User's manual

Totalizer

with current input, loop powered
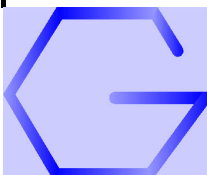
D 122.Z

Software version 1.6

User's manual for totalizers
D 122.Z.0.0	D 122.Z.0.2
D 122.Z.3.0	D 122.Z.3.2
D 122.Z.5.0	D 122.Z.5.2

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1   Operation instruction for Explosion protected control panels

Application and Standards

This instruction manual applies to explosion protected control panels of type of protection types below. This apparatus is only to be used as defined and meets requirements of EN 60 079 particulary EN60 079-14 "electrical apparatus for potentiality explosive atmospheres". It can be used in hazardous locations which are hazardous due to gases and vapours according to the explosion group and temperature class as stipulated on the type label. When installing and operating the explosion protected distribution and control panels the respective nationally valid regulations and requirements are to be observed.

General Instructions

The control panel has to have a back-up fuse as stipulated. The mains connection must have a sufficient short circuit current to ensure safe breaking of the fuse. To achieve an impeccable and safety device operation, please take care for adept transportation, storage and mounting, as well as accurate service and maintenance. Operation of this device should only be implemented by authorised persons and in strict accordance with local safety standards. The electrical data on the type label and if applicable, the "special conditions" of the test certificate PTB 98 ATEX 1488 are to be observed.

For outdoor installation it is recommended to protect the explosion protected distribution and control panel against direct climatic influence, e.g. with a protective roof. The maximum ambient temperature is 40°C, if not stipulated otherwise.

Intrinsically Safe Circuits

Erection instructions in the testing certificates of intrinsically safe apparatus are to be observed. The electrical safety values stipulated on the type label must not be exceeded in the intrinsically safe circuit. When interconnecting intrinsically safe circuits it is to be tested, whether a voltage and/or current addition occurs. The intrinsic safety of interconnected circuits is to be ensured. (EN 60079-14, section 12)

✋ Safety Measures: to read and to comply

Work on electrical installations and apparatus in operation is generally forbidden in hazardous locations, with the exception of intrinsically safe circuits. In special cases work can be done on non-intrinsically safe circuits, on the condition that during the duration of such work no explosive atmosphere exists. Only explosion protected certified measuring instruments may be used to ensure that the apparatus is voltage-free. Grounding and short circuiting may only be carried out, if there is no explosion hazard at the grounding or short circuit connection.

2   Totalizer with current input D 122.Z

2.1   Short description

The 5-digit totalizer D122.Z operates in hazardous area and indicates the sum of measured values of a 4 up to 20 mA current circuit. The device gets its energy from the measure circuit, therefore an extra power supply or batteries are unnecessary. The totalizer measures the current, adds the previous values, scales the sum and displays the sum finally on the LCD.

The present measured signal is also be displayed on a **41 segment bargraph**. It's possible to scale the bargraph separately to the digital value. The totalizer D122 is available in several housings.

The totalizer has 2 intrinsically safe **alarm outputs as an option (D122.Z.x.2).** These outputs change their state, if the measured value exceeds his alarm limits. It's possible to choose open-circuit or closed-circuit connection.
It is possible to refer the alarm monitoring to the sum or to the present measured value. In the last case the limits are displayed on a second bargraph. On one look you're sure that the measured value is in its limits.

Alternative to the option of two digital outputs for external limit monitoring, a **control input and a digital output** are implemented to the totalizer **D122.Z.x.3**. An active intrinsically safe signal (Low < 2V, High > 5V) on the control input sends a reset command to the totalizer.

The digital output port can be configured by software in two different modes: As a setpoint-reached message when the totalizer sum reaches its limit and as a **pulse output for the current flow signal**. In this case, the D122 measures the present flow rate and converts it to a digital signal.
The resolution of the digital signal is directly coupled with the scale configuration of the totalizer: each increment of the least significant digit sends a pulse. **The pulse width is about 7 ms, by a maximum output frequency of 68 Hz.**

The option curve and square root fitting offers a reproduction of an arbitrary monotone function of measured current and displayed value. A square root fitting function especial for measuring a flow through an aperture is implemented.

2.2   Features overview

☑   Basic functions

- Loop-powered totalizer with current input (4 .. 20 mA)
- Connect like passive analogue totalizers, voltage drop ca. 1V
- LC-Display, 5 digits, up to 30 mm figure-height
- Scale by keyboard and Display
- 41-segment bargraph for present value observation
- Bargraph is scaleable separately
- Several housings available (control panel- and field housing)

☑   Options D122.Z.x.2

- Alarm monitoring: two intrinsically safe alarm outputs on the display
- Limit-functions with hysteresis and time delay
- Field housing with additional (2nd) PG-Connector

☑   Options D122.Z.x.3

- Digital input to receive an external reset signal
- Digital output with 2 configurations: as an sum limit monitor and as quantity proportional pulse signal

☑   Curve fitting Option D122.xS

- Root function
- Curve fitting with any monotone function by using a list of points

☑   Explosion protection

- In accordance with CENELEC specifications

  - DIN/EN 50014 + A1, ... A5 (VDE 0170/0171 Part 1/1.87) general regulations
  - DIN/EN 50020 + A1, ... A5 (VDE 0170/0171 Part 1/1.87) intrinsically safety

- explosion protection type

  - E Ex ib IIC T6 at ambient temperature up to 50°C or
    E Ex ib IIC T5 at ambient temperature up to 65°C

3   Installation and Connection

3.1   Mounting Instructions

☑   Control panel housing D 122.Z.0 and D 122.Z.3

The totalizers D122.Z.0 and D 122.Z.3 are predicated for installation in a control panel.

How to insert the dimension symbol

Insert the dimension symbol (icon) before mounting. Do this by first removing the front frame as shown in the figure at left. Now remove the front panel from the housing as shown in the figure on the right.
Cut the desired dimension-symbol from the set and pull it into its intended place on the right side of the panel. Make sure that the symbol is facing the front. Replace the front panel and frame.
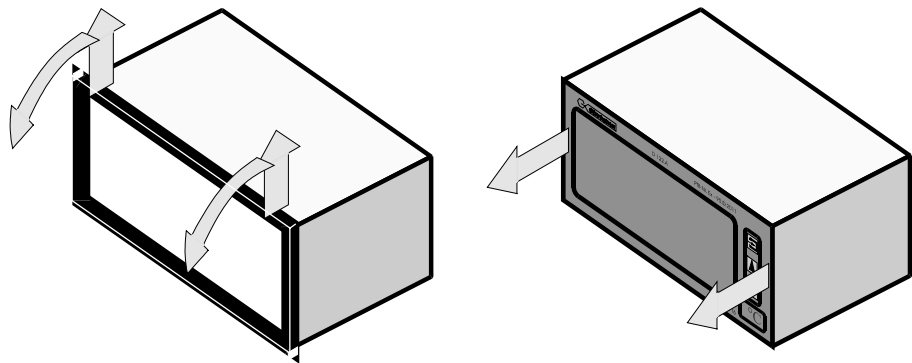
How to fix the device in the control panel

Fix the device into the control panel with the intend cramps.

☑   Field housing D 122.Z.5

Choose a solid place to install the totalizers in the field area.

How to insert the dimension symbol

First, cut the desired dimension symbol out of the set. Then pull off the four screws of the cap and remove the cap from the housing.
Now push the prepared dimension-symbol into the dimension-symbol-slot. Make sure that the symbol is facing the front.
The dimension-symbol-slot lies below the display, on the internal side of the cap.

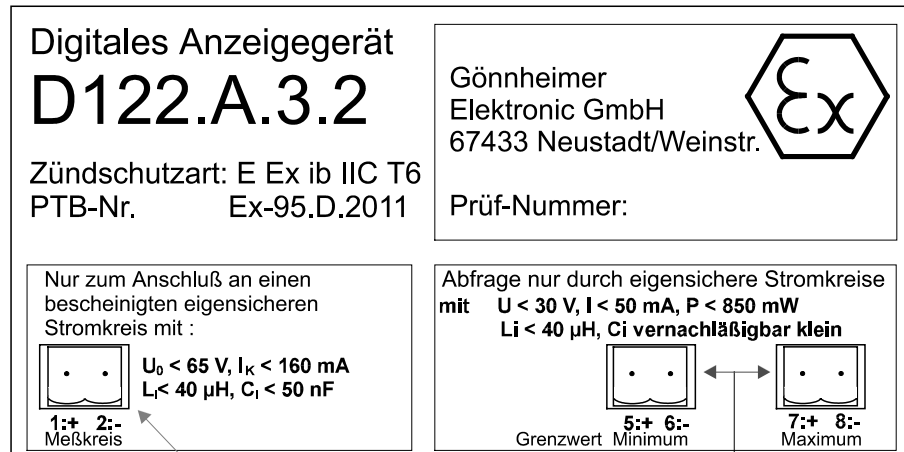Finally replace the cup on the housing.

3.2   Connecting

✋ **Note**   **Connect the totalizers only to intrinsically safe 4 ... 20 mA current circuits.**

☑ Control panel housing

The terminals of the totalizers in the control panel housing are shown in Figure 1. The terminals 5,6 and 7,8 are absent by totalizers without alarm monitoring.

Digitales Anzeigegerät

D122.A.3.2

Zündschutzart: E Ex ib IIC T6
PTB-Nr.   Ex-95.D.2011

Gönnheimer
Elektronic GmbH
67433 Neustadt/Weinstr.

⬡ Ex

Prüf-Nummer:

Nur zum Anschluß an einen
bescheinigten eigensicheren
Stromkreis mit :

$U_0 < 65$ V, $I_K < 160$ mA
$L_i < 40$ µH, $C_i < 50$ nF

1:+ 2:-
Meßkreis

Abfrage nur durch eigensichere Stromkreise
mit $U < 30$ V, $I < 50$ mA, $P < 850$ mW
       $L_i < 40$ µH, C_i vernachläßigbar klein

5:+ 6:-
Grenzwert Minimum

7:+ 8:-
Maximum

intrinsically safe
measure circuit 4 ..20 mA
terminals 1,2
alarm

alarm monitoring option
terminals 5,6: lower alarm
terminals 7,8: upper

Figure 1: Terminals by totalizers in control panel housing

✋ **Note**   **Be sure that the no-load voltage must be below 65 V and short-circuit current be below 160 mA for all types of totalizers.**

☑ field housing

The terminals of the totalizers with field housing are inside. The placement of the terminals is shown at the Figure 2..

