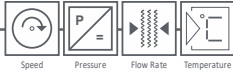


# INSTRUCTION MANUAL IM 326-00 E

Device: Flow Computer GDR 1530-0000-0000  
Content: Instruction manual  
Rev. No.: IM 326-00 E V0.4-2023-08-11, FW G12.02

Rev.-Nr.: IM 326-00 E V0.4-2023-08-11, FW G12.02



## User information

- Read the operating instructions completely before installing or operating the device for the first time.
- Pay attention to all important notes and warnings in this document.
- Please refer to the nameplate for the serial number of the device, which you will need to order spare parts, and the correct voltage supply. You will find it on the outside of the device.
- Installation, commissioning, operation and maintenance may only be carried out by a qualified electrician. The guidelines applicable at the installation site must be observed.
- For reasons of personal safety, maintenance work may only be carried out when the device is de-energized.
- To ensure operational safety, only original spare parts from the manufacturer may be installed.
- If the device is not used for its intended purpose, any claims under warranty and product liability become invalid. In particular, improper use is deemed to have occurred if the information in the operating instructions was not observed during installation, commissioning, operation and maintenance.
- The device must be integrated into the lightning protection concept of the system operator.



**Please note that the device must always be used in accordance with the operating instructions. Any deviations will invalidate the operating safety.**

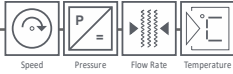
Technical developments may result in deviations from this document. If you require further information or if special problems arise which are not dealt with in detail in these operating instructions, you can obtain information at the following address:

## Imprint

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Internet: [www.esters.de](http://www.esters.de), [www.fluidistor.de](http://www.fluidistor.de)

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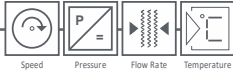
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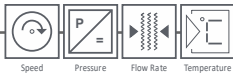
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## List of abbreviations

EP	Enumeration parameters
NP	Numerical parameters
FS	Factory settings



## 1 Common

The actual gas quantity of the gas flow meter GD 300 (Ex) / GD 500 (Ex) is calculated by the 1-channel flow computer GDR 1530.

On an hourly or minutely basis, the current gas quantity can be displayed in cubic meters or liters. The totalizer of the total quantity can be displayed either in cubic meters or in liters. The counter can have 9 digits up to 999 million cubic meters. The resolution is 0.1 liters.

2 different inputs are available for the input signal.

### Gas flow meter GD 300 (Ex)/ GD 500 (Ex):

1. Direct connection of the platinum wire sensor (NON-ATEX)
2. Connection of the HB 300 Ex (ATEX area)

The current output 0(4) - 20 mA indicates the current flow in the form of operating or standard cubic meters. Two limit values are available for limit value monitoring. Flow rate, device status or error messages can be passed on to superior PLC system via 2 semiconductor relays.

In addition to a pt100 input, the devices also have mA inputs for pressure and temperature sensors as well as an integrated barometric sensor for recording the atmospheric pressure.

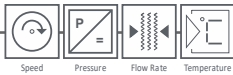
The standardization can be performed according to the standards DIN 1343, DIN 6358, DIN ISO 2533 or DIN 102 / ISO 1-1975.

The Modbus RTU bus systems are available as an option for data transmission.

## 2 Technical data

### 2.1 Input

FLOW RATE	- Input for platinum wire sensor (GD 300/GD 500) (only NON-ATEX) or
FLOW RATE IMPULSE INPUT	- Impulse input for HB 300 (Ex) (GD 300 (Ex)/GD 500 (Ex)) Definition of minimum threshold to distinguish between gas flow and standstill possible (creeping quantity suppression).
The following inputs are integrated for connecting external sensors for pressure and temperatures:	
TEMPERATURE	- 4 - 20 mA, 2 wire = -100 - 999 °C (17 bit) or - Pt100, 3 wire (17 bit)
PRESSURE	4 - 20 mA, 2 wire = 0 - 1000 bar (17 bit)



## 2.2 Output

OUTPUT	0 (4) - 20 mA = 0 - (x) Bm <sup>3</sup> /h, l/h, Bm <sup>3</sup> /min, l/min, Nm <sup>3</sup> /h, NL/h, Nm <sup>3</sup> /min, NL/min) flow rate (freely programmable), input resistance 500 Ohm
--------	---

## 2.3 Relays

K1:	Relay (NO) freely programmable <ul style="list-style-type: none"> <li>- pulse output (0,1, 1 oder 10 oder 100 m<sup>3</sup> per impulse, freely programmable), counter output quantity <u>or</u></li> <li>- limit value <u>or</u></li> <li>- device status</li> </ul>
K2:	Relay (NO) freely programmable <ul style="list-style-type: none"> <li>- pulse output (0,1, 1 oder 10 oder 100 m<sup>3</sup> per impulse, freely programmable), counter output quantity <u>or</u></li> <li>- limit value <u>or</u></li> <li>- device status</li> </ul>

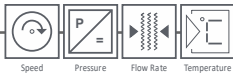
## 2.4 Electrical values

ACCURACY	± 0,05 % EW ± 1 Digit with 23°C
POWER SUPPLY	<ul style="list-style-type: none"> <li>- 24 V, DC ± 3 V , max. 200 mA (Standard)</li> <li>- 100 - 240 V, AC, 0,33 - 0,14 A, max. 47 - 63 Hz (optional, Retrofit kit)</li> </ul>

## 2.5 Environmental influences

AMBIENT TEMPERATURE	-10 to +55°C
STORAGE TEMPERATURE	-20 to +85°C
TEST VOLTAGE	3 kV
HUMIDITY CLASS	E-DIN 40040
ELECTROMAGNETIC COMPATIBILITY	acc. to EN 50082-2

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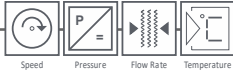


## 2.6 Display, housing, weight

LCD DISPLAY	4 rows à 20 characters Size: 66 x 40mm, font size 4.8 mm Display colour: black on white
DATE	Acc. to ISO8601/EN28601
COUNTER PULSES	Max. 999.999.999.999.999 Pulse (1*10 <sup>18</sup> - 1 pulse), resolution 1 pulse (In the event of a counter overflow, the counter starts at zero.)
PULSE OUTPUT	0,001 - 1.000.000 m <sup>3</sup> /pulse, resolution 1l/pulse Max. 10 pulses/s for Bm <sup>3</sup> or Nm <sup>3</sup>
FLOW „OPERATIONAL“	Max. 100 Bm <sup>3</sup> /s, 360.000 Bm <sup>3</sup> /h
FLOW „STANDARDIZED“	Max. 1.000 Nm <sup>3</sup> /s, 3.600.000 Nm <sup>3</sup> /h
COUNTER OPERATING QUANTITY STANDARDIZED QUANTITY	Max. 99.999.999.999.999,9999999 m <sup>3</sup> (<1*10 <sup>15</sup> ) resolution 0,1cm <sup>3</sup> Display: 99.999.999.999.999,9 m <sup>3</sup> or Nm <sup>3</sup> (In the event of a counter overflow, the counter starts at zero.)

