OMU 408UNI

4/8 CHANNEL DATA LOGGER
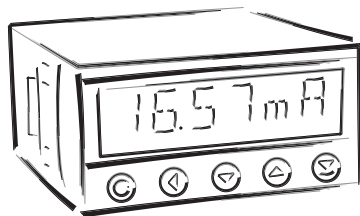DC VOLTMETER/AMMETER
PROCESS MONITOR
OHMMETER
THERMOMETER FOR PT 100/500/1 000
THERMOMETER FOR NI 1 000
THERMOMETER FOR THERMOCOUPLES
DISPLAY UNIT FOR LIN. POTENTIOMETERS

SAFETY INSTRUCTIONS

Please, read the enclosed safety instructions carefully and observe them!
These instruments should be safeguarded by isolated or common fuses (breakers)!
For safety information the EN 61 010-1 + A2 standard must be observed.
This instrument is not explosion-safe!

TECHNICAL DATA

Measuring instruments of the OMU 408 series conform to the European regulation 73/23/EWG and 2004/108/EC.

The instruments are up to the following European standards:
EN 61010-1   Electrical safety
EN 61326-1   Electronic measuring, control and laboratory devices – Requirements for EMC "Industrial use"

Seismic capacity:
IEC 980: 1993, čl. 6

The instruments are applicable for unlimited use in agricultural and industrial areas.

CONNECTION

Supply of energy from the main line has to be isolated from the measuring leads

2.1 DESCRIPTION

OMU 408UNI is an 8-channel logger designed for maximum efficiency and user comfort while maintaining its favourable price. It is a multifunction instrument with the option of configuration for 8 various input options, easily configurable in the instrument menu.

The instrument is based on an 8-bit microcontroller with a multichannel 24-bit sigma-delta converters that secure high accuracy, stability and easy operation of the instrument.

Great quality of the instrument, owing to the high rate of sampling on individual channels, is the chance to evaluate all measuring inputs at the same time.

TYPES AND RANGES

UNI		
	DC:	0…60/150/300/1200 mV
	PM:	0…5 mA/0…20 mA/4…20 mA/±2 V/±5 V/±10 V/±40 V
	OHM:	0…100 Ω/0…1 kΩ/0…10 kΩ/0…100 kΩ/Автомат. выбор диапазона
	RTD-Pt:	Pt 50/100/Pt 500/Pt 1000
	RTD-Cu:	Cu 50/Cu 100
	RTD-Ni:	Ni 1 000/Ni 10 000
	T/C:	J/K/T/E/B/S/R/N/L
	DU:	Linear potentiometer (min. 500 Ω)

PROGRAMMABLE PROJECTION

Selection:	of type of input and measuring range
Measuring range:	fixed
Setting:	manual, optional projection on the display may be set in the menu for both limit values of the input signal, e.g. input 0…20 mA > 0…850,0
Projection:	-999…9999

COMPENSATION

of conduct:	in the menu it is possible to perform compensation for 2-wire connection
of conduct in probe:	internal connection (conduct resistance in measuring head)
of CJC (T/C):	manual or automatic, in the menu it is possible to perform selection of the type of thermocouple and compensation of cold junctions, which is adjustable or automatic(temperature at the brackets)

LINEARIZATION

Linearization:*	by linear interpolation in 255 points/for 8 Channels (solely via OM Link)

DIGITAL FILTERS

Floating average:	from 2…30 measurements
Exponen. average:	from 2…100 measurements
Arithmetic average:	from 2…100 measurements
Rounding:	setting the projection step for display

MATHEMATIC FUCTIONS

Min/max. value:	registration of min./max. value reached during measurement
Tare:	designed to reset display upon non-zero input signal
Peak value:	the display shows only max. or min. value
Mat. operations:	polynome, 1/x, logarithm, exponential, power, root, sin x and mathematic operatin between input - total, divergence, divide

* only for types DC, PM, DU

EXTERNAL CONTROL

Lock:	control keys blocking
Hold:	display/instrument blocking
Tare:	tare activation/resetting tare to zero
Resetting MM:	resetting min/max value
Memory:	data storage into instrument memory
SWITCH:	switching measuring inputs

2.2	OPERATION

The instrument is set and controlled by five control keys located on the front panel. All programmable settings of the instrument are performed in three adjusting modes:

LIGHT **Simple programming menu**
- contains solely items necessary for instrument setting and is protected by optional number code

PROFI **Complete programming menu**
- contains complete instrument menu and is protected by optional number code

USER **User programming menu**
- may contain arbitrary items selected from the programming menu (LIGHT/PROFI), which determine the right (see or change)
- acces without password

All programmable parameters are stored in the EEPROM memory (they hold even after the instrument is switched off).

OMLINK Complete instrument operation and setting may be performed via OM Link communication interface, which is a standard equipment of all instruments.

The operation program is freely accessible (www.orbit.merret.cz) and the only requirement is the purchase of OML cable to connect the instrument to PC. It is manufactured in version RS 232 and USB and is compatible with all ORBIT MERRET instruments. Another option for connection is with the aid of data output RS 232 or RS 485 (without the need of the OML cable).

The program OM LINK in „Basic" version will enable you to connect one instrument with the option of visualization and archiving in PC. The OM Link „Standard" version has no limitation of the number of instruments connected.

2.3	РАСШИРЕНИЕ

Comparators are assigned to monitor four or eight limit values with relay output. The user may select limits regime: LIMIT/DOSING/FROM-TO. The limits have adjustable hysteresis within the full range of the display as well as selectable delay of the switch-on in the range of 0...99,9 s. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

Data outputs are for their rate and accuracy suitable for transmission of the measured data for further projection or directly into the control systems. We offer an isolated RS232 and RS485 with the ASCII or DIN MessBus protocol.

Analog outputs will find their place in applications where further evaluating or processing of measured data is required in external devices. We offer universal analog output with the option of selection of the type of output - voltage/current. The value of analog output corresponds with the displayed data and its type and range are selectable in Menu.

Measured data record is an internal time control of data collection. It is suitable where it is necessary to register measured values. Two modes may be used. FAST is designed for fast storage (40 records/s) of all measured values up to 8 000 records. Second mode is RTC, where data record is governed by Real Time with data storage in a selected time segment and cycle. Up to 250 000 values may be stored in the instrument memory. Data transmis sion into PC via serial interface RS232/485 and OM Link

3. INSTRUMENT CONECTION

The instrument supply leads should not be in proximity of the incoming low-potential signals.

Contactors, motors with larger input power should not be in proximity of the instrument.

The leads into the instrument input (measured quantity) should be in sufficient distance from all power leads and appliances. Provided this cannot be secured it is necessary to use shielded leads with connection to ground (bracket E).

The instruments are tested in compliance with standards for use in industrial area, yet we recommend to abide by the above mentioned principles.

MEASURING RANGES

TYPE	INPUT I	INPUT U
DC		0...60/150/300/1 200 mV
PM	0...5/20 mA/4...20 mA	±2/±5/±10/±40 V
OHM	0...100 Ω/1 kΩ/10 kΩ/100 kΩ	
RTD-Pt	Pt 50/100/Pt 500/ Pt 1 000	
RTD-Cu	Cu 50/100	
RTD-Ni	Ni 1 000/10 000	
T/C	J/K/T/E/B/S/R/N/L	
DU	Linear potentiometer (min. 500 Ω)	

Termination of RS 485 communication line

X3 - Termination of commuication line RS 485

Full	Significance	Default	Recomendation
1-2	connect L+ to (+) source	terminalconnected	
3-4	termination of line 120 Ohm	disconnected	connect at the end of line
5-6	connect L- to (-) source	terminalconnected	do not disconnect

RS 485 line should have a linear structure - wires (ideally shielded and twisted) should lead from one device to another.

POWER SUPPLY

L8 L4 L3 L7 L6 L2 L1 L5

L N E
+ -

A B C   D E F   G H I   J K L   M N O

25 26 27   28 29 30 31 32 33 34 35 36 37   38 39 40 41 42 43 44 45 46 47

1 2 3 4   5 6 7 8 9 10 11 12 13 14   15 16 17 18 19 20 21 22 23 24   CJC

GND
TxD   232
RxD

GND
Rx/Tx-   485
Rx/Tx+

GND
AO-I
AO-U

GND DC, PM
INPUT - I
INPUT - U

RTD, OHM, Ni
E+ IS+ IS- E-
E+ IS+ IS- E-
ES+ ES- ES-

GND EXT. 1 EXT. 2 EXT. 3

T/C

DU

E B
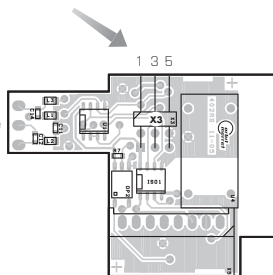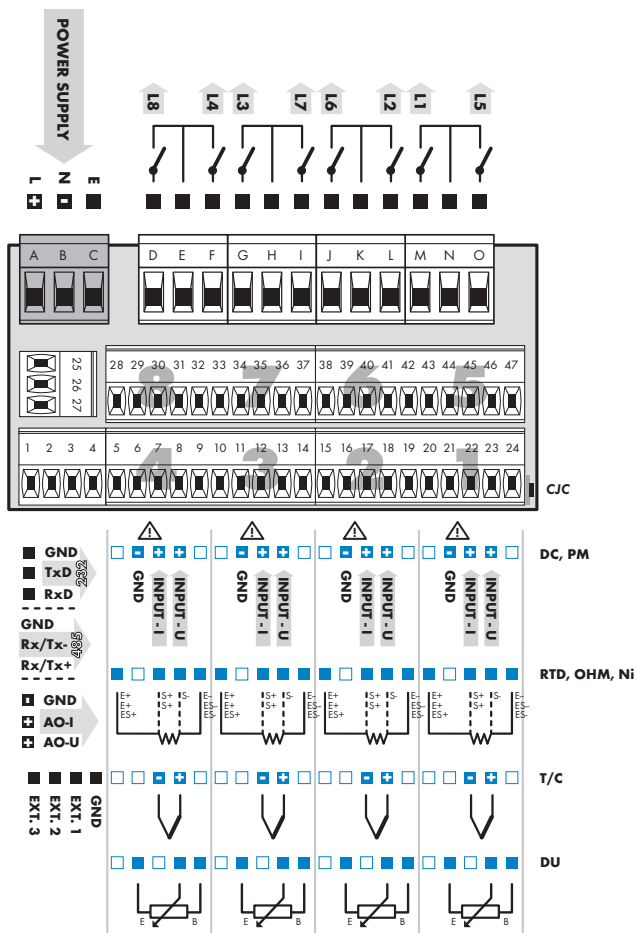
The inputs do not have galvanic separation among themselves!
Maximum of 250 mA may be connected to "INPUT - I", i.e. 10-times range overload.
Maximum difference between the GND brackets is 0,2V - DC, PM, TC, DU (internally connected through resistors 100 Ω)
Brackets E - have to be on the same potnetial - OHM, RTD-Pt, RTD-Ni, RTD-Cu (internal galvanic connection)

SETTING
PROFI

For expert users
Complete instrument menu
Access is password protected
Possibility to arrange items of the **USER MENU**
Tree menu structure

SETTING
LIGHT

For trained users
Only items necessary for instrument setting
Access is password protected
Possibility to arrange items of the **USER MENU**
Linear menu structure

SETTING
USER

For user operation
Menu items are set by the user (Profi/Light) as per request
Access is not password protected
Optional menu structure either tree (PROFI) or linear (LIGHT)

4.1	SETTING

The instrument is set and controlled by five control keys located on the front panel. All programmable settings of the instrument are performed in three adjusting modes:

LIGHT   **Simple programming menu**
- contains solely items necessary for instrument setting and is protected by optional number code

PROFI   **Complete programming menu**
- contains complete instrument menu and is protected by optional number code

USER   **User programming menu**
- may contain arbitrary items selected from the programming menu (LIGHT/PROFI), which determine the right (see or change)
- acces without password

All programmable parameters are stored in the EEPROM memory (they hold even after the instrument is switched off).

Complete instrument operation and setting may be performed via OM Link communication interface, which is a standard equipment of all instruments.

The operation program is freely accessible (www.orbit.merret.cz) and the only requirement is the purchase of OML cable to connect the instrument to PC. It is manufactured in version RS 232 and USB and is compatible with all ORBIT MERRET instruments.

Another option for connection is with the aid of data output RS 232 or RS 485 (without the need of the OML cable).

Scheme of processing the measured signal
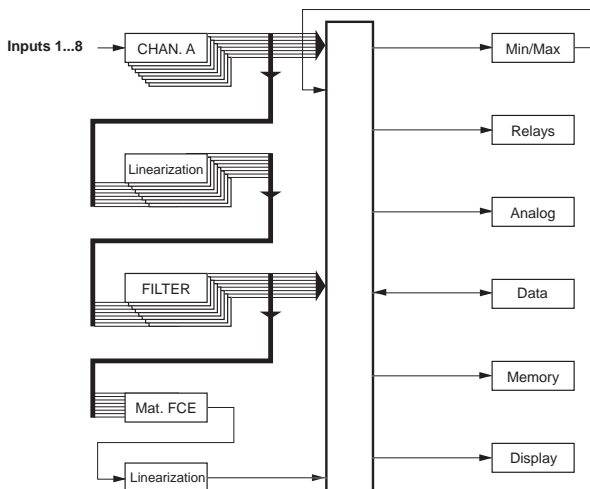
Настройки и управление прибором осуществляются с помощью пяти кнопок, находящихся на передней панели.
С их помощью, в меню, можно изменять и выставлять любые доступные параметры прибора.

Indication of measured input
- red LED by green display
- green LED by red display

Measured value
(red/green LED)

Function (green LED)

M   Min/max. value
T   Tare

Measuring units
(red/green LED)

Relay status
(red LED)

ON   the digit is lit
OFF   the digit is not lit
OFF   the digit is flashing > *limits with restriction (hysteresis, delay)*
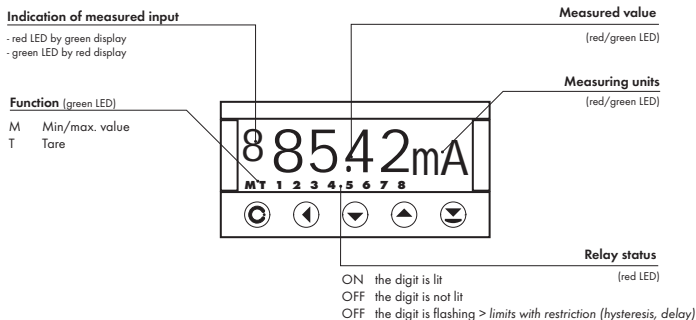
Symbols used in the instructions

DC **PM**
DU **OHM** **RTD** **T/C**   Indicates the setting for given type of instrument

DEF   values preset from manufacture

42   symbol indicates a flashing light (symbol)

MIN   inverted triangle indicates the item that can be placed in USER menu

CONECT.   broken line indicates a dynamic item, i.e. it is displayed only in particular selection/version

⊠   after pressing the key the set value will not be stored

💾   after pressing the key the set value will be stored

📖 30   continues on page 30

Setting the decimal point and the minus sign

DECIMAL POINT
Its selection in the menu, upon modification of the number to be adjusted it is performed by the control key ◀ with transition beyond the highest decade, when the decimal point starts flashing . Positioning is performed by ▲/▼.

THE MINUS SIGN
Setting the minus sign is performed by the key ▼ on higher decade. When editing the item substraction must be made from the current number (e.g..: 013 > ▼ , on class 100 > -87)

Control keys functions

KEY	MEASUREMENT	MENU	SETTING NUMBERS/SELECTION
	access into USER menu	exit menu	quit editing
	programmable key function	back to previous level	move to higher decade
	programmable key function	move to previous item	move down
	programmable key function	move to next item	move up
	programmable key function	confirm selection	confirm setting/selection
+			numeric value is set to zero
+	access into LIGHT/PROFI menu		
+	direct access into PROFI menu		
+		configuration of an item for "USER" menu	
+		determine the sequence of items in "USER - LIGHT" menu	

Setting items into „USER" menu

• in **LIGHT** or **PROFI** menu
• no items permitted in **USER** menu from manufacture
• on items marked by inverted triangle

USER

legend is flashing - current setting is displayed

return to item

NO YES SHOW
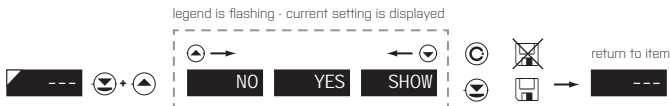
NO	item will not be displayed in USER menu
YES	item will be displayed in USER menu with the option of setting
SHOW	item will be solely displayed in USER menu

SETTING
LIGHT

For trained users
Only items necessary for instrument setting
Access is password protected
Possibility to arrange items of the **USER MENU**
Linear menu structure

Access password

1428 ©+☉ PASSW. ☉ 0 ☉

Selection of number of inputs   Type of instruments   Measuring range
INPUTS ☉ 4 INP ☉ TYPE 1 ☉ PM ☉ MODE 1 ☉ 4-20mA ☉

RTD **OHM**   Selecting projection and connection
CONE.1 ☉ 2-WIRE ☉ FORM.A ☉ 000.0 ☉

T/C
CONE.1 ☉ EXT.1TC ☉ CJ.TEM. ☉ 23 ☉ FORM.A ☉ 000.0 ☉

DC **PM** **OHM** **DU**
MIN A ☉ 0 ☉ MAX A ☉ 100 ☉ FORM.A ☉ 000.0 ☉

LIM.L1 ☉ 20 ☉ LIM L2 ☉ 30 ☉ LIM L3 ☉ 40 ☉ LIM L4 ☉ 50 ☉
Option - comparator

LIM L5 ☉ 60 ☉ LIM L6 ☉ 70 ☉ LIM L7 ☉ 80 ☉ LIM L8 ☉ 90 ☉

TYP.A.O. ☉ I 20 ☉ MIN A.O. ☉ 0 ☉ MAX A.O. ☉ 100 ☉
Option - Analog output

Menu type   Return to manufacture calibration   Return to manufacture setting
MENU ☉ LIGHT ☉ RE.CAL. ☉ YES ☉ RE.SET. ☉ FIRM. ☉

DU
C.MIN ☉ YES ☉ C.MAX ☉ YES ☉
Calibration - only for "DU"

Language selection   New password
LANG. ☉ ENGL. ☉ PAS.LI. ☉ 0 ☉

Identification   Type of instruments   SW 1: version   SW 2: version   current no. of inputs
IDENT. ☉ YES ☉ OMU 408UNI 64-A01 64-A01 4 INP. ▸ 1428 Возврат к режиму измерения

Preset from manufacture	
Password	"0"
Menu	LIGHT
USER menu	off
Setting the items	**DEF**

!
Upon delay exceeding 60 s the programming mode is automatically discontinued and the instrument itself restores the measuring mode

1428

C + ▼

PASSW. ▼ → 0 | Entering access password for access into the menu → ▼

PASSW. Access into instrument menu

PAS = 0
- access into menu is unrestricted, after releasing keys you automaticaly move to first item of the menu

PAS > 0
- access into menu is protected ny number code

Set "Passw." = 42 | Example

0 ⊙ 1 ⊙ 2 ◁ 02 ⊙ 12 ⊙ 22 ⊙

32 ⊙ 42 ▼ INPUTS

INPUTS ▼ → ⊙ → 1 INP. | 2 INP. | 3 INP. | 4 INP. | 5 INP. | 6 INP. ← ▼ C ✗

⊙ 7 INP. | 8 INP. | 2 FAST | 3 FAST | 4 FAST ▼ 💾

INPUTS Selection of number of active measuring inputs of the instrument

- number of active measuring inputs affects the adjustable range of measuring rate
- inputs 5…8 are displayed only in 8-channel version (not in standard version)

- if fast measuring is required (max 40 m/s) option "**FAST.**" may be used, when set number of inputs is active (connected are always only odd inputs 1, 3, 5 or 7)

- **DEF** = 4 INP.

