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OPERATING MANUAL

Universal interfacial layer device

MIQ 8110/8130/8260

- Continuous measurement of the interfacial layer
- Interfacial layer detection for batch separation of two not mixable liquids
- 2. measuring circuit for upper layer level, separation reaction or product compensation
- Display of %-/ mA-/ Pulses
- Analog output 4–20 mA
- Limit value with opto- electronic coupler or relay

- MIQ-Version V1.1x
- Technical specifications
- Operating
- Commissioning
- Installation

mipromex

for the continuous or batch-separation of liquid/liquid interface layer

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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 universal interfacial layer device **MIQ 8110/8130** is using for batch seperation or measurement of the interfacial layer level.

The **MIQ 8260** is equipping with two measuring circuits and is able to detect separating speed by batch separation or level by continuous interfacial layer measuring. The dynamic interfacial layer detection for liquid/liquid phase batch separation detects the interfacial layer fully automatic without parameter setting. Depending on execution one or two analog outputs 4 - 20 mA signal are available.

Reading and carefully following the operating instructions, assures a perfect functioning of your **MIQ** 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 **MIQ interfacial layer.**

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:

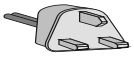
	Mortal Danger: The non-observance can lead to injuries or death.		Step by step: Text enhanced/marked this way, contains detailed instructions and comments
	Caution: the non-observance can lead to equipment damages or loss of information.		Actions to be carried out by user.
	Information / Notice: describes 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

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 ligh1Ling protection of the probe supply cables is recommended.
- Installation instructions for impedance probes I 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**

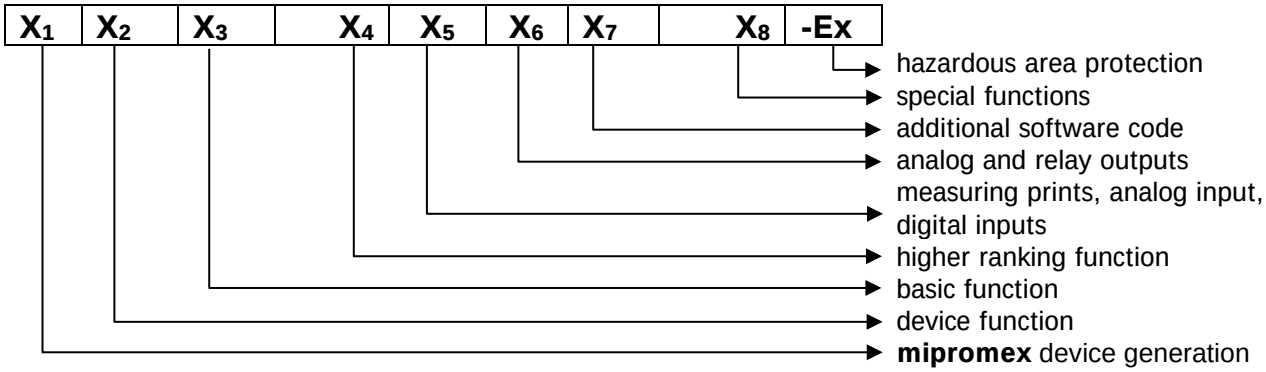
2.1. MIQ-Hardware types

MIQ 8110 1 measuring circuit with 1 analog output and 2 limit value output with OC

MIQ 8130 1 measuring circuit with 1 analog output and 2 limit value output with relay

MIQ 8260 2 measuring circuits with 1 analog outputs each (not potentially separated against each other) and 2 limit value output with relay

2.1.1. mipromex-type code:



X1 M = **mipromex**

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

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

X4
1 = Limit switch
2 = Level switch empty
3 = Level switch full
4 = Analog output
5 = Universal new
6 = Filling level
7 =
8 = Interfacial layer
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 intern		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. Basic

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.

Example:

MIQ 8110	V1.1x	1 measuring circuit with 1 analog output and 2 limit value output with OC
MIQ 8130	V1.1x	1 measuring circuit with 1 analog output and 2 limit value output with relay
MIQ 8260	V1.1x	2 measuring circuits with 1 analog outputs each and 2 limit values output with relay

Within each software type, at cost, additional functions can be activated.
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 MIQ** 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 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 MIQ** using a shielded two core cable. Between field and control room an equipotential bond must be installed.

2.5. Function

A product surrounding, or filling an aquasant-mt impedance pipe or bar probe, you varied the impedance in function of the dielectrical constant and/or conductivity characteristics of organic products or aqueous solutions as, well as 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 analog transmitter **mipromex MIQ**.
The measured values within the normed signal range are product specific and characteristic for the different products and changing in accordance with product mixtures of interfacial layer level. This product specific measured value correspond to a value in the range of 0 – 3700. The physical impedance measured value of a product is registered in digits, designed as pulses value.

Dynamic measurement supervision detects the product modification as well as the empty status signal fully automatically with the highest precision. The interfacial layer is detected with pipe or bar probe which is built-in in the ground run line after the ground valve of a reactor.

The dynamic batch seperation detection of the mipromex works increasing or falling independently of the product (measurement size) and the signal course. The interfacial layer is detected by the measurement modification of the lower one in the interfacial layer probe to the upper phase. The cut-out valve is controled directly over the digital output two of the MIQ. The signal course is supervised and documented over the analog output.

The dynamic interfacial layer detection is started and stopped via start ID-/ stop ID function of the keypad buttons or via PLS. Three digital inputs or the keypad buttons control the sensitivity steps 1 -7. Keypad button start and PLS starts are locked against each other. To the start the display changes to measurement indication. The menu access is closed during the separating layer.

1. Parameter set IL index / Sensitivity separation detection ID

Value		Digital input			Discript for separation detection		
Parameter set IL	**E-Level ID**	**D1**	**D2**	**D3**	**MW Hysterese**	**MW fluctuations ± /10 s ->**	
	0	0	0	0	change of the meas value		Stop aktiv
1	**1**	1	0	0	6 Imp	< 2 Imp	Start; data adjustable max. 300Imp
2	**2**	0	1	0	10 Imp	< 2 Imp	Start; highly sensitive
3	**3**	1	1	0	16 Imp	< 3 Imp	Start;high sensitive
4	**4**	0	0	**1**	**30 Imp**	**< 4 Imp**	Start; **sensitive (Basic setting)**
5	**5**	1	0	1	60 Imp	< 5 Imp	Start; insensitive
6	**6**	0	1	1	120 Imp	< 5 Imp	Start;very insensitive
7	**7**	1	1	1	200 Imp	< 5 Imp	Start

Chart. 2 IL Parameter set/ID sensitivity

The interfacial layer supervision switch off at a to high sensitivity possibly to early, increases the sensitivity by a step. Readjustment: If within 5 min. the output measurement of the lower phase is reached again after the interfacial layer reconnaissance, the cut-out valve is opened once more, the measuring remains active.

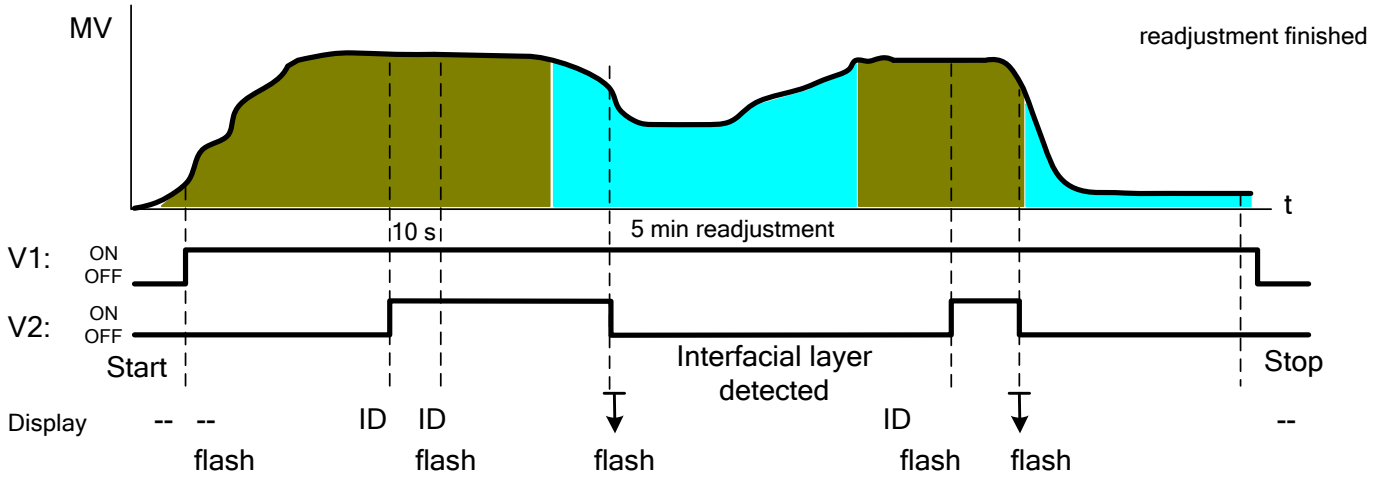
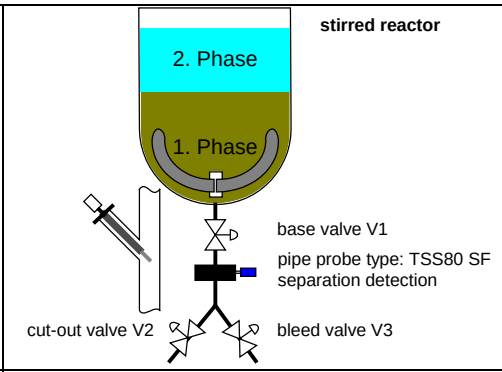
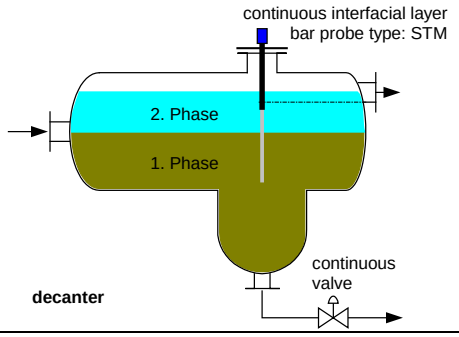
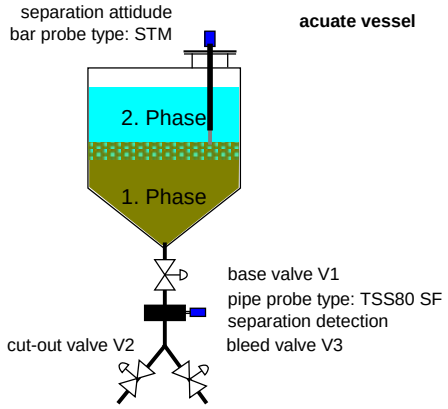
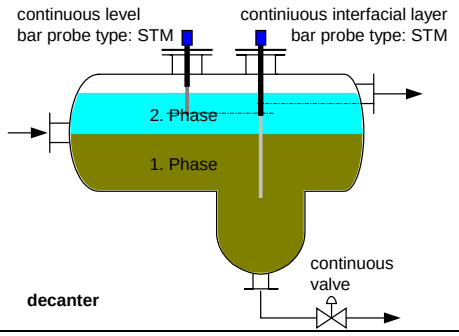
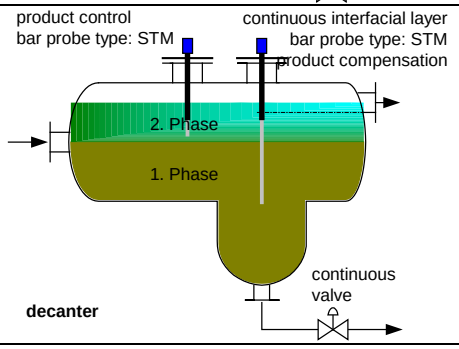


Chart. 3 ID-Run of the gradient

ID flashing => Interfacial layer detection on
🡻 flashing => Interfacial layer detect

At the interfacial layer level measuring the parameter sets of 1-7 in the archives can also externally in accordance with step 1-7 table 2 is dialed. Modification on a positive edge at the digital input D1-D3.
A modern and menu driven operation and calibration concept enables a time saving commissioning of the analog transmitter. The frontal keypad with function and graphic display assure a user friendly operation and reliable working.

2.6. Operation:

MIQ 8110	**Batch separation supervision** with analog output for the visualization of the product measurement course of the interfacial layer detection of a pipe probe or a bar probe into the pipe. Two digital outputs (OC) for the dynamic interfacial layer measuring and empty status signal.	
	Change- over: **Interfacial layer level measuring** with analog output and 2 limit values (OC) for Low/High.	
MIQ 8130	According to MIQ 8110 however with relay outputs (potential-free change-over contacts)	
MIQ 8260	According to MIQ 8130 however with an additional measuring circuit with analog output for the measuring of the separating speed at batch separations. (separation reaction)	
	Level measuring of the upper phase at the continuous interfacial layer level measuring.	
	With activation code the product compensated interfacial layer level measuring is activated. At product changes of the upper or lower phase at the continuous measuring the span is corrected automatically. Also available as **one bar probe**.	

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.

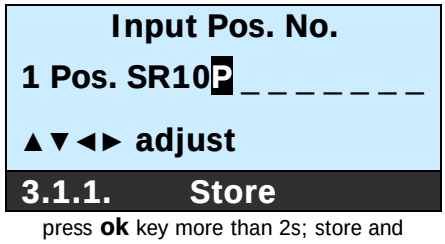
3.2. Key functions

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. 4 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

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

Change and input

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

Chart. 5 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

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

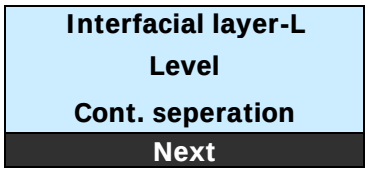
ok: forward to device type

Unit description
Device type and hardware model
MIQ 8110/8130/8260
ok button function

Start information mask.

ok: forward to Funktionsinfo

Unit description
Continuous Interfacial level in the reactor, dacanter
MIQ 8110/8130
ok button function



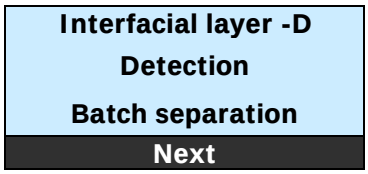
Information mask in accordance with program choice

Parameter sets 1-7 from archive

ok: forward to meas.value display

=> Or after choice 2.4

Unit description
Measuring into pipe with ring or bar probe
ok button function

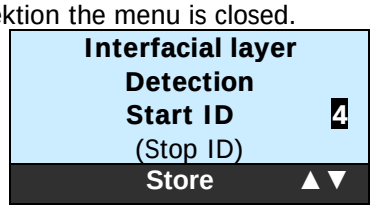


Information mask in accordance with program choice

ok: forward to meas.value display

Dynamic interfacial *detection*: Valve control at OC/Relay 2. Initial instruction over keypad or external digital inputs provided if programmed on dynamic (dyn) under 6.1.1./(4.26.). Keypad and PLS starts (by digital inputs) are locked against each other. During the Detektion the menu is closed.

Start the interfacial detection
ok button function / active keys



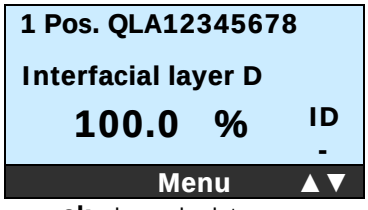
After pressing the ok button > 2 s start/stop of the automatic batch separation detection.

Sensitivity ID 1-7 see Tabelle2 page 11
4 fundamental attitude

3.3.2. Measured value display

3.3.2.1. Unit types MIQ 8110/8130 (1 Meas. circuit) Interfacial layer D (detektion)

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



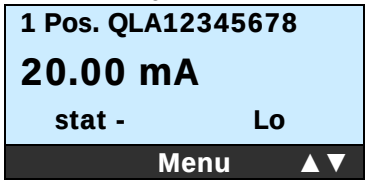
Change and input in measuring circuit 1, Menu 3.1.1.

