MOLLET
Füllstandtechnik GmbH

Yo-Yo sensing level measurement
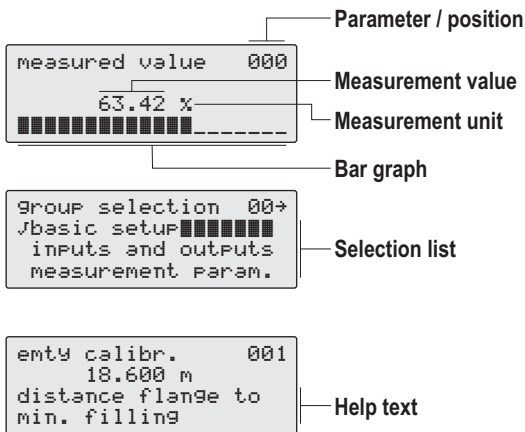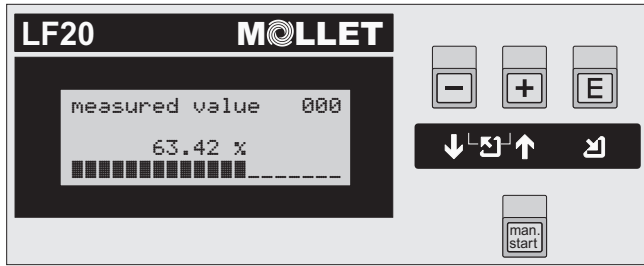## continuous level indication for bulk solids

LF

Instruction for parameterisation

S/N serial number							silo number / silo name

Index   **Page**

MOLLET Füllstandtechnik GmbH

Yo-Yo sensing level measurement
LF20

MOLOS bob

Display and input keys

LF20 MOLLET

```
measured value    000
        63.42 %
■■■■■■■■■■■■_____
```

[- + E]

↓ ⌐⌐↑   ⌐⌐

man. start

measured value   000 —— **Parameter / position**
63.42 % —— **Measurement value**
—— **Measurement unit**
■■■■■■■■■■■■_____ —— **Bar graph**

```
group selection  00→
√basic setup■■■■■■■
 inputs and outputs
 measurement param.
```
—— **Selection list**

```
emty calibr.     001
      18.600 m
distance flange to
min. filling
```
—— **Help text**

Key functions

| Key(s)	Function
− ↓	- Downwards navigation in the **selection list** - Edit the numerical values within a function
+ ↑	- Upwards navigation in the **selection list** - Edit the numerical values within a function
E ⌐⌐	- Navigation to the right within the group selection - Downwards navigation within the parameter groups - Confirmation
− + + ⌐⌐	- Navigation to the left within the group selection - Upwards navigation within the parameter groups
+ + E	- Increases the contrast of the display
− + E	- Decreases the contrast of the display
man. start or Start extern	- Starts measurement process in case display shows **measured value [000]**

## Menu levels

Menu consists of two levels.

1. The level of the **parameter groups PG**
    These divide the menu into groups.

2. The level of the **parameters P**
    Here parameters can be selected or numerical values can be insert and stored.

In order to provide a improved orientation for each parameter a number is shown in the display and in this instruction.

Parameter group PG 0 2 →

0 2 3 **Parameter P**

```
normal or short   023
√normal■■■■■■■■■■■■■
 short
```
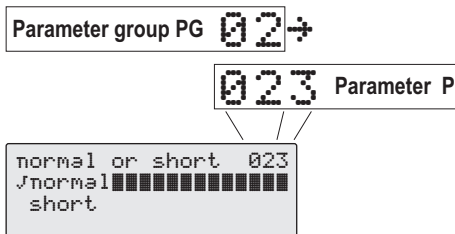
Numerical entry and text input

Select parameter display e.g. **full calibration [003]**.

```
full calibration 003
 ▮0.80     m
measuring range
max. = empty − bd
```
↑ + E
− ⌐⌐ ↓
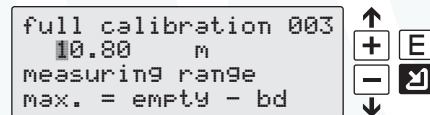
Key(s)	Operation
− + ↓ ↑	**1.** Pressure on one of these keys puts the blinking input mask on the first position.
− + ↓ ↑	**2.** Select with the keys the required sign.
E ⌐⌐	**3.** Pressing the key puts the blinking input mask on the next position.
	4. Repeat step **2.** and **3.** until the value is completely inserted or changed.
E ⌐⌐	**5.** In case ⌐⌐ appears in the input mask the value is stored by pressing this key.
− + + ⌐⌐	**6.** Pressing both keys at the same time interrupts insert procedure. The edit mode is left.

Parameterisation MOLLET D-74706 Osterburken Tel. +49 6291 6440-0 Fax +49 6291 9846

LF20 first switch-on

```
Initialization

Jan 20 2014
```

| 5 sek |

```
LF20
V01.01.12-X3

A84A1AD1N1
```

| 5 sek |

```
Language         060
√English■■■■■■■■■■■■
 Deutsch
 Francais
```

| ↑ | + | E |
| ↓ | − | ↵ |

```
ニホンゴ
```

| E |

```
distance unit    083
√m■■■■■■■■■■■■■■■■
 ft
 in
```

| ↑ | + | E |
| ↓ | − | ↵ |

| E |

```
measured value   000

     63.42 %
■■■■■■■■■■■_____
```
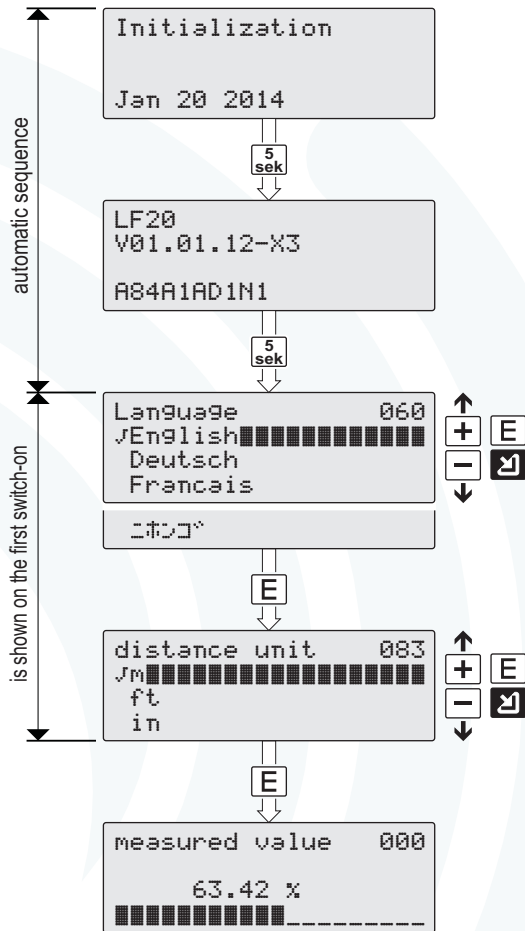
Initialization

Day of production

Type of device
Device version (hard- and software)

Order code (device configuration)

Please note selection.

Select language

Preset parameter   **English**

060   Language
❏ **English**
❏ Deutsch
❏ Français
❏ Japanisch

Select distance unit

Preset parameter   **m**   (meter)

083   distance unit
❏ m
❏ ft
❏ in

Last measurement value is shown.

A measuring procedure has to be operated in order to get an actual measuring value.

Hardware locking mechanism

```
measured value   000

     63.42 %
■■■■■■■■■■■_____
```

| − | + | + | + | E |

```
unlock parameter 074
⌁ hardware locking
```

| E |

```
measured value   000
⌁
     63.42 %
■■■■■■■■■■■_____
```

Disable parameterisation | − | + | + | + | E | pressing at the same time

⌁ -symbol is shown

Inputs no more possible.
Measuring procedures can take place.

Deblock parameterisation | − | + | + | + | E | pressing at the same time

LF20 parameterise

```
measured value    000
      63.42 %
■■■■■■■■■_____
```

E

Back from page
LF-PA-05 to LF-PA-22

– + +

```
group selection   00→
√basic setup■■■■■■■■
 inputs and outputs
 measurement param.
```
```
 current output
 safety seting
 linearization
 display
 diagnostics
 system parameters
 service
```

↑
+
–
↓

E

– + +

Move from measurement value indication to the group selection and choose the required parameter group [PG].

```
group selection   00→
√basic setup■■■■■■■■
```
PG 00→
page **LF-PA-05**

▶ **!!! At the time of the first start of operation and after any reset (see parameter [073]) the parameters in group basic setup [PG00] <u>have to</u> be inserted. *)**

```
group selection   01→
√inputs and outputs■
```
PG 01→
page **LF-PA-06**

```
group selection   02→
√measurement param.■
```
PG 02→
page **LF-PA-10**

```
group selection   03→
√current output■■■■■
```
PG 03→
page **LF-PA-14**

```
group selection   04→
√safety seting■■■■■■
```
PG 04→
page **LF-PA-15**

*) In most cases this basic setup is sufficient for a successful start of operation.