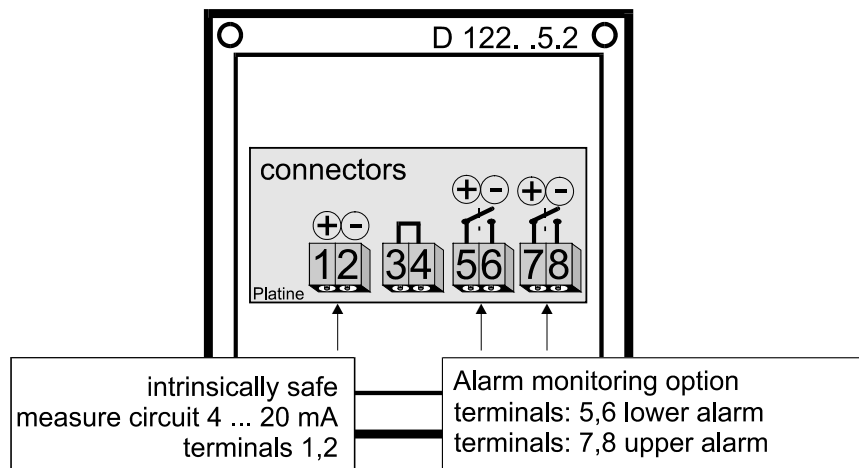The terminals 5,6 and 7,8 are absent by totalizers without alarm monitoring.

○   D 122. .5.2   ○

connectors

⊕⊝ ⊕⊝

⊕⊝

12 34 56 78

Platine

intrinsically safe
measure circuit 4 ... 20 mA
terminals 1,2

Alarm monitoring option
terminals: 5,6 lower alarm
terminals: 7,8 upper alarm

Figure 2: Terminals of D 122.Z.5

3.3   Starting

✋ **Note**

After connecting, a **display test** (all segments of the display are turned on) appears immediately during one second. Thereupon the display shows the **software version** of the totalizer.

Default parameters

The following parameters are active ex works:

| Scaling (display and bargraph)	4 mA curent -> 4.00
	20 mA current -> 20.00
Totalizer (total menu)	Prescale factor: 1 Creep suppression 4 mA Output configuration: sum limit monitoring (D122.Z.x.3 only)
Limits (refers to measurement current, D122.Z.x.2 only)	Low: 4.00 mA / High: 20.00 mA
Hysteresis / Delay	0.10 / 0 sec.
alarm outputs (alarm monitoring)	circuit-opening connection
Code words	CODE1: 0001 / CODE2: 0002

✋ **Note**

Press the **Enter- and Right-button** during the start sequence to reactivate the default parameters. (Hardware-Reset)
An reset activates also the **ex works calibration**.

4   Operating manual

4.1   Front view and push-keys

☑   Front view

LC-Display

enter-button

up-button

right-button

dimension symbol

limit bargraph

bargraph
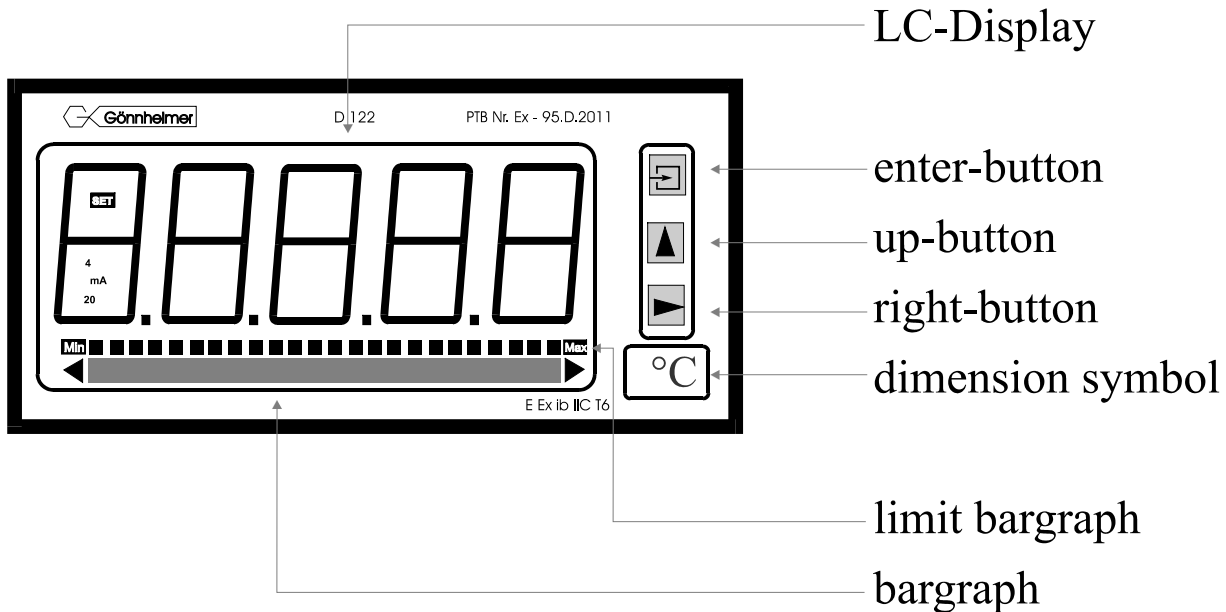
☑   Keys

On the front side of the totalizer are tree buttons with several function symbols. With these tree buttons the user can activate each function and enter all parameters for any individual setting.
Each button is named by its function:

Enter-button
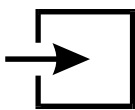
Pressing the *enter*-button starts the input menu.
In general, the *enter*-button activates the menu item or accepts the manipulated value of a parameter.
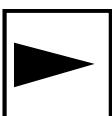
Up-button

Functions of the up-button are:
1. present measure value button
2. modification of the selected figure
3. pass menu items

Right-button

Functions of the right-button are:
1. change the display to limit view
2. select figures
3. pass menu items

4.2   Configuration

It is easy to set the parameters and change the configuration of the totalizer. The inputs are logical grouped by a menu structure. The **flow charts** of these menus can be found at chapter 6.

✋ **Note**   Totalizers without the alarm monitoring option do not have the corresponding menu items.

✋ **Note Flow charts**

The Input-views in the flow diagrams have additional boxes in their background, because the Input-views may be changed by pressing any of the buttons.
The procedure, to enter a value, is shown in the flow diagram 'Edit menu', see Figure 13.

☞   Normal state

After connecting, the totalizer D122 starts to initialise its configuration. The configuration data is stored in an internal EEPROM due to the previous run. By the first start, the D122.Z totalizer initialises the default configuration.
Directly past starting sequence the totalizer begins to operate. This state is called the 'normal state' of the D122 and the totalizer is also ready for inputs.

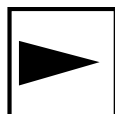(See also flow diagram in Figure 7)

☞   Present-value control

Pressing and holding the *up*-button (**present value control button**) the display shows the present measured value.

(See also flow diagram in Figure 7)

☞   Limit view menu / Counter reset

One touch on the *right*-button starts the limit view menu. Totalizers without the alarm monitoring option propose the counter reset suggest immediately. This reset will be executed by pressing the *enter*-button and entering the right code word.

(See also flow diagram in Figure 8)

LI L

Totalizers with the alarm monitoring option proposes on the other hand the lower limit. (Note: if the limits refers to the sum then the lower limit is absent).
The screen shows now [limit low]. Confirm with the *enter*-button to display the value of the lower limit.

LI H

To pass the lower limit press the *right*-button. The menu changes to the upper limit. The screen shows now [limit high]. Confirm with the *enter*-button to display the value of the upper limit.

rESEt

Pressing the *right*-button for a second time quits the limit view menu and offers the reset of the counter.
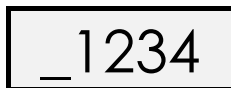To reset the counter hit the *enter*-button. The totalizer is now back in normal state.
Pass the counter-reset by pressing the *right*-button, the totalizer returns to normal state too.
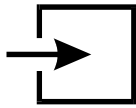
While watching the limit value it is possible to manipulate it by pressing the *enter*-button. The view changes to the

☑ Edit mode.

_1234

A blinking segment appears below the sign place. Pressing the *right*-button selects the figure and the *up*-button increments the selected figure. To accept the new limit value, press the *enter*-button.

(See also flow diagram in Figure 8

☑ Code protection

CodE 2

✋ **Note !**

Before the menu gets to the edit mode the **code 2** must be entered, to **prevent a modification by unauthorised persons**. Entering a wrong code word stops the limit view menu immediately.
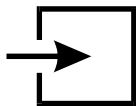The default code 2 is [0002].

The interrogation of **code 2 can be switched off** by modifying the code 2 to **[0000].** For this reason the flow diagram shows the code interrogation in stroked dots. To change the code you must enter the input menu, later in this chapter.

☑ Parameter entering

(See also flow diagram in Figure 9)

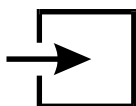Back in the normal state of the totalizer we start the

☞ Input menu

by pressing the *enter*-button.

CodE 1

The **configuration of the totalizer is protected** against manipulations by unauthorised persons with the **code 1**. To get the input menu enter the code 1 default [0001].
It's **impossible to switch off the code 1** interrogation.

After entering the right code word the totalizer proposes to join the

SCAL

Scale menu. The figure on the left hand appears on the screen.
To scale the **measured current**, the **bargraph** and to **set the decimal point** join the scale menu by confirming with the *enter*-button.

See also flow diagram in Figure 10).

✋ **Hint !**

Enter the upper scale point correct figured 'as big as possible' (the first figures should not be '0')

| tOtAL |

In this case you get the maximum precision of the totalizer.
Press the *right*-button to pass the scale menu and select the second submenu, the total menu. To start the total menu press the *enter*-button.

(See also flow diagram in Figure 12)

| LI |

To pass the total menu press the *right*-button. The followingsub menu is called **limit menu**. This menu is naturally only available for totalizers with the alarm monitoring option.

In the limit menu the user enters the limits, as well as the hysteresis and the time delay of the alarm outputs.

(See also flow diagram in Figure 14)

| CodE 1 |

The next two following items allow to manipulate the words for code 1 and code 2. The *enter*-button confirms the input and the corresponding code appears in edit mode.

| CodE 2 |

Remember that the code word [0000] switches off the code 2.

| CAL |

Finally it's possible to calibrate the totalizer with the following submenu called calibration menu.

(See flow diagram in Figure 15)

✋ **Note !**

The totalizer is already calibrated ex-works.
In general, a further calibration is not necessary and only experienced persons are allowed to calibrate it.

| End |

Now we reach the end of the input menu. Confirm the end with the *enter*-button. The totalizer switches back to normal state.

If you want to repeat the input menu, press the *right*-button.

