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OPERATING MANUAL

Level transmitter - measuring device

MLT 6130/6230/6260

- Continuous level measuring
- with auto-100% adjustment on
  * keystroke
  * internal limit value 2nd measuring circuit
  * external limit value digital input
  * with level-difference measuring
  * via filling curve
- Auto-100% adjustment with product-compensation, 2end measuring circuit
- Display unit %/mA/Impuls/free choice
- 1 or 2 analog outputs 4–20 mA
- Limit value with relay

- MLT version V1.2x
- Technical specifications
- Operating
- Commissioning
- Installation

mipromex®

for continuous level measurement in production plants

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Dear Customer

Congratulations! With this system you have chosen a high performance unit of the famous **mipromex**® line from **Aquasant-mt Switzerland**.

The filling level device MLT 6130 is furnished with volume linearization and residual volume display. Diverse calibration algorithms are at your sidposal. The MLT 6230 offers a product-compensated level measuring. It is made for use without calibration or parameterization. The 2nd measuring circuit measures the quality of the product, which can be indicated – with the MLT6260 – as analog output 4-20 mA as well.

Reading and carefully following the operating instructions, assures a perfect functioning of your **MLT** system.

There's something else which is important for you to know:
If any troubles should appear (opposite all our expectations), then our **Aquasant-mt Switzerland** service department will assist you even long time after you purchased your **MLT level measuring device.**

Using this manual

Symbols and conventions

- **In this document the following conventions are used at formatting to differentiate text elements.**
- The names of equipment pieces are written in BOLD.
  Example: **mipromex®**

In this document the following terms and symbols are used for special program messages:

Emphasized symbols and notices and their meaning:

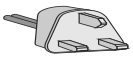
	Mortal Danger: The non-observance can lead to injuries or death.		Step by step: Text enhanced/marked this way, contains detailed instructions and comments
	Caution: the non-observance can lead to equipment damages or loss of information.		Actions to be carried out by user.
	Information / Notice: describes equipment characteristic features.		Read and follow instruction steps.
	A waiting time is required during which the equipment does recalibrate itself.	*mipromex® display*	Compare with the **mipromex®** display.
	Adjustment of the measuring electronic MTI (visualized by red and green LED's).		Plug in mains 230/115 V (24 V AC/DC).
	Observe and control equipment display.		Send equipment back to manufacturer.
▲▼	Button on **mipromex®** front panel		**mipromex®** error message on display with Time/Date
▲▼	Function: change value according to displayed character set	◀▶	Button on **mipromex®** front panel
▲▼	Change line without store	◀▶	Function: select number or character
C	Button on **mipromex®** front panel, Function: back	ok	Button on **mipromex®** front panel, Functions: menu, select, next, store (press more than 2s)
"next step" in navigation bar	Press **ok** button on **mipromex®**. Press less than 2 seconds to advance to the next parameter	"store" in navigation bar	Press **ok b**utton on **mipromex®**. Press more than 2 seconds to store

Chart. 1 Symbol description

Index

1. Security and precautions

The following points must be considered at installation and setting up of microprocessor units 24 V AC/DC:

1.1. Installation

- The units are IP20 according to EN 60529 and must be protected against e.g. splash water or pollution exceeding the degree of pollution 2.
- The units must be installed outside the hazardous area.
  Maximum 7 units can be installed into a 19"-Rack. Multipoint connector type: FI32 must only be equipped with d- and z – contacts. Solder connections are to be isolated with heat shrinkable sleeves (see chapter 7.)
- Single units installed with Monorack Type MRM 2 (see chapter 7.6)
- Hazardous area blue line to lead separately (cable channel or joined to loom of cables)
  equipotential bond must be installed; Hazardous area protection
  outside installations: a corresponding lighILing protection of the probe supply cables is recommended.
- Installation instructions for impedance probes l must be observed

1.2. Setup

- Verify wiring and power supply tension (chapter 7.)
- Perform probe and system specific parameterization in the menu (chapter 5.)
- Check max. load of the opto-electronic coupling transistor outputs (NPN) according to datasheet (chapter 7.8.)
- Adjustments under tension are only allowed to be carried out by manufacturer
  Handling by user is performed only via protected film keypad
  Repair of unit only by trained personnel with manufacturer certificate

1.3. Hazardous Area protection

The EC-type examination certificate has to be respected. It is specially important to respect the contained "special conditions". Ex certification according to Directive 94/9/CE (ATEX 100 A).

Confidential test certificate no. 08-IK-0396.01 CE **1254**
EC-type examination certificate SEV09 ATEX 0132

Notification no.:	**QS 11 ATEX 2081** Ex
Ex classification:	**II (2)G [Ex ia] IIC**
	II (2)D [Ex iaD]
	II (2)GD

Please pay attention to the following documents:

- ***VEZ-SEV-ATEX-09-ISO_Certifcat-Doc.pdf*** (actually valid certificats)
- ***VED-TSS**...***.probe data sheet with specific (X) Ex-relevant coat thicknesses and information regarding the application in which zone
- ***08-IK-0396.01*** the test certificate with the characteristics is submitted in strict confidence.

1.3.1. Following notices must be observed:

1. The microprocessor control unit **mipromex**® as per EN *60079-0:2006* can only be used outside of the hazardous area.
2. The highest allowed ambient temperature is 60°C (also inside a protective housing)
3. The microprocessor unit **mipromex**® is to install in a manner that at least the protection standard IP 20 as per Standard IEC 529 resp. EN 60529 is fulfilled. By corresponding mount into rack unit this condition is fulfilled.
4. At installation of the microprocessor control unit **mipromex**® a minimum distance of 50mm must be created by insertion of a separation wall between the intrinsic safe and non intrinsic safe wiring circuit or the connecting parts must be insulated (i.e. with a heat-shrinkable sleeve). The input lines are secured to the rack or the monorack with a strain relief.
5. The intrinsic safe signal wiring circuits are safe galvanic separated from the remaining wiring circuits up to a peak value of 375 V of the nominal voltage.

1.4. SIL Safety Integrity Level

The microprocessor unit **mipromex**® is produced as per the SIL standards Norm IEC 61508/61511.

1.5. Cleaning of units

The microprocessor unit **mipromex**® and the measuring electronic **MTI** built-in on the probe head are not allowed to be cleaned with water.
The cleaning of the front panel is to be done with a slightly damped, clean cloth. The printed circuit boards, to remove the dust, shall only be slightly blown-out with compressed air (low pressure 4 bar).
The bar probes must be cleaned with alcohol or a corresponding solvent.
Probes with stainless steel electrodes (SRK or SRM or probes made to measure powders/solids) are not allowed to be cleaned with water or liquids.

1.6. Maintenance

The data transmission of the microprocessor units remains stable, even over a long period of time. Therefore, a periodic adjustment or similar, is not necessary.

1.7. Warranty claims

Your measuring system had to undergo a precise final inspection at the factory. Interventions are only allowed to be carried out by a competent person. Guarantee according to Aquasant Messtechnik AG warranty.

1.8. Waste disposal of electrical and mechanical components

The disposal of the components must be carried out in compliance with the country valid regulations.

2. mipromex® type description

Pic. 1 **mipromex®**

2.1. MLT hardware types

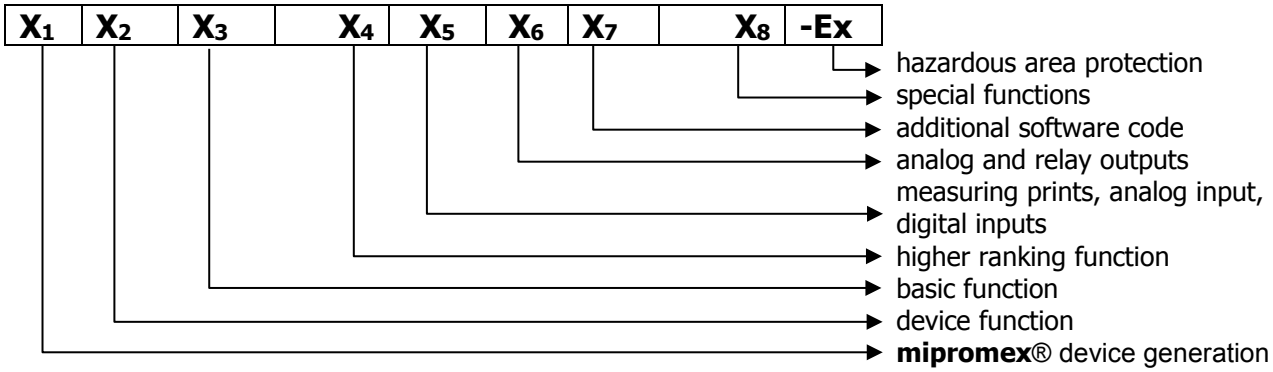
MLT 6130 1 measuring circuit with 1 analog output and 2 limit-value outputs with relay

MLT 6230 2 measuring circuits with 1 analog output and 2 limit-value outputs with relay on measuring circuit 1

MLT 6130/260 1 measuring circuit with 1 analog output and 2 limit-value outputs with relay
2nd measuring circuit and 2nd analog output can be activated with the activation code

MLT 6260 2 measuring circuits with 1 analog output each; measuring circuit 1 with to limit-value outputs with relay on measuring circuit 1

2.1.1. mipromex®-type code:



X1 M = **mipromex®**

X2
A = Analog
I = Interface
L = Level
P = Product

X3
C = Limit/Level
M = Monitoring
T = Transmitter
R = Recognition
Q = Quality
S = Switch
L = Level
U = Universal

X4
1 = Limit switch
4 = Analog output
7 =
2 = Level switch empty
5 = Universal new
8 = Interfacial layer
3 = Level switch full
6 = Filling level
9 = Product (quality, type, concentration)

X5	Meas. print	MeV of 2nd unit	analog input	digital input
1	1			3
2	2			3
3	2	1 MeV ex Rackbus		3
4	2	2 MeV ex Rackbus		3
5	1		1	3
6	2		1	3

X6	Relay	OC	analog output	DC-converter
0	2			
1		1/2	1	1
2		2	2	1
3	2		1	1
4		2	2	2
5	2		2	2
6	2		2	1
7		2		
8	2 internal		1	1
9	1		1	1

One DC-converter, with potential separation, analog output toward power supply
Two DC-converter, additional potential separation, analog outputs toward each other

X7
0 = standard - software
1 = first expansion of a standard - software

X8
- = without
C = controller (device with control function) e.g. **MIL** 8110 **C** interfacial layer level controller
P = product compensation
S = Segment

Ex
Ex = with hazardous area protection according to ATEX II(2)G [Ex ia] IIC // II(2)D [Ex iaD]
Exd = with hazardous area protection according to ATEX II(2)GD [Ex d ia] IIC
NEx = without hazardous area protection on measuring print

2.2. Software Versions

2.2.1. Basics

The standard operating software is used for all basic hardware units. The basic functions are identical for all software versions; you can use them on all the units. Software versions are marked according to NAMUR EN53.

Examples:

MLT 6130	V1.2x	1 measuring circuit with 1 analog output and 2 limit-value outputs with relay
MLT 6230	V1.2x	2 measuring circuits with 1 analog output and 2 limit-value outputs with relay on measuring circuit 1
MLT 6130/260	V1.2x	1 measuring circuit with 1 analog output and 2 limit-value outputs with relay 2nd measuring circuit and 2nd analog output can be activated with the activation code
MLT 6260	V1.2x	2 measuring circuits with 1 analog output each; measuring circuit 1 with to limit-value outputs with relay on measuring circuit 1

Within each software type additional functions can be activated liable to costs.
For each additional function a separate activation code is generated for each measuring circuit. The activation code is serial number depending.

The simple menu navigation (language selectable) assures a fast and accurate operation.
Input can be made via buttons and display of the device or via connection to a laptop or the process control system.

2.3. Basic function

The **mipromex® MLT** has one or two separated and independent measuring circuits. Depending on the device type, one or two measured signal processing can be activated.
The impulse signal transmitted by the measuring electronics MTI becomes in an offset compensated, filtered impulse value changed and into function of the entered measuring range for the batch separation with dynamic interfacial layer detection or a parameter substitute for the interfacial layer level converted into 4-20 mA signals.
The output signal is displayed as pulses value, % value semantics on:
mm/cm/m/ml/l/hl/cm3/dm3/m3/g/kg/t/in/feet/ga/lb/oz/gt or as mA value.
The offset range can be set between 10 and 1000 pulses.
The measuring signal offset (zero point) can be picked up automatically and/or the stored value can be modified via the keypad buttons. The measuring span is product dependent determined and automatically stored and/or the stored value can also be modified manually via the keypad buttons. The impulses signal is converted into a 0–100% value.
The 4-20 mA analog output from the interfacial layer measuring can spread via programmable % start value and % final value.
Parameter input is menu-driven and device-type based. Inactive positions are hidden.
The parameters can be stored and reloaded. The device is equipped with three digital inputs which the dynamic interfacial layer monitoring is started alternatively at batch separations or being able to dial interfacial layer level in 7 product-related parameters. If all 3 inputs are on 0, the interfacial layer monitoring can also start ID via keypad buttons. At the interfacial level measuring the parameters are loaded from the archives.
For interfacial layer monitoring or level measuring being available 2 open collectors (OC) or relay with change-over contact low and high function as well as adjustable at on-delay, drop-out delay and fail-save position. Error messages are visualized with time and date of the error. Press OK button more than 2 seconds, the error is confirmed and the display changes back to lastactive menue point.

2.4. Measuring circuit

One or two probes with the measuring electronic MTI in the connecting head are connected to the **mipromex® MLt** using a shielded two core cable. Between field and control room an equipotential bond must be installed.

2.5. Function

The product-surrounded electrode system of an aquasant-mt impedance bar probe varies the impedance in function of the dielectric and electrically conductive qualities of organic products or aqueous solutions as well as in function of the immersion depth of the active part of the bar probe .
The measured impedance sum signal is converted directly by the measuring electronic MTI into a normed signal and is transmitted as pulse packages to the **mipromex® MLT**.

There are diverse calibration alternatives for the level measuring with the **MLT 6130** (no product variations during measuring):

1. Importing of the measured value at known filling level and measuring-span calculation on ***keystroke.*** That demands the entry of the current filling level in mm and of the 100 % filling level in mm or in the instantaneous active unit.
2. ***External limit value*** via digital input D1 (see chapter 7.4.) with entry of the filling level at the limit-value probe and conversion to 100 % according to the unit mm, m, ml, l, m3, kg, t at overstepping or undercutting of the limit value but not at supply on.
3. Automatic importing of the 100 % measured value; adjustment ***via filling curve*** adjusting on gradient only (no adjustment at filling level stop).
4. Calculation of the measuring span in function of a ***filling level difference.*** Measured value storage at filling level 1 and filling level 2 and entry of the filling level difference.
5. Provides 1 analog output 4-20 mA and 2 filling level limit value relay outputs.

The level measuring **MLT 6130/6260** is conform to the MLT 6130 software, but furnished for a 2nd measuring circuit. The 2nd measuring circuit can be activated with the activation code, position 1.7.

Product-compensated measurement with **MLT 6230**:

1. Factory parameterization for a level probe.
2. Connect the level probe and measure. Entry of limit values and linearization curves for volume indication according to installation specification.
3. ***Internal limit value*** with internal limit value 3 of measuring circuit 2, entry of the filling level at the limit-value probe and conversion to 100 % according tot he unit mm, m, ml, l, m3, kg, t… at overstepping or undercutting of the limit value but not at supply on.
4. Provides 1 analog output 4-20 mA and 2 filling level limit value relay outputs on measuring circuit 1.

Product-compensated measurement with **MLT 6260**: (Software according to MLT 6230, item 3 disabled)

1. Factory parameterization for a level probe. Same software as 6230.
2. Connect the level probe and measure. Entry of limit values and linearization curves for volume indication according to installation specification.
3. Provides 1 analog output 4-20 mA each for filling level and product measuring value as well as 2, in measuring circuit 1, filling level limit value relay outputs.

2.5.1. Table of digital inputs external functions

Digital inputs

Importing of meas. Value	D1	D2	D3	Digital input D1 importing of measured value at MLT 6130. Change to positive shoulder on the digital input D1.
	0	0	0	
1	1	0	0	
2	0	1	0	
3	1	1	0	
4	0	0	**1**	
5	1	0	1	
6	0	1	1	
7	1	1	1	

Chart. 2 Digital inputs

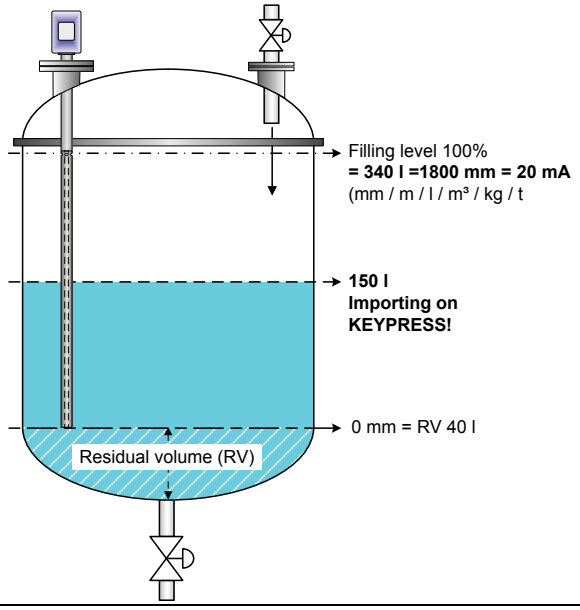
A modern menu-guided operating and calibration concept allows a very time-saving commissiong oft he level measuring device. The film keypad with functional buttons and fully graphical display makes the operating easy and save. Wiring scheme see chapter 7.4.

2.6. Operation: Menu [4.2.]

MLT 6130

Calibration on keypress

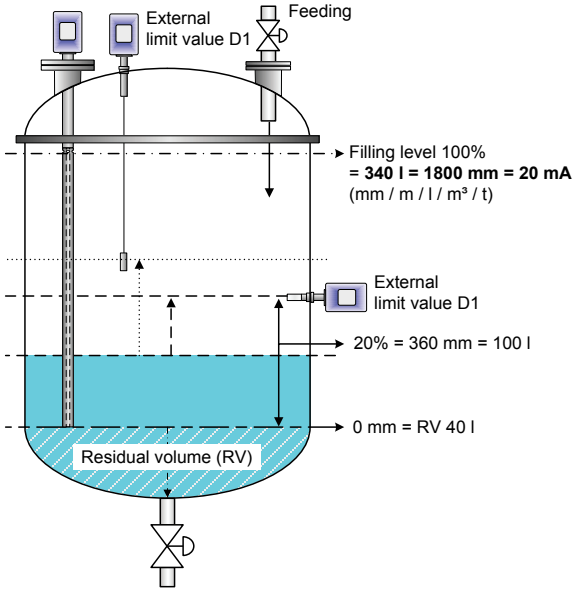
The calibration is made on keypress at known filing level / volume / weight. With analog output and two relay outputs for full/empty alarm.



Pic. 2 Vertical roundtank, calibration on keypress

Calibration by external limit value

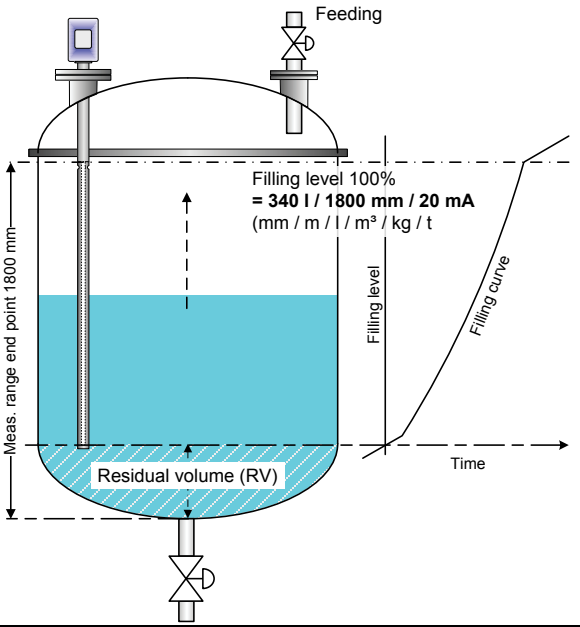
A re-calculation of the 100% measuring span follows from **each** ascending limit value oversteppig!
Activation at the digital input D1 of the mipromex® MLT 6130
→ Linearization of vertical linear roundtank menu item: [2.6.] selection: **no**



Pic. 3 Vertical roundtank, calibration by external limit value

Calibration by filling curve

A re-calculation of the measuring span through filling curve follows from mains supply ON
Automatic calculation of the 100% filling level! (Relays stay energized while filling)



Pic. 4 Vertical roundtank, calibration by filling curve

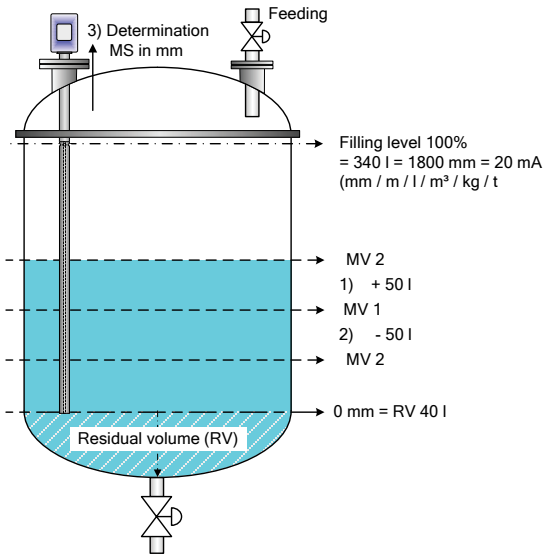
MLT 6130

Calibration by level variation

1) Level variation by product addition (e.g. 50 l)
2) Level variation by product taking (e.g. 50 l)
3) At partly filled tank:
Calibration by changing the level by
defined removal of the bar probe (e.g. remove about 100 mm)

To change measuring range: mm → l limit values will be checked!
→ Linearization of vertical linear roundtank menu item: [2.6.] selection: **no**
With analog output and two relay outputs for full/empty alarm.