## 2.7 Housing

STANDARD HOUSING WALL MOUNTING	Dimensions: 151 mm (W) x 125 mm (H) x 60 mm (D) Material: polycarbonate UL 94 V0 Protection class: IP 65 Weight: approx. 600 g
HOUSING OPTIONS	<ul style="list-style-type: none"> <li>- mounting parts for DIN rail mounting</li> <li>- fixing parts for direct mounting on gas flowmeter GD 300 (only NON ATEX applications)</li> </ul>



### 3 Device codes

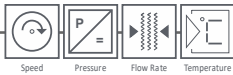
GDR 1530-0000-0000	
<b>Inputs</b>	
1: Flow rate: input for platinum wire sensor (GD 300/GD 500) (only NON-ATEX) <u>or</u>	•
1: Flow rate: impulse input for HB 300-R000000 (GD 300/GD 500), HB 300 Ex-R000000 (GD 300 Ex/GD 500 Ex)	•
2: Temperature <sup>1)</sup> : 4 - 20 mA, 2 wire = -100 - 999 °C (17 bit) <u>or</u>	•
2: Temperature (Pt100) <sup>1)</sup> : 3 wire (17 bit)	•
3: Pressure <sup>1)</sup> : 4 - 20 mA, 2-Leiter = 0 - 1000 bar (17 bit)	•
<b>Output</b>	
1: 4 - 20 mA = 0 - (x) Bm <sup>3</sup> /h, l/h, Bm <sup>3</sup> /min, l/min, Nm <sup>3</sup> /h, NL/h, Nm <sup>3</sup> /min, NL/min) flow rate (freely programmable), input resistance 500 Ohm	•
<b>Relay</b>	
K1 (NO) freely programmable	•
K2 (NO) freely programmable	•
<b>Further Functions</b>	
Limit value monitoring (2 limit values)	•
Integrated barometric sensor	•
<b>Optional Functions</b>	
Modbus RTU	•

<sup>1)</sup>virtual input for freely programmable fixed values

**Table 1: Device codes**

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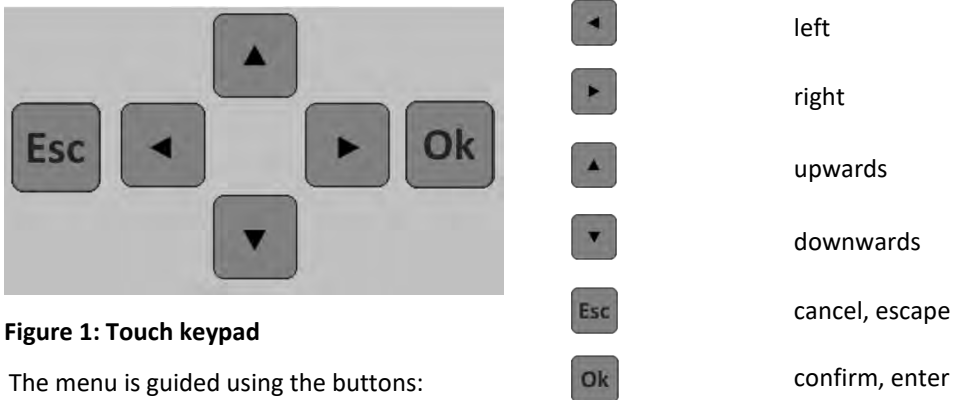




## 4 Operating overview

### 4.1 Touch keypad

The GDR 1530-0000-0000 is programmed directly on the device using the capacitive touch keyboard.

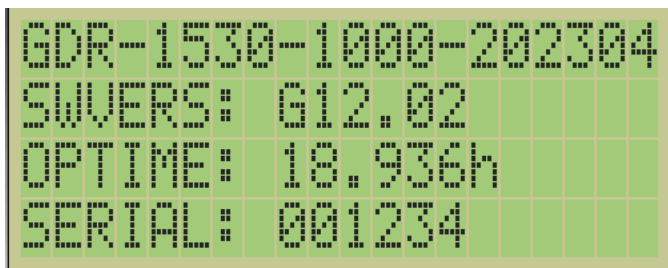


**Figure 1: Touch keypad**

The menu is guided using the buttons:

### 4.2 Display: Device start

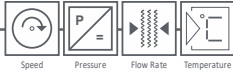
The start-up screen appears when the device is started. After approx. 10 seconds, the device automatically switches to the first LIVE screen.



**Figure 2: Display device start**

The GDR 1530-0000-0000 differentiates between two screen types, the so-called LIVE screen including error messages (ERROR screens) and the PARAMETER screen.

In the LIVE screen, you can display the device information (power-on diagram) by briefly pressing the Enter key (Ok).



### 4.3 Display: LIVE screen

Depending on the device parameterization, corresponding LIVE screens are displayed in relation to the current measured values and settings relating to the connected sensors. Screens that are not relevant to the operating mode of the device are hidden accordingly. The display interval can be set by the user.

A setting of 0 prevents the automatic switchover.