✋ **Note !**

If an invalid value is entered for any of the parameters, you will not be able to quit the input menu. Instead, the program switches automatically into edit mode to the found invalid value.

4.3   Parameter input illustration

☑   Prescale factor determination (I-fac)

The totalizer D122.Z adds the measured values to a sum and displays it. The measured value always refers to second, so it is possible to sum short count events. Recording for a long time the sum gets considerable bigger as the dimension of the present value.

To adjust the summation to each application, a prescale factor (I-fac) divides the sum to the desired range. Using the prescale factor it is possible to adjustthe dimension of the instantaneous value to the desired dimension of the sum. The prescale factor V is defined by

V = desired dimension of sum / dimension of the measured value

or

$$V = \frac{E_S}{E_M \cdot [s]}$$

Example: An measuring transductor has an output-signal with the dimension g/min. The sum should have the dimension kg. The right prescale factor is

$$V = \frac{kg}{\frac{g}{min} \cdot [s]} = \frac{1000g}{\frac{1g}{60s} \cdot [s]} = 60\,000 = 6 \cdot 10^4 = 6\,E\,4$$

According to this example the prescale factor V changes to 1000 (1E3) for a transductor signal with the dimension g/s, respectively 3600 000 (36E5) for a transductor signal with the dimension g/h.

✋ **Note !**

The format of the prescale factor V is the **exponent notation**, i.e. the figures in front of the zeros of V lie by the exponent notation in front of the „E" and the **quantity** of the zeros lie behind the „E".

☑   Creep suppression (StArt)

In some cases, it will be necessary to ignore a transductor signal above 4 mA. This threshold level is named creep suppression value. The figure on the right hand shows its function.

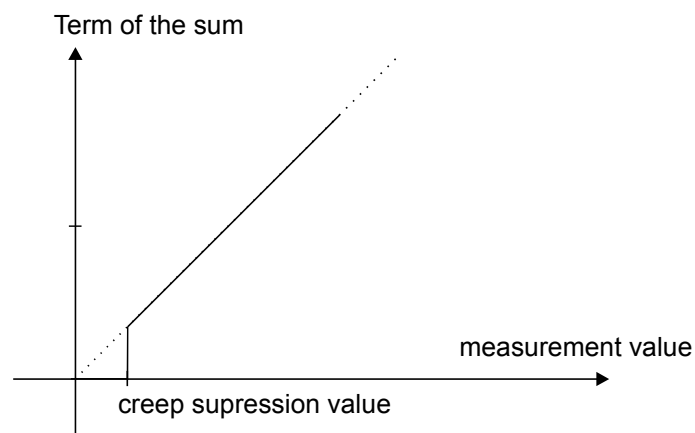Edit the creep suppression value in the total menu.

Term of the sum

measurement value

creep supression value

Figure 3: Creep suppression

☑   Hysteresis and time delay (HyStE)

naturally only available when the limits refers to the present measured value (D122.Z.x.2)

Hysteresis

A hysteresis prevents an un-
wanted fast switching of the
alarm outputs.

The switching behaviour of the
lower alarm (min) shows figure 4.
The switching behaviour of the
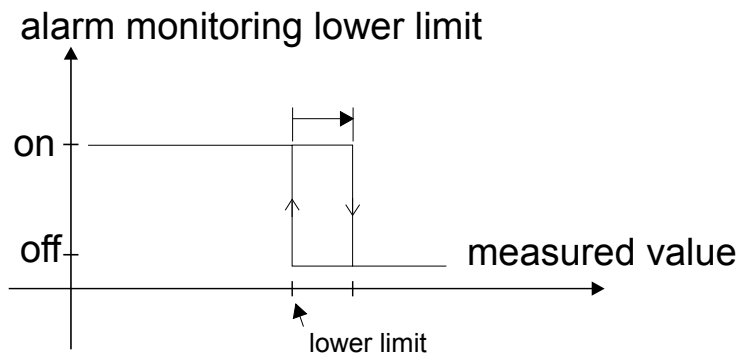upper alarm (max) shows figure
5.

Figure 4: Hysteresis low alarm

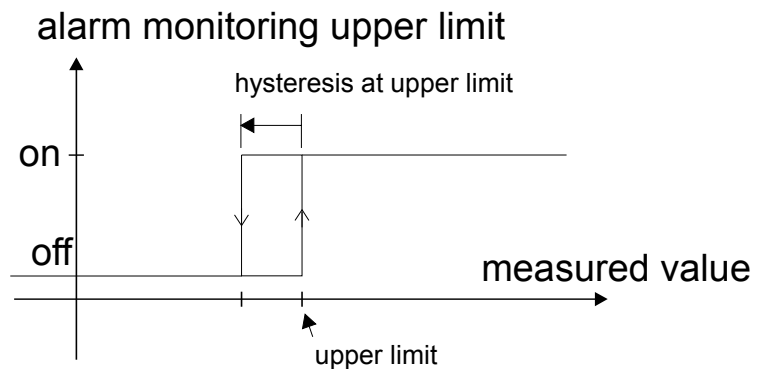**Figure 5: Hysteresis high alarm**

Time delay

The span of time 't_e' is the differ-
ence between the first exceeding
of the measurement above the
upper limit and the switching of
the high alarm (For the low alarm
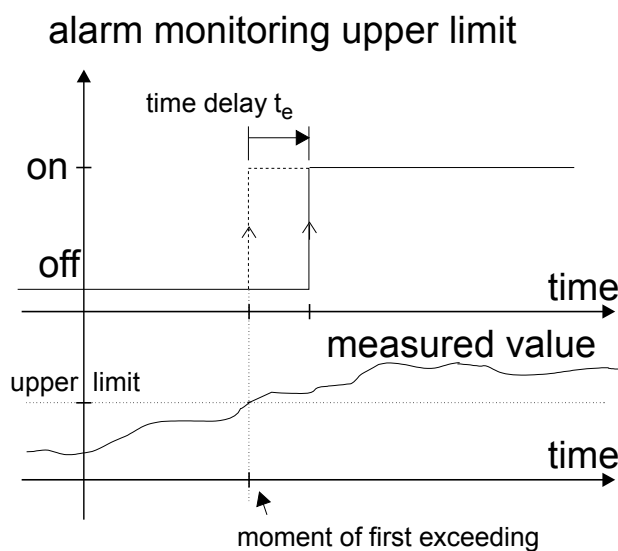exists an analogous 't_e').

Figure 6: Time delay max respectively min

✋ **Note**

If the measured current falls below the high limit during 't_e', the t_e-
timer resets.

4.4   Configuration example

For a successful parameter input, see the following example of a flow measurement, with alarm monitoring.
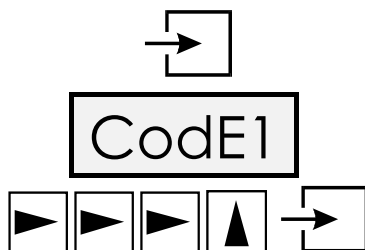
↑ Situation

- Sensor range:
  10g/min ... 100g/min
- Alarm by reaching a throughput rate of 50 kg
- creep suppression:
  12g/min

↑ Adjustment

1] Measure range:	010,0 g/min ... 100,0 g/min for 4 ... 20 mA
2] Bargraph:	010,0 g/min ... 100,0g/min
3] Limits:	Limit relates to the sum (Limit): 50 kg
4] creep suppression:	012,0 g/min
5] Alarm monitoring mode:	circuit-opening connection

Procedure:

One touch on the enter-button quits the normal state and starts **the input menu**.

The menu interrogates for code 1.
The default code 1 is [0001].

Enter the right code word using the arrow buttons.
Finally hit the *enter*-button.

☑   Scaling display and bargraph:

Join the **scale menu** pressing the *enter*-button.

First set the **position of the decimal** point. The position of the decimal point will be used for each parameter, like display, bargraph and limits.
Set the decimal position after the third position (count from left side), because we will enter [1000] (100 g/min) for the high scale point afterwards.
Choose the *enter*-button to edit the decimalpoint position and press the *right*-button for three times.

Confirm with the *enter*-button.

Now the [scale point low] view appears.
Edit by pressing the *enter*-button and enter the **lower scale point**
[0100] (10g/min) as follows:

Press the *right*-button for two times to select the second figure.

0400

Now the figure „4" blinkes.

▲ ... ▲

Hit the *up*-button until ...

0100

... the figure „1" will be adjusted.

→|

Confirm the lower scale point pressing the *enter*-button. Now the...

SCA H

... item appears.

Repeat the input procedure for the **upper scale point** like the lower scale point. Enter [1000] (100 g/min) for the upper scale point.
(Confirm by hitting *enter*-button)

✋ **Hint!**

Enter the upper scale point correct figured 'as big as possible' (the first figures should not be '0')
In this case you **get the maximum precision of the totalizer**.

bAr L

Now **scale the bargraph**. Hit the e*nter*-button.

Enter [0100] (10 g/min) for the lower bargraph scale point.
Confirm by hitting the e*nter*-button

bAr H

Enter [1000] (100g/min) for the upper bargraph scale point.

Hitting e*nter*-button accepts and quits the scale menu.

☑   Prescale factor and creep suppression

tOtAL

Start **total menu** by pressing *enter*-button.

I-FAC

Press *enter*-button a further time to edit the **prescale factor**.

6E4

Enter the value [6E4] (60 000) using the arrow-buttons. To define the correct prescale factor see paragraph 4.3.

Confirm by hitting the e*nter*-button.

StArt

Press now the *enter*-button to edit the creep suppression value. Use the arrow-buttons to enter [0120] (12 g/min).

(Confirm by hitting the e*nter*-button.)

LIS Y

Finally, let the alarm monitoring refer to the sum. Select [LIS_Y] using the arrow-buttons and confirm with the *enter*-button.

PUL	Totalizer with external reset and current flow signal option (D122.Z.x.3) have additional the option to configure the digital output. Pass this menu item using the *right*-button, to keep the default setting: pulse output = no (=false)

☑   Limits, Hysteresis and time delay

LI	Start the limit menu by pressing the e*nter*-button*.* The device skips the input of the lower limit, because the limit refers to the sum.

LI H	The upper limit input appears. After hitting the *enter*-button enter the limit [0050.0] (50 kg) using the arrow-buttons. Confirm by hitting the e*nter*-button. The hysteresis and time delay are also skipped.

Con H	Now choose the circuit-opening connection [nc---] (normaly closed) using the *up*-button and confirm by pressing *enter*-button.

► ► ►	We pass simply the following menu items (manipulate code words and calibrate) using the *right*-button.

|	
End →|	Finally quit the scale menu hitting the *enter*-button. The totalizer is back in normal state. The changes are immediately active and will still be active after power off (disconnecting the totalizer).