Pic. 5 Vertical roundtank, calibration by level variation



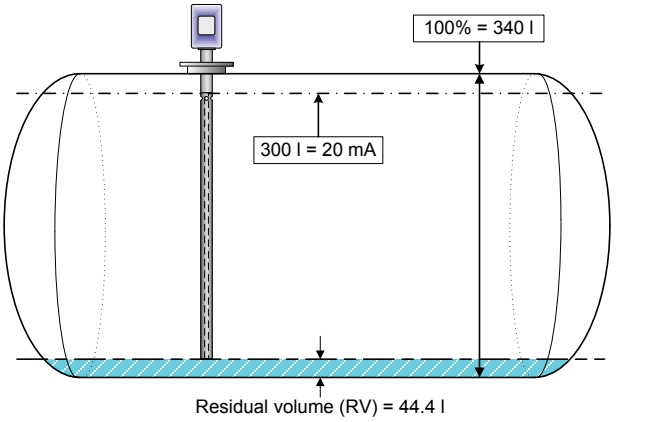
Horizontal roundtank

- Calibration by
→ Linearization vertical roundtank menu item: [2.6.] selection: **yes**
- Enter: internal diameter and residual height in mm

Residual volume will be calculated!

Example:
Ø = 600 mm
Residual height = 100 mm

Pic. 6 Horizontal roundtank, calibration by linearization

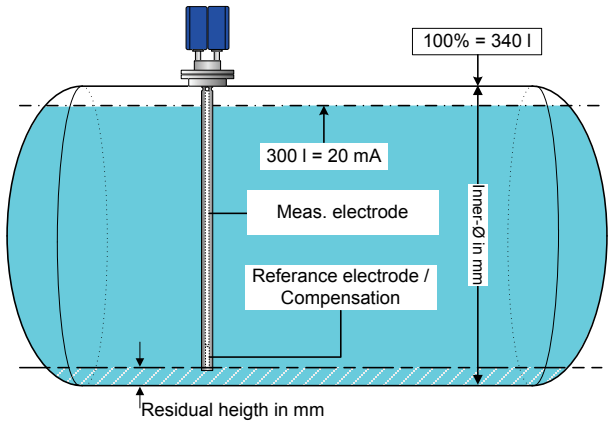


MLT 6260

Calibration by auto-product compensation

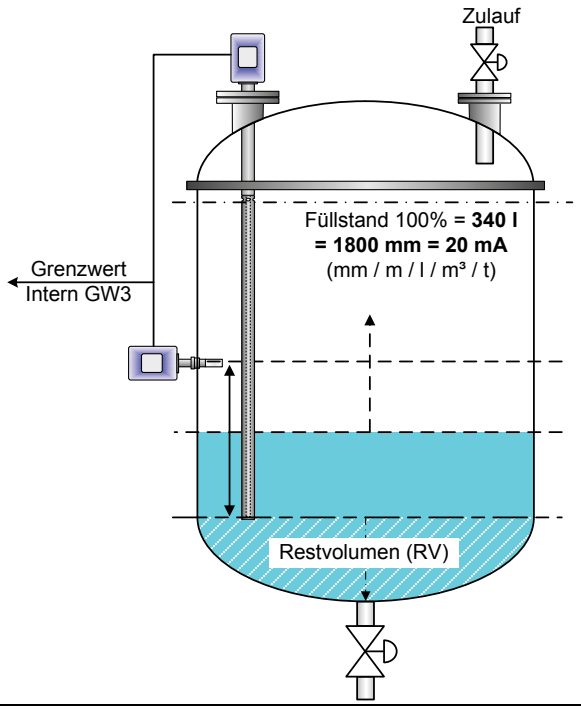
Continuous calculation of the 100% measuring span
Product and temperature variations will be compensated automatically
mipromex® MLT 6230/6260
→ Linearization horizontal roundtank menu item: [2.6.] selection: **yes**

Pic. 7 Horizontal roundtank, calibration by product compensation



MLT 6260

Calibration by internal limit value
A re-calculation of the 100% measuring span follows from **each** ascending limit value oversteppig!
Activation at LV3 of the mipromex® MLT 6230/6260



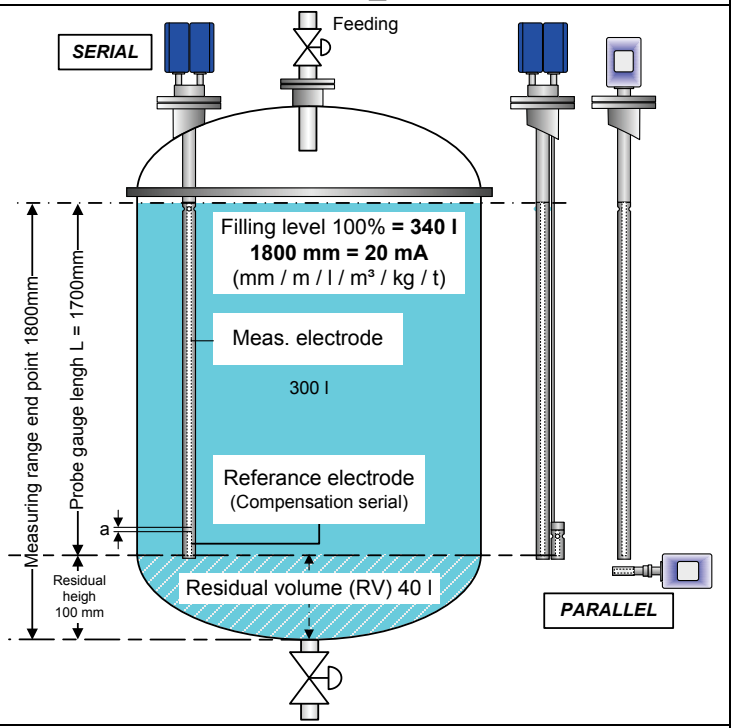
Pic. 8 Vertical roundtank with internal limit value

Calibration by auto-product compensation

Continuous calculation of the 100% measuring span
Product and temperature variations will be compensated automatically mipromex® MLT 6230/6260

Serial reference electrode
Probe length at measuring range endpoint =
Length of ref. meas. probe + space of electrodes a + length of measuring probe up to 100%

Length of measuring range = length of measuring probe up to 100% + residual height

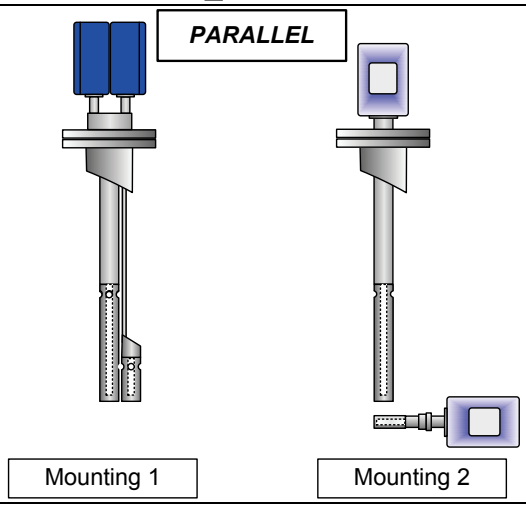


Pic. 9 Vertical roundtank with auto-product compensation

- **Parallel**
  Mounting 1:
  Enter length of ref. probe: x mm

  Mounting 2:
  Set length of ref. probe on 0 mm

Switch-on point of measuring span calculation
Length of ref. probe + Hyst 1 (30 mm)



Pic. 10 Probe with parallel measurement

3. Structure of data input (parameterization)

3.1. General

To select a menu point or to go forward/ "next" step in the menu, use the **OK** button.
The function of the **OK** button is shown in the inversed bar at the bottom of the display.
The position number of the actual menu item is displayed at bottom left.
To select the desired menu item use the ▲ ▼ buttons. The selected menu item is shown inversed. To execute the shown function use the **ok** button, to delete a value or go back to the previous menu, use the **C** button.

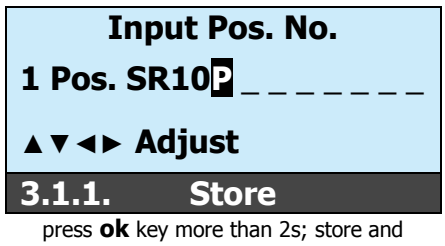
3.2. Key functions

key	description	display	main menu	menu line	data input
▲	up	Proceeding Display	"next" menu item	1 step up	., /, 0-9, :, A-Z, -
▼	down	Next Display	"next" menu item	1 step down	., /, 9-0, :, Z-A, -
►	right	-	-	Choose right	input right
◄	left	-	-	Choose left	input left
OK	"next" / menu / select / store	(>2 s) Persistency check	select	confirm	continue or (>2 s) store continue
C	back	back	back	back	back

Chart. 3 Key functions

3.2.1. Input / changing of characters

Every parameter has its own input field.
The input and change of parameter values can be done using the **mipromex**® menu or via PC-Software.
For several menu configuration text input is required. Text input is done the same way in all functions.
Input via buttons on the **mipromex**® key pad is done as follows:
The first position, beginning on the left, is inverted. To change the character use the ▲ ▼ buttons.
To select the next position use the ◄ ► buttons.
With the **ok** button (press >2 sec) the new value is stored and the display changes to the next parameter.
You can reactivate the old value using the **C** button. If no input is made during an adjustable amount of time, the display changes back to measured value.



Define your position, instrument or tag-number, 11 characters max.

active key-navigation

Menu-Pos.-Nr.-Code /**ok** button function

Change and input

1. position character input using ▲▼-buttons alpha-numerical

press **ok** key more than 2s; store and advance to the next Menu item

Chart. 4 Display

3.2.2. Select language

The languages Deutsch/English/Français are available and selectable in the **mipromex**® menu. A fourth language can be programmed. The parameter text field is loaded according to language code via PC-Software. Changes of the text can not be done using only the microprocessor unit **mipromex**®!

3.3. Graphic display

The format of the display is as follows:
Every menu position, parameter and device unit can be set active or inactive (not visible) according to the function of the device. The display is also adjusted to the function of the device.

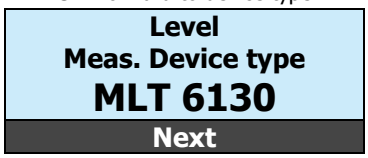
3.3.1. Display at switch-on of mipromex®

Vendor
Name of device generation
ok button function

ok: forward to device type

Start information mask. The mask switches to measurement indication after 10 seconds automatically

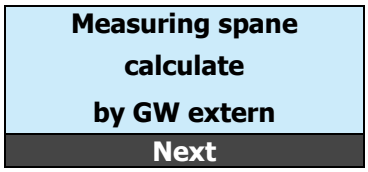
Unit description
Device type and hardware model
MLT 6130/6230/6260
ok button function



ok: forward to Funktionsinfo

Start information mask.

Unit description
Continuous Interfacial level in the reactor, dacanter
ok button function

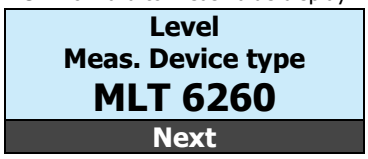


ok: forward to meas.value display

Information mask in accordance with program choice

Parameter sets 1-7 from archive

Unit description
Device type and hardware model
ok button function



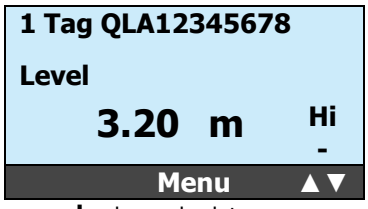
ok: forward to Funktionsinfo

Start information mask.

3.3.2. Measured value display

3.3.2.1. Unit types MLT 6130/6160 (1 Meas. circuit)

Description of the 1st measuring position
Description of the measured value
Actual calibrated meas.value display in %
Change and input in Menu 3.1.5. / 5.1.1.
ok button function / active keys



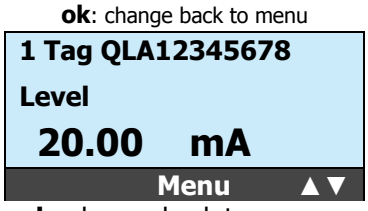
ok: change back to menu

Change and input in measuring circuit 1, Menu 3.1.1.

ID = Interfacial layer detection ON dyn (stat L or H)
↑ or ↓ flasching = interfacial layer detect OC/Relay 2
Limit value Full/empty sensor are reaches OC/relay 1
modification and petition under measuring circuit 1 menu 6.1.2

▲▼: circulate (loop) in display mode

Description of the 1st measuring position
Analog output
Full/Empty sensor static (not adjustable)
Show L or H
ok button function / active keys



ok: change back to menu

Change and input in measuring circuit 1, Menu 3.1.1.

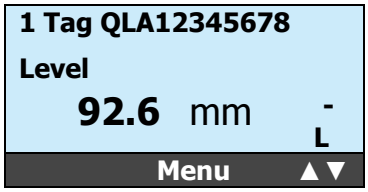
Display in function of the measuring range 0-100% = 4-20 mA

ID = Interfacial layer detection ON
ID↑ or ID↓ flasching = Interfacial layer detect OC/Relay 2

▲▼: circulate (loop) in display mode

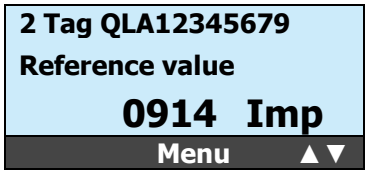
3.3.2.2. Unit type MLT 6260 (2 Measuring circuits)

Description of the 1st measuring position
Description of the measured value
Actual calibrated meas. value display in %/Imp. Change and input in menu 3.1.5. and 5.1.1.



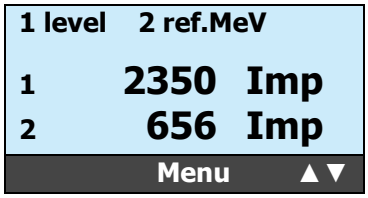
Change and input in Menu 3.1.1.
Limit value full/empty sensor are reaches OC/relay 1 modification and petition under measuring circuit 1 menu 6.1.2

Description of the 2nd measuring position
Description of the 2nd measured value
Meas. Value level upper phrase



Change and input in measuring circuit 1, Menu 3.1.1.
Modification and petition under Measuring circuit 2 menu 2.5. level of the top phase with level probe
Display in function of the measuring range

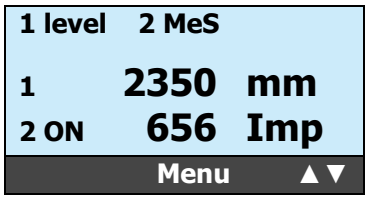
Description of the outputs of the 1st and 2nd measured value
Product meas. value calibrated %
Level measuring upper phase
Seperation reaction



(or display 2: upper layer level)

During alarm **Δ**, Low (Lo) or High (Hi): no display and arrow

Description of the outputs of the 1st and 2nd measured value
Product meas. value calibrated %
Level measuring upper phase
Seperation reaction

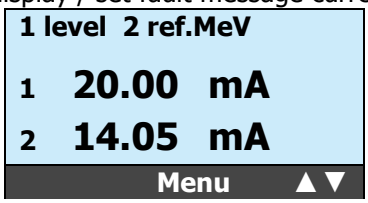


(or display 2: upper layer level)

During alarm **Δ**, Low (Lo) or High (Hi): no display and arrow

At **Δ**, arrows ↑↓: no measured value display / set fault message current e.g. 3.6 mA

Description of the outputs and of the 1st and 2nd measured value
Actual display of current output product data
Measurement organic phase separation or level in the upper phase

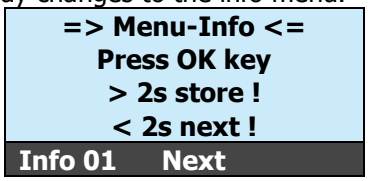


(or display 2: upper layer level)

3.3.3. Menu parameter settings

After pressing the OK button the display changes to the info menu.

Menu-Information
Both functions of the **ok** button
store or
next
Menu Pos. No. / **ok** button function

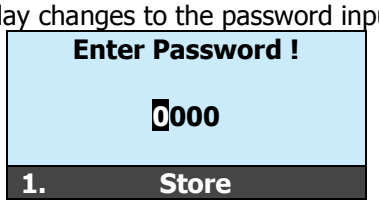


Store = Press Longer than 2 sec. on the OK-button
Next = shortly on the OK-button

ok: change to password input

After pressing the OK button the display changes to the password input.

selected character is inverted
Menu Pos. No

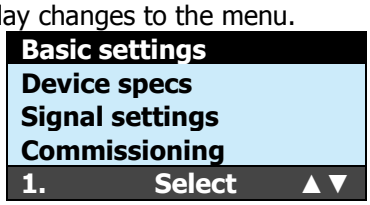


1. key-in the numerical password using the ▲▼◀▶-buttons
2. press **ok** button more than 2 seconds
Standard factory password 0000
Display changes to the menu
Parameters can be changed

ok: change to the menu

After pressing the OK button the display changes to the menu.