▶ **In addition for measurements are alternatively required**
(see page LF-PA06)

- selection of „**start measurement**" for **input 1 [010]** or **2 [012]** and wiring of the signal input accordingly

- for **measurement type [020]** the selection „**periodical**".

```
group selection   05→
√linearization■■■■■■
```
PG 05→
page **LF-PA-18**

```
group selection   06→
√display■■■■■■■■■■■■
```
PG 06→
page **LF-PA-19**

▶ **In order to protect sensing weight from spillage during filling process and quick discharging**

- select „**bolting**" for **input 1 [010]** or **2 [012]** and wire the signal input accordingly
(see page LF-PA06)

```
group selection   07→
√diagnostics■■■■■■■■
```
PG 07→
page **LF-PA-20**

```
group selection   08→
√system parameters■■
```
PG 08→
page **LF-PA-22**

▶ **Complex measurement tasks require further settings.**

```
group selection   0D→
 service          20
```

Basic setup - parameter group PG 00⁺

PG 00⁺
page **LF-PA-04**

```
empty calib.      001
      12.00 m
distance flange to
min. filling
```
↑ E
+
− ↵
↓

E   − + +

```
block distance    002
      0.72 m
distance flange to
bottom weight
```
↑ E
+
− ↵
↓

E   − + +

```
full calibration 003
      10.80 m
measuring range
max. = empty - bd
```
↑ E
+
− ↵
↓

E   − + +

```
measurement type 020
√single cycle■■■■■■■
 periodical
 manual
```
↑ E
+
− ↵
↓

E   − + +

```
dist./meas.value 004
distance   9.90 m
meas.val 19.45 %
```

E

```
    Return to
group selection
```

page **LF-PA-04**
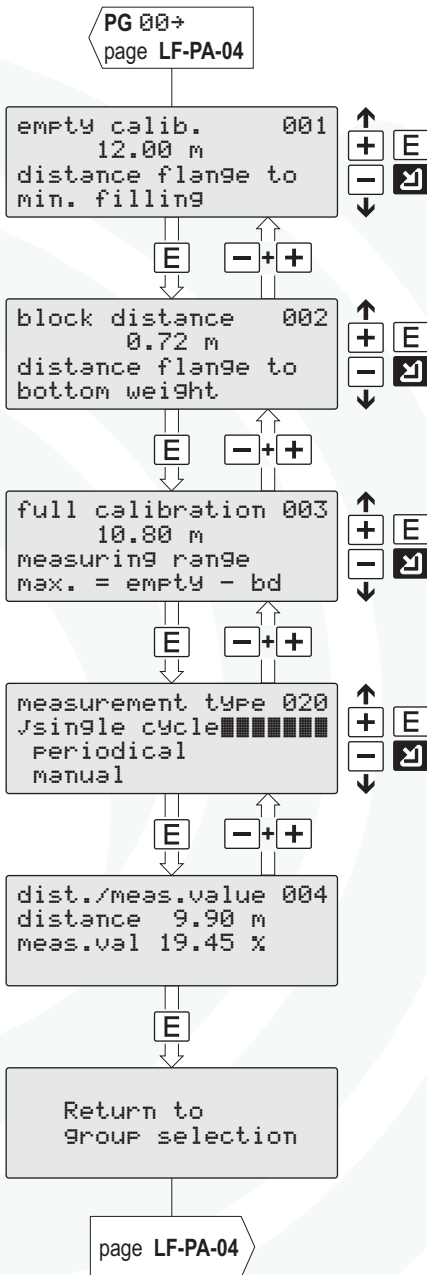
Please see drawings below!

Please note setup values.

Insert length:
Distance from flange bottom line to minimum fill level.

Default value   **length of measuring tape of LF20**

001 empty calibration
_____ m / ft / in

Insert length:
Distance from flange bottom line to end of sensing weight.

Default value   **0.72 m**

002 block distance
_____ m / ft / in

Insert length of measuring range:
Empty calibration [001] − block distance [002] − ≥ 0.2 m
maximal empty calibration [001] − block distance [002] (bd)

Default value   **length of measuring tape − block distance**

003 full calibration
_____ m / ft / in

Select measuring type (please see explanation below)

Default value   **single cycle**

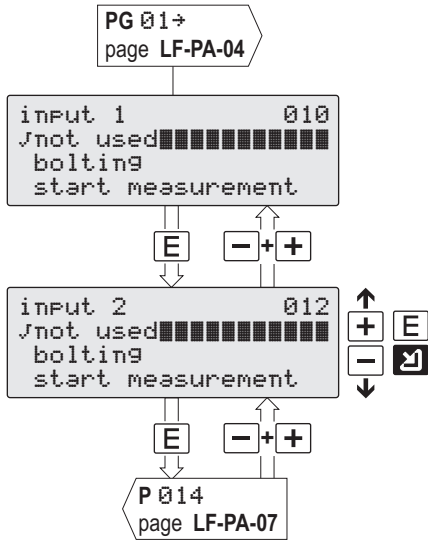| 020 measurement type |
|---|
| ❏ single cycle |
| ❏ periodical |
| ❏ manual |

Measuring information
Distance between flange bottom line and product
Actual measuring value
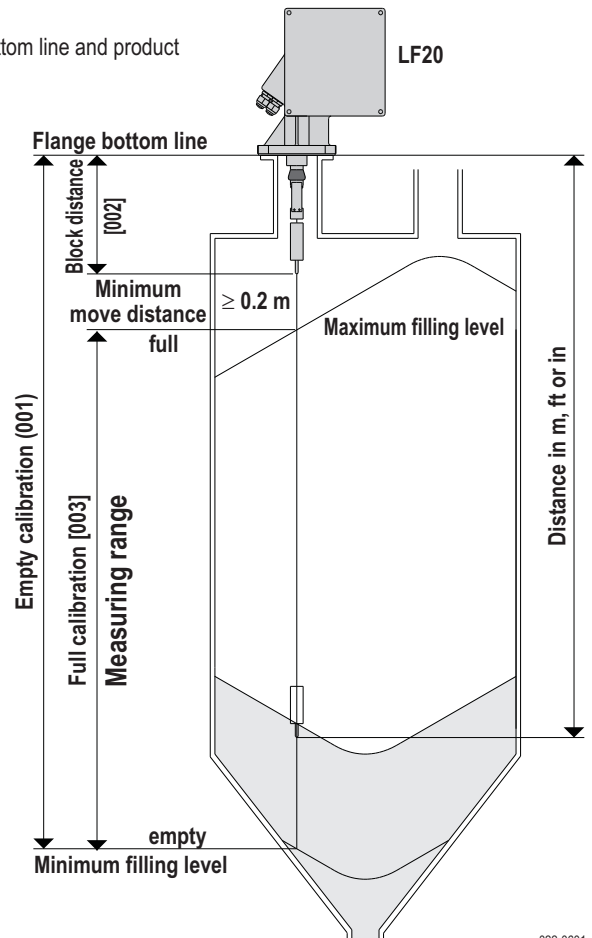
LF20

Measuring type	Funktionen der Auswahl	Discription see page
Single cycle	- Start by pressing **start-key** at **LF20**	**LF-PA-06**
	- Start by **signal input 1 [010]** or **2 [012]**	
Periodical	- Start by time control of the **LF20** depending on time interval in **P [021]** and time unit in **P [022]**	**LF-PA-11**
Manual	- **Measurement cycles** can be started with [man. start] key at the **LF20**.	**LF-PA-12**

▶ **In case the silo height is not known, the empty calibration can be determined by manual operation (see page LF-PA-12).**

022-0601

Signal inputs - parameter group PG 01÷

PG 01÷
page **LF-PA-04**

```
input 1            010
√not used■■■■■■■■■■■■
 bolting
 start measurement
```

E   − + +

```
input 2            012
√not used■■■■■■■■■■■■
 bolting
 start measurement
```

↑ + E − ↵ ↓

E   − + +

P 014
page **LF-PA-07**

Please note selection.

Select function for input 1.

Default value   **not used**

010 input 1
❏ **not used**
❏ bolting
❏ start measurement

Select function for input 2.

Default value   **not used**

012 input 2
❏ **not used**
❏ bolting
❏ start measurement

Input 1 [010] or **2 [012]** see **LF-GI-08**

Parameter	Function of input 1 or 2
bolting	If there is a signal at the input, the **LF20** is blocked for further measurements. A running measurement is cancelled immediately. The sensing weight is moved into the upper limit position.

▶ Avoids e.g. spillage of the sensing weight during filling process.

start measurement	If there is a signal at the input, the **LF20** starts a new measurement.

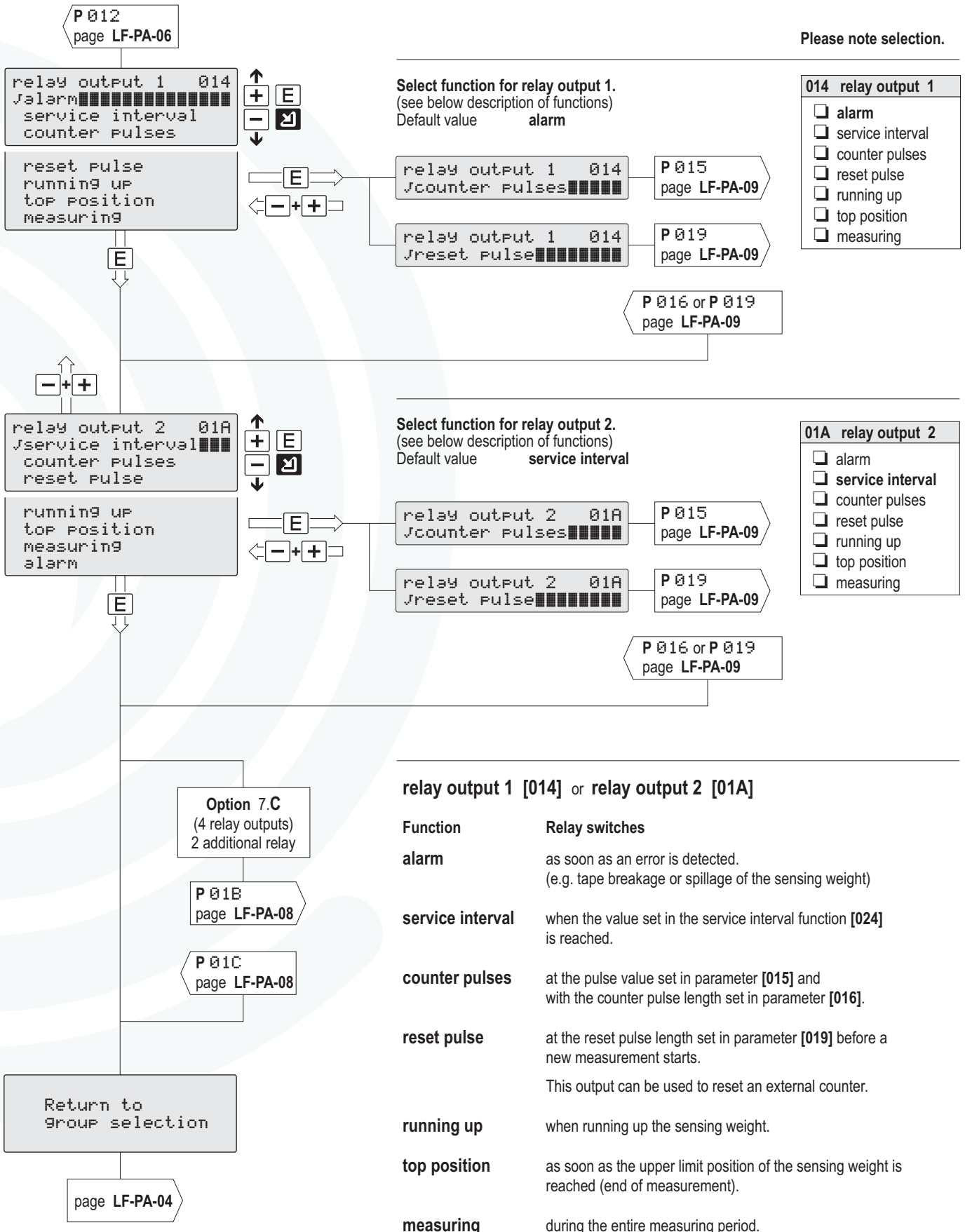▶ Can be used for the start by a key in a control room or by an external control.