Selection of number of active measuring inputs - 4 x > 4 INP. | Example

4 INP. ▼ TYPE 1

TYPE 1

| DC | PM | OHM | RTD- Pt | RTD-Ni | TC |
| DU | RTD-Cu |

TYPE 1 — Selection of the type of instrument

- primary selection of the type of instrument
- performs default setting **DEF** of values from manufacture, incl. calibration
- **DEF** = „PM"

Menu	Type of instrument
DC	DC voltmeter
PM	Process monitor
OHM	Ohmmeter
RTD-Pt	Thermometer for sensors Pt
RTD-Ni	Thermometer for sensors Ni
TC	Thermometer for thermocouples
DU	Display for lin. potentiometer
RTD-Cu	Thermometer for sensors Cu

TYPE 1

Type "PM" Example

PM MODE 1

Type DC	📖 16
Type PM	📖 18
Type OHM	📖 20
Type RTD-Pt	📖 22
Type RTD-Ni	📖 24
Type T/C	📖 26
Type DU	📖 28
Type RTD-Cu	📖 30

INPUT / CHANNEL A > **DC**

MODE 1

60 mV 150 mV 300 mV 1200mV

MODE 1	Selection of the instrument measuring range

DEF = 60 mV

	Menu	Measuring range
MODE 1	60 mV	±60 mV
	150 mV	±150 mV
	300 mV	±300 mV
	1200mV	±1,2 V

Range ±150 mV   Example

60 mV   150 mV   MIN A

MIN A   0   Setting for minimum input signal

MIN A	Setting display projection for minimum value of input signal

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 0

Projection for 0 mV > MIN A = 0   Example

0   MAX A

MAX A → 100

Setting for maximum input signal

MAX A **Setting display projection for maximum value of input signal**

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 100

Projection for 150 mV > MAX A = 3500   Example

100 ◄ 100 ◄ 100 ▲ 200 ▲ 300 ▲ 400 ▼
500 ◄ 0500 ▲ 1500 ▲ 2500 ▲ 3500 ▼ FORM.A

FORM.A →

0000   000.o   00.oo   0.ooo   FLOA.P.

FORM.A **Setting projection of the decimal point**

- positioning of the DP is set here in the measuring mode

DEF = 000.o

Projection of DP on display > 0000   Example

000.o ▼   0000 ▼   MENU   *subsequent item on the menu depends on instrument equipment

📖 36

INPUT / CHANNEL A > **PM**

MODE 1

0-5mA | 0-20mA | 4-20mA | • • • | 0-10 V | 0-40 V | Er4-20

MODE 1	Selection of the instrument measuring range

DEF = 4 - 20 mA

	Menu	Measuring range
MODE 1	0-5mA	0...5 mA
	0-20mA	0...20 mA
	4-20mA	4...20 mA
	0-2 V	±2 V
	0-5 V	±5 V
	0-10 V	±10 V
	0-40 V	±40 V
	Er.4-20	4...20 mA, with error statement of „underfl ow" upon signal smaller than 3,36 mA

Range 0...20 mA   Example

4-20mA   0-2 V   MIN A

MIN A

0   Setting for minimum input signal

MIN A	Setting display projection for minimum value of input signal

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 0

Projection for 0 mA > MIN A = -25   Example

0 | 1 | 2 | 3 | 4 | 5

05 | -5 | -05 | -15 | -25 | MAX A

INPUT / CHANNEL A > **PM**

| MAX A | ⊝ → | 100 | Setting for maximum input signal | → | Ⓒ ⊠ ⊝ 💾 |

MAX A **Setting display projection for maximum value of input signal**

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 100

Projection for 20 mA > MAX A = 2500   Example

| 100 ◁ | 100 ◁ | 100 ▲ | 200 ▲ | 300 ▲ | 400 ▲ |
| 500 ◁ | 0500 ▲ | 1500 ▲ | 2500 ⊝ | FORM.A | |

| FORM.A | ⊝ → | 0000 | 000.₀ | 00.₀₀ | 0.₀₀₀ | FLOA.P. |
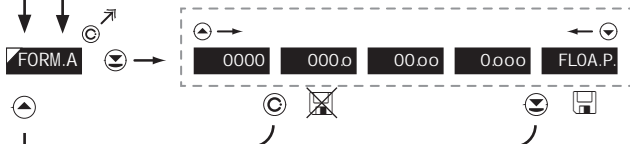
Ⓒ ⊠   ⊝ 💾

FORM.A **Setting projection of the decimal point**

- positioning of the DP is set here in the measuring mode

DEF = 000.₀

Projection of DP on display > 0000   Example

| 000.₀ ⊝ | 0000 ⊝ | MENU | *subsequent item on the menu depends on instrument equipment |

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INPUT / CHANNEL A > **OHM**

MODE 1

| 100 R | 1 K | 10 K | 100 K |

| MODE 1 | Selection of the instrument measuring range |

DEF = 100 Ω

	Menu	Measuring range
MODE 1	100 R	0...100 Ω
	1 k	0...1 kΩ
	10 k	0...10 kΩ
	100 k	0...100 kΩ

Range 0...10 kΩ   Example

| 100 R | | 1 k | | 10 K | | CONE.1 |

CONE.1

| 2-WIRE | 3-WIRE | 4-WIRE |

| CONE.1 | Selection of the type of sensor connection |

DEF = 2-WIRE

	Menu	Connection
CONE. 1	2-WIRE	2-wire
	3-WIRE	3-wire
	4-WIRE	4-wire

Type of connection - 3 wire > CONE. 1 = 3-WIRE   Example

| 2-WIRE | | 3-WIRE | | MIN A |

MIN A

| 0 |

Setting for minimum input signal

| MIN A | Setting display projection for minimum value of input signal |

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 0

Projection for 0 Ohm > MIN A = 0   Example

| 0 | | MAX A |

MAX A → 100   Setting for maximum input signal

MAX A   Setting display projection for maximum value of input signal

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 100

Projection for 10 kOhm > MAX A = 10000   Example

100   100   100   000   0000   00000   10000   FORM.A

FORM.A →   0000   000.o   00.oo   0.ooo   FLOA.P.

FORM.A   Setting projection of the decimal point

- positioning of the DP is set here in the measuring mode

DEF = 000.o

Projection of DP on display > 0000   Example

000.o   0000   MENU   *subsequent item on the menu depends on instrument equipment

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INPUT / CHANNEL A > **RTD-Pt**

MODE 1

EU-100 | EU-500 | EU-1k0 | US-100 | RU-50 | RU-100

CONE.1

MODE 1	Selection of the instrument measuring range

DEF = Pt 100

	Menu	Measuring range
	EU-100	Pt 100 (3 850 ppm/°C)
	EU-500	Pt 500 (3 850 ppm/°C)
MODE 1	EU-1k0	Pt 1000 (3 850 ppm/°C)
	US-100	Pt 100 (3 920 ppm/°C)
	RU-50	Pt 50 (3 910 ppm/°C)
	RU-100	Pt 100 (3 910 ppm/°C)

Range - Pt 1 000 > MODE 1 = EU-1k0   Example

EU-100 | EU-500 | EU-1K0 | CONE.1

CONE.1

2-WIRE | 3-WIRE | 4-WIRE

CONE.1	Selection of the type of sensor connection

DEF = 2-WIRE

	Menu	Connection
	2-WIRE	2-wire
CONE. 1	3-WIRE	3-wire
	4-WIRE	4-wire

Type of connection - 3 wire > CONE. 1 = 3-WIRE   Example

2-WIRE | 3-WIRE | FORM.A

FORM.A

0000   000.0   00.00

FORM.A	Setting projection of the decimal point

- positioning of the DP is set here in the measuring mode

DEF = 000.0

Projection of DP on display > 0000   **Example**

000.0   0000   MENU   *subsequent item on the menu depends on instrument equipment

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INPUT / CHANNEL A > **RTD-Ni**

MODE 1

5.0-1k | 6.2-1k | 5.0-10k | 6.2-10k

MODE 1	Selection of the instrument measuring range

DEF = Ni 1 000 - 5 000 ppm/°C

	Menu	Measuring range
MODE 1	5.0-1k	Ni 1 000 (5 000 ppm/°C)
	6.2-1k	Ni 1 000 (6 180 ppm/°C)
	5.0-10k	Ni 10 000 (5 000 ppm/°C)
	6.2-10k	Ni 10 000 (6 180 ppm/°C)

Range - Ni 10 000, 5 000 ppm > MODE 1 = 5.0-10k Example

5.0-1k | 6.2-1k | 5.0-10k | CONE.1

CONE.1

2-WIRE | 3-WIRE | 4-WIRE

CONE.1	Selection of the type of sensor connection

DEF = 2-WIRE

	Menu	Connection
CONE. 1	2-WIRE	2-wire
	3-WIRE	3-wire
	4-WIRE	4-wire

Type of connection - 3 wire > CONE. 1 = 3-WIRE Example

2-WIRE | 3-WIRE | FORM.A

FORM.A	Setting projection of the decimal point

- positioning of the DP is set here in the measuring mode   **DEF** = 000.0

Projection of DP on display > 0000   Example

000.0   ⊖   0000   ⊖   MENU   *subsequent item on the menu depends on instrument equipment

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INPUT / CHANNEL A > **T/C**

MODE 1

| T/C B | T/C E | T/C J | T/C K | > |
| T/C N | T/C R | T/C S | T/C T | T/C L |

MODE 1 Selection of the type of thermocouple

DEF = Typ "J"

Menu	Type of thermocouple
T/C B	B
T/C E	E
T/C J	J
T/C K	K
T/C N	N
T/C R	R
T/C S	S
T/C T	T
T/C L	L

MODE 1

Type of thermocouple "K"   Example

J   K   CONE.1

CONE.1

| INT1TC | INT2TC | EXT1TC | EXT2TC |

CONE.1 Selection of the type of sensor connection

DEF = EXT. 1TC

	Menu	Connection	Ref. T/C
	INT.1TC	measuring C.J. at instrument brackets	✗
CONE. 1	INT.2TC	measuring C. J. at instrument brackets with anti-series connected ref. TC	✓
	EXT.1TC	the entire measuring set is working under invaried and constant temperature	✗
	EXT.2TC	when using compensation box	✓

Type of connection > CONE. 1 = EXT. 2TC   Example

EXT1TC   EXT2TC   C.J.TEM.

! For thermocouple type "B" the items **CONE. 1** and **C.J. TEM.** are not available

! Method and procedure of setting the cold junctions is described in separate chapter on page 93

INPUT / CHANNEL A > **T/C**

C.J.TEM. ⊙ → 23   Setting temperature of cold junction → ⊙ ⊠ ⊙ ⊟

C.J.TEM. **Setting temperature of cold junction**

- range 0...99°C with compensation box

DEF = 23

Setting temperature of cold junction > C.J. TEM. = 35   Example

23 ⊙ 24 ⊙ 25 ⊙ 25 ⊙ 35 ⊙ FORM.A

FORM.A ⊙ → 0000 000.0 00.00   ⊙ ⊠ ⊙ ⊟

FORM.A **Setting projection of the decimal point**

- positioning of the DP is set here in the measuring mode

DEF = 000.0

Projection of DP on display > 0000   Example

000.0 ⊙ 0000 ⊙ MENU   *subsequent item on the menu depends on instrument equipment

📖 36

INPUT / CHANNEL A > **DU**

MI N A → 0   Setting for minimum input signal

MI N A — **Setting display projection for minimum value of input signal**

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 0

Projection for the beginning > MIN A = 0   Example

0   MAX A

MAX A → 100   Setting for maximum input signal

MAX A — **Setting display projection for maximum value of input signal**

- range of the setting: -999...9999
- position of the DP does not affect display projection

- the DP is automatically shifted after the value is confirmed

DEF = 100

Projection for end > MAX A = 5000   Example

100   100   100   000   0000   1000
2000   3000   4000   5000   FORM.A

FORM.A

| 0000 | 000.0 | 00.00 | 0.000 | FLOA.P. |

| **FORM.A** | **Setting projection of the decimal point** |

- positioning of the DP is set here in the measuring mode
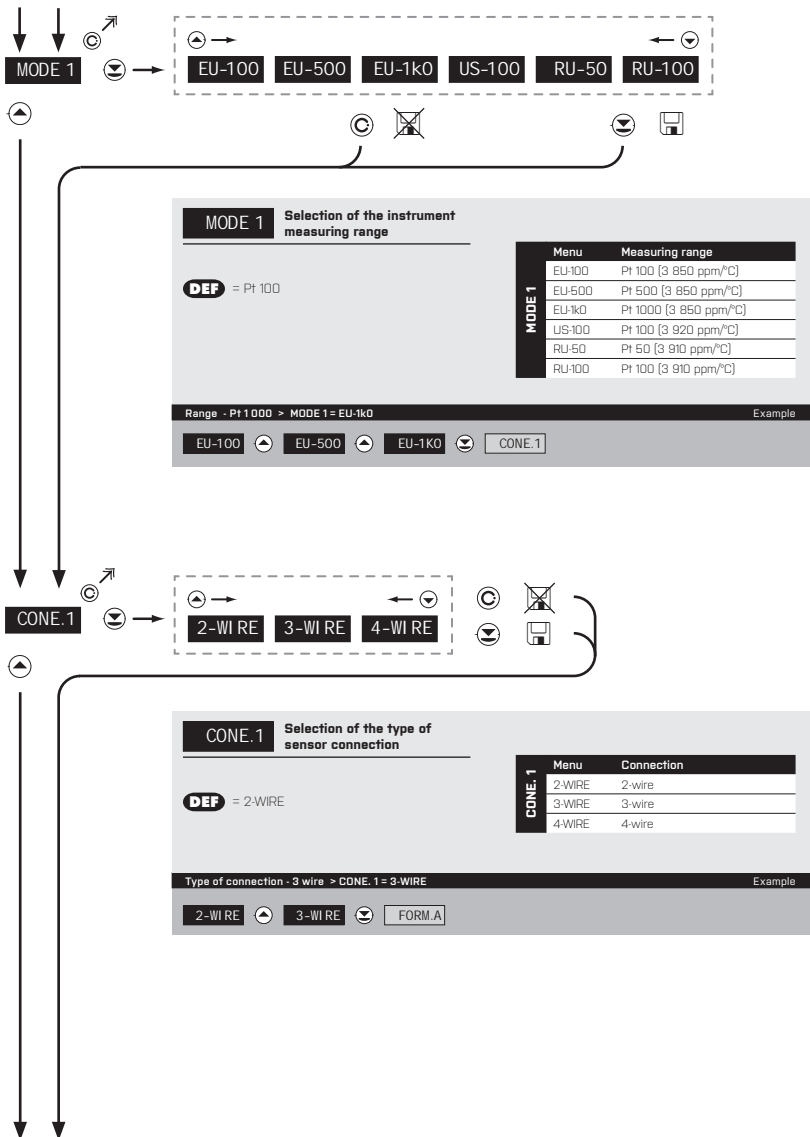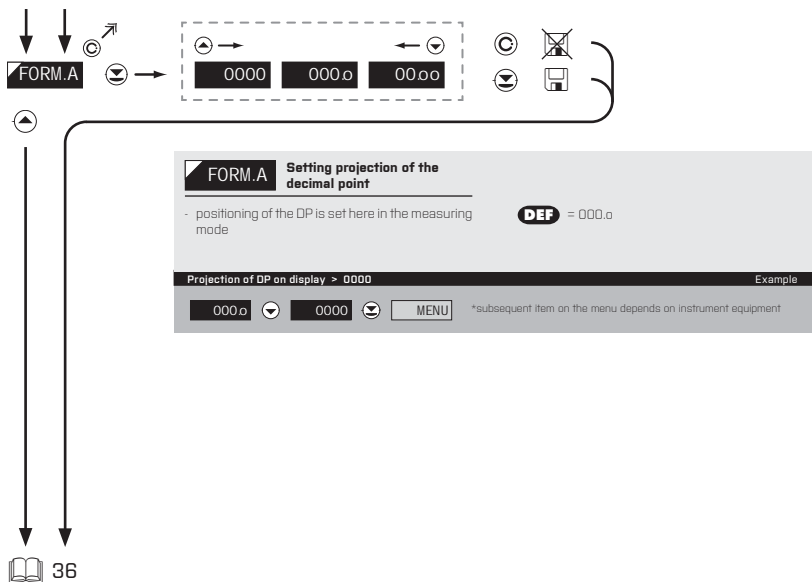
DEF = 000.0

| Projection of DP on display > 0000 | | | Example |

000.0   0000   MENU   *subsequent item on the menu depends on instrument equipment