selected menu item is inverted
Menu Pos. No./**ok** function/active keys



ok: change to the selected menu item

▲▼: circulate (loop) menu items

4. Program structure with parameters of the analog transmitter

Legend: ☜ = Select / ✍ = Input / 🖋 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
1. Basic settings		☑	☑	☑	☑	☜
1.1. Language		☑	☑	☑	☑	☜
1.1.1. Deutsch		☑	☑	☑	☑	☜
1.1.2. English		☑	☑	☑	☑	☜
1.1.3. Français		☑	☑	☑	☑	☜
1.1.4. Free language / text		-	-	-	-	✍
1.2. Time/Date		☑	☑	☑	☑	☜
1.2.1. Time, input/correction		☑	☑	☑	☑	✍
1.2.2. Date, input/correction		☑	☑	☑	☑	✍
1.3. Modify Password		☑	☑	☑	☑	☜
1.3.1. Password input		☑	☑	☑	☑	✍
1.3.2. Modify password		☑	☑	☑	☑	✍
1.4. Lighting		☑	☑	☑	☑	☜
1.4.1. Lighting on/off		☑	☑	☑	☑	☜
1.4.2. Duration of lighting in min. / 0 = continuous ON		☑	☑	☑	☑	✍
1.5. Contact information		☑	☑	☑	☑	☜
1.5.1. Contact address		☑	☑	☑	☑	🖋
1.5.2. Contact Tel./E-Mail		☑	☑	☑	☑	🖋
1.5.3. Contact Web		☑	☑	☑	☑	🖋
1.6. Factory settings		☑	☑	☑	☑	☜
1.6.1. Store parameter set		☑	☑	☑	☑	☜
1.6.2. Load parameter set		☑	☑	☑	☑	☜
1.6.3. Initialize device no/yes		☑	☑	☑	☑	☜
1.7. Activation code		⌨	⌨	⌨	⌨	🖋
1.7.1. Activation of 2nd measuring circuit, Code: **********		-	☑	-	-	✍
2. Device specs		☑	☑	☑	☑	☜
2.1. Device type: **MIQ** 8110 / 8130 oder **MIQ** 8260; Software: Version V….		☑	☑	☑	☑	🖋
2.2. Serial Number and system Verification date		☑	☑	☑	☑	🖋
2.3. Quantity of measuring circuits (1. Measuring circuit 2.5.-2.7. skip) Battery type: CR2032		-	-	☑	☑	🖋
2.4. Select MS calculation: ❶ Keypress / ❷ External limit value / ❸ Filling curve / ❹ MV difference in function of the level variation		☑	☑	-	-	☜
2.5. Select ❶Internal limit value 3 measuring circuit 2 / ❷Product compensation (MLT 6230: 2nd analog output not activ)		-	-	☑	☑	☜
2.6. Select calibration curve for volume display: no/yes (horizontal roundtank standard or curve from archives)		☑	☑	☑	☑	☜
2.7. Select measuring circuit 1 / 2		-	-	☑	☑	☜
2.7.1. Probe; Type code 1 / 2		☑	☑	☑	☑	✍
2.7.2. Probe S/N 1 / 2		☑	☑	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 〰 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
3. Signal settings		☑	☑	☑	☑	☜
3.1 Select measuring circuit 1 / 2		-	-	☑	☑	☜
3.1.1. Input (position number)/ TAG - No		☑	☑	☑	☑	✍
3.1.2. Probe factor		☑	☑	☑	☑	✍
Info 06: Zero adjustment for; Bar probe; empty/clean; ex-works prog ~ 60		☑	☑	☑	☑	〰
3.1.3. Zero point MeV input (Offset), accept at press of OK button, store		☑	☑	☑	☑	✍
3.1.4. Manual input of the zero point =MeV (Offset)		☑	☑	☑	☑	✍
Info 14 MS calculation on keypress at known filling level (**MLT 6130/❶**)		☑	☑	-	-	〰
Info 15: Determine/measure out filling level [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt Imp]		☑	☑	-	-	〰
3.1.5. level input and Meas. span = MeS, accept at press button, store [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt/ %]		☑	☑	-	-	✍
3.1.6. level input/volume/actual weight XL/XV/XG (%, mm, m, ml, l, m3, kg, t) accept at press button		☑	☑	-	-	✍
Info 16: MS calculation with external limit value input D1(**MLT 6130/❷**)		☑	☑	-	-	〰
3.1.7. Level input/volume/weight XL/XV/XG position of limit value probe (%, mm, m, ml, l, m3, kg, t); external LV exceeded re-calculation on measuring range unit 5.1.3. (2.6. no)		☑	☑	☑	☑	✍
3.1.8. Level input position of limit value probe in mm (linearization with calibration curve 2.6. yes)		☑	☑	-	-	✍
Info 17: MS calculation with filling curve (**MLT 6130/❸**)		☑	☑	-	-	〰
Info 18: MS calculation with level variation **(MLT 6130/❹)**		☑	☑	-	-	〰
3.1.9. Importing of measured value MV1 on keypress		☑	☑	-	-	✍
3.1.10. Enter level variation DL in units (2.6. no)		☑	☑	-	-	✍
3.1.11. Enter level variation DL in mm (Linearization with calibration curve 2.6. yes)		☑	☑	-	-	✍
3.1.12. Importing of measured value MV2 on keypress, Store: measuring span calculation		☑	☑	-	-	✍
Info19: Internal limit value LV3 for measuring span calculation		-	-	☑	☑	〰
3.1.13. Set internal limit value LV3 measuring circuit 2 (according to position of the limit value probe)		-	-	☑	☑	✍
3.1.14. Mounting height of the limit value probe		-	-	☑	☑	✍
3.1.15. Measuring span MS manual entry/correction/initial measuring span		☑	☑	☑	☑	✍
3.1.16. Signal filter		☑	☑	☑	☑	✍
4. Commissioning according to device type		☑	☑	☑	☑	☜
4.1. [2.1.] Selection of device type MLT 6130 or MLT 6230/6260 (if 1.7.1 activated)		☑	☑	☑	☑	☜
4.2. [2.4.] Selection: MS caculation: ❶ Keypress / ❷ External limit value / ❸ Filling curve / ❹ MV difference in function of the level variation		☑	☑	-	-	☜
4.3. [2.5.] Select ❶Internal limit value 3 measuring circuit 2 / ❷Product compensation (MLT 6230: 2nd analog output not activ)		-	-	☑	☑	☜
4.4. [2.6.] Selection calibration curve for volume indication: no/yes (horizontal roundtank standard or curve from archives) (Calibr. curve yes)		☑	☑	☑	☑	☜
4.5. [2.7.1.] Probe type		☑	☑	☑	☑	✍
4.6. [2.7.2.] Serial no.		☑	☑	☑	☑	✍
4.7. [5.1.1.] Measuring unit [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		☑	☑	☑	☑	✍
4.8. [5.1.2.] Enter number of decimal places		☑	☑	☑	☑	✍
4.9. [5.1.3.] Measuring range 100% point		☑	☑	☑	☑	✍
4.10. [5.1.4.] Residual volume/%/volume/weight (RV) [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		☑	☑	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 🖇 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
4.11. [5.1.5.] Measuring range starting point 4 mA (setting measured value in units)		☑	☑	☑	☑	✍
4.12. [5.1.6.] Measuring range end point 20 mA (setting measured value in units)		☑	☑	☑	☑	✍
4.13. [5.1.7.] Residual height filling level of horizontal roundtank (initial value 00000 mm) [Calib. curve yes]		☑	☑	☑	☑	✍
4.14. [5.1.8.] Probe measuring length (mm) according to 100%; xxx [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		-	-	☑	☑	✍
4.15. [5.1.9.] Diameter of horizontal roundtank (initial value 02000 mm) Calib. curve yes]		☑	☑	☑	☑	✍
4.16. [3.1.1.] Entry position no. ; Tag No.		☑	☑	☑	☑	✍
4.17. [3.1.2.] Probe factor		☑	☑	☑	☑	✍
Info 06: Zero point for bar probe, receptacle empty, clean factory calibration ~ 60		☑	☑	☑	☑	🖇
4.18. [3.1.3.] Zero point MV importing on keypress (offset) OK store		☑	☑	☑	☑	✍
4.19. [3.1.4.] Zero point MV manual entry (offset)		☑	☑	☑	☑	✍
Info 14: MS calculation on keypress at known filling level (❶)		☑	☑	-	-	🖇
Info 15: Determine/measure out filling level (% , mm, m, ml, l, m3, kg, t)		☑	☑	-	-	🖇
4.20. [3.1.5.] Filling level input and measuring span calculation MS on keystroke [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt/ %] [Calib. curve.: No]		☑	☑	-	-	✍
4.21. [3.1.6.] Filling level input and measuring span calculation MS on keystroke [mm] [Calib. curve.: Yes]		☑	☑	-	-	✍
Info 16: MS calculation with external limit value input D1 (❷)		☑	☑	-	-	🖇
4.22. [3.1.7.] Level input/volume/weight XL/XV/XG (%, mm, m, ml, l, m3, kg, t)		☑	☑	-	-	✍
4.23. [3.1.8.] Level input/volume/weight XL/XV/XG [mm] [Calib. curve: yes] Position of the limit value probe		☑	☑	-	-	✍
Info 17: MS calculation with filling curve (❸)		☑	☑	-	-	🖇
Info 18: MS calculation with level variation (❹)		☑	☑	-	-	🖇
4.24. [3.1.9.] Importing of the measured value MV1 on keystroke		☑	☑	-	-	✍
4.25. [3.1.10.]Enter level variation DL [Calib. curve: no] [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt/ %]		☑	☑	-	-	✍
4.26. [3.1.11.]Enter level variation DL [mm] [Calib. curve: yes]		☑	☑	-	-	✍
4.27. [3.1.12.]Measuring span = MS, accept at keystroke, store		☑	☑	-	-	✍
4.28. [3.1.15.]Measuring span = MS input / manual correction		☑	☑	☑	☑	✍
4.29. [3.1.16.] Signal filter		☑	☑	☑	☑	✍
4.30. [11.12.] Limitation of current output on RV		☑	☑	☑	☑	✍
Info21: Filling level measuring product compensated 11. Take note of the service parameters		-	-	☑	☑	🖇
Info 20 Measuring circuit 1 limit value 1 and 2; Measuring circuit 2 internal limit value 3		☑	☑	☑	☑	🖇
Info 22 Limit value 1		☑	☑	☑	☑	🖇
4.31. [6.1.2.] Limit value		☑	☑	☑	☑	✍
4.32. [6.1.4.] Time delay, off		☑	☑	☑	☑	✍
4.33. [6.1.5.] Time delay, on		☑	☑	☑	☑	✍
4.34. [6.1.6.] FSL / FSH position		☑	☑	☑	☑	✍
Info 23 Limit value 2		☑	☑	☑	☑	✍
4.35. [6.1.1.] Function relay 2 (limit value 2) ❶Limit value/Fault message/Controller		☑	☑	☑	☑	✍
4.36. [6.1.2.] Limit value ❶		☑	☑	☑	☑	✍
4.37. [6.1.4.] Time delay, off ❶		☑	☑	☑	☑	✍
4.38. [6.1.5.] Time delay, on ❶		☑	☑	☑	☑	✍
4.39. [6.1.6.] FSL / FSH Position ❶		☑	☑	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 🖋 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
4.40. [9.1.] Relay 2 on position controller: 2-point controller switchpoint low		☑	☑	☑	☑	✍
4.41. [9.2.] Relay 2 on position controller: 2-point controller switchpoint high		☑	☑	☑	☑	✍
Info 24 Measuring circuit 2		☑	☑	☑	☑	✍
4.42. [2.7.1.] Probe type		☑	☑	☑	☑	✍
4.43. [2.7.2.] Serial no.		☑	☑	☑	☑	✍
4.44. [5.1.3.] 100% point of measuring range		☑	☑	☑	☑	✍
4.44. [5.1.8.] Measuring length of probe (mm) according to 100%; xxx [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		-	-	☑	☑	✍
4.45. [3.1.1.] Entry of position; Tag no.		☑	☑	☑	☑	✍
4.46. [3.1.2.] Probe factor		☑	☑	☑	☑	✍
Info 06: Zero point for bar probe receptacle empty, clean factory calib. ~ 60		☑	☑	☑	☑	🖋
4.47. [3.1.3.] Importing of the zero point MV on keypress (offset) OK store		☑	☑	☑	☑	✍
4.48. [3.1.4.] Zero point MV manual entry (offset)		☑	☑	☑	☑	✍
4.49. [3.1.13.]Internal limit value LV 3 set measuring circuit 2 (according to the position of the limit value probe)		-	-	☑	☑	✍
Info19: MLT 6230 internal limit value LV 3 for measuring span calculation		-	-	☑	☑	🖋
4.50. [3.1.14.]Mounting height of limit value probe if 4.3.[2.5.] Int. LV3		-	-	☑	☑	✍
4.51. [3.1.15.]Measuring span MS manual entry/correction/initial measuring span		☑	☑	☑	☑	✍
4.52. [3.1.16.] Signal filter		☑	☑	☑	☑	✍
4.53. [1.6.1.] Store parameters ok		☑	☑	☑	☑	☜
5. Measuring range		☑	☑	☑	☑	☜
5.1 Select measuring circuit 1 / 2		-	-	☑	☑	☜
5.1.1. Measuring units [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		☑	☑	☑	☑	✍
5.1.2. Entry of digital numbers		☑	☑	☑	☑	✍
5.1.3. Meas. Range length 100 % point in [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt, Imp]		☑	☑	☑	☑	✍
5.1.4. Residual height/%/volumen/weight (RV) [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		☑	☑	☑	☑	✍
5.1.5. Measuring range start point 4 mA (setting measured value in units)		☑	☑	☑	☑	✍
5.1.6. Measuring range end point 20 mA (setting measured value in units)		☑	☑	☑	☑	✍
5.1.7. Residual height filling level horizontal roundtank (initial value 00000 mm)		☑	☑	☑	☑	✍
5.1.8. Probe measuring length (mm) corresponds 100%; xxx [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]		☑	☑	☑	☑	✍
5.1.9. Diameter horizontal roundtank (initial value 02000 mm)		☑	☑	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 🖷 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
6. Limit values		☑	☑	☑	☑	☜
Info 20 Meas. circuit 1; Limit value 1 and 2; measuring circuit 2 Limit value 3 int.		☑	☑	☑	☑	🖷
6.1 Select limit value 1 / 2		☑	☑	☑	☑	☜
6.1.1.Select function : Limit value; Fault message; Controller (9.1./9.2.)		☑	☑	☑	☑	✍
6.1.2. Limit value (set 1/2)		☑	☑	☑	☑	✍
6.1.3. Internal limit value 3 (MLT 6230/6260) (item 3.1.13.)		-	-	☑	☑	✍
6.1.4. Time delay, off (set 1/2)		☑	☑	☑	☑	✍
6.1.5. Time delay, on (set 1/2)		☑	☑	☑	☑	✍
6.1.6. FSL/FSH-Position Limit value (set 1)		☑	☑	☑	☑	☜
7. Test functions		☑	☑	☑	☑	☜
7.1. **Analog output** / Limit value select		☑	☑	☑	☑	☜
7.2. Analog output / **Limit value** select		☑	☑	☑	☑	☜
7.1.1. Select Analog- output 1 / 2		-	-	☑	☑	☜
7.1.1.1. mA- output 1 / 2 simulation (0.1 mA steps) beginning at 0.5 mA		☑	☑	☑	☑	✍
7.2.1. Select Limit value 1 / 2		☑	☑	☑	☑	☜
7.2.1.1. Limit value 1 / 2; Simulation OFF / ON		☑	☑	☑	☑	☜
8. Fault msg; Error message mA output		☑	☑	☑	☑	☜
8.1. Data error; Measured value; Underflow,<0010 pulses		☑	☑	☑	☑	✍
8.2. Data error; Measured value; Overflow, >3750 pulses		☑	☑	☑	☑	✍
8.3. Technical; Error		☑	☑	☑	☑	✍
8.4. Error protocol		⌨	⌨	⌨	⌨	🖷
Display actual error with time/date		☑	☑	☑	☑	🖷
9. Controller function		☑	☑	☑	☑	☜
9.1. 2-point controller switch point low		☑	☑	☑	☑	✍
9.2. 2-point controller switch point high		☑	☑	☑	☑	✍
10. Protocol log of errors		-	-	-	-	☜
10.1. Commissioning protocol of the parameter settings		-	-	-	-	PC

Legend: ☜ = Select / ✍ = Input / 🖋 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**	**MLT 6130 ID**	**MLT 6130/6260**	**MLT 6230**	**MLT 6260**	**Change**
11. Service parameter basic settings		☑	☑	☑	☑	☜
11.1. Reference electrode parallel/in serie		-	-	☑	☑	☜
11.2. Space measuring electrode/reference electrode		-	-	☑	☑	✍
11.3. Reference signal for probe factor F1		-	-	☑	☑	✍
11.4. Reference signal for probe factor F2		-	-	☑	☑	✍
11.5. Reference signal value for probe factor F3		-	-	☑	☑	✍
11.6. Probe factor for reference signal value MR1		-	-	☑	☑	✍
11.7. Probe factor for reference signal value MR2		-	-	☑	☑	✍
11.8. Probe factor for reference signal value MR3		-	-	☑	☑	✍
11.9. Hysteresis for MS calculation on 30 mm		-	-	☑	☑	✍
11.10. Hysteresis to freeze Mrref 300 mm		-	-	☑	☑	✍
11.11. Time delay for MS calculation on		-	-	☑	☑	✍
11.12. Mr min switch point for MS calculation on		-	-	☑	☑	✍
11.13. MS coefficient for measuring span calculation for measuring circuit 2 off		-	-	☑	☑	✍
11.14. Limitation current output on RV no/yes		☑	☑	☑	☑	✍
12. Calculation parameter		☑	☑	☑	☑	☜
12.1. Select measuring circuit 1 / 2		☑	☑	☑	☑	☜
12.1.1 Drift memory		☑	☑	☑	☑	✍
12.1.2 Drift (gradient) pulses		☑	☑	☑	☑	✍
12.1.2 Drift (gradient) time		☑	☑	☑	☑	✍
13. Archives		☑	☑	☑	☑	☜
13.1. Fault message protocols (7)		-	-	-	-	🖋
13.2. Scanning interval		-	-	-	-	✍
13.3. Circular storage for the last 1000 measured values (reading in excel chart)		-	-	-	-	🖋

Display modes					
1. Pos. Number Analog output 1; level in [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt]; L / H Grenzwertanzeige	☑	☑	☑	☑	🖋
1. Pos. Number; display 1 in [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt] und Imp	☑	☑	-	-	🖋
1 Level in [%, mm, cm, m, ml, l, hl, cm3, dm3, m3, g, kg, t, in, feet, ga, lb, gz, qt] und 2 Messspanne [Imp]	☑	☑	☑	☑	🖋
1. Pos. Number; Analog output 1 in mA	☑	☑	-	-	🖋
Analog output 1 level/2 Reference measuring value in mA	-	-	☑	☑	🖋
2. Pos. Number; Referenc measuring value, [Imp]	-	-	☑	☑	🖋
Displayed actual Error with time / date	☑	☑	☑	☑	🖋

Chart. 5 Program structure

4.1. Description of the menu, program structure General, for all mipromex® units

mipromex® display

Your TAG or Position number
Measuring position, number
Display measured value in %
Hi = High Alarm

ok button function / active keys

```
1 Tag QLA12345678
Level
100.0        --
                Hi
        Menu  ▲▼
```

After pressing the **ok** button the display changes to the info menu.

Information about storing or next

```
=> Menu-Info <=
Press OK key
>2s store !
< 2s next !
Info 01  Next
```

After pressing the **ok** button, the display changes to password input.

Password

The password protects the programming level of the **mipromex**®. If you start up for the first time, the standard password is *0000* and is displayed. If you change the password (under point 1.3.) every user has to log-in using the new password!

Note: If you loose the new password, contact aquasant-mt to obtain an override password.

Key in your new password or accept the standard password
selected digit is inverted

```
Enter Password !

0000

1.      Store
```

1. Key-in the numerical password using the ▲▼◀▶-buttons
2. Press **ok** button more than 2 seconds; display change to the menu "change password"; the password can be change now.
3. Press **ok** button; display switch to menu.

4.1.1. [1.] Basic settings

You can set the device specific parameters in the basic settings menu. Please note that you first have to activate the password before you can make any changes.

Main menu
selected menu item is inverted

```
Basic settings
Device specs
Signal settings
Commissioning
1.      Select  ▲▼
```

Menu-Positions-Number

After pressing the **ok** button the display changes to the sub menu basic settings

Sub menu
Selected sub menu item is inverted

```
Language / Sprache
Time/Date
Modify password
Lighting settings
1.1.    Select  ▲▼
```

Menu-Positions-Number

After pressing the **ok** button the display changes to the sub menu Language / Sprache

[1.1.] Language/Sprache

Select the desired language. After you selected the language and stored your choice, the new language will be activated immediately. On the internet homepage www.aquasant-mt.com / Downloads, you can download an Excel-file. The three languages Deutsch, English and Français are listed. Replenish all text blocks in your language (max 16-characters), send it to us and we will be glad to implement your language.

selected character is inverted

```
Deutsch
English
Français

1.1.1   Store  ▲▼
```

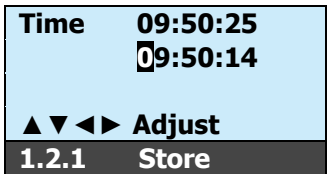
1. select language with the ▲▼-buttons
2. press **ok** button more than 2 seconds ; The selected language is immediately activated Display changes back to menu item 1.1.

[1.2.] Time/Date

Correction of device time and date. The time is displayed in hours, minutes and seconds. Daylight saving time is not adjusted automatically! The date is displayed in day, month and year. The device time is used for the protocol logger.

current time
selected character is inverted

active key-navigation

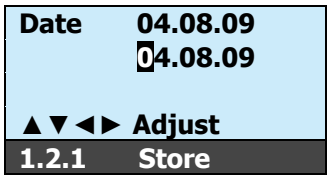


1. use ▲▼◄►-buttons to change the time
2. press **ok** button more than 2 seconds

Time is stored
Display changes to date 1.2.1.

current date
selected character is inverted

active key-navigation



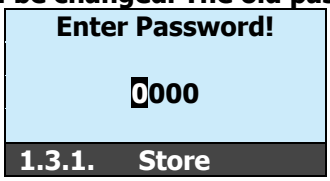
1. use ▲▼◄►-buttons to change the date
2. press **ok** button more than 2 seconds

Date is stored
Display changes back to menu item 1.2.

[1.3.1.] Key-in and change password

The standard password (0000) **can be changed. The old password has to be confirmed first.**

selected character is inverted



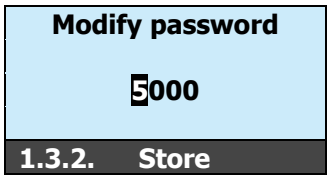
1. use ▲▼◄►-buttons to input the numerical password
2. press **ok** button more than 2 seconds

Password is stored
Display changes to modify password 1.3.2.

[1.3.2.] Modify password

The standard password (0000) can be changed. The new password has not to be confirmed.

selected character is inverted



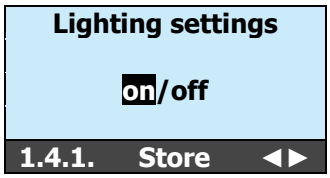
1. use ▲▼◄►-buttons to input the numerical password
2. press **ok** button more than 2 seconds

New password is stored
Display changes back to menu item 1.3.

[1.4.] Lighting

The display lighting can be switched on or off. The duration of the lighting can be set in minute-steps; for continuously on choose time 00, under the menu point 1.4.2.!

selected character is inverted



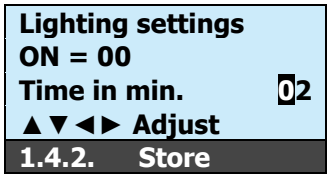
1. use ◄►-buttons to switch the lighting on or off
2. press **ok** button more than 2 seconds

Selection is stored
Display changes to sub menu lighting duration 1.4.2.

[1.4.2.] Lighting settings

The display lighting can be switched on or off. The duration of the lighting can be set in minute-steps; for continuously on choose 00!

selected character is inverted

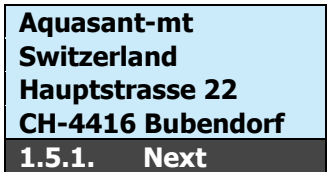


1. use ▲▼◄►-buttons to select the lighting duration
2. press **ok** button more than 2 seconds

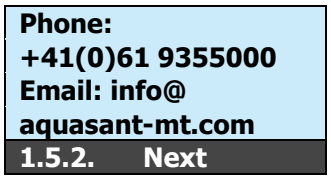
Lighting duration is immediately activated
Display changes back to menu item 1.4.

[1.5.] Contact

Our contact information: Address / Phone-No. / Email / Web



After pressing the **ok** button the display changes to the next menu item.



After pressing the **ok** button the display changes to the next menu item.

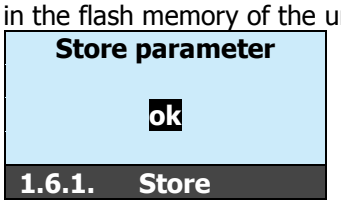
After pressing the **ok** button the display changes back to the sub menu Contact 1.5

[1.6.] Factory settings

Under the *Factory settings* Menu Level, the programmed device parameters can also be stored, reloaded or deleted. All parameters are set back to factory settings at initialization of the device.

[1.6.1.] Store Parameter set

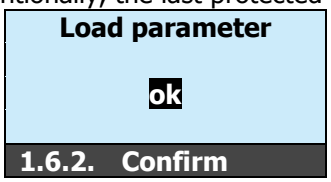
All keyed-in parameters are stored in the flash memory of the unit. The parameters can be reloaded afterwards.



1. press **ok b**utton more than 2 seconds; the parameter will store into the flash. Old Parameter will overwrite.
2. A short ok-feeling pressure jumps further into the next mask 1.6.2.

[1.6.2.] Parameter set load

If parameters were changed unintentionally, the last protected operation parameter set can be activated again.

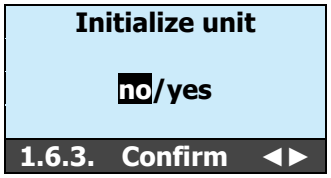


1. Press **ok**-button longer than 2 sec.; the parameter will store into the flash. Old Parameter will overwrite.
2. A short ok-feeling pressure jumps further into the next mask

[1.6.3.] Initialize unit no/yes

If the device is initialized, all user-programmed parameters are deleted and set back to factory settings.