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

ok: change back to menu

▲▼: 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



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

ok: change back to menu

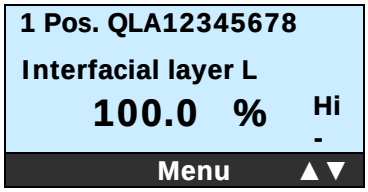
▲▼: circulate (loop) in display mode

3.3.2.2. Unit type MIQ 8110/8130 (1 Measuring circuit) Interfacial layer level

Description of the 1st measuring position

Description of the measured value

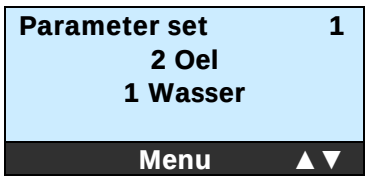
Actual calibrated meas.value display in %
Calculation 3.1.6.



Change and input in Menu 3.1.1.

Display shows digital output 1 limit value high (Hi)
Display shows digital output 1 limit value low (Lo)

Activ Parameter set (change under 13.2)
Upper Phase:
Lower Phase:
(Measurements are deposited)

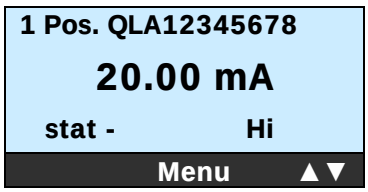


Information mask to the active parameter set substitute at the continuous interfacial layer measuring.

Description of the 1st measuring position

Analog output

Full/Empty sensor static (not adjustable)
Show static (stat) or dynamic (dyn)



Change and input in measuring circuit 1, Menu 3.1.1.

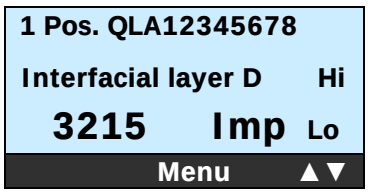
Display in function of the measuring range; at data disturbance display 00.50 mA and data disturbance arrow ↑ or ↓
Interfacial layer level stat or dyn
Show low (Lo) or high (Hi)

3.3.2.3. Unit type MIQ 8260 (2 Measuring circuits) Interfacial layer D (Detection) and seperation reaction or level

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.



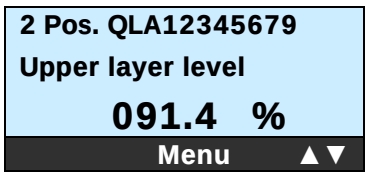
Change and input in Menu 3.1.1.

ID = Interfacial layer detection ON
ID↑ or ID↓ 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

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

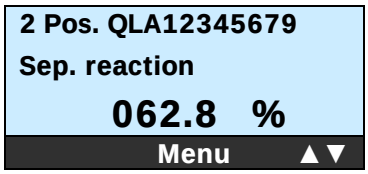
Display in function of the measuring range

=> Or after select 2.5.

Description of the 2nd measuring position

Description of the 2nd measured value

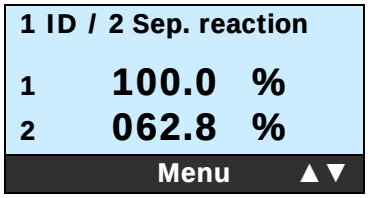
Measurement organic phase seperation



Product meas. value with indicator probe in organic phase

Description of the outputs of the 1st and 2nd measured value
Product meas. value calibrated %

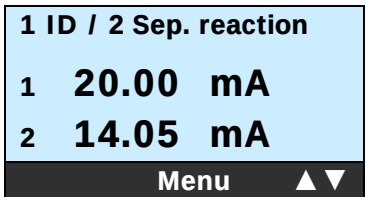
Level measuring upper phase
Seperation reaction



(or display 2: upper layer level)

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

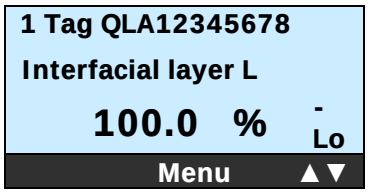
Description of the outputs and of the 1st and 2nd measured value
Actual display of current output product data
Measurement organic phase separation or level in the upper phase



(or display 2: upper layer level)

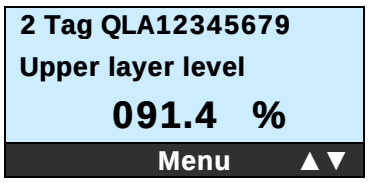
3.3.2.4. Unit type MIQ 8260 (2 Measuring circuit) Interfacial layer level L and upper layer level or separation reaction

Description of the 1st measuring position
Description of the meas. value
Actual calibrated meas.value display in %
Calculation 3.1.21.



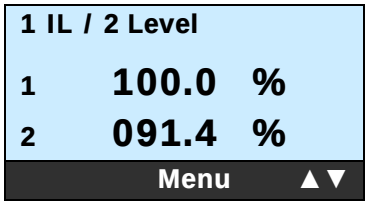
Change and input in measuring circuit 1, Menu 3.1.1
Display shows digital output 2 limit value high (H)
Display shows digital output 1 limit value low (L)

Description of the 2nd measuring position
Description of the 2nd meas.value
Actual calibrated level display in %
Calculation 3.1.5./7.



Change and input in measuring circuit 1, Menu 3.1.1
On position separation reaction, measured product value display in %

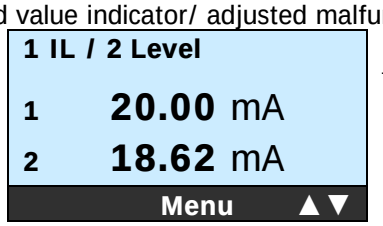
Description of the outputs
Description of the 1st and 2nd meas.value
Actual interfacial layer level display in %
Actual calibrated level display in %



(or display 2: Separation reaction)
for product compensation

With Alarm **Δ**, Arrow ↑↓: no measured value indicator/ adjusted malfunction message e.g. 3.6 mA

Description of the outputs
Description of the 1st and 2nd meas. value
Actual interfacial layer level display in mA
Actual calibrated level display in mA

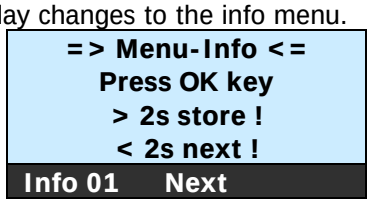


(or display 2: Separation reaction)
for product compensation

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

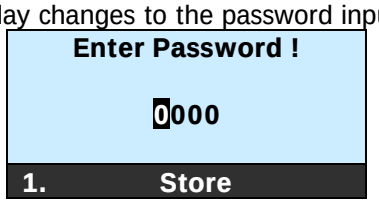


Store = Press Longer than 2 sec. on the OK-button
Next = shortly on the OK-button

ok: change to password input

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

selected character is inverted
Menu Pos. No

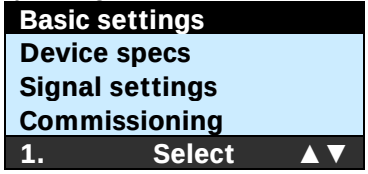


1. key-in the numerical password using the ▲▼◀▶- buttons
2. press **ok** button more than 2 seconds
Standard factory password 0000
Display changes to the menu
Parameters can be changed

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:**	**MIQ 8110/30 ID**	**MIQ 8110/30 IL**	**MIQ 8260 ID**	**MIQ 8260 IL**	**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 1 Interfacial layer Batch detection / Interfacial layer level		☑	☑	☑	☑	☜
2.5. Select 2 Level measuring upper phase / Seperation reaction (2.4. Detection)		-	-	☑	-	☜
2.6. Select 2 Upper layer level / Seperation reaction / Product compensation (2.4 Level only)		-	-	-	☑	☜
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:**	**MIQ 8110/30 ID**	**MIQ 8110/30 IL**	**MIQ 8260 ID**	**MIQ 8260 IL**	**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 02: Zero adjustment for;Pipe/bar probe empty/clean; ex-works prog ~ 60		☑	-	☑	-	🖷
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 03 Meas. circuit 1: Pipe/bar probe fill with aqueous layer		☑	-	☑	-	🖷
Info 04 Meas. circuit 2: Dipping level probe 100% in top layer		-	-	☑	☑	🖷
Info 05 Meas. circuit 2: Indicator probe 100% in top layer aqueous layer		-	-	☑	☑	🖷
Info 07: Meas. circuit 1: Dipping IL bar probe 100 % into lower layer		-	☑	-	☑	🖷
3.1.5. Meas. span = MeS, accept at press button, store		☑	-	☑	-	✍
3.1.6. auto calculation meas. span		-	-	-	-	✍
3.1.7. Meas. span = MeS input / correction manual		☑	-	☑	-	✍
3.1.8. Choose product -- new -- / product 1-50		-	☑	-	☑	☜
-- new -- (store; switchover product name)		-	☑	-	☑	☜
3.1.9. Product name (input mandatory)		-	☑	-	☑	✍
3.1.10. Product meas. value (lower phase) accept at press of OK botton, store		-	☑	-	☑	✍
3.1.11. Product measurement (lower phase) manual input/correction		-	☑	-	☑	✍
Info 08 : Meas. circuit 1: Dipping IL bar probe (100 %) in upper layer		-	☑	-	☑	🖷
3.1.12. Choose product -- new -- / product 1-50		-	☑	-	☑	☜
-- new -- (store; switchover product name)		-	☑	-	☑	☜
3.1.13. Product name (input mandatory)		-	☑	-	☑	✍
3.1.14. Product meas. value (upper phase) accept at press of OK botton, store		-	☑	-	☑	☜
3.1.15. Product meas. value (upper phase) manual input/correction		-	☑	-	☑	✍
3.1.16. Signal filter		☑	☑	☑	☑	✍
3.1.19. Sensitivity ID Hysteresis 1 (xx Imp) batch sep. only		☑	-	☑	-	✍
3.1.20. Sensitivity ID Fluctuations MV 1 (xx Imp) batch sep. only		☑	-	☑	-	✍
3.1.21. IL calculation (Value) Zero Point: /Meas Span: /M-Reversion: (no / yes)		-	☑	-	☑	🖷
4. Commissioning according to device type		☑	☑	☑	☑	☜
4.1. [2.4.] Select 1 Interfacial layer Batch detection / Interfacial layer level)		☑	☑	☑	☑	☜
4.2. [5.1.1.] Measuring units [% / Imp] (measuring circuit 1 and 2)		☑	☑	☑	☑	☜
4.3. [3.1.1.] Input (position number)/ TAG - No		☑	☑	☑	☑	✍
4.4. [3.1.2.] Probe factor		☑	☑	☑	☑	✍
Info 02: Zero adjustment for;Pipe/bar probe empty/clean; ex-works prog ~ 60		☑	-	☑	-	🖷
Info 06: Zero adjustment for; Bar probe; empty/clean; ex-works prog ~ 60		-	☑	-	☑	🖷
4.5. [3.1.3.] Zero point MeV input (Offset), accept at press of OK button, store		☑	☑	☑	☑	✍
4.6. [3.1.4.] Manual input of the zero point =MeV (Offset)		☑	☑	☑	☑	✍
Info 03 Meas. circuit 1: Pipe/bar probe fill with aqueous layer		☑	-	☑	-	🖷
Info 07: Meas. circuit 1: Dipping IL bar probe 100 % into lower layer		-	☑	-	☑	🖷

Legend: ☜ = Select / ✍ = Input / 🖋 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:** MIQ 8110/30 ID	MIQ 8110/30 IL	MIQ 8260 ID	MIQ 8260 IL	Change
4.7. [3.1.8.] Choose product -- new -- / product 1-50	-	☑	-	☑	☜
4.9. [3.1.5.] Meas. Span = MeS, accept at press button, store	☑	-	☑	-	☜
4.10. [3.1.10.] Product meas. value (lower phase) accept at press of OK botton, store	-	☑	-	☑	☜
4.11. [3.1.7.] Measuring Span = MeS input / correction manual	☑	-	☑	-	✍
4.12. [3.1.11.] Product measurement (lower phase) manual input/correction	-	☑	-	☑	✍
Info 08 : Meas. circuit 1: Dipping IL bar probe (100 %) in upper layer	-	☑	-	☑	🖋
4.13. [3.1.8.] Choose product -- new -- / product 1-50	-	☑	-	☑	☜
4.15. [3.1.14.] Product meas. value (upper phase) accept at press of OK botton, store	-	☑	-	☑	☜
4.16. [3.1.15.] Product meas. value (upper phase) manual input/correction	-	☑	-	☑	✍
4.17. [3.1.16.] Signal filter	☑	-	☑	-	✍
4.18. [3.1.21.] IL calculation (Value) Zero Point: /Meas Span: /M-Reversion: (no / yes)	-	☑	-	☑	🖋
4.19. [2.7.1.] Probe; Type code	☑	☑	☑	☑	✍
4.20. [2.7.2.] Probe S/N	☑	☑	☑	☑	✍
4.21. [6.1.1.] Select function stat/dyn (static/dynamic)	-	-	-	-	☜
Info 12 Meas. circuit 1; Limit value 1 and 2; Measuring circuit 2 no limit value	-	-	☑	☑	🖋
Info 13 Limit value 1 Hi/Lo; Relay or OC 1; limit value 2 ID; Relay or OC 2	☑	-	☑	-	🖋
Info 15 Limit value 1	☑	☑	☑	☑	🖋
4.22. [6.1.2.] Limit value	☑	☑	☑	☑	✍
4.23. [6.1.4.] Time delay, off	☑	☑	☑	☑	✍
4.24. [6.1.5.] Time delay, on	☑	☑	☑	☑	✍
4.25. [6.1.6.] FSL/FSH- Position	☑	☑	☑	☑	✍
Info 16 Limit value 2	☑	☑	☑	☑	🖋
4.26. [6.1.1.] Select function stat/dyn (static/dynamic)	☑	-	☑	-	☜
Info 11 Limit value; Relay 2; Interfacial layer ; Detection	☑	-	☑	-	🖋
4.27. Limit value	-	-	-	-	✍
4.28. [6.1.4.] Time delay, off	☑	☑	☑	☑	✍
4.29. [6.1.5.] Time delay, on	☑	☑	☑	☑	✍
4.30. [6.1.6.] FSL/FSH- Position	☑	☑	☑	☑	☜
4.31. [13.1.] Storing an active operation parameter set on next free place 1-7	-	☑	-	☑	☜
4.32. [5.2.] Select of 2; Upper layer level / Seperation reaction	-	-	☑	-	☜
4.33. [5.2.] Select of 2; Upper layer level / Seperation reaction / Product compensation	-	-	-	☑	☜
4.34. [2.7.1.] Probe; Type code	-	-	☑	☑	✍
4.35. [2.7.2.] Probe S/N	-	-	☑	☑	✍
4.36. [3.1.1.] Input TAG – No (position number)	-	-	☑	☑	✍
4.37. [3.1.2.] Probe factor	☑	☑	☑	☑	✍
Info 06 Zero adjustment for; Bar probe; empty/clean; ex-works prog ~ 60	-	-	☑	☑	🖋
4.38. [3.1.3.] Zero point MeV input (Offset), accept at press of OK button, store	-	-	☑	☑	✍
4.39. [3.1.4.] Manual input of the zero point =MeV (Offset)	-	-	☑	☑	✍
Info 04 Meas. circuit 2: Dipping level probe 100% in top layer	-	-	☑	☑	🖋
Info 05 Meas. circuit 2: Indicator probe; 100% in top layer; aqueous layer	-	-	☑	☑	🖋
4.40. [3.1.5.] Meas. span = MeS, accept at press button, store	-	-	☑	☑	☜
4.41. [3.1.7.] Meas. span = MeS input / correction manual	-	-	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 🖵 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Types:**		**MIQ 8110/30 ID**	**MIQ 8110/30 IL**	**MIQ 8260 ID**	**MIQ 8260 IL**	**Change**
4.42. [3.1.12.] Signal filter			-	-	☑	☑	✍
4.43. [5.1.6.] Residual height; Level			-	-	☑	☑	✍
4.44. [1.6.1.] Store parameter with **ok**			☑	☑	☑	☑	☜
5. Measuring range			☑	☑	☑	☑	☜
5.1 Select measuring circuit 1 / 2			-	-	☑	☑	☜
5.1.1. Measuring units [% / Imp] (measuring circuit 1 and 2)			☑	☑	☑	☑	☜
5.1.2. Measuring range; Start 4 mA (1)			☑	☑	☑	☑	✍
5.1.3. Measuring range; End 20 mA (1)			☑	☑	☑	☑	✍
5.1.4. Meas. Range length 100 %-Punkt			-	-	-	-	✍
5.1.5. Seperating layer height current			-	-	-	-	✍
5.1.6. Residual height; Level(2)			-	-	☑	☑	✍
5.1.7. Meas. range zero point / MWN will be calculate			-	-	-	-	✍
5.1.8. Meas. range reversal / will be calculate			-	-	-	-	✍
5.1.9. Delta height DL ±Δ			-	-	-	-	✍
5.1.10. Meas. range analogous input			-	-	-	-	✍
6. Limit values			☑	☑	☑	☑	☜
Info 12 Meas. circuit 1; Limit value 1 and 2; measuring circuit 2 no Limit value			-	-	☑	☑	🖵
Info 13 Limit value 1 Hi/Lo; Relay or OC 1 limit value 2 ID Relay or OC 2			☑	☑	☑	☑	🖵
6.1 Select limit valiue 1 / 2 1 full/empty message; 2 seperation detection stat/dyn for ID (batch) Select limit value 1 Lo-Alarm; 2 Hi-Alarm static for IL (cont.) only			☑	☑	☑	☑	☜
6.1.1. Limit value 1: Select function stat/dyn (static/dynamic)	-	-	-	-	-	-	☜
6.1.1. Limit value 2: Select function stat/dyn (static/dynamic)	**stat**	**dyn**	☑	-	☑	-	☜
Info 11 Limit value; Relay 2; Interfacial layer ; Detection	-	☑	☑		☑		🖵
6.1.2. Limit value	☑	-	☑	☑	☑	☑	✍
6.1.3. Hysteresis	-	-	-	-	-	-	✍
6.1.4. Time delay, off	☑	☑	☑	☑	☑	☑	✍
6.1.5. Time delay, on	☑	☑	☑	☑	☑	☑	✍
6.1.6. FSL/FSH- Position Limit value 1	☑	-	☑	☑	☑	☑	☜
6.1.6. FSL/FSH- Position Limit value 2	☑	-	☑	☑	☑	☑	☜
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			☑	☑	☑	☑	✍