5   Option special software

The indicator D122.AS as well as the totalizer D122.ZS have a special software option. With this option it is possible to use this devices in any individual cases of measurement and indication.

☑   Curve fitting

The curve fitting software **indicates the measure current in a non-linear way**. Consider the application of a filling-level meter for a sphere-tank. The measure current is linear to the filling-height of the liquid. But the function between the filling-height and the volume is non-linear, as shown in the figure below.
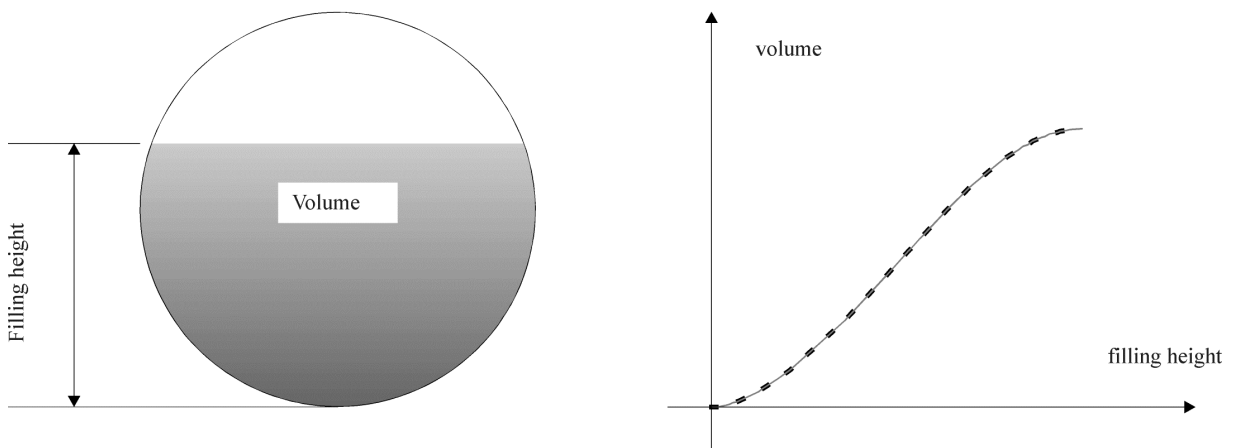
To get the correct quantity indication you require a **list of points**, which shows the connection between measure current and associated quantity inside of the tank. The curve fitting software of the D122.XS interpolates the curve between these points on your choice in a linear or a square way.

> The **linear interpolation** generates imaginary **straight lines** between the selected points. A value on this line will be calculated on base of his distance to the previous selected point. This kind of interpolation requires **17 points** to scale 4 up to 20 mA.

> On the other hand the **square interpolation** needs a list of **33 points**, but it approximates the original curve much better than the linear one, so the **error between the original curve and the interpolated curve is much smaller**.

To put in the list of selected point enter the (extended) scale menu. The device displays the measure current and you have to enter the associated display value. See also flow diagram in Figure 11.

☑   Squareroot-fitting

To program a squareroot-function, e.g., to display the flow through a aperture, a special squareroot-fitting feature is available. For this option it is not necessary to enter a list of points, but just a start- and a end-value (in previous example: associated flow by 4 and by 20mA measure current). The device calculates automatically the selected points for interpolation.
Be prepared, this procedure will take some time. See also flow diagram in Figure 11.