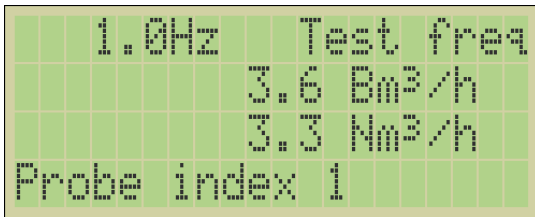


Figure 4: Measurement value flow rate

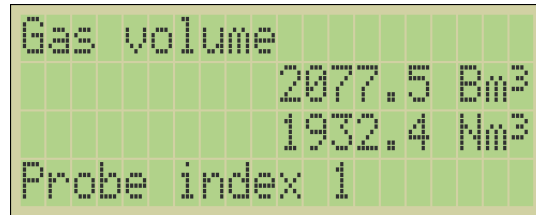


Figure 3: Meter reading

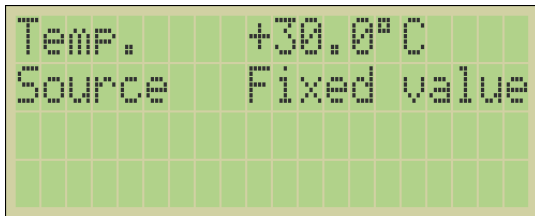


Figure 5: Measurement value temperature

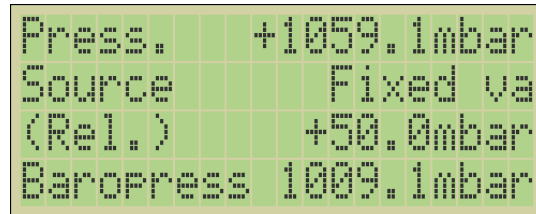


Figure 6: Measurement value pressure

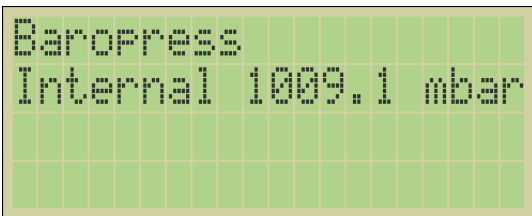


Figure 7: Internal barometric pressure



Figure 8: mA output

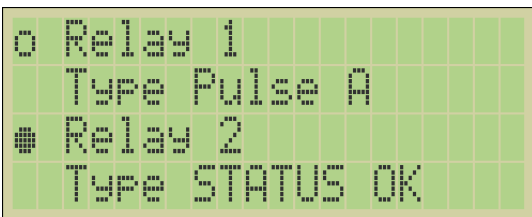


Figure 10: Relay

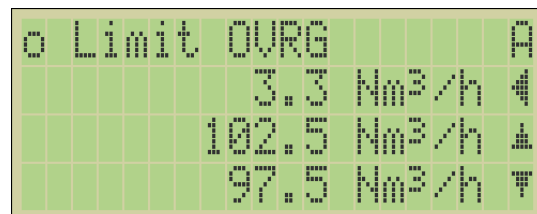


Figure 9: Limit value

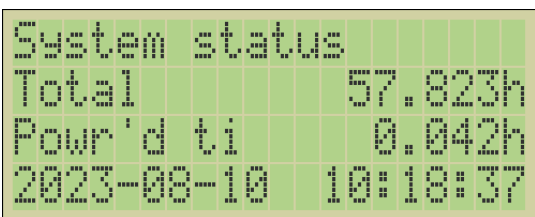
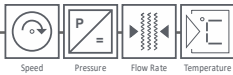






Figure 11: System status

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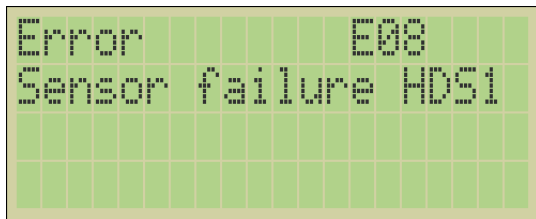


**Navigation in LIVE screen**

	Switch between the LIVE screens
	Within a LIVE screen (e.g. limit value) it is possible to scroll within the screen.
	Back to LIVE screen
	LONG HOLD/ PRESS (approx. 3 seconds) Opening the PARAMETER screen or settings menu

**4.4 Display: ERROR Screens (Error messages)**

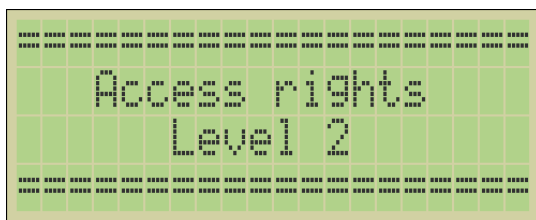
In case of an error, an ERROR screen is appended to the LIVE SCREEN for each active error. If the automatic switching of the LIVE SCREENS is deactivated, the appropriate error screen is automatically displayed when an error occurs. If the error is gone, the system switches back to the last LIVE SCREEN.



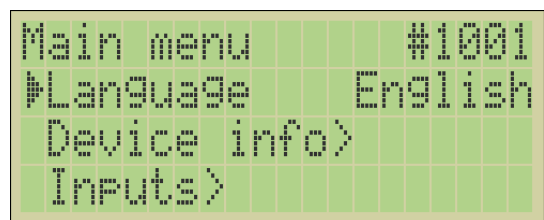
**Figure 12: Error screen**

**4.5 Display: PARAMETER screen (settings menu) and navigation**

The device is parameterized on the PARAMETER screen. Starting from the LIVE screen, you can reach the PARAMETER screen by holding down the ENTER key (3 seconds).



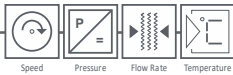
**Figure 14: Displaying the hierarchy level when opening the PARAMETER screen (approx. 3 sec.)**



**Figure 13: Main menu (PARAMETER screen)**

The settings menu or PARAMETER screen opens on a newly delivered device with the write rights of "Access rights Level 2". When opening the menu, the display of the access rights level appears for approx. 3 seconds before switching to the menu.

Within the " Access rights Level 2", the user can make all the necessary system settings for commissioning. A PIN code (PIN1) can be defined to protect the parameters. The PIN assigned ex works is: 10000. The factory-defined PIN code results in the device being "open" and thus access to the parameter setting is not protected. The parameter settings are only protected against unauthorized access after an individual PIN code has been



assigned. When the device is restarted or when the user logs off, the device is downgraded to the "Access rights Level 1". If the keys on the device are unused within 300 seconds, an automatic logout and thus downgrading to access level (1) takes place.

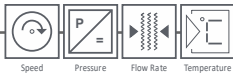
In the "Access rights 1 Level", no changes can be made to the settings. The information is only available in read mode. To change the access rights, logging on to the system is required (see Section ). All other access levels are only accessible by customer service. In the event of such a support case, the customer service representative will instruct you accordingly.

#### 4.5.1 Explanations of the menu (PARAMETER screen)





The main menu is shown as a tree structure. Tree nodes can be setting values (PARAMETERS), commands (COMMANDS) or submenu items. Every parameter and every menu tree node have a unique ID code. A parameter can be "open" (adjustable) or closed (locked). This is indicated by a symbol (open or closed diamond).

Legend	
<b>Unique parameter ID or menu node ID</b>	#1522
<b>Open/ adjustable parameter</b> Parameter can be changed.	▶Festwert +11.000
For better readability, a separator "-" is inserted between the name and value of the parameter in longer texts of open parameters.	▶Relativ/abs#Relativ
<b>Closed/ locked parameter</b> Cannot be changed at the current access level.	▶Festwert◻ +11.000
For better readability, a "space" separator is inserted between the name and value of the parameter in longer texts of locked parameters	▶Relativ/ab◻ Relativ
<b>Command</b>	▶Abmelden
<b>Sub menu</b>	▶Zugriffsrechte>

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#### 4.5.2 Navigation in the menu tree (PARAMETER screen)

Navigation in the menu tree (PARAMETER screen)	
	Switch a menu item down or up
	LEFT: Temporarily hide parameter values Press and hold RIGHT: Load default value for the displayed parameter (if not locked)
	<ul style="list-style-type: none"> <li>- Opens a submenu item</li> <li>- Executes a command or</li> <li>- Edits a parameter <sup>1</sup></li> </ul>
	<ul style="list-style-type: none"> <li>- Goes back one menu level</li> <li>- LONG HOLD/ PRESS Exits menu and returns to LIVE screen</li> </ul>

#### 4.5.3 Setting parameters

Navigate according to the previous explanations to the desired parameter, which you want to adjust and confirm with Enter. The editing mode appears.

A distinction is made between enumeration parameters (EP) and numerical parameters (NP).

For the enumeration parameters, the value can be set using the predefined selection. In the case of numerical parameters, the setting is made by defining the individual digits. Here, the glancing cursor marks the position of the item to be changed.