Choice display is inverted



Caution, all current parameter values are overwritten!

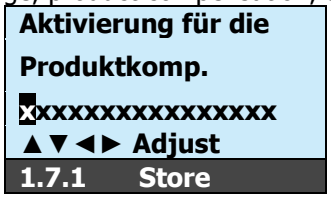
[1.7.] Activation code

With the activation code, several optional dutiable *software packages/functions* can be activated.

[1.7.1.] Activation other functions

For example measuring signal storage, product compensation, simulationen etc**.**

Description
Product compensation continuous
Interfacial layer measurement
Code input



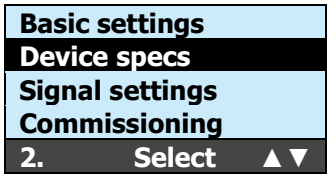
1. use ▲▼◄►-buttons to input the alpha-numerical Code
2. press **ok b**utton more than 2 seconds

Input is stored
Display changes back to menu 1.

4.1.2. [2.] Device specs

In the device specs you will find specific information about the **mipromex**®.

Main menu
Menu list display is inverted



After pressing the **ok** button the display changes equipment data to the sub-menu

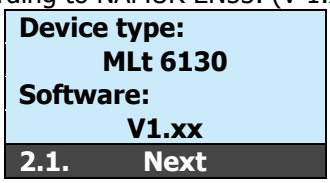
[2.1.] Device-type MLT 6130 / 6230 / 6260

In the device type menu the hardware type and the software-release are displayed. Example:

MLT 6130 1 measuring circuit with 1 analog output and 2 limit value output with Relay
MLT 6230 2 measuring circuit with 1 analog output and 2 limit value output with Relay
MLT 6260 2 measuring circuits with 1 analog outputs each (not potentially separated against each other) and 2 limit value output with Relay

Software versions are marked according to NAMUR EN53. (V 1.xx)

Information mask about the mipromex

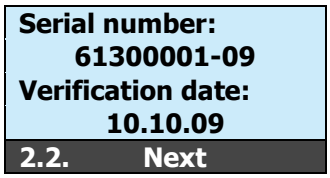


After pressing the **ok b**utton the display changes to the next menu item 2.2.

[2.2.] Serial number and date of the system verification

The serial number is fix stored in the **mipromex**® and can not be changed. The serial number is linked to the activation codes. The date of the system verification marks the QS-function control during the final function test.

Information mask about the mipromex



After pressing the **ok b**utton the display changes to the next menu item 2.3.

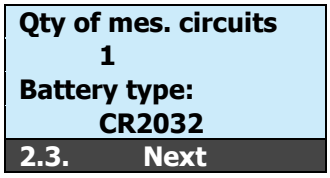
[2.3.] Number of measuring circuits (1. measuring circuit, skip 3.1/4.1)

Here is displayed if there is one or two measuring circuits activated.

Battery type

The inserted battery type is displayed. The battery has not to be charged before using the **mipromex**®. The battery lifetime of 10 years guarantees that no data loss will occur.

Information mask about the mipromex



After pressing the **ok b**utton the display changes to the next menu item 2.4.

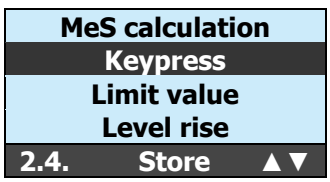
[2.4.] Measuring span calculation for the type MLT 6130

The measuring span is used for the calculation of the filling level dependent on the measured impedance. This means that the measuring span is product dependent. There are 3 easy possibilities to determine the measuring span.

Description:

- **Keystroke;** enter the known filling level in the calibrated unit under menu 3.1.6. and store it, then the actual measured value will be calculated to 100%.
- **External limit value**; the 100% point can be set at the digital input D1. Either manually or automatically by a limit-value contact in the receptacle at a set filling level in percentage.
- **Filling curve**; with a constant liquid feeding. At mains ON or when the digital input D1 activates (5 seconds) an automatic 100% filling-level calibration will be made. The relays stay energized while filling. After the calibration they take up the set function.
- **Level variation**; the 100% point is automatically calculated by a known level delta.

Measuring span calculation / Entry
External limit value via D1
Filling curve (LLCU device)
Entry of MV at different levels
On keystroke at known level

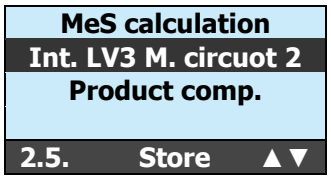


After pressing ▲▼ -buttons the display changes to selection keystroke / limit value / fillung curve for LLCU only (level control) or level variation
Press **ok** button > 2s; entry will be stored
Disaply changes to menu item 2.x.

[2.5.] Measuring span calculation for the type MLT 6230/6260

Automatic level calibration by an internal limit value **Int. LV3** which is activated by the 2nd measuring circuit (limit value probe freely programmable e.g. at 60 % tank height) and calculates the measuring span for the 100% point. Or fully automatic **product compensation** with the 2nd measuring span (reference probe in the lower part of the tank). When the product varies in the process the measuring span is constantly recalculatet.

Measuring span calculation / Entry
Internal limit value LV3
Product compensation



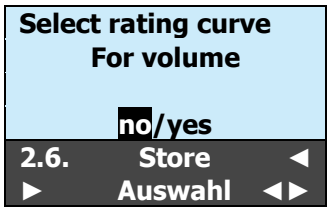
After pressing ▲▼-buttons the display changes to selection
After pressing the **ok** button the display changes to menu item 2.6.

[2.6.] Calibration curve for volume display

[**yes**] by default the calibration curve is calibrated for a horizontal roundtank. Pay attentention to the parameterization!

[**no**] Application for a cubic or a vertical linear roundtank.

Linear level measuring
or volume display with calibration curve
Standard horizontal roundtank

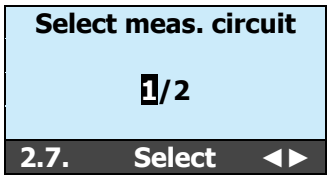


After pressing ◄►-buttons the display changes to selection
After pressing the **ok** button the display changes to menu item 2.7.

[2.7.] Select measuring circuit 1 or 2

Select the active measuring circuit for the next steps.

Menu list choice display is inverted

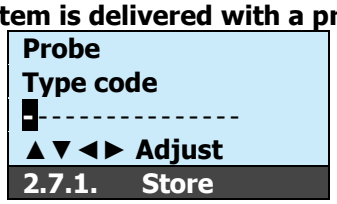


After pressing the ok button the display changes to the menu of the select measuring circuit (1). 2.4.1.

[2.7.1.] Probe type code

This is an input field. If the system is delivered with a probe, the probe type is stored here.

selected character is inversed 16-char.
Alphanumeric

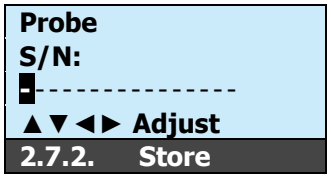


1. use ▲▼◄►-buttons to input the alpha-numerical type code of the probe
2. press **ok b**utton more than 2 seconds; Type code is stored Display changes to the next menu item 2.7.2.

[2.7.2.] Serie-Nr.

This is an input field. If the system is delivered with a probe, the serial no. of the probe is stored here.

selected character is inversed 16-char.
Max.

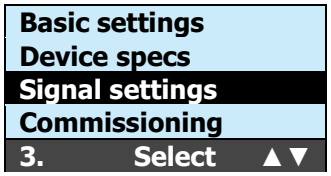


1. use ▲▼◄►-buttons to input the alpha-numerical serial number of the probe
2. press **ok b**utton more than 2 seconds Serial number is stored Display changes back to menu 2.7. back with **C b**otton

4.1.3. [3.] Signal settings

In the signal adjustings all parameters which are named with the signal processing are parametrized.

Main menu
selected menu item is inverted

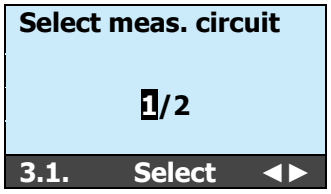


After pressing the **ok b**utton the display changes to the sub menu signal settings

[3.1.] Select measuring circuit 1 or 2 (Select only for MLT6230/6260)

Select the active measuring circuit for the next steps.

selected menu item is inverted

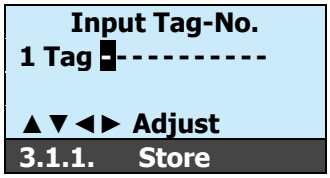


After pressing the **ok b**utton the display changes to the menu of the selected measuring circuit (1). 3.1.1.

[3.1.1.] Input Positions-/TAG-Number

You have the possibility to store a Tag No. for the probe in the **mipromex**®. The field is alphanumerical. (No lower case letters!)

Define your Tag No.
Tag-number, 11-characters max.



1. use ▲▼◄►-buttons to input the alpha-numerical position number
2. press **ok b**utton more than2 seconds

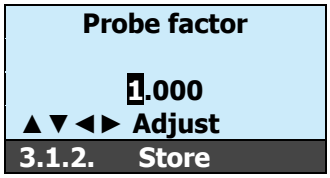
Pos.-No. is stored
Display changes to menu item 3.1.2.

[3.1.2.] Probe factor

The probe factor is a probe specific number which indicates the correlation to the standard probe (factor 1.00). If you replace the probe you will get a reproducible measurement with the same measured values. The probe factor has only to be changed when using a replacement probe. By changing the factor, you will get with the replacement probe, the same pulses value at 100 %

e. g. MeV old probe 2600 / 2955 MeV new probe = f 0.879

The probe factor has only to be changed when using a replacement probe
selected character is inverted



1. use ▲▼◄►-buttons to define the probe factor
2. press **ok b**utton more than 2 seconds

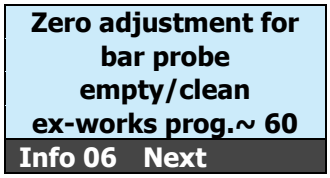
Probe factor is stored
Display changes to the next menu item 3.1.3. After changing the probe factor the zero point must be actualized and stored 3.1.3.

[3.1.3.] Zero point acceptance at push button (Offset) OK

The electronic probe is calibrated in the factory to 60±5 pulses. If the probe is installed, this value can be higher due to the environment. If the probe is installed; empty and dry, the zero point can be checked and/or manually corrected. Attention: switch-on the unit 30 minutes before the zero adjust. A measured value between 10 and 1000 pulses can be adjusted without performing an electronic calibration. ***Attention;*** *Probe must be dry and clean! At a coparison of 1000 the product measurement is limited on approx. 2700 impuls*

If the system has been into operation the zero point adjustement can be renounced. (Work adjusting approx. 60)

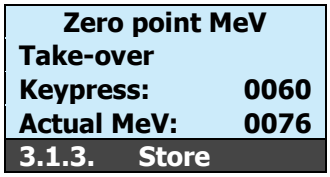
Menu information
furthermore process



After pressing the **ok** button the display changes the information mask to the next menu item 3.1.3.

MeV = normed measured value in pulses

actual stored zero point offset
actual raw measured value, empty probe



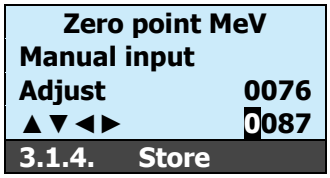
1. press **ok b**utton more than 2 seconds

The new zero point is immediately activated
Display changes to the next menu item 3.1.4.

[3.1.4.] Manual zero point input (offset)

The programmable probe zero point can be changed or corrected manually. If the installation cannot be emptied for the zero point of the probe, then the zero point is manually keyed-in from the protocol

You can manually correct the
zero point of the probe
actual raw measured value of the probe
adjust zero point



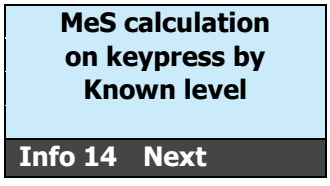
1. use ▲▼◄►-buttons to define the zero point
2. press **ok b**utton more than 2 seconds

The new zero point is immediately activated
Display changes to the next menu

Measuring span calculation for the MLT 6130 on keypress

The selection of the calculation method is defined under item [2.4.].

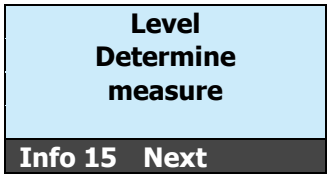
Menu information concerning
the following action
for measuring circuit 1



After pressing the **ok** button the display changes to the mask Info 15

Define the correct filling level in the tank, in the unit chosen under menu item 5.1.1. The level will be entered in the next mask 3.1.6. and be stored.

Menu information concerning the following action



After pressing the **ok** button the display changes to mask 3.1.5

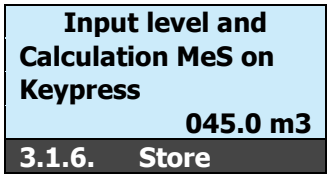
Determine the current filling level in the adequate unit
e.g. mm, m3, l, etc.

[3.1.6.] Measuring span importing on keypress OK

The measuring span, which is needed for the calculation of the 100% measuring range is product dependent. The impulse value is imported with the product to be measured at the set filling level or filling volume on keystroke and the 100% measuring range is calculated in the adequate unit. The measuring span is recalculated and stored.

Menu information concerning the following action

Enter the current filling level

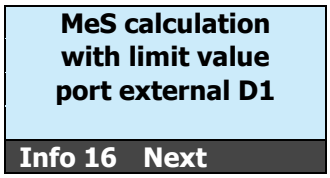


1. Press **ok** button > 2s; the new measuring span is calculated immediately
Display changes to menu item 3.1.14.

Measuring span calculation for the MLT 6130 with external limit value

The selection of the calculation method is set under item [2.4.]. At the digital input D1 the 100% calibration can be automatized at a defined known height by using an external limit value probe.

Menu information concerning the following action



After pressing the **ok** button the display changes to mask 3.1.7

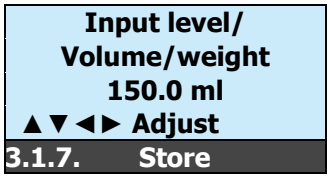
Define the current filling level in the adequate unit
e.g. mm, m3, l, etc.

[3.1.7.] Filling level with mounted limit value probe ([2.6.] no, calibration curve)

At overstepping the external limit value the new measuring span will be re-calculated by the digital input D1 or the internal LV3.

Menu information concerning the following action

Measured value at limit value height



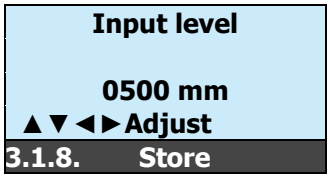
1. Press the **ok** button > 2s;
Measuring span calculation at overstepping the external limit value D1
Display changes to menu item 3.1.15.

[3.1.8.] Filling level or content with mounted limit value probe ([2.6.] yes, calibr. curve)

The selection of the calculation method is set under item [2.4.].
At overstepping the external limit value the new measuring span will be re-calculated by the digital input D1 or the internal LV3.
Entry always in mm

Menu information concerning the following action

Measured value at limit value height

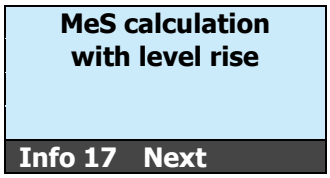


1. Press the **ok** button > 2s;
Measuring span calculation at overstepping the external limit value D1
Display changes to menu item 3.1.15.

Measuring span calculation for the MLT 6130 with filling curve

The calculation method can be selected in item [2.4.]. A continuous liquid feeding is very important during the first filling for the 100% calibration. The fill velocity may decelerate max. 75 % (referred to the initial fill velocity), otherwise the 100% calibration is done before reaching the 100% label. For calibration the receptacle must be filled slightly over the 100% label. The relays stay energized while filling. After the calibration they take up the set function.

Menu information concerning the following action

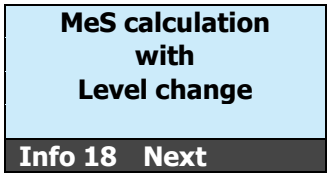


After pressing the **ok** button the display changes to the mask Info 14

Measuring span calculation for the MLT 6130 with level variation

The calculation method can be selected in item [2.4.]. The measured value is detected at two different levels. With the level delta the measuring span is calculated to 100% filling level automatically. The calculation is done in the set measurement unit.

Menu information concerning the following action

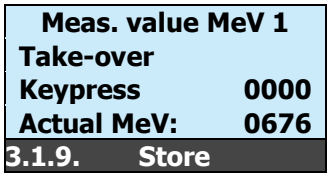


After pressing the **ok** button the display changes to the mask 3.1.14

[3.1.9.] Storing of measured value 1

The first measured value of the actual level is stored for the difference calculation.

MV1 = standardized measured value in impulses
last measured value
actual measured value

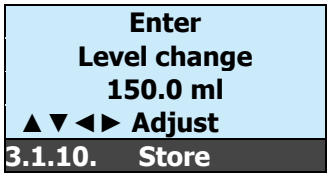


1. Press the **ok** button > 2s;
The actual measured value is imported immediately
Display changes tot he following menu item 3.1.10.

[3.1.10.] Enter level variation ([2.6.] no, no calibration curve)

The level variation must be entered in the corresponding measurement unit. If the calibration is only possible in mm, the measurement unit can be changed after calibration. The filling level can be increased or reduced. Depending on the installation you have the possibility to loosen and to lift the probe about e.g. 150 mm.

Menu information concerning the following action
level variation in unit

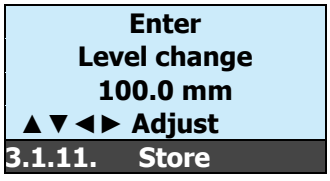


1. Press the **ok** button > 2s; the new measuring span is re-calculated at overstepping the external limit value D1
Display changes to menu item 3.1.12.

[3.1.11.] Enter level variation ([2.6.] yes, with calibration curve)

The level variation **must be** entered **in mm**. The filling level can be increased or reduced. Depending on the installation you have the possibility to loosen and to lift the probe about e.g. 150 mm.

Menu information concerning the following action
level variation in unit

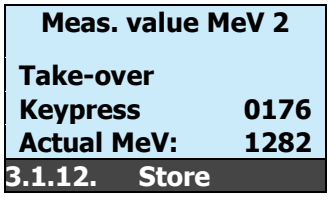


1. Press the **ok** button > 2s; the new measuring span is re-calculated at overstepping the external limit value D1
Display changes to menu item 3.1.12.

[3.1.12.] Storing of measured value 2

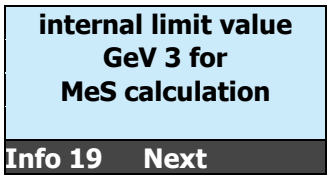
The second measured value of the changed filling level is stored fort he difference calculation. The measuring span is calculated automatically and displayed in item 3.1.15.

MV2 = standardized measured value in impulses
last measured value
actual measured value



1. Press the **ok** button > 2s; the actual measured value is imported immediately and the measuring span is calculated
Display changes to menu item 3.1.15.

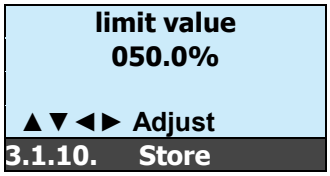
Measuring span calculation for the MLT 6230/6260 with internal limit value LV3
The calculation method is selected in item [2.5.].



[3.1.10.] Enty of the internal limit value LV3

At overstepping the internal limit value LV3 the new measuring span will be automatically re-calculated through the external limit value probe on a defined known height of the 100% calibrationt. Set this known height, volume or % value in the display.

Entry of limit value
Limit value VL 3

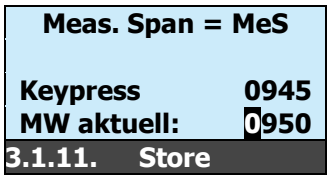


1. press **ok** button more than 2 seconds;
Dislay changes to next item 3.1.11.

[3.1.11.] Measuring span measuring circuit 2 MLT 6230/6260

The actual measured value is imported as measuring span

The measuring span of the probe can be corrected by manual entry
Actually stored measuring span
Enter measuring span

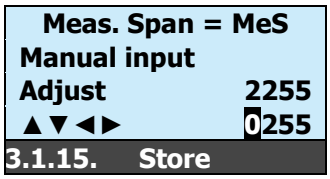


1. use ▲▼◄►-buttons to define the measuring span
2. press **ok** button more than 2 seconds; the new measuring span is immediately activ.
Display changes to item 3.1.12.

[3.1.15.] Measuring span

The measuring span described in item 3.1.5 or calculated in item 3.1.12. can here be set or corrected manually.

The measuring span of the probe can be corrected by manual entrye
Actually stored measuring span
Enter measuring span

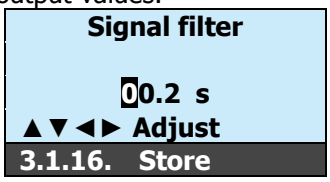


1. use ▲▼◄►-buttons to define the measuring span
2. press **ok** button more than 2 seconds; the new measuring span is immediately activ.
Display changes to item 3.1.16.

[3.1.16.] Signal filter

With the free selectable filter time constant (max 30 seconds) you can attenuate the raw measuring signal. A way to center the displayed and power output values.

Input the filter constant
filter of the first order
actual stored filter constant



1. use ▲▼◄►-buttons to define the signal filter time
2. press **ok b**utton more than 2 seconds

The new time is immediately activated
Display changes back to menu 3.1.19.

4.1.4. [4.] Commissioning

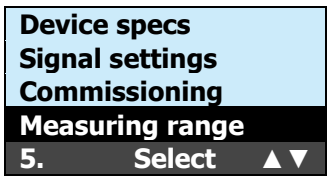
Chronological commissioning sequence of operations for a correct function.
Follow the INFORMATION instructions and enter the corresponding values step by step. Masks see page 18, the menu item numbers indicated are clip into [ ].