Legend: ☜ = Select / ✍ = Input / 🖷 = Display / ⌨ = only available with activation code **Menu-Code Parameter**	**Typen:**	**MIQ 8110/30 ID**	**MIQ 8110/30 IL**	**MIQ 8260 ID**	**MIQ 8260 IL**	**Change**
8.4. Error protocol		⌨	⌨	⌨	⌨	🖷
Display actual error with time/date		☑	☑	☑	☑	🖷
9. Controller function		-	-	-	-	☜
10. Protocol of active data set		⌨	⌨	⌨	⌨	☜
11. Service parameter basic settings		-	-	-	-	☜
11.1. Service parameter list (encoded)		-	-	-	-	PC
11.2. Parameter list for different device types		⌨	⌨	⌨	⌨	
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. Archive		☑	☑	☑	☑	☜
13.1. Storing an active operation parameter set on next free place 1-7		-	☑	-	☑	🖷
13.2. Load the select parameter set 1-7 for Interfacial layer level measurement		-	☑	-	☑	☜
13.3. Delete product meas. value (don't store into a parameter set)		-	☑	-	☑	☜

Display modes					
Analog output 1 in %	☑	☑	☑	☑	🖷
Parameter set 1-7	-	☑	-	☑	🖷
Analog output 2 in %	-	-	☑	☑	🖷
Analog outputs 1/2 in %	-	-	☑	☑	🖷
Analog outputs 1/2 in mA	-	-	☑	☑	🖷
Start / Stop	☑	-	☑	-	🖷
Display actual error with time /date	☑	☑	☑	☑	🖷

Chart. 6 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
Interfacial layer D
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
Menu-Positions-Number