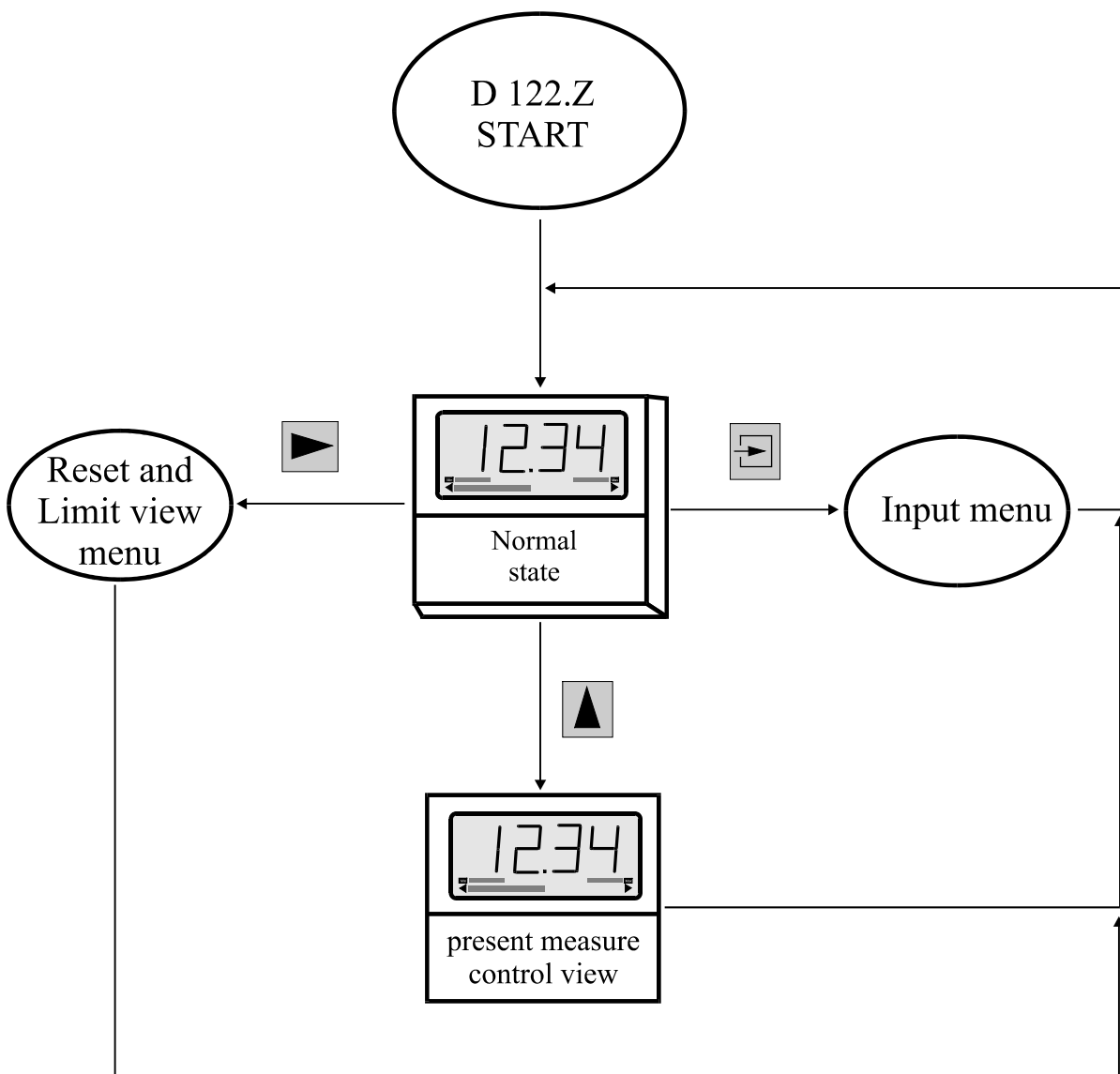# 6   Flow charts

Figure 7: Flow diagram normal state
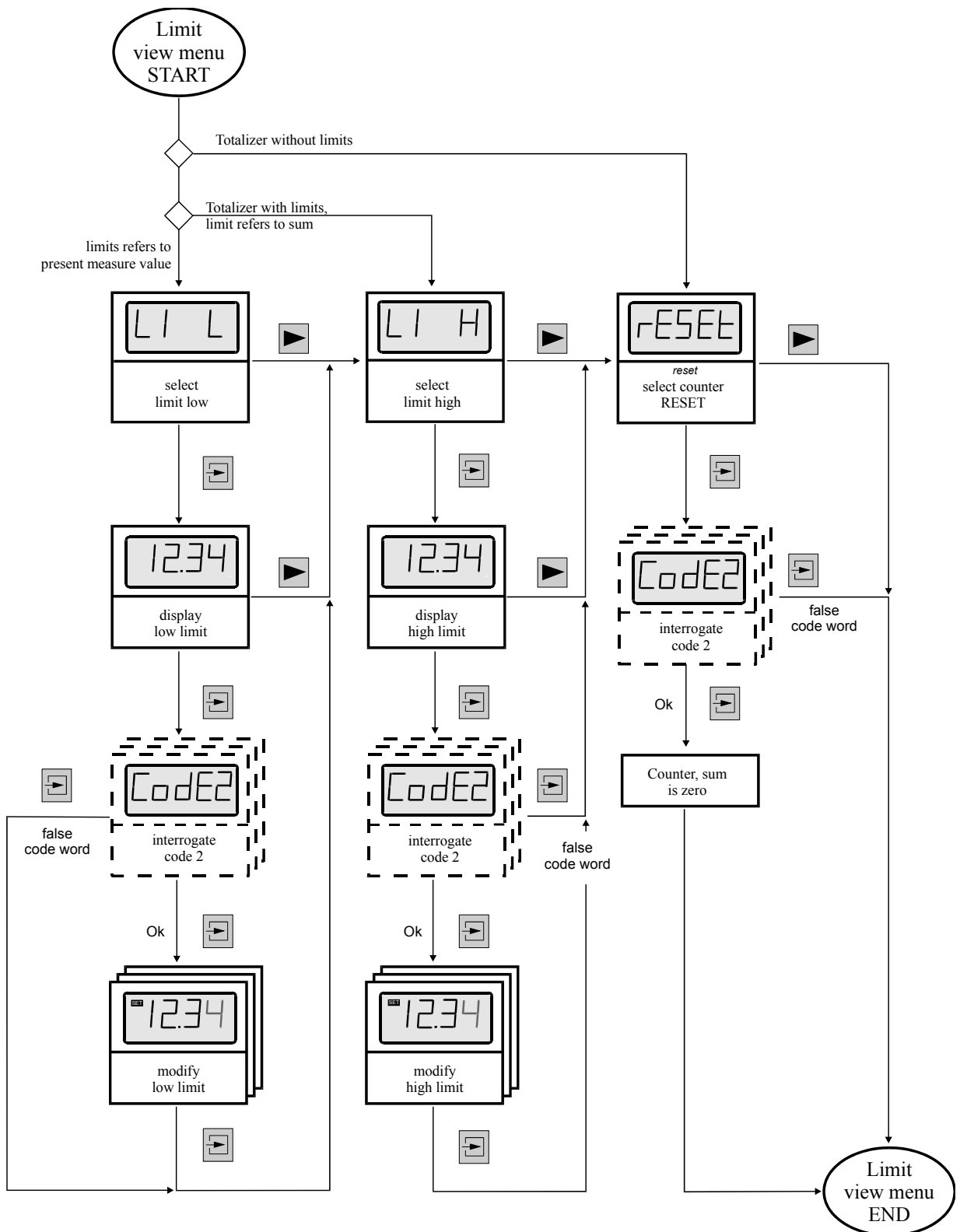
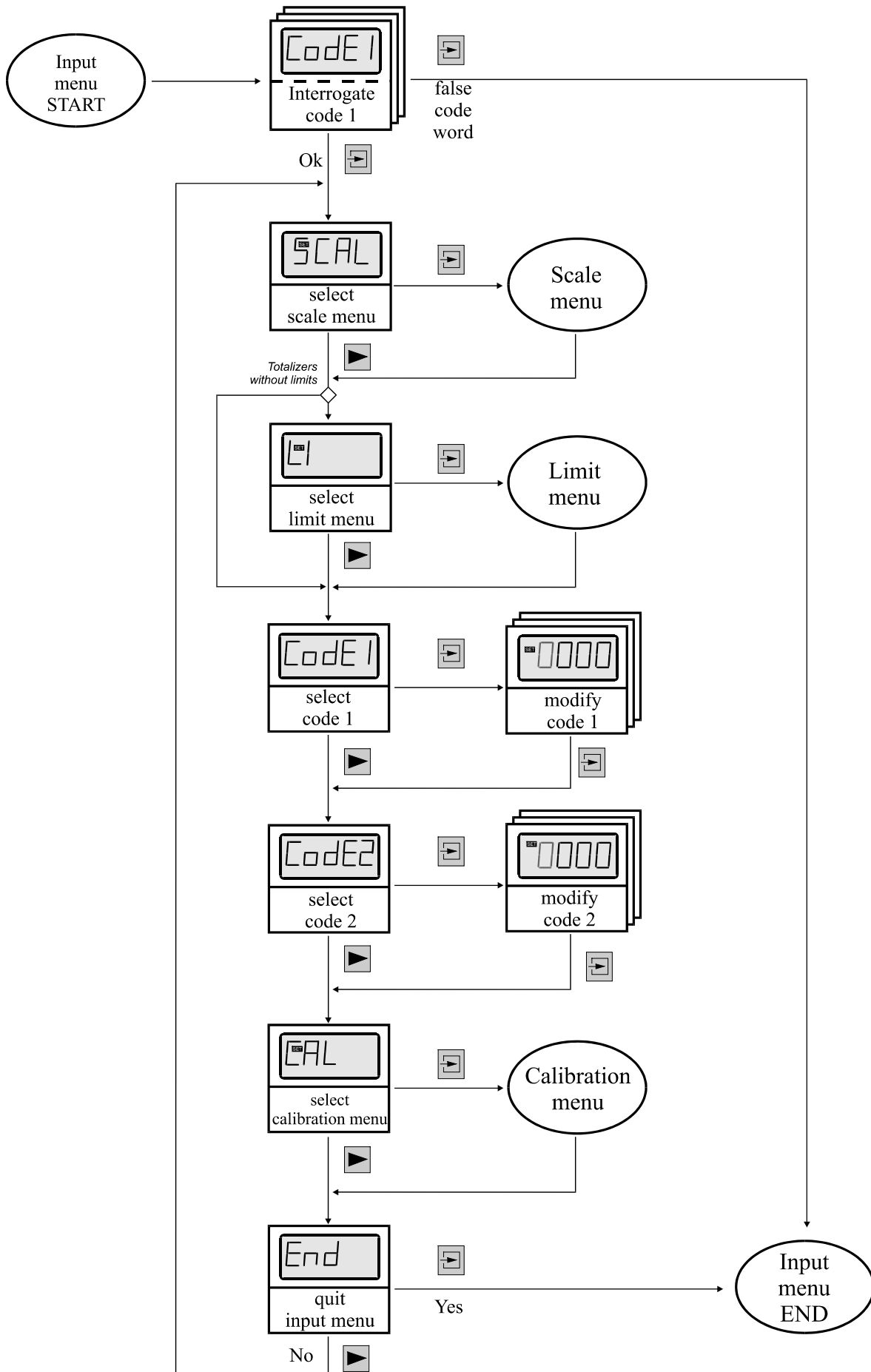**Figure 8: Flow diagram limit view**
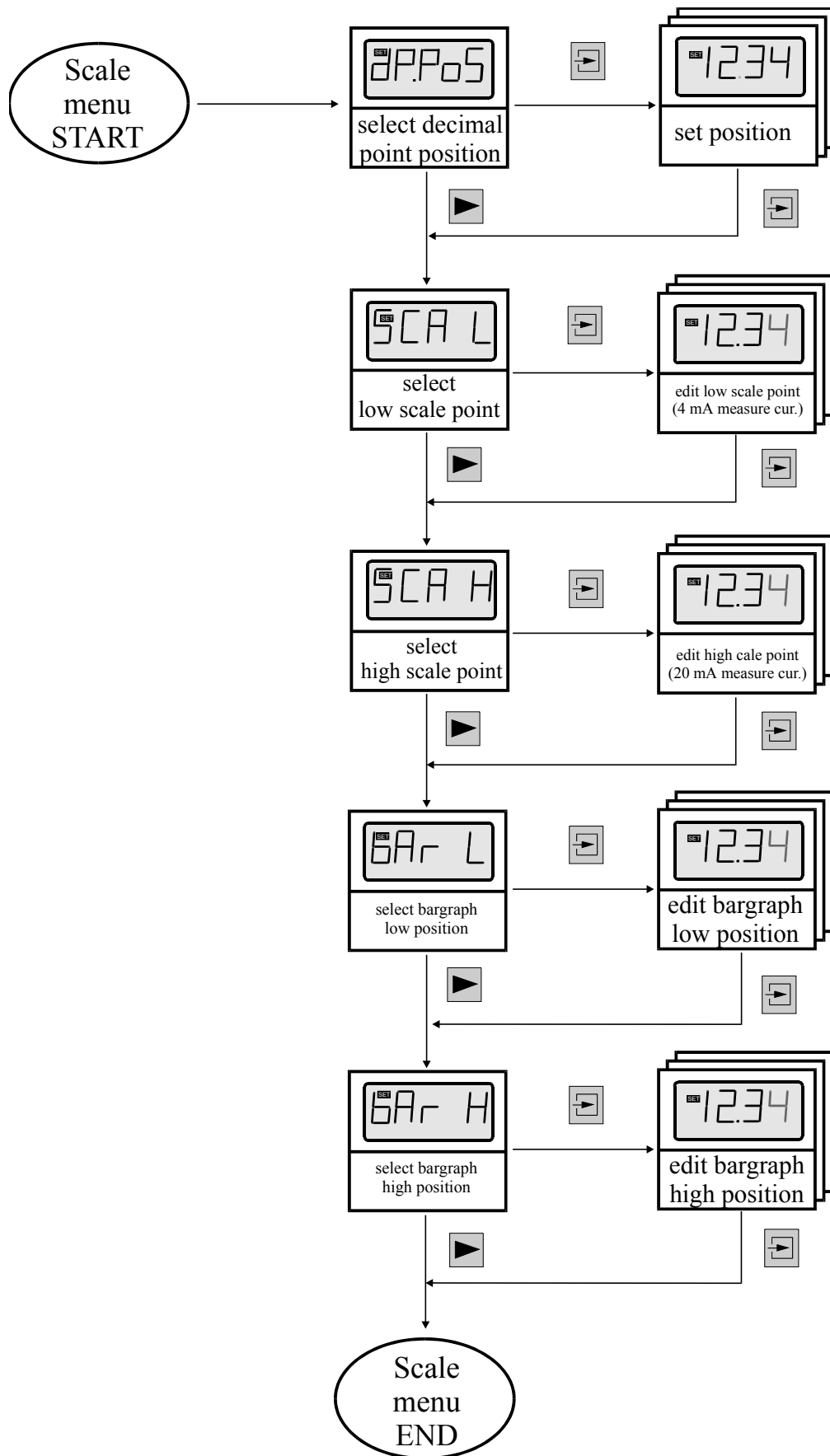
Figure 9: Flow diagram input menu

Figure 10: Flow diagram scale menu

Alternative (extended) scale menu for special software option only
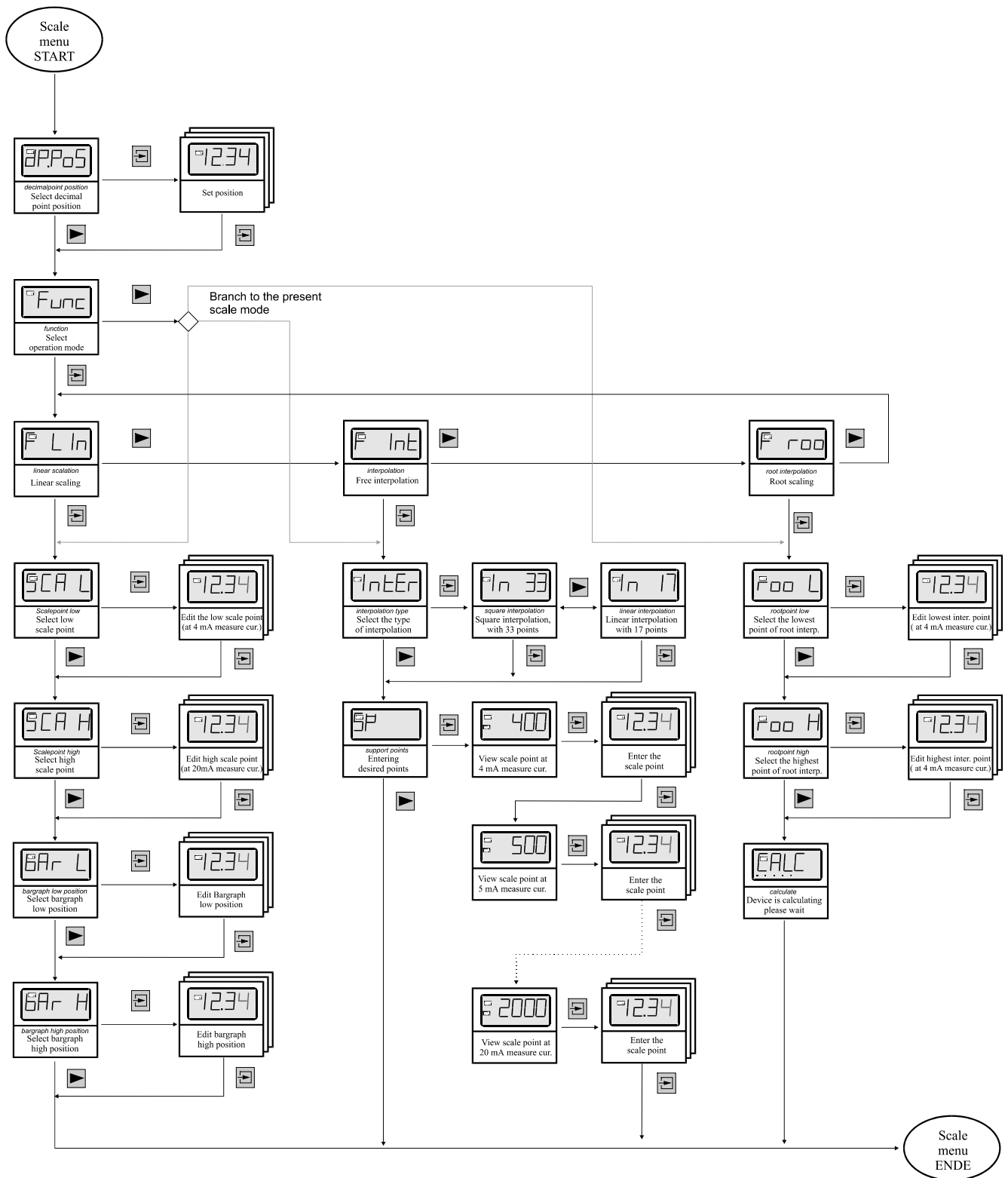