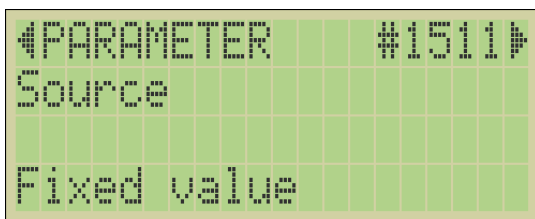


Figure 15: Enumeration parameter (EP)

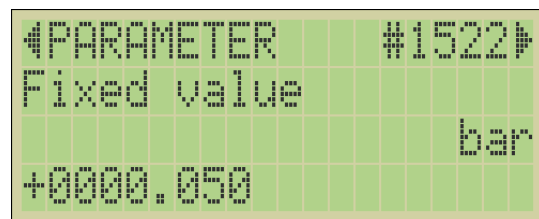
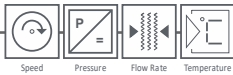






Figure 16: Numerical parameter (NP)

<sup>1</sup> If a parameter cannot be edited due to locking, a parameter info display opens instead.

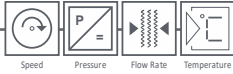


### Navigation in editing mode

	<ul style="list-style-type: none"> <li>- <b>Enumeration parameters (EP):</b> adjust option</li> <li>- <b>Numerical parameters (NP):</b> adjust digits (The cursor marks the digit to be adjusted, flashes alternately with the digit located there).</li> </ul>
	<ul style="list-style-type: none"> <li>- <b>Enumeration parameters (EP):</b> adjust option</li> <li>- <b>Numerical parameters (NP):</b> move cursor</li> </ul>
	<p>Save value and exit editing mode</p>
	<p>Do not save value and exit editing mode</p>

After leaving the editing mode by pressing the OK key (Save), you will be returned to the previous position in the menu tree.

If it was a "chained" parameter, the next following parameter of the chain is opened for editing instead. The chain is interrupted if a parameter is not saved because the menu item was exited with ESC.

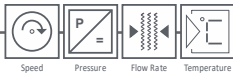


## 5 Menu structure and parameter IDs (PARAMETER screen)

### 5.1 Menu structure: Main menu

ID	MENU STRUCTURE: MAIN MENU
#1001	<b>LANGUAGE</b> The device software has different languages, which can be set according to customer requirements. - - German as factory setting (FS)
#1100	<b>DEVICE INFO</b> Display of relevant device information, e.g. device family, firmware, serial number, ...
#1500	<b>INPUTS</b> Settings related to the connected units, such as flow meter, temperature and pressure sensor.
#2400	<b>OUTPUTS</b> Setting the relay outputs and the current output.
#2900	<b>LIMITS</b> Defining the limit values A and B
#1200	<b>SYSTEM</b> Definition of system settings, such as operating mode, display, LED status, error display, ...
#1900	<b>WIZARDS</b> Selection of wizards, such as quick start via menu ID, restart of the device, reset to factory settings, ...
#1950	<b>ACCESS RIGHTS</b> Functions such as logging in and out of the device in relation to the access levels as well as setting a separate device pin for the access levels 2.
#1300	<b>COUNTER VALUE</b> Display of the quantity and pulse counters

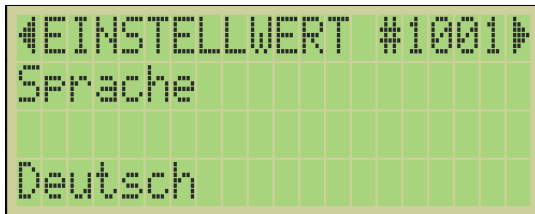
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## 5.2 Menu structure: Language

### 5.2.1 Setting the language: New device

For new devices and devices that have been reset to factory settings, the firmware starts in German. The LANGUAGE setting parameter is opened automatically. The change is made according to the explanations for enumeration parameters from section 4.5.3 Setting parameters.

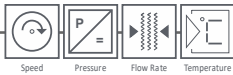


**Figure 17: Language setting for new devices**

### 5.2.2 Setting the language: Configured device.

The language can only be changed in the "Access rights 2 Level". If no PIN code (factory setting (FS): 10000) has been assigned and no previous logout has taken place, it is not necessary to log in to the device again. The device is therefore open and does not need to be unlocked. The change is made according to the explanations for enumeration parameters from section 4.5.3 Setting parameters.





### 5.3 Menu structure: Device info (#1100)<sup>2</sup>

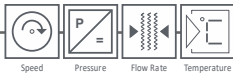
All parameters within the device info are locked parameters and cannot be changed by the customer. Only the parameter Measuring point for changing the designation can be changed.

#1100	MENU STRUCTURE: DEVICE INFO	PARA.-TYP
#1101	<b>Device family</b> Displaying the device family, e.g. GDR-1530	-
#1102	<b>Firmware</b> Displaying the firmware version, e.g. G12.02	-
#1008 #1011	<b>PcbID</b> Display of the installed hardware	-
#1965	<b>Modell</b> Specification of the device type	-
#1103	<b>Serial number</b> Displaying the serial number of the device	-
#1107	<b>Production year</b> Display the year of manufacture of the device	-
#1108	<b>Production month</b> Display the month of manufacture of the device	-
#1104	<b>Operating hours</b> Displaying the total operating hours of the device	-
#1290	<b>Probe index<sup>3</sup></b> Setting the designation of the measuring point <ul style="list-style-type: none"> <li>– Probe index 1 (FS)</li> <li>– Probe index 2</li> <li>– Probe index 3</li> <li>– Probe index 4</li> </ul>	EP
#1968	<b>Upgrade-Key</b> Function not available	NP

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<sup>2</sup> The menu item is not available in previous versions.

<sup>3</sup> The setting for "Measuring point" can be found in previous versions under the "System" menu item.



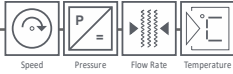
## 5.4 Menu structure: Inputs (#1500)

### 5.4.1 Input: Flow rate

#1500	MENU STRUCTURE: INPUT FLOW	PARA.-TYP
#1206	<p><b>Typ-CH-A</b> Flow rate signal: channel A Type selection:</p> <ul style="list-style-type: none"> <li>- Off</li> <li>- GD-Sensor direct (FS) (further settings required)</li> <li>- HB300<sup>4</sup>/SC300/UNI100 (further settings required)</li> <li>- Test frequency (further settings required)</li> </ul> <p><b>NOTE:</b> <b>GD-Sensor direct:</b> In the NON-ATEX area, the gas flow meter GD 300/ GD 500 and the predecessor model GD 100 can be connected directly. If an SC 300 is installed in the current installation situation, it no longer needs to be connected.</p> <p><b>HB300/SC300/UNI100</b></p> <ul style="list-style-type: none"> <li>- HB 300 Ex-R000000 / UNI-100: In the ATEX area, the gas flow meter GD 300 Ex/ GD 500 Ex is connected via the integrated volume corrector HB 300 Ex-R000000. Older installations with UNI-100 of the predecessor model GD 100 can be connected.</li> <li>- HB 300 -R000000 / SC 300 / SC 310: In the NON-ATEX area the gas flow meter GD 300/ GD 500 can be connected via the integrated volume corrector HB 300-R000000 or via the external signal conditioners SC 300<sup>5</sup> and SC 310.</li> </ul>	EP
#2500	<p>- <b>Test frequency</b> (Display only when selected: Test frequency) Type selection:</p> <ul style="list-style-type: none"> <li>- 0,1 Hz</li> <li>- 0,2 Hz</li> <li>- 0,5 Hz</li> <li>- 1 Hz</li> <li>- 2 Hz</li> <li>- 5 Hz (FS)</li> <li>- ....</li> <li>- 1 kHz</li> </ul>	EP

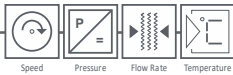
<sup>4</sup> Only the HB300 integrated volume correctors with type code HB 300-R0000 / HB 300 Ex-R0000 can be connected.