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

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

Sub menu
Selected sub menu item is inverted
Menu-Positions-Number

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

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  ▲▼
```

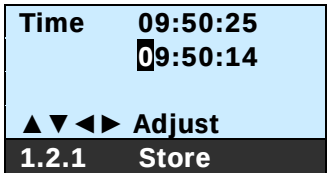
1. select language with the ▲▼-buttons
2. press **ok** button more than 2 seconds ; The selected language is immediately activated Display changes back to menu item 1.1.

[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

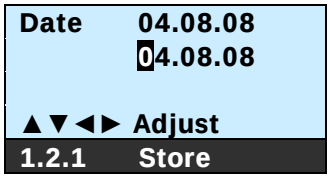


1. use ▲▼◄►-buttons to change the time
2. press **ok** button more than 2 seconds

Time is stored
Display changes to date 1.2.1.

current date
selected character is inverted

active key-navigation



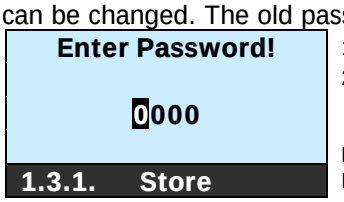
1. use ▲▼◄►-buttons to change the date
2. press **ok** button more than 2 seconds

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



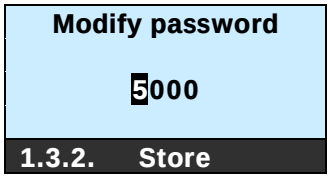
1. use ▲▼◄►-buttons to input the numerical password
2. press **ok** button more than 2 seconds

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



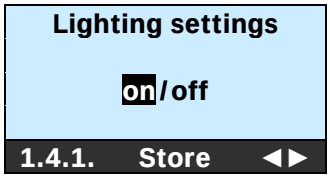
1. use ▲▼◄►-buttons to input the numerical password
2. press **ok** button more than 2 seconds

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



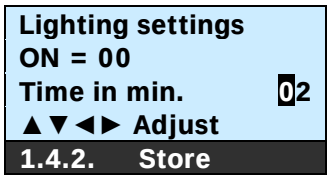
1. use ◄►-buttons to switch the lighting on or off
2. press **ok** button more than 2 seconds

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

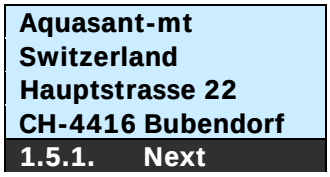


1. use ▲▼◄►-buttons to select the lighting duration
2. press **ok** button more than 2 seconds

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.

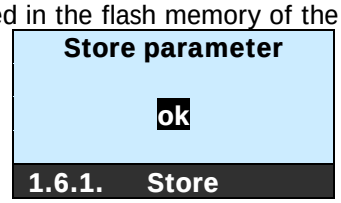
After pressing the **ok** button the display changes back to the sub menu Contact 1.5

[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

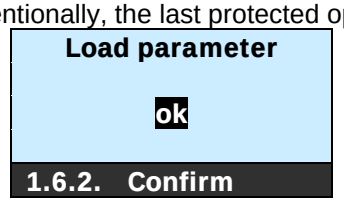
All keyed-in parameters are stored in the flash memory of the unit. The parameters can be reloaded afterwards.



1. press **ok** button 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.

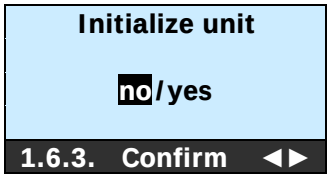


1. Press **ok**-button longer than 2 sec.; the parameter will store into the flash. Old Parameter will overwrite.
2. A short ok-feeling pressure jumps further into the next mask

[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!

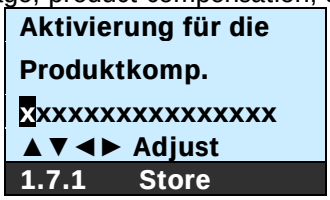
[1.7.] Activation code

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



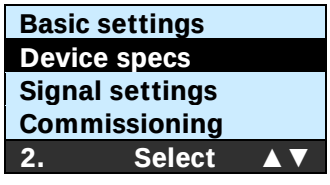
1. use ▲▼◄►-buttons to input the alpha-numerical Code
2. press **ok** button more than 2 seconds

Input is stored
Display changes back to menu 1.

4.1.2. [2.] Divice 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

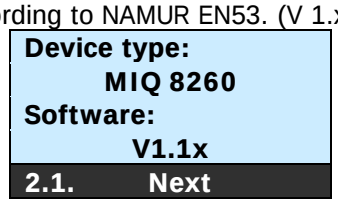
[2.1.] Device-type MIQ 8110 / 8130 / 8260

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

MIQ 8110 1 measuring circuit with 1 analog output and 2 limit value output with OC
MIQ 8130 1 measuring circuit with 1 analog output and 2 limit value output with Relay
MIQ 8260 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

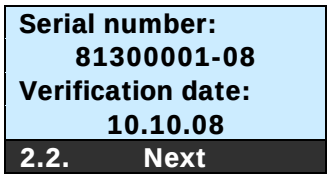


After pressing the **ok b**utton the display changes to the next menu item 2.2.

[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.

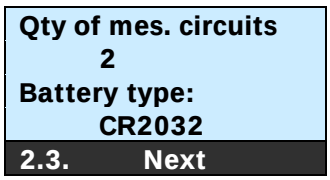
[2.3.] Number of measuring circuits (1. measuring circuit, skip 3.1/4.1)

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



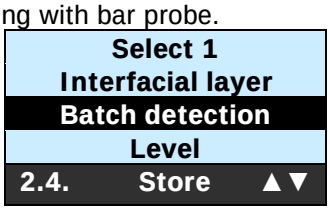
After pressing the **ok b**utton the display changes to the next menu item 2.4.

[2.4.] hoice separating detection (batch) or interfacial layer level (continuous)

Choose the measuring function separating detection for the batch separation by means of ring probe or level for the continuous interfacial layer measuring with bar probe.

Equipment function

Menu list choice display is inverted



1. use ▲▼-buttons the separating layer function is chosen

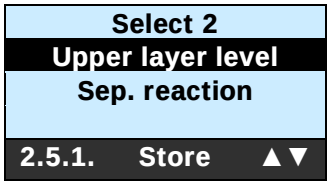
2. press **ok b**utton more than 2 seconds; the display in detection changes: Measuring in the pipe.
Niveau: Measuring of the separating layer height in the trap

[2.5.] At MIQ 8260 Interfacial layer detection for batch separation choice Upper layer level/Seperation reaction

Seperation vessel or reators with built-in pipe probe or bar probe especially after the base valve V1 and respectively in front of the cut- out valve V2. Second level bar probe of length active in the top phase or bar probe with 100 mm in the organic phase for the supervision of the seperation process (separation reaction)

Equipment function

Menu list choice display is inverted

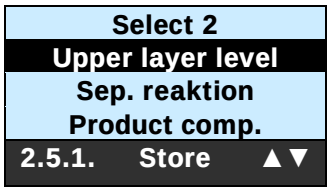


1. use ▲▼-buttons the function of the 2nd measuring circuit is choosen.
2. press **ok b**utton more than 2 seconds; the display in detection changes to the mask 2.7. Measuring circuit 2 measures upper layer level or separation reaction.

[2.5.] MIQ 8260 Interfacial layer level (continuous)
Option: Upper layer level/Seperation reaction/Product compensation

Interfacial layer bar probe with two active measurement in the separator. The second upper active measurement electrode as a level probe for the upper phase trained or in the lower or upper phase than indicator probe for the product compensation.

Device function
Menu list choice display is inverted

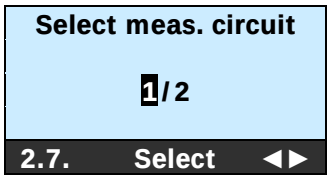


1. use ▲▼-buttons the function of the 2nd measuring circuit is choose
2. press **ok b**utton more than 2 seconds the display change to the mask 2.7. Measuring circuit 2 measures upper layer level, separation reaction or product compensation lower or upper phase with free shifting activation code still inactive

[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.

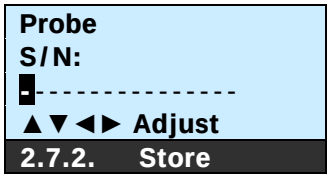
selected character is inversed 16-char.
Alphanumeric

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.

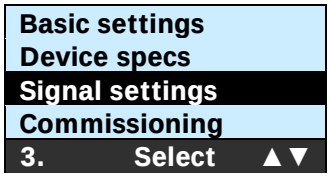


1. use ▲▼◄►-buttons to input the alpha-numerical serial number of the probe
2. press **ok b**utton more than 2 seconds Serial number is stored Display changes back to menu 2.7. back with **C b**otton

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

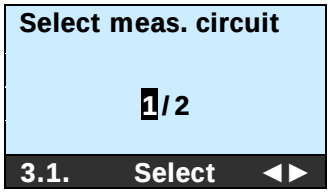


After pressing the **ok b**utton the display changes to the sub menu signal settings

[3.1.] Select measuring circuit 1 or 2 (Interface detection for batch separation)

Select the active measuring circuit for the next steps.

selected menu item is inverted

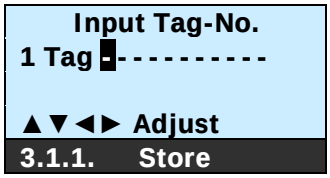


After pressing the **ok b**utton the display changes to the menu of the selected measuring circuit (1). 3.1.1.

[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

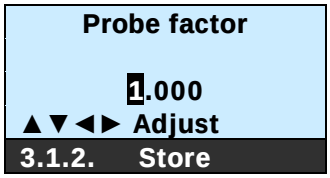
Pos.-No. is stored
Display changes to menu item 3.1.2.

[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

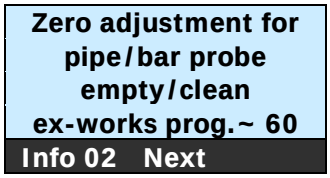
Probe factor is stored
Display changes to the next menu item 3.1.3. After changing the probe factor the zero point must be actualized and stored 3.1.3.

[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)

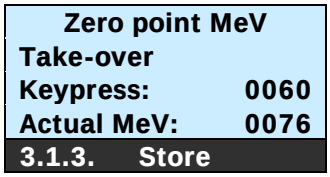
Menu - information
furthermore process



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



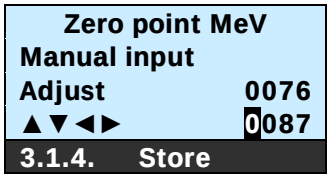
1. press **ok b**utton more than 2 seconds

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

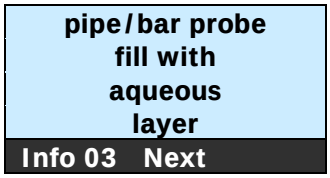
You can manually correct the zero point of the probe
actual raw measured value of the probe
adjust zero point



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

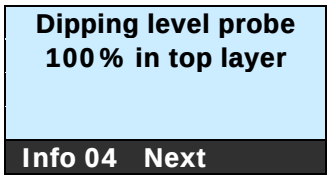
The new zero point is immediately activated
Display changes to the next menu

Menu information of the
further process
for measuring circuit 1



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

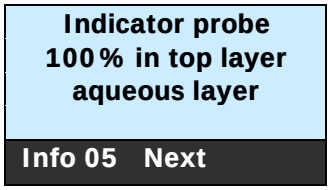
Menu Information of the
further process
For measuring circuit 2
Filling level measuring top phase



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

Measuring range of filling level

Menu Information of the
further process
For measuring circuit 2
Seperation reaction of the two phases



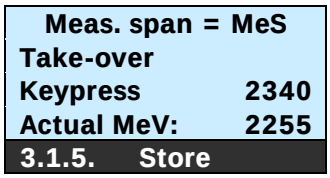
After pressing the ok button the display changes to the mask 3.1.5
Measuring range for product meas. value
Probe can dive in during the operation in the upper or lower phase

[3.1.5.] Measuring span acceptance at push button

The measuring span for the calculation of the 100 % point is product depending. This pulses value is obtained by fully immersing the measuring electrode into the product and by saving "at push button" the measured value.
Attention: this procedure is in dependence of point 3.1.6.

MS = normed measuring span in pulses

actual stored measuring span
(raw measured value – zero point offset)



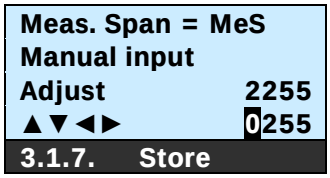
1. press **ok b**utton more than 2 seconds

The new measuring span is immediately activated
Display changes to the next menu item 3.1.7.

[3.1.7.] Measuring span

The measuring span (point 3.1.5) can be changed or corrected here manually.

You can manually correct the
Measuring span of the probe
actual measured value of the probe
Adjust measuring span



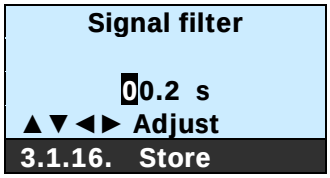
1. use ▲▼◄►-buttons to define the measuring span
2. press **ok b**utton more than 2 seconds

The new measuring span is immediately activated
Display changes to the next menu 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

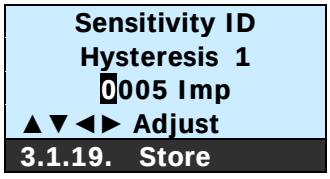
The new time is immediately activated
Display changes back to menu 3.1.19.

[3.1.19.] Sensitivity interface detection for batch separation

(Sensitivity max. 300 Imp)

Petition of the Hysteresis

At the moment stored new Hysteresis



1. use ▲▼◄►-buttons to define the signal filter time
2. press **ok** button more than 2 seconds; the new time immediately gets active.

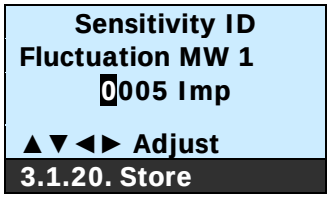
Display changes to menu item 3.1.20.

[3.1.20.] Sensitivity interface detection for batch separation

(Fluctuation max. 20 Imp) .

of the meas. value

At the moment stored the new Fluctuation value



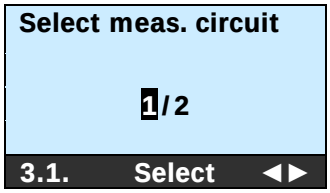
1. use ▲▼◄►-buttons to define the signal filter time
2. press **ok** button more than 2 seconds; the new time immediately gets active.

Display changes back to menu item 3.1., with C button back to the menu

[3.1.] Select measuring circuit 1 or 2 (1: Interfacial layer level (continuous))

Select the active measuring circuit for the next steps.

selected menu item is inverted
MIQ 8260



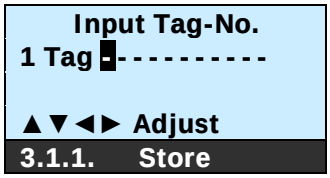
After pressing the **ok b**utton the display changes to the selected measuring circuit menu (1) 3.2.1.

Measuring circuit 1 interfacial level

[3.1.1.] Input Tag No.

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-number
Tag-number, 11-characters max.
Alphanumeric



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

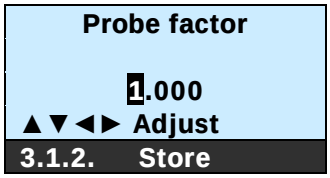
Pos.-No. is stored
Display changes to menu item 3.1.2.

[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 must only at exchange the probe is corrected
Option number is inverted



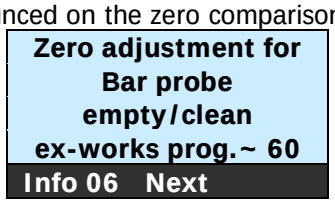
1. use ▲▼◄►-buttons the probe will define
2. Press **ok b**utton more than2 seconds; the petition is stored.

Display changes to information 06.
Caution: After modification of the probe factor the zero point must be stored newly 3.1.3.

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

The probe electronic 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 comparison of 1000 the product measurement is limited on approx. 2700 impulses.
Is the system can already be renounced on the zero comparison into operation. (Work adjusting approx. 60)