▶ !!!   The external start key is connected to **input 1 [010]** in the device version with option 10.**2** (external start key mounted at the **LF20**)

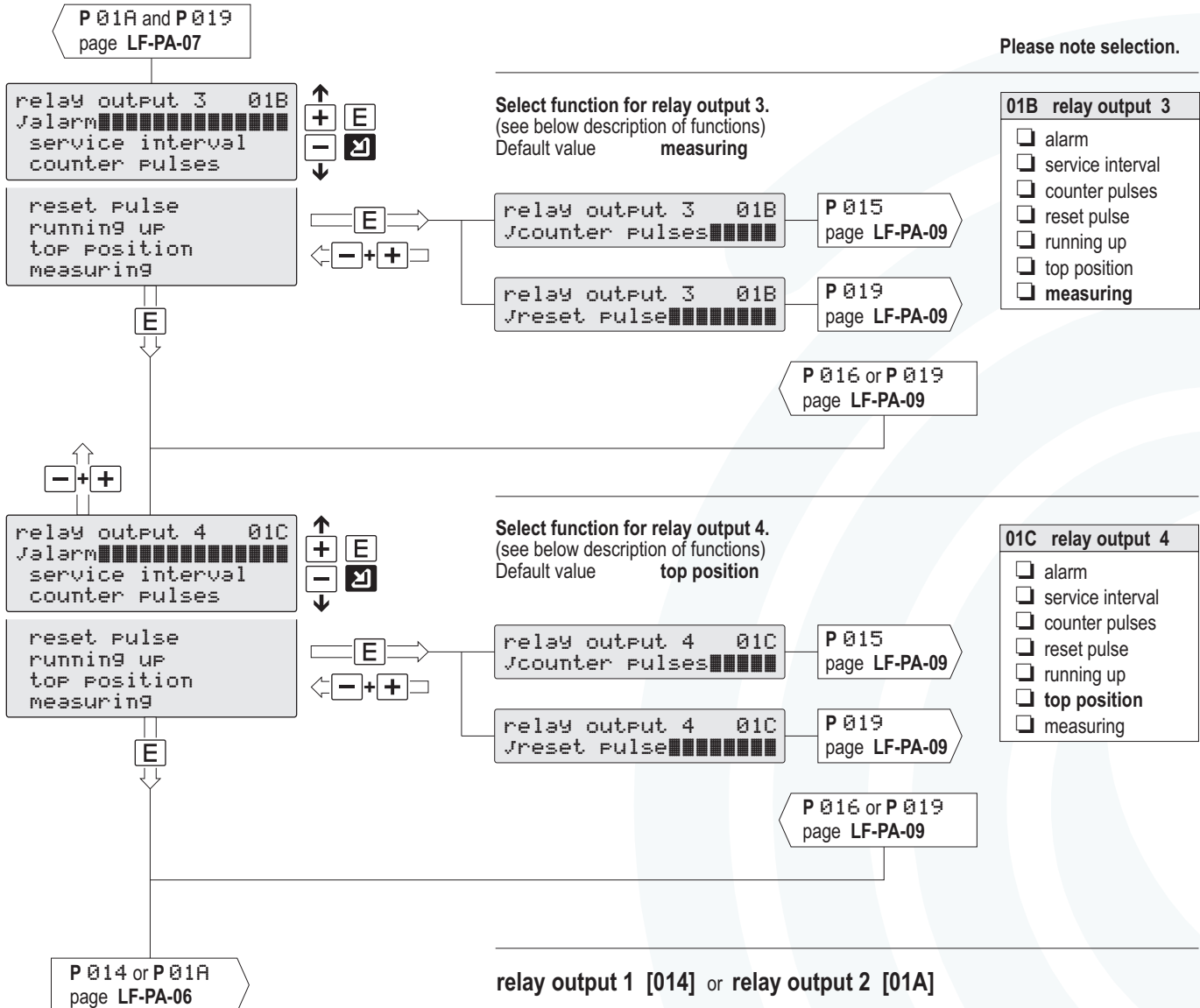Default value with option 10.**2**   **start measurement**

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Yo-Yo sensing level measurement
LF20

MOLOS
bob

Relay output 1 and 2 - parameter group PG 01÷

P 012
page **LF-PA-06**

Please note selection.

```
relay output 1    014
√alarm████████████
 service interval
 counter pulses
```
```
 reset pulse
 running up
 top position
 measuring
```

Select function for relay output 1.
(see below description of functions)
Default value **alarm**

```
relay output 1    014
√counter pulses█████
```
P 015
page **LF-PA-09**

```
relay output 1    014
√reset pulse████████
```
P 019
page **LF-PA-09**

P 016 or P 019
page **LF-PA-09**

014 relay output 1
❏ **alarm**
❏ service interval
❏ counter pulses
❏ reset pulse
❏ running up
❏ top position
❏ measuring

```
relay output 2    01A
√service interval███
 counter pulses
 reset pulse
```
```
 running up
 top position
 measuring
 alarm
```

Select function for relay output 2.
(see below description of functions)
Default value **service interval**

```
relay output 2    01A
√counter pulses█████
```
P 015
page **LF-PA-09**

```
relay output 2    01A
√reset pulse████████
```
P 019
page **LF-PA-09**

P 016 or P 019
page **LF-PA-09**

01A relay output 2
❏ alarm
❏ **service interval**
❏ counter pulses
❏ reset pulse
❏ running up
❏ top position
❏ measuring

Option 7.**C**
(4 relay outputs)
2 additional relay

P 01B
page **LF-PA-08**

P 01C
page **LF-PA-08**

```
    Return to
 group selection
```

page **LF-PA-04**

relay output 1 [014] or **relay output 2 [01A]**

Function	Relay switches
alarm	as soon as an error is detected. (e.g. tape breakage or spillage of the sensing weight)
service interval	when the value set in the service interval function **[024]** is reached.
counter pulses	at the pulse value set in parameter **[015]** and with the counter pulse length set in parameter **[016]**.
reset pulse	at the reset pulse length set in parameter **[019]** before a new measurement starts. This output can be used to reset an external counter.
running up	when running up the sensing weight.
top position	as soon as the upper limit position of the sensing weight is reached (end of measurement).
measuring	during the entire measuring period.

Relay output 3 and 4 - parameter group PG 01÷

Relay output 3 [01B] and relay output 4 [01C] are optional available.

P 01A and P 019
page **LF-PA-07**

Please note selection.

```
relay output 3    01B
Jalarm███████████████
 service interval
 counter pulses
```
```
 reset pulse
 running up
 top position
 measuring
```

↑ + E
− ↵ ↓

E
←−+ +

Select function for relay output 3.
(see below description of functions)
Default value   **measuring**

```
relay output 3    01B
Jcounter pulses█████
```
P 015
page **LF-PA-09**

```
relay output 3    01B
Jreset pulse███████████
```
P 019
page **LF-PA-09**

01B   relay output 3
❏ alarm
❏ service interval
❏ counter pulses
❏ reset pulse
❏ running up
❏ top position
❏ **measuring**

E

P 016 or P 019
page **LF-PA-09**

−+ +

```
relay output 4    01C
Jalarm███████████████
 service interval
 counter pulses
```
```
 reset pulse
 running up
 top position
 measuring
```

↑ + E
− ↵ ↓

E
←−+ +

Select function for relay output 4.
(see below description of functions)
Default value   **top position**

```
relay output 4    01C
Jcounter pulses█████
```
P 015
page **LF-PA-09**

```
relay output 4    01C
Jreset pulse█████████
```
P 019
page **LF-PA-09**

01C   relay output 4
❏ alarm
❏ service interval
❏ counter pulses
❏ reset pulse
❏ running up
❏ **top position**
❏ measuring

E

P 016 or P 019
page **LF-PA-09**

P 014 or P 01A
page **LF-PA-06**

relay output 1 [014] or relay output 2 [01A]

Function	Relay switches
alarm	as soon as an error is detected. (e.g. tape breakage or spillage of the sensing weight)
service interval	when the value set in the service interval function **[024]** is reached.
counter pulses	at the pulse value set in parameter **[015]** and with the counter pulse length set in parameter **[016]**.
reset pulse	at the reset pulse length set in parameter **[019]** before a new measurement starts. This output can be used to reset an external counter.
running up	when running up the sensing weight.
top position	as soon as the upper limit position of the sensing weight is reached (end of measurement).
measuring	during the entire measuring period.