<sup>5</sup> Signal conditioners SC 300 and SC 310 can be connected, but it is possible to connect the gas flow meter GD 100 / GD 300 / GD 500 also directly via the platinum wire.



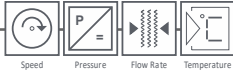
#1500	MENU STRUCTURE: INPUT FLOW	PARA.-TYP
#2110	<p><b>Sensor curve CH-A</b> (Display only when selected: GD-300 Sensor direct, HB300/SC300/UNI100)</p> <p><b>#2101 Valid Points</b></p> <ul style="list-style-type: none"> <li>- 02 (FS)</li> </ul> <p><u>NOTE:</u> The definition of the number of interpolation points can take place as follows:</p> <ul style="list-style-type: none"> <li>- Transfer of the resolution/ native pulses (liters/pulse), specification from the nameplate of the gas flow meter.</li> <li>- (Examples see section <b>Error! Reference source not found. Error! Reference source not found.</b>)</li> </ul> <p>This applies to connections with HB 300 (Ex)-R000000 or direct connection of the gas flow meter GD 300/ GD 500 and if no calibration protocol is available.</p> <p>Number of points: 2</p> <ul style="list-style-type: none"> <li>- Take over of values from factory calibration protocol</li> </ul> <p>Number of points: n+1 n+1 = number of measuring points of the calibration protocol plus 1 (For details see section 7.2 Factory calibration certificate for gas flow meter)</p> <p><b>#2111 Justierung</b></p> <ul style="list-style-type: none"> <li>- 00 (FS)</li> </ul>	<p>NP</p> <p>NP</p>

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#1500	MENU STRUCTURE: INPUT DURCHFLOSS	PARA.-TYP
	<p><b>Continuation:</b> Sensor curve CH-A (Display only when selected: GD-300 Sensor direct, HB300/SC300/UNI100)</p>	
	<p><b>#220x Charline</b>            Number depending on the number of specified measuring points in #2101, where the first measuring point is always 0</p> <p># 2201 Frequency 1 (NP): 0 Hz (FS)            # 2202 Volume1 (NP): 0 l (FS)</p> <p># 2203 Frequency 2 (NP): x.x Hz (FS)            # 2204 Volume 2 (NP): x.x l (FS)</p> <p>...</p> <p># 220x Frequency n (NP): x.x Hz            # 220y Volume n (NP): x.x l</p> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>– Adoption of the resolution (liter/pulse) data from the nameplate of the gas flow meter.</li> </ul> <p>Example acc. to <b>Error! Reference source not found. Error! Reference source not found.</b></p> <p># 2201 Frequency 1 (NP): 0.0 Hz            # 2202 Volume 1 (NP): 0</p> <p># 2203 Frequency 2 (NP): 1 Hz            # 2204 Volume 2 (NP): 0,5002 l (Example)</p> <ul style="list-style-type: none"> <li>– Transfer of values from factory calibration record            Number of points: n+1,            corresponding to number of measuring points in the protocol plus 1</li> </ul> <p>Example acc. to 7.2 Factory calibration certificate for gas flow meter</p> <p># 2201 Frequency 1 (NP): 0.0 Hz            # 2202 Volume 1 (NP): 0</p> <p># 2203 Frequency 2 (NP): 3.16 Hz            # 2204 Volume 2 (NP): 2.1982 l</p> <p># 2205 Frequency 3 (NP): 17.27 Hz            # 2206 Volume 3 (NP): 2.1974 l</p> <p>....</p> <p># 2212 Frequency 7 (NP): 82.69 Hz            # 2213 Volume 7 (NP): 2.18994 l</p> <p>A maximum of 32 measuring points can be defined.</p>	<p>NP</p>

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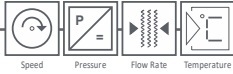


## 5.4.2 Input: Temperature (Temp)

#1510	MENU STRUCTURE: INPUT TEMPERATURE (TEMP)	PARA.-TYP
#1511	<b>Source</b> Definition of the source for the measured value temperature Type selection: <ul style="list-style-type: none"> <li>– Fixed value (FS) (further settings required)</li> <li>– 4-20mA (further settings required)</li> <li>– PT100-3W (3 wire)</li> <li>– PT100-4W (4 wire)</li> <li>– PTE-3W (3 wire)</li> <li>– PTE-4W<sup>6</sup>(4 wire)</li> </ul>	EP
#1512	<b>Fixed value °C</b> (Display only when selected Fixed value) Specification of the desired fixed value in °C (FS: +30 °C)	NP
#1513	<b>Minimum °C</b> (Display only when selected 4-20mA) min. measurement range of the sensor in °C (min. -100 °C)  <b>NOTE:</b> Please take the information from the connected pressure sensor or set it according to the settings of the higher-level system (value supplier).	NP
#1514	<b>Maximum °C</b> (Display only when selected 4-20mA) max. measurement range of the sensor in °C (max. +800 °C)  <b>NOTE:</b> Please take the information from the connected pressure sensor or set it according to the settings of the higher-level system (value supplier).	NP

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<sup>6</sup> PTE-3W, PTE-4W Esters resistance thermometers for the GD 600, only usable for IFC 16XX!



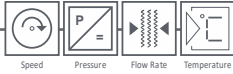
### 5.4.3 Input: Pressure

#1520	MENU STRUCTURE: INPUT PRESSURE	PARA.-TYP
#1521	<b>Source</b> Definition of the source for the measured value pressure Type selection: <ul style="list-style-type: none"> <li>– Fixed value (FS) (further settings required)</li> <li>– 4-20mA (further settings required)</li> </ul>	EP
#1525	<b>Relative/ absolut</b> Definition of the type of connected sensor (also for fixed value) <ul style="list-style-type: none"> <li>– Relative (FS)</li> <li>– Absolut</li> </ul>	EP
#1522	<b>Fixed value bar</b> (Display only when selected Fixed value) Specification of the desired fixed value in bar (FS: 0.050 bar)	NP
#1523	<b>Min value mbar</b> (Display only when selected 4-20mA) min. measuring range of the sensor in mbar (min. -500 mbar)  <u>NOTE:</u> Please take the information from the connected pressure sensor or set it according to the settings of the higher-level system (value supplier).	NP
#1524	<b>Max value mbar</b> (Display only when selected 4-20mA) max. measuring range of the sensor in mbar (max. +1000 bar)  <u>NOTE:</u> Please take the information from the connected pressure sensor or set it according to the settings of the higher-level system (value supplier).	NP

