



PTZ-BOX 5.0

Gas volume and energy electronic conversion device with integrated 4G modem

Presented by René Tietz

PTZ-BOX 5.0 for PTZ, PT or T conversion of gas volume

- ✓ designed to measure volume, energy and flow of gas.
- ✓ Primarily battery powered with the possibility to connection to an external power supply.
- ✓ converts the volume of gas counted by various types of gas meter (turbine, rotary, diaphragm) into base conditions.
- ✓ Method of Gas compressibility factor is calculated with: SGERG-88, MGERG-88, AGA8-92DC, AGA8-G1, AGA8-G2, AGA NX-19 mod or constant value of relative compression factor.
- ✓ Designed with intrinsic safety, ready to be installed in explosive hazardous zone 0



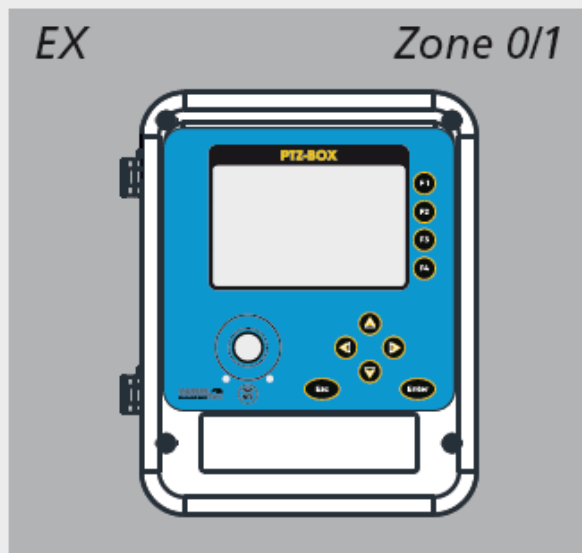
Main features of the PTZ-BOX 5.0

- ✓ Industrial housing cooperates with various types of counting inputs: by LF, HF, NAMUR, ENCODER or Wiegand
- ✓ 4 independent serial transmission ports: 2 x RS-485 + optical interface 62056-21
- ✓ Built-in 4G/IoT modem (optional available)
- ✓ Backlit graphic display
- ✓ 5 configurable binary Ex inputs
- ✓ 2 configurable binary NAMUR Ex inputs on battery mode
- ✓ binary and frequency outputs
- ✓ Internal or external pressure transducers available
- ✓ 10 years of archivable registered data storage (monthly sampling interval)



Communication via optional Modem

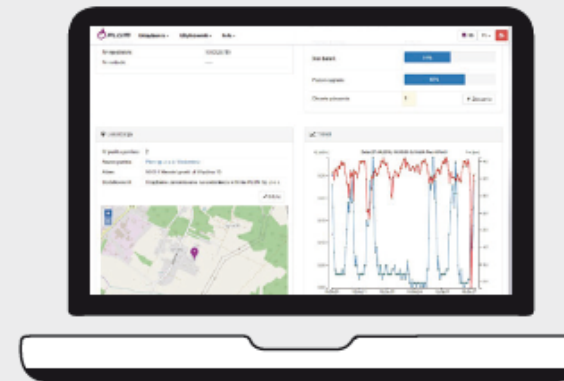
Direct transfer of data to system – Data readout through internal GSM/GPRS modem with the use of internal batteries