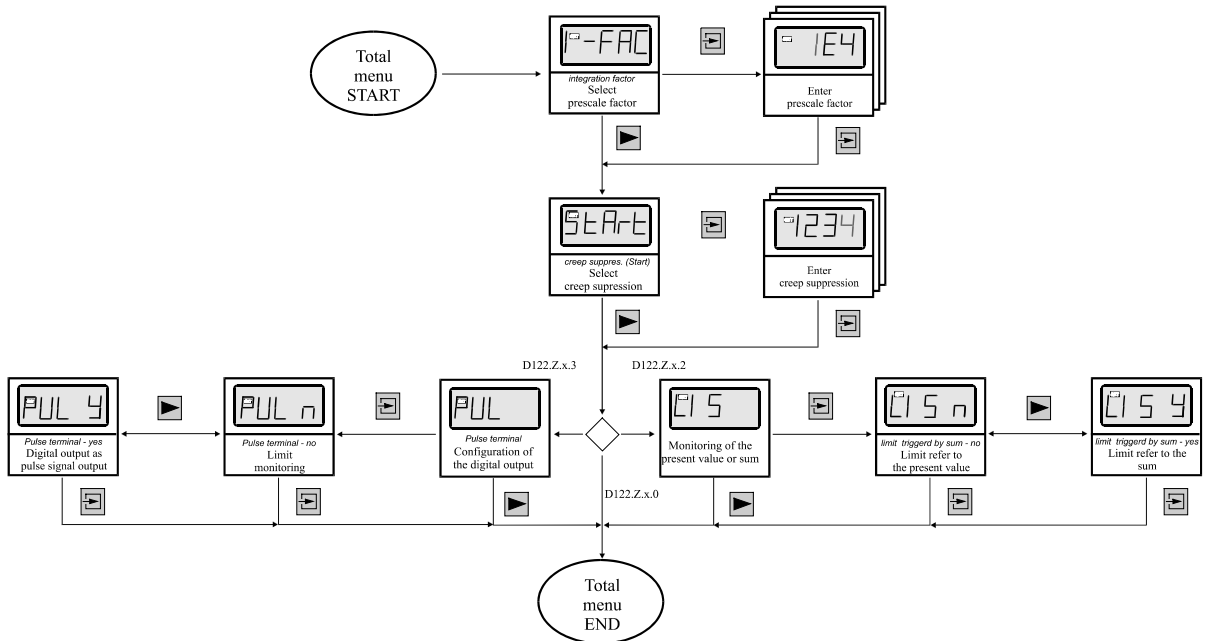**Figure 11: Flow diagram extended scale menu**
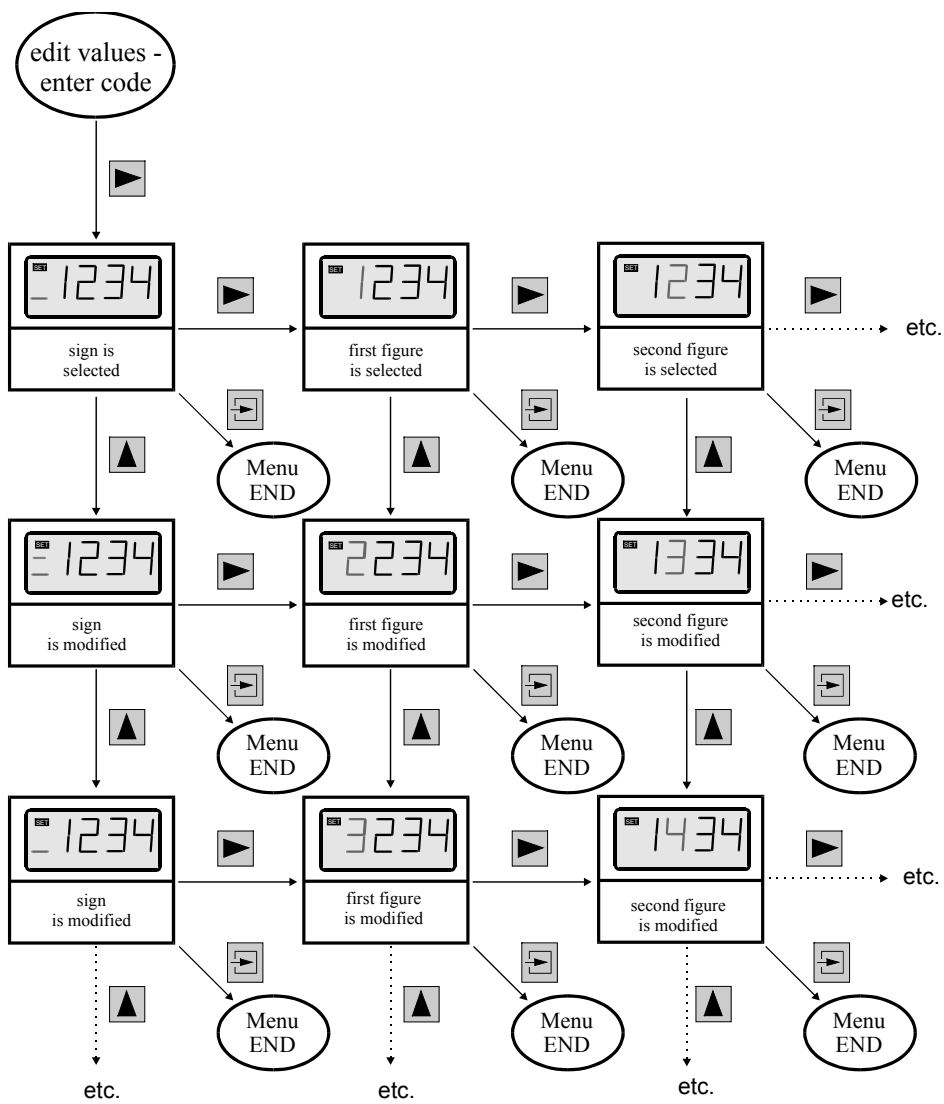
Figure 12: Flow diagram total menu