### 5.4.4 Input: Barometric pressure

#1540	MENU STRUCTURE: BAROMETRIC PRESSURE	PARA.-TYP
#1541	<b>Hydr. Press</b> Definition of the source for the ambient pressure measured value <ul style="list-style-type: none"> <li>– Internal (FS)</li> <li>– Fixed value (further settings required)</li> </ul>	EP
#1542	<b>Hydr. Fixed value</b> (Display only when selected fixed value) Specification of the desired fixed value in mbar (FS: 1013.0 mbar)	NP

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### 5.4.5 Input: Conversion (Standardization)

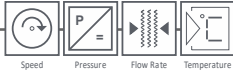
#1550	MENU STRUCTURE: CONVERSION (STANDARDIZATION)	PARA.-TYP
#1530	<b>Standard</b> (Display only when selected System > Operating mode (#1201): Bm <sup>3</sup> +Nm <sup>3</sup> ) Definition of the calculation formula for standardization, selection of standards: <ul style="list-style-type: none"> <li>- DIN1343 (FS)</li> <li>- DIN6358</li> <li>- ISO2533"</li> <li>- DIN102</li> <li>- Other (further settings required)</li> </ul>	EP
#1531	<b>Ref. Temp. °C</b> (Display only when selected Other) Reference temperature in °C (FS: +20°C)	NP
#1532	<b>Ref. Press. mbar</b> (Display only when selected Other) Reference pressure in mbar (FS: +1013 mbar)	NP

### 5.5 Menu structure: Outputs (#2400)

#### 5.5.1 Output: Relays

#1600	MENU STRUCTURE: RELAYS	PARA.-TYP
#1610	<b>Relay 1</b> <b>Definition of the output of the relay 1</b> Type selection: <ul style="list-style-type: none"> <li>- Type Off</li> <li>- Type Pulse A (FS) (further settings required)</li> <li>- Type Status OK</li> <li>- Type Error code</li> <li>- Type Limit A</li> <li>- Type Limit B</li> </ul>	EP
#1611	<b>Relay 2</b> <b>Definition of the output of the relay 2</b> Type selection: <ul style="list-style-type: none"> <li>- Type Off</li> <li>- Type Pulse A (further settings required)</li> <li>- Type Status OK (FS)</li> <li>- Type Error code</li> <li>- Type Limit A</li> <li>- Type Limit B</li> </ul>	EP

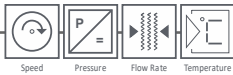
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#1600	MENU STRUCTURE: RELAY	PARA.-TYP
#1220	<p><b>Pulse weight m<sup>3</sup>/pulse</b> (Display only when selected Pulse A) X m<sup>3</sup>/pulse (FS: 1 m<sup>3</sup>/pulse)</p> <p><b>NOTE:</b> The pulse weighting depends on the flow rate and must be defined analogously for the receiver.</p>	NP
#1603	<p><b>Pulse/pause in milliseconds</b> (Display only when selected Pulse A) Selection:</p> <ul style="list-style-type: none"> <li>- 500/500 (1Hz) (FS)</li> <li>- 250/250 (2Hz)</li> <li>- 100/100 (5Hz)</li> <li>- 50/50 (10Hz)</li> <li>- 10/10 (50Hz)</li> <li>- 5/5 (100Hz)</li> <li>- 1/2 (333Hz)</li> <li>- 1/1 (500Hz)</li> <li>- Custom (further settings required)</li> </ul> <p><b>NOTE:</b> The pulse weighting depends on the flow rate and must be defined analogously for the receiver.</p>	EP
#1601	<p><b>Pulse length in milliseconds</b> (Display only when selected Pulse/pause: Custom) xxx ms (FSE: 500 ms)</p>	NP
#1602	<p><b>Pulse length in milliseconds</b> (Display only when selected Pulse/pause: Custom) xxx ms (FS: 500 ms)</p>	NP

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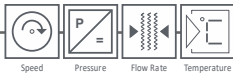




### 5.5.2 Output: Current output

#1800	MENU STRUCTURE: CURRENT OUTPUT	PARA.-TYP
#1804	<p><b>Function</b> Definition of the current output. Type selection:</p> <ul style="list-style-type: none"> <li>- Off (FS)</li> <li>- 0-20 mA (further settings required)</li> <li>- 4-20 mA (further settings required)</li> </ul>	EP
#1802	<p><b>Source</b> (Display only when selected 0-20mA or 4-20mA) Type selection:</p> <ul style="list-style-type: none"> <li>- Standard volume (FS)</li> <li>- Operational volume</li> </ul>	EP
#1810	<p><b>Flow in m<sup>3</sup>/h</b> (Display only when selected 0-20mA or 4-20mA) Definition of the output range. Type selection:</p> <ul style="list-style-type: none"> <li>- 0-5 m<sup>3</sup>/h</li> <li>- 0-10 m<sup>3</sup>/h</li> <li>- 0-20 m<sup>3</sup>/h</li> <li>- 0-50 m<sup>3</sup>/h</li> <li>- 0-100 m<sup>3</sup>/h (FS)</li> <li>- 0-200 m<sup>3</sup>/h</li> <li>- 0-400 m<sup>3</sup>/h</li> <li>- 0-800 m<sup>3</sup>/h</li> <li>- 0-1000 m<sup>3</sup>/h</li> <li>- 0-1500 m<sup>3</sup>/h</li> <li>- 0-2000 m<sup>3</sup>/h</li> <li>- 0-3000 m<sup>3</sup>/h</li> <li>- 0-5000 m<sup>3</sup>/h</li> <li>- 0-7000 m<sup>3</sup>/h</li> <li>- 0-10000 m<sup>3</sup>/h</li> <li>- 0-20000 m<sup>3</sup>/h</li> <li>- 0-50000 m<sup>3</sup>/h</li> <li>- 0-100000 m<sup>3</sup>/h</li> <li>- 0-200000 m<sup>3</sup>/h</li> <li>- 0-500000 m<sup>3</sup>/h</li> <li>- 0-1000000 m<sup>3</sup>/h</li> <li>- 0-2000000 m<sup>3</sup>/h</li> <li>- 0-5000000 m<sup>3</sup>/h</li> <li>- Custom (further settings required)</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>- The selection depends on the max. flow per hour of the gas flow measurement or the plant.</li> <li>- If the data is standardized, the standardized values (Nm<sup>3</sup>/h) are passed on, otherwise in m<sup>3</sup>/h.</li> <li>- Please note that the settings at the data receiver are configured correspondingly with respect to type and unit.</li> <li>- Example.: For an expected flow rate of 950 m<sup>3</sup>/h the type 0-1000 m<sup>3</sup>/h (or 0-1500 m<sup>3</sup>/h) should be selected.</li> </ul>	EP
#1810	<p><b>Flow (20mA)</b> (Display only when selected: Custom) (FS: 100.00)</p>	NP

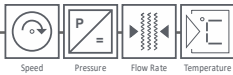
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## 5.6 Menu structure: Limits (#2900)