4.1.5. [5.] Measuring range

In the measuring range menu all measuring range related parameters can be set.

Main menu

Selected menu item is inverted

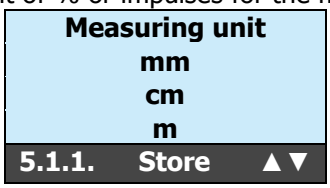


After pressing the ok button the display changes to the sub-menu measurement ranges 5.1. measuring circuit choice

[5.1.1.] Measurement range unit

Choose the measurement range unit of % or impulses for the measurement indication.

Possible units change
Selected character is inverted



1. use ▲▼-buttons to define the unit in % or Impulses
2. press **ok** button more than 2 seconds

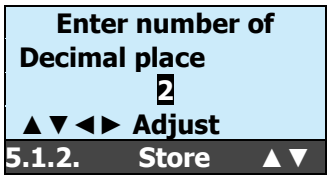
.

Display changes to menu item 5.1.2.

[5.1.2.] Number of decimal points

Set the requested number of decimal points for the four-place display (e.g. 2: **xx.xx**)

Menu information
Number of decimal points
Navigation buttons



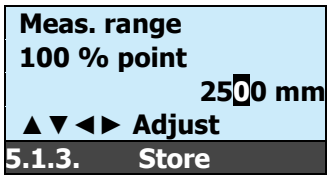
1. use ▲▼-buttons to select the requested quantity
2. press **ok** button more than 2 seconds: quantitiy is immediately activ.

Display changes to item 5.1.3.

[5.1.3.] Measuring range 100 % point

Set the measuring range at the required value e.g. 2500 mm. Caution: the residual height [5.1.4.] ***must be added*** to the measuring range.

Menu information
Selection is shown inverted
Navigation buttons



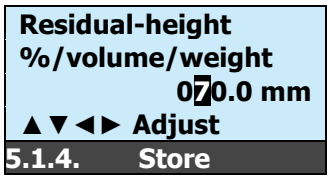
1. use ▲▼◄►-buttons to define the 100% point
2. press **ok** button more than 2 seconds; the new measuring range is immediately activ.

Display changes to item 5.1.4.

[5.1.4.] Residual value in the set unit

If you measure with linearization (e.g. horizontal roundtank) the residual height must be set in mm [5.1.4.].
Linearization with calibration in preparation. The residual height ***must be added*** to the measuring range [5.1.3.].

Menu information
Selection is shown inverted
Navigation buttons



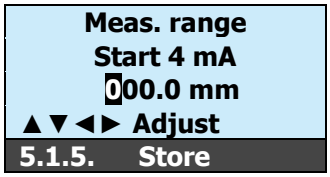
1. use ▲▼◄►-buttons to define the residual content
2. press **ok** button more than 2 seconds; the new residual content is immediately activ.

Display changes back to item 5.1. or to 5.1.7

[5.1.5.] mA output Measuring range starting point

Define the measurement start 4.00 mA for the analog output oft he level measurement (e.g. 440 mm; the active probe length begins at 440.0 mm filling level) measuring range = 440 - 2500mm corresponds to 4-20 mA

Selected character is inverted



1. use ▲▼◄►-buttons to define the start point
2. press **ok** button more than 2 seconds

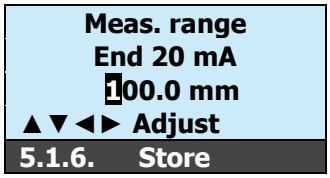
The new spreading is immediately activated

Display changes to the next menu item 5.1.3.

[5.1.6.] mA output Measuring range end point

Set the end point of the selected measuring range (e.g. 20.0 – **60.0** %)

Selected character is inverted



1. use ▲▼◄►-buttons to define the end point
2. press **ok** button more than 2 seconds

The new spreading is immediately activated

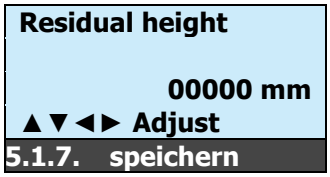
Display changes back to menu 5.1.

[5.1.7.] Residual height horizontal roundtank (2.6. yes, with calibration curve)

If the measurement is done with linearization (e.g. horizontal roundtank) the residual height must be entered in mm.

The residual height is automatically converted into the according residual volume (unit volume or weight units only)

Menu information
selection is shown inverted
navigation buttons



1. With the ▲▼◄► -buttons is set the value
2. Press **ok** button more than 2 seconds; the new residual heigth is immediately activ.

Display changes to item 5.1.8.

[5.1.8.] Probe gauge length (2.6. no, no calibration curve)

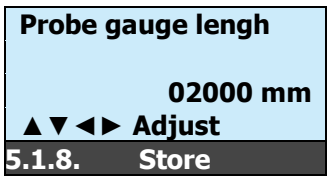
If the measurement is done with linearization (e.g. horizontal roundtank) the residual height must be entered in mm.

The residual height is automatically converted into the according residual volume (unit volume or weight units only)

Menu information

selection is shown inverted

navigation buttons



1. With the ▲▼◄► -buttons the is set
2. Press **ok** button more than 2 seconds; the new residual height is immediately activ.
Display changes to item 5.

[5.1.9.] Diameter horizontal roundtank (2.6. yes, with calibration curve)

If the measurement is done with linearization (e.g. horizontal roundtank) the tank diameter must be entered in mm.

Menu information

selection is shown inverted

navigation buttons

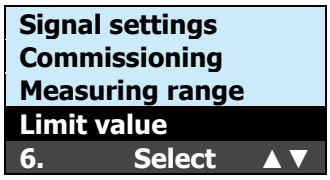
1. With the ▲▼◄►-buttons the residual height is set
2. Press the **ok** button more than 2 seconds; the new spreading is immediately activ.
Display changes to item 5. or 5.1.

4.1.6. [6.] Limit values

In the limit value menu all limit values related parameters can be set.
If the measuring range [5.3.1.] is changed the limit values will be re-calculated automatically. The controller settings must be done again.

Main menu

Selected menu item is inverted



After pressing the **ok b**utton the display changes to the sub menu measuring ranges 6.1. select measuring circuit.

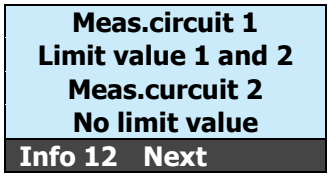
Sub-menu measurement ranges 6.1. Measuring circuit choice

1. Measuring circuit level measurement — Limit value 1 Lo/Hi Relay 1 (static only)
Limit value 2 Lo/Hi Relay 2 (Function to be parameterized (static only)
Limit value/Fault message/2-point controller

2. Measuring circuit reference meas. — Internal limit value LV3 for measuring span calculation via limit value probe or automatic product comp.

Menu information

For measuring circuit 1

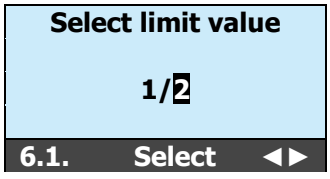


After pressing the **ok b**utton the display changes to the sub menu measuring ranges 6.1. or info 13.

[6.1.] Select Limit value 1 or 2 (batch)

Selected menu item is inverted

Limit value select 2



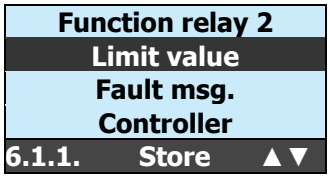
1. use ◄►- buttons becomes the output relay or transistor Open collector output (NPN) 1 or 2 define
2. press **ok b**utton more than 2 seconds; the new spread immediately gets active.
Display changes back to menu 6.1.1.

[6.1.1.] Selection limit value 2

The K2 relay can be used differently. Define the function of the relay output. *Limit-value* function according to relay 1 (static limit value). Function as *fault-message relay* all faults are visualized by the fault-message relay: **Fail Safe** condition ok: Relay energized / Fault: Relay de-energized
Controller Settings of the 2-point controller see item [9.] Controller function
(Standard settings: limit value parameter settings according to relay 1)

Menu information

Menulist selection is shown inverted

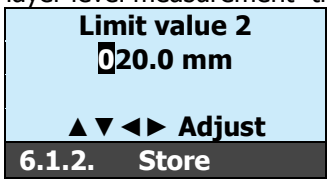


1. use ▲▼-buttons to define relay function K2
2. press **ok** button more than 2 seconds;
Desplay changes to item 6.1.2 at selection limit value

[6.1.2.] Limit value

The manual limit value "stat" can be programmed freely after petition under 6.1.1. on the corresponding product measurement (at ID). At interfacial layer level measurement the limit value 2 is freely programmable.

selected character is inverted



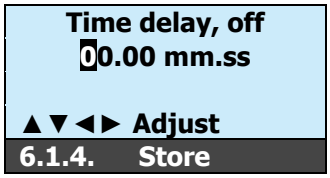
1. use ▲▼◄►-buttons the limit value will define
2. press **ok** button more than 2 seconds

Display changes to the next menu item 6.1.4.

[6.1.4.] Time, drop down delay, 1

The relay- or opto-electronic coupler- transistor- output can be activated with a drop down time delay. Input of the time delay drop, in 1 second steps from 0 - 30 minutes.

selected character is inverted



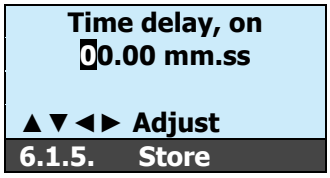
1. use ▲▼◄►-buttons to define the time delay off, drop
2. press **ok** button more than 2 seconds

The selected time delay is immediately activated
Display changes to the next menu item 6.1.5.

[6.1.5.] Time, on delay, 1

The relay- or opto-electronic coupler- transistor- output can be activated with an on/raise time delay. Input of the time delay, of raise, in 1 second-steps from 0 - 30 minutes.

selected character is inverted



1. use ▲▼◄►-buttons to define the time delay on, raise
2. press **ok** button more than 2 seconds

The selected time delay is immediately activated
Display changes to the next menu item 6.1.6.

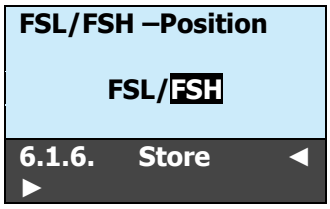
[6.1.6.] FSL/FSH –Position

Define the security settings of the Relay- or opto-electronic-coupler- transistor- outputs, ...

Active position		Measured value	Display	Relay/opto-electronic coupler
Fail Safe low:	*FSL*	is **lower** than limit value	**Lo**	de-energized
L-Alarm		is **higher** than limit value	**none**	switched on
Fail Safe hight:	*FSH*	is **lower** than limit value	**none**	switched on
H-Alarm		is **higher** than limit value	**Hi**	de-energized

Chart. 6 Fail Safe settings

Selected menu item is inverted



1. use ◄►-buttons to define the opto-electronic coupler-output
2. press **ok** button more than 2 seconds

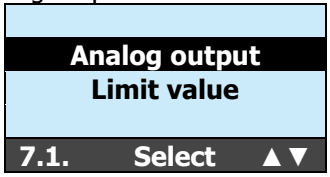
The selected definition is immediately activated
Display changes back to menu item 6.

4.1.7. [7.] Test functions

[7.1.] select the Test function

Choose the test function for the analog output or the limit values of the measuring circuit 1.

Selected menu item is inverted

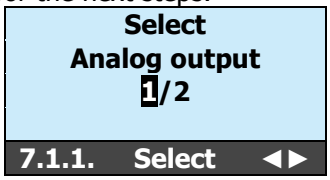


After pressing the **ok** button the display changes to the selected measuring circuit menu (1). 7.1.1

[7.1.1.] Select measuring circuit 1 or 2

Select the active measuring circuit for the next steps.

selected menu item is inverted

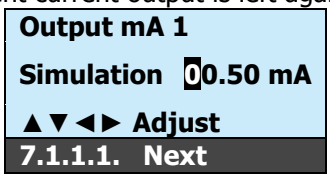


After pressing the **ok** button the display changes to the selected measuring circuit menu (1). 7.1.1

[7.1.1.] Simulation of mA- output (in 0.1 mA steps, starting at 0.5 mA)

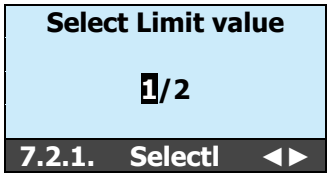
With this function the active current output (load 750 Ω) can be tested.
The current output can be increased in 0.1 steps starting at 0.5 mA and ending at max. 22.0 mA.
The mask becomes the measurement current output is left again actively.

Option number for the modification is inverted



1. use ▲▼◄►-buttons is the current output immediately becomes defined actively current output
2. Pressing ok button; Display changes back to menu item 7.1.1.
3. C button back on 7.1 switch over on limit value
4. Pressing ok button; Display changes to menu item 7.2.1

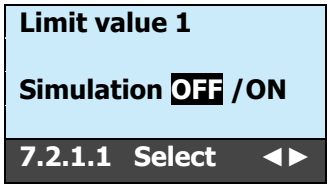
selected character is inverted



After pressing the ok button the display changes the dialed limit value to the menu. 7.2.1.1

[7.2.3.] Relay position simulation

selected character is inverted



1. use ◄►-buttons the output relay or transistor opto collector output (NPN) 1/2 deactivated or activated digital output immediately gets activated.

2. **C**-button back

4.1.8. [8.] Programmable mA output

All **mipromex**® microprocessor units are equipped with a diagnostic system, which makes fault-finding easier and facilitates quicker correction in case of malfunction occurrence. The error levels can be set in 0.1 mA-steps between 0.5 - 4.0 and 20.0 - 22.0 mA. Error messages are set at factory to automatically acknowledge the fault. The fault-type is displayed with time and date. By pressing > 2 seconds the **ok** button, the display changes back to the measured value. The error is displayed without measured value ---. - and an arrow up ⬆ or down ⬇ .

Main menu

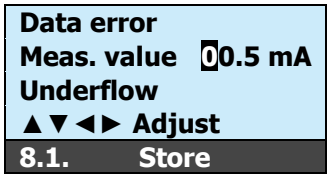
selected menu item is inverted

After pressing the **ok b**utton the display changes to the sub menu fault messages 8.1.

[8.1.] Data error measuring value underflow MeV <0010

The data transmission of the measured value, between measuring electronic MTI and the control unit **mipromex**® is faulty. The control unit **mipromex**® is unable to process the measured data.
Error level 1 see fault finding on page 45

selected character is inverted



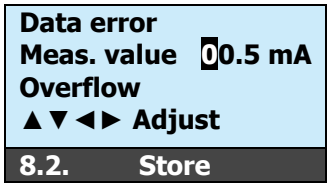
1. use ▲▼◄►-buttons to define the current output
2. press **ok b**utton more than 2 seconds

Current output is immediately activated
Display changes to the next menu item 8.2.

[8.2.] Data error measuring value overflow MeV >3750

The measured value of the measuring electronic MTI is higher than the allowed range of pulses. The control unit **mipromex**® is unable to process the measured data. Error level 2 see fault finding on page 32

Option number for the modification is inverted



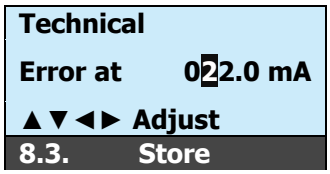
1. use ▲▼◄►-buttons to define the current output
2. press **ok b**utton more than 2 seconds

Current output is immediately activated
Display changes to the next menu item 8.3.

[8.3.] Technical Error

The control unit **mipromex®** generates a periodic checksum test. If it is faulty, an error message is displayed. Error level 3 see fault finding on page 32.

Option number for the modification is inverted



1. use ▲▼◄►-buttons to define the current output
2. press **ok b**utton more than 2 seconds

Current output is immediately activated
Display changes back to menu 8.

4.1.9. [9.] Controller settings

Relay 2 can be parameterized as 2-point controller in [6.1.1.]. The level can be controlled between a lower and an upper limit value. *Settings are only possible, when relay 2 is parameterized as controller.*

Main menu
Selection figure is shown inverted
Menu list selection is shown inverted

After pressing the **ok** button the display changes to the sub-menu fault messages 9.1.

[9.1.] Controller setting switch point low

When the installation is started the limit value at empty receptacle is energized. When the measuring signal sinks and the set switchpoint (limit value) is reached relay 2 will be energized.

Menu information
Selection figure is shown inverted
Navigation buttons

After pressing the **ok** button the display changes to the sub-menu fault messages 9.2.

[9.2.] Reglereinstellung Schaltpunkt oben

When the set commutation point (limit value) is reached at rising measuring signal, relay 2 will be de-energized.

Menu information
Selection figure is shown inverted
Navigation buttons

After pressing the **ok** button the display changes to the sub-menu fault messages 9.

4.1.10. [10.] Production log (not in use!)

Caution: is not activated in version 1.1x and visible in the menu!

Mainmenu
Menu list selection is shown inverted

After pressing the **ok** button the display changes to the sub-menu fault messages 11.1.

[10.1.] Fault message protocols

Last fault message

1. use ▲▼◄►-buttons to select the new time interval.
2. press **ok** button more than 2 seconds; time interval will be stored
   Display changes to item 13.2

[10.2.] Scanning interval measured-value storage

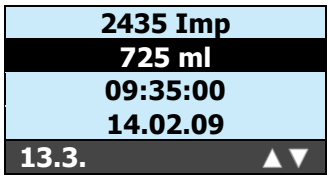
Selection figure is shown inverted

1. With the ▲▼◄►-buttons you choose the new time interval
2. Press **ok b**utton more than 2 seconds; the time inverval will be stored
   Display changes to menu item 13.3

[10.3.] Measured-value storage

Last measured value in impulses / level / volume with time and date, 1000 measured value max.

Impulses value
Measured value
Time
Date



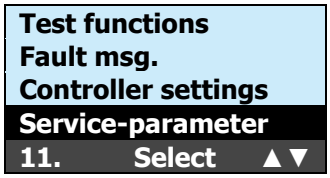
1. Choose with ▲▼-buttons

4.1.11. [11.] Basic settings of service parameters

The factory settings of the service parameters are made for the specific application of product compensation. 11.1. – 11.11. are probe-depending parameters and must be re-parameterized after a probe changement. The definition of the parameters is hold in reserve for Aquasant measuring technique Ltd. You will receive the values in a commissioning certificate.

Main menu

Menu list selection is shown inverted



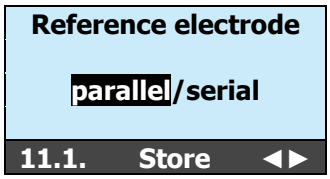
After pressing the **ok** button the display changes to the sub-menu fault messages 11.1.

[11.1.] Position of the reference electrode

(MLT 62x0 type only) At one-bar measuring probes the measuring probes are positioned one underneath the other in serie. Parallel means that two independent bar probes are in use. Caution: not all probe types can be combinated.

Menu information

Selection figure is shown inverted



After pressing the **ok** button the display changes to 11.2.

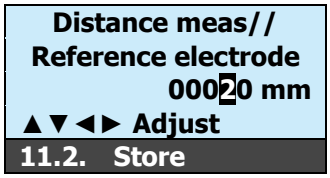
[11.2.] Space between reference and measuring electrode (norm 20 mm at serial measuring electrode)

(MLT 62x0 type only) Probe-specific factory parameters; are defined and set by the manufacturer.

Menu information

Selection figure is shown inverted

Navigation buttons



After pressing the **ok** button the display changes to 11.3.

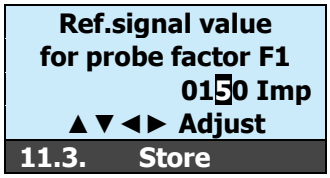
[11.3.] Reference-signal value MR1 for probe factor F1

(MLT 62x0 type only) Probe-specific factory parameters; are defined and set by the manufacturer.

Menu information

Selection figure is shown inverted

Navigation buttons

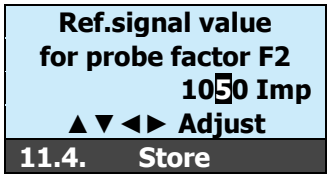


After pressing the **ok** button the display changes to 11.4.

[11.4.] Reference-signal value MR2 for probe factor F2

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.

Menu information
Selected character is inverted
Navigation buttons

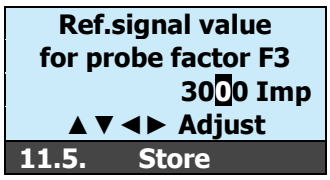


After pressing the **ok** button the display changes to 11.5.

[11.5.] Reference-signal value MR3 for probe factor F3

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.

Menu information
Selected character is inverted
Navigation buttons

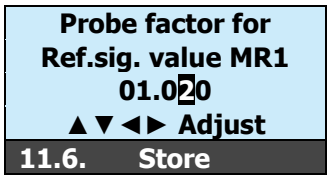


After pressing the **ok** button the display changes to 11.6.

[11.6.] Probe factor F1 for reference-signal value MR1

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.

Menu information
Factor max 50.000
Selected character is inverted
Navigation buttons

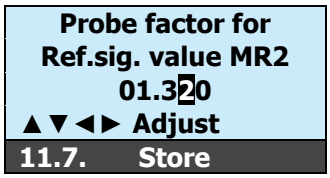


After pressing the **ok** button the display changes to 11.7

[11.7.] Probe factor F2 for reference-signal value MR2

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.

Menu information
Factor max 50.000
Selected character is inverted
Navigation buttons

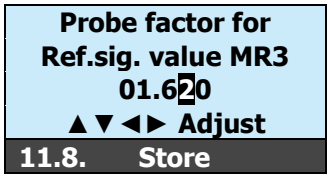


After pressing the **ok** button the display changes to 11.8.

[11.8.] Probe factor F3 for reference-signal value MR3

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.