Relay output - pulse settings - parameter P 015 - P 016

P 014, P 01A, P 01B or P 01C
page LF-PA-07

```
Pulse weight      015
         10
length per pulse
output = value*2,5cm
```

Please note setup values.

Insert pulse weight.

Default value	**1**
Range of values	**1 ... 20** (2,5 cm ... 50 cm)

015   pulse weight
_____

Pulse value x 2,5 cm = **Move distance of the measuring tape per pulse**

Example

Pulse value 8 (8x2,5 cm) issues a counting pulse every 0.2 m.

022-0602

```
pulse length      016
         50 ms
length of the
counter pulse
```
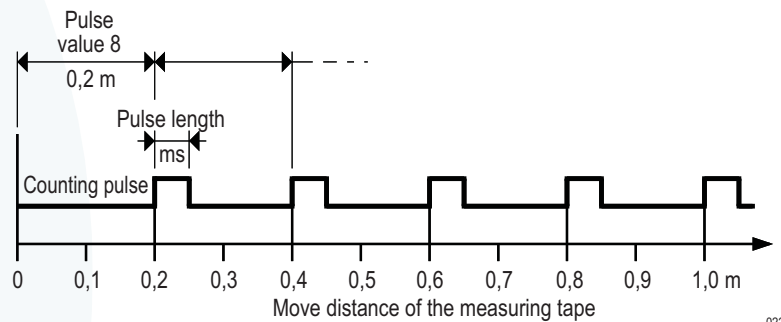
Insert pulse length.

Default value	**50 ms**
Range of values	**depended on pulse values [015]**

016   pulse length
_____ ms

P 01A, **return** or **option**
page **LF-PA-07**

Pulse value [015]	Range of pulse length [016]
1	30 ms ... 100 ms
2	30 ms ... 250 ms
3	30 ms ... 400 ms
4 ... 20	30 ms ... 550 ms

Relay output - reset pulse - parameter P 019

P 014, P 01A, P 01B or P 01C
page **LF-PA-07**

```
reset pulse       019
        300 ms
length of the
reset pulse
```
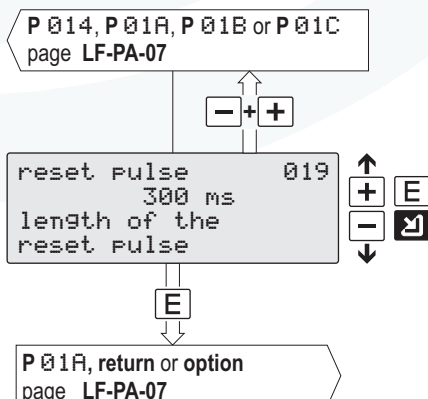
Insert length of reset pulse.

Default value	**300 ms**
Range of values	**30 ms ... 1000 ms**

019   reset pulse
_____ ms

P 01A, **return** or **option**
page **LF-PA-07**

Measurement parameters - parameter group PG 02→

Please note selection.

```
measurement type 020
√single cycle■■■■■■■
  periodical
  manual
```
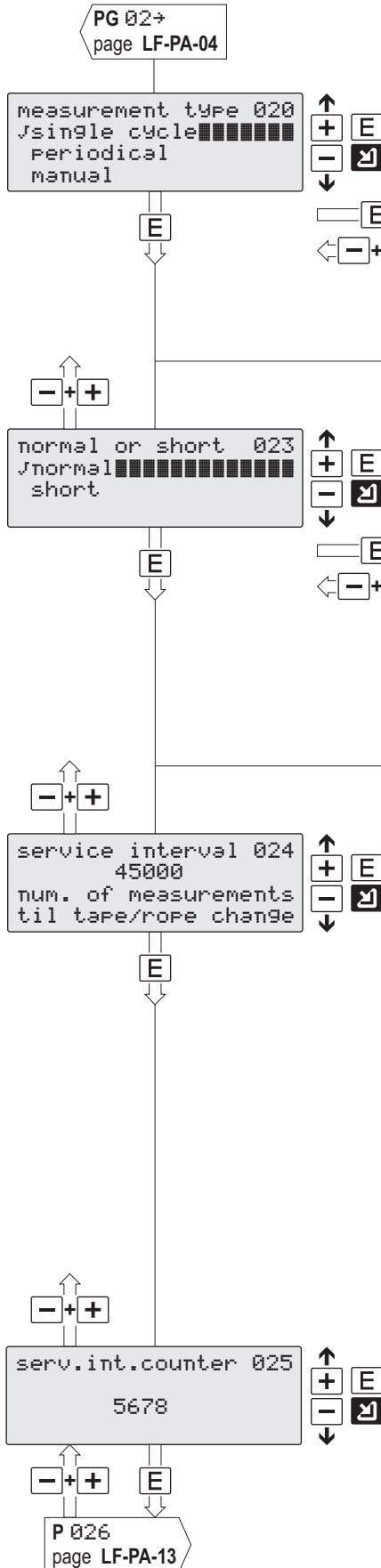
Select measurement type.

Default value   **single cycle**

```
measurement type 020
√periodical■■■■■■■■■
```

020 Measurement type
❏ **Single cycle**
❏ periodical

```
normal or short   023
√normal■■■■■■■■■■■■■
  short
```
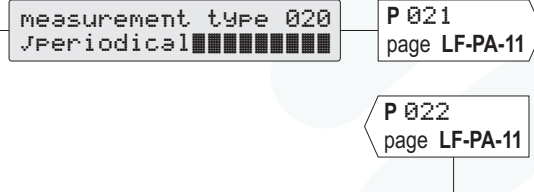
Select operating type.

Default value   **normal**

At the start of a measurement the sensing weight is lowered down to the product and pulled back to the upper limit position.

```
normal or short   023
√short■■■■■■■■■■■■■■
```

023   normal or short
❏ **normal**
❏ short

Please note setup values.

```
service interval 024
        45000
num. of measurements
til tape/rope change
```
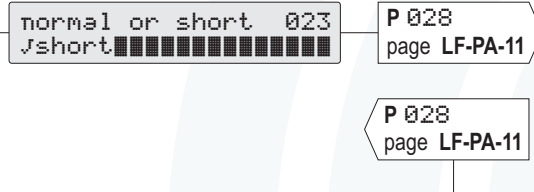
Insert number of measurement cycles.

Default value   **45000**

Range of values   **1 ... 90000**

▶ **The number of measurement cycles depends on the process environment. The value should be adjusted to the level of dirt and/or measuring tape condition.**

The relay output **service interval** switches as soon as the insert value is reached. The display alternately shows present error and measuring value. In the measured value display the alert symbol ↳ for error is blinking.

024   service interval
_____

```
present error
rope change
measured value   000
  ↳
      63.42 %
■■■■■■■■■■■_____
```
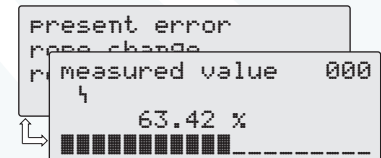
Service interval counter

Range of values   **0 ... 90000**

The counter shows the number of measurement cycles.

```
serv.int.counter 025
        5678
```

▶ **Reset counter to 0 after maintenance was executed.**

Measurement parameters - parameter P 021 - P 022

P 020
page **LF-PA-10**

```
time interval      021
            1 h
for periodical
measurement
```
↑ + E
  − ⮐ ↓

E

− + +

```
time unit          022
✓h▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆▆
  min.
```
↑ + E
  − ⮐ ↓

E

P 023
page **LF-PA-10**

Please note setup values.

Insert time interval for measurement type periodical [020].

Default value	**1** h (depending on time unit [022])	
Range of values	**1 ... 60**	

021 time interval
_____ [022]

The minimum time interval (T_{minute}) for the distance between the measurements is dependent on the ambient temperature (T_{amb}) and the measurement range (MR_{meter}) and must not be undercut in all measurement types.

▶ **Please pay attention to this, otherwise malfunctions could occur!**

022-MZ01.cdr
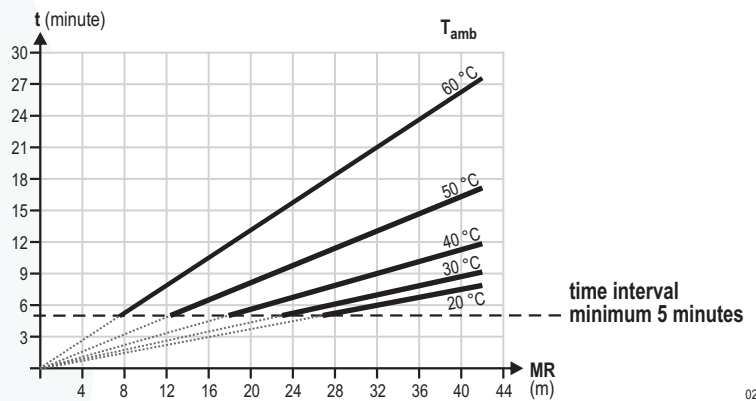
Select time unit for time interval [021].

Default value	**h**	
Range of values	**h**	(hours)
	min.	(minutes)

022 time unit
❏ **h**
❏ min.

Measurement parameters - parameter P 028

P 023
page **LF-PA-10**

```
run up length      028
            1 m
run up length for
operating type short
```
↑ + E
  − ⮐ ↓

E

P 024
page **LF-PA-10**
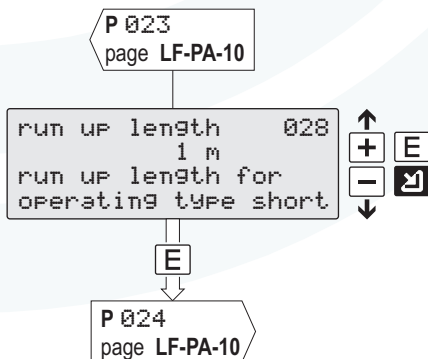
The **operating mode short** can considerably shorten the length of a measurement cycle.

Insert run up length for operating type short [023].