4G/IoT



**SCADA or
Billing System**



Local readout and configuration

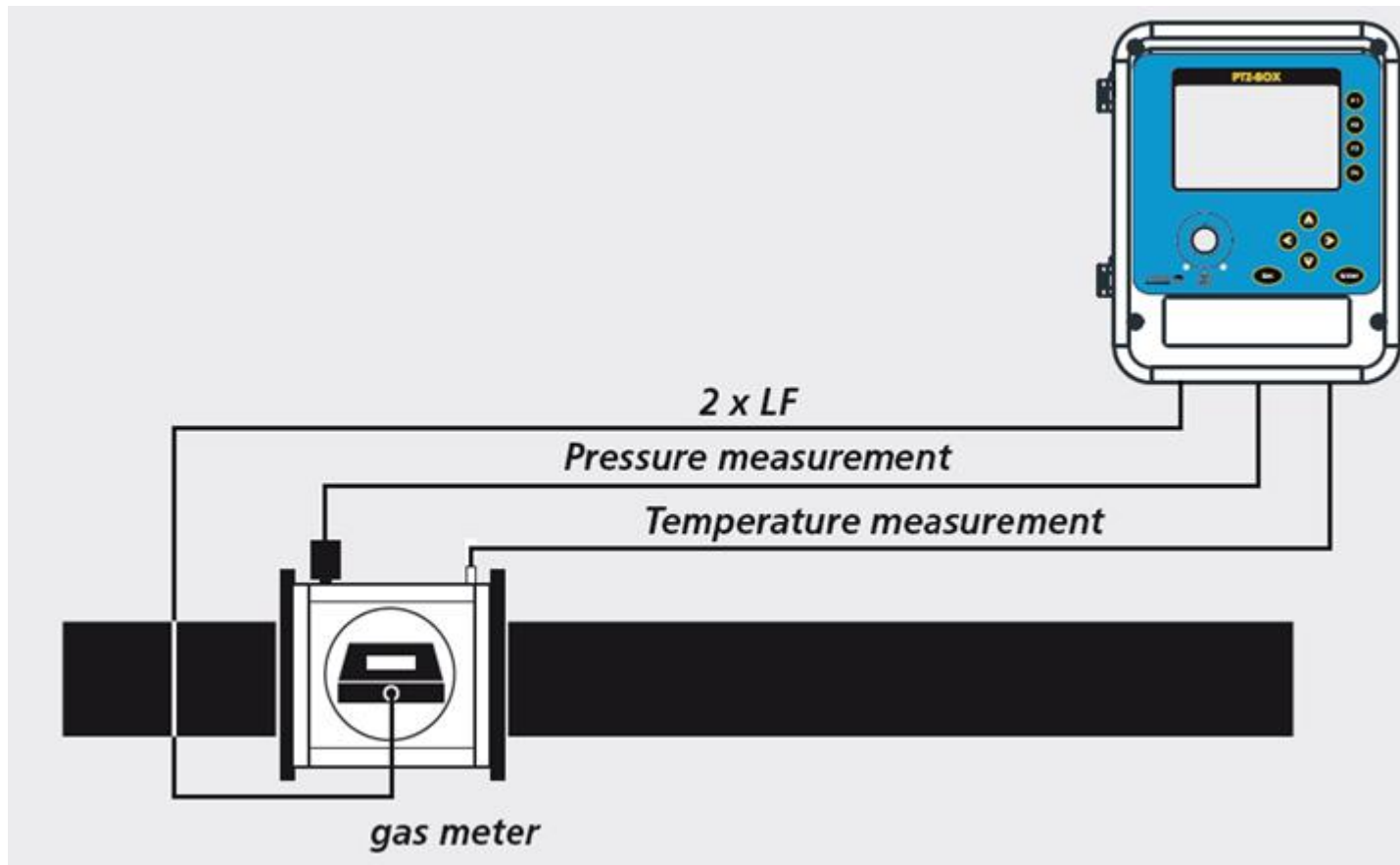
Local readout and configuration



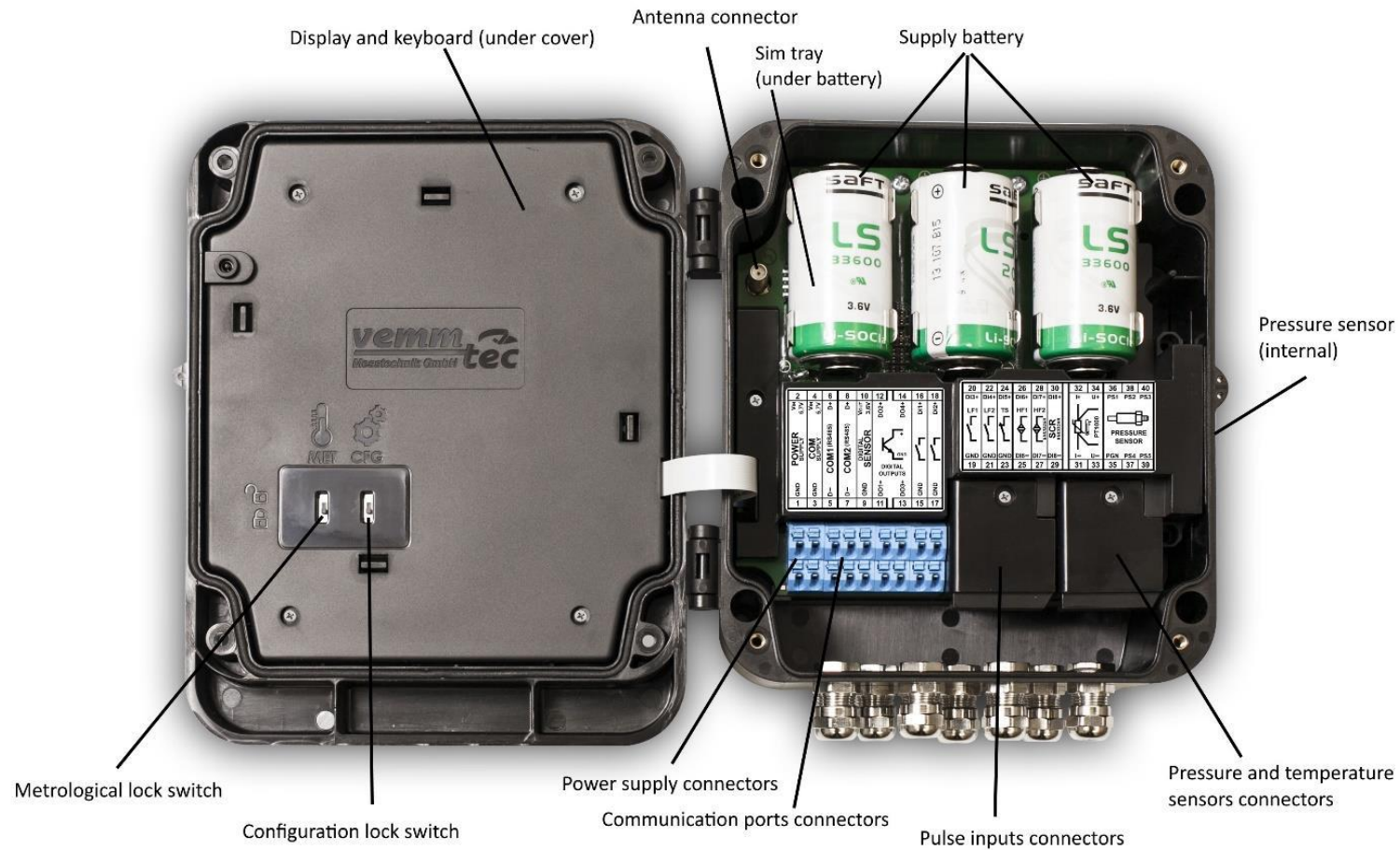
Optical Interface



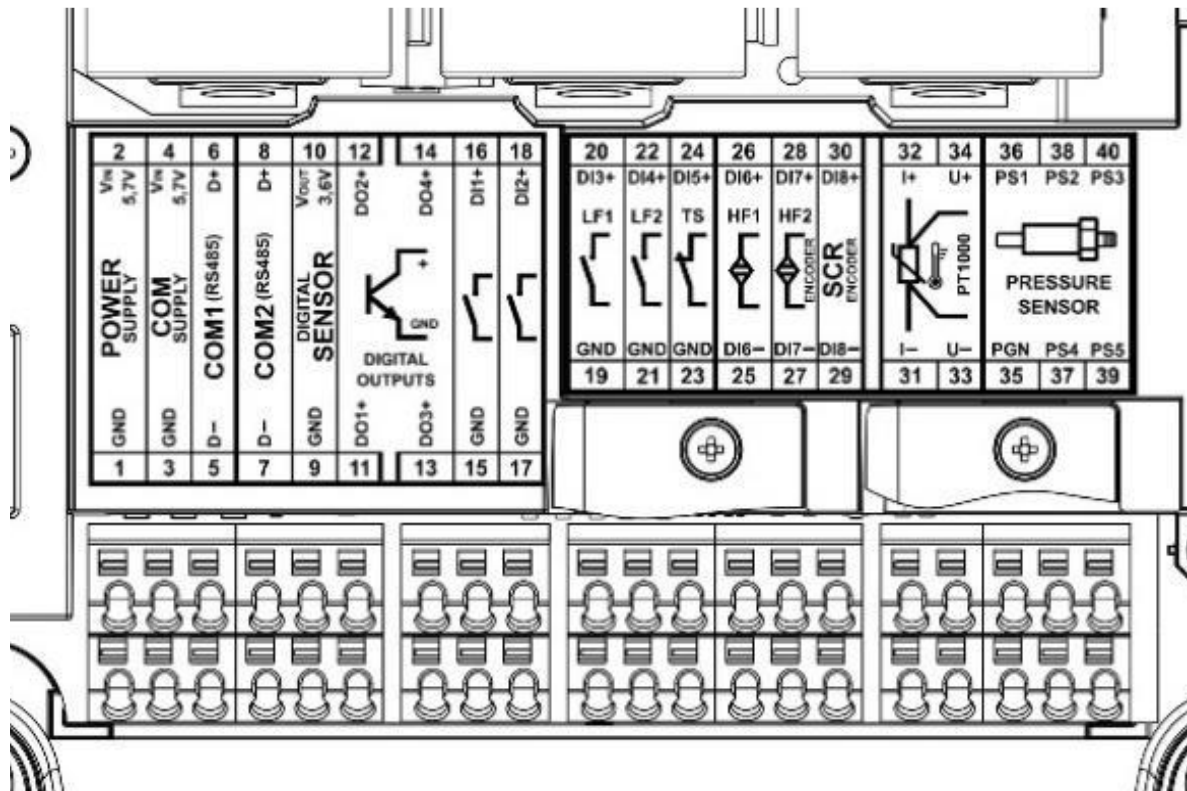
Process of Measurement with Battery mode