Menu information
Factor max 50.000
Selected character is inverted
Navigation buttons

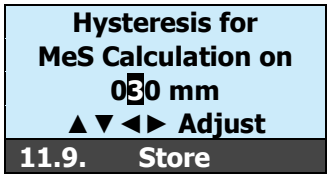


After pressing the **ok** button the display changes to 11.9

[11.9.] Hysteresis for measuring-span calculation on

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.
When the hysteresis for the measuring-span calculation is reached (covered with product); the time delay oft he measuring-span calculation will be activated [11.11.]

Menu information
Selected character is inverted
Navigation buttons



After pressing the **ok** button the display changes to 11.10.

[11.10.] Hysteresis for Store Mrref

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.
The measured value will be stored at a filling level of 300 mm above the reference electrode.

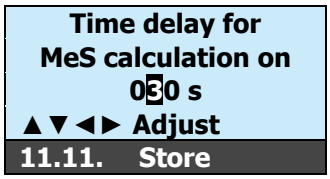
Menu information
Selected character is inverted
Navigation buttons

After pressing the **ok** button the display changes to 11.11.

[11.11.] Time delay for measuring-span calculation switching on

(MLT 62x0 type only) The delayed switching on of the measuring-span delay is suggestiv with tanks in which the product splashes heavily to the measuring electrodes while filling. When the hysteresis for the measuring-span calculation is reached (covered with product) the time delay of the measuring-span calculation is activated.

Menu information
Selected character is inverted
Navigation buttons

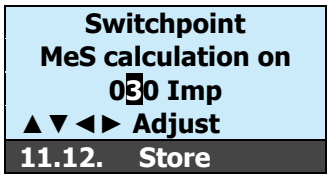


After pressing the **ok** button the display changes to 11.12.

[11.12.] Switch point for measuring-span calculation switched on

(MLT 62x0 type only) Probe-specific factory parameter; are defined and set by the manufacturer.
The switching point switches the measuring-span calculation on

Menu information
Selected character is inverted
Navigation buttons

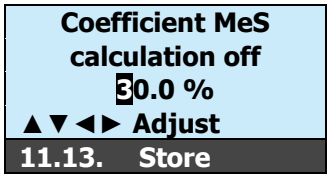


After pressing the **ok** button the display changes to 11.12.

[11.13.] Coefficient for measuring-span calculation switched off

(MLT 62x0 type only) The Coefficient switches the measuring-span calculation off

Menu information
Selected character is inverted
Navigation buttons



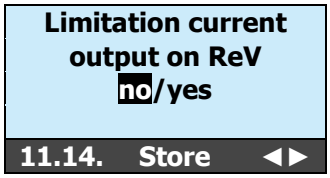
After pressing the **ok** button the display changes to 11.12.

[11.14.] Limitation for mA outputs on residual volume ReV

Selection **no**: The current output is visualized without residual volume. At measured value 0 impulses the mA output is switched to 4 mA.

Selection **yes**: The current output remains stationary analog to the residual volume on the corresponding mA value.

Menu information
Selected character is inverted
Navigation buttons



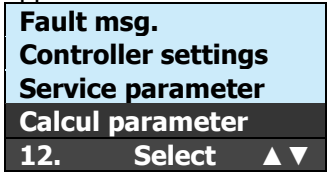
After pressing the **ok** button the display changes to 11.

4.1.12. [12.] Calculation parameter

[12.1.] Choice measuring circuit 1 oder 2 (MLT 6130/6230/6260)

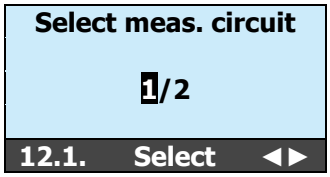
With the drift compensation small measurement modifications like temperature drift are compensated for by HF wire or probes. ± 1-3 impulses per minute correspond to normal drift compensation. With the drift compensation the measurement has left constantly if the drift is smaller than the drift gradient. This means the measurement corrects itself the max. drift in impulses is fixed in the drift memory within a minute (adjusting drift time 60 s). The sum of the individual drift compensations becomes e.g. 30 (impulses) to change the measurement more greatly than 30 impulses begin itself into function of the drift. At a zero comparison [3.1.3.] the drift loft is put on 0000. Around min. 40 impulses, the zero comparison **must** always be *GREATER* than Max drift memory. The measurement otherwise sinks at a negative drift under the zero. Consequence is: *Technical disturbance measurement underrun!*
At the measuring of at times slow modifications like filling level measuring the drift compensation must get prepared for 0 Imp, i.e. turned off.
Caution: With the drift compensation no probe pollutions can be compensated for. Select the measuring circuit for the further action. For the standard application a drift activation is not recommended

Mainmenu
Menulist selection is inverted



After pressing the **ok** button the display changes to the sub-menu Fault messages 12.1.

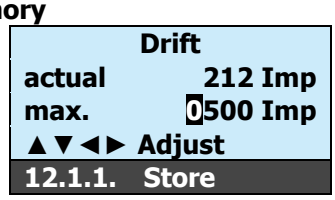
selected character is inverted



After pressing the **ok** button, display changes to the menu for the measuring circuit selected (1). 12.1.1.

[12.1.1.] Drift memory

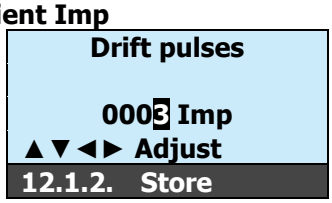
Option number for the modification is inverted



1. use ▲▼◄►-buttons the max. drift will defined
2. press **ok b**utton more than 2 seconds; +/- drift, drift compensation is no more possible when the max. drift is exceeded

[12.1.2.] Drift gradient Imp

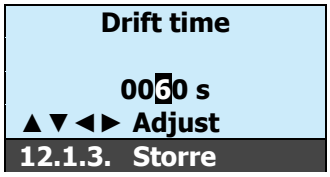
Option number for the modification is inverted



1. use ▲▼◄►-buttons the max. drift will defined
2. press **ok b**utton more than 2 seconds; +/- drift, drift compensation is no more possible when the max. drift is exceeded

[12.1.3.] Drift gradient time

Option number for the modification is inverted



1. use▲▼◄►-buttons the max. drift will defined
2. press **ok b**utton more than 2 seconds; Time interval for drift compensation

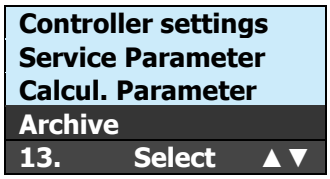
4.1.13. [13.] Archive

[13.1.] Active parameter set store

Caution: Not activated in version 1.1x!

Mainmenu

Menulist selection is inverted



After pressing the **ok** button the display changes to the sub-menu Fault messages 11.1.

5. Commissioning example

Make sure the connections in the Monorack or 19"-Rack are wired correctly and the probe is connected.
The control unit **mipromex**® is installed in the Rack and under tension.
The green or red LED inside the MTI (measuring electronic) of the probe is lit.
The vessel is empty; the probe is dry and clean.
Under **menu position 4th commissioning**, a comfortable commissioning routine can be carried out. The commissioning routine is a combination of all operation relevant parameters in a chronological order. You can also individually, however, jump at every mask one by one.

Follow the steps of the commissioning:

5.1. Level bar probe

At system deliveries the probe-specific parameter are set and obvious in the commissioning cerfiticate. Make sure that the probe is mounted, wired according to the scheme and that mipromex MLT is under current.

5.1.1. Level measurement with a measuring circuit MLT 6130

The tank is empty; now you can start the commissioning under item 4. Caution: the impedance measurement is a product-depending measurement. For the calibration you **must** take the same product that you want to measure afterwards.

5.1.2. Level measurement via filling curve

At mains ON or when the digital input D1 activates (5 seconds) an automatic 100%-level calibration is made. With constand liquid feeding via pump (level control system LLCU). The relays remain energized while filling. After the calibration they take up the defined function.

5.2. Bar probe with serial referenc bar probe (one-bar measuring probe) or parallel two probes MLT 6230/6260

5.2.1. Product compensated level measuring

The tank is empty; now you can start the commissioning under item 4. Caution: the service parameter item 11., are probe specific and may not be changed.

5.2.2. Level measuring with internal limit switch for 100% compensation

The tank is empty; now you can start the commissioning under item 4. For the commissioning you need to know the position in %/height/volume of the limit value probe of the 2nd measuring circuit. Caution: the impedance measurement is a product-depending measurement. For the calibration you **must** take the same product that you want to measure afterwards.

5.3. Electronic calibration MTI, basic equalization

An electronic calibration has only to be done at following occurrences:

- ☑ Probes without reference electrode, flexible- or flat-probes where the ***measured value*** inside the ***empty*** vessel is smaller than 10 or bigger than 200
- ☑ After exchange of the measuring electronic MTI, or of the coax cable, or of the probe, or after repair of the probe
- ☑ If the zero adjust is not possible: displayed measured value >2000 or <10

Tip:	Adjust the measuring electronic MTI between 60 and 80 pulses This allows the biggest possible measuring span of up to max. 3750 pulses. **Soiled or uncleaned probes should not be adjusted with an MTI calibration.**	
	Probe dry and clean, built in the vessel	Go to the menu point 3.1.3.
oder	*Calibration of MTI as follows:* Using a screwdriver size No. 1, fine adjust to switch point of the LED from red to green (red will flicker). Display between 60 and 80	

The 0-point has been stored at the system test. If the probe is built in, dry and empty the 0-point can be checked and corrected.

Menu position Number-Code

Zero point MeV	
Take-over	
Keypress:	**0060**
Actual MeV:	**0076**
3.1.3.	**Store**

change to the next menu item by pressing the **Ok b**utton

1. press **ok b**utton more than 2 seconds:

actual MeV is stored
Display changes to the next parameter input

Chart. 7 Electronic calibration operation sequence of operations

5.4. Final inspection and commissioning certificate MLT 6130

Operating parameters (settings at final inspection on site and commissioning)

Company		Order	
Building		PO no.	
Plant		Project no.	
mipromex®	**MLT 6130** V1.22 Ex ia ☐ Exd ☐ Non-ex ☐	Serial no.	
Measuring ciruit 1		Pos./Tag no.	
Probe type		Serial no.	
Coax cable	Serial no.	MTI	Serial no.

Chart for operating settings Level transmitter

Menu	items	Meas. Circuit	Description	Final inspection	Commissioning
↓ Commissioning Menu items	**1.**		***Basic settings***		
	1.1.		Language Deutsch/English/Français	Deutsch	
	1.2.1.		Time	Local time	Local time
	1.2.2.		Date	Local date	Local date
	1.3.1		Password	0000	
	1.4.1.		Lighting settings	on	
	1.4.2.		Lighting time	1	
	1.6.2.		Load the parameters	Press **OK** button >2s to confirm	
4.			***Commissioning***		
4.1.	2.1.		Device type / Software version	MLT 6130 V1.22	MLT 6130 V
4.2.	2.4.	**MC1**	Selection: Measuring span (MS) calculation		
4.4.	2.6.	**MC1**	Select rating curve for volume (yes/no) *Info: horizontal round tank (yes), linear measurement (no)*	no	
4.5.	2.7.1.	**MC1**	Probe type		
4.6.	2.7.2.	**MC1**	Probe serial no.		
4.7.	5.1.1.	**MC1**	Measuring unit %,mm, cm, m, ml, l etc.	%	
4.8.	5.1.2.	**MC1**	Number of decimal places		
4.9.	5.1.3.	**MC1**	Measuring range 100% point	%	
4.10.	5.1.4.	**MC1**	Residual hight / % / Volume / Weight ([4.4.] no)	%	
4.11	5.1.5.	**MC1**	Measuring range starting point 4 mA *(mA-indication spreading)*	%	
4.12.	5.1.6.	**MC1**	Measuring range end point 20 mA *(mA-indication spreading)*	%	
4.13.	5.1.7.	**MC1**	Residual hight ([4.4.] yes) mm		
4.14.	5.1.8.	**MC1**	Measuring range of probe mm		
4.15.	5.1.9.	**MC1**	Diameter of horizontal round tank ([4.4.] yes) mm		
4.16.	3.1.1.	**MC1**	Entry of positions/Tag no.		
4.17.	3.1.2.	**MC1**	Probe factor	1.000	
Info06			*Zero adjustment for bar probe empty/clean*		
4.18./19.	3.1.3./4.	**MC1**	Zero point importing on keystroke / manual entry Imp		
Info14	❶ ***Measuring span calculation on keystroke (OK) at known filling level → fill receptacle!***				
Info15			Determine / measure the level	*Receptacle full or partly filled!*	
4.20.	3.1.5.	**MC1**	Level entry and MS calculation on keystroke ([4.4.] no)	%	
4.21.	3.1.6.	**MC1**	Level entry and MS calculation on keystroke ([4.4.] yes) mm		

Info16	❷ *Measuring span calculation with limit value external input D1 → at limit value overstepping!*					
4.22.	3.1.7.	**MC1**	Entry of level / volumen / weight (position limit value probe) ([4.4.] no)		%	
4.23.	3.1.8.	**MC1**	Entry of level (position limit value probe) ([4.4.] yes)	mm		
Info17	❸ *Measuring span calculation with filling curve → see picture on page 12 of the operating manual*					
	Notice: After completed commissioning: MS calculation will start after turning the power on again! **Level must be <20%!** → Fill the receptacle! → 1. filling must be >100%					
Info18	❹ *Measuring span calculation with level variation → receptacle partly filled!*					
4.24.	3.1.9.	**MC1**	Measured value MeV1 importing on keystroke	Imp		
4.25.	3.1.10.	**MC1**	Enter level variation DL ([4.4.] no)		%	
4.26.	3.1.11.	**MC1**	Level variation DL ([4.4.] yes) mm	mm		
4.27.	3.1.12.	**MC1**	Measured value MeV2 importing on keystroke	Imp		
4.28.	3.1.15.	**MC1**	Manual entry / adjustment of measuring span	Imp		
4.29.	3.1.16.	**MC1**	Signal filter	s	00.1	
4.30.	11.14.	**MC1**	Limitation current output on RV (residual volume)		no	
Info22			*Limit value 1* *(Digital output 1)*			
4.31.	6.1.2.	**DO1**	Adjust limit value 1		%	
4.32.	6.1.4.	**DO1**	Time delay, off	mm.ss	00.00	
4.33.	6.1.5.	**DO1**	Time delay, on	mm.ss	00.00	
4.34.	6.1.6.	**DO1**	FSL / FSH position		FSL	
Info23			*Limit value 2* *(Digital output 2)*			
4.35.	6.1.1.	**DO2**	Function relay 2 limit value / faults message / controller			
4.36.	6.1.2.	**DO2**	Adjust limit value 2		%	
4.37.	6.1.4.	**DO2**	Time delay, off	mm.ss	00.00	
4.38.	6.1.5.	**DO2**	Time delay, on	mm.ss	00.00	
4.39.	6.1.6.	**DO2**	FSL / FSH position		FSH	
4.40.	9.1.	**DO2**	Switching point low (Controller function)		%	
4.41.	9.2.	**DO2**	Switching point high (Controller function)		%	
4.53.	1.6.1.		Store parameters		OK ☐	OK ☐

Notice filling curve: After completed commissioning: MS calculation will start after turning the power on again! **Level must be <20%!** → Fill the receptacle! → 1. filling must be >100%

	7.		***Test functions***			
	7.1.1.1.	**MC1**	mA output 1 simulation	mA	00.5 ☐ i.O.	☐ i.O.
	7.2.1.1.	**DO1**	Limit value 1 simulation OFF/ON		☐ i.O.	☐ i.O.
	7.2.1.1.	**DO2**	Limit value 2 simulation OFF/ON		☐ i.O.	☐ i.O.
	8.		***Fault messages***			
	8.1.		Data failure undercut of MeV <0010	mA	00.5	
	8.2.		Data failure overstepping of MeV >3750	mA	00.5	
	8.3.		Technical failure	mA	00.5	
	12.		***Calculation parameters***			
	12.1.1.	**MC1**	Max. drift in pulses	Imp	0100	
	12.1.2.	**MC1**	Drift pulses per time unit	Imp	0	
	12.1.3.	**MC1**	Drift time	s	0060	

Final inspection carried out by:

Aquasant Messtechnik AG / Bubendorf /

Commissioning carried out by:

5.5. Final inspection and commissioning certificate MLT 6230/6260

Operating parameters (settings at final inspection on site and commissioning)

Company		Order	
Building		PO no.	
Plant		Project no.	
mipromex® **MLT 6260** V1.22	Ex ia ☐ Exd ☐ Non-ex ☐	Serial no.	
Measuring circuit 1		Pos./Tag no.	
Probe type		Serial no.	
Coax cable	Serial no.	MTI	Serial no.
Measuring circuit 2		Pos./Tag no.	
Probe type		Serial no.	
Coax cable	Serial no.	MTI	Serial no.

Chart for operating settings Level transmitter

Menu	items	Meas. Circuit	Description	Final inspection	Commissioning
↓ Commissioning Menu items	**1.**		***Basic settings***		
	1.1.		Language Deutsch/English/Français	English	
	1.2.1.		Time	Local time	Local time
	1.2.2.		Date	Local date	Local date
	1.3.1		Password	0000	
	1.4.1.		Lighting settings	on	
	1.4.2.		Lighting time in minutes	1	
4.			***Commissioning***		
4.1.	2.1.		Device type / Software version	MLT 6260 V1.22	MLT 6260 V
4.3.	2.5.	**MC1**	Selection: Measuring span (MS) calculation		
4.4.	2.6.	**MC1**	Select rating curve for volume (yes/no) *Info: horizontal round tank (yes), linear measurement (no)*	no	
4.5.	2.7.1.	**MC1**	Probe type		
4.6.	2.7.2.	**MC1**	Probe serial no.		
4.7.	5.1.1.	**MC1**	Measuring unit %,mm, cm, m, ml, l etc.	%	
4.8.	5.1.2.	**MC1**	Number of decimal places		
4.9.		**MC1**	Measuring range 100% point	%	
4.10.	5.1.4.	**MC1**	Residual hight / % / volume / weight ([4.4.] no)	%	
4.11	5.1.5.	**MC1**	Measuring range starting point 4 mA *(mA-indication spreading)*	%	
4.12.	5.1.6.	**MC1**	Measuring range end point 20 mA *(mA-indication spreading)*	%	
4.13.	5.1.7.	**MC1**	Residual hight ([4.4.] yes) mm		
4.14.	5.1.8.	**MC1**	Measuring range of probe mm		
4.15.	5.1.9.	**MC1**	Diameter of horizontal round tank ([4.4.] yes) mm		
4.16.	3.1.1.	**MC1**	Entry of position/TAG no.		
4.17.	3.1.2.	**MC1**	Probe factor	1.000	
Info06			*Zero adjustment for bar probe empty/clean*		
4.18./19.	3.1.3./4.	**MC1**	Zero point importing on keystroke / manual entry Imp		
4.28.	3.1.15.	**MC1**	Manual entry / adjustment of measuring span Imp		
4.29.	3.1.16.	**MC1**	Signal filter s	00.1	
4.30.	11.14.	**MC1**	Limitation current output on residual volume ReV	no	
	Product compensation for MS calculation				
Info21			*Product-compensated level 11. attend to the service parameters*		
	Internal LV3 (2. measuring circuit) for MS calculation				

Info20			*Measuring circuit 1 Limit value 1 and 2* *Measuring circuit 2 Internal limit value 3*		
Info22			*Limit value 1* *(Digital output 1)*		
4.31.	6.1.2.	**DO1**	Adjust limit value	%	
4.32.	6.1.4.	**DO1**	Time delay, off mm.ss	00.00	
4.33.	6.1.5.	**DO1**	Time delay, of mm.ss	00.00	
4.34.	6.1.6.	**DO1**	FSL / FSH position	FSL	
Info23			*Limit value 2* *(Digital output 2)*		
4.35.	6.1.1.	**DO2**	Function relay 2 limit value / fault message / Controller		
4.36.	6.1.2.	**DO2**	Adjust limit value	%	
4.37.	6.1.4.	**DO2**	Time delay, off mm.ss	00.00	
4.38.	6.1.5.	**DO2**	Time delay, on mm.ss	00.00	
4.39.	6.1.6.	**DO2**	FSL / FSH position	FSH	
4.40.	9.1.	**DO2**	Switchpoint high (Controller function)	%	
4.41.	9.2.	**DO2**	Switchpoint low (Controller function)	%	
Info24			*Measuring circuit 2*		
4.42.	2.7.1.	**MC2**	Probe type		
4.43.	2.7.2.	**MC2**	Probe serial no.		
4.44.	5.1.8.	**MC2**	Measuring range of probe mm		
4.45.	3.1.1.	**MC2**	Entry of position/TAG no		
4.46.	3.1.2.	**MC2**	Probe factor	1.000	
Info06			*Zero adjustment for bar probe empty/clean*		
4.47./48.	3.1.3./4.	**MC2**	Zero point importing on keystroke / manual entry Imp		
4.49.	3.1.13.	**MC2**	Internal limit value 3 %		
Info19	***Internal LV3 (2. measuring circuit) for MS calculation***				
4.50.	3.1.14.	**MC2**	Mounting height of the limit probe mm		
4.51.	3.1.15.	**MC2**	Manual entry / adjustment of measuring span Imp	200	
4.52.	3.1.16.	**MC2**	Signal filter s	00.1	
4.53.	1.6.1.		Store parameters	OK ☐	OK ☐
	7.		***Test functions***		
	7.1.1.1.	**MC1**	mA output 1 simulation mA	00.5 ☐ i.O.	☐ i.O.
	7.1.1.1.	**MC2**	mA output 2 simulation mA	00.5 ☐ i.O.	☐ i.O.
	7.2.1.1.	**DO1**	Limit value 1 simulation OFF/ON	☐ i.O.	☐ i.O.
	7.2.1.1.	**DO2**	Limit value 2 simulation OFF/ON	☐ i.O.	☐ i.O.
	8.		***Fault messages***		
	8.1.		Data failure undercut of MeV <0010 mA	00.5	
	8.2.		Data failure overstepping of MeV >3750 mA	00.5	
	8.3.		Technical failure mA	00.5	
	11.		***Service parameter***		
	11.1.		Reference electrode parallel / serial		
	11.2.		Distance (a) measuring to reference electrode mm	020	
	11.3.		Ref. signal value (MR1) for probe factor F1 Imp		
	11.4.		Ref. signal value (MR2) for probe factor F2 Imp		
	11.5.		Ref. signal value (MR3) for probe factor F3 Imp		
	11.6.	**MC2**	Probe factor (F1) for ref. signal value MR1		
	11.7.	**MC2**	Probe factor (F2) for ref. signal value MR2		
	11.8.	**MC2**	Probe factor (F3) for ref. signal value MR3		
	11.9.	**MC1**	Hysteresis for MS calculation on mm		
	11.10.	**MC1**	Hysteresis for storing Mrref mm		
	11.11.	**MC1**	Time delay for MS calculation on s		
	11.12.	**MC2**	Switchpoint for MS calculation on Imp	0040	
	11.13.	**MC2**	Coefficient for MS calculation off %	99.0	
	11.14.	**MC1**	Limitation current output on ReV	no	

	12.		*Calculation parameters*			
	12.1.1.	**MC1**	Max. drift in pulses	Imp	0100	
	12.1.2.	**MC1**	Drift pulses per time unit	Imp	0	
	12.1.3.	**MC1**	Drift time	s	0060	
	12.1.1.	**MC2**	Max. drift in pulses	Imp	0100	
	12.1.2.	**MC2**	Drift pulses per time unit	Imp	0	
	12.1.3.	**MC2**	Drift time	s	0060	

Final inspection carried out by:

Aquasant Messtechnik AG / Bubendorf /

Commissioning carried out by:

6. Fault finding

All **mipromex** –microprocessor units are equipped with a diagnostic system, which makes fault finding easier and facilitates quicker correction in case of malfunction occurrence

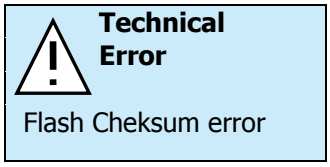
6.1. After power on

7.1.1. Technical error;

The error message can have different origin.