Default value	**1 m**	
Range of values	**1 ... (Full calibration [003] ./. 1)**	

028 run up length
_____ m / ft / in

At the start of a measurement the sensing weight is lowered down to the product and pulled back to the position that has been insert in the run up length [028], e.g. 1 m above product using the default value.

For readjustment the upper limit position is approached every 20 measurement cycles.

▶ **In this operating type the sensing weight is not protected from spillage.
Select bolting for input 1 or 2 (see LF-PA-06) and wire the signal input accordingly.**
(with an active input, sensing weight will be immediately moved into the upper limit position)

▶ **The use of the relay output function counter pulse [015/016] makes no sense, as the sensing weight does not approach a defined point at the end of the measurement.**
(and therefore no defined distance)

Manual mode - parameter P 020

```
measurement type 020
√manual■■■■■■■■■■■■
  single cycle
  periodical
```

↑ + E
↓ − ↵

E 6x   − + +

```
measured value    000
     ‡
        0.72 m
■_____
```
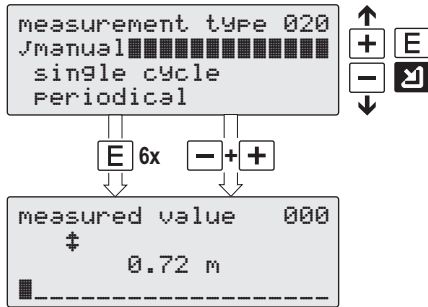
Measurement type
Select manual.

Return to display **measured value [000]**.
Manual measurements will be possible only, if the display shows **measured value [000]**.

‡- **symbol for manual mode** is blinking and
measured value for the inserted block distance is shown.

```
measured value    000
     ↓
        7.45 m
■■■■■■■■■■_____
```

− ↓
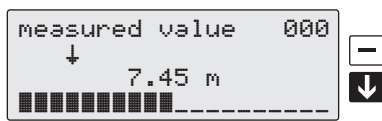
Move down sensing weight
↓ - symbol for moving down
Measured value indicates the tape length run out from flange bottom line to sensing weight bottom line depending on selected length unit **[083]** (m, ft, in) and selected decimal places **[062]**.

001   empty calibration
_____ m / ft / in

```
measured value    000
     ↑
        3.75 m
■■■■■■_____
```

+ ↑
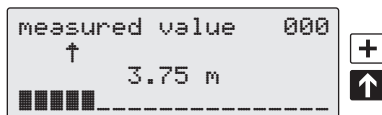
Move up sensing weight
↑ - symbol for moving up
Measured value indicates the tape length run out from flange bottom line to sensing weight bottom line depending on selected length unit **[083]** (m, ft, in) and selected decimal places **[062]**.

⚠

The **loose band switch** and
the **upper limit switch** are **out of order** during manual mode operation!

▶ **Therefore it is possible in the manual mode to lower the sensing weight into improper areas of the silo/bunker or into the discharge section!**

▶ **Please make sure that you know the position in which the sensing weight is currently located.**

During manual mode operation the last valid measured value remains saved internally, it is not overwritten in manual mode. The outputs still follow this.
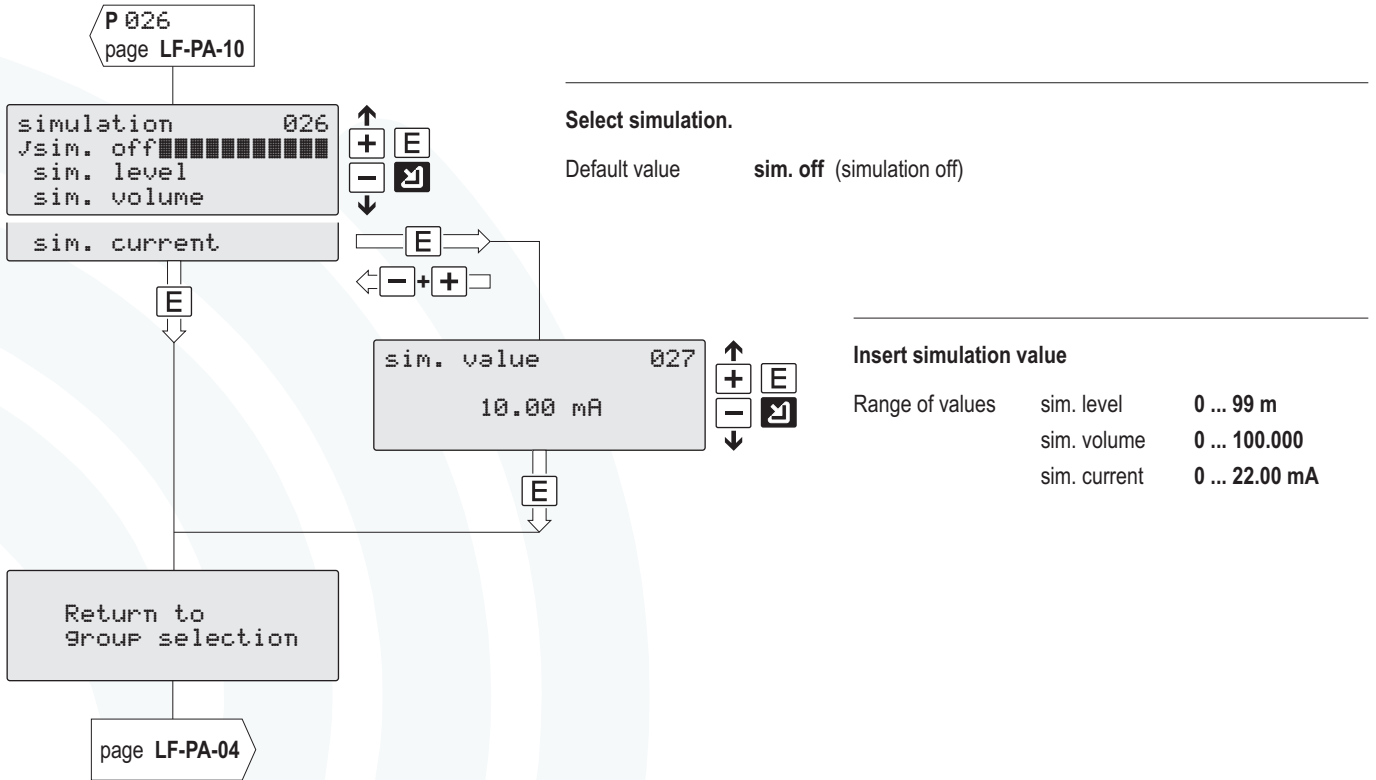(e.g. with a 50% fill level, 12 mA is still output for the current output)

Once work in manual mode has been completed, the measured value display [000] is changed back to the form of depiction originally selected! (e.g. fill level in technical units **TE**)

▶ If the height of the silo is not exactly known, the empty calibration **[001]** could be determined with the help of the manual mode.
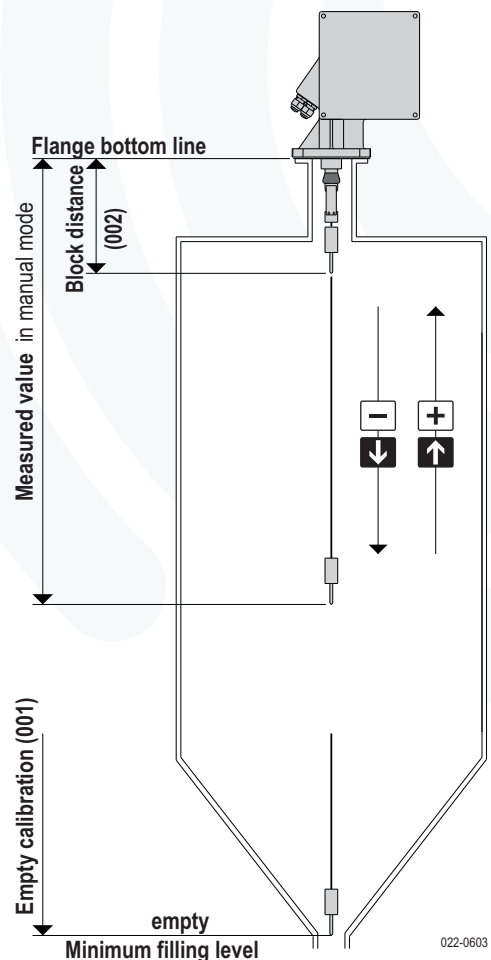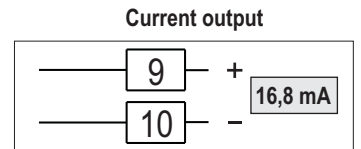
Simulation - parameter P 026

P 026
page **LF-PA-10**

```
simulation          026
√sim. off████████████
  sim. level
  sim. volume
```

```
sim. current
```

↑
+ E
− ↵
↓

→ E →
← − + + ←

E
↓

```
sim. value          027

     10.00 mA
```

↑
+ E
− ↵
↓

E
↓

```
Return to
group selection
```

page **LF-PA-04**

Select simulation.