#2900	MENU STRUCTURE: LIMITS	PARA.-TYP
#2910	<b>Limit A</b>	EP
#2913	<b>Function</b> Defines the function of the limit value of the device <ul style="list-style-type: none"> <li>– Underrange</li> <li>– Overrange (FS)</li> <li>– Band</li> <li>– Notch</li> </ul>	EP
#2911	<b>Limit A</b> xxx.xx m <sup>3</sup> /h (FS: 100.00 m <sup>3</sup> /h)	NP
#2912	<b>Hysteresis A</b> xxx.x % (FS 2.5 %)	NP
#2920	<b>Limit B</b>	EP
#2923	<b>Function</b> Defines the function of the limit value of the device <ul style="list-style-type: none"> <li>– Underrange</li> <li>– Overrange (FS)</li> <li>– Band</li> <li>– Notch</li> </ul>	EP
#2921	<b>Limit B</b> xxx.xx m <sup>3</sup> /h (FS: 100.00 m <sup>3</sup> /h)	NP
#2922	<b>Hysteresis B</b> xxx.x % (FS 2.5 %)	NP

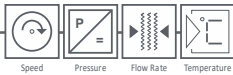
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## 5.7 Menu structure: System (#1200)

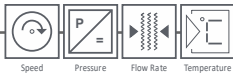
#1200	MENU STRUCTURE: SYSTEM	PARA.-TYP
#1201	<p><b>Operating mode</b> Defines the operating mode of the device</p> <ul style="list-style-type: none"> <li>– 1:1</li> <li>– <math>Bm^3</math></li> <li>– <math>Bm^3+Nm^3</math> (FS)</li> </ul> <p><b>NOTE:</b> <b>Operating mode <math>Bm^3+Nm^3</math>:</b> This operating mode must be selected to standardize the measured values. Measured values for pressure and temperature must be provided accordingly. The measured values can be processed by connected temperature and pressure sensors or by a higher-level system via mA input in the GDR 1530. In systems without measured value fluctuations for pressure and temperature, corresponding fixed values can be defined. Please still define at "Inputs &gt; Standard (#1530)" the standard to be applied (FS DIN1243) <b>Operating mode 1:1:</b> For third-party gas flow meters for 1:1 transfer of measured values.</p>	AP
#1700	<p><b>Mean value</b> The mean value is used to calm the indication of the measured value in the display in case of strongly and quickly fluctuating flows. The setting has no influence on the measured values themselves.</p> <p><b>#1701 Flow operational:</b> Filter for operating volume (FS 10) <b>#1702 Flow standard:</b> Filter for normalized volume (FS 10) <b>#1704 freqGate:</b> Filter for Frequency in seconds (FS 10)</p>	AP AP AP
#1703	<p><b>Min Frequency</b> Definition of a minimum threshold to distinguish between gas flow and standstill (FS 0.0 Hz)</p>	NP
#1202	<p><b>Display</b> Defines the measuring unit to be shown on the device's display</p> <ul style="list-style-type: none"> <li>– <math>m^3/h</math> (FS)</li> <li>– <math>m^3/min</math></li> <li>– l/h</li> <li>– l/min</li> </ul>	AP

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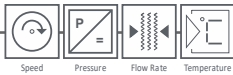
#1200	MENU STRUCTURE: SYSTEM	PARA.-TYP
#1204	<p><b>LED</b></p> <p>Setting the status of the left "Status" LED</p> <ul style="list-style-type: none"> <li>- Device status (FS)</li> <li>- Pulse input</li> <li>- Pulse output</li> </ul> <p><b>NOTE:</b> The left LED labeled "Status" on the housing of the device can be assigned individually.</p>	AP
#1207	<p><b>Display switch</b></p> <p>Defines the display change in the LIVE Screen.</p> <ul style="list-style-type: none"> <li>- Off</li> <li>- On error (FS)</li> <li>- Time triggered</li> </ul> <p><b>NOTE:</b> <b>On error:</b> An ERROR screen is appended to each LIVE screen in the event of an active error message. In the event of an error, the system switches directly to the error screen. If the error is corrected, the system switches to the last LIVE screen. New errors are prioritized and displayed according to their priority. Once all errors have been corrected, the system switches back to the last LIVE screen displayed. <b>Time triggered:</b> Rolling change between the LIVE screens based on the defined time.</p>	AP
#1227	<p><b>Display time (Display only when selected: Time triggered)</b></p> <p>Define number of seconds (FS 10 s)</p>	NP
#1248	<p><b>Menu preview</b></p> <p>Definition of the display time in seconds regarding the menu preview before the configuration of the individual parameters is displayed.</p> <ul style="list-style-type: none"> <li>- Off</li> <li>- 1s (FS)</li> <li>- 2.5s</li> <li>- 5s</li> <li>- 7.5s</li> <li>- 10s</li> </ul>	AP
#1210	<p><b>Time&amp;date</b></p> <p>Definition of date and time.</p>	NP

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## 5.8 Menu structure: Wizards (#1900)

#1900	MENU STRUCTURE: WIZARDS	PARA.-TYP
#1006	<b>Service</b> Direct call of settings by means of parameter or menu ID	NP
#1901	<b>Reboot</b> Restart the device	EP
#1902	<b>Clear counters</b> Deletes the data of all volume and pulse counters	EP
#1903	<b>Factory settings</b> Resets the device to factory settings (FS), all individual settings are lost.  <b>NOTE:</b> Please note that this also deletes the factory-set individually predefined support curve/characteristic curve in relation to the connected gas flow meter. The data for the characteristic curve are contained in the factory calibration record (see 7.2 Factory calibration certificate for gas flow meters). The description regarding the settings on the device is given in section 5.4.1 Input: Flow rate.	EP
#1905	<b>Welcome</b> Activates the automatic language request at device start.	EP



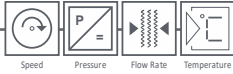
### 5.9 Menu structure: Access rights (#1950)

#1950	MENU STRUCTURE: ACCESS RIGHTS	PARA.-TYP
#1007	<p><b>Logout</b> (only displayed if logged in at a higher level than "Access rights level 1").</p> <p>Logout from the current access level and back to "Access rights level 1". No changes can be made to the settings within "Access rights level 1", they can only be read.</p>	-
#1002	<p><b>Login</b></p> <p>Display only if logged on to "Access rights level 1".</p> <p>Login to higher access level with PIN code.</p>	NP
#1205	<p><b>PIN Code</b></p> <p>Change the PIN Code for „Access Level 2“. (FS: 10000)</p> <p><b>NOTE:</b></p> <p>If a brand-new device is to be locked against unintentional changing of settings, a separate PIN code must be defined. The factory-defined code "10000" has the effect that the device is "open". Any other PIN code locks the device as soon as it is restarted, the user logs off or no keys have been used on the device for a longer period of time. After 300 seconds, the settings menu closes automatically and after another 900 seconds, the device logs out automatically. Re-registration is then only possible with the previously assigned PIN code.</p>	NP

### 5.10 Menu structure: Counter values (#1300)

#1300	MENU STRUCTURE: COUNTER VALUES	PARA.-TYP
#1301	<p><b>Volume CH-A</b></p> <p>Display of the info screen for the respective meter readings</p>	-
#1303	<p><b>Pulses CH-A</b></p> <p>Display of the info screen for the respective meter readings</p>	-

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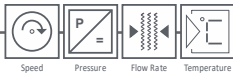