📖 **36**   Calibration of the beginning and the end of range of linear potentiometer is on page 38
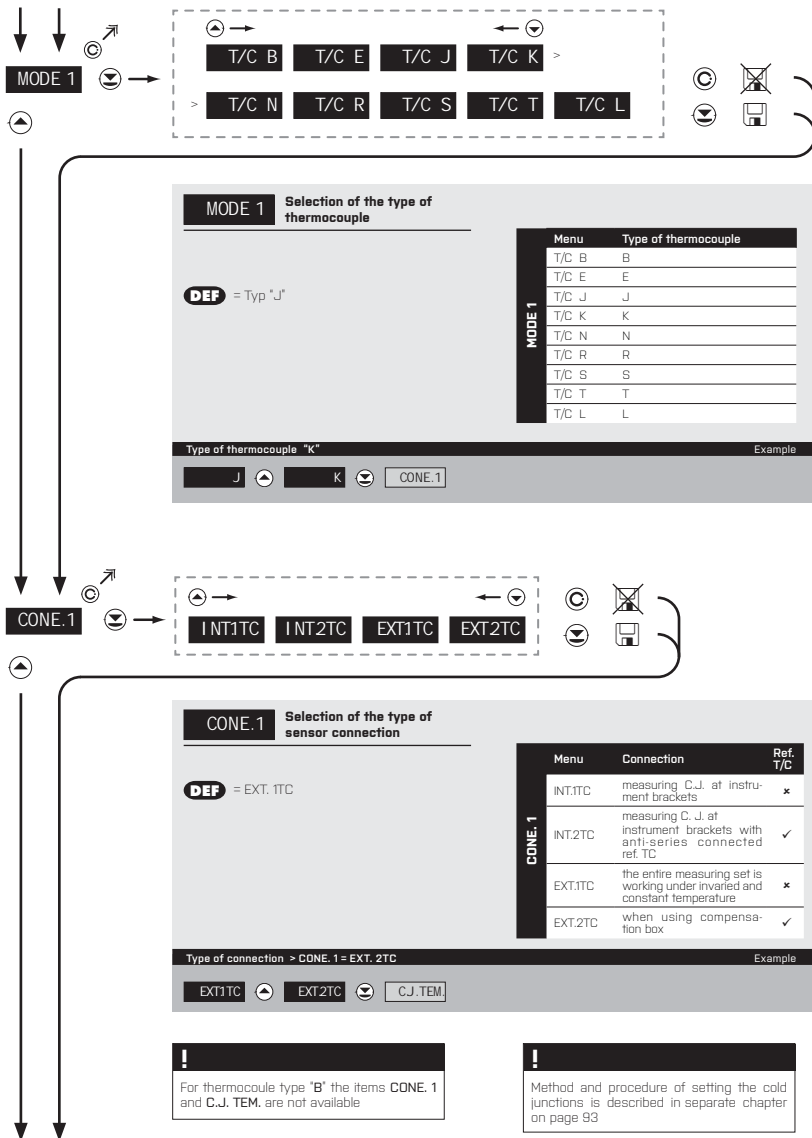
INPUT / CHANNEL A > **RTD-CU**

MODE 1

428-50 428-01 426-50 426-01

MODE 1	Selection of the instrument measuring range

DEF = 428 - 50

	Menu	Measuring range
MODE 1	428-50	Cu 50 [4 285 ppm/°C]
	428-100	Cu 100 [4 285 ppm/°C]
	426-50	Cu 50 [4 260 ppm/°C]
	426-100	Cu 100 [4 260 ppm/°C]

Range - Cu 50/4260 ppm > MODE 1 = 426-50   Example

428-50 428-01 426-50 CONE.1

CONE.1

2-WIRE 3-WIRE 4-WIRE

CONE.1	Selection of the type of sensor connection

DEF = 2-wire

	Menu	Connection
CONE.1	2-WIRE	2-wire
	3-WIRE	3-wire
	4-WIRE	4-wire

Type of connection - 3 wire > CONE. 1 = 3-WIRE   Example

2-WIRE 3-WIRE FORM.A

FORM.A

0000   000.0   00.00

FORM.A   **Setting projection of the decimal point**

- positioning of the DP is set here in the measuring mode

DEF = 000.0

Projection of DP on display > 0000   Example

000.0   0000   MENU   *subsequent item on the menu depends on instrument equipment

📖 36

DISPLAYED ONLY WITH OPTIONS > **COMPARATORS**

LIM.L1 → 20 Setting boundary for limit 1

LIM.L1 | Setting boundary for limit 1

- range of the setting: -999...9999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 20
DEF „Hystresis"=0, „Delay"=0

Setting limit 1 > **LIM. L 1 = 32**   Example

20 → 21 → 22 → 22 → 32 → MENU

LIM.L2 → 30 Setting boundary for limit 2

LIM.L2 | Setting boundary for limit 2

- range of the setting: -999...9999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 30
DEF „Hystresis"=0, „Delay"=0

Setting limit 2 > **LIM. L 2 = 54.1**   Example

30 → 31 → 41 → 41 → 041 → 141
241 → 341 → 441 → 541 → 0541 → 00541
000541 → 000541 → 000541 → MENU

* subsequent item on the menu depends on instrument equipment

!

Items for "**Limits**" and "**Analog output**" are accessible only if incorporated in the instrument.

LI M L3 → 40 Setting boundary for limit 3

LI M L3 — Setting boundary for limit 3

- range of the setting: -999…9999
- contingent modification of hysteresis or delay may be performed in "PROFI" menu

DEF = 40
DEF „Hystresis"=0, „Delay"=0

Setting limit 3 > LIM. L 3 = 65   Example

40 41 42 43 44 45
45 55 65 MENU

* subsequent item on the menu depends on instrument equipment

LI M L4 → 50 Setting boundary for limit 4
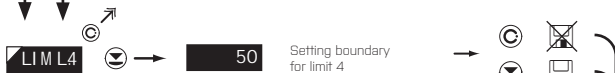
LI M L4 — Setting boundary for limit 4

- range of the setting: -999…9999
- contingent modification of hysteresis or delay may be performed in "PROFI" menu

DEF = 50
DEF „Hystresis"=0, „Delay"=0

Setting limit 4 > LIM. L 4 = 173   Example

50 51 52 53 53 63
73 073 173 MENU

* subsequent item on the menu depends on instrument equipment

!
If instrument with 8 relays was ordered, after setting Limit 4 follows the setting of limits 5…8

DISPLAYED ONLY WITH OPTIONS **> COMPARATORS**

DISPLAYED ONLY WITH OPTIONS **> ANALOG OUTPUT**

| TYP.A.O. | 0-20mA | E.4-20 | 4-20mA | 0-5mA | 0-2V | 0-5V | 0-10 V |

TYP.A.O. Setting the type of analog output

Menu	Range	Description
0-20mA	0...20 mA	
E. 4-20	4...20 mA	with indication of error statement [<3,6 mA]
4-20mA	4...20 mA	
0-5mA	0...5 mA	
0-2 V	0...2 V	
0-5 V	0...5 V	
0-10 V	0...10 V	

TYP. A.O.

DEF = 4...20 mA

Type of analog output - 0...10 V > TYP. A.O. = U 10   Example

| 4-20mA | 0-5mA | 0-2 V | 0-5 V | 0-10 V | MIN A.O. |

MIN A.O.

| 0 |

Assigning the display value to the beginning of the AO range

MIN A.O. Assigning the display value to the beginning of the AO range

- range of the setting: -999...9999   **DEF** = 0

Display value for the beginning of the AO range > MIN A.O. = 0   Example

| 0 | MAX A.O. |

! Items for "Limits" and "Analog output" are accessible only if incorporated in the instrument.

MAX A.O. ▼ → 100   Assigning the display
value to the end of the
AO range → Ⓒ ⊠
▼ 💾

▲

MAX A.O.	**Assigning the display value to the end of the AO range**

- range of the setting: -999...9999   **DEF** = 100

Display value for the end of the AO range > MAX A.O. = 120   Example

100 ◀ 100 ▲ 120 ▲ 120 ▼ MENU
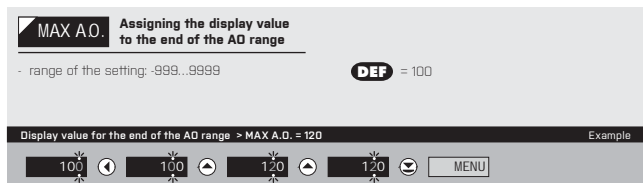
DISPLAYED ONLY WITH OPTIONS **> ANALOG OUTPUT**
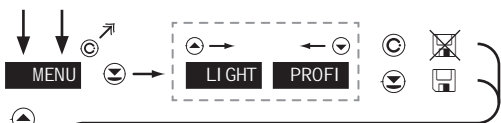
MENU → LIGHT PROFI

MENU — Setting the menu type LIGHT/PROFI

LIGHT > menu LIGHT, a simple menu, which contains only the most essential items necessary for instrument setting

> linear tree structure

PROFI > menu PROFI, a complete menu for complete instrument setting

> tree menu structure

DEF = LIGHT

Menu LIGHT > MENU = LIGHT   Example

LIGHT → ER.IND.

ER.IND. → DECS. DOT

ER.IND. — Selection of type of error statement signalization

- selection of type of signalization relates only to error statements on active measuring inputs, which are not currently projected on the display
- error on the displayed active input is always indicated

DEF = DESC.

Menu	Description
DESC.	Error statements are displayed as text on the display of measuring units
DOT	Error statement is signalled only by flashing of the decimal point by the indicated channel number

Selection of type of error statements signalization > DESC.   Example

DECS. → RE.CAL.

RE.CAL. ⊙ → YES

RE.CAL. Restoration of manufacture calibration

- in the event of error calibration it is feasible to restore manufacture calibration. Prior to execution of any modifications you will be asked to confirm your selection (**YES**)

Restoration of manufacture calibration > YES   Example

CALI B. ⊙ YES ⊙ RE.SET.

RE.SET. ⊙ → FI RM. ← USER

RE.SET. Restoration of manufacture instrument setting

- in the event of error setting the manufacture setting may be restored
- restoration is performed for the currently selected type of the instrument input (select "**FIRM**")

- provided you stored your user setting in the "**PROFI**" menu, it may also be restored (select "**USER**")
- loading manufacture calibration and primary setting of items on the menu (**DEF**)

Restoration of manufacture setting > RE. SET.   Example

RE.SET. ⊙ FI RM ⊙ LANG.   ** subsequent item on the menu depends on instrument type, for "DU" > "C. MIN"

MEASURING MODE > **DU**

flashing legend

C.MIN → INP.1 INP.2 – – – – – INP.8 → YES

C.MIN	Calibration of input range - the potentiometer traveller in	Only for type "DU"

initial position

- only active "DU" inputs can be found in the selection
- prior confirming the flashing "YES" sign the potentiometer traveller has to be in given idle position

Calibration of the beginning of the range > C. MIN   Example

YES → C.MAX

flashing legend

C.MAX → INP.1 INP.2 – – – – – INP.8 → YES

C.MAX	Calibration of input range - the potentiometer traveller	Only for type "DU"

in end position

- only active "DU" inputs can be found in the selection
- prior confirming the flashing "YES" sign the potentiometer traveller has to be in given idle position

Calibration of the end of the range > C. MAX   Example

YES → LANG.

LANG.

LANG. — Selection of language in instrument menu

- selection of language version of the instrument menu

DEF = ENGL.

Language selection - ENGLISH > LANG. = ENGL. — Example

CZECH — ENGL. — PAS.LI .

PAS.LI .

0 — Setting new access password

PAS.LI . — Setting new access password

- access password for menu **LIGHT**
- range of the number code 0...9999
- upon setting the password to "**0000**" the access to menu **LIGHT** is free without prompt to enter it

- in case the password is lost, please contact the adminstrator of this device

DEF = 0

New password - 341 > PAS. LI. = 341 — Example

0 — 1 — 01 — 11 — 21 — 31 —
41 — 041 — 141 — 241 — 341 — I DENT.

instrument type | SW 1: version | SW 2: version | act. inputs

I DENT. → YES → OMU 4O8UNI | 64-AO1 | 64-AO1 | 4 INP

	I DENT.	**Instrument SW version**

- the display shows the type of instrument indication, SW number, SW version and current input setting (Mode)
- if SW version contains a letter in first position, then it is a customer SW
- after the identification is completed the menu is automatically exited and the instrument restores the measuring mode

	Packet	Description
IDENT.	1.	type of instrument
	2.	no-of program version - processor 1
	3.	no-of program version - processor 2
	4.	no. of active measuring inputs

1428   Return to measuring mode

SETTING
PROFI

For expert users
Complete instrument menu
Access is password protected
Possibility to arrange items of the **USER MENU**
Tree menu structure

6.0	SETTING "PROFI"

PROFI   **Complete programming menu**
- contains complete instrument menu and is protected by optional number code
- designed for expert users
- preset from manufacture is menu **LIGHT**

Switching over to "PROFI" menu

⊙ + ⊙   • access to **PROFI** menu
- authorization for access to **PROFI** menu does not depend on setting under item SERVIC. > MENU
- password protected access (unless set as follows under the item SERVIC. > N. PASS. > PROFI =0)
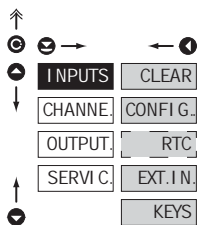
⊙ + ⊙   • access to menu selected under item SERVIC. > MENU > **LIGHT**/**PROFI**
- password protected access (unless set as follows under the item SERVIC. > N. PASS. > LIGHT =0)
- for access to **LIGHT** menu passwords for **LIGHT** and **PROFI** menu may be used
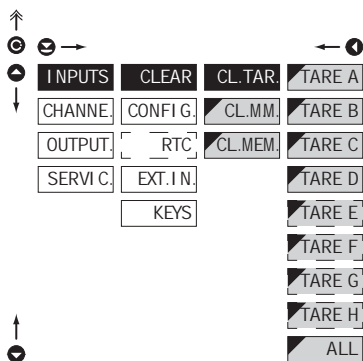
6. SETTING **PROFI**

6.1   SETTING "PROFI" - INPUT

INPUTS	CLEAR
CHANNE.	CONFIG.
OUTPUT.	RTC
SERVIC.	EXT.IN.
	KEYS

The primary instrument parameters are set in this menu

CLEAR	Resetting internal values
CONFIG.	Selection of measuring range and parameters
RTC	Setting date and time for option with RTC
EXT.IN.	Setting external inputs functions
KEYS	Assigning further functions to keys on the instrument

6.1.1   RESETTING INTERNAL VALUES

INPUTS	CLEAR	CL.TAR.	TARE A
CHANNE.	CONFIG.	CL.MM.	TARE B
OUTPUT.	RTC	CL.MEM.	TARE C
SERVIC.	EXT.IN.		TARE D
	KEYS		TARE E
			TARE F
			TARE G
			TARE H
			ALL

CLEAR — **Resetting internal values**

CL.TAR. — Tare resetting

- tare resetting may be performed separately for each input or en block for all

CL.MM. — Resetting min/max value

- resetting memory for the storage of minimum and maximum value achieved during measurement

CL.MEM. — Resetting the instrument memory

- resetting memory with data measured in the "**FAST**" or "**RTC**" modes
- not in standard equipment

6.1.2a SELECTION OF MEASURING RATE

INPUTS	CLEAR	READ/S	400
CHANNE.	CONFIG.	INPUTS	200
OUTPUT.	RTC	IN.MOD.	100
SERVIC.	EXT.IN.	SWITCH	50 **DEF**
	KEYS	TIM.SW.	20
		INP.1	10
		INP.2	05
		INP.3	02
		INP.4	01
		INP.5	
		INP.6	
		INP.7	
		INP.8	

READ/S	Selection of measuring rate
400	40,0 measurements/s
200	20,0 measurements/s
100	10,0 measurements/s
50	5,0 measurements/s
20	2,0 measurements/s
10	1,0 measurement/s
05	0,5 measurements/s
02	0,2 measurements/s
01	0,1 measurements/s

6.1.2b SELECTION OF NUMBER OF ACTIVE MEASURING INPUTS

INPUTS	CLEAR	READ/S	1 INP.
CHANNE.	CONFIG.	INPUTS	2 INP.
OUTPUT.	RTC	IN.MOD.	3 INP.
SERVIC.	EXT.IN.	SWITCH	4 INP. **DEF**
	KEYS	TIM.SW.	5 INP.
		INP.1	6 INP.
		INP.2	7 INP.
		INP.3	8 INP.
		INP.4	2 FAST
		INP.5	3 FAST
		INP.6	4 FAST
		INP.7	
		INP.8	

INPUTS	Selection of number of active measuring inputs

- the number of active measuring inputs influences the resulting measuring rate

1 INP.	1 active measuring input
....	
4 INP.	4 active measuring inputs
5 INP.	5 active measuring inputs
.....	
8 INP.	8 active measuring inputs
2 FAST	2 fast measuring inputss

- inputs 1 and 3 with max. 40 measur./s

3 FAST	3 fast measuring inputs

- inputs 1, 3 and 5 with max. 40 measur./s

4 FAST	4 fast measuring inputs

- inputs 1, 3, 5 and 7 with max. 40 meas./s

6.1.2c SELECTION OF MEASURING MODE

IN.MOD.	**Selection of measuring mode**

INPUTS | CLEAR | READ/S | CYKL. **DEF**
CHANNE. | CONFIG | INPUTS | SWITCH
OUTPUT. | RTC | IN.MOD.
SERVIC. | EXT.IN. | SWITCH
| KEYS | TIM.SW.
| | INP.1
| | INP.2
| | INP.3
| | INP.4
| | INP.5
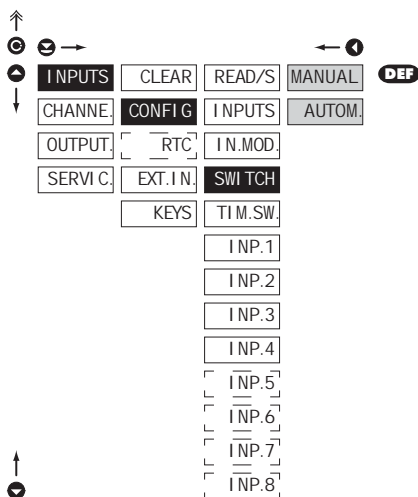| | INP.6
| | INP.7
| | INP.8
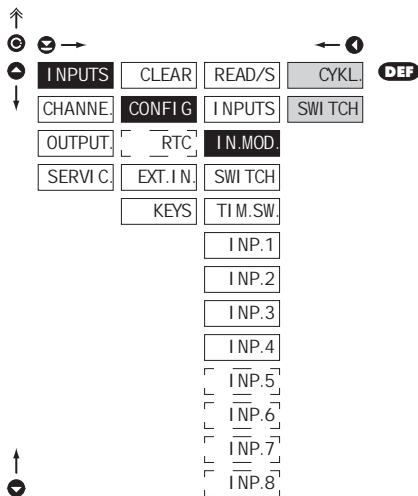
CYKL.	Cyclic measurement on all inputs

- number of active measuring inputs is set in the **INPUTS/CONFIG./INPUTS**
- projection of measuring inputs is set in the menu **INPUTS/CONFIG/SWITCH**.
- the cycle option rather significantly affects the measuring rate and depends on the number of active inputs (real measuring rates are listed in chapter Technical data)

SWITCH	Instrument performs measuring only on the active input

- projection of measuring inputs is set in the menu **INPUTS/CONFIG/SWITCH**.