Default value   **sim. off** (simulation off)

Insert simulation value

Range of values	sim. level	**0 ... 99 m**
	sim. volume	**0 ... 100.000**
	sim. current	**0 ... 22.00 mA**

Example for simulation level

Settings at LF20

```
empty calibr.      001
     20.00 m
```

```
full calibration  003
     15.00 m
```

```
current range      033
√4-20mA█████████████
```

```
level/volume       050
√volume██████████████
```

```
customer unit      056
√m3██████████████████
```

```
max. scale         057
     1000 m3
```

```
simulation         026
√sim. Volume█████████
```

```
sim. value          027

     800 m3
```

↑
+ E
− ↵
↓

− + +

```
present error
simulation
a  measured value  000
   ↳
      800.00 m3
   ████████████████____
```

Current output

9 +
10 −   **16,8 mA**

```
sim. value          027

     200 m3
```

↑
+ E
− ↵
↓

− + +

```
present error
simulation
a  measured value  000
   ↳
      200.00 m3
   ████████████████____
```

Current output

9 +
10 −   **7,1 mA**

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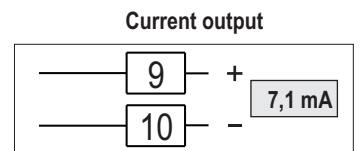
Current output - parameter P 033

```
current range   033
√4-20mA
 0-20mA
```

↑
+ E
− ⏎
↓

E

```
Return to
group selection
```

page **LF-PA-04**
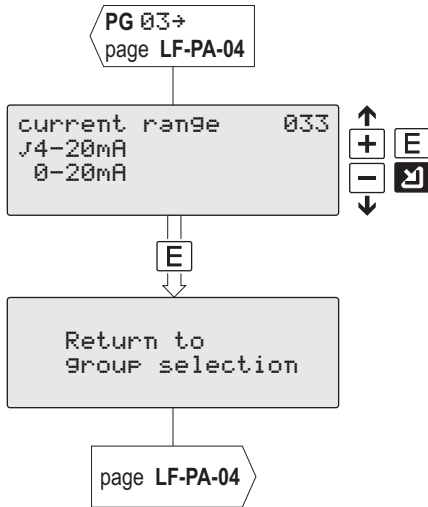
Please note selection.

Select current range.

Default value   **4 ... 20 mA**

033 current range
❏ **4 ... 20 mA**
❏ 0 ... 20 mA

The characteristics of the current output can be influenced using the parameter level/volume [050] as follows.

The setting **level m/ft/in** or **level TE** cause an __increasing output current__ when the **fill level** __rises__.

The setting **residual volume m/ft/in** or **residual volume TE** cause a __declining output current__ when the **fill level** __rises__.
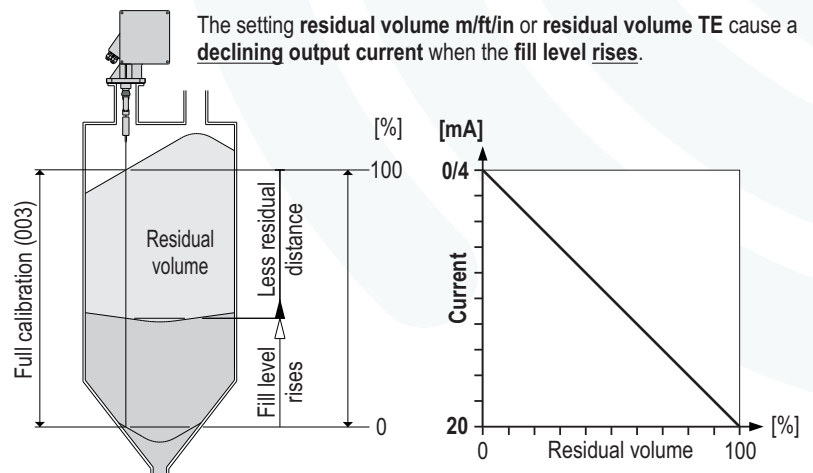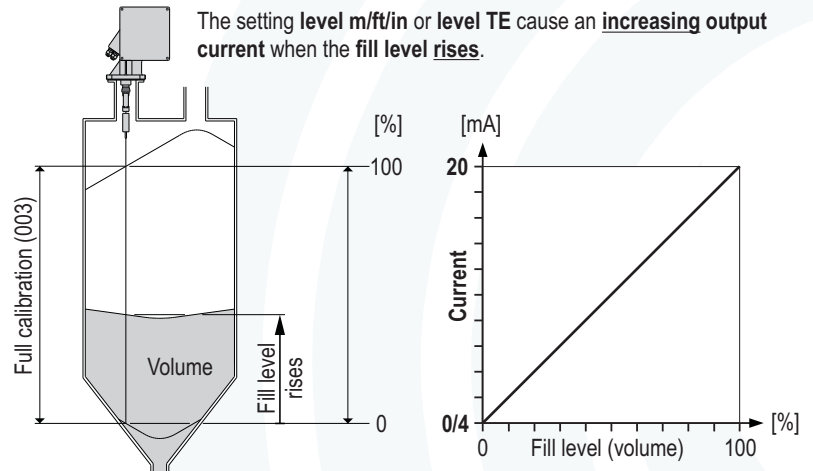
Output on alarm - Parameter P 040

```
output on alarm    040
√MIN (0/3.6mA)███████
 MAX (22mA)
 hold
```

↑ + E − ↵ ↓

```
user specific.
```

E →

E

Please note selection.

Select current output.

Default value   **MIN (0/3.6 mA)**

040 output on alarm
❏ MIN (0/3.6 mA)
❏ MAX (22 mA)
❏ hold
❏ user-specific

These parameters determine the characteristics of the current output in the event of an error.

Selection	At the current output
MIN (0/3.6mA)	the current falls to 0 mA or 3,6 mA (depending on parameter **current range [033]**)
MAX (22mA)	the current increases to 22 mA.
hold	the last current output is retained.
user-specific	the current set in **output on alarm [041]** is output.

− + +

```
output on alarm    041
          3.60 mA
```

↑ + E − ↵ ↓

E

Please note setup value.

Insert output on alarm.

Default value   **3,60 mA**

Range of values **0 ... 22,00 mA**

041 output on alarm
_____ mA

− + +

Safety distance - parameter P 042

P 040 and P 041
page **LF-PA-15**

```
safety distance   042
        0.00 m
minimum distance
to empty calibration
```

↑ + E − ↙ ↓

E − + + >0 E →
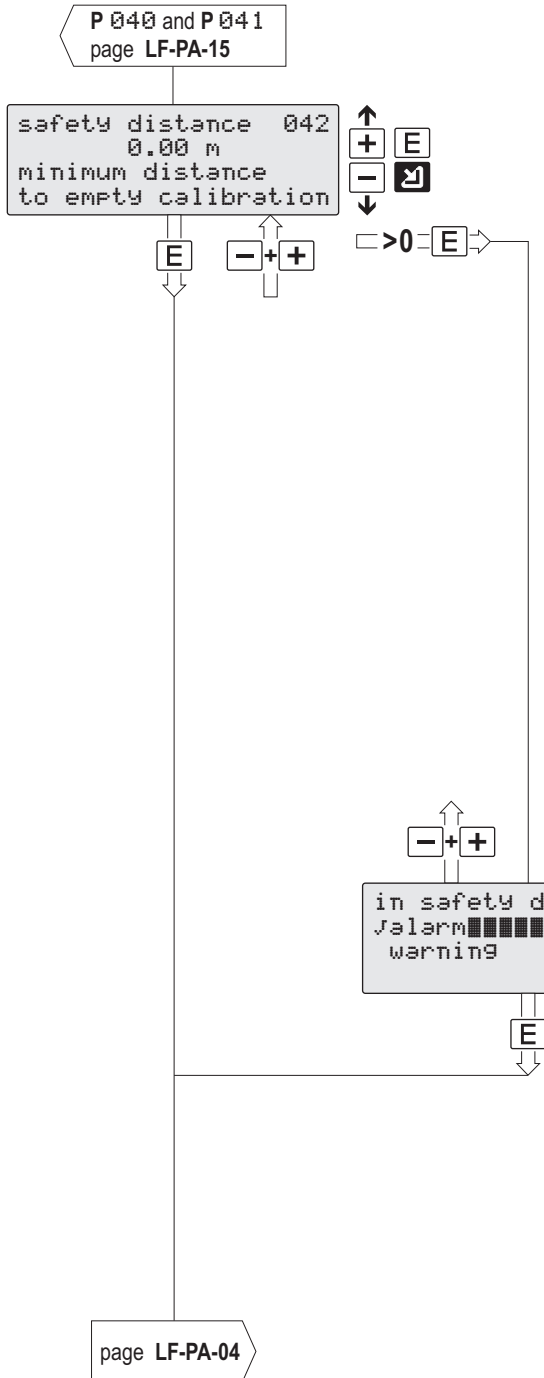
Insert safety distance.
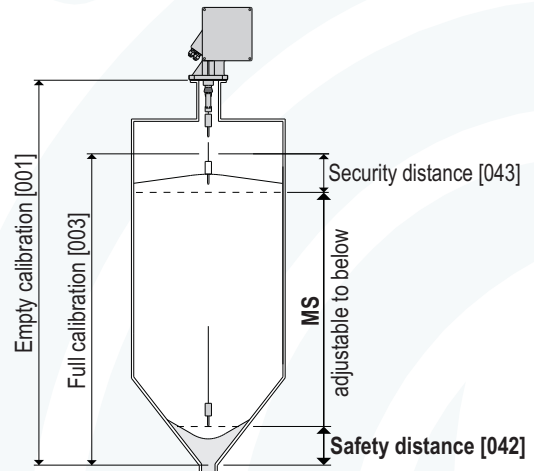
042 safety distance
_____ [083]

Default value	**0 m**
Range of values	**0 m ... MS**

This parameter prevents the sensing weight from running out into improper areas of the silo/bunker or into the discharge section.

Empty calibration [001]
Full calibration [003]
Security distance [043]
MS adjustable to below
Safety distance [042]

− + +

```
in safety dist.   045
✓alarm██████████████
 warning
```

↑ + E − ↙ ↓

E

Select signal type.

045 in safety distance
❏ alarm
❏ warning

Default value	**alarm**

This parameter determine the device reaction, in case the sensing weight reaches the **safety distance [042]**.

page **LF-PA-04**

Behaviour in case of reaching the safety distance

1. **alarm** is selected in **in safety distance [045]**.

   - Sensing weight stops.
   - Actual measurement is disapproved - last valid measured value is displayed.
   - Current output represents the value selected in parameter **output on alarm [041]**.
   - Alarm [A660] and ↳ are shown in the display.
   - Output relay with programmed function „alarm" switches.

2. **warning** is selected in **in safety distance [045]**.

   - Sensing weight stops.
   - Actual measurement is completed with a new measured value.
     Full calibration [003] ./. Safety distance [042] = Measured value (fill level)
   - Current output represents the measured value.
   - Warning [W661] is shown and ↳ is blinking.