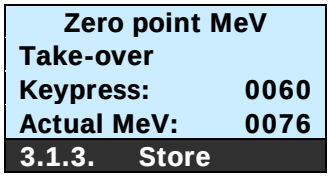
Menu--Information



After pressing the ok button the display changes to the mask 3.1.3

MeV = normed measured value in pulses

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



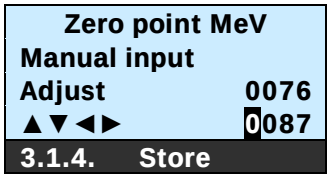
1. press **ok b**utton more than 2 seconds

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

[3.1.4.] Zero point petition manual (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.

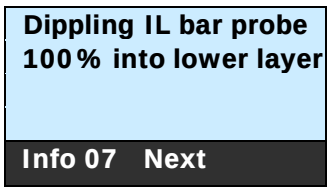
You can manually correct the zero point of the probe
actual raw measured value of the probe
adjust zero point



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 Info 07

Menu--Information
for Measuring circuit 1

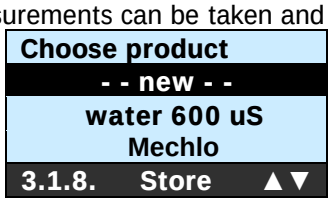


If the active bar probe is too long, the measurement at partial filling can be lower phase projected and entered manually without separating layer. Example:
MW = 736 Impulse / Short-term one depth= 450 mm / aktive probe lengh = 1000 mm
Calculation **MW**: 736 Imp. / 450 mm x 1000 mm = **1636 Imp**

[3.1.8.] Choose product name entering or selecting

Under the product name the product measurement is stored. The existing measurement can be measured by an existing product name taken, changed or newly. For a new product the product name or a number must be entered mandatorily. Max. 50 product measurements can be taken and stored.

In the Archive product 1
product 2

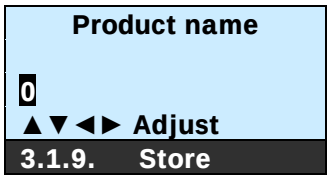


1. use ▲▼-buttons the product name is entered selectly or newly to the lower phase
2. press **ok b**utton more than 2 seconds; Choice is further processed

[3.1.9.] Product name of the new products

If - - new - - is stored, the product name must be entered mandatority

16-digit alphanumeric
(no lower case letters)

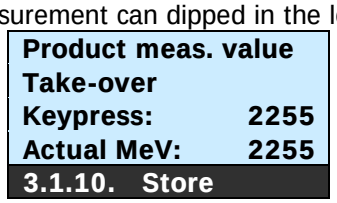


1. With ▲▼◄►-buttons product name is defined
2. press C back or ok button longer for 2 seconds;
Name gets stored and can not be changed any more!
Provided that the product is not stored in a parameter set substitute, it can be deleted in the archives 13.3 again.

[3.1.10.] Lower phase product measurement; Take-over on keypress

The active probe length is the measurement can dipped in the lower phase be taken by keypress to 100%.

actual measurement
(Raw measurement zero point offset)

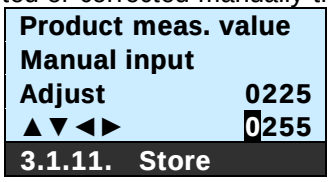


1. press **ok b**utton more than 2 seconds
the measurement is taken and stored under the entered product name.
Display changes to menu item 3.2.11.

[3.1.11.] Lower phase Product measurement; manual input

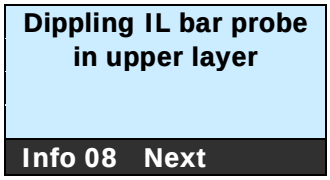
Product measurement can be adjusted or corrected manually the described under item 3.1.8 here.

By the manual input the measuring range of the probe is corrected
actuel measurement
Entering measurement



1. use ▲▼◄►-buttons the measuring span is defined
2. press **ok b**utton more than 2 seconds;
the new measuring range immediately gets active.
Display changes information MK1 to the next menu point

Menu--Information
measuring circuit 1

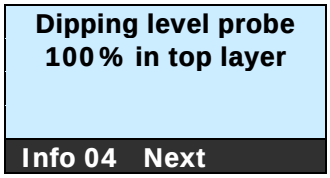


If the active bar probe is too long, the measurement at partial filling can be lower phase projected and entered manually without separating layer. Example:
MW = 143 impulse / Short-term one depth = 450 mm / aktive probe lengh = 1000 mm
Calculation **MW**: 143 Imp. / 450 mm x 1000 mm = **318 Imp**

Menu--Information

measuring circuit 2

Level measuring upper phase

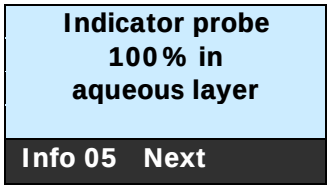


After pressing the ok button the display changes to the mask to 3.1.5./7.
Measuring range of filling level is stored

Menu--Information

measuring circuit 2

Product compensation

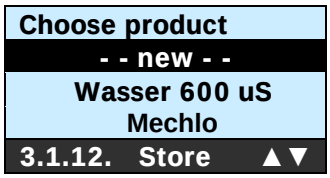


After pressing the ok button the display changes to the mask to 3.1.5./7.
Measurement for compensation

Probe can dive in during the operation in the upper or lower phase

[3.1.12.] Product name entering or selecting

Under the product name the product measurement is stored. The existing measurement can be measured by an existing product name taken, changed or newly. For a new product the product name or a number must be entered mandatorily. Max. 50 product measurements can be taken and stored.



1. use ▲▼-buttons the product name is entered selectly or newly to the upper phase
2. press **ok b**utton more than 2 seconds; Choice is further processed

Display changes to menu item 3.1.13

[3.1.13.] Product name of the new products

If - - new - - is stored, the product name must be entered mandatority

16-digit alphanumeric

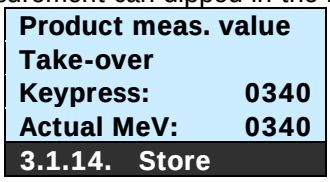
(no lower case letters)

1. With▲▼◄►-buttons product name is defined
2. press C back or ok button longer for 2 seconds;

Name gets stored and can not be changed any more!
Provided that the product is not stored in a parameter set substitute, it can be deleted in the archives 13.3 again.
Display changes to menu item 3.1.14.

[3.1.14.] Upper phase product measurement; Take-over on keyspress

The active probe length is the measurement can dipped in the lower phase be taken by keyspress to 100%.

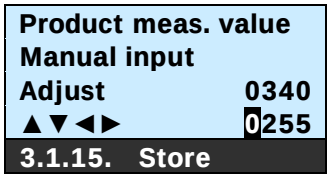


1. press **ok b**utton more than 2 seconds; the new measuring range is immediately calculated by the measurement automatically,

Display changes to menu item 3.1.15.

[3.1.15.] Upper phase product measurement; manual input

Product measurement can be adjusted or corrected manually the described under item 3.1.12 here.



1. use ▲▼◄►-buttons the measuring span is defined
2. press **ok b**utton more than 2 seconds; the new measuring range is immediately aktive.

Display changes to menu item 3.1.16.

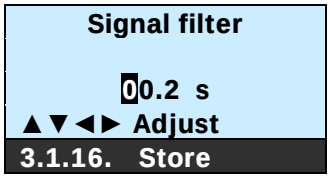
[3.1.16.] Signal filter

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

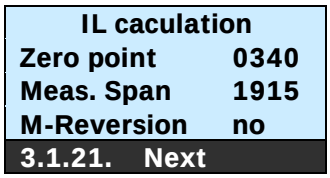


1. use ▲▼◄►-buttons to define the signal filter time
2. press **ok b**utton more than 2 seconds

The new time is immediately activated
Display changes back to menu 3.1.21.

[3.1.21.] Calculation of interfacial layer zero point, measurement range and reversal measurement range

The information mask shows the calculated measuring range, zero point and reversal measurement for the interfacial level measuring. (Reversal measurement: yes = upper water phase)



press **ok b**utton more than 2 seconds
The new parameter set substitute immediately gets active.
The storage in the archives 13.1. into next free parameter set substitute (will show automatically)
Display changes back to the menu 3.1.

4.1.4. [4.] Commissioning

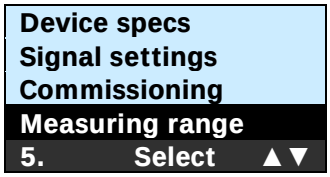
Chronological commissioning sequence of operations for a correct function. Follow the INFORMATION instructions and enter the corresponding values step by step. Masks see page 18, the menu item numbers indicated are clip into [ ].

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



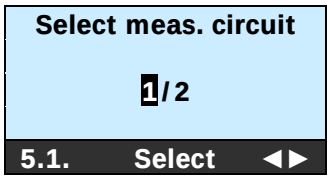
After pressing the ok button the display changes to the sub-menu measurement ranges 5.1. measuring circuit choice

[5.1.] Select measuring circuit 1 or 2

Select the active measuring circuit for the next steps.

Selected menu item is inverted

Menu-Pos-No./**ok**-Function/Active button

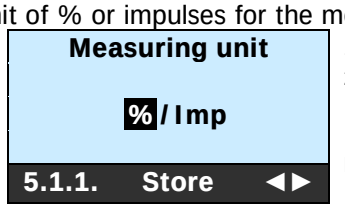


After pressing the ok button the display changes to the selected measuring circuit menu (1). 5.1.1.

[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



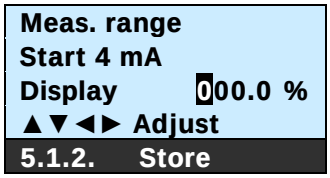
1. use ▲▼-buttons to define the unit in % or Impulses
2. press **ok b**utton more than 2 seconds

.
Display changes to menu item 5.1.2.

[5.1.2.] Measuring range starting point

Set the start point of the selected measuring range (e.g. **20.0** – 60.0 %). By defining the start and the end point you can ***spread*** the mA signal and therefore get a higher resolution in this area.

Selected character is inverted



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

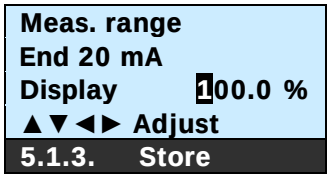
The new spreading is immediately activated

Display changes to the next menu item 5.1.3.

[5.1.3.] 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 b**utton more than 2 seconds

The new spreading is immediately activated

Display changes back to menu 5.1.

[5.1.6.] 2. Measuring circuit level: measuring start

Fix the measuring beginning for the filling level measuring
(For excample 70.0 %; active probe length starts at 70.0% filling level) Measurement range = 70 - 100 %

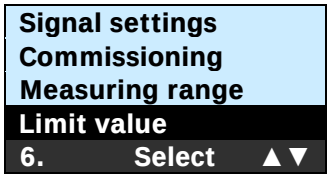
Selected character is inverted
Active botton navigation

1. use ▲▼◄►-buttons to define the end point
2. press **ok** button more than 2 seconds; the new spread immediately gets active.
Display changes back to menu 5.1.

4.1.6. [6.] Limit values

In the limit value menu all limit values related parameters can be set.

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.

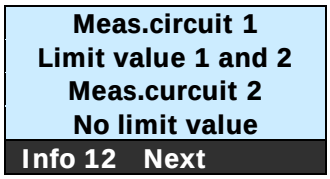
Sub-menu measurement ranges 6.1. Measuring circuit choice

MIQ 8110/8130/8160

1. Measuring circuit batch-seperation	Limit value 1 Lo/Hi OC/Relay 1	(static only)
	Limit value 2 Lo/Hi OC/Relay 2	(prefer dynamic seperation
detection (ID/↑↓)		
1. Measuring circuit interfacial layer level	Limit value 1 Lo/Hi OC/Relay 1	(static 20% only)
	Limit value 2 Lo/Hi OC/Relay 2	(static 80% only)

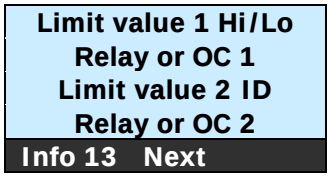
2. Measuring circuit No limit value

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.

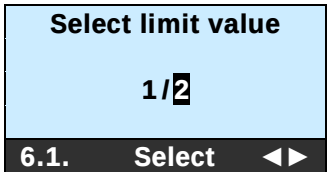
Menu--Information
For measuring circuit 1



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

[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.] Choose static or dynamic

At the continuous measurement of interfacial layer level with bar probe, the function dyn is inactive; the choice mask is not shown. At batch separation with pipe or bar probe the limit value 2 can be adjusted, stat or dyn for the interface layer Detektion ID.

With the static limit value you can:

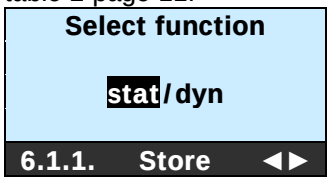
- adjusting an exact and reproducible limiting value for a defined measuring range according to 100%
- reading the desired measuring value % and programming as a limit value %.

With the dynamic limit value for measuring cicuit 2 you can:

- detecting the separating layer independently of a product way and qualities like DK value, electrical conductivity with most different signal courses, density, viscosity, temperature, pressure as well as product coting and flow speed in the pipe probe, automatically.
- in function of the DK value and electrical conductivity of the two phases a interfacial layer transition can be decoded as of 6 impulses measurement modification.

Measurement value processing see table 2 page 11.

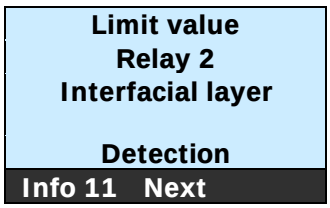
Choice display is inverted
Measured-value processing function static/ dynamic for separating layer detection



1 use ▲▼◄►-buttons to define the function
2. Press **ok** button more than 2 seconds; select function gets active
This mask is for interfacial detection programming only

Menu--Information

for measuring circuit 1 limit value 2 on dynamic

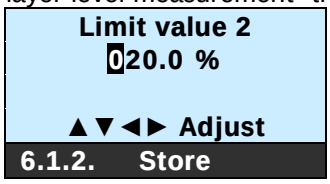


After pressing the ok button the display changes to the mask 6.1.4.
If the limit value 2 is static, the ID algorithm turned off.
A static limit value can be to progamm

[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

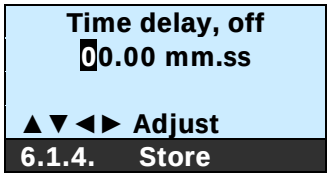


1. use ▲▼◄►-buttons the limit value will define
2. press **ok b**utton more than 2 seconds
Display changes to the next menu item 6.1.4.

[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



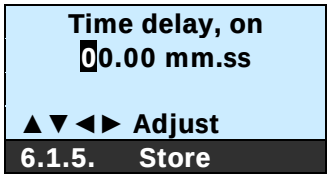
1. use ▲▼◄►-buttons to define the time delay off, drop
2. press **ok** button more than 2 seconds

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. 7 Fail Safe settings