6.1.2d SELECTION OF MEASURING INPUTS SWITCHING

IN.MOD.	**Selection of measuring inputs switching**

INPUTS | CLEAR | READ/S | MANUAL **DEF**
CHANNE. | CONFIG | INPUTS | AUTOM.
OUTPUT. | RTC | IN.MOD.
SERVIC. | EXT.IN. | SWITCH
| KEYS | TIM.SW.
| | INP.1
| | INP.2
| | INP.3
| | INP.4
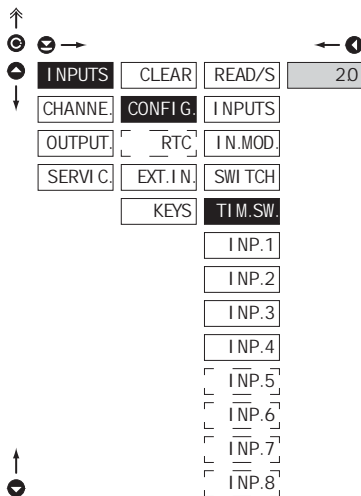| | INP.5
| | INP.6
| | INP.7
| | INP.8

MANUAL	Manual inputs switching

- inputs switching is controlled by selected key on the front panel or selected external input

AUTOM.	Automatic inputs switching

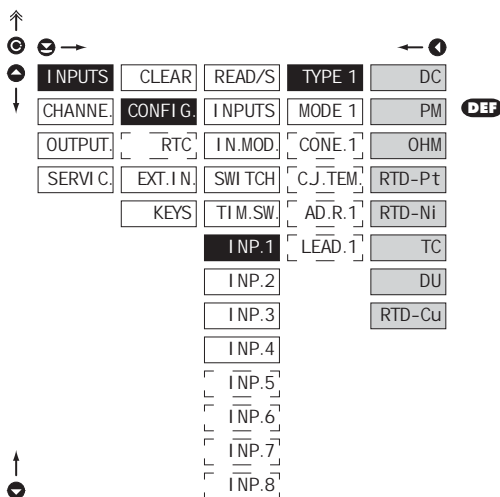- inputs switching is automatic with time period set in "**TIM. SW.**"

6.1.2e SETTING PERIOD FOR MEASURING INPUTS SWITCHING

INPUTS	CLEAR	READ/S	20
CHANNE.	CONFIG.	INPUTS	
OUTPUT.	RTC	IN.MOD.	
SERVIC.	EXT.IN.	SWITCH	
	KEYS	TIM.SW.	
		INP.1	
		INP.2	
		INP.3	
		INP.4	
		INP.5	
		INP.6	
		INP.7	
		INP.8	

TIM.SW. **Setting period for measuring inputs switching**

- setting time period for projection of channels in automatic mode of inputs switching ("**AUTOM.**")
- range of setting 0,5...99,9 s
- **DEF** = 2 s

6.1.2f SELECTION OF „INSTRUMENT" TYPE FOR INPUT 1

INPUTS	CLEAR	READ/S	TYPE 1	DC
CHANNE.	CONFIG.	INPUTS	MODE 1	PM
OUTPUT.	RTC	IN.MOD.	CONE.1	OHM
SERVIC.	EXT.IN.	SWITCH	CJ.TEM.	RTD-Pt
	KEYS	TIM.SW.	AD.R.1	RTD-Ni
		INP.1	LEAD.1	TC
		INP.2		DU
		INP.3		RTD-Cu
		INP.4		
		INP.5		
		INP.6		
		INP.7		
		INP.8		

TYPE 1 **Selection of „instrument" type for Input 1**

- selection of particular type of "instrument" is bound to relevant dynamic items

DC	DC voltmeter
PM	Process monitor
OHM	Ohmmeter
RTD-Pt	Thermometer for Pt xxx
RTD-Ni	Thermometer for Ni xxxx
TC	Thermometer pro thermocouples
DU	Display for linear potentiometers
RTD-Cu	Thermometer for Cu xxx

6.1.2c	SELECTION OF MEASURING RANGE FOR INPUT 1

MODE 1	Selection of instrument measuring range for Input 1

	Menu	Measuring range
DC	60 mV	±60 mV
	150 mV	±150 mV
	300 mV	±300 mV
	1200mV	±1,2 V
	Menu	Measuring range
PM	0-5mA	0...5 mA
	0-20mA	0...20 mA
	4-20mA	4...20 mA
	0-2 V	±2 V
	0-5 V	±5 V
	0-10 V	±10 V
	0-40 V	±40 V
	Er.4-20	4...20 mA, with error statement of „underfl ow" upon signal smaller than 3,36 mA
	Menu	Measuring range
OHM	100 R	0...100 Ω
	1 k	0...1 kΩ
	10 k	0...10 kΩ
	100 k	0...100 kΩ
	Menu	Measuring range
RTD-PT	EU-100	Pt 100 (3 850 ppm/°C)
	EU-500	Pt 500 (3 850 ppm/°C)
	EU-1k0	Pt 1000 (3 850 ppm/°C)
	US-100	Pt 100 (3 920 ppm/°C)
	RU-50	Pt 50 (3 910 ppm/°C)
	RU-100	Pt 100 (3 910 ppm/°C)
	Menu	Measuring range
RTD-NI	5.0-1k	Ni 1 000 (5 000 ppm/°C)
	6.2-1k	Ni 1 000 (6 180 ppm/°C)
	5.0-10k	Ni 10 000 (5 000 ppm/°C)
	6.2-10k	Ni 10 000 (6 180 ppm/°C)
	Menu	Measuring range
RTD-CU	428-50	Cu 50 (4 280 ppm/°C)
	428-0.1	Cu 1 00 (4 280 ppm/°C)
	426-50	Cu 50 (4 260 ppm/°C)
	426-0.1	Cu 100 (4 260 ppm/°C)
	Menu	Type of thermocouple
T/C	T/C B	B
	T/C E	E
	T/C J	J
	T/C K	K
	T/C N	N
	T/C R	R
	T/C S	S
	T/C T	T
	T/C L	L

*

Setting procedure is identical also for inputs 2...8

6.1.2h | SELECTION OF THE TYPE OF SENSOR CONNECTION FOR INPUT 1 | RTD OHM T/C

INPUTS	CLEAR	READ/S	TYPE 1	2-WIRE	DEF
CHANNE.	CONFIG.	INPUTS	MODE 1	3-WIRE
OUTPUT.	RTC	IN.MOD.	CONE.1	4-WIRE
SERVIC.	EXT.IN.	SWITCH	AD.R.1
	KEYS	TIM.SW.	LEAD.1
		INP.1
		INP.2
		INP.3
		INP.4
		INP.5
		INP.6
		INP.7
		INP.8

INPUTS	CLEAR	READ/S	TYPE 1	INT1TC	DEF
CHANNE.	CONFIG.	INPUTS	MODE 1	INT2TC
OUTPUT.	RTC	IN.MOD.	CONE.1	EXT1TC
SERVIC.	EXT.IN.	SWITCH	C.J.TEM.	EXT2TC
	KEYS	TIM.SW.
		INP.1
		INP.2
		INP.3
		INP.4
		INP.5
		INP.6
		INP.7
		INP.8

CONE.1 — **Selection of type of sensor connection for Input 1**

RTD OHM

2-WIRE — 2-wire connection

3-WIRE — 3-wire connection
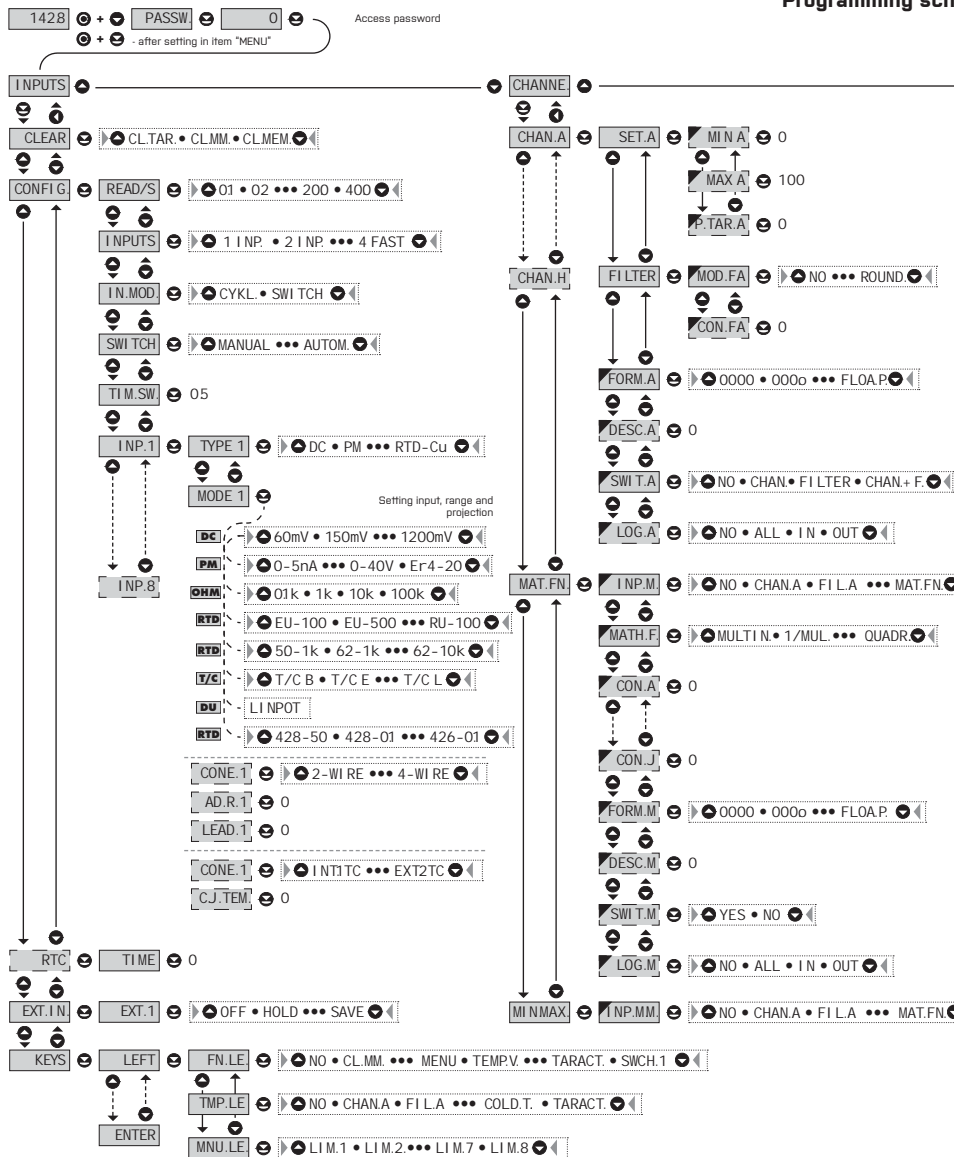
4-WIRE — 4-wire connection

T/C

INT.1TC — Measurement without reference thermocouple

- measuring cold junction at instrument brackets

INT2TC — Measurement with reference thermocouple

- measuring cold junction at instrument brackets with anti-series connected reference thermocouple

EXT1TC — Measurement without reference thermocouple

- the entire measuring set is working under invaried and constant temperature

EXT2TC — Measurement with reference thermocouple

- when using compensation box

!

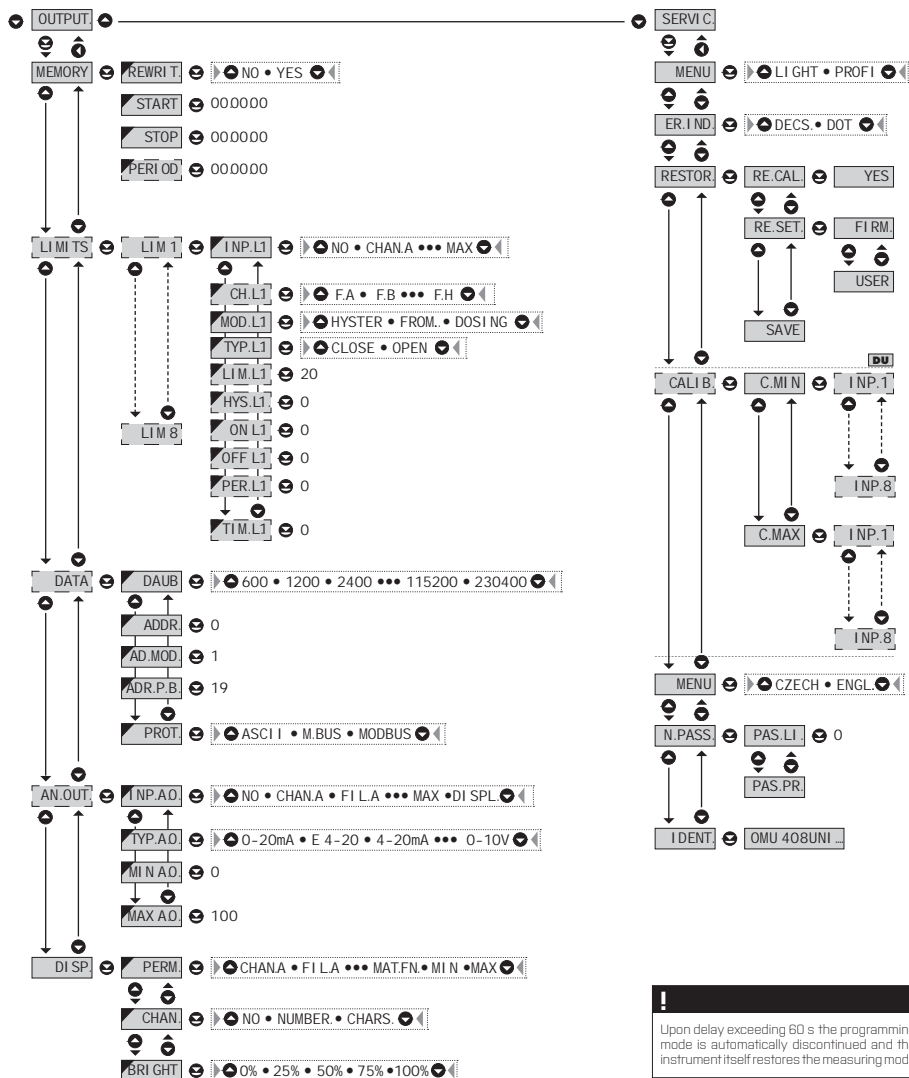Setting for "**T/C**" is accessible only for 1st input

!

Method and procedure of setting the cold junctions is described in separate chapter on page 93

!

For thermocoule type "**B**" the items **CONE. 1** and **C.J. TEM.** are not available

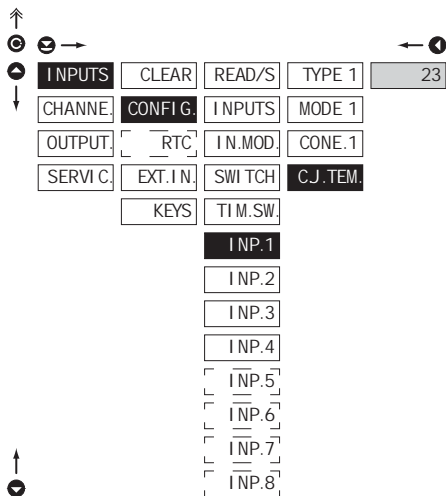*****

Setting procedure is identical also for inputs 2...8

Programming sch

| 1428 | ⊙ + ⊖ | PASSW. | ⊖ | 0 | ⊖ | Access password |

⊙ + ⊖ - after setting in item "MENU"

INPUTS

CLEAR ⊖ ► CL.TAR. • CL.MM. • CL.MEM. ◄

CONFIG. ⊖

READ/S ⊖ ► 01 • 02 ••• 200 • 400 ◄

INPUTS ⊖ ► 1 INP. • 2 INP. ••• 4 FAST ◄

IN.MOD. ⊖ ► CYKL. • SWITCH ◄

SWITCH ⊖ ► MANUAL ••• AUTOM. ◄

TIM.SW 05

INP.1 ⊖

TYPE 1 ► DC • PM ••• RTD-Cu ◄

MODE 1 ⊖

Setting input, range and projection

DC - ► 60mV • 150mV ••• 1200mV ◄
PM - ► 0-5nA ••• 0-40V • Er4-20 ◄
OHM - ► 01k • 1k • 10k • 100k ◄
RTD - ► EU-100 • EU-500 ••• RU-100 ◄
RTD - ► 50-1k • 62-1k ••• 62-10k ◄
T/C - ► T/C B • T/C E ••• T/C L ◄
DU - LINPOT
RTD - ► 428-50 • 428-01 ••• 426-01 ◄

INP.8

CONE.1 ⊖ ► 2-WIRE ••• 4-WIRE ◄
AD.R.1 ⊖ 0
LEAD.1 ⊖ 0

CONE.1 ⊖ ► INT1TC ••• EXT2TC ◄
C.J.TEM. ⊖ 0

RTC ⊖ TIME ⊖ 0

EXT.IN ⊖ EXT.1 ► OFF • HOLD ••• SAVE ◄

KEYS ⊖ LEFT ⊖ FN.LE ► NO • CL.MM. ••• MENU • TEMP.V. ••• TARACT. • SWCH.1 ◄

ENTER

TMP.LE ► NO • CHAN.A • FIL.A ••• COLD.T. • TARACT. ◄

MNU.LE ► LIM.1 • LIM.2. ••• LIM.7 • LIM.8 ◄

CHANNE.