Figure 13: edit mode
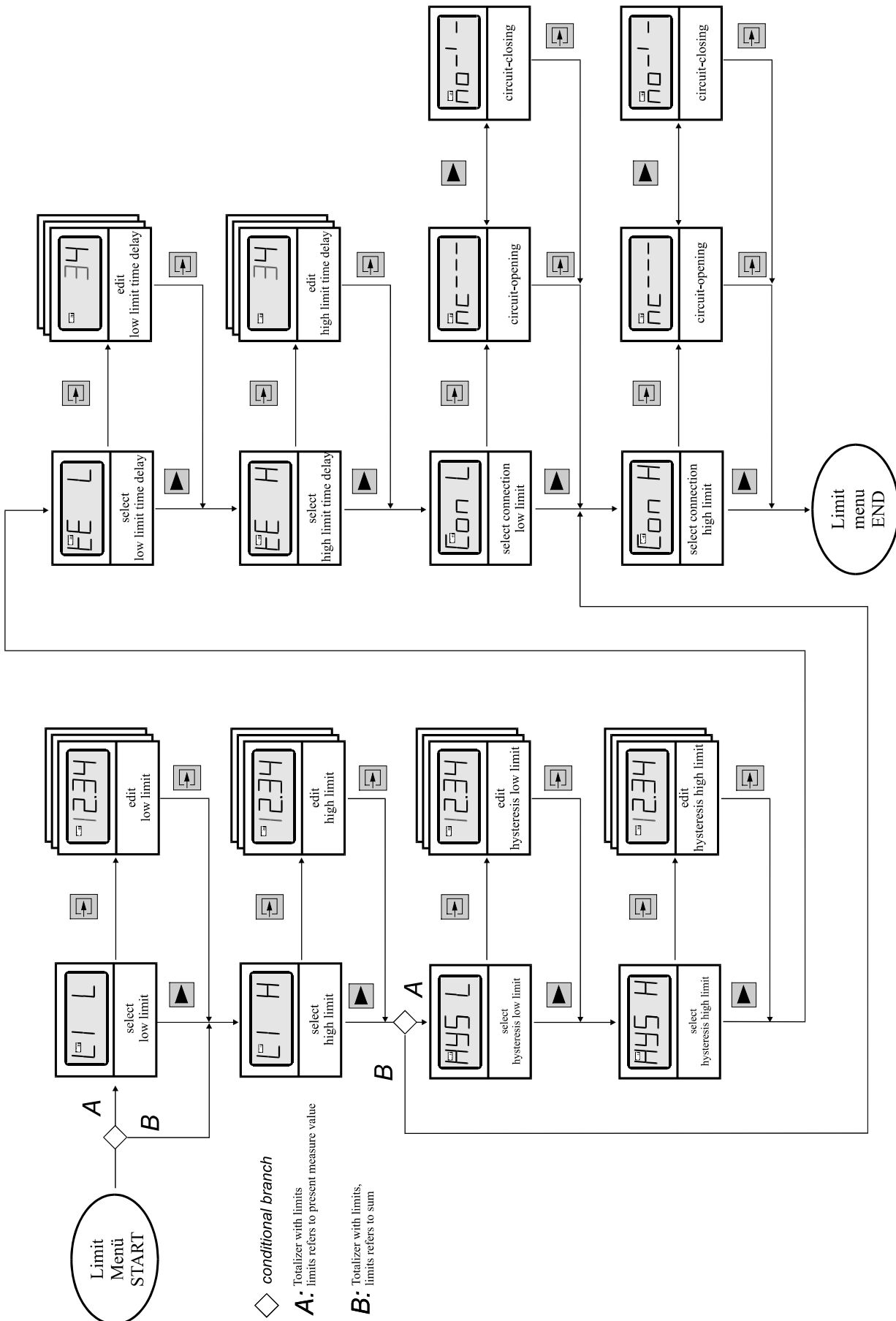
Figure 14: Flow diagram limit menu
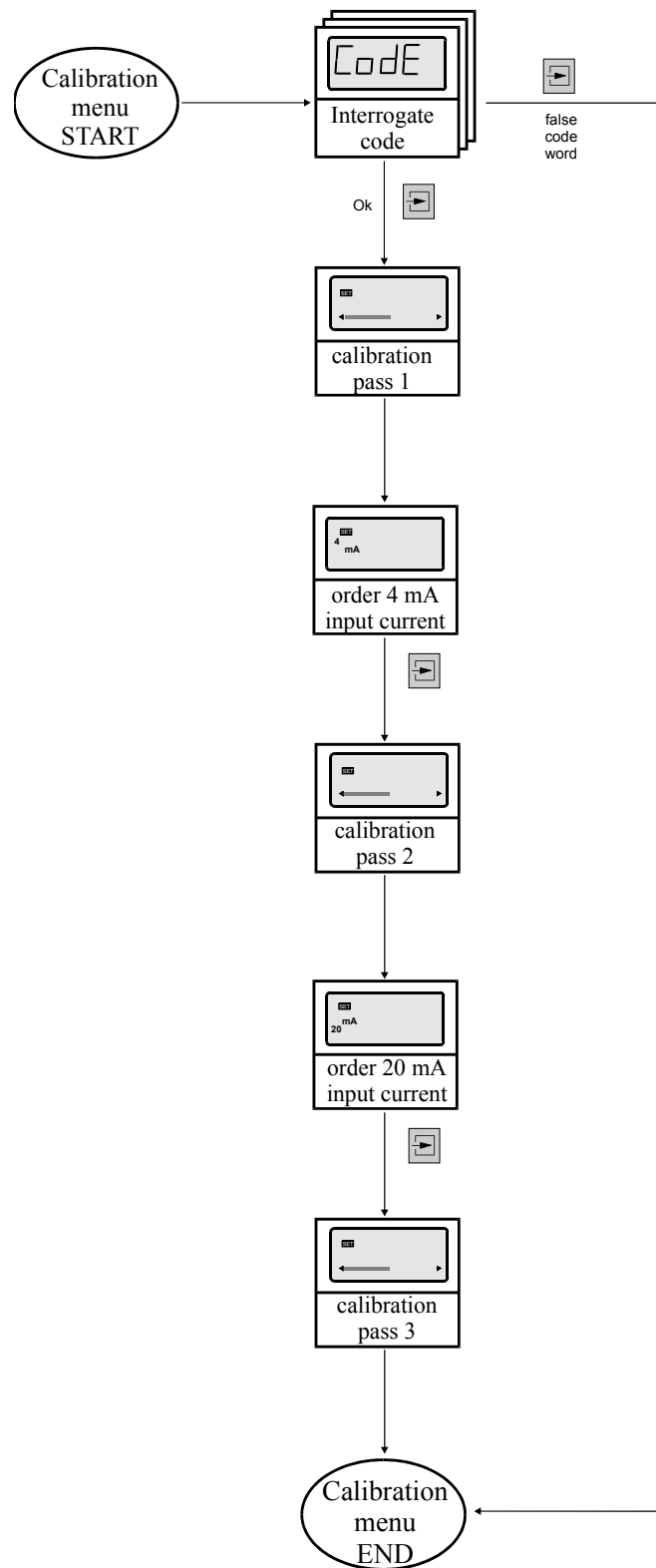
Figure 15: Flow diagram calibration menu

7   Appendix

7.1   Specifications

	D 122.Z.		
	Z.0	Z.3	Z.5
Display	5-digit seven-segment LCD		
Digit height	15mm	30mm	30mm
Display range	00000 ... +99999 for the sum		
Dimension symbols	Selectable with defined symbols		
Decimal points	Selectable by keyboard		
Bargraph	41 Segments		
Alarm limits display Versions D122.Z.☐.2	- Via bargraph - Flashing 'max' Or 'min' sign		
Alarm limit monitoring Version D122.A.☐.2	By means of intrinsically safe control circuits (e.g. NAMUR or DIN 19234)		
present measure value button	Direct display of present measure value in measurement circuit		
Measurement circuit	Intrinsically safe measurement circuit 4 ...20 mA; Voltage drop ca. 1V		
Measurement circuit limits	No-load Voltage $U_0 \le 65$ V; short-circuit current $I_k \le 160$ mA Internal inductance: ≤ 40 μH Internal capacitance: ≤ 10 nF, see certificate TÜV 99 ATEX 1448		
Alarm monitoring limits	By intrinsically safe control circuits No-load Voltage $U_0 \le 30$ V; short-circuit current $I_k \le 160$ mA P_{max} not greater than 850 mW; Internal inductance: ≤ 40 μH Internal capacitance is negligible see certificate TÜV 99 ATEX 1448		
Explosion protection	E Ex ib IIC T6 at ambient temperature 45°C or E Ex ib IIC T5 at ambient temperature 60°C		
Housing	Acc. to control-panel standard DIN 43700		-
Protection class	Front panel IP 40up to IP 65		IP 65
Dimensions HxWxD [mm]	48x96x62	72x144x80	134x138x64
Material	glass fibre strengthened Noryl		ABS
Measuring error	0,1% $\pm$ 2 digits referring to measure range		
Temperature coefficient	< 0,01% of measure range / K		
Ambient temperature limit	-10°C ...+45°C for temperature class 6 or -10°C ...+60°C for temperature class 5 totalizers for -20°C ambient temperature on inquiry		

7.2   Error messages

during start sequence:

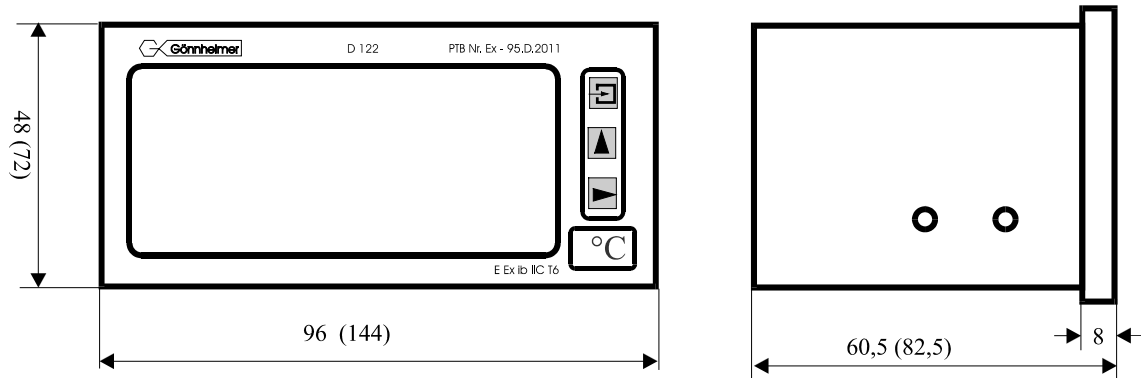| Message	Reason	Solution
Error 1	trouble, ordinary failure	switch off and on for a further one, if error repeats, send the device back to us.
Error 2	The sum from a previous run is lost	press any button, device is ready for run

7.3   Dimensions
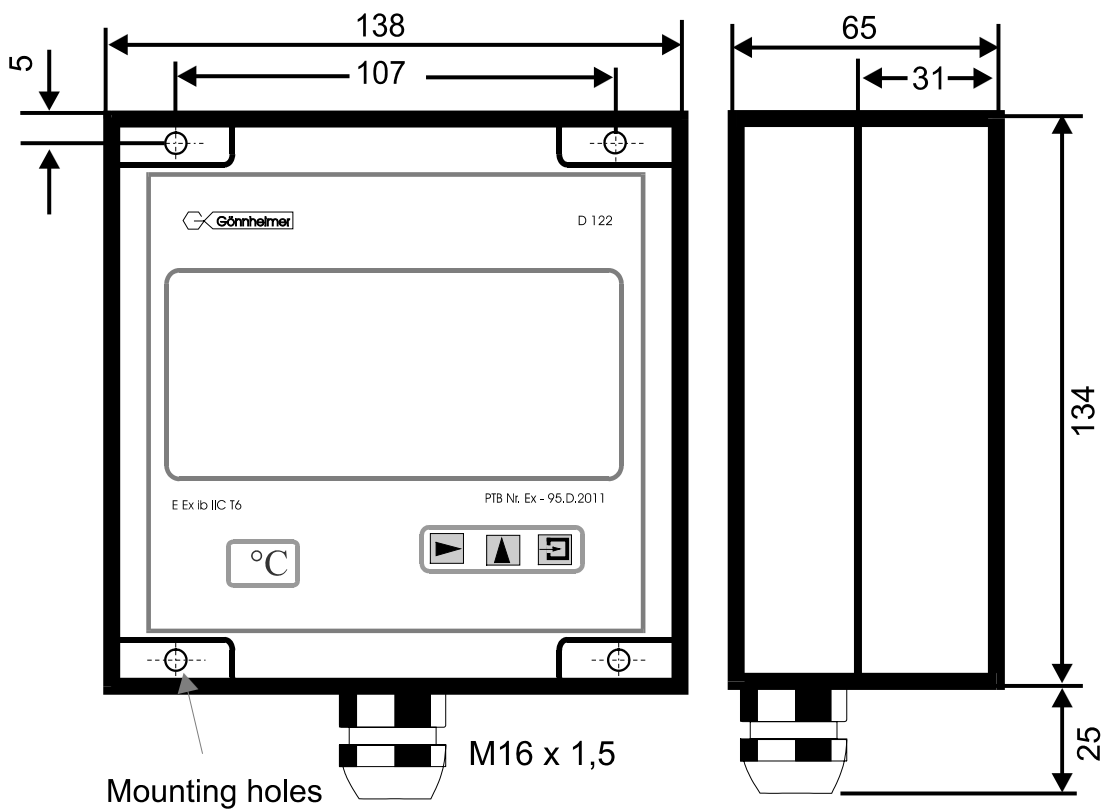

Figure 16: Control panel housing cut-out

Figure 17: Field housing cut-out

7.4   Parameter list

The customer is free to use this chart for archiving the parameters of his indicator D122.