The separation detection is activated (dynamic), output 2 stands on FSL (OC de-energizet; relay off, cut-out valve closed). At start ID detection the cut-out valve opens and closes if the interfacial layer is decoded. FS position valve closed.

Selected menu item is inverted

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

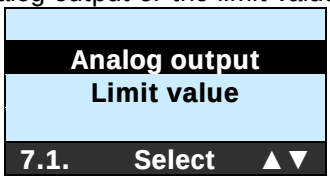
The selected definition is immediately activated
Display changes back to menu item 6.

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

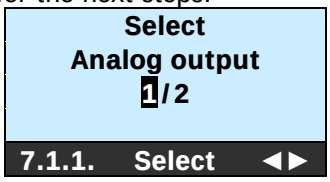


After pressing the **ok** button the display changes to the selected measuring circuit menu (1). 7.1.1

[7.1.1.] Select measuring circuit 1 or 2

Select the active measuring circuit for the next steps.

selected menu item is inverted

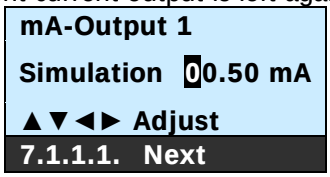


After pressing the **ok** button the display changes to the selected measuring circuit menu (1). 7.1.1

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

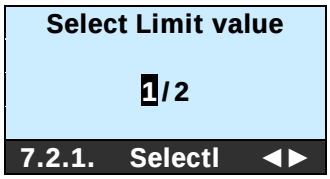
With this function the active current output (load 750 Ω) can be tested.
The current output can be increased in 0.1 steps starting at 0.5 mA and ending at max. 22.0 mA.
The mask becomes the measurement current output is left again actively.

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

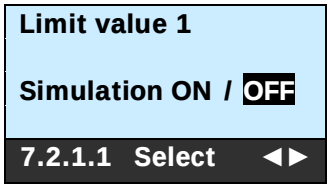
selected character is inverted



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.

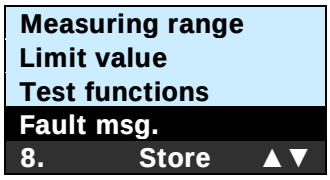
2. **C**-button back

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

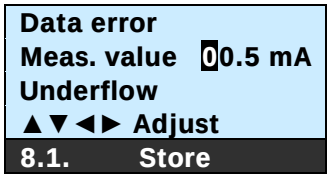


After pressing the **ok b**utton the display changes to the sub menu fault messages 8.1.

[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



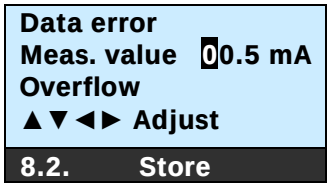
1. use ▲▼◄► -buttons to define the current output
2. press **ok b**utton more than 2 seconds

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



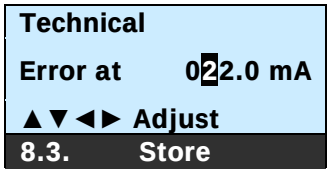
1. use ▲▼◄► -buttons to define the current output
2. press **ok b**utton more than 2 seconds

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.

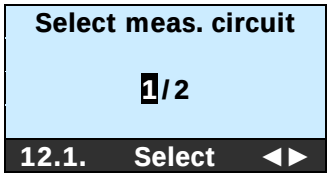
4.1.9. [12.] Calculation parameter

[12.1.] Choice measuring circuit 1 oder 2 (MIQ 8110/8130/8260)

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.

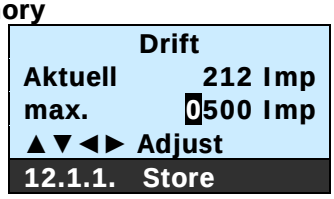
selected character is inverted



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

[12.1.1.] Drift memory

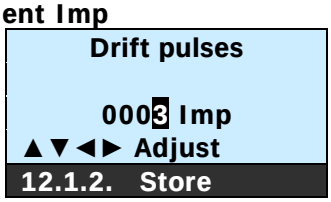
Option number for the modification is inverted



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

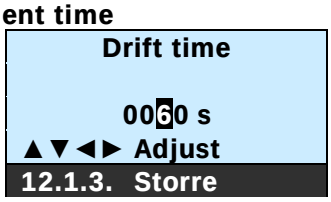
Option number for the modification is inverted



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



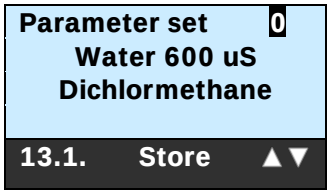
1. use▲▼◄►-buttons the max. drift will defined
2. press **ok b**utton more than 2 seconds; Time interval for drift compensation

4.1.10. [13.] Archive

[13.1.] Active parameter set store interfacial layer level measuring IL

The next free parameter set substitute for interfacial layer seems on the right above and it can be stored. All seven parameter sentences are occupied 0 is shown. You choose one parameter set substitute which can be made over to it and you store the new parameter set substitute under this number.

Option number for the modification is inverted

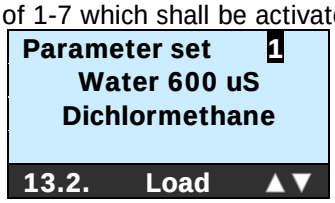


1. (0) use ▲▼◄► -buttons You choose the new parameter place (1-7) from overwrite. A number between 1 appears and the place is still 7 freely.
2. pressing ok button longer for 2 seconds; the active parameter set substitute is stored Display changes load to 13.2

[13.2.] Load active parameter set by continuous of interfacial layer

You choose the new parameter set of 1-7 which shall be activated.

Option number for the modification is inverted



1. use ▲▼◀▶-buttons you select the new parameter set (1-7) this one shall be loaded newly (activated).
2. pressing ok button longer for 2 seconds; Parameter set substitute is loaded and activated.

Display changes load to 13.3

[13.3.] Deleting the stored product measurements

Only product names and the corresponding measurements which are not used in a parameter set substitute can be deleted.

Option number for the modification is inverted

1. use ▲▼◀▶-buttons you select the new product
2. pressing ok button longer for 2 seconds; Select product measurement is deleted.

Display changes back to 13.

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. Commissioning the mipromex with a pipe probe

5.1.1. Batch seperation layer detection 1. Measuring circuit

This commissioning adjusting is in a mono plant for a tube probe. The adjustings are in the batch operation for a static level switch detection of the separating layer. You follow the most important parameter for the short commissioning. The ring probe is built-in in pipe. The pipe is empty!

Menu-Code	Description	Sample		Commissioning	
2.4.	Choosing the function for the operation with tube probes	Detection		Detection	
2.7.1	Check the probe type	TSS80 DN50		TSS80 DN...	
2.7.2	Check the serial no. of the probe	1050066-08			
3.1.1.	Enter your TAG-, position- or measuring site- number	LS1200			
3.1.2.	Check the probe factor Only to be changed when using a replacement probe	1.000			
3.1.3.	Accept the actual zero point Important: the pipeline must be empty, Important: the pipe probe must be dry and clean Pipe probes are calibrated in the factory to 60 pulses **If the probe is already product, please keep the factory settings**	Optimal between 60–80			
3.1.5.	Accept measuring span MS: Fill the pipeline with your petrochemical product with the highest water content The MS is product and nominal diameter depending	2810			
6.1.	Define the limiting values 1 and 2 OC or Relay 1 for empty status signal 2 for separating layer transition	GW 1	GW2	GW1	GW2
6.1.1.	Choice function of the limiting value 2	-	**stat**	-	stat
6.1.2.	Limit value in %/Imp for empty status signal, separating layer transition	5.0 %	20.0 %		
6.1.4.	Fall-delay time from OC/Relay in minutes, seconds	00.00	00.00		
6.1.5.	On-delay time from OC/Relay in minutes, seconds	00.00	00.00		
6.1.6.	Fail-Save-position of the relay output	FSL	FSH		
1.6.1.	Safe parameter	ok			

Chart. 8 Commissioning batch seperation

5.1.2. Batch seperation layer detection 1. Measuring circuit

This commissioning adjusting is in a multiple system for a ring probe. The adjustings are in the Batch operation for a dynamic detection of the separating layer. The detections start becomes over the display in the **start separation detection** or over the three digital inputs started. Follow the most important parameter for the short commissioning. The ring probe is built-in in pipe. The pipe is empty!

Menu-Code	Description	Sample		Commissioning	
2.4	Choosing the function for the operation with pipe probes	Detection		Detection	
2.7.1	Check the probe type	TSS80 DN50		TSS80 DN...	
2.7.2	Check the serial no. of the probe	1050066-08			
3.1.1.	Enter your TAG-, position- or measuring site- number	LS1200			
3.1.2.	Check the probe factor Only to be changed when using a replacement probe	1.000			
3.1.3.	Accept the actual zero point Important: the pipeline must be empty, Important: the pipe probe must be dry and clean Pipe probes are calibrated in the factory to 60 pulses **If the probe is already product, please keep the factory settings**	Optimal between 60–80			
3.1.5.	Accept measuring span MS: Fill the pipeline with your petrochemical product with the highest water content The MS is product and nominal diameter depending	2810			
3.1.16.	Define the signal filter of first order	0.02			
6.1.	Define the limiting values 1 and 2 OC or Relay 1 for empty status signal / 2 for separation detection	GW 1	GW2	GW1	GW2
6.1.1.	Choice function of the limiting value 2	-	**dyn**	-	dyn
6.1.2.	Limit value in %/Imp for empty status signal, separating layer transition	5.0 %	-		-
6.1.4.	Fall-delay time from OC/Relay in minutes, seconds	00.00	00.00		
6.1.5.	On-delay time from OC/Relay in minutes, seconds	00.00	00.00		
6.1.6.	Fail-Save-position of the relay output	FSL	-		-
6.1.6.	Fail-Save-position of the relay output	FSL	FSH		
1.6.1.	Safe Parameter	ok			
Display	Defining the sensitivity of the separation detection	**4 Start**			

Chart. 9 Automatic commissioning of batch separating detection

5.2. Commissioning the mipromex with a bar probe

5.2.1. Continuous interfacial layer level 1. Measuring circuit

This commissioning adjusting is in a separating on container for a bar probe. The adjustings are for a continuous separating layer standard measuring. You follow the most important parameter for the short commissioning. Bar probe is installed and adjusted into decanters. The vessel is empty, the bar probe is clean and dry!

Menu-Code	Description	Sample		Input	
2.4	Choosing the function for the operation with bar probes	Level		Level	
2.7.1	Check the probe type	STM 180/100 SB R IL ES SW V			
2.7.2	Check the serial no. of the probe	1050066-06			
3.1.1.	Enter your TAG-, position- or measuring site- number	LS1200			
3.1.2.	Check the probe factor Only to be changed when using a replacement probe	1.000			
3.1.3.	Accept the actual zero point Important: the bar probe must be dry and clean **If the probe is already soiled with product please keep the factory settings**	Optional between 60–80			
3.1.8.	Measurement acceptance of the ***lower phase*** probe dipped 100%. Product choice or new definition [**]	--new--			
3.1.9.	A " new" product name must be defined	Mechlo			
3.1.10.	The measurement of the new product is stored	855			
3.1.12.	Measurement acceptance of the ***upper phase*** probe dipped 100%. Product choice or new definition [**]	Water 600 mS			
3.1.16.	Define the signal filter of first order	0.02			
6.1.	Define the limiting values 1 and 2 OC or Relay 1 for empty status signal / 2 for separation detection	GW 1	GW2	GW1	GW2
6.1.2.	Limit value in %/Imp for empty status signal, separating layer transition	20.0 %	80.0 %		
6.1.4.	Fall-delay time from OC/Relay in Minutes, Seconds	00.00	00.00		
6.1.5.	On-delay time from OC/Relay in Minutes, Seconds	00.00	00.00		
6.1.6.	Fail-Save-position of the relay output	FSL	FSH		
1.6.1.	Safe parameter	Ok			
13.1.	Store parameter set	1-7 ok			

Chart. 10 Commissioning of the continuous interfacial layer

[**]If the active bar probe is too long, the measurement at partial filling can be lower phase projected and entered manually without separating layer. Example:

MW = 736 Impulse / Short-term one depth = 450 mm / aktive probe length = 1000 mm
Calculation **MW**: 736 Imp. / 450 mm x 1000 mm = **1636 Imp**

5.2.2. Seperation reaction/supervising level 2. Meas. circuit

This commissioning adjusting is in a separating on container for a bar probe for the following applications:

- Visualization of the seperating reaction of the separating layer
- Supervising the filling level of the upper phase
- Compensation of one phase at the continuous seperating layer measuring (achivationscode for 2nd meas. circuit)

The adjustings are in the continuous or batch operation for an interfacial level or separation reaction. Follow the most important parameter for the short commissioning. Bar probe is installed and adjusted into decanters. The bar probe is bare, clean and dry!

Menu-Code	Discription	Sample	Input
2.6	Choose the function of the 2nd measuring circuit for the operation with bar probes	Filling level upper phase	
2.7.1	Check the probe type	STM 400/300 SB R N DN50 C	
2.7.2	Check the serial no. of the probe	1050066-08	
3.1.1.	Enter your TAG-, position- or measuring site- number	LS1250	
3.1.2.	Check the probe factor Only to be changed when using a replacement probe	1.000	
3.1.3.	Accept the actual zero point Important: the bar probe must be dry and clean **If the probe is already soiled with product please keep the factory settings**	Optimal between 60–80	