CHAN.A ⊖ SET.A ⊖ MIN A ⊖ 0

MAX A ⊖ 100

P.TAR.A ⊖ 0

CHAN.H

FILTER ⊖ MOD.FA ⊖ ► NO ••• ROUND. ◄

CON.FA ⊖ 0

FORM.A ⊖ ► 0000 • 000o ••• FLOA.P. ◄

DESC.A ⊖ 0

SWIT.A ⊖ ► NO • CHAN. • FILTER • CHAN.+ F. ◄

LOG.A ⊖ ► NO • ALL • IN • OUT ◄

MAT.FN. ⊖ INP.M. ⊖ ► NO • CHAN.A • FIL.A ••• MAT.FN. ◄

MATH.F ⊖ ► MULTI N. • 1/MUL. ••• QUADR. ◄

CON.A ⊖ 0

CON.J ⊖ 0

FORM.M ⊖ ► 0000 • 000o ••• FLOA.P. ◄

DESC.M ⊖ 0

SWIT.M ⊖ ► YES • NO ◄

LOG.M ⊖ ► NO • ALL • IN • OUT ◄

MINMAX ⊖ INP.MM. ⊖ ► NO • CHAN.A • FIL.A ••• MAT.FN. ◄

eme PROFI MENU

OUTPUT.

MEMORY — REWRIT. — NO • YES
START — 00.00.00
STOP — 00.00.00
PERIOD — 00.00.00

LIMITS — LIM 1 — INP.L1 — NO • CHAN.A ••• MAX
CH.L1 — F.A • F.B ••• F.H
MOD.L1 — HYSTER • FROM.. • DOSING
TYP.L1 — CLOSE • OPEN
LIM.L1 — 20
HYS.L1 — 0
ON L1 — 0
OFF L1 — 0
PER.L1 — 0
LIM 8 — TIM.L1 — 0

DATA — DAUB — 600 • 1200 • 2400 ••• 115200 • 230400
ADDR. — 0
AD.MOD. — 1
ADR.P.B. — 19
PROT. — ASCII • M.BUS • MODBUS

AN.OUT. — INP.A.O. — NO • CHAN.A • FIL.A ••• MAX •DISPL.
TYP.A.O. — 0-20mA • E 4-20 • 4-20mA ••• 0-10V
MIN A.O. — 0
MAX A.O. — 100

DISP. — PERM. — CHAN.A • FIL.A ••• MAT.FN.• MIN •MAX
CHAN. — NO • NUMBER.• CHARS.
BRIGHT — 0% • 25% • 50% • 75% •100%

SERVIC.

MENU — LIGHT • PROFI

ER.IND. — DECS.• DOT

RESTOR. — RE.CAL. — YES
RE.SET. — FIRM.
USER
SAVE

CALIB. — C.MIN — INP.1
INP.8
C.MAX — INP.1
INP.8

MENU — CZECH • ENGL.

N.PASS. — PAS.LI. — 0
PAS.PR.

IDENT. — OMU 408UNI ...

!

Upon delay exceeding 60 s the programming mode is automatically discontinued and the instrument itself restores the measuring mode

6. SETTING **PROFI**

| 6.1.2i | SETTING TEMPERATURE OF COLD JUNCTION FOR INPUT 1 | **T/C** |

INPUTS	CLEAR	READ/S	TYPE 1	23
CHANNE.	CONFIG.	INPUTS	MODE 1	
OUTPUT.	RTC	IN.MOD.	CONE.1	
SERVIC.	EXT.IN.	SWITCH	CJ.TEM.	
	KEYS	TIM.SW.		
		INP.1		
		INP.2		
		INP.3		
		INP.4		
		INP.5		
		INP.6		
		INP.7		
		INP.8		

CJ.TEM. **Setting temperature of cold junction for Input 1**

- range 0…99°C with compensation box

- **DEF** = 23°C

!

Setting for "T/C" is accessible only for 1st input

*

Setting procedure is identical also for inputs 2…8

| 6.1.2j | ZERO OFFSET OF THE MEASUREMENT RANGE FOR INPUT 1 | **RTD** **OHM** |

INPUTS	CLEAR	READ/S	TYPE 1	0.00
CHANNE.	CONFIG.	INPUTS	MODE 1	
OUTPUT.	RTC	IN.MOD.	CONE.1	
SERVIC.	EXT.IN.	SWITCH	AD.R.1	
	KEYS	TIM.SW.	LEAD.1	
		INP.1		
		INP.2		
		INP.3		
		INP.4		
		INP.5		
		INP.6		
		INP.7		
		INP.8		
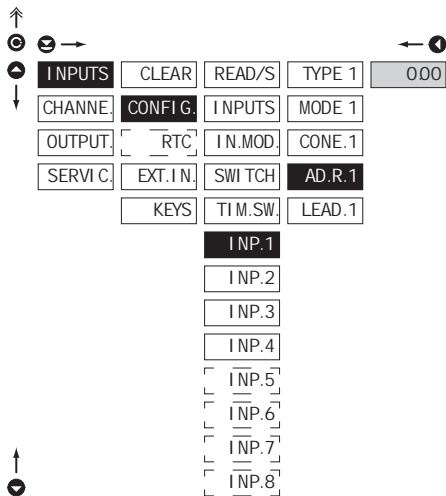
AD.R.1 **Offset of the beginning of the measuring range for Input 1**

- in cases when it is necessary to offset the beginning of the range by certain value, e.g. while using sensor in measuring head
- entered directly in Ohm [0…9999]

- **DEF** = 0.00

*

Setting procedure is identical also for inputs 2…8

6.1.2k | COMPENSATION OF 2-WIRE CONDUCT FOR INPUT 1 | RTD OHM

INPUTS	CLEAR	READ/S	TYPE 1	YES
CHANNE.	CONFIG.	INPUTS	MODE 1	
OUTPUT.	RTC	IN.MOD.	CONE.1	
SERVIC.	EXT.IN.	SWITCH	AD.R.1	
	KEYS	TIM.SW.	LEAD.1	
		INP.1		
		INP.2		
		INP.3		
		INP.4		
		INP.5		
		INP.6		
		INP.7		
		INP.8		
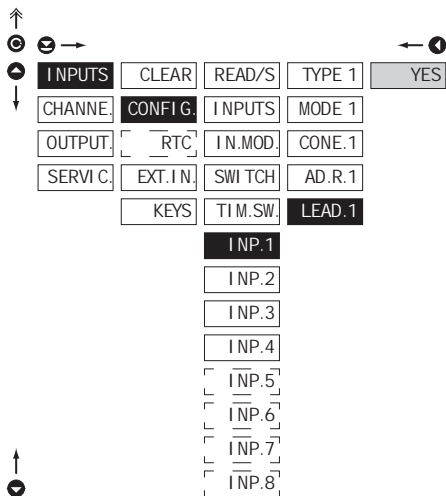
LEAD.1   **Compensation of 2-wire conduct for Input 1**

- for measurement accuracy it is necessary to perform compensation of conduct always in case of 2-wire connection
- prior confirmation of the displayed prompt "**YES**" it is necessary to substitute the sensor at the end of the conduct by a short-circuit

- **DEF** = 0

*

Setting procedure is identical also for inputs 2...8

6.1.3 | SETTING THE REAL TIME CLOCK

INPUTS	CLEAR	TIME	00.00.00
CHANNE.	CONFIG.	DATE	
OUTPUT.	RTC		
SERVIC.	EXT.IN.		
	KEYS		
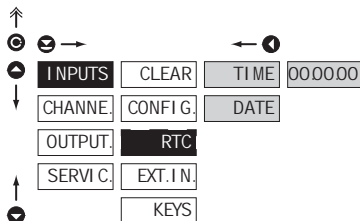
RTC   **Setting the real time clock (RTC)**

TIME   Time setting

- format 23.59.59

DATE   Date setting

- format DD.MM.YY

6.1.4a EXTERNAL INPUT FUNCTION SELECTION

INPUTS	CLEAR	EXT. 1	OFF
CHANNE.	CONFIG.	EXT. 2	HOLD
OUTPUT.	RTC	EXT. 3	LOCK.K.
SERVIC.	EXT.IN.	M.HOLD	B.PASS.
	KEYS		TARE A
			TARE B
			TARE C
			TARE D
			TARE E
			TARE F
			TARE G
			TARE H
			TARALL
			TARACT.
			CL.MM.
			CLR.TA
			CLR.TB
			CLR.T.C
			CLR.TD
			CLR.TE
			CLR.TF
			CLR.TG
			CLR.TH
			CT.ALL
			CT.ACT.
			SWIT.1
			SWIT.2
			SWIT.3
			SAVE
			CL.MEM.
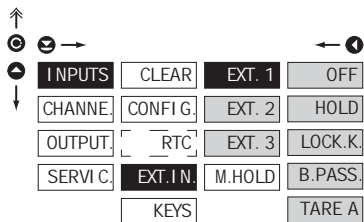
Table with external inputs control

Chan.	Ext 1	Ext 2	Ext 3
FIL. A	0	0	
FIL. B	0	1	
FIL. C	1	0	
FIL. D	1	1	
FIL. E	0	0	1
FIL. F	0	1	1
FIL. G	1	0	1
FIL. H	1	1	1

*

Procedure identical for **EXT. 2** and **EXT. 3**.
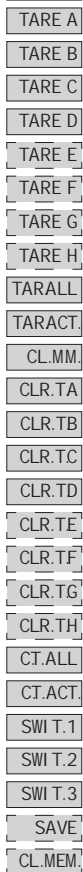
EXT.IN. **External input function selection**

OFF	Input is off
HOLD	Activation of HOLD
LOCK K.	Locking keys on the instrument
B.PASS.	Activation of locking access into programming menu

LIGHT/PROFI

TARE −	Tare activation > by individual inputs
TARALL	Tare activation > on all channels
TARACT.	Tare activation > on current input
CL.MM.	Resetting min/max value
CLR.T.−	Clear tare > by individual inputs
CT.ALL	Clear tare > on all channels
CT.ACT.	Clear tare > on current input
SWIT.1	Gradual switching of inputs projection
SWIT.2	BCD switching of inputs projection - Ext 1, 2

- control see table
- after this choice the setting for „EXT.2" is automatically disabled

| SWIT.3 | BCD switching of inputs projection - Ext 1, 2, 3 |

- control see table
- after this choice the setting for „EXT.2" and „EXT. 3" is automatically disabled

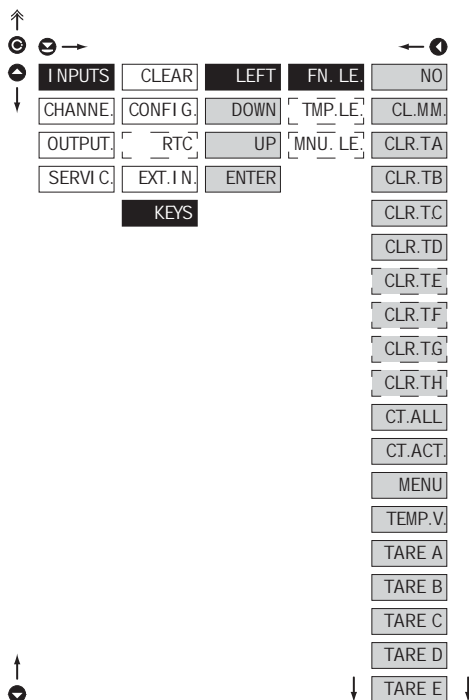| SAVE | Activation of recording of measured data into instrument memory (not a standard option) |
| CL.MEM. | Clears data and starts initialization (FAST RTC) |

- **DEF** EXT. 1 > HOLD
- **DEF** EXT. 2 > LOCK
- **DEF** EXT. 3 > SWIT. 1

6.1.4b   SELECTION OF FUNCTION "HOLD"

INPUTS	CLEAR	EXT. 1	DI SPL.	**DEF**
CHANNE.	CONFIG.	EXT. 2	DIS.+A.O.
OUTPUT.	RTC	EXT. 3	D.+A.O.+L.
SERVIC.	EXT.IN.	M.HOLD	ALL
	KEYS
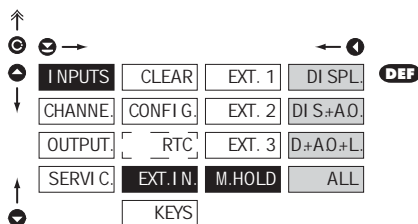
M.HOLD	Selection of function "HOLD"
DI SPL.	"HOLD" locks only the value displayed
DIS.+A.O.	"HOLD" locks the value displayed and on AO
D.+A.O.+L.	"HOLD" locks the value displayed, on AO and limit evaluation
ALL	"HOLD" locks the entire instrument

6.1.5a   OPTIONAL ACCESSORY FUNCTIONS OF THE KEYS

INPUTS	CLEAR	LEFT	FN. LE.	NO
CHANNE.	CONFIG.	DOWN	TMP.LE.	CL.MM.
OUTPUT.	RTC	UP	MNU. LE.	CLR.TA
SERVIC.	EXT.IN.	ENTER		CLR.TB
	KEYS			CLR.TC

CLR.TD, CLR.TE, CLR.TF, CLR.TG, CLR.TH, CT.ALL, CT.ACT., MENU, TEMP.V., TARE A, TARE B, TARE C, TARE D, TARE E

| FN. LE. | Assigning further functions to instrument keys |

- „FN. LE." > executive functions

NO	Key has no further function
CL.MM.	Resetting min/max value
CLR.T.-	Clear tare > by individual inputs
CT.ALL	Clear tare > on all channel
CL.ACT.	Clear tare > on current input
MENU	Direct access into menu on selected item

- after confirmation of this selection the "MNU. LE." item is displayed on superior menu level, where required selection is performed

| TEMP. V. | Temporary projection of selected values |

- after confirmation of this selection the item "TMP. LE." is displayed on superior menu level, whererequired selection is performed
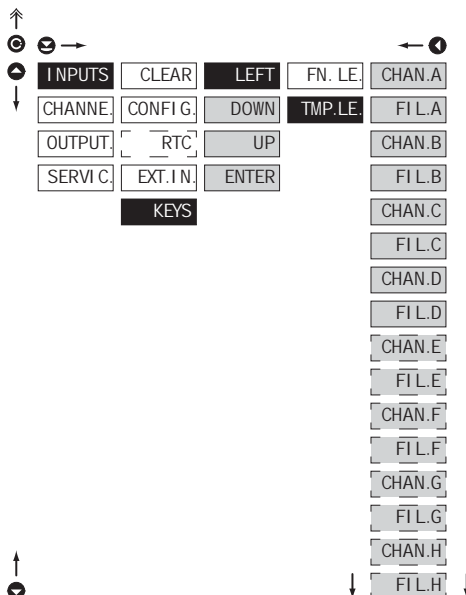
| TARE - | Tare activation > by individual inputs |

TARE E

TARE F

TARE G

TARE H

TARALL

TARACT.

SWI T.1

SWI T.-1

SAVE

CL.MEM.
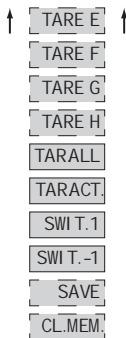
TARALL	Tare activation > on all channels
TARACT.	Tare activation > on current input
SWI T.1	Gradual switching of inputs projection - UP
SWI T.-1	Gradual switching of inputs projection - DOWN
SAVE	Activation of recording of measured data into instrument memory (not a standard option)
CL.MEM.	Clears data and starts initialization (FAST RTC)

!