Security distance - parameter P 043

```
security dist.    043
        0.00 m
minimum distance
to full calibration
```

↑ E
+ ↵
−
↓

□ >0 ⎓E⎓▷

E

Please note setup value.

**Insert security distance.**

Default value   **0,00 m**

Range of values   **0 m ... SA**

This parameter configurates a safety zone underneath the maximum **full calibration [003]**.
This safety zone is used to warn the user that in case of fill level continuous to rise future measurements could be invalid, if the current measured value leaves the range of the maximum full calibration.

043	security distance
_____	[083]

− + +
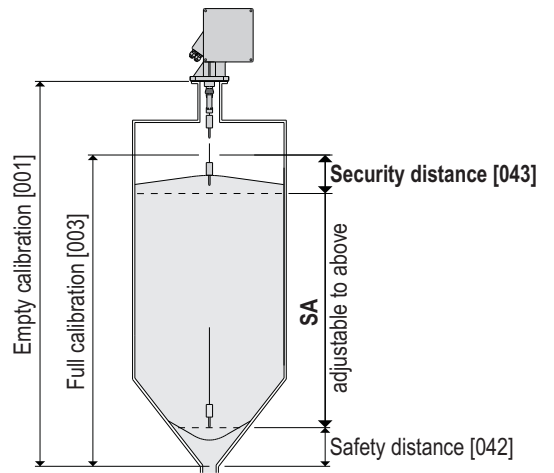
```
in security dist 044
⌐alarm███████████████
  warning
```

↑ E
+ ↵
−
↓

E

Please note selection.

Select signal type.

Default value   **warning**

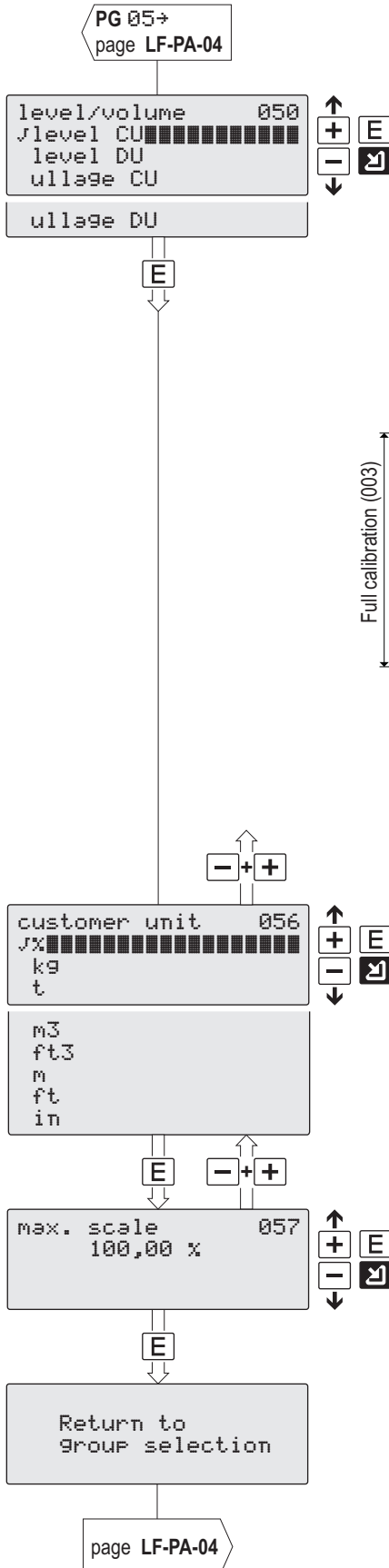| 044	in security dist.
❑	warning
❑	alarm

This parameter determine the device reaction, in case the sensing weight reaches the **security distance [043]**.

```
Return to
group selection
```
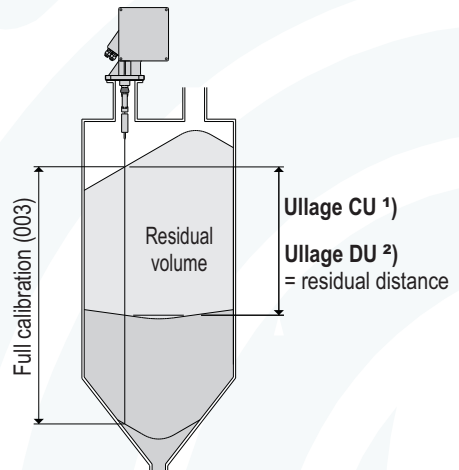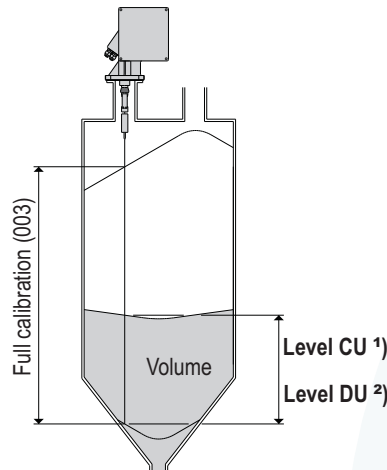
Linearisation - parameter group PG 05

PG 05 →
page LF-PA-04

```
level/volume      050
√level CU███████████
 level DU
 ullage CU
```
```
 ullage DU
```

E

Please note selection.

Select display value in the measured value display
parameter [000].

Default value   **level CU**

050   level/volume
❏ **level CU**
❏ level DU
❏ ullage CU
❏ ullage DU

Full calibration (003)

Volume

Level CU ¹)

Level DU ²)

Residual
volume

Full calibration (003)

Ullage CU ¹)

Ullage DU ²)
= residual distance

¹) Dimension unit according selected parameter **customer unit [056]** see below

²) Dimension unit according selected parameter **distance unit [083]** see page **LF-PA-22**

− + +

```
customer unit     056
√%██████████████████
 kg
 t
```
```
 m3
 ft3
 m
 ft
 in
```

Select customer unit (dimension unit) for CU.

Default value   **%**

▶ active only with selection CU,
  no function with selection DU

056 customer unit	
❏ **%**	❏ ft³
❏ kg	❏ m
❏ t	❏ ft
❏ m³	❏ in

E   − + +

Please note setup value.

```
max. scale        057
     100,00 %
```

Inset the maximum scale value of measurement.
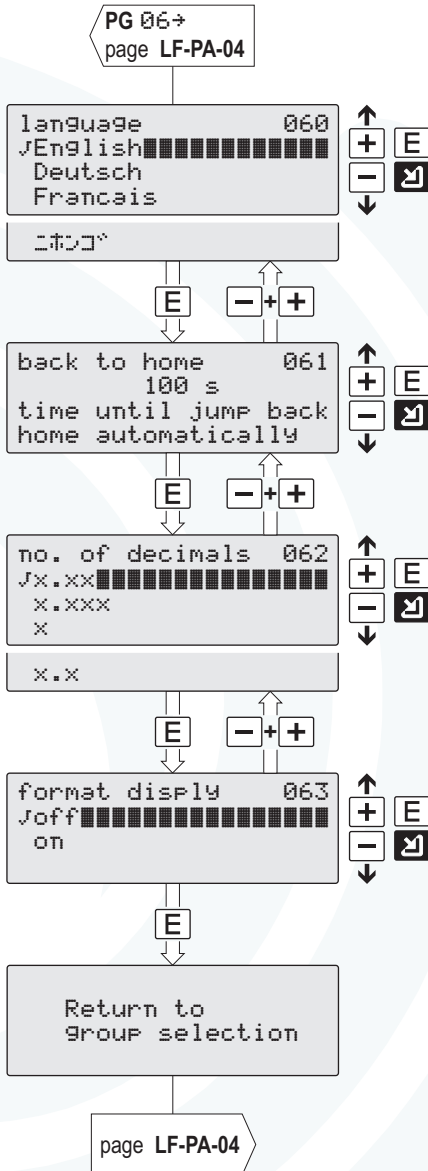In the dimension unit selected and the number of decimal
places selected.

Default value   **100**

Range of values   **1 ... 100000**

057   max. scale
_____ [056]

E

```
    Return to
  group selection
```

page **LF-PA-04**

Display - parameter group PG 06⇥

PG 06⇥
page **LF-PA-04**

```
language        060
√English████████████
 Deutsch
 Francais
```
```
 ニホンゴ
```

Select language

Default value   **English**

060	language
❏	**Englisch**
❏	Deutsch
❏	Français
❏	Japanisch

```
back to home     061
        100 s
time until jump back
home automatically
```

Insert time until return to measured value display [000].

Default value   **100 s** (seconds)

Range of values   **3 ... 9999** (seconds)

061	back to home
	_____ s

```
no. of decimals   062
√x.xx███████████████
 x.xxx
 x
```
```
 x.x
```

Select number of decimals.
For display measured value [000] and input parameters.
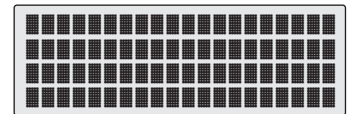
Default value   **x.xx** (two decimals)

062	no. of decimals
❏	X
❏	X,X
❏	**X,XX**
❏	X,XXX

```
format disply    063
√off████████████████
 on
```

Select „on" for display check.
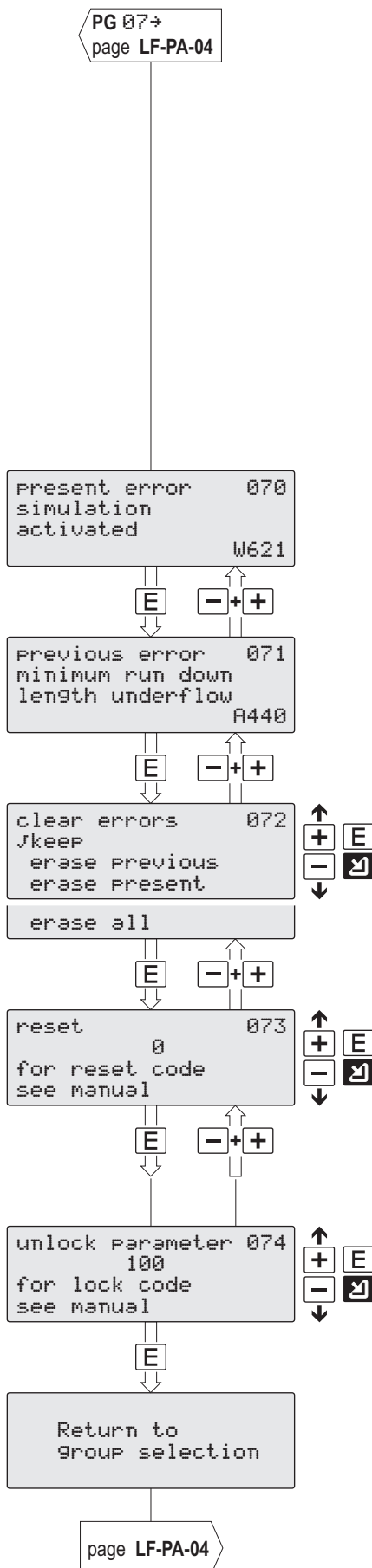All points on the display are activated for around two seconds.