1. Flash checkisums inspect has failed

Disturbance info



1. Press ok button longer than 2 seconds.
Disturbance is confirmed. The display changes to the previous active mask.
2. in pos. 1.6.1. Data of RAM loading into flash
Send renewed disturbance for repair!

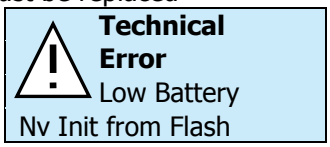
2. Flash has failed

Disturbance info

Flash is faulty; Send for repair!

3. Battery is unloaded and must be replaced

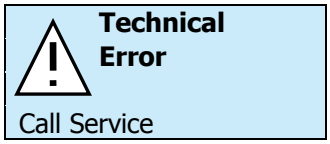
Disturbance info



1. press **ok** button longer than 2 seconds.
Disturbance is confirmed. The display changes to the previous active mask.
Battery change; Send for repair!

4. Programm memory check has failed

Disturbance info



Microprocessor card faulty**;** Device send for repair!

Switch OFF and then switch ON the unit. If error reoccurs then:

Send unit back for repair!

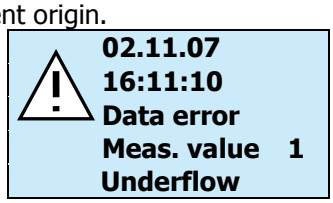
6.2. During operation

6.2.1. Data error

7.1.1. Technical error; Measured value 1 underflow

The error message can have different origin.

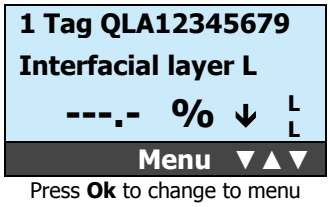
Date of error
Time of error
Measuring circuit 1 or 2
Error description



1. press **ok** button more than 2 seconds,
the error is confirmed and
the display changes back to last active menu point

The mA output falls to the value programmed under menu point 8.3!

Description of 1st meas. circuit position
Description of 1st meas. value
Non display of meas. value
Error display
ok button-functions / active keys

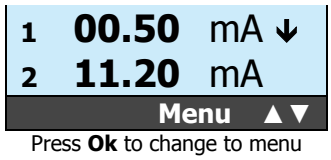


Press **Ok** to change to menu

Limit value low alarm is reached
Arrow down ↓ signalizes : Meas. range underflow

use the ▲▼ -buttons to scroll within display mode

Discribe the first output
Discribe the 1. and 2. Measuring circuit



LEDs on measuring electronic MTI are dark/OFF

1. Short circuit or circuit break. Change connection wires on clamp 1 / 2 of probe electronic.

∫ **Check connections of measuring electronic MTI**

∫ **Anschlussdrähte auf Klemme 1/2 in der Sondenelektronik wechseln.**

2. Hazardous area output microprocessor unit **mipromex**® or measuring electronic MTI defective

∫ **Send unit back for repair!** .

The electronic insert MTI is plugged in the blue protection housing. Loosen the two outer M4-screws and remove the electronic insert MTI laterally towards the cable gland.

LED's on measuring electronic MTI are ON

3. Range monitoring did respond, measured value <10

∫ **Check with 0-point-function at menu item 5.3. Menue 3.1.3., perform a new zero adjust. Negative driftet compensation; Drift ist greater than 0 point.**

4. Coax cable or probe defective (circuit break)

∫ **Send coax cable and probe back for repair!**

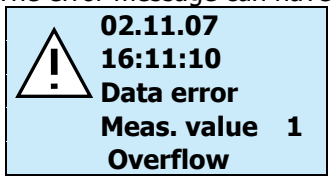
Calibration of MTI was possible, microprocessor unit mipromex® showing fault or after power cut showing measured value underflow (no measure):

5. Hazardous area data input of **mipromex**® defective;

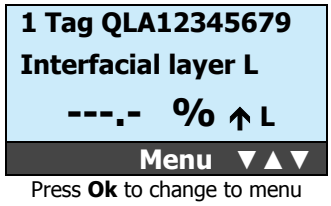
∫ **Send mipromex® unit back for repair!**

7.1.1. Technical error; Measured value 1 overflow

The error message can have different origin.

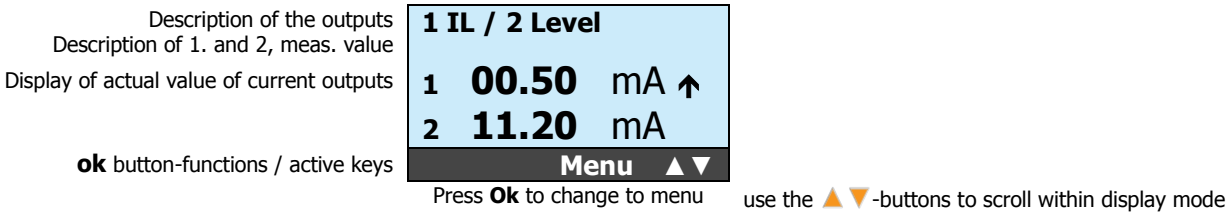


1. press **ok** button more than 2 seconds, the error is confirmed and the display changes back to last active menu point



Limit value high alarm is reached
Arrow up ↑ signalizes : Meas. range overflow

use the ▲▼-buttons to scroll within display mode



∫ **Check probe, product intrusion**

LEDs on MTI measuring electronic are ON

6. Range control active, measured value >3750

∫ **Scheck with 0-point function under Menu 5.3, perform new basic calibration**

∫ Probe not covered (empty), coax cable or probe defective (coax plug wet)

∫ Fault occurs only when probe covered (full): Impedance in function of product too high:

∫ **Send probe back for repair!**

6.2.2. Display error

Faulty or no display on the LCD display

1. Restart the program after 5 seconds of mains interruption.

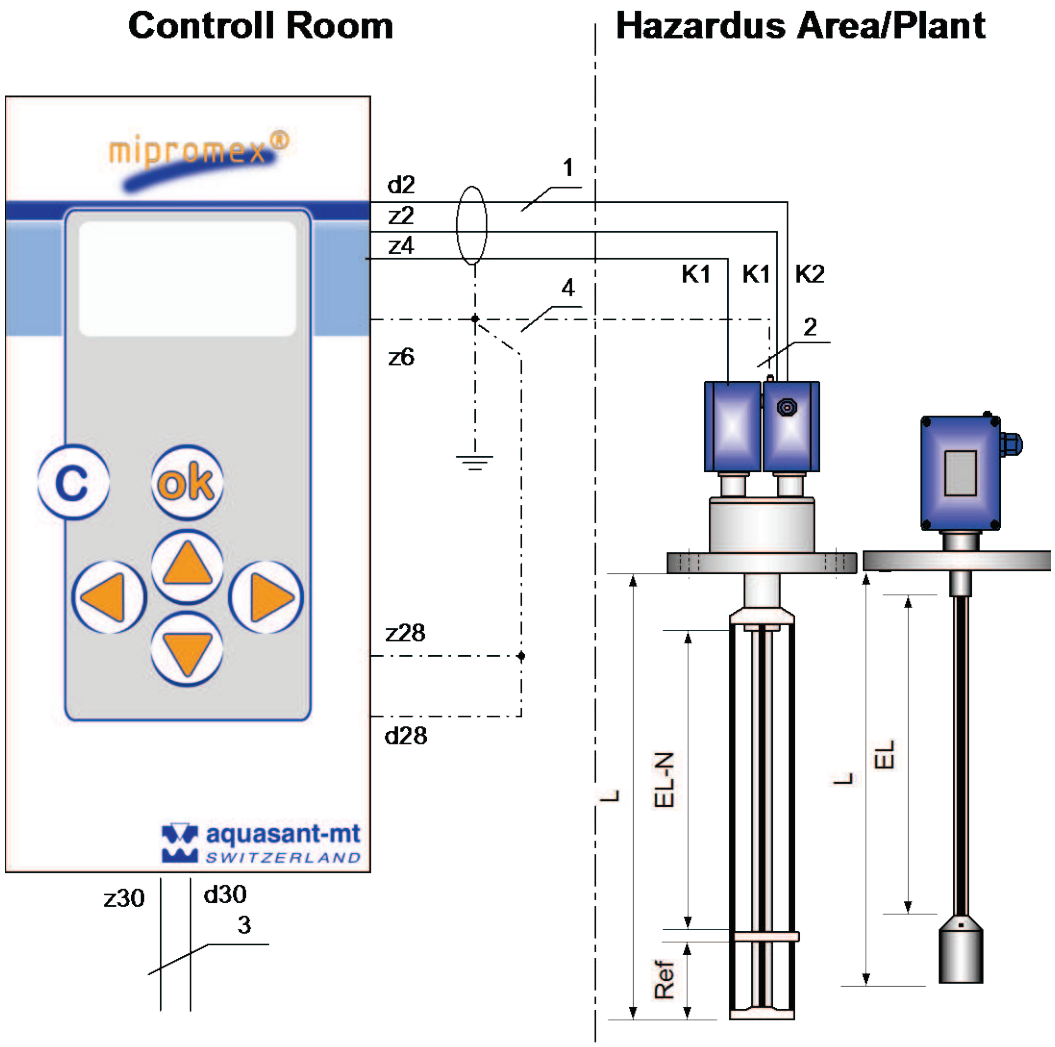
6.2.3. Radio equipment

∫ Radio/wireless equipment should not be operated in the immediate vicinity of the microprocessor unit **mipromex**®, of an open MTI measuring electronic or of the bar probe (measurements can be affected)

∫ Minimum distance 1 to 2 m

7. Wiring diagram

7.1. Measuring electronic/probe with fix connection

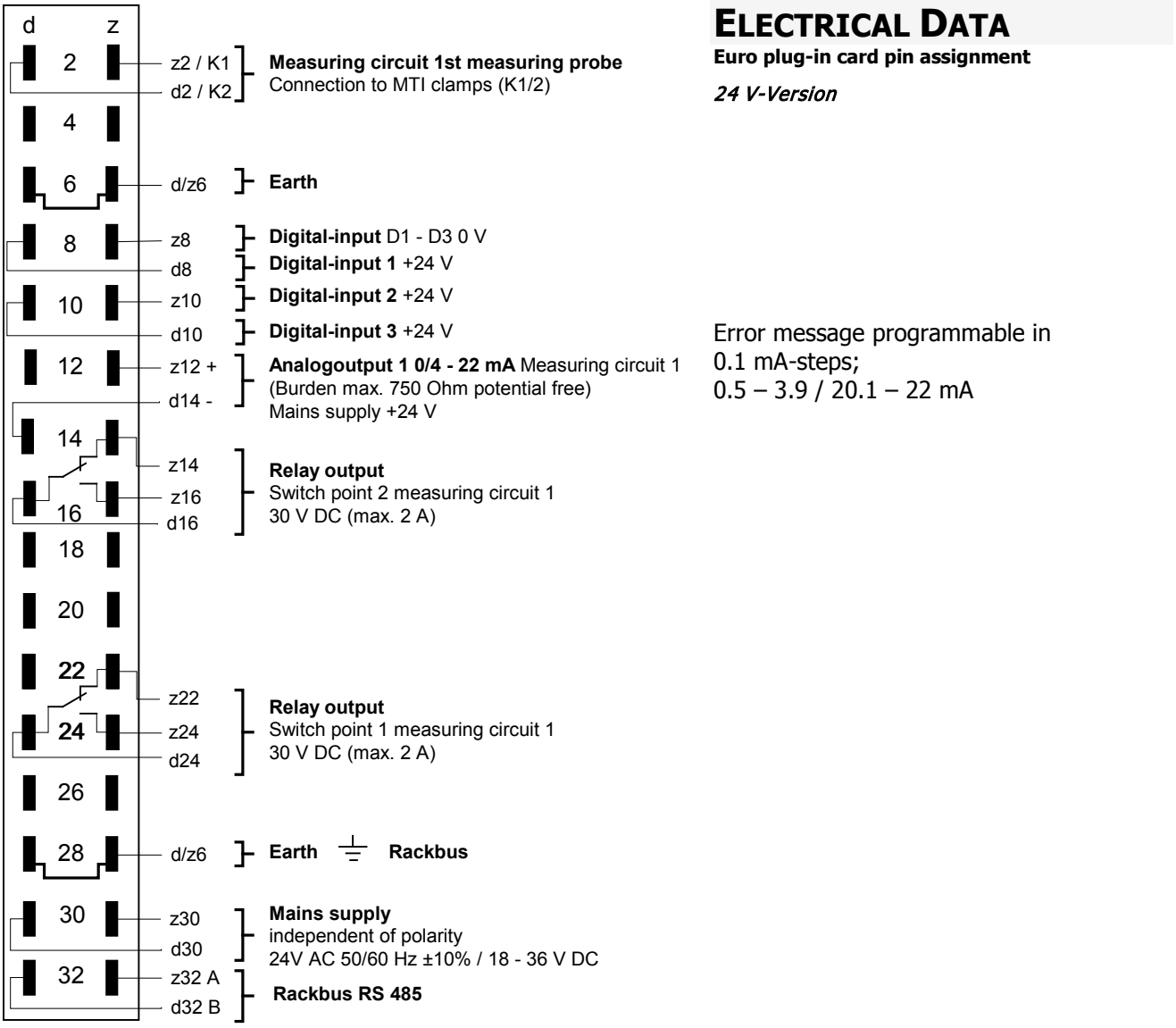


Pic. 11 Wiring diagram

1. Für zwei Messkreissysteme 2x2 x 0.75 mm^2 shielded (both sides earthed in switch room and probe head)
2. MTI housing and probe are connected to the (factory/plant) equipment earths
3. Mains 24 V AC 50/60 Hz /DC ±10 % control voltage, polarity independent, without inductive load
4. Equipotential bond
   An equipotential bond must be fitted between the control room earth and the equipment earth
   (condition of hazardous area protection and for accurate data transmission)

7.2. Connections to female multipoint connector with 32 poles, type: MLT 6130

Microprocessor units with one measuring circuit input
Connections to female multipoint connector FI 32



Pic. 12 FI 32 female multipoint connector to MLT 6130

Switch point 1 for measuring circuit 1 *FSL* (Fail Safe Lo) *Lo-Alarm*
Relay falling (measured value < limit value)
Switch point 2 for measuring circuit 1 *FSH* (Fail Safe Hi) *Hi-Alarm*

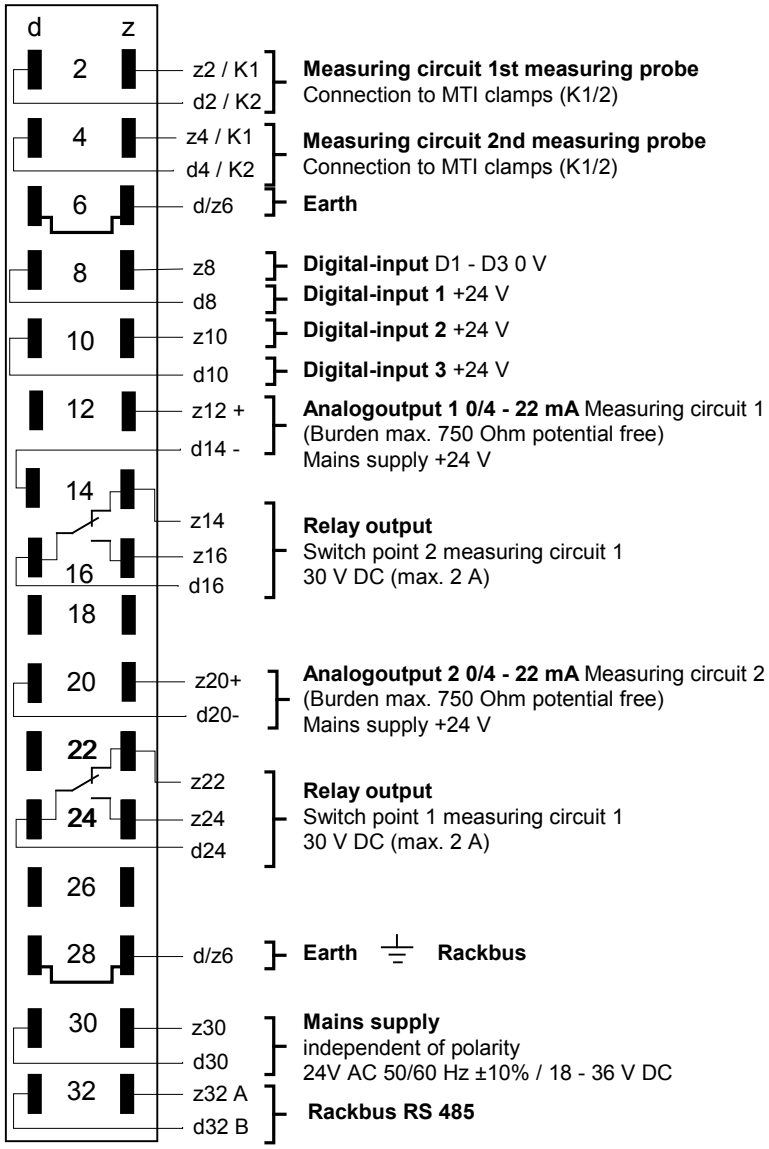
Schaltpunkt 2 für Messkreis 1 *Störmeldung*
Relais abgefallen (bei Anstehende Störung)

Schaltpunkt 2 für Messkreis 1 *Regler*
Relais angezogen (Messwert 0 steigend ≤ Schaltpunkt oben)
Relais abgefallen (Messwert ≥ Schaltpunkt oben ≥ Schaltpunkt unten)

Technical error level of analog output according to parameterization
Relay falling

7.3. Connections to female multipoint connector with 32 poles, type: MLT 6230/6260

Microprocessor units with one measuring circuit input
Connections to female multipoint connector FI 32



ELECTRICAL DATA

Euro plug-in card pin assignment

24 V-Version

Error message programmable in
0.1 mA-steps;
0.5 – 3.9 / 20.1 – 22 mA

MLT 6260 Messkreis 2:
Produktkompensation mit Analogausgang vom Produktmess-wert ohne Grenzwert Relais oder interner Grenzwertgeber für die Mess-spannenberechnung

MLT 6230 Messkreis 2:
mit internem Grenzwert ohne Analogausgang und Grenzwert Relaisausgang

Pic. 13 FI 32 female multipoint connector to MLT 6230/60

Switch point 1/2 for measuring circuit 1 *FSL* (Fail Safe Lo) *L-Alarm*
Relay falling (measured value < limit value)

Switch point 1/2 for measuring circuit 1 *FSH* (Fail Safe Hi) *H-Alarm*
Relay falling (measured value <limit value)

Schaltpunkt 2 für Messkreis 1 *Störmeldung*
Relais abgefallen (bei Anstehende Störung)

Schaltpunkt 2 für Messkreis 1 *Regler*
Relais angezogen (Messwert 0 steigend ≤ Schaltpunkt oben)
Relais abgefallen (Messwert ≥ Schaltpunkt oben ≥ Schaltpunkt unten)

Technical error level of analog output according to parameterization
Relay falling