Device Overview



I/O Interface board



- 1, 2 - input of external power supply,
- 3, 4 - input of external power supply for transmission ports,
- 5..8 - transmission ports COM1 and COM2,
- 9..10 - power output for external reserve transducers,
- 11..14 - controlling outputs, "open-collector" type,
- 15..18 - digital inputs DI1 and DI2,
- 19..22 - pulse inputs LF1 and LF2 from gas meter (optional digital inputs DI3 and DI4),
- 23, 24 - tamper switch input from gas meter (optional digital input DI5),
- 25, 26 - pulse input HF1 from gas meter (optional digital input DI6 in NAMUR standard),
- 27, 28 - pulse input HF2 from gas meter (shared with encoder input and with digital input DI7 in NAMUR standard),
- 29, 30 - input of SCR encoder or DI8 digital input,
- 31..34 - Pt1000 temperature sensor terminals,
- 35..40 - terminals for connection of external pressure sensor P1 or P2.

Power Supply / Batteries



The device is powered from 1 up to 3, lithium 3,6V size D internal batteries.

Batteries – depending on Customer order – can be designed to supply:

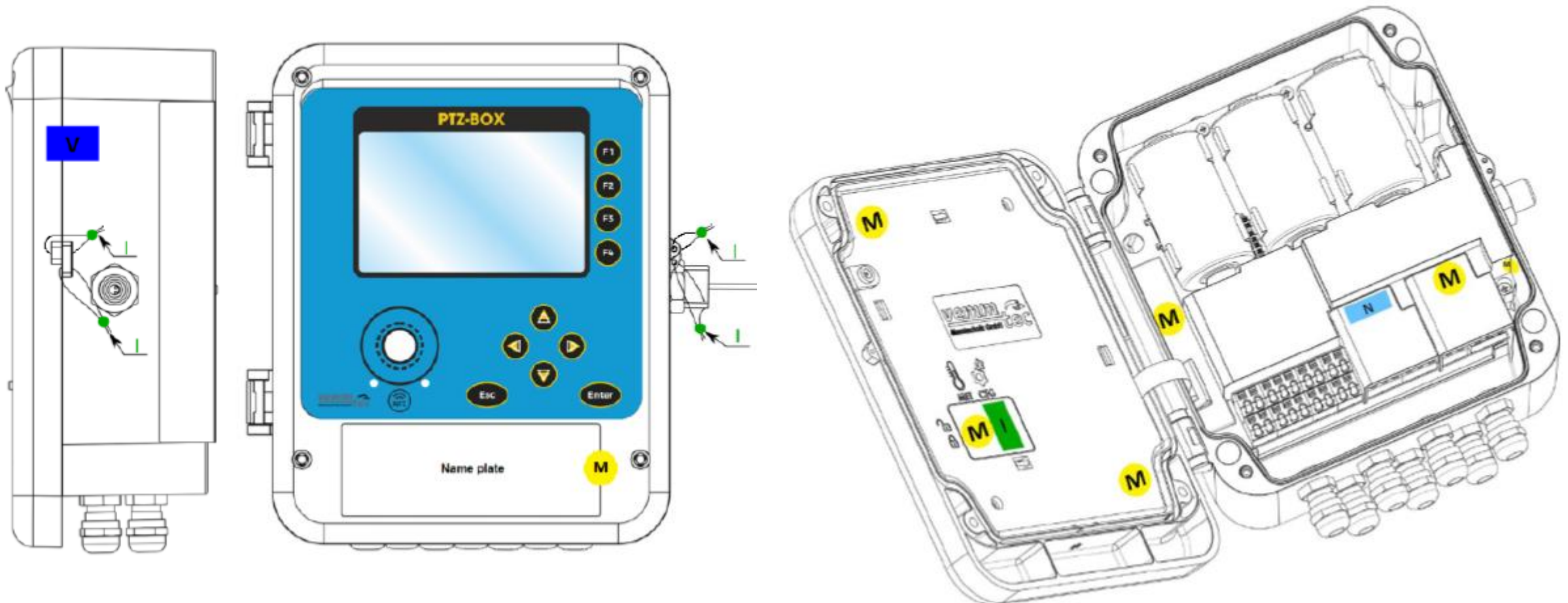
- complete device, without built-in GSM modem (1 ÷ 3 batteries),
- built-in GSM modem (optional) (1 ÷ 2 batteries).

Life time of device equipped with 1 battery is over 5 years, assuming:

- registration period set on 60 min,
- all of outputs, digital inputs and transmission ports (wire without terminators) are inactive,
- LCD display is constantly switched off, keyboard not used,
- operating temperature equals minimum of ambience temperature, -25° C,
- provided maximum pulses frequency on LF input (2 Hz),

When battery charge reaches 10% of its remaining capacity, an alarm will be generated (*Battery low*), it's recommended then to perform battery replacement procedure.