Parameter	Description	previous Display	Value
Scale menu			
Decimalpoint position		dP.PoS	0 0 0 0
Low scale point	Display at 4 mA input current	SCAL L	
High scale point	Display at 20 mA input current	SCAL H	
Bargraph low position	Display of starting bargraph	bAr L	
Bargraph high position	Display at full bargraph	bAr H	
Total menu			
Prescale factor	Dvides the actuell measured value to scale the sum	I-FAC	
Creep suppression	To ignore transductor signals below this value	StArt	
Alarm refer to the sum	or refer to the present measure value	LI S Y LI S n	
Limit menu			
Low limit		LI L	
High limit		LI H	
Hysteresis of low limit		HYS L	
Hysteresis of high limit		HYS H	
Alarm connection of low limit	Choice between normal open (no) and normal closed (nc)	Con L	nc no
Alarm connection of high limit	Choice between normal open (no) and normal closed (nc)	Con H	nc no
Code word Nr. 1		CodE 1	
Code word Nr. 2		CodE 2	
Only on Option Sondersoftware			
Low scale point root function	Display at 4 mA input current	roo L	
High scale point root function	Display at 20 mA input current	roo H	

linear or square Interpolation	Choice between linear or square Interpolation	INTER	In 33	In17
Setpoint		400		
		450		
		500		
		550		
		600		
		650		
		700		
		750		
		800		
		850		
		900		
		950		
		1000		
		1050		
		1100		
		1150		
		1200		
		1250		
		1300		
		1350		
		1400		
		1450		
		1500		
		1550		
		1600		
		1650		
		1700		
		1800		
		1850		
		1900		
		1950		
		2000		

7.5   Type code

Device series D122	.	.	.	
Device:				
Indicator	.A			
Indicator with curve fitting option	.AS			
Totalizer	.Z			
Totalizer with curve fitting option	.ZS			
Housing:				
Control panel housing 48 x 96 mm		.0		
Control panel housing 72 x 144 mm		.3		
Field housing (30 mm Ziffernhöhe)		.5		
Field housing (50 mm Ziffernhöhe)		.6		
Digital output:				
without			.0	
with 2 digital outputs			.2	
with reset input and pulse output			.3	
Additional option:				
Internal zener barrier				.BM

7.6   Index

EC- TYPE- EXAMINATION CERTIFICATE

(1)

(Translation)

(2) Equipment and protective systems intended for use in potential explosive Atmospheres – **Directive 94/9/EC**

(3) EC- type- examination Certificate number
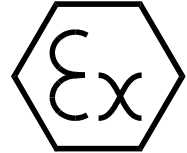
TÜV 99 ATEX 1488

(4) Equipment: Digital Indicator Type D122...

(5) Manufacturer: Gönnheimer Elektronic GmbH

(6) Address: D-Neustadt an der Weinstraße

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, notified body No. 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 1994, certifies that equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the confidential report No. 99/PX24090

(9) Compliance with to essential Health and Safety Requirements has been assured by compliance with:
EN 50 014:1997   EN 50 020:1994   EN 50 028:1988

(10) If the sign "X" is places after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC- type- examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:
⟨Ex⟩ **II 2 (1) G EEx ia IIC T6 bzw. EEx m [ib] IIC T6**

TÜV Hannover/Sachen-Anhalt e.V.   Hannover, 02.11.1999
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Der Leiter

SCHEDULE

EC- TYPE-Examination CERTIFICATE No. TÜV 99 ATEX 1488

(15) Description of equipment
The digital indicator type D122 ... serves as direct indicator of measured values of intrinsically safe 4 ..20 mA current circuits in explosive endangered areas. The maximum ambient temperature is 45°C in temperature class T6 and 60°C in the temperature class T5.

Electrical details

Supply and signal current circuit (Terminal 1,2)	Exclusive connection to a certificated intrinsically safe current circuit with the following highest values: $U_i = 65$ V $I_i = 160$ mA
	Effective internal inductivity 40 µH Effective internal capacity 10 nF

Only Type D122.T.x.x.x

Supply and signal current circuit (Terminal 1,2)	Exclusive connection to a certificated intrinsically safe current circuit with the following highest values: $U_i = 30$ V $I_i = 160$ mA $P_i = 1,6$ W
	Effective internal inductivity 40 µH effective internal capacity 10 nF
Terminals 3,4	Bridget

Only TYP 122.x.x.x.BM with additional protection type moulding and the sign EEx m [ib] IIC T6 bzw. EEx m [ib] IIC T5

Input current circuit (wire)	$U_m = 250$ V and to connect to ground

---

Any types

Alarm current circuits (Terminal 5,6; 7,8)	Exclusive connection to a certificated intrinsically current circuit with the following highest values each current circuit:
Outputs:	$U_i = 30\ V$
	$I_i = 160\ mA$
	$P_i = 850\ mW$
Inputs:	$U_i = 30\ V$

Effective internal inductivity $\leq 40\ \mu H$
the effective internal capacity is negligibly small

All current circuits are safe gavanically separated up to a nominal voltage of 90 V to each other. The input current circuit by the type D122.x.x.x.BM is internally connected to the supply and signal circuit.

(16)   Report No. 99/PX24090

(17)   Special conditions for safe area
        None

(18)   Essential health and safety requirements
        No additional

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the TÜV Hannover/Sachsen-Anhalt e.V.

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TÜV CERT

(1) EG-Baumusterprüfbescheinigung

(2) Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen - **Richtlinie 94/9/EG**

⟨Ex⟩

(3) EG Baumusterprüfbescheinigungsnummer

TÜV 99 ATEX 1488

(4) Gerät: Digitales Anzeigegerät Typ D122...

(5) Hersteller: Gönnheimer Elektronic GmbH

(6) Anschrift: D-67433 Neustadt/Weinstraße, Dr.-Julius Leber-Str.2

(7) Die Bauart dieses Gerätes sowie die verschiedenen zulässigen Ausführungen sind in der Anlage zu dieser Baumusterprüfbescheinigung festgelegt.

(8) Der TÜV Hannover/Sachsen-Anhalt e.V., TÜV CERT-Zertifizierungsstelle, bescheinigt als benannte Stelle Nr. 0032 nach Artikel 9 der Richtlinie des Rates der Europäischen Gemeinschaften vom 23. März 1994 (94/9/EG) die Erfüllung der grundlegenden Sicherheits- und Gesundheitsanforderungen für die Konzeption und den Bau von Geräten und Schutzsystemen zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen gemäß Anhang II der Richtlinie.

Die Ergebnisse der Prüfung sind in dem vertraulichen Prüfbericht Nr. 99/PX24090 festgelegt.

(9) Die grundlegenden Sicherheits- und Gesundheitsanforderungen werden erfüllt durch Übereinstimmung mit

EN 50 014:1997   EN 50 020:1994   EN 50 028:1988

(10) Falls das Zeichen "X" hinter der Bescheinigungsnummer steht, wird auf besondere Bedingungen für die sichere Anwendung des Gerätes in der Anlage zu dieser Bescheinigung hingewiesen.

(11) Diese EG-Baumusterprüfbescheinigung bezieht sich nur auf die Konzeption und den Bau des festgelegten Gerätes gemäß Richtlinie 94/9/EG. Weitere Anforderungen dieser Richtlinie gelten für die Herstellung und das Inverkehrbringen dieses Gerätes.

(12) Die Kennzeichnung des Gerätes muß die folgenden Angaben enthalten:

⟨Ex⟩ **II 2 (1) G EEx ia IIC T6 bzw. EEx m [ib] IIC T6**

TÜV Hannover/Sachsen-Anhalt e.V.   **Hannover, 02.11.1999**
TÜV CERT-Zertifizierungsstelle
Am TÜV 1
D-30519 Hannover

Der Leiter

(13) **A N L A G E**

(14) **EG-Baumusterprüfbescheinigung Nr. TÜV 99 ATEX 1488**

(15) Beschreibung des Gerätes

Das digitales Anzeigegerät Typ D122... dient zur Anzeige von Messwerten aus eigensicheren 4-20 mA Stromkreisen innerhalb des explosionsgefährdeten Bereiches.

Der höchstzulässigen Umgebungstemperaturen betragen 45°C für die Temperaturklasse T6 und 60°C für die Temperaturklasse T5.

Elektrische Daten

Versorgungs- und Signalstromkreis (Klemme 1, 2)	in Zündschutzart Eigensicherheit EEx ia IIC bzw. EEx ib IIC nur zum Anschluss an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten: U_i = 65 V I_i = 160 mA

wirksame innere Kapazität　　10　nF
wirksame innere Induktivität　40　µH

nur Typ D122.T.x.x.x

Versorgungs- und Signalstromkreis (Klemme 1, 2)	in Zündschutzart Eigensicherheit EEx ia IIC bzw. EEx ib IIC nur zum Anschluss an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten: U_i = 30 V I_i = 160 mA P_i = 1,6 W

wirksame innere Kapazität　　10　nF
wirksame innere Induktivität　40　µH

Klemme 3, 4　　　　　　　gebrückt

nur Typ D122.x.x.x.BM mit zusätzlicher Zündschutzart Vergusskapselung und der Kennzeichnung EEx m [ib] IIC T6 bzw. EEx m [ib] IIC T5

Eingangsstromkreis (Kabelschwanz)	U_m = 250 V und zum Anschluss an den Potenzialausgleich

alle Typen

Grenzwertstromkreise (Klemme 5, 6; 7, 8)	in Zündschutzart Eigensicherheit EEx ib IIC nur zum Anschluss an bescheinigte eigensichere Stromkreise mit folgenden Höchstwerten:
für Schaltausgänge	$U_i = 30$ V
	$I_i = 160$ mA
	$P_i = 850$ mW
bzw. für Schalteingänge	$U_i = 30$ V

wirksame innere Induktivität   40 μH
die wirksame innere Kapazität ist vernachlässigbar klein

Alle eigensicheren Stromkreise sind voneinander bis zu einem Scheitelwert der Nennspannung von 90 V sicher galvanisch getrennt. Beim Typ D122.x.x.x.BM ist der Eingangsstromkreis intern mit dem Versorgungs- und Signalstromkreis verbunden.

(16) Prüfungsunterlagen sind im Prüfbericht Nr.: 99/PX24090 aufgelistet.

(17) Besondere Bedingung

keine

(18) Grundlegende Sicherheits- und Gesundheitsanforderungen

keine zusätzlichen