## 6 Error codes list

CODE	GERMAN	ENGLISH
E01	EEP Hardware	EEP hardware
E02	Parametersatz	Param data
E03	Seriennummer	Serial number
<b>E04</b>	<b>Eingang Überl. CH-A</b>	<b>Input overflow CH-A</b>
<b>E05</b>	<b>Ausgang Überl. CH A</b>	<b>Output overflow CH-A</b>
<b>E06</b>	<b>Ausgang Überl. CH-B</b>	<b>Input overflow CH-B</b>
E07	<b>Sensorfehler CH A</b>	<b>Sensor error CH-A</b>
<b>E08</b>	<b>Stromausgang Bürde</b>	<b>Current output load</b>
E09	Key Hardware	Key Hardware
E10	LCD Hardware	LCD Hardware
E11	RTC Hardware	RTC Hardware
E12	<b>Uhrzeit Datenverlust</b>	<b>Time data lost</b>
<b>E13</b>	<b>Sensorfehler Temp.</b>	<b>Sensor failure temp</b>
<b>E14</b>	<b>Sensorfehler Druck</b>	<b>Sensor failure press.</b>
E15	System param. 171x	System param. 171x
E16	<b>Sensorfehler CH-B</b>	<b>Sensor break CH-B</b>
<b>E17</b>	<b>Eingang Überl. CH-B</b>	<b>Input failure CH-B</b>
<b>E18</b>	<b>Überl. Betrieb CH-A</b>	<b>Overflow CH-A oper.</b>
E19	<b>Überl. Betrieb CH-B</b>	<b>Overflow CH-B oper.</b>
<b>E20</b>	<b>Überl. Normiert CH-A</b>	<b>Overflow CH-A std.</b>
<b>E21</b>	<b>Überl. Normiert CH-B</b>	<b>Overflow CH-B std.</b>
<b>E22</b>	Hardwareaufbau	Hardware
<b>E23</b>	Hydrostatischer Druck	Hydrostatic pressure

The error messages printed in bold type can occur on the device during normal operation. The other messages may occur during device production, troubleshooting or device defect.

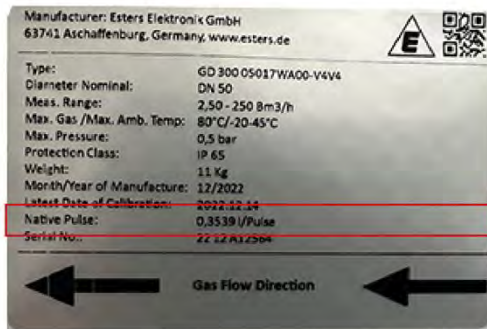
**Table 2: Error codes**



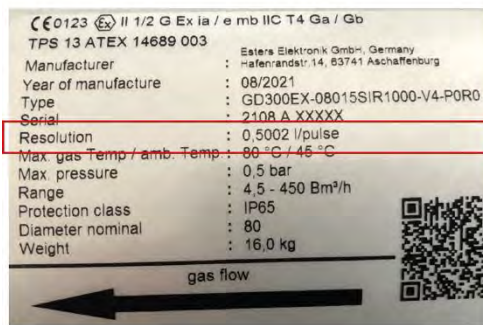
## 7 Appendix

### 7.1 Overview of nameplates GD 300 (Ex) and GD 100

Example: Nameplate GD 300



Example: Nameplate GD 300 Ex



Resolution or native pulses  
(liter/pulse) for defining  
the support curve

Example: Nameplate GD 100

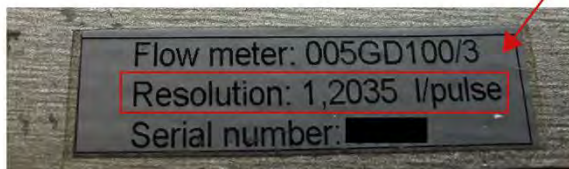
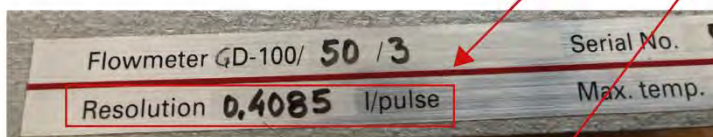
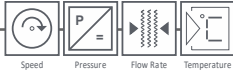


Figure 18: Overview nameplates GD 300 (Ex) und GD 100





## 7.2 Factory calibration certificate for gas flow meter

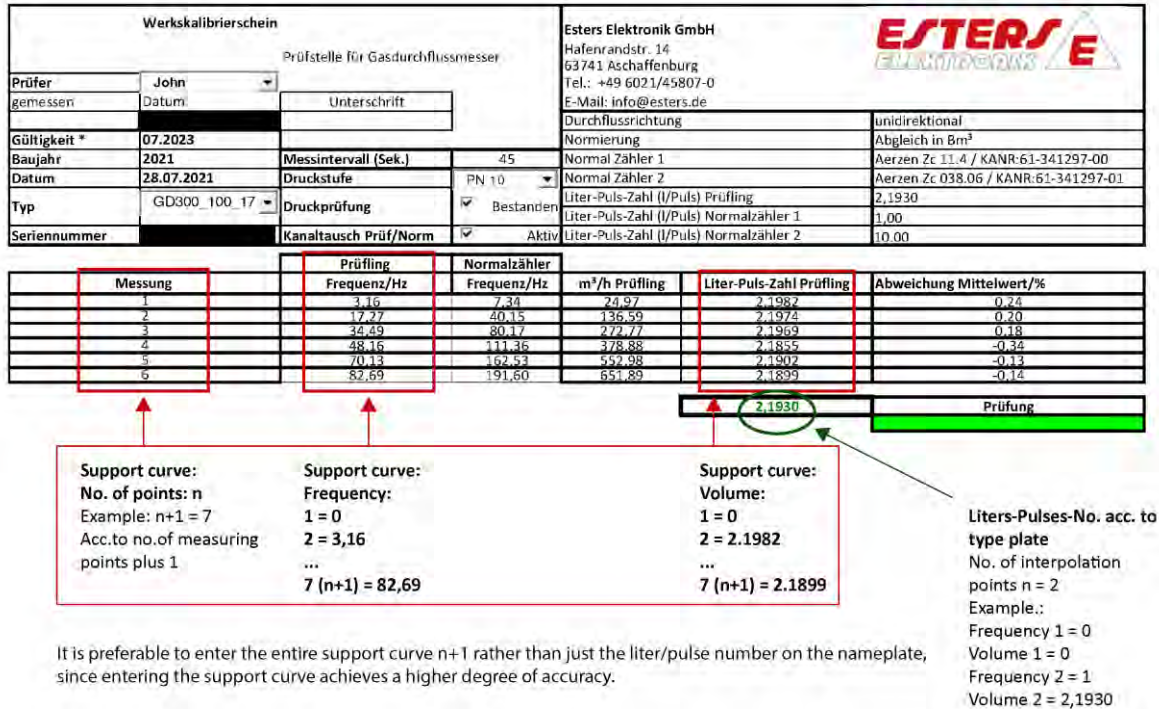


Figure 19: Factory calibration certificate for gas flow meter