	The measurement points > 400, i an electronic calibration is recommended after item 5.3, page 41 The measuring range MS otherwise is limited		
3.1.5.	**M**easuring range take-over **MS**: Dip the stick probe to 100% in the upper phase. The MS is product and dimension dependent. The measuring range must at part covered bar probes being 100% converted and entered after 3.1.7.	3150	
3.1.16.	Define the signal filter of first order	0.02	
5.1.6.	Defining the rest volume (outside measurement range) At filling level only!	12.0 %	
6.1.	Caution no limiting values are available	-	-
1.6.1.	Safe Parameter	ok	

Chart. 11 Commissioning Filling level probe 2. Measuring circuit

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. 12 Electronic calibration operation sequence of operations

5.4. Inspection release of the parameters MIQ 8110 / 8130 IL

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

Company		Order	
Building		PO no.	
Plant		Project no.	
mipromex **MIQ** V1.16	Ex ia ☐ Exd ☐ Non-ex ☐	Serial no.	
Measuring circuit 1		Pos./Tag no.	
Probe type		Serial no.	
Coax cable	Serial no.	MTI	Serial no.

Chart for operating settings Interfacial layer

Menu	items	Meas. Circuit	Description		Final inspection	Commissioning
↓ Commissioning Menu items	**1.**		***Basic settings***			
	1.1.		Language Deutsch/Français/English		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	
	3.		***Signal settings***			
	3.1.19.	**MC1**	Sensitivity ID hysteresis **level 1**	Imp	0006	
	3.1.20.	**MC1**	Sensitivity ID variation MeV 1	Imp	0002	
4.			***Commissioning***			
4.1.	2.4.	**MC1**	Selection 1 Interfacial	Detection / Level		
4.2.	5.1.1.	**MC1**	Measuring unit	%/Imp	%	
4.3.	3.1.1.	**MC1**	Entry of position/TAG no.			
4.4.	3.1.2.	**MC1**	Probe factor		1.000	
	MS calculation for Interfacial detection (batch separation)					
Info02		**MC1**	*Zero adjustment for tube/bar probe empty/clean*			
	MS calculation for Interfacial level (continuous separation)					
Info06		**MC1**	*Zero adjustment for bar probe empty/clean*			
4.5./6.	3.1.3./4.	**MC1**	Zero point importing on keystroke / manual entry	Imp		
Info07		**MC1**	*IL bar probe immerged at 100% in the lower phase*			
4.7./8.	3.1.8./9.	**MC1**	Choose the product or key it in		LOWER PHASE	
4.10./12.	3.1.10./11.	**MC1**	Importing of the MeV of the product on keystroke / manual entry	Imp		
Info08		**MC1**	*IL bar probe immerged at 100% in the upper Phase*			
4.13.	3.1.12.	**MC1**	Choose the product or key it in		UPPER PHASE	
4.15./16.	3.1.14./15.	**MC1**	Importing of the MeV of the product on keystroke / manual entry	Imp		
4.17.	3.1.16.	**MC1**	Signal filter	s	00.1	
4.18.	3.1.21	**MC1**	IL calculation Zero point Measuring span Measuring range inversion	Imp Imp	 no	
Info03		**MC1**	*Fill tube/bar probe with aqueous phase*			
4.9./11.	3.1.5./7.	**MC1**	Importing of the MeV of the product on keystroke / manual entry	Imp		
4.19.	2.7.1.	**MC1**	Probe type			
4.20.	2.7.2.	**MC1**	Probe serial no..			
Info13		**MC1**	Limit value 1 H/L (R/OC) Limit value 2 ID (R/OC)		***At detection only!***	

Info15		**MC1**	*Limit value 1* *(Digital output 1)*		
4.22.	6.1.2.	**DO1**	Set limit value		
4.23.	6.1.4.	**DO1**	Time delay, off mm.ss	00.00	
4.24.	6.1.5.	**DO1**	Time delay, on mm.ss	00.00	
4.25.	6.1.6.	**DO1**	FSL / FSH position	FSL	
Info16		**MC1**	*Limit value 2* *(Digital output 2)*		
	Interfacial detection (batch separation)				
4.26.	6.2.1.	**DO2**	Select function *(stat / **dyn**)*		
Info11		**DO2**	*Limit value relay 2 Interfacial detection*	***Only if limit value 2 is set on function dyn!***	
4.27.	6.1.2.	**DO2**	Set limit value *(→ stat)*		
4.28.	6.1.4.	**DO2**	Time delay, off mm.ss	00.00	
4.29.	6.1.5.	**DO2**	Time delay, on mm.ss	00.00	
4.30.	6.1.6.	**DO2**	FSL / FSH position *(→ stat)*	FSH	
	Interfacial level (continuous separation)				
4.31.	13.1.		Store the set of parameters	1	
4.44.	1.6.1.		Store the parameters	OK ☐	OK ☐
	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**	Maximal drift storage in pulses Imp	0100	
	12.1.2.	**MC1**	Drift pulses per time unit Imp	0	
	12.1.3.	**MC1**	Drift time s	0060	
	13.		***Archives → active only at Interfacial level***		
	13.1.		Store the active set of operating parameters on the next free memory location	1 UPPER PHASE LOWER PHASE	
	13.2.		Load the selected set of parameters for MeV processing	press **OK** button >2s ton confirm	

Final inspection carried out by:

Commissioning carried out by:

Interfacial *LEVEL:* **External choice of the set of parameters!**
D1 – D3 to set on 1 according to the chart (+24 V)
D1 – D3 to set on 0 (0 V) ➔ the last stored set of parameters is active!

Choice of para-meter set	Digital inputs			Product name lower phase	MeV [Imp]	Product name upper phase	MeV [Imp]
	D1	D2	D3				
Not active	0	0	0				
1	1	0	0	LOWER PHASE		UPPER PHASE	
2	0	1	0				
3	1	1	0				
4	0	0	1				
5	1	0	1				
6	0	1	1				
7	1	1	1				

1	LOWER PHASE		2	UPPER PHASE		3		
4			5			6		
7			8			9		
10			11			12		
13			14			15		
16			17			18		
19			20			21		
22			23			24		
25			26			27		
28			29			30		
31			32			33		
34			35			36		
37			38			39		
40			41			42		
43			44			45		
46			47			48		
49			50					

5.5. Inspection release of the parameters MIQ 8260 ID

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

Company		Order	
Building		PO no.	
Plant		Project no.	

mipromex **MIQ 8260** V1.16 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 Interfacial detection (ID)

Menu	items	Meas. circuit	Description	Final inspection	Commissioning
↓ Commissioning Menu items	**1.**		***Basic settings***		
	1.1.		Language Deutsch/Français/English	English	
	1.2.1.		Time		
	1.2.2.		Date		
	1.3.1		Password	0000	
	1.4.1.		Lighting	on	
	1.4.2.		Lighting time in minutes	1	
	3.		***Signal settings***		
	3.1.19.	**MC1**	Sensitivity ID hysteresis **grade 1** Imp	0006	
	3.1.20.	**MC1**	Sensitivity ID variation MeV 1 Imp	0002	
4.			***Commissioning***		
4.1.	2.4.	**MC1**	Selection 1 Interfacial **Detection /** Level	Detection	Detection
4.2.	5.1.1.	**MC1**	Measuring unit %/Imp	Imp	
4.3.	3.1.1.	**MC1**	Entry of position/TAG no.		
4.4.	3.1.2.	**MC1**	Probe factor	1.000	
	MS calculation for Interfacial detection (batch separation)				
Info02		**MC1**	*Zero adjustment for bar probe empty/clean*		
4.5./6.	3.1.3./4.	**MC1**	Zero point importing on keystroke / manual entry Imp		
Info03		**MC1**	*Fill tube/bar probe with aqueous phase*		
4.9./11.	3.1.5./7.	**MC1**	Importing of the MeV of the product on keystroke / manual entry Imp		
4.17.	3.1.16.	**MC1**	Signal filter s	00.1	
4.19.	2.7.1.	**MC1**	Probe type		
4.20.	2.7.2.	**MC1**	Probe serial no.		
Info12			*Measuring circuit 1 limit value 1 and 2* *Measuring circuit 2 no limit value*		
Info13			*Limit value 1 H/L relay or open collector 1* *Limit value 2 ID relay or open collector 2*		
Info15		**MC1**	*Limit value 1 (Digital output 1)*		
4.22.	6.1.2.	**DO1**	Set limit value	Imp	
4.23.	6.1.4.	**DO1**	Time delay, off mm.ss	00.00	
4.24.	6.1.5.	**DO1**	Time delay, on mm.ss	00.00	
4.25.	6.1.6.	**DO1**	FSL / FSH position	FSL	
Info16		**MC1**	*Limit value 2 (Digital output 2)*		
	Interfacial detection (batch separation)				

4.26.	6.1.1.	**DO2**	Select function *(stat / **dyn**)*			
Info11		**DO2**	*Limit value relay 2 Interfacial detection*		***Only when limit value 2 dynamic!***	
4.27.	6.1.2.	**DO2**	Set limit value *(→ stat)*		Imp	
4.28.	6.1.4.	**DO2**	Time delay, off	mm.ss	00.00	
4.29.	6.1.5.	**DA2**	Time delay, on	mm.ss	00.00	
4.30.	6.1.6.	**DA2**	FSL / FSH position *(→ stat)*		FSH	
4.32.	2.5.	**MC2**	Selection 2 Upper layer level / Separation behavior			
4.34.	2.7.1.	**MC2**	Probe type			
4.35.	2.7.2.	**MC2**	Probe serial no.			
4.36.	3.1.1.	**MC2**	Entry of position/TAG no.			
4.37.	3.1.2.	**MC2**	Probe factor		1.000	
Info06		**MC2**	*Zero adjustment for bar probe empty/clean*			
4.38./39.	3.1.3./4.	**MC2**	Zero point importing on keystroke / manual entry	Imp		
Info04		**MC2**	*Immerge the level bar probe at 100% in the upper phase*			
Info05		**MC2**	*Immerge the indicating probe at 100% in the aqueous phase*			
4.40./41.	3.1.5./7.	**MC2**	Importing of the MeV on keystroke / manually	Imp		
4.42.	3.1.16.	**MC2**	Signal filter	s	00.1	
4.43.	5.1.6.	**MC2**	Residual hight level (upper phase only)	%	000.0	
4.44.	1.6.1.		Store the parameters		OK ☐	OK ☐

	7.		***Test functions***			
	7.1.1.1.	**MC1**	mA output 1 simulation	mA	00.5 ☐ ok	☐ ok
	7.1.1.1.	**MC2**	mA output 2 simulation	mA	00.5 ☐ ok	☐ ok
	7.2.1.1.	**DO1**	Limit value 1 simulation OFF/ON		☐ ok	☐ ok
	7.2.1.1.	**DO2**	Limit value 2 simulation OFF/ON		☐ ok	☐ ok
	8.		***Fault messages***			
	8.1.		Data failure untercut 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.		***Calculating parameters***			
	12.1.1.	**MC1**	Max drift storage 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 storage 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:

Commissioning carried out by:

5.6. Inspection release of the parameters MIQ 8260 IL

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

Company		Order	
Building		PO no.	
Plant		Project no.	

mipromex **MIQ 8260** V1.16 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 Interfacial level (IL)

Menu	items	Meas. circuit	Description	Final inspection	Commissioning
↓ Commissioning Menu items	**1.**		***Basic settings***		
	1.1.		Language Deutsch/Français/English	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	on	
	1.4.2.		Lighting time in minutes	1	
4.			***Commissioning***		
4.1.	2.4.	**MC1**	Selection 1 Interfacial **Level** / Detection	Level	Level
4.2.	5.1.1.	**MC1**	Measuring unit %/Imp	%	
4.3.	3.1.1.	**MC1**	Entry of position/TAG no.		
4.4.	3.1.2.	**MC1**	Probe factor	1.000	
	MS calculation for Interfacial level (continuous separation)				
Info06		**MC1**	*Zero adjustment for bar probe empty/clean*		
4.5./6.	3.1.3./4.	**MC1**	Zero point importing on keystroke / manual entry Imp		
Info07		**MC1**	*The IL bar probe must be immerged in the lower phase at 100%*		
4.7./8.	3.1.8./9.	**MC1**	Choose the product or key it in	LOWER PHASE	
4.10./12.	3.1.10./11.	**MC1**	Importing of the MeV of the product on keystroke / manual entry Imp		
Info08		**MC1**	*The IL bar probe must be immerged in the upper phase at 100%*		
4.13./14.	3.1.12./13.	**MC1**	Choose the product or key it in	UPPER PHASE	
4.15./16.	3.1.14./15.	**MC1**	Importing of the MeV of the product on keystroke / manual entry Imp		
4.17.	3.1.16.	**MC1**	Signal filter s	00.1	
4.18.	3.1.21	**MC1**	IL calculation Zero point Imp Measuring span Imp Measuring range inversion	no	
4.19.	2.7.1.	**MC1**	Probe type		
4.20.	2.7.2.	**MC1**	Probe serial no.		
Info12			*Measuring circuit 1 limit value 1 and 2* *Measuring circuit 2 no limit value*		
Info15		**MC1**	*Limit value 1 (Digital output 1)*		
4.22.	6.1.2.	**DO1**	Set limit value	Imp	
4.23.	6.1.4.	**DO1**	Time delay, off mm.ss	00.00	
4.24.	6.1.5.	**DO1**	Time delay, on mm.ss	00.00	
4.25.	6.1.6.	**DO1**	FSL / FSH position	FSL	

Info16		**MC1**	*Limit value 2* *(Digital output 2)*			
4.27.	6.1.2.	**DO2**	Set limit value		Imp	
4.28.	6.1.4.	**DO2**	Time delay, off	mm.ss	00.00	
4.29.	6.1.5.	**DO2**	Time delay, on	mm.ss	00.00	
4.30.	6.1.6.	**DO2**	FSL / FSH position		FSH	
	Interfacial level (continuous separation)					
4.31.	13.1.		Store the active set of operating parameters on the next free memory location		UPPER PHASE LOWER PHASE	
4.33.	2.6.	**MC2**	Selection 2 Upper layer level / Separation behavior / *Product compensation (not active!)*			
4.34.	2.7.1.	**MC2**	Probe type			
4.35.	2.7.2.	**MC2**	Probe serial no.			
4.37.	3.1.2.	**MC2**	Probe factor		1.000	
Info06		**MC2**	*Zero adjustment for bar probe* *empty/clean*			
4.38./39.	3.1.3./4.	**MC2**	Zero point importing on keystroke / manual entry	Imp		
Info04		**MC2**	*Immerge the level bar probe at 100% in the upper phase*			
Info05		**MC2**	*Immerge the indicating probe at 100% in the aqueous phase*			