7.4. Printed circuit board for 19"-Rack, Monorack, Wall- and Table Top housing

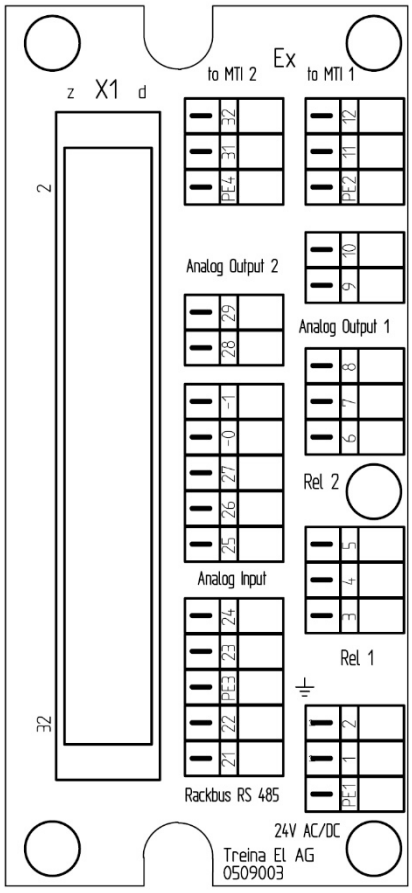
The Cage Clamp® connection clamps for cable diameter 0.08 – 2.5 mm² bared length 5 – 6 mm /0.22 in (without cable cover) are mounted with a special pre spanning tool.
Color coding:

- To the **blue** clamps: connection of the intrinsically safe field circuit. This one being allowed, with connection lines in accordance to DIN EN 60079-14, to be routed into the hazardous area.
- The **black/orange**- clamps are polarity independent current- inputs or -outputs

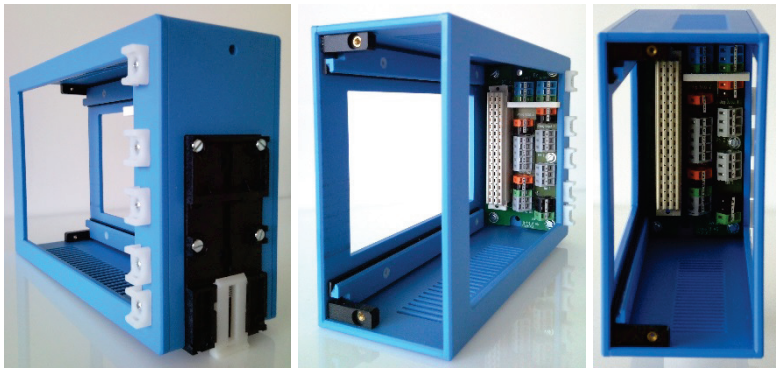
Dimension: H x B x T 137 x 77 x 210 mm / for 19"-plug in module Euro 3 HE/12TE profundity 160 mm

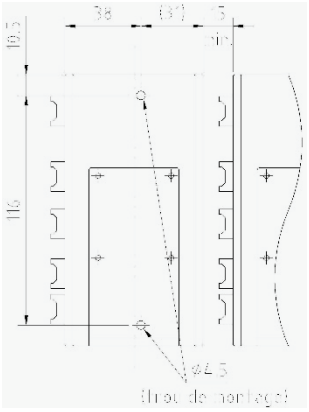
Anschluss an: Microprocessor unit mipromex®

Artikel-Nr.: 02.03.18.011



PE1	Earthing		FI32: d/z6
1.	Mains 24 V AC/DC 50/60 Hz (polarity independent)		FI32: z30
2.	Mains 24 V AC/DC 50/60 Hz (polarity independent)		FI32: d30
	Relay	Opto-e. coupler	
3.	1 NO	output E-	FI32: z24
4.	1 COM	output C+	FI32: d24
5.	1 NC	-	FI32: z22
6.	2 NO	output E-	FI32: z16
7.	2 COM	output C+	FI32: d16
8.	2 NC	-	FI32: z14
9.	MC1 analog output 1 -		FI32: d14
10.	MC1 analog output 1 +		FI32: z12
11.	MC1 MTI 1 K1		FI32: z2
12.	MC1 MTI 1 K2		FI32: d2
21.	Rackbus RS 485 A		FI32: z32
22.	Rackbus RS 485 B		FI32: d32
23.	Analog input -		FI32: d18
24.	Analog input +		FI32: d12
25.	Digital input 3 (+24 V)		FI32: d10
26.	Digital input 2 (+24 V)		FI32: z10
27.	Digital input 1 (+24 V)		FI32: d8
-0	Digital input D1-3 (0 V)		FI32: z8
-1	Digital input D1-3 (0 V)		FI32: z8
28.	MC2 Analog output 2 -		FI32: d22
29	MC2 Analog output 2 +		FI32: z20
31.	MC2 MTI 2 K1		FI32: z4
32.	MC2 MTI 2 K2		FI32: d4

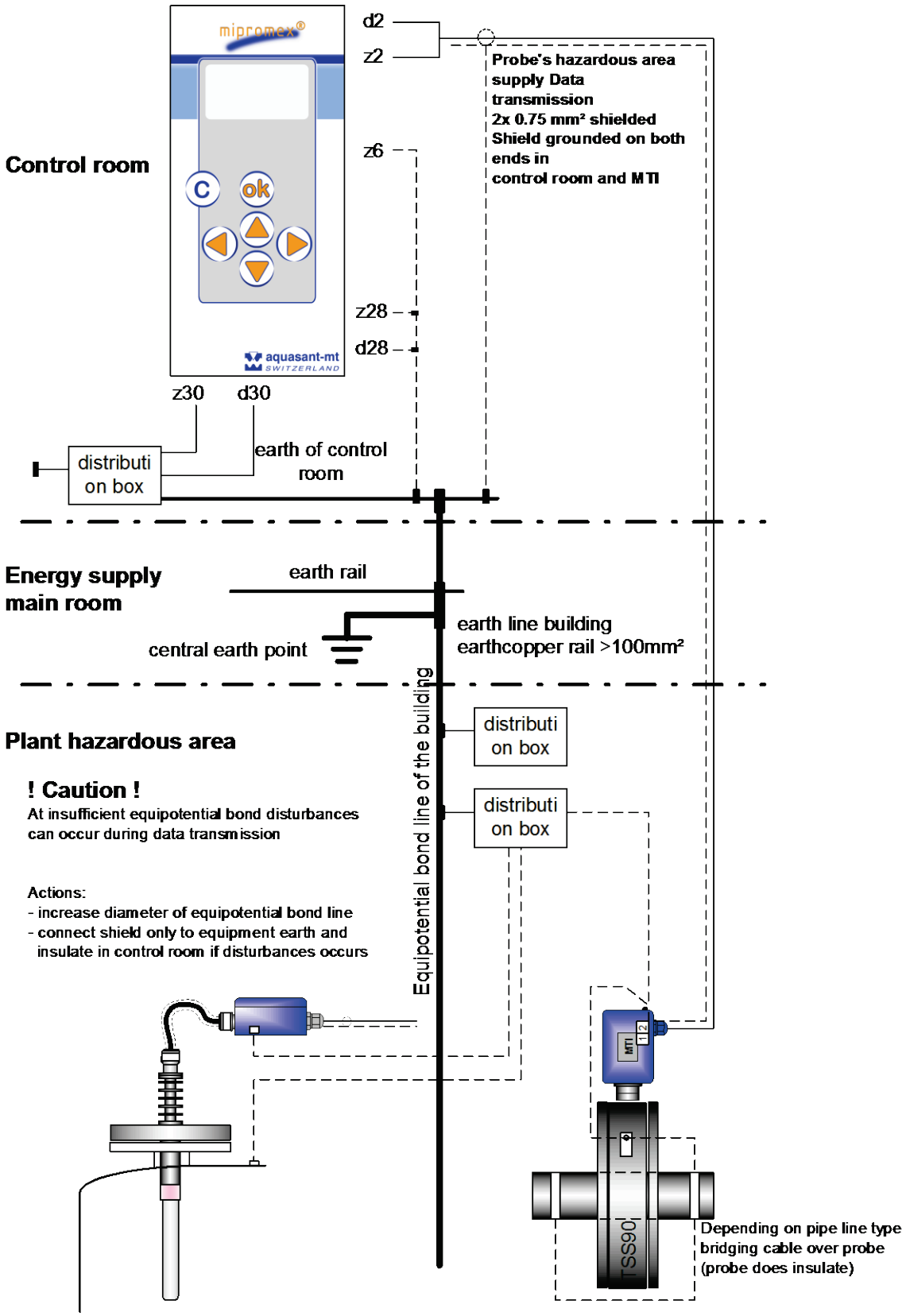




Pic. 14 Connection print to mipromex

7.5. Earthing of microprocessor units and probes

Equipotential bond and correct earthing for the hazardous area protection and against disturbances of the data transmission



Pic. 15 Earthing principle

8. Technical Data

8.1. mipromex® level measuring unit type: MLT 6130

Construction

19"-plug in module, with aluminum-steel housing; IP 20

Assembly

19"-Rack type MR 7; 3 HE (Europ.sizes)
Monorack type MRM2; plastic housing for DIN-rail- or wall mounting.
Front plate fitting with Bopla housing.
Compact or table top housing

Purpose

- Level measuring unit with intrinsically safe supply for one measuring electronic MTI xx
- Level measuring with measuring-span calculation via external limit value, filling curve or level variation
- Menu-guided multilingual unit communication
- Commissioning procedures
- 1 analog and 2 relay outputs

Operation/Display

Film keypad-front plate with graphical LCD-display, backlit, 6 buttons for data and parameter input

Data saving during power cuts

Battery buffer max. 10 years. Parameter storage into flash at battery failure

Dimensions

Height 3 HE; Width 12 TE
Front plate: Height x width 128 x 61 mm
Plug in module: Height x width x depth 100 x 60 x 160 mm
7 units can be inserted on a 19"-rack

Weight

690 g
Mains supply
24 VAC 50/60 Hz +- 10% / 24 VDC Range 20 – 39 VDC
independent of polarity

Switch on current

momentary (1ms) approx. 1A

Power input

ca. 3.4 VA (I = 140 mA)

Fuses

8.5 x 8.5 mm miniature fuse MST 400 mA

Hazardous area supply and signal transmission

[Ex ia] IIC Pulse modulated supply signal
open circuit voltage max. 18.9 V; typically 17 V
short circuit current max. 49 mA; typically 40 mA

[Ex d ia], Pulse modulated supply signal
open circuit voltage max. U ≤19.3 V; typ. 17 V
short circuit current max. I ≤75 mA; typ. 70 mA

Signal transmission

1 measuring circuit, pulse modulated supply signal

Signal line short circuit

power input max. MIQ 8130: 160 mA

Ambient temperature

0 °C ... 45 °C

Storage temperature

–20 °C ...+45 °C, ideally 20 °C

Measurement range

0 – 3700 pulses

Data display

MeV 0 – 3700

Switching hysteresis

1 pulse = 0.028 pF for the 100 pF measuring range

Connection

32 pole FI connector, coding facility

Relay outputs

2 relay per measuring point with a changeover contact for the limit value. Example: min./max. Deviation min. or max. selectable safety value. Switching voltage 30 Vdc /2 A, I/O=2kV, -40 to 85°C

Analog output

one active 4 – 20 mA output, max.working resistance/load 750 Ω, not for hazardous area, with potential separation, tech. fault 0.5 – 4 / 20 - 22 mA adjustable

Interface

RS 232 / RS 485

Monitoring

Self-monitoring detection system for: defective probe; short circuit/interruption signal supply to hazardous area (cable break security); measurement range; main power interruption **mipromex**® -error messages

Test and certification

Ex II (2) G [Ex ia] IIC
II (2) D [Ex iaD]
II (2) GD
RL 94/9/EG **SEV 09 ATEX 0132**
Confidential test report No.: 08-IK-0396.01 with amendment 1
Unit also available without hazardous area protection
The **mipromex**® must be installed outside of the Ex-Zone
Ex-connection:
Measuring electronic MTI ... in protection housing or bar probe type S**; K**; F*
EMC-tested, STS 024 report NR. 990102WS corresponds to

EN 1127-1:2007	CE
EN 61241-0:2006	EN 61241-11 :2006
EN 60079-0:2006	EN 60079-11 :2007

8.2. mipromex®- level measuring unit type: MLT 6230/60

Construction
19"-plug in module, with aluminum-steel housing; IP 20

Assembly
19"-Rack type MR 7; 3 HE (Europ.sizes)
Monorack type MRM2; plastic housing for DIN-rail- or wall mounting.
Front plate fitting with Bopla housing.
Compact or table top housing

Purpose
- Level measuring unit with intrinsically safe supply for two measuring electronics MTI xx
- Level measuring with measuring-span calculation via internal limit value
- Product-compensated level measuring
- Menu-guided multilingual unit communication
- Commissioning procedures
- 1 or 2 analog and 2 relay outputs

Operation/Display
Film keypad-front plate with graphical LCD-display, backlit, 6 buttons for data and parameter input

Data saving during power cuts
Battery buffer max. 10 years. Parameter storage into flash at battery failure

Dimensions
Height 3 HE; Width 12 TE
Front plate: Height x width 128 x 61 mm
Plug in module: Height x width x depth 100 x 60 x 160 mm
7 units can be inserted on a 19"-rack

Weight
705 g

Mains supply
24 VAC 50/60 Hz ±10% / 24 VDC Range 18 – 36 VDC independent of polarity

Switch on current
momentary (1ms) approx. 1A

Power input
ca. 4 VA (I = 200 mA)

Fuses
8.5 x 8.5 mm miniature fuse MST 400 mA

Hazardous area supply and signal transmission
[Ex ia] IIC Pulse modulated supply signal
open circuit voltage max. 18.9 V; typically 17 V
short circuit current max. 49 mA; typically 40 mA

[Ex d ia], Pulse modulated supply signal
open circuit voltage max. U ≤19.3 V; typ. 17 V
short circuit current max. I ≤75 mA; typ. 70 mA

Signal transmission
2 measuring circuits, pulse modulated supply signal

Signal line short circuit
power input max. MIQ 8260: 280 mA

Ambient temperature
0 °C ... 45 °C

Storage temperature
–20 °C ...+45 °C, ideally 20 °C

Measurement range
0 – 3700 pulses

Data display
MeV 0 – 3700

Switching hysteresis
1 pulse = 0.028 pF for the 100 pF measuring range

Connection
32 pole FI connector, coding facility

Relay outputs
2 relay per measuring point with a changeover contact for the limit value. Example: min./max. Deviation min. or max. selectable safety value. Switching voltage 30 Vdc /2 A, I/O=2kV, -40 to 85°C

Analog output
2 active 4 – 20 mA output, max.working resistance/load 750 Ω, not for hazardous area, with potential separation, tech. fault 0.5 – 4 / 20 - 22 mA adjustable

Interface
RS 232 / RS 485

Monitoring
Self-monitoring detection system for: defective probe; short circuit/interruption signal supply to hazardous area (cable break security); measurement range; main power interruption **mipromex**® -error messages

Test and certification
Ex
II (2) G [Ex ia] IIC
II (2) D [Ex iaD]
II (2) GD
RL 94/9/EG **SEV 09 ATEX 0132**
Confidential test report No.: 08-IK-0396.01 with amendment 1
Unit also available without hazardous area protection
The **mipromex**® must be installed outside of the Ex-Zone
Ex-connection:
Measuring electronic MTI ... in protection housing or bar probe type S**; K**; F*
EMC-tested, STS 024 report NR. 990102WS corresponds to
CE

EN 1127-1:2007	
EN 61241-0:2006	EN 61241-11 :2006
EN 60079-0:2006	EN 60079-11 :2007

8.3. Measuring electronic MTI for measuring probes

Probes with separate or integrated measuring electronic MTI

- *MTI – measuring electronic in protection housing*
- *for bare-, strip- and pipe probes with and without measuring electronic in the connection head*
- *Measuring electronic slot*
- *Ex-version ATEX ExG / ExD*
- *screwed cable gland M16 x 1.5 or M20 x 1.5*
- *Viton or Silicon cover joint*
- *Cover and screw are saved*

Dimension:
Aluminium gush-housing: H x B x L = 57 x 80 x 125 mm
Inox-housing: H x B x L = 85 x 82 x 142 mm
Polyester-housing: H x B x L = 55 x 80 x 110 mm

Definition range:
MTI10-50: -3/+0pF
Under value -10/+0 pF // upper value -0/+10 pF

Temperature range:
–20 bis +60 °C ambient air temperature

Connection:
For all S*K ** bar- and TSS pipe probes with HF-connection

Article-N°.: 02.24.06.0000

Example: MTI in housing	MTI	50/2	A	Gv	L	-	2		K	H
Example: MTI slot	MTI	50/2	A	E	-	E	2		K	H

MTI	= measuring electronic slot	MTI

Measuring range:

10	= Δ20 pF accuracy ≤ 3	
15	= Δ20 pF accuracy ≤ 2.5 Imp/10	
20	= Δ20 pF accuracy ≤ 2 Imp/10	
30	= Δ20 pF accuracy ≤ 2 Imp/10	
50	= Δ20 pF accuracy ≤ 2 Imp/10	50
100	= Δ60 pF accuracy ≤ 1 Imp/10	
200	= Δ100 pF accuracy ≤ 1 Imp/10	
300	= Δ100 pF accuracy ≤ 1 Imp/10	
400	= Δ100 pF accuracy ≤ 0.75	
600	= Δ100 pF accuracy ≤ 0.75	

Base calibration range:

0	= calibration range in pF of measuring	
1…	= calibration range in pF of measuring	

Measuring technology:

A	= Analog measuring technics for interface	A

Form or protection housing version

E	= Slot	E
G	= Alu housing IP 65 blue powder coated angled	
Gl	= Alu housing IP 65 blue powder coated angled long	
2G	= dooble Alu housing IP 65 blue powder coated angled	
Gd	= Alu housing IP 68 blue powder coated (Exd)	
Gv	= V4A housing IP 68 stainless steel	Gv
Gk	= Plastic housing IP 65 Polyester conductive	

Connection to the probe:

K	= UHF-connection	
L	= Lemo-connection	
S	= dual HF-connection SMA	

Slot-version:

E	= measuring electronic slot angled	E
R	= measuring electronic slot round (old)	
O	= measuring electronic slot round for ExD-head (Gd)	
K	= measuring electronic slot angled for plastics-head	

Ex-version: SEV 09 ATEX 0133 X / CE 1254

0	= without protection for hazardous area CE	
2	= protection for hazardous area II 2G Ex ia IIC T6 / II 2D	2

Differential measuring:

2	= 2. Measuring input for compensation (Antistatic protection	

Trimmer:

K	= 20/30 pF Ceramic trimmer (vibrationsfest) (MTI 10 to 50)	K

Version:

H	= increased ESD (electrostatic) protection	H
Tt	= Used for low temperature -40°C on Mil-Norm	
F2	= Use for compensated systems with shifted frequency measurement	
F3	= Use only for batch separation with conductivity of organic phase up	
T	= Wika transmitter programmable with 4-pol Lemo-connector	

Pic. 16 Measuring electronic

8.3.1. Technical Data MTI . . . / .

Construction/design type
Plug-in measuring electronic with stainless steel cover in protection housing, with coax connection

Installation
Protection housing with mounting holes, plug-in electronic insert, mounting with 2 screws

Function
Linear conversion of an impedance range into a digital measuring norm signal

Operation/display
One time only calibration of the coax cable and the (dry, clean, empty) probe. LED display for quick setting

Housing
Cast aluminum housing, powder coated, solvent resistant, cover and screws secured; IP 65; coax probe connector and cable gland M16, IP 65; blue color coded

Dimensions
Height x width x length 57 x 80 x 175 mm

Weight of electronic
140 g

Weight of housing
740 g incl. MTI and transmitter

Supply/connection hazardous area
Shielded 2 core cable 0.75 mm² to all microprocessor measuring and control units types mipromex®; cable length up to (200m) or max. C= 120 nF / R = 30 Ohm line impedance.

Transmission signal
Pulse packages, superimposed to the power supply

Measuring circuit voltage/current
V ~ 11 V I ~ 13,5 mA

Nominal data of supply voltage
$U_N \leq 18{,}9$ V $I_N \leq 49$ mA
Ci_{max} 60 nF $Li_{max} \leq 0$ mH
$P_0 \leq 231$ mW

Ambient temperature
–20 . . . +60 °C

Storage temperature
–30 up to +80 °C, ideally +20 °C

Measurement range
10 / 20 / 50 / 100 / 200 / 300 corresponding to 0 to 3500 pulses, special ranges can be supplied, max. pulse range 3700 pulses

Resolution
Max. 0.003 pF/pulse

Standard measuring range for bar probes
Type STK .../100/200/300
55 pF, Type MTI 50/(0 - 16) basic calibration range (0 – 16) depending on coax cable and probe length, is determined by manufacturer

Basic calibration range
MTI .../. 0 up to 16, 0 to 500 pF

Monitoring frequency
~ 500 kHz

Linearity
Deviation < 0,1 % (without probe)

Hysteresis
1 monitoring pulse

Influence of temperature 5 – 45 °C
Type MTI .../.D digital: < ± 10 measurement pulses
Type MTI .../.A analog: < ± 3 measurement pulses

Test and certification
Ⓔx II 2 G Ex ia IIC
II 2 D Ex iaD
II 2 GD

RL 94/9/EG SEV 09 ATEX 0133 X

confidential test report N° : 08-IK-0396-01

EN 1127-1:2007	EN 60079-26 :2007
EN 61241-0:2004	EN 61241-11 :2006
EN 60079-0:2006	EN 60079-11 :2007

CE

Unit also available without (Ex-Zone) hazardous area protection

Only for connection to microprocessor unit .TI…. K/S and mipromex®

SEV 09 ATEX 0132 Ⓔx II (2)G [Ex ia] IIC
EMC-tested, STS 024 test report N° : 990102WS corresponds to directive 94/9/EG CENELEC Norms
EN 50081-2: 1993
\+ EN 50082-2: 1995
+pr EN 50082-2: 1996

Feed line to probe

Version
- MTI fix mounted onto probe

- Coax cable with UHF plug on both ends

Mounting
Screw in UHF plugs and shrink heat-shrinkable sleeves

Length
0.3 m, 1 m, 2 m and 3 m

Code color brown
High temperature resistant up to 200 °C, Teflon coated, only suitable for permanent installations

Code color blue
Highly flexible, temperature resistant up to max. 80 °C
Deviation at cable move ±2 measuring pulse

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