Default value   **off**

Switches automatically to „**off**" after this 2 seconds.

```
   Return to
   group selection
```

page **LF-PA-04**

Diagnostics - parameter group PG 07⇥

```
┌─────────────────┐
│ PG 07⇥          │
│ page LF-PA-04   │
└─────────────────┘
```

An error occurring in the device is shown

- by the ⌐ error symbol in the display **measured value [000]**
  warning ⌐ blinking — the device continues to measure
  alarm ⌐ permanent

- with relay output. The relay switch, if for the
  parameter(s) **relay 1 [014]** and/or **relay 2 [01A]**
  and/or optional **relay 3 [01B]** and/or **relay 4 [01C]**
  the function **alarm** has(have) been selected.

- via the current output. The current output takes the value that has been determined
  in **output on alarm [040].**

- in the parameter group diagnostics [07] with the code **[W] warning** and **[A] alarm**
  in parameter **present error [070]**
  respectively in **previous error [071]**

▶ **Only the error with the highset level priority is shown.**

```
┌──────────────────────────┐
│ present error     070    │
│ simulation               │
│ activated                │
│                   W621   │
└──────────────────────────┘
    [E]   [−]+[+]
```

Present error is shown.

Letter	**W** = warning
	A = alarm
Error code	**621** (example)

▶ Warning [**W**] is shown.

▶ Alarm **[A]** is shown and additional a relay output switches, if the function **alarm** is selected and current output alters.

```
┌──────────────────────────┐
│ previous error    071    │
│ minimum run down         │
│ length underflow         │
│                   A440   │
└──────────────────────────┘
    [E]   [−]+[+]
```

Previous error is shown.

Letter	**W** = warning
	A = alarm
Error code	**440** (example)

▶ You will find the depiction of all error codes on page **LF-PA-21**.

```
┌──────────────────────────┐    ↑
│ clear errors      072    │   [+] [E]
│ √keep                    │   [−] [↵]
│  erase previous          │    ↓
│  erase present           │
├──────────────────────────┤
│  erase all               │
└──────────────────────────┘
    [E]   [−]+[+]
```

Deletion of errors.

| Default value | **keep** |

```
┌──────────────────────────┐    ↑
│ reset             073    │   [+] [E]
│          0               │   [−] [↵]
│ for reset code           │    ↓
│ see manual               │
└──────────────────────────┘
    [E]   [−]+[+]
```

Reset all parameters to default values.

Default value	**0**
Range of values	**< > 333** (does not undertake reset)
	333 undertakes reset

▶ **At least a basic setup is required after the reset .**

```
┌──────────────────────────┐    ↑
│ unlock parameter 074     │   [+] [E]
│          100             │   [−] [↵]
│ for lock code            │    ↓
│ see manual               │
└──────────────────────────┘
         [E]
```

Lock of parameter entries.

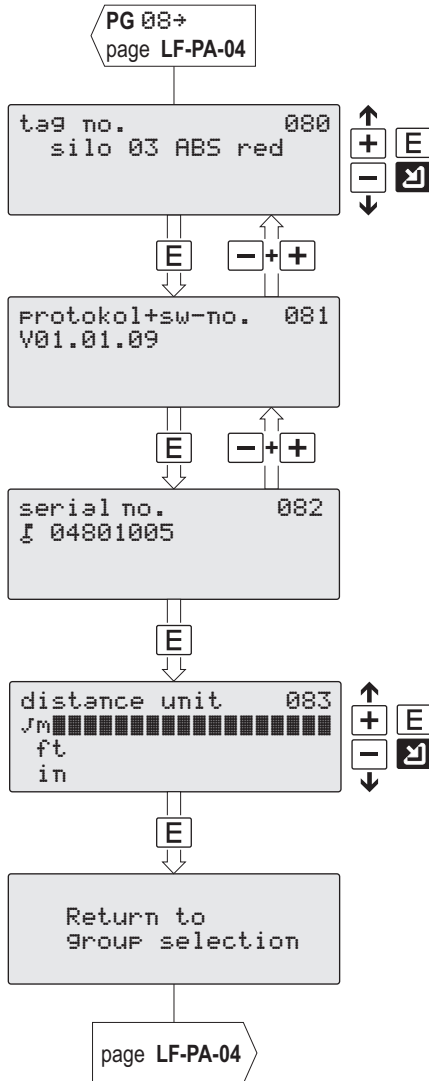| Default value | **100** (unlocks parameter entry) |
| Range of values | **< > 100** (locks parameter entry) |

```
┌──────────────────────────┐
│ 074   unlock parameter   │
│                          │
│ _____ │
└──────────────────────────┘
```
Note unlock parameter.

```
┌──────────────────────────┐
│    Return to             │
│    group selection       │
└──────────────────────────┘
```

```
┌─────────────────┐
│ page LF-PA-04   │
└─────────────────┘
```

Error messages   Reason and corrective action

Code	Reason	Corrective action
A100	Checksum error in internal program memory	- Reset
A101	Checksum error in EEPROM 1	- Avoid EMC problems
A102	Checksum error in EEPROM 2	- If the alarm is still present after a reset, contact service and/or replace the electronics
A103	Initialisation failed	
A106	Program download error (only for service technicians)	- Repeat download and/or restart
A110	Default service parameter loaded	- Warning that a reset has been undertaken
A111	Default customer parameter loaded	- Disappears automatically with the next entry
A112	Default input/output configuration loaded	
A120	Error during loading the service parameters	- Reset
A121	Error during loading the customer parameters	- Avoid EMC problems
A122	Error when loading the input/output configuration	- If the alarm is still present after a reset, contact service and/or replace the electronics
A123	Error during loading the last measured values	
A125	Error during loading the language string	
A130	Process of saving the service parameters has failed	
A131	Process of saving the customer parameters has failed	
A132	Process of saving the input/output configuration has failed	
A133	Process of saving the measured values has failed	
A200	Interface to motor controller defective	
A201	Initialisation of motor controller failed	
A202	Fatal motor error	
A203	Temperature inside the motor driver is too high	- Reset or contact service and/or replace the electronics, if the alarm is still present after the reset
A205	Motor current consumption is too high	- Avoid excessive heating of the device
A206	Motor driver defective	- Reset - If the alarm is still present after a reset, contact service and/or replace the electronics
A220	Temperature in the device is too high	- Check mounting position and /or **time interval [021]** - If the alarm is still present after a reset, contact service
A330	Maximum time for a measurement cycle exceeded	- If the alarm is still present after several measurement processes, contact service
A340	Sensing weight or tape / rope is torn	- Inspection of the sensing weight and measuring tape - If necessary, replace sensing weight and /or measuring tape
A350	Sensing weight is buried	- Expose sensing weight by hand - Reset or briefly cutting off the supply voltage (restart of the device)
A430	Tape-switch expected	- Contact service and / or replace tape
A431	Limit-switch expected	- Contact service
A440	Minimum move distance not reached	- Check mounting position - Remove transportation lock - Observe minimum sensing weight move distance of 0,2 m
A450	Time for counting wheel pulses exceeded	- Check of counting wheel - Reset
A460	Counting wheel is slipping	- If the alarm is still present after several measurement processes, contact service
A470	Measurement could not be started	- Check the device for damage or blocking parts
W621	Simulation activated	- Deactivate simulation in parameter [026]
A630	Maximum move distance exceeded	- Check the tape switch - Check mounting position - Use device with larger measurement range
A650 W651	Security distance underrun	- Check mounting position - Check the parameterisation
A660 W661	Safety distance underrun	
W681	Measurement range exceeded	
W700	Tape / rope change required	- Check measuring tape and replace if necessary - Reset maintenance interval counter

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Yo-Yo sensing level measurement
LF20

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System parameters - parameter group PG 08÷

PG 08÷
page **LF-PA-04**

Please note setup values.

```
tag no.        080
  silo 03 ABS red
```
↑ + E
− ↵ ↓

Insert name of measuring point.

Default value   _ _ _ _ _ _ _ _

Range of values   **16** alpha-numerical digits

080   tag number

E   − + +

```
protokol+sw-no.  081
V01.01.09
```

Protocol- and software version is shown here.

081   protocol+sw-no.

E   − + +

```
serial no.       082
⌿ 04801005
```

Serial number of the device is shown here.
It is identical with the number on the type-plate.

082   serial number

Please note selection.

E

```
distance unit    083
⌿m■■■■■■■■■■■■■■■
  ft
  in
```
↑ + E
− ↵ ↓

Select distance unit.
It forms the basis for all display and entry values, with
exception of the customer unit **(CU)**, in case this has been
selected.

Default value   **m** (meter)

083   distance unit
❏ m
❏ ft
❏ in

E

```
   Return to
   group selection
```

page **LF-PA-04**