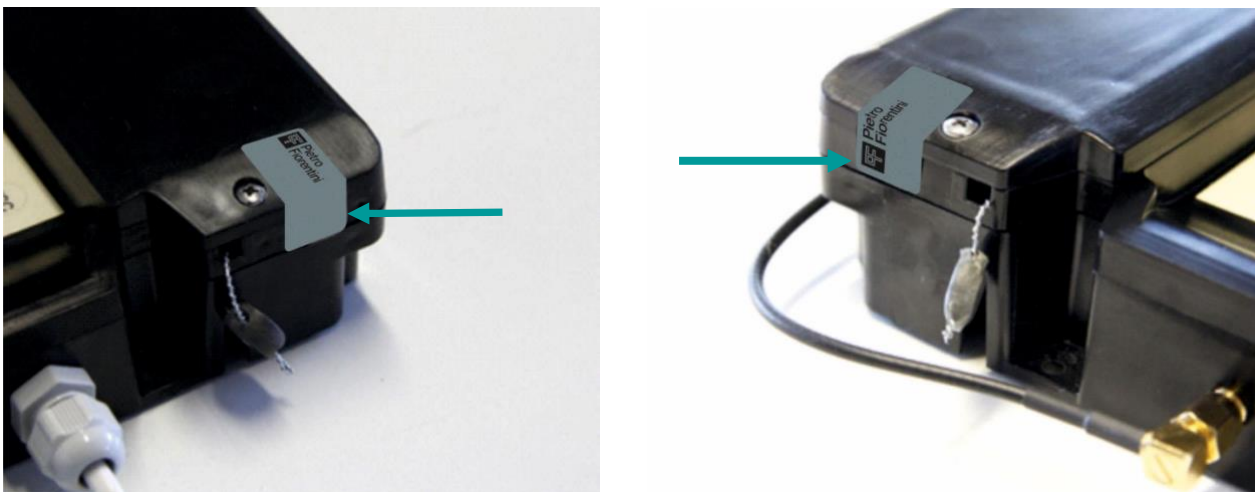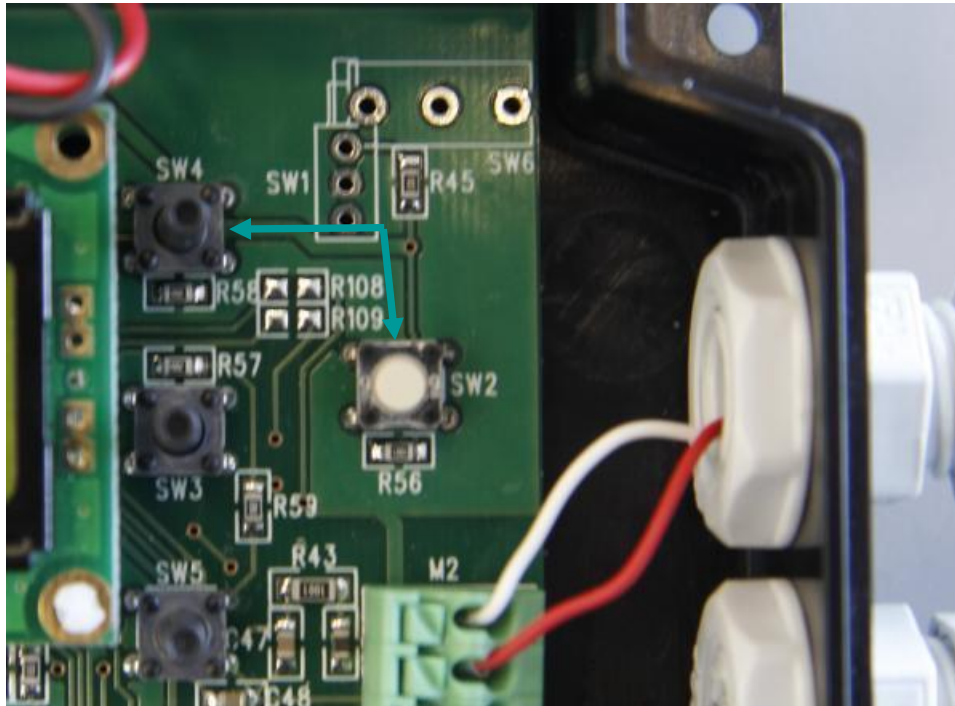

Figure 5: Non-Metrological sealings

6.5 Factory reset

⚠️ The converter's reset involves the removal of the metrological seals.

Figure 6: Push buttons for Factory Reset

It is possible to restore both the flowmeter and the data logger to the original factory conditions (converter calibrated but not configured).
Reset procedure:
1.   Disconnect the two battery packs;
2.   Wait for 5 seconds;
3.   Press buttons **PROG** and **ESC** and connect battery pack; keeping buttons pressed wait for display message **RESET CONFIG**;
4.   Release buttons and wait for device to complete the reset procedure. At the end of reset the device will reboot.