Setting is identical for **LEFT**, **DOWN**, **UP** and **ENTER**

6.1.5b OPTIONAL ACCESSORY FUNCTIONS OF THE KEYS - TEMPORARY PROJECTION

INPUTS	CLEAR	LEFT	FN. LE.	CHAN.A
CHANNE.	CONFI G.	DOWN	TMP.LE.	FI L.A
OUTPUT.	RTC	UP		CHAN.B
SERVI C.	EXT.I N.	ENTER		FI L.B
	KEYS			CHAN.C

FI L.C

CHAN.D

FI L.D

CHAN.E

FI L.E

CHAN.F

FI L.F

CHAN.G

FI L.G

CHAN.H

FI L.H

TMP.LE.	**Temporary projection of selected item**

- "**Temporary**" projection of selected value is displayed for the time of keystroke
- "**Temporary**" projection may be switched to permanent by pressing ⊙ + "Selected key", this holds until the stroke of any key

CHAN.-	Temporary projection of value input/channel

- selection from "**Temporary**" projection of input A, B, C, D, E, F, G, H

FI L.-	Temporary projection of value input/channel after

digital filter processing

- selection from "**Temporary**" projection of filtered input A, B, C, D, E, F, G, H

↑ MAT.FN. ↑
MI N.
MAX
LI M 1
LI M 2
LI M 3
LI M 4
LI M 5
LI M 6
LI M 7
LI M 8
TI ME
DATE
TARE A
TARE B
TARE C
TARE D
TARE E
TARE F
TARE G
TARE H
TARACT.
P.T. A
P.T. B
P.T. C
P.T. D
P.T. E
P.T. F
P.T. G
P.T. H
PT. ACT
↑
⌄
COLD.J.
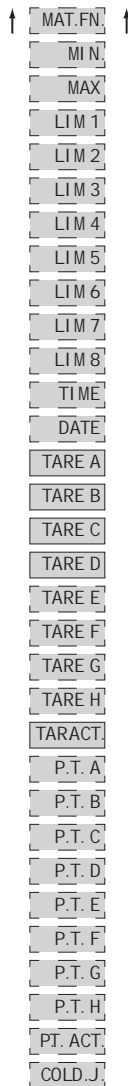
| MAT.FN. | Temporary projection of value "Mathematic funtion" |

| MI N | Temporary projection of value "Min. value" |

| MAX | Temporary projection of value "Max. value" |

| LI M – | Temporary projection of value "Limits" |

- selection from "Temporary" projection Limits 1, 2, 3, 4, 5, 6, 7, 8

| TI ME | Temporary projection of "TIME" value |

| DATE | Temporary projection of "DATE" value |

| TARE – | Temporary projection of "TARE" value |

- selection from "Temporary" projection Tare fir inputs A, B, C, D, E, F, G, H

| TARACT | Temporary projection of value "TAR.ACT" |

- "Temporary" projection of Tare for currently selected type

| P.TAR.A | Temporary projection of value "P. TAR. A" |

- selection from "Temporary" projection of "P. TAR. A" for inputs A, B, C, D, E, F, G, H

| PT.ACT. | Temporary projection of value "P. T. ACT." |

- "Temporary" projection of "P. T. TAR.-" for currently selected inpu

| COLD.J – | Temporary projection of "CJC" value |

!

Setting is identical for **LEFT**, **DOWN**, **UP** and **ENTER**

!

Preset values of the control keys **DEF**:
LEFT   dispays Input B
UP   dispays Input C
DOWN   dispays Input D
ENTER   Input switching - UP

6.1.5c OPTIONAL ACCESSORY FUNCTIONS OF THE KEYS - DIRECT ACCESS TO ITEM

INPUTS	CLEAR	LEFT	FN. LE.	LIM 1	DEF
CHANNE.	CONFIG.	DOWN	MNU.LE.	LIM 2	
OUTPUT.	RTC	UP		LIM 3	
SERVIC.	EXT.IN.	ENTER		LIM 4	
	KEYS			LIM 5	
				LIM 6	
				LIM 7	
				LIM 8	
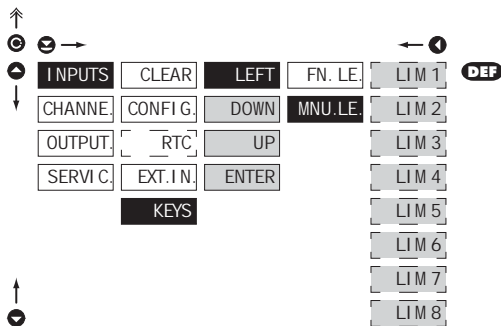
MNU.LE. | **Assigning access to selected menu item**

LIM 1	Direct access to item "LIM 1"
LIM 2	Direct access to item "LIM 2"
LIM 3	Direct access to item "LIM 3"
LIM 4	Direct access to item "LIM 4"
LIM 5	Direct access to item "LIM 5"
LIM 6	Direct access to item "LIM 6"
LIM 7	Direct access to item "LIM 7"
LIM 8	Direct access to item "LIM 8"

!

Setting is identical for LEFT, DOWN, UP and ENTER

6. SETTING **PROFI**

6.2   SETTING "PROFI" - CHANNELS
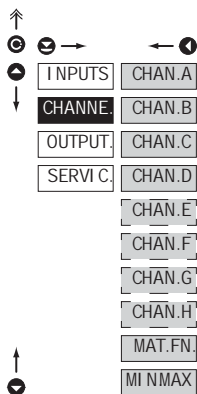
The primary instrument parameters are set in this menu

CHAN.A	Setting parameters of measuring "Channel"

- selection from inputs A, B, C, D, E, F, G, H

MAT.FN.	Setting parameters of mathematic functions

MINMAX	Selection of access and evaluation of Min/max

value значения

6.2.1a   DISPLAY PROJECTION   DC PM DU OHM
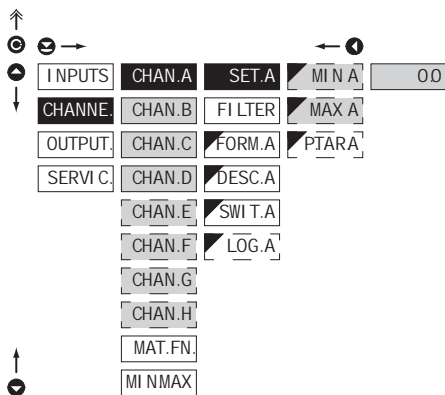
SET.A	Setting display projection > Input/Channel A

MIN A	Setting display projection for minimum value of input

signal

- range of the setting: -999...9999
- **DEF** = 0

MAX A	Setting display projection for maximum value of

input signal

- range of the setting: -999...9999
- **DEF** = 100

!

Setting is identical for inputs **B**, **C**, **D**, **E**, **F**, **G**, **H**

| 6.2.1b | SETTING FIXED TARE | DC | PM | DU | OHM |

	INPUTS	CHAN.A	SET.A	MIN A	0.0
	CHANNE.	CHAN.B	FILTER	MAX A
	OUTPUT.	CHAN.C	FORM.A	PTARA
	SERVIC.	CHAN.D	DESC.A
		CHAN.E	SWIT.A
		CHAN.F	LOG.A
		CHAN.G
		CHAN.H
		MAT.FN.
		MINMAX
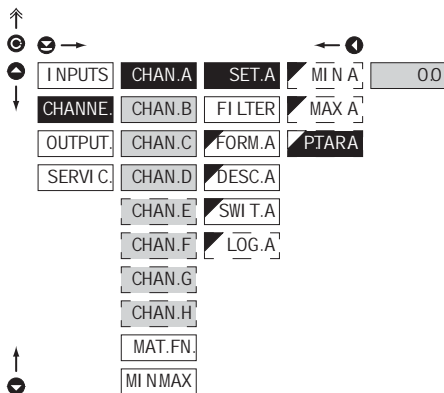
P.TARA — Setting "Fixed tare" value > Input/Channel A

- setting is designed for the event when it is necessary to firmly shift the beginning of the range by known size
- when setting (**P. TAR. A** ≠ 0) is in effect, display does not show the "T" symbol
- range of the setting: 0...9999
- **DEF** = 0

!

Setting is identical for inputs **B, C, D, E, F, G, H**

6.2.1c DIGITAL FILTERS

INPUTS	CHAN.A	SET.A	MOD FA	NO
CHANNE.	CHAN.B	FILTER	CON.FA	PRUMER
OUTPUT.	CHAN.C	FORM.A		PLOVOU.
SERVIC.	CHAN.D	DESC.A		EXPON.
	CHAN.E	SWIT.A		ROUND.
	CHAN.F	LOG.A		
	CHAN.G			
	CHAN.H			
	MAT.FN.			
	MINMAX			

DEF
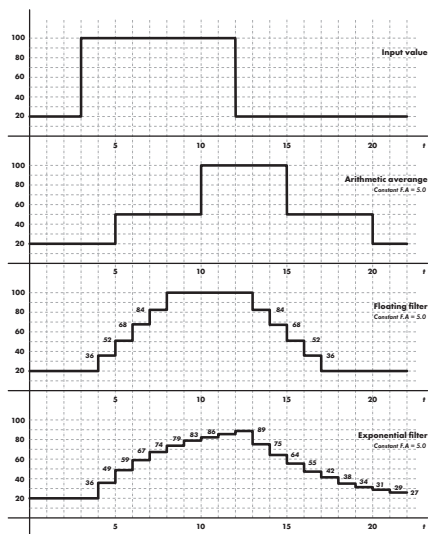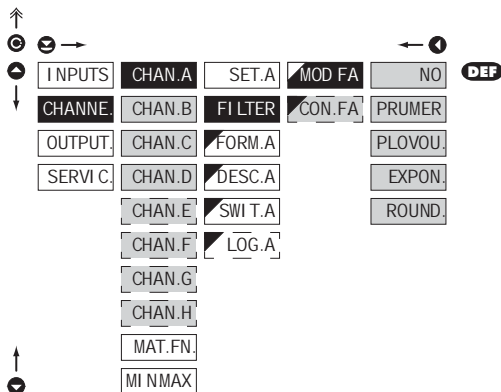
MOD.FA — Selection of digital filters > Input/Channel A

- at times it is useful for better user projection of data on display to modify it mathematically and properly, wherefore the following filters may be used

NO Filters are off

AVER. Measured data average

- arithmetic average from given number („CON. F.A") of measured values
- range 2…100

FLOAT. Selection of floating filter

- floating arithmetic average from given number („CON. F.A") of measured data and updates with each measured value
- range 2…30

EXPON. Selection of exponential filter

- integration filter of first prvniho grade with time constant („CON. F.A") measurement
- range 2…100

ROUND Measured value rounding

- is entered by any number, which determines the projection step (e.g: „CON. F.A" = 2,5 > display 0, 2.5, 5,…)
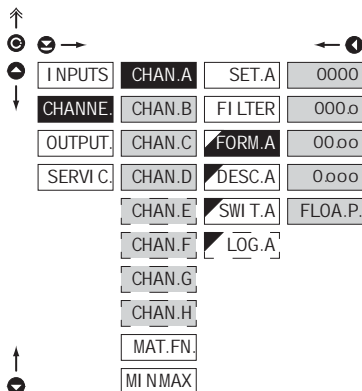
CON.FA Setting constants

- this menu item is always displayed after selection of particular type of filter
- **DEF** = 2

!
Setting is identical for inputs B, C, D, E, F, G, H

6.2.1d   PROJECTION FORMAT - POSITIONING OF DECIMAL POINT

INPUTS	CHAN.A	SET.A	0000
CHANNE.	CHAN.B	FILTER	000.0
OUTPUT.	CHAN.C	FORM.A	00.00
SERVIC.	CHAN.D	DESC.A	0.000
	CHAN.E	SWIT.A	FLOA.P.
	CHAN.F	LOG.A	
	CHAN.G		
	CHAN.H		
	MAT.FN.		
	MINMAX		

FORM.A Selection of decimal point > Input/Channel A

- the instrument allows for classic projection of a number with positioning of the DP as well as projection with floating DP, allowing to display a number in its most exact form „FLOAT. P."

0000. Setting DP - XXXX.

000.0 Setting DP - XXX.x

- **DEF**

00.00 Setting DP - XX.xx

0.000 Setting DP - X.xxx

FLOA.P. Floating DP

!
Setting is identical for inputs B, C, D, E, F, G, H

6.2.1e   PROJECTION OF DESCRIPTION - THE MEASURING UNITS

INPUTS	CHAN.A	SET.A
CHANNE.	CHAN.B	FILTER
OUTPUT.	CHAN.C	FORM.A
SERVIC.	CHAN.D	DESC.A
	CHAN.E	SWIT.A
	CHAN.F	LOG.A
	CHAN.G	
	CHAN.H	
	MAT.FN.	
	MINMAX	
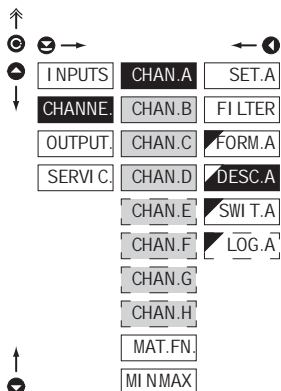
DESC.A Setting projection of descript. > Input/Channel A

- projection of mesured data may be extended (at the expense of the number of displayed places) by two characters for description
- description is set by shifted ASCII code, when two first places show the set description and two last characters their code in period 0...95
- description is cancelled by code 00

- **DEF** no description

!
Table of signs on page 90

!
Setting is identical for inputs B, C, D, E, F, G, H

6.2.1f SELECTION OF CHANNEL PROJECTION UPON SWITCHING

INPUTS	CHAN.A	SET.A	NO
CHANNE.	CHAN.B	FILTER	CHAN.	**DEF**
OUTPUT.	CHAN.C	FORM.A	FILTER
SERVIC.	CHAN.D	DESC.A	CHAN.+ F.
	CHAN.C	SWIT.A	
	CHAN.C	LOG.A	
	CHAN.D		
	CHAN.D		
	MAT.FN.		
	MINMAX		

SWIT.A | **Selection of channel projection upon switching**
> Input/Channel A

- setting in this item allows the user to choose individual measuring channels, which will be projected upon channel switching through function „SWIT. A"

NO | Projection prohibited

CHAN. | "Channel A" will be projected

FILTER | "Channel A" will be projected after digital filter modification

CHAN.+ F. | "Chanel A" will be projected and subsequently also "Channel A" after digital filter modification

!

Setting is identical for inputs B, C, D, E, F, G, H

6.2.1g SELECTION OF STORING DATA INTO INSTRUMENT MEMORY

INPUTS	CHAN.A	SET.A	LOG.A	NO	**DEF**
CHANNE.	CHAN.B	FILTER	FROM A	ALL
OUTPUT.	CHAN.C	FORM.A	TO A	IN
SERVIC.	CHAN.D	DESC.A		OUT
	CHAN.E	SWIT.A		
	CHAN.F	LOG.A		
	CHAN.G			
	CHAN.H			
	MAT.FN.			
	MINMAX			

LOG.A | **Selection of storing data into instrument memory**
> Input/Channel A

- by selection in this item you allow to register values into instrument memory
- another setting in item "OUTPUT. > MEMORY" (not in standard equipment)

NO | Measured data are not stored

ALL | Measured data are stored in memory

IN | Only data measured within the set interval are stored in memory

OUT | Only data measured outside the set interval are stored in memory

FROM A | Setting the initial value of interval

- range of setting: -999…9999
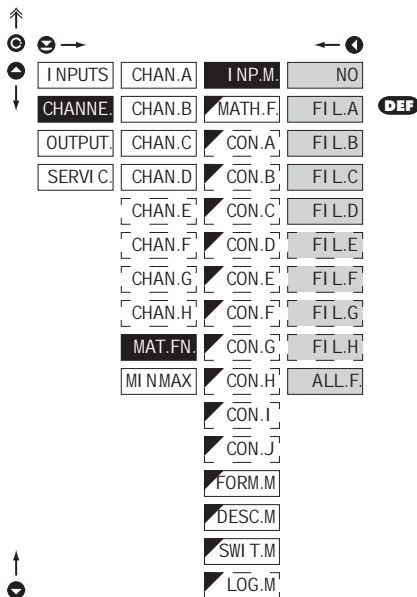
TO A | Setting the final value of interval

- range of setting: -999…9999

!

Setting is identical for inputs B, C, D, E, F, G, H

| 6.2.2a | MATHEMATIC FUNCTION - INPUT SELECTION |

| INP.M. | **Selection of input for calculation of mat. function** |

- selection of value from which the mathematic function will be calculated

NO	Mathematic functions are off
FIL.A	From "input/channel A" after digital filter modification
FIL.B	From "input/channel B" after digital filter modification
FIL.C	From "input/channel C" after digital filter modification
FIL.D	From "input/channel D" after digital filter modification
FIL.E	From "input/channel E" after digital filter modification
FIL.F	From "input/channel F" after digital filter modification
FIL.G	From "input/channel G" after digital filter modification
FIL.H	From "input/channel H" after digital filter modification
ALL.F.	From all inputs/channels after digital filter modification

6.2.2b   МАТЕМАТИЧЕСКИЕ ФУНКЦИИ

INPUTS	CHAN.A	INP.M.	OFF. DEF
CHANNE.	CHAN.B	MAT. F.	MULTIN.
OUTPUT.	CHAN.C	CON. A	1/MUL.
SERVIC.	CHAN.D	CON. B	LOGAR.
	CHAN.E	CON. C	EXPON.
	CHAN.F	CON. D	POWER
	CHAN.G	CON. E	ROOT
	CHAN.H	CON. F	SIN X
	MAT.FN.	CON. G	
	MINMAX	CON. H	SUMA DEF
		CON. I	DIVIDE
		CON. J	QUADR.
		FORM.M	
		DESC.M	
		PREp.M	
		LOG.M	

MATH.F. **Selection of mathematic functions**

In selecting „**FIL. - "** in item „**INP. M.**"

OFF Mathematic functions are off

MULIN Multinominal

$Ax^5 + Bx^4 + Cx^3 + Dx^2 + Ex + F$

1/MUL. 1/x

$\dfrac{A}{x^5} + \dfrac{B}{x^4} + \dfrac{C}{x^3} + \dfrac{D}{x^2} + \dfrac{E}{x} + F$

LOGAR. Logarithm

$A \times \ln\left(\dfrac{Bx+C}{Dx+E}\right) + F$

EXPON. Exponential

$A \times e^{\left(\frac{Bx+C}{Dx+E}\right)} + F$

POWER Power

$A \times (Bx+C)^{(Dx+E)} + F$

ROOT Root

$A \times \sqrt{\dfrac{Bx+C}{Dx+E}} + F$

SIN X Sin x

$A\sin^5 x + B\sin^4 x + C\sin^3 x + D\sin^2 x + E\sin x + F$

In selecting „**ALL. F.**" in item „**INP. M.**"

SUMA Total of values from channels (inputs)

[A x KA + B x KB + C x KC + D x KD + G x KE + H x KF + I x KG + J x KH] x E + F

DIVIDE Channels (inputs) values division

[A x KA + C x KC + G x KE + J x KG] /[B x KB + D x KD + H x KF + J x KH] x E + F

QUADR. Product of channels (inputs) values

[A x KA² + B x KB² + C x KC² + D x KD² + G x KE² + H x KF² + I x KG² + J x KH²] x E + F

CON. - Setting constants for calculation of mat.functions

- this menu is displayed only after selection of given mathematic function
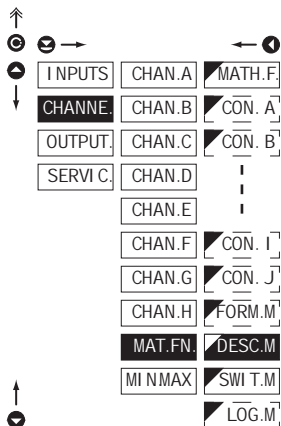
6.2.2c MATHEMATIC FUNCTIONS - DECIMAL POINT

INPUTS	CHAN.A	INP.M.	0000
CHANNE.	CHAN.B	MATH.F.	000.o
OUTPUT.	CHAN.C	CON. A	00.oo
SERVI C.	CHAN.D	CON. B	0.ooo
	CHAN.E	CON. C	FLOA.P.
	CHAN.F	CON. D	
	CHAN.G	CON. E	
	CHAN.H	CON. F	
	MAT.FN.	CON. G	
	MI NMAX	CON. H	
		CON. I	
		CON. J	
		FORM.M.	
		DESC.M	
		SWI T.M	
		LOG.M	
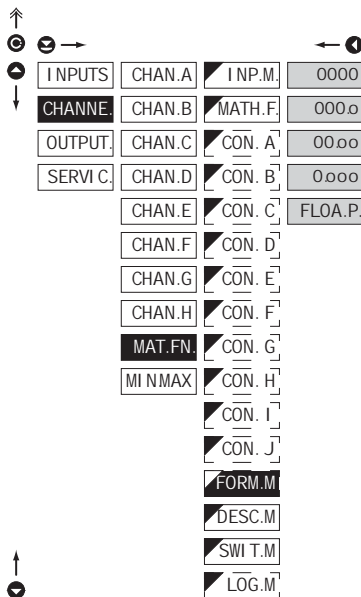
FORM.M — **Selection of decimal point**

- the instrument allows for classic projection of a number with positioning of the DP as well as projection with floating DP, allowing to display a number in its most exact form „**FLOA. P.**"

0000	Setting DP - XXXX.
000.o	Setting DP - XXX.x
00.oo	Setting DP - XX.xx
0.ooo	Setting DP - X.xxx
FLOA.P.	Floating DP

- **DEF**

6.2.2d MATHEMATIC FUNCTIONS - MEASURING UNITS

INPUTS	CHAN.A	MATH.F.
CHANNE.	CHAN.B	CON. A
OUTPUT.	CHAN.C	CON. B
SERVI C.	CHAN.D	¦
	CHAN.E	¦
	CHAN.F	CON. I
	CHAN.G	CON. J
	CHAN.H	FORM.M
	MAT.FN.	DESC.M
	MI NMAX	SWI T.M
		LOG.M

DESC.M. — **Setting projection of description for "MAT.FN"**

- projection of mesured data may be extended (at the expense of the number of displayed places) by two characters for description
- description is set by shifted ASCII code, when two first places show the set description and two last characters their code in period 0...95
- description is cancelled by code 00

- **DEF** no description

!