Sealing of Device



M – MID sealing mark **I** – installer seal **N** – seal according to national regulations

Nameplates

CE 1026 FTZU 17 ATEX 0165X **Ex II 1G Ex ia IIB T4 Ga**
ATTENTION!
 > Electrostatic hazard - do not rub
 > Types of batteries and electrical parameters
 - see EU type examination certificate
 > When using batteries type EVE ER34615 range
 of temperature is limited to $(-25 \leq T_{amb} \leq 50) ^\circ C$
 > More parameters - see the display

vemmtec Gartenstrasse 20, 14482 Potsdam, Germany

Environmental class: 0



Device is ATEX approved by FTZU for use in potentially explosive atmospheres.

Certificate: FTZU 17 ATEX 0165X

Load recorder and maximum load
 $f_{max} = 5 \text{ kHz}$

Volume conversion device PTZ-BOX 5.0

Gas temperature:
 $t: (-30 \div 70) ^\circ C$
 Gas pressure:
 $p1: (4 \div 20) \text{ bar abs}$
 $p2: (0 \div 6) \text{ bar G}$
 $(-25 \leq T_{amb} \leq 70) ^\circ C$
 Date: 2019 IP66

CE M 19 1440
 EC-type examination certificate:
 DE-19-MI002-PTB006
 EN 12405-1 MPE at ref. cond. $\pm 0,5\%$

vemmtec Potsdam Germany

s/n: 1234567890



7654321

Device is MID approved by PTB

Certificate: DE-19-MI002-PTB006

Metrological properties – Temperature measurement

- Measurement range: $-40\text{ °C} \div +80\text{ °C}$,
- Transducer - platinum resistor Pt1000 class A, CT6A
- Connection cable with 4- or 2- wires, 2 m (standard), max 10 m
- Measuring resistor is galvanically isolated from the housing,
- For mounting of sensor in thermometer sleeve is used connector with thread M20×1,5.

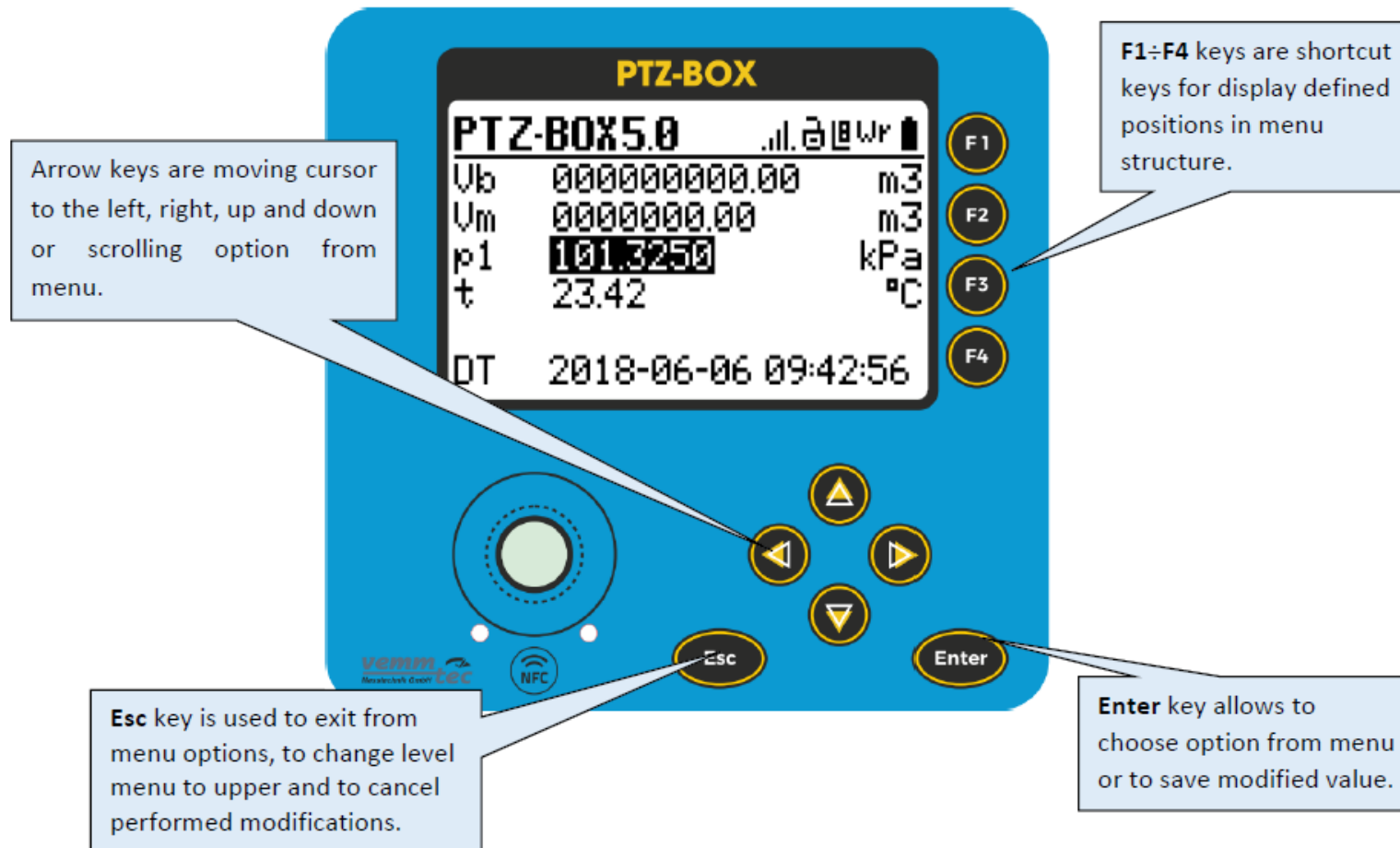
Measuring range:	Maximum permissible errors for measurements of t^1	
	Ambient temperature	
	20 °C ($\pm 3\text{ °C}$)	($-25 \div 70$) °C
Measurement of gas temperature t		
($-30 \div 70$) °C	$\pm 0,1\%$	$\pm 0,2\%$

¹ – values of errors referred to correct values of temperature, expressed in [K].