PAY ATTENTION: do not remove batteries during reset.

6.6 Maintenance

All verification and / or maintenance operations must be carried out according to the criteria of the European standard EN60079-17.

7   Technical Specifications

MECHANICAL	MIN	TIP	MAX
Casing material		Bayer Bayblend FR3000	
Casing Dimensions (L X H X P)		180x150x40 mm	
Pressure transducer - installed dimensions (L X H X P)		38 X 27 X 27 mm	
Pressure transducer - Headroom (L)		50 mm	
Pressure transducer - process connection		¼" G Male	
Temperature transducer - thermal element dimensions (L X D)		6 X 50 mm	
Temperature transducer - Headroom(L)		50 mm	
IP protection		66	
ENVIRONMENT	**MIN**	**TIP**	**MAX**
Ambient operating temperature range	-25°C		+60°C
Operating gas temperature range with formula AGA8-DC92	-25°C		+60°C
Operating gas temperature range with SGERG88 formula	-20°C		+60°C
Operating gas temperature range with formula AGA-NX19	-25°C		+60°C
Environmental classes		M2/E2	
ELECTRICAL	**MIN**	**TIP**	**MAX**
Nominal voltage LE8-BP, HP6-BP, HP7-BP		3.6 V	
LE8-BP capacity		19 Ah	
HP6-BP capacity		17 Ah	
HP7-BP capacity		19 Ah	
PRESSURE TRANSDUCERS	**MIN**	**TIP**	**MAX**
	0.8		1.5
	0.8		2
Pressure transducer working range (Bar)[2]	0.8		10
	1		20
	6		80
TEMPERATURE TRANSDUCERS			
Type		PT1000 class A IEC/EN 60751	
IMPULSIVE INPUTS	**MIN**	**TIP**	**MAX**
AVAILABLE			2
Digital Inputs Type		Contact	
Frequency			3 Hz
Electrical characteristics		See: Safety instructions Nr. 09 of 10 December 2013	
DIGITAL OUTPUTS	**MIN**	**TIP**	**MAX**
Digital Outputs Type		Open collector	
AVAILABLE			4
Electrical characteristics		See: Safety instructions Nr. 09 of 10 December 2013	
LOCAL OPTICAL INTERFACE			
Speed, data bits, parity, stop bits		9600,8, n,1	
COMMUNICATION			
Protocol		UNI TS 11291-3 (CTR)	
Communication vectors		GSM data, GSM SMS, GPRS	
Data link		Scheduled Call to the centre; configuration; missing data download, archive, date / time alignment.	
Firmware update		Via local port or remotely. Check CRC32	
FUNCTIONAL			
Calculation of conversion factor		UNI EN 12405-1	
Calculation of compressibility		UNI EN ISO 12213-3 (SGERG-88)	
		UNI EN ISO 12213-2 (AGA8-DC92)	
		AGA NX-19	
Energy calculation		UNI EN 12405-2	
Calculation of higher calorific value [3]		UNI EN ISO 6976:2008	

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[2] MID certified fields. Other fields are available without metric certification.

[3] If the compressibility calculation is set according to AGA8-DC92.

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8   Ex Safety Parameters

Digital Inputs										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	6,5mA	10mW	N.A.	N.A.	N.A.	100µF	1H	N.A.	N.A.
Digital Outputs										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	6,5mA	10mW	15V	N.A.	N.A.	100µF	1H	≈0	≈0
Input for Analog pressure sensor (1)										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	151mA	227mW	N.A.	N.A.	N.A.	100µF	1mH	N.A.	N.A.
Input for digital pressure sensor (2)										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	70mA	105mW	N.A.	N.A.	N.A.	100µF	1mH	N.A.	N.A.
Input for SPI / I2C digital sensor										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	82mA	123mW	N.A.	N.A.	N.A.	100µF	1mH	N.A.	N.A.
Input for temperature Transducer										
Parameter	**Uo**	**Io**	**Po**	**Ui**	**Ii**	**Pi**	**Co**	**Lo**	**Ci**	**Li**
Valore	6 Volt	26mA	39mW	N.A.	N.A.	N.A.	100µF	1mH	N.A.	N.A.

(1)   The following transducer types can be connected to this channel:
STS   TD GAS
STS   TM EX
GEMS   563966
GEMS   564280
TECLAB GSE-03
TECLAB TL01
TECLAB GSE/03/1
FAST   GSE-03
FAST   TL01
FAST   GSE/03/1

Or any ATEX certified transducer with characteristic parameters compatible with the values indicated above.
(2)   A transducer of the following type can be connected to this channel t:
HUBA   528
Or any ATEX certified transducer with characteristic parameters compatible with the values indicated above.