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6.2.2e MATHEMATIC FUNCTIONS - SELECTION OF CHANNEL PROJECTION UPON SWITCHING

INPUTS	CHAN.A	INP.M.	NO	DEF
CHANNE.	CHAN.B	MATH.F.	YES	
OUTPUT.	CHAN.C	CON. A		
SERVIC.	CHAN.D	CON. B		
	CHAN.E			
	CHAN.F			
	CHAN.G	CON. H		
	CHAN.H	FORM.M		
	MAT.FN.	DESC.M		
	MINMAX	SWIT.M		
		LOG.M		

SWIT.M — **Selection of channel projection upon switching**

- setting in this item allows the user to choose individual measuring channels, which will get projected upon switching function channels „SWIT. M"

YES — Projection admitted

NO — Projection denied

6.2.2f MATHEMATIC FUNCTIONS - SELECTION OF STORING DATA INTO INSTRUMENT MEMORY

INPUTS	CHAN.A	INP.M.	LOG.M	NO	DEF
CHANNE.	CHAN.B	MATH.F.	FROM M	ALL	
OUTPUT.	CHAN.C	CON. A	TO M	IN	
SERVIC.	CHAN.D	CON. B		OUT	
	CHAN.E	CON. C			
	CHAN.F	CON. D			
	CHAN.G	CON. E			
	CHAN.H	CON. F			
	MAT.FN.	CON. G			
	MINMAX	CON. H			
		CON. I			
		CON. J			
		FORM.M			
		DESC.M			
		SWIT.M			
		LOG.M			

LOG.M — **Selection of storing data into instrument memory**

- by selection in this item you allow to register values into instrument memory
- another setting in item "OUTPUT. > MEMORY" (not in standard experiment)

NO — Measured data is not stored

ALL — Measured data is stored in memory

IN — Only data measured within the set interval is stored in memory

OUT — Only data measured outside the set interval is stored in memory
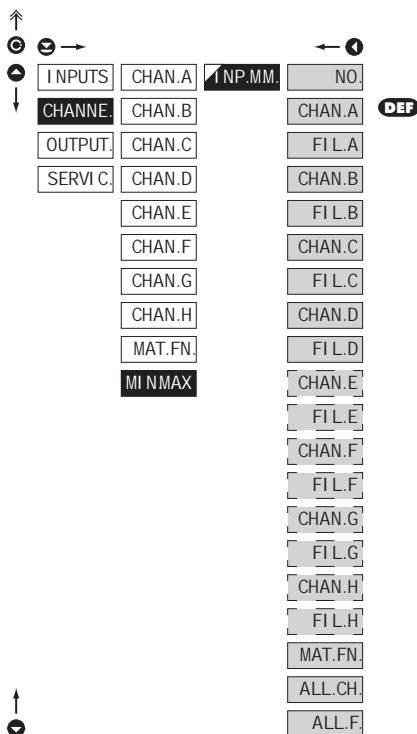
FROM M — Setting the initial interval value
- setting range: -999...9999

TO M — Setting the final interval value
- setting range: -999...9999

6.2.3 SELECTION OF EVALUATION OF MIN/MAX VALUE

INPUTS	CHAN.A	INP.MM.	NO.
CHANNE.	CHAN.B		CHAN.A **DEF**
OUTPUT.	CHAN.C		FIL.A
SERVIC.	CHAN.D		CHAN.B
	CHAN.E		FIL.B
	CHAN.F		CHAN.C
	CHAN.G		FIL.C
	CHAN.H		CHAN.D
	MAT.FN.		FIL.D
	MINMAX		CHAN.E
			FIL.E
			CHAN.F
			FIL.F
			CHAN.G
			FIL.G
			CHAN.H
			FIL.H
			MAT.FN.
			ALL.CH.
			ALL.F.

INP.MM. Selection of evaluation of min/max value

- selection of value from which the min/max value will be calculated

NO Evaluation of min/max value is off

CHAN.- From selected input

- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

FIL.- From selected input after digital filter modification

- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

MAT.FN. From "Mathematic functions

ALL.CH. From all channels

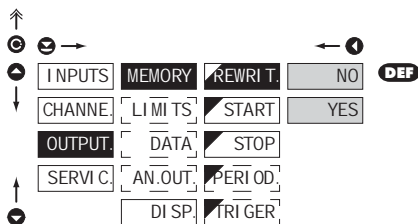**ALL.F.** From all inputs after digital filter modification

6.3 SETTING „PROFI" - OUTPUTS

INPUTS	MEMORY
CHANNE.	LIMITS
OUTPUT.	DATA
SERVIC.	AN.OUT.
	DISP.
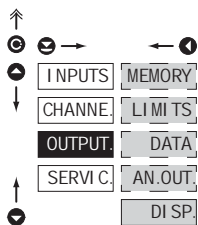
In this menu it is possible to set parameters of the instrument output signals

MEMORY	Setting data logging into memory
LIMITS	Setting type and parameters of limits
DATA	Setting type and parameters of data output
AN.OUT.	Setting type and parameters of analog output
DISP.	Setting display projection and brightness

6.3.1a SELECTION OF MODE OF DATA LOGGING INTO INSTRUMENT MEMORY

INPUTS	MEMORY	REWRIT.	NO	DEF
CHANNE.	LIMITS	START	YES	
OUTPUT.	DATA	STOP		
SERVIC.	AN.OUT.	PERIOD		
	DISP.	TRIGER		

REWRIT.	**Selection of the mode of data logging**

- selection of the mode in the event of full instrument memory

NO	Rewriting values prohibited
YES	Rewriting values permitted, the oldest get rewritten by the latest

6.3.1b SETTING DATA LOGGING INTO INSTRUMENT MEMORY - RTC

INPUTS	MEMORY	REWRIT.
CHANNE.	LIMITS	START
OUTPUT.	DATA	STOP
SERVIC.	AN.OUT.	PERIOD.
	DISP.	

START Start of data logging into instrument memory
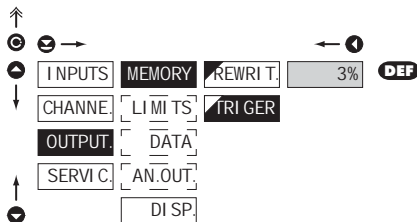- time format HH.MM.SS

STOP Stop data logging into instrument memory
- time format HH.MM.SS

PERIOD. Period of data logging into instrument memory
- determines the period in which values will be logged in an interval delimited by the time set under items **START** and **STOP**
- time format HH.MM.SS
- records are made on a daily basis in selected interval and period
- item not displayed if "**SAVE**" is selected in menu [**INPUT > EXT. IN.**]

RTC

The lowest recording rate possible is once a day, the highest is every second. Under exceptional circumstances it is possible to set the rate to 8 times per second by entering the recording period as 00:00:00. However, this mode is not recommended due to the memory overload. Recordings are realised in a timeframe of one day and are repeated periodically every following day. Recordings can take place either inside or outside of selected time intervals. The duration of re-writing can be determined by the number of channels recorded as well as by the recording rate.

6.3.1c SETTING DATA LOGGING INTO INSTRUMENT MEMORY - FAST

INPUTS	MEMORY	REWRIT.	3%	DEF
CHANNE.	LIMITS	TRIGER		
OUTPUT.	DATA			
SERVIC.	AN.OUT.			
	DISP.			

TRIGER Setting logging data into inst. memory
- logging data into inst. memory is governed by the folowing selection, which determines how many percent of the memory is reserved for data logging prior to initiation of trigger imputse
- initialization is on ext. input or button
- setting in range 1...100 %
- when setting 100 %, datalogging works in the mode **ROLL** > data keep getting rewritten in cycles
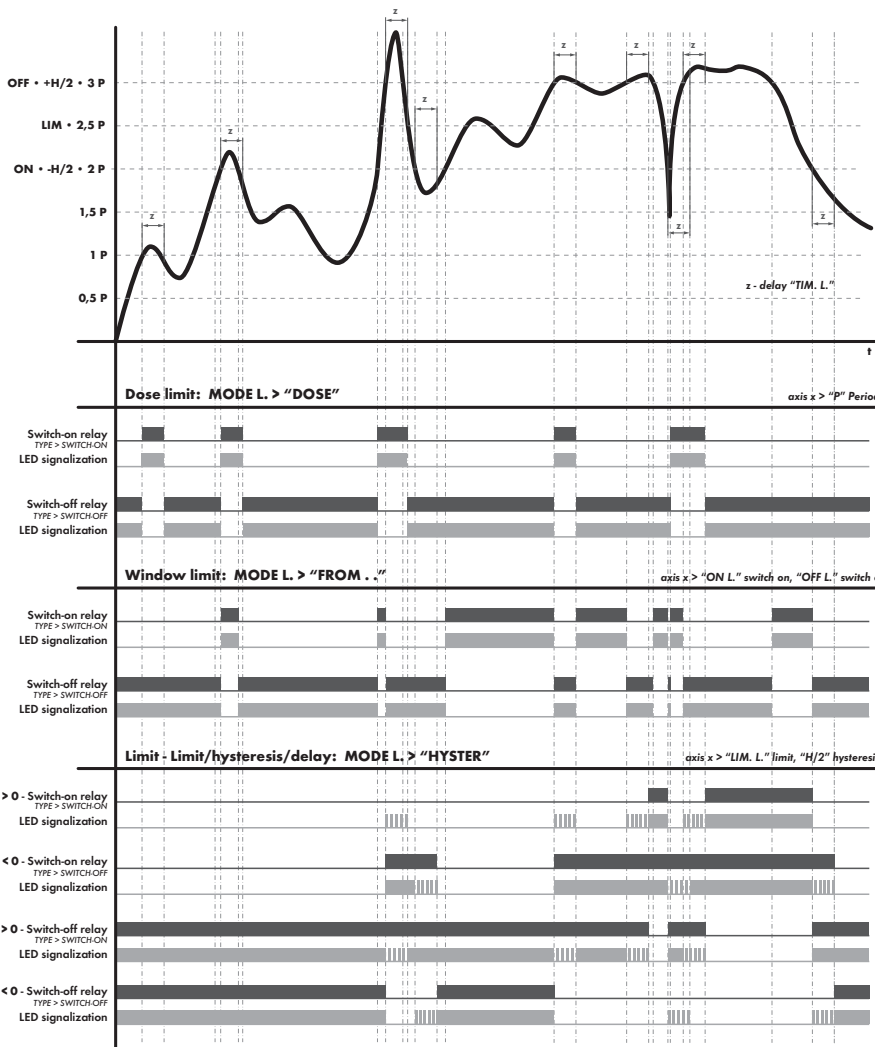
1. Memory initialization
- clear memory [ext.input, button]
- LED "M" flashes, after reading TRIGGER [%] memory is permanently shining. In ROLL flashes constantly.
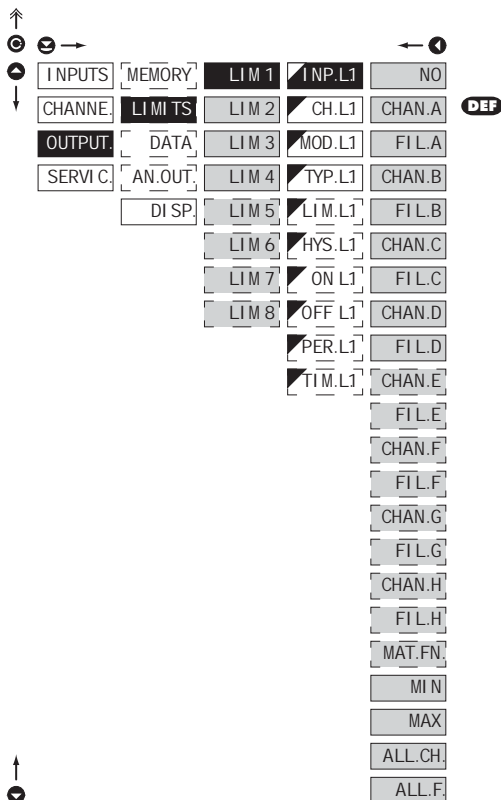
2. Triggering
- external input, button
- after the memory LED is full "M" turns off
- in the ROLL mode the trigger ends datalogging and LED turns off

3 . Termination
- ext. input, button or reading data via RS

FAST

The memory operates on the basis of memory oscilloscope. Select an area of 0...100% of the memory capacity [100% represents 8 192 individual recordings for a single channel measurement]. This area is filled cyclically up to the point when the recording starts [activated by the front panel button or by an external input]. When the remaining memory capacity fills up the recording stops. A new recording is possible after the deletion of the latest recording. It is possible to abort a recording before its completion by reading out the data.

MODE > HYSTER • FROM - TO - DOSING

DESCRIPTION OF RELAY FUNCTION

OFF • +H/2 • 3 P

LIM • 2,5 P

ON • -H/2 • 2 P

1,5 P

1 P

0,5 P

z - delay "TIM. L."

t

Dose limit: MODE L. > "DOSE"

axis x > "P" Period

Switch-on relay
TYPE > SWITCH-ON
LED signalization

Switch-off relay
TYPE > SWITCH-OFF
LED signalization

Window limit: MODE L. > "FROM . ."

axis x > "ON L." switch on, "OFF L." switch

Switch-on relay
TYPE > SWITCH-ON
LED signalization

Switch-off relay
TYPE > SWITCH-OFF
LED signalization

Limit - Limit/hysteresis/delay: MODE L. > "HYSTER"

axis x > "LIM. L." limit, "H/2" hysteresi

Z > 0 - Switch-on relay
TYPE > SWITCH-ON
LED signalization

Z < 0 - Switch-on relay
TYPE > SWITCH-OFF
LED signalization

Z > 0 - Switch-off relay
TYPE > SWITCH-ON
LED signalization

Z < 0 - Switch-off relay
TYPE > SWITCH-OFF
LED signalization

6.3.2a SELECTION OF INPUT FOR LIMITS EVALUATION

INPUTS	MEMORY	LIM 1	INP.L1	NO
CHANNE.	LIMITS	LIM 2	CH.L1	CHAN.A	**DEF**
OUTPUT.	DATA	LIM 3	MOD.L1	FIL.A
SERVIC.	AN.OUT.	LIM 4	TYP.L1	CHAN.B
	DISP.	LIM 5	LIM.L1	FIL.B
		LIM 6	HYS.L1	CHAN.C
		LIM 7	ON L1	FIL.C
		LIM 8	OFF L1	CHAN.D
			PER.L1	FIL.D
			TIM.L1	CHAN.E
				FIL.E
				CHAN.F
				FIL.F
				CHAN.G
				FIL.G
				CHAN.H
				FIL.H
				MAT.FN.
				MIN
				MAX
				ALL.CH.
				ALL.F.

INP.L1 — **Selection evaluation of limits**

- selection of value from which the limit will be evaluated

NO — Limit evaluation is off

CHAN.– — From selected input
- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

FIL.– — From selected input after digital filter modification
- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

MAT.FN. — Limit evaluation from "Mathematic functions"

MIN — Limit evaluation from "Min. value"

MAX — Limit evaluation from "Max. value"

ALL.CH. — From all inputs

ALL.F. — From all inputs after digital filter modification

!