Metrological properties – Pressure measurement

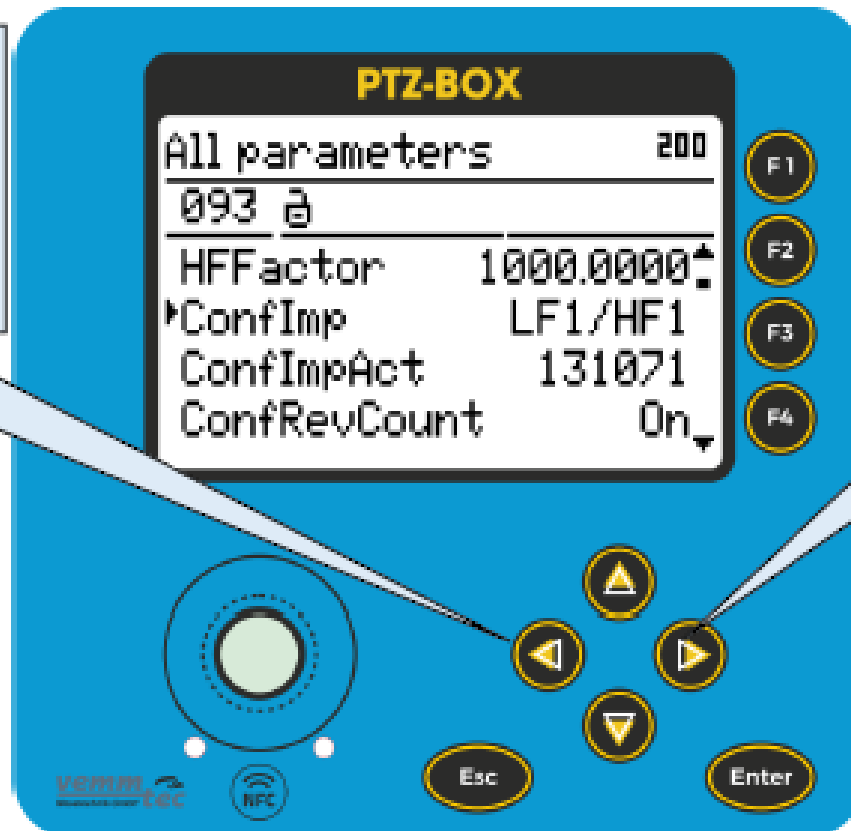
Measuring ranges:	Maximum permissible errors for measurements of p1 and p2	
	Ambient temperature	
	20 °C (± 3 °C)	(-25 $\div$ 70) °C
Measurement of gas pressure p1 (for billing) or p2 (auxiliary, optional)		
(0,8 $\div$ 6) bar abs (0,8 $\div$ 10) bar abs (2 $\div$ 10) bar abs ² (4 $\div$ 20) bar abs ² (7 $\div$ 35) bar abs ² (4 $\div$ 70) bar abs ²	$\pm 0,2$ % of measured value	$\pm 0,5$ % of measured value

Operation – The keyboard



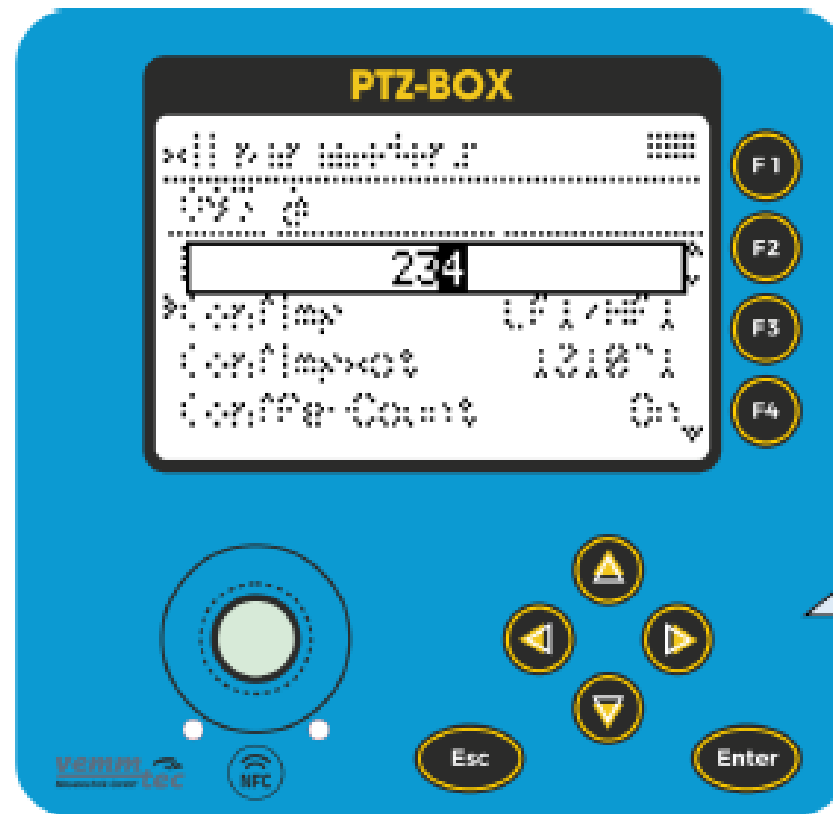
Operation – The keyboard

While browsing current parameters of the device, pressing cursor  displays parameter search window



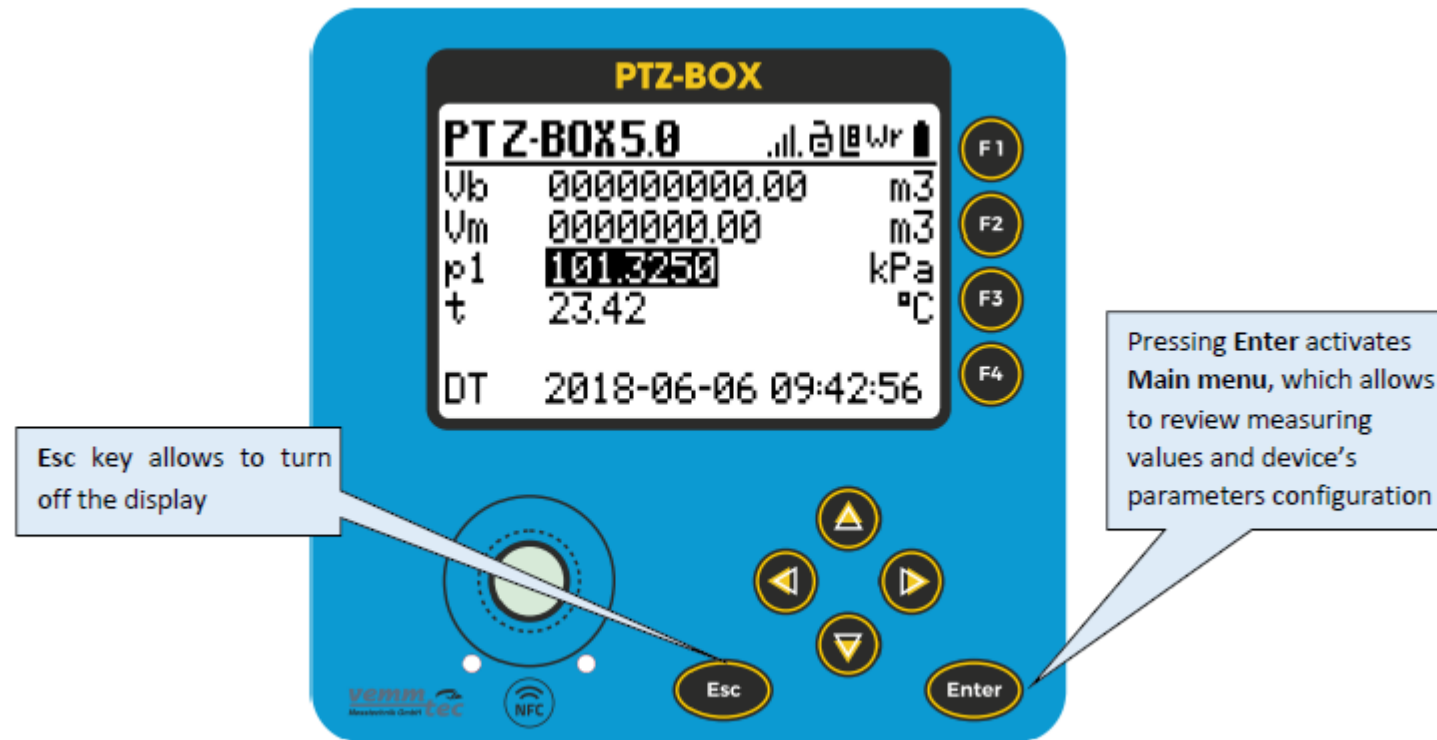
Cursor  displays a detailed info window with the selected parameter

Operation – The keyboard



Cursors   change the searched parameter's index digit, cursors   change value of the digit, **Enter** key confirms and **Esc** cancels the parameter search

Operation – The keyboard

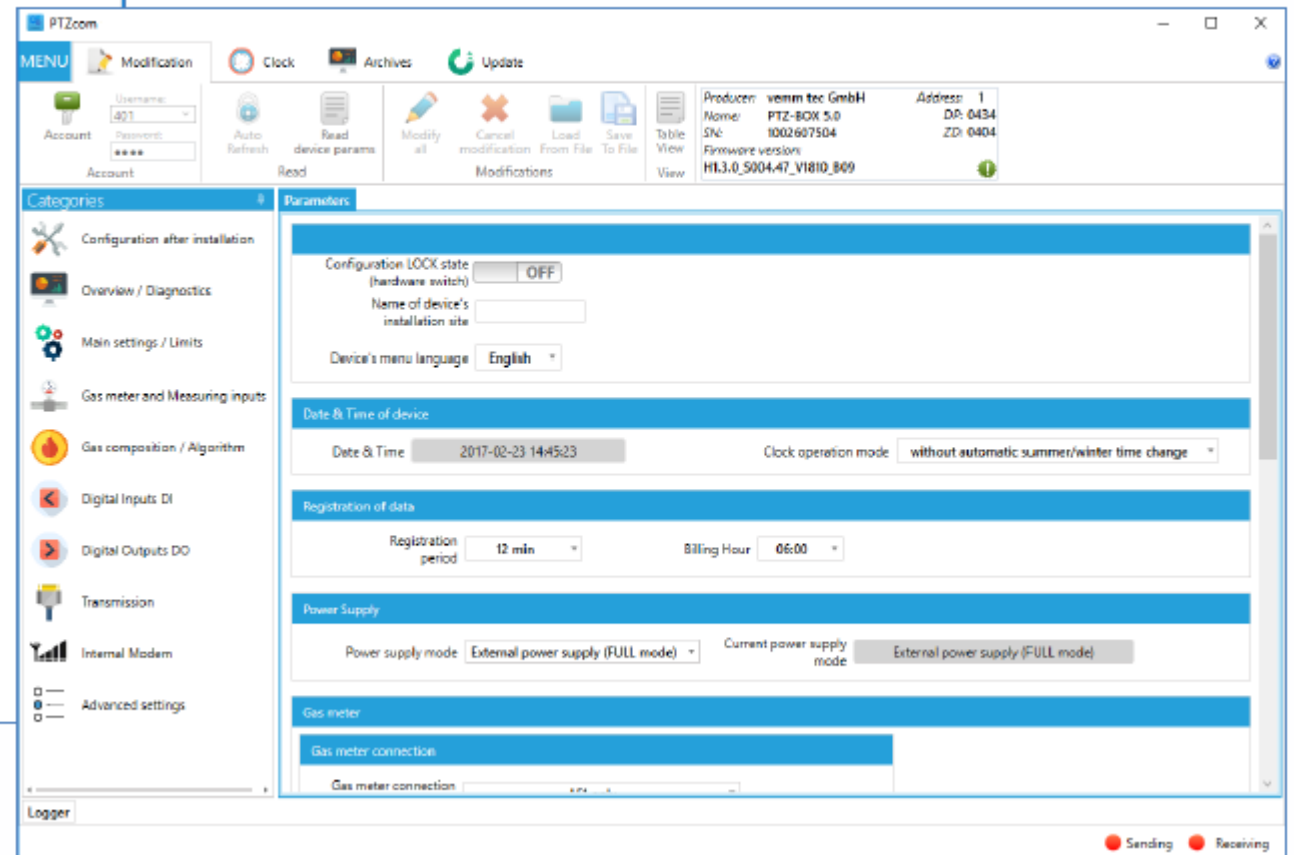
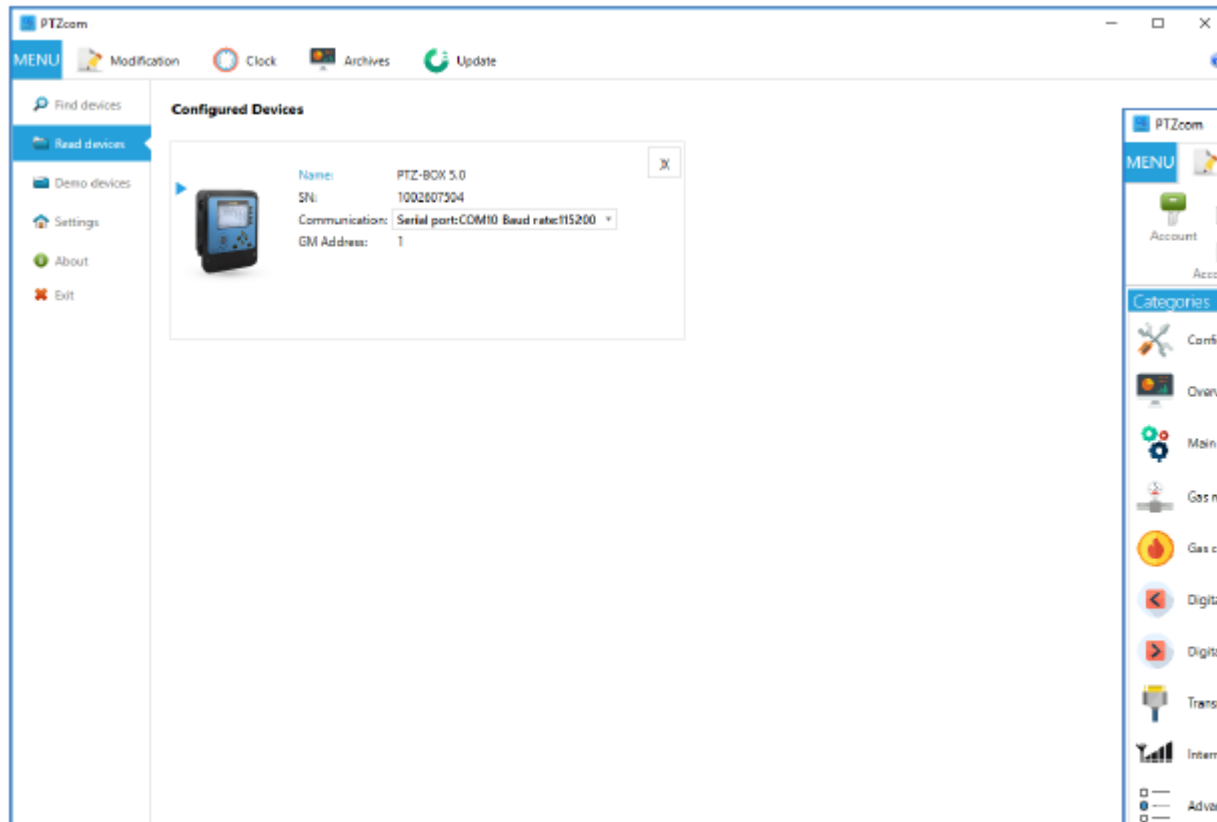


Signals of operation state

	Battery 10-100% (the icon changes its filling depending on the percentage of battery charge)
	Battery discharged or close to discharge: <10%
	External supply
	Hardware configuration lock ON (both locks MET and CFG are ON)
	Hardware configuration lock OFF (MET or CFG is OFF)

	User logged locally (in this example – level 4 of privileges)
	Active alarms or events, pulsation – new alarms /events
	Active events, pulsation – new events
	No active alarms, pulsation – there were unchecked alarms/events that have ended
	Modem signal reception strength (in this example – 4 out of 5 bars)
	Device has MID-compatible software and has active protection of MID parameters
	Device has MID-compatible software but has inactive protection of MID parameters

PTZcom – Software for Configuration



PTZcom – requirements

PTZcom can be used on Personal Computers which meets below requirements:

- Operating system: Microsoft Windows Vista/7/8/8.1/10
- Software:
 - Microsoft NET.Framework 4.5.2 or higher
- Hardware :
 - for cable communication: USB or RS232 or RS485 or Ethernet communication port
(type of required communication port depends on type of converter used for cable connection between computer and device).

PTZcom – User Accounts

Predefined accounts

Username	Password	Set as default	
301	••••	☐	
401	••••	☒	

Add

Remove

Set producer prefs

Set as default

Save

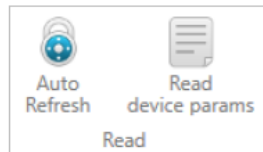
It is possible to set predefined accounts which are needed to configure devices. Every device needs user name and password to make configuration possible. So this setting makes possible to set user password for his devices to avoid necessity of set password during configuration of every device. It is also possible to set default account which will be used for every next readout device.

PTZcom – Modification tab

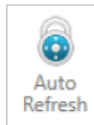
Modification tab is related to device configuration.

MENU		Modification		Clock		Archives		Update	
Account Username: 401 Password: •••• Account		Auto Refresh Read device params Read		Modify all Cancel modification Modifications		Load From File Save To File		Table View View	
								Producer: vemm tec GmbH Address: 1 Name: PTZ-BOX 5.0 DP: 0434 SN: 1002607504 ZD: 0404 Firmware version: H1.3.0_S004.48_V1810_B09	

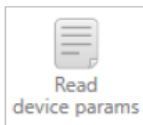
PTZcom – modification tab



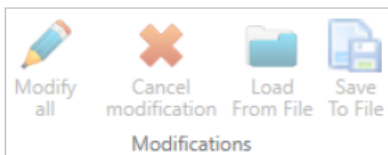
Read section is related to readout of device configuration.



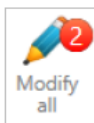
Auto Refresh button makes possible automatic re-readout of device configuration. Application starts new readout instantly after the end of previous readout. This functionality is available not for all devices and not for every view.



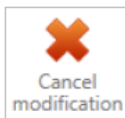
Read device params button makes possible readout of device configuration on demand.



Modifications section is related to changes of configuration of device.

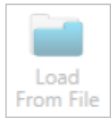


Modify all button is being enabled when some device configuration was set to be changed in device. It is required to click this button to save new configuration in device. The number in red circle shows amount of parameters to be modified (if some parameters exists in the device's profile more than once it also will be counted here). If clicking Modify all button doesn't cause any change, it means that authentication parameters was wrong.

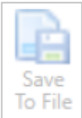


Cancel modification button is being enabled when some device configuration was set to be changed in device. It is required to click this button to cancel intention of configuration change.