4.40./41.	3.1.5./7.	**MC2**	Importing of the MS on keystroke / manual entry	Imp		
4.42.	3.1.16.	**MC2**	Signal filter	s	00.1	
4.43.	5.1.6.	**MC2**	Residual hight level (upper phase only)	%	000.0	
4.44.	1.6.1.		Store the 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	
	12.		***Calculation parameters***			
	12.1.1.	**MC1**	Max drift storage 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 storage in pulses	Imp	0100	
	12.1.2.	**MC2**	Drift pulses per time unit	Imp	0	
	12.1.3.	**MC2**	Drift time	s	0060	
	13.		***Archives → active at interfacial level only***			
	13.1.		Store the active set of operating parameters on the next free memory location		UPPER PHASE LOWER PHASE	
	13.2.		Load the selected set of parameters for MeV processing		press **OK** button >2s to confirm	

Final inspection carried out by:

Aquasant Messtechnik AG / Bubendorf /

Commissioning carried out by:

Interfacial *LEVEL:* **External choice of the set of parameters!**
D1 – D3 to set on 1 according to the chart (+24 V)
D1 – D3 to set on 0 (0 V) ➔ the last stored set of parameters is active!

Choice of para-meter set	Digital inputs			Product name lower phase	MeV [Imp]	Product name upper phase	MeV [Imp]
	D1	D2	D3				
not active	0	0	0				
1	1	0	0	LOWER PHASE		UPPER PHASE	
2	0	1	0				
3	1	1	0				
4	0	0	1				
5	1	0	1				
6	0	1	1				
7	1	1	1				

1	LOWER PHASE		2	UPPER PHASE		3		
4			5			6		
7			8			9		
10			11			12		
13			14			15		
16			17			18		
19			20			21		
22			23			24		
25			26			27		
28			29			30		
31			32			33		
34			35			36		
37			38			39		
40			41			42		
43			44			45		
46			47			48		
49			50					

6. Fault finding

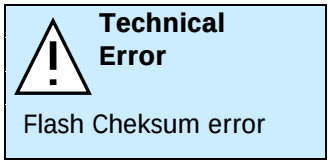
All **mipromex** –microprocessor units are equipped with a diagnostic system, which makes fault finding easier and facilitates quicker correction in case of malfunction occurrence

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

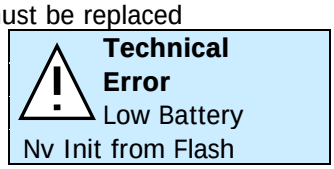
1. Press ok button longer than 2 seconds.
Disturbance is confirmed. The display changes to the previous active mask.
2. in pos. 1.6.1. Data of RAM loading into flash
Send renewed disturbance for repair!

2. Flash has failed

Disturbance info

Flash is faulty; Send for repair!

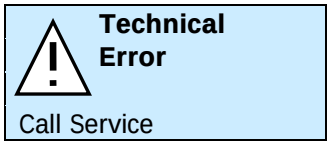
3. Battery is unloaded and must be replaced



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:

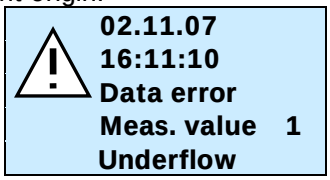
∫ **Send unit back for repair!**

6.2. During operation

6.2.1. Data error

7.1.1. Technical error; Measured value 1 underflow

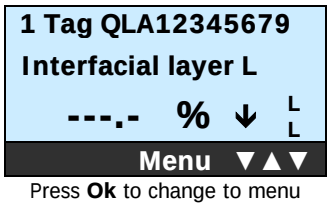
The error message can have different origin.



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!



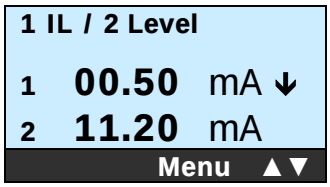
Description of 1st meas. circuit position
Description of 1st meas. value
Non display of meas. value
Error display
ok button-functions / active keys

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
Current value indication current outputs
ok button-functions / active keys



Press **Ok** to change to menu

use the ▲▼ buttons to scroll within display mode

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**

∫ **Change the connecting wires to terminal 1/2 in the probe electronics.**

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):

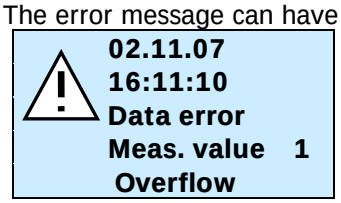
5. Hazardous area data input of **mipromex** defective;

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

7.1.1. Technical error; Measured value 1 overflow

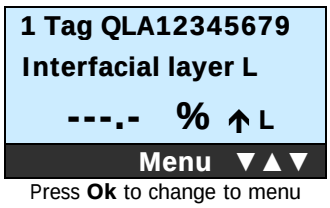
The error message can have different origin.

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

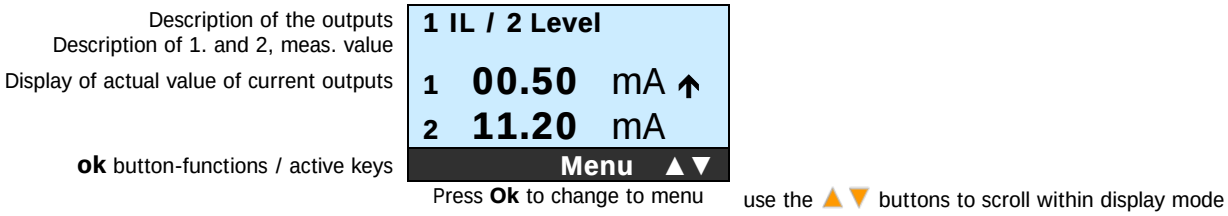
Description of 1st meas. circuit position
Description of 1st meas. value
Non display of meas. value
Error display
ok button-functions / active keys



Press **Ok** to change to menu

Limit value 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.

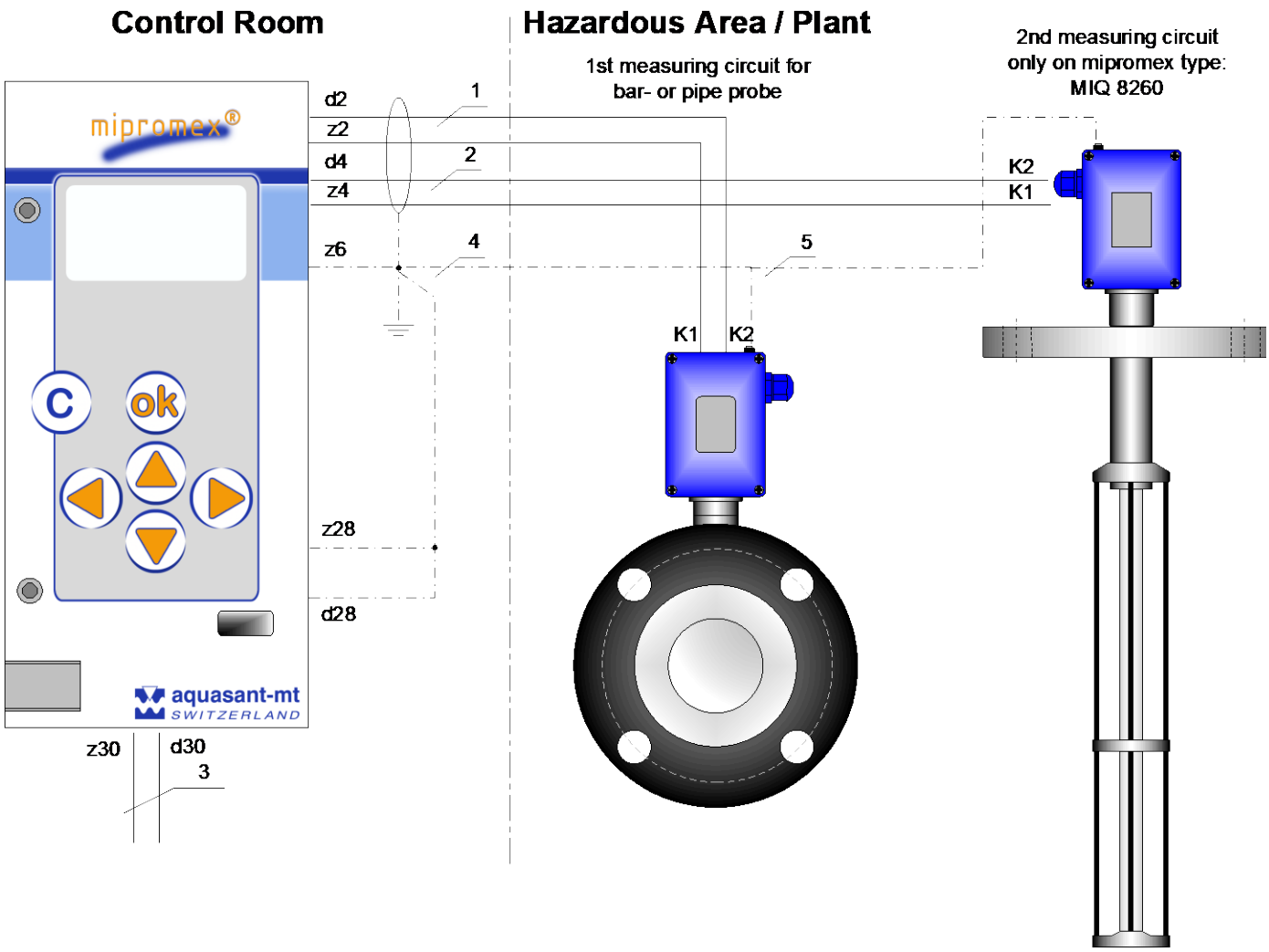
6.2.3. Radio equipment

∫ 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

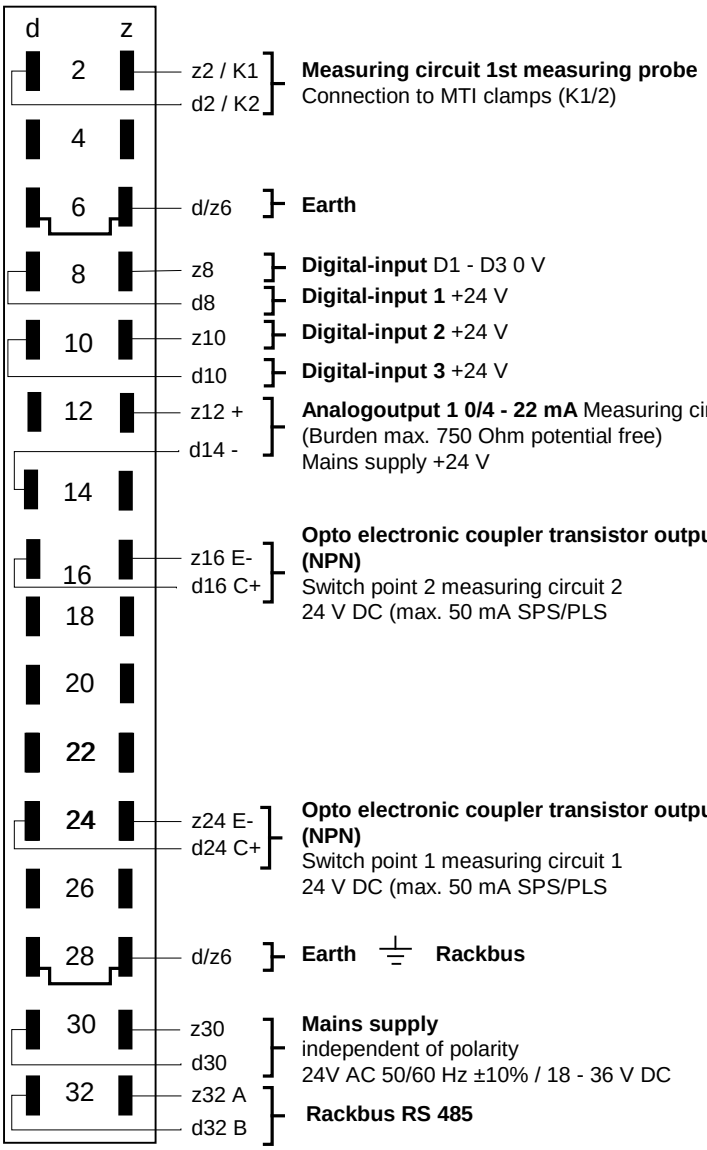


Pic. 2 Wiring diagram

1. 2 x 0.75 mm² shielded (both sides earthed in switch room and probe head)
2. 2 x 0.75 mm² shielded (both sides earthed in switch room and probe head)
3. 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)
4. Mains 24 V AC 50/60 Hz /DC ±10 % control voltage, polarity independent, without inductive load
5. MTI housing and probe are connected to the (factory/plant) equipment earths

7.2. Connections to female multipoint connector with 32 poles, type: MIQ 8110

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



Pic. 3 FI 32 female multipoint connector to MIQ 8110

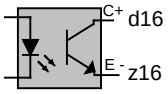
ELECTRICAL DATA

Euro plug-in card pin assignment

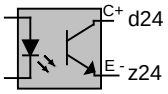
24 V-Version

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

Optokoppler
NPN



Optokoppler
NPN

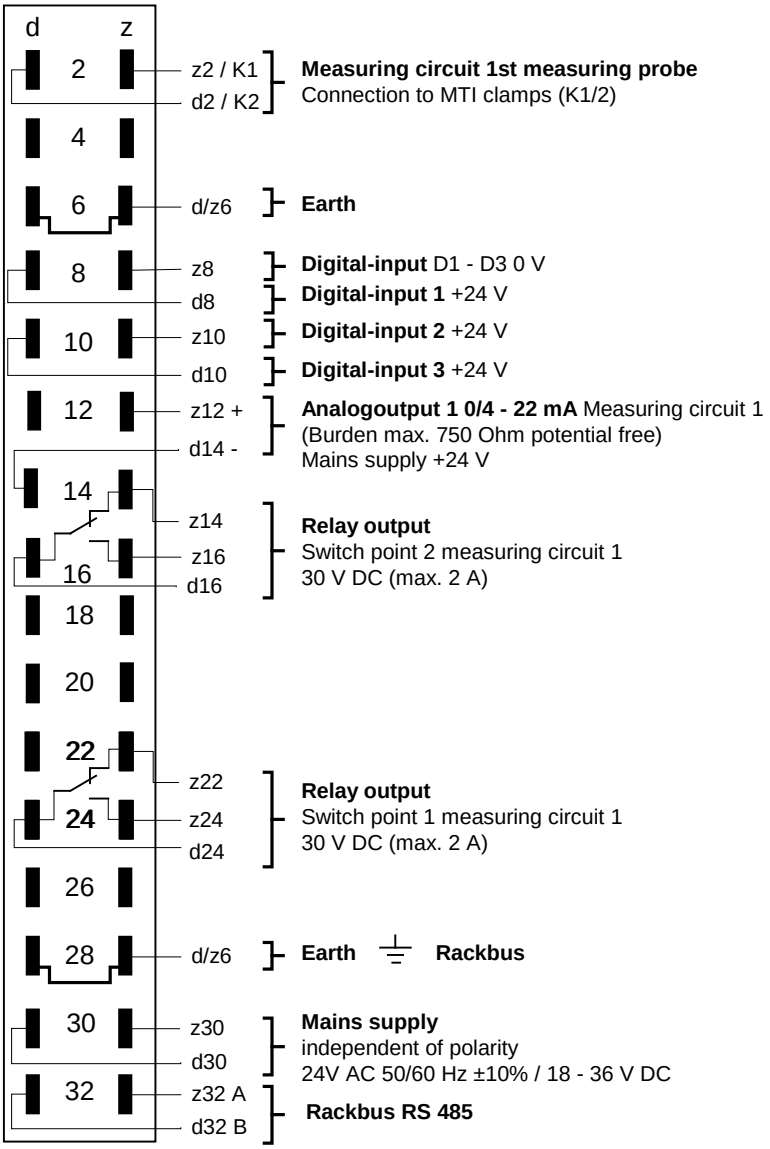


Switch point 1 for measuring circuit 1 ***FSL*** (Fail Safe Low) ***Lo-Alarm***
Opto-electronic coupler transistor output NPN 1 disabled (measured value < limit value)
Switch point 2 for measuring circuit 1 ***FSH*** (Fail Safe Hi) ***Hi-Alarm***
=> at dynamic Batch separation FS position is inactive
Opto-electronic coupler transistor output NPN 1 disabled (measured value < limit value)

Technical error level of analog output according to parameterization
Opto-electronic coupler transistor output NPN 1 disabled

7.3. Connections to female multipoint connector with 32 poles, type: MIQ 8130

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



Pic. 4 FI 32 female multipoint connector to MIQ 8130

ELECTRICAL DATA

Euro plug-in card pin assignment

24 V-Version

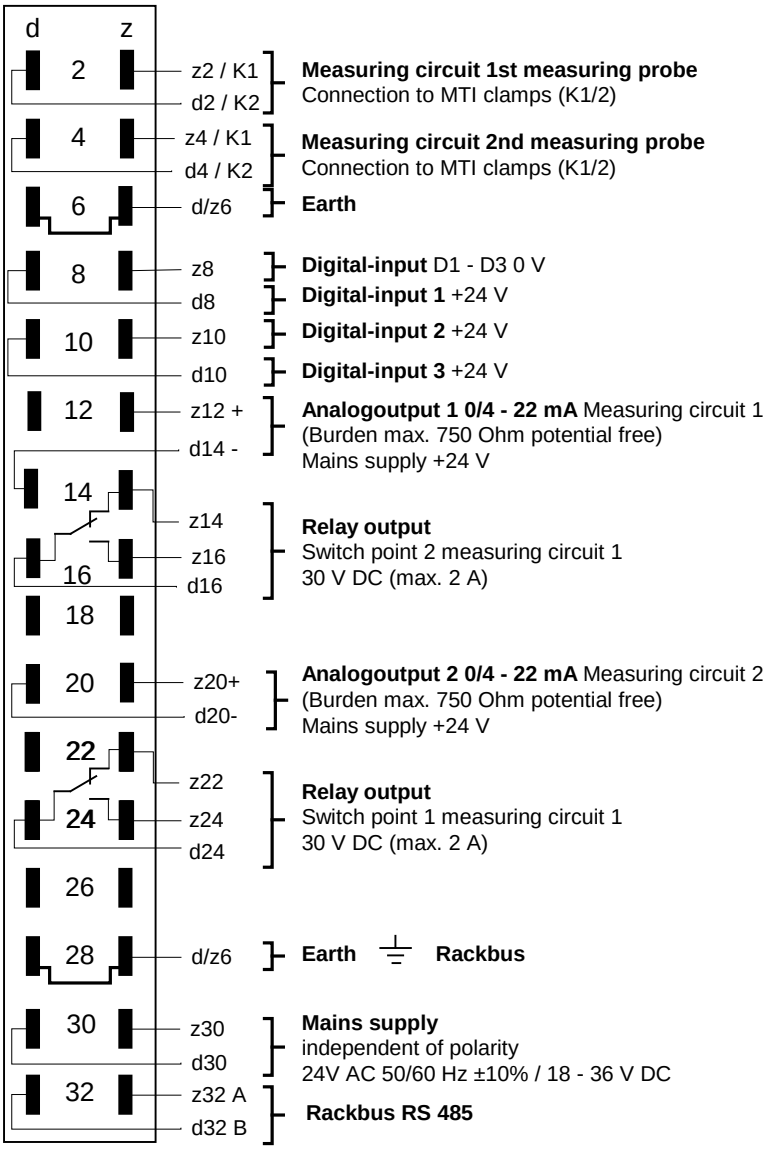
Error message programmable in
0.1 mA-steps;
0.5 – 3.9 / 20.1 – 22 mA

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***
=> at dynamic batch separation ***FS-position*** is inactive
Relay falling (measured value < limit value)

Technical error level of analog output according to parameterization
Relay falling

7.4. Connections to female multipoint connector with 32 poles, type: MIQ 8260

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



Pic. 5 FI 32 female multipoint connector to MIQ 8260

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

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)

Technical error level of analog output according to parameterization
Relay falling

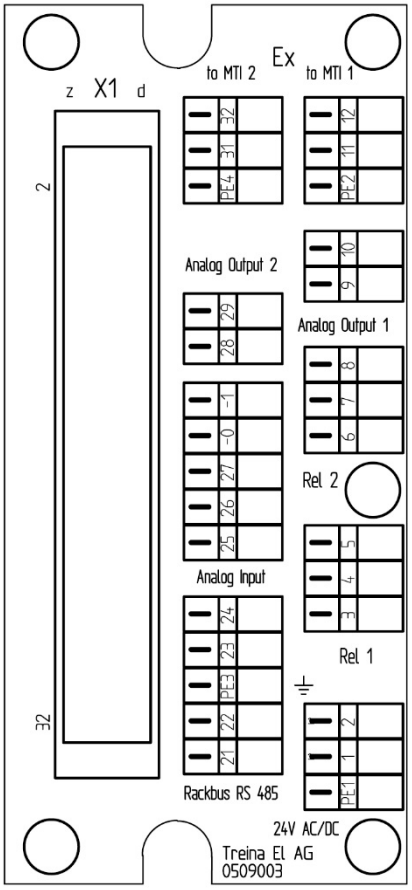
7.5. Printed circuit board for 19"-Rack, Monorack, Wall- and Table Top housing

The Cage Clamp® connection clamps for cable diameter 0.08 – 2.5 mm^2 bared length 5 – 6 mm /0.22 in (without cable cover) are mounted with a special pre spanning tool.
Color coding:

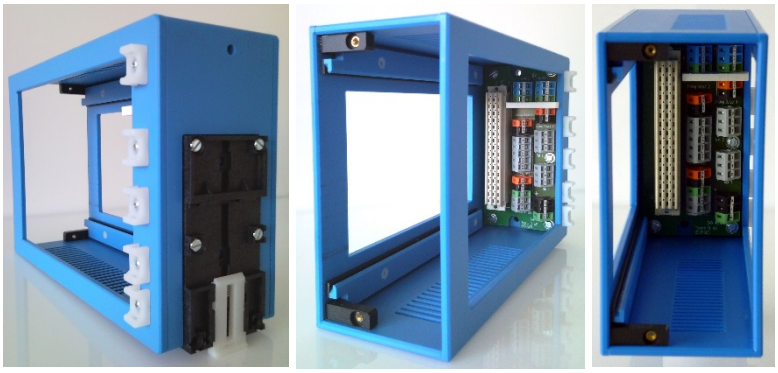
- To the **blue** clamps: connection of the intrinsically safe field circuit. This one being allowed, with connection lines in accordance to DIN EN 60079-14, to be routed into the hazardous area.
- The **black/orange**- clamps are polarity independent current- inputs or -outputs

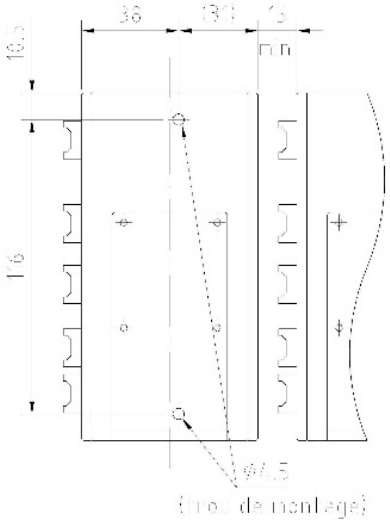
Dimension: H x B x T 137 x 77 x 210 mm / for 19“-plug in modul Euro 3 HE/12TE profundity 160 mm

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

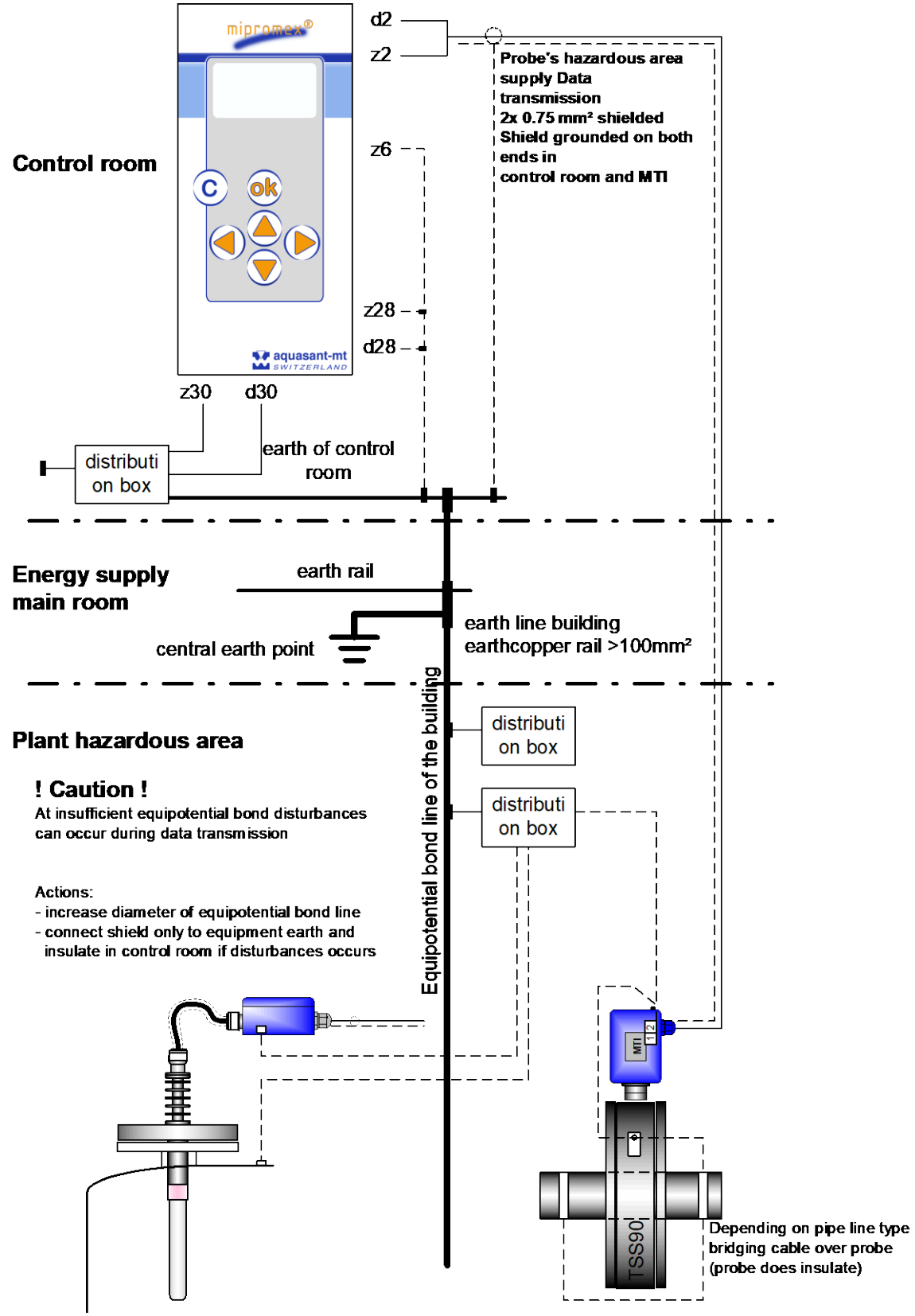




Pic. 6 Connection print to mipromex

7.6. Earthing of microprocessor units and probes

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



Pic. 7 Earthing principle

8. Technical Data

8.1. mipromex Interfacial layer measuring unit type: MIQ 8110

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
- Interfacial layer measuring unit with intrinsically safe supply for one measuring electronic MTI xxx/xx
- Continuous inerfacial layer level measurement
- Dynamic interfacial layer detection for batch separation
- Menu driven, multi language unit
- 1 analog output 4 – 20 mA and 2 digital outputs OC
- Ex supply for one measuring electronics
- shielded 19“ plug in module
- Commissioning sequence of operations

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

Open collector NPN output
1st potential free NPN transistor output for the limit switch as min./max. variation security min./max. selectable.
Switching voltage 30 Vdc /2 A, I/O=2kV, -40 to 85°C

Rupturing tension NPN output
30 V DC

Continuous current NPN output
50 mA

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

CE

8.2. mipromex Interfacial layer measuring unit type: MIQ 8130

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

- Interfacial layer measuring unit with intrinsically safe supply for one measuring electronic MTI xxx/xx
- Continuous inerfacial layer level measurement
- Dynamic interfacial layer detection for batch separation
- Menu driven, multi language unit
- 1 analog output 4 – 20 mA and 2 relay outputs
- Ex supply for one measuring electronics
- shielded 19“ plug in module
- Commissioning sequence of operations

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 18 – 36 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

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

CE

8.3. mipromex- Interfacial layer measuring unit type: MIQ 8260

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
- Interfacial layer measuring unit with intrinsically safe supply for two measuring electronics MTI xxx/xx
- Continuous inerfacial layer level measurement or
- Dynamic interfacial layer detection for batch separation
- Menu driven, multi language unit
- 2 analog output 4 – 20 mA and 2 relay outputs
- Ex supply for two measuring electronics
- shielded 19“ plug in module
- Commissioning sequence of operations

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

CE

8.4. Measuring electronic MTI for measuring probes

Probes with separate or integrated measuring electronic MTI

HOTSPOTS

- *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*

MTI structure:

- Aluminium gush, Inox or Polyester-protection housing IP 65
- Cover and screw are saved
- Viton cover joint
- screwed cable gland M16 x 1.5 or M20 x 1.5

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:

Under value -10/+0 pF // upper value -0/+10 pF

Temperature range:

–40 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
Your version:	MTI									

MTI	= measuring electronic slot	MTI

Measuring range:

10	= 3000 Imp/10 pF	
15	= 2400 Imp/10 pF	
20	= 1600 Imp/10 pF	
50	= 650 Imp/10 pF	50
100	= 350 Imp/10 pF	
200	= 180 Imp/10 pF	
300	= 120 Imp/10 pF	
400	= 90 Imp/10 pF	
600	= 60 Imp/10 pF	
...	= Special range	

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 housing version

E	= Slot	E
G	= Protection housing IP 65 blue powder coated angled	
Gd	= Protection housing IP 68 blue powder coated	
Gv	= Protection housing IP 68 stainless steel	Gv
Gk	= Protection 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	
K	= measuring electronic slot angled for plastics-head	

Ex-version: SEV 09 ATEX 0133 X / CE 0036/049

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 pF Ceramic trimmer (vibrationsfest) (all MTI from 10 to 50)	K

Version:

H	= increased ESD (electrostatic) protection	H

Pic. 8 Measuring electronic

8.4.1. 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 aluminium housing, powder coated, solvent resistant, cover and screws secured; IP 65; coax probe connector and cable gland M16x1.5 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 of mipromex; cable length up to (100m) 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, ideal +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	CE
EN 61241-0:2004	EN 61241-11 :2006	
EN 60079-0:2006	EN 60079-11 :2007	

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

Only for connection to microprocessor unit mipromex

SEV 09 ATEX 0132 Ⓔx II (2)G [Ex ia] IIC
EMC-tested, STS 024test 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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