Setting is identical for **LIM 2…LIM 8**

6.3.2b SELECTION OF CHANNELS FOR LIMIT EVALUATION

INPUTS	MEMORY	LIM 1	INP.L1	F.A	YES-NO
CHANNE.	LIMITS	LIM 2	CH.L1	F.B	
OUTPUT.	DATA	LIM 3	MOD.L1	F.C	
SERVIC.	AN.OUT.	LIM 4	TYP.L1	F.D	
	DISP.	LIM 5	LIM.L1	F.E	
		LIM 6	HYS.L1	F.F	
		LIM 7	ON L1	F.G	
		LIM 8	OFF L1	F.H	
			PER.L1		
			TIM.L1		

CH.L1 — **Selection of channels for limit evaluation**

- function is available only upon setting "ALL.CH." or "ALL. F." in item menu **OUTPUT./LIMITS/ LIM 1/INP. L1**, when selecting "ALL. CH.", then description "CH.A...H"", is displayed here, upon selection of "ALL. F." description "F.A...H"
- setting allows assigning an arbitrary number of measuring channels to one limit for their evaluation
- the limit is active if at least one value from arbitrary channel exceeds the set value

- **DEF** = YES

!

Setting is identical for LIM 2...LIM 8

6.3.2c SELECTION OF TYPE OF LIMIT

INPUTS	MEMORY	LIM 1	INP.L1	HYSTER	DEF
CHANNE.	LIMITS	LIM 2	CH.L1	FROM..	
OUTPUT.	DATA	LIM 3	MOD.L1	DOSING	
SERVIC.	AN.OUT.	LIM 4	TYP.L1		
	DISP.	LIM 5	LIM.L1		
		LIM 6	HYS.L1		
		LIM 7	ON L1		
		LIM 8	OFF L1		
			PER.L1		
			TIM.L1		

MOD.L1 — **Selection the type of limit**

HYSTER — Limit is in mode "Limit, hysteresis, delay"

- for this mode the parameters of "LIM. L1" are set, at which the limit will shall react, "HYS. L1" the hysteresis range around the limit (LIM ±1/2 HYS) and time "TIM. L1" determining the delay of relay switch-on

FROM.. — Frame limit

- for this mode the parameters are set for interval "ON. L1" the relay switch-on and "OFF. L1" the relay switch-off

DOSING — Dose limit (periodic)

- for this mode the parameters are set for "PER. L1" determining the limit value as well as its multiples at which the output is active and "TIM. L2" indicating the time during which is the output active

!

Setting is identical for LIM 2...LIM 8

6.3.2d   SELECTION OF TYPE OF OUTPUT

INPUTS	MEMORY	LIM 1	INP.L1	CLOSE	**DEF**
CHANNE.	LIMITS	LIM 2	CH.L1	OPEN	
OUTPUT.	DATA	LIM 3	MOD.L1		
SERVIC.	AN.OUT.	LIM 4	TYP.L1		
	DISP.	LIM 5	LIM.L1		
		LIM 6	HYS.L1		
		LIM 7	ON L1		
		LIM 8	OFF L1		
			PER.L1		
			TIM.L1		

TYP.L1	**Selection of type of output**
CLOSE.	Output switches on when condition is met
OPEN	Output switches off when condition is met

!

Setting is identical for LIM 2…LIM 8

6.3.2e   SETTING VALUES FOR LIMITS EVALUATION

INPUTS	MEMORY	LIM 1	INP.L1
CHANNE.	LIMITS	LIM 2	CH.L1
OUTPUT.	DATA	LIM 3	MOD.L1
SERVIC.	AN.OUT.	LIM 4	TYP.L1
	DISP.	LIM 5	LIM.L1
		LIM 6	HYS.L1
		LIM 7	ON L1
		LIM 8	OFF L1
			PER.L1
			TIM.L1

LIM.L1	Setting limit for switch-on

- for type "HYSTER"

HYS.L1	Setting hysteresis

- for type "HYSTER"
- indicates the range around the limit (in both directions, LIM. ±1/2 HYS.)

ON.L1	Setting the outset of the interval of limit switch-on

- for type "FROM.."

OFF.L1	Setting the end of the interval of limit switch-on

- for type "FROM.."

PER.L1	Setting the period of limit switch-on

- for type "DOSING"

TIM.L1	Setting the time switch-on of the limit

- for type "HYSTER" and "DOSING"
- setting within the range: ±0…99,9 s
- positive time > relay switches on after crossing the limit (LIM. L1) and the set time (TIM. L1)
- negative time > relay switches off after crossing the limit (LIM. L1) and the set negative time (TIM. L1)

!

Setting is identical for LIM 2…LIM 8

6.3.3a SELECTION OF DATA OUTPUT BAUD RATE

INPUTS	MEMORY	BAUD	600
CHANNE.	LIMITS	ADDR.	1200
OUTPUT.	DATA	AD.MOD.	2400
SERVIC.	AN.OUT.	ADR.PB.	4800
	DISP.	PROT	9600 **DEF**
			19200
			38400
			57600
			115200
			230400

BAUD	Selection of data output baud rate
600	Rate - 600 Baud
1200	Rate - 1 200 Baud
2400	Rate - 2 400 Baud
4800	Rate - 4 800 Baud
9600	Rate - 9 600 Baud
19200	Rate - 19 200 Baud
38400	Rate - 38 400 Baud
57600	Rate - 57 600 Baud
115200	Rate - 115 200 Baud
230400	Rate - 230 400 Baud

6.3.3b SETTING INSTRUMENT ADDRESS

INPUTS	MEMORY	BAUD	0
CHANNE.	LIMITS	ADDR.	
OUTPUT.	DATA	AD.MOB.	
SERVIC.	AN.OUT.	ADR.PB.	
	DISP.	PROT.	

ADDR.	Setting instrument address

- setting in range 0...31
- **DEF** = 00

ADDR.	Setting instrument address - MODBUS

- setting in range 1...247
- **DEF** = 1

ADR.PB.	Setting instrument address - PROFIBUS

- setting in range 1...127
- **DEF** = 19

6.3.3c | SELECTION OF DATA OUTPUT PROTOCOL

INPUTS	MEMORY	BAUD	ASCII	DEF
CHANNE.	LIMITS	ADDR.	MBUS
OUTPUT.	DATA	AD.MOD.	MODBUS
SERVIC.	AN.OUT.	ADR.PB.
	DISP.	PROT.
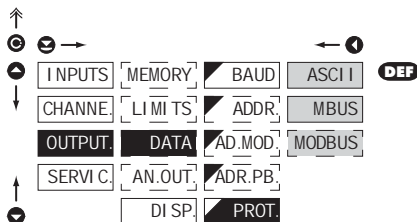
PROT. **Selection of the type of analog output**
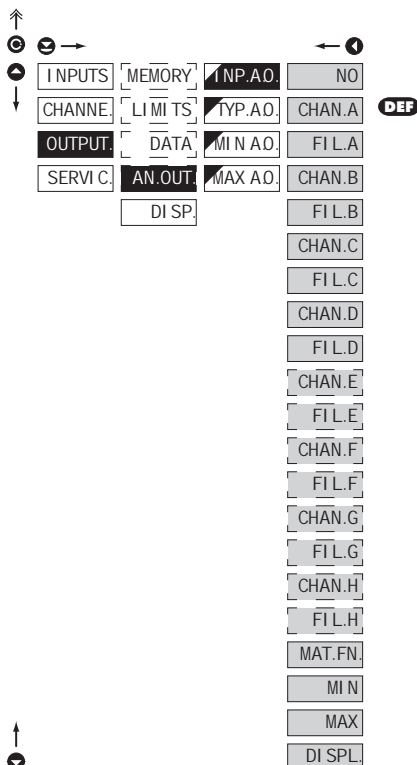
ASCII Data protocol ASCII

M.BUS Data protocol DIN MessBus

MODBUS Data protocol MODBUS-RTU

- option is available only for RS 485

6.3.4a | SELECTION OF INPUT FOR ANALOG OUTPUT

INPUTS	MEMORY	INP.AO.	NO
CHANNE.	LIMITS	TYP.AO.	CHAN.A	DEF
OUTPUT.	DATA	MIN AO.	FIL.A
SERVIC.	AN.OUT.	MAX AO.	CHAN.B
	DISP.		FIL.B
			CHAN.C
			FIL.C
			CHAN.D
			FIL.D
			CHAN.E
			FIL.E
			CHAN.F
			FIL.F
			CHAN.G
			FIL.G
			CHAN.H
			FIL.H
			MAT.FN.
			MIN
			MAX
			DISPL.

INP.AO. **Selection evaluation analog output**

- selection of value from which the analog output will be evaluated

NO AO evaluation is off

CHAN.- From selected input

- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

FIL.- С "Входа/Канала" после цифрового фильтра

- selection from inputs 1, 2, 3, 4, 5, 6, 7, 8

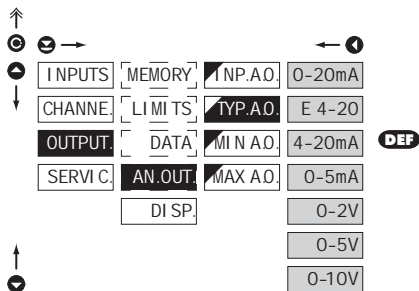**MAT.FN.** AO evaluation from "Math. functions"

MIN AO evaluation from "Min. value"

MAX AO evaluation from "Max. value"

DISPL. From currently displayed value

6.3.4b SELECTION OF THE TYPE OF ANALOG OUTPUT

INPUTS	MEMORY	INP.A.O.	0-20mA
CHANNE.	LIMITS	TYP.A.O.	E 4-20
OUTPUT.	DATA	MIN A.O.	4-20mA **DEF**
SERVIC.	AN.OUT.	MAX A.O.	0-5mA
	DISP.		0-2V
			0-5V
			0-10V

TYP. A.O. Selection of the type of analog output

0-20mA Type - 0…20 mA

Er4-20 Type - 4…20 mA with indication
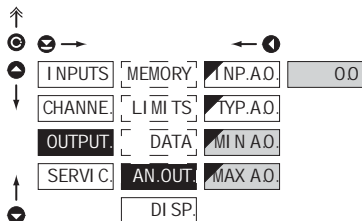- with indic. of error statement [< 3,6 mA]

4-20mA Type - 4…20 mA

0-5mA Type - 0…5 mA

0-2V Type - 0…2 V

0-5V Type - 0…5 V

0-10V Type - 0…10 V

6.3.4c SETTING THE ANALOG OUTPUT RANGE

INPUTS	MEMORY	INP.A.O.	0.0
CHANNE.	LIMITS	TYP.A.O.	
OUTPUT.	DATA	MIN A.O.	
SERVIC.	AN.OUT.	MAX A.O.	
	DISP.		

AN.OUT. Setting the analog output range

- analog output is isolated and its value corresponds with displayed data. It is fully programmable, i.e. it allows to assign the AO limit points to two arbitrary points of the entire measuring range

MIN A.O. Assigning the display value to the beginning of the AO range
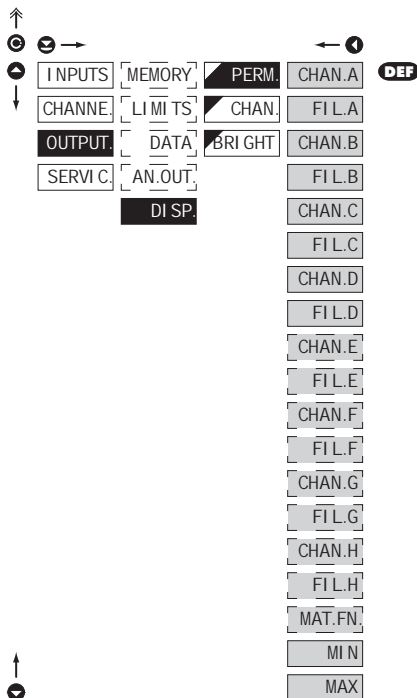
- range of the setting: -999…9999
- **DEF** = 0

MAX A.O. Assigning the display value to the end of the AO range

- range of the setting: -999…9999
- **DEF** = 100
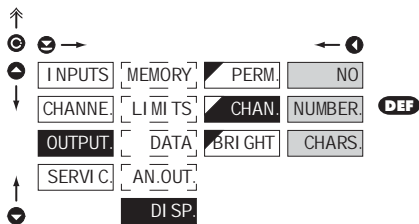
6.3.5a SELECTION OF INPUT FOR DISPLAY PROJECTION

INPUTS	MEMORY	PERM.	CHAN.A	DEF
CHANNE.	LIMITS	CHAN.	FIL.A
OUTPUT.	DATA	BRIGHT	CHAN.B
SERVIC.	AN.OUT.		FIL.B
	DISP.		CHAN.C

CHAN.A
FIL.A
CHAN.B
FIL.B
CHAN.C
FIL.C
CHAN.D
FIL.D
CHAN.E
FIL.E
CHAN.F
FIL.F
CHAN.G
FIL.G
CHAN.H
FIL.H
MAT.FN.
MIN
MAX

PERM.	**Selection display projection**

- selection of value which will be shown on the instrument display

CHAN.A	Projection of values from "Channel A"
FIL.A	From "Channel A" after digital filters processing
CHAN.B	Projection of values from "Channel B"
FIL.B	From "Channel B" after digital filters processing
CHAN.C	Projection of values from "Channel C"
FIL.C	From "Channel C" after digital filters processing
CHAN.D	Projection of values from "Channel D"
FIL.D	From "Channel D" after digital filters processing
CHAN.E	Projection of values from "Channel E"
FIL.E	From "Channel E" after digital filters processing
CHAN.F	Projection of values from "Channel F"
FIL.F	From "Channel F" after digital filters processing
CHAN.G	Projection of values from "Channel G"
FIL.G	From "Channel G" after digital filters processing
CHAN.H	Projection of values from "Channel H"
FIL.H	From "Channel H" after digital filters processing
MAT.FN.	Projection of values from "Math.functions"
MIN.	Projection of values from "Min.value"
MAX	Projection of values from "Max.value"

6.3.5b | SELECTION OF SIGNALIZATION OF MEASURING INPUTS ON DISPLAY

INPUTS	MEMORY	PERM.	NO
CHANNE.	LIMITS	CHAN.	NUMBER. **DEF**
OUTPUT.	DATA	BRIGHT	CHARS.
SERVIC.	AN.OUT.		
	DISP.		

CHAN.	Selection of inputs signalization
NO	Display is off
NUMBER.	Numeric description of inputs

- inputs are marked 1, 2, 3, 4, 5, 6, 7, 8

CHARS.	Alphabetical description of inputs

- inputs are marked A, B, C, D, E, F, G, H

6.3.5c | SELECTION OF DISPLAY BRIGHTNESS

INPUTS	MEMORY	PERM.	100% **DEF**
CHANNE.	LIMITS	CHAN.	75%
OUTPUT.	DATA	BRIGHT	50%
SERVIC.	AN.OUT.		25%
	DISP.		0%
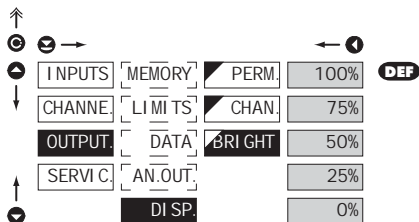
BRIGHT	Selection of display brightness

- by selecting display brightness we may appropriately react to light conditions in place of instrument location

0%	Display is off

- after keystroke display turns on for 10 s

25%	Display brightness - 25%
50%	Display brightness - 50%
75%	Display brightness - 75%
100%	Display brightness - 100%

6.4 SETTING "PROFI" - SERVIS

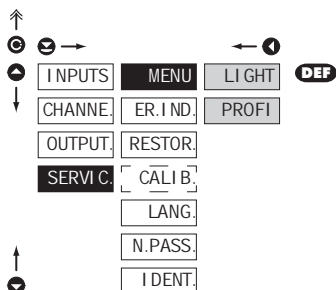|		
INPUTS	MENU	
CHANNE.	ER.IND.	
OUTPUT.	RESTOR.	
SERVIC.	CALIB.	
	LANG.	
	N.PASS.	
	IDENT.	
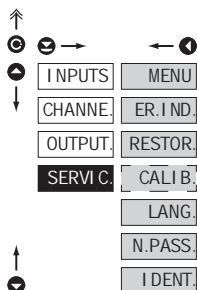
The instrument service functions are set in this menu

MENU — Selection of menu type LIGHT/PROFI

ER.IND. — Selection of type of error statement signalization

RESTOR. — Restore instrument manufacture setting and calibration

CALIB — Input range calibration for „DU" version

LANG. — Language version of instrument menu

N.PASS. — Setting new access password

IDENT. — Instrument identification

6.4.1 SELECTION OF TYPE OF PROGRAMMING MENU

INPUTS	MENU	LIGHT	DEF
CHANNE.	ER.IND.	PROFI	
OUTPUT.	RESTOR.		
SERVIC.	CALIB.		
	LANG.		
	N.PASS.		
	IDENT.		

MENU — **Selection of menu type - LIGHT/PROFI**

- enables setting the menu complexity according to user needs and skills
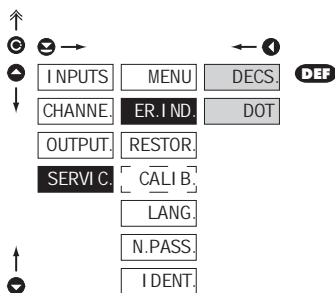
LIGHT — Active LIGHT menu

- simple programming menu, contains only items necessary for configuration and instrument setting
- linear menu > items one after another

PROFI — Active PROFI menu

- complete programming menu for expert users
- tree menu

!
Change of setting is valid upon next access into menu

6.4.2 SELECTION OF TYPE OF ERROR STATEMENT SIGNALIZATION

INPUTS	MENU	DECS.	DEF
CHANNE.	ER.IND.	DOT	
OUTPUT.	RESTOR.		
SERVIC.	CALIB.		
	LANG.		
	N.PASS.		
	IDENT.		

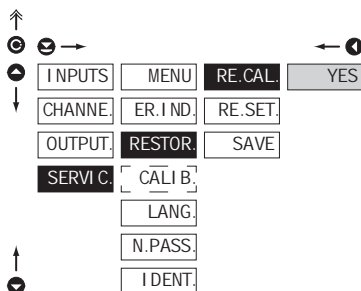**ER.IND.** Selection of type of error statement signalization

- selection of type of signalization relates only to error statements on active measuring inputs, which are