PTZcom – modification tab



Load From File button makes possible to see previously saved configuration. For now this functionality is not available.



Save To File button makes possible to save device configuration to file. For now this functionality is not available.



View section with **Table View** button makes possible to change view of device configuration between Profile view (button disabled, see **MODIFICATION TAB – PROFILE VIEW** chapter) and Table view (button enabled - marked by blue, see **MODIFICATION TAB – TABLE VIEW** chapter).

Producer: vemm tec GmbH Address: 1
Name: PTZ-BOX 5.0 DP: 0434
SN: 1002607504 ZD: 0404
Firmware version:
H1.3.0_S004.48_V1810_B09 

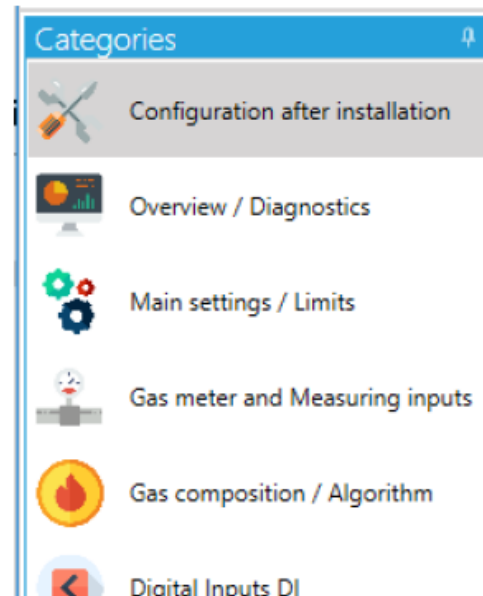
This section shows device's identifier, like **Name**, serial number (**SN**), communication **Address**, **Firmware version** etc.

Producer: vemm tec GmbH Address: 1
Name: PTZ-BOX 5.0 DP: 0434
SN: 1002607504 ZD: 0404
Firmware version:
H1.3.0_S004.48_V1810_B09 

 Green exclamation mark icon shows additional information of device's identifier.

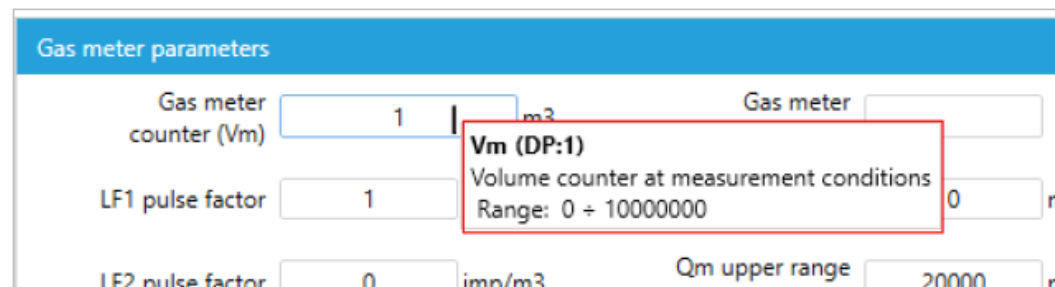
MID0.00_M02.03_MR004.11_R004.11
MM005_U04129_L00(EN)
TL0_GLO
2017-02-19
LL8

PTZcom – configuration



Categories section it is a list of groups of device's parameters which are related by their functionalities. It makes easier to find parameter to change it.

The way how Categories section looks like depends on device functionalities.



When mouse cursor is put on some parameter, application shows its **description** (marked in red on the picture), name of this parameter (e.g. Vm) and position in DP table (e.g. DP:1) (see **MODIFICATION TAB – TABLE VIEW** chapter)

PTZcom – configuration

LF1 pulse factor imp/m3

Editable **Text box** contains short name of the parameter (e.g. LF1 pulse factor), value of parameter (e.g. 0,1) and its unit (if parameter has units, e.g. imp/m3).

LF1 pulse factor imp/m3

If value of parameter was changed (but before modification in device) value box changes its colour to orange. After modification (see **Modify all** button in **MODIFICATION TAB** chapter) it backs to white with new value.

Atmospheric pressure bar

Non-editable **Text box** shows value of parameter which is read only. This box occurs also in version where value is converted to text.

State

Schedule #1 ☒

ON/OFF switch box makes possible to enable (ON) or disable (OFF) some device functionality.

Schedule #1 ☐

LF1 pulse factor

Dropdown list box contains short name of parameter and list of possible settings of this parameters.

LF1 pulse factor
0,01 m3/pulse [100 pulses/m3]
0,1 m3/pulse [10 pulses/m3]
1 m3/pulse [1 pulse/m3]
10 m3/pulse [0,1 pulse/m3]

Dropdown list box also makes possible to show other boxes depending on setting chosen from the list.

Pulse inputs configuration
LF input time between pulses

Pulse inputs configuration
Current HF/LF pulses ratio

PTZcom – configuration with table view

It should be remembered that this user manual describes functionalities available in table view for devices configuration. This manual doesn't describe the way how devices works or how they can be configured.

Table View of device configuration shows all **DP table** of device. It's a list of all **Device Parameters** for configuration and current data of device. This view also supports device configuration modification but unlike Profile view, it requires knowledge about how parameters can be changed (meaning of values).

Table View is a default view for devices which are not supported as Profile view.

Account

Username:
401
Password:
••••

Account

Auto Refresh

Read device params

Read

Modify all

Cancel modification

Load From File

Save To File

Modifications

Table View

View

Producer: vemm tec GmbH

Address: 1

Name: PTZ-BOX 5.0

DP: 0434

SN: 1002607504

ZD: 0404

Firmware version: H1.3.0_S004.48_V1810_B09

Parameters

Drag a column header and drop it here to group by that column

Index	Name	Unit	Actual Value	New Value	Long Description
0	Vb	m3	0		Volume counter at base conditions
1	Vm	m3	0		Volume counter at measurement conditions
2	V2	m3	0		Control volume counter at measurement conditions
3	E	kWh	0		Energy counter
4	M	kg	0		Mass counter
5	Vme	m3	0		Emergency volume counter at measurement conditions
6	Vbe	m3	0		Emergency volume counter at base conditions
7	Fe	kWh	0		Emergency energy counter

Many thanks for your attention



***Your Partner for Volume- and Energy
MeasureMent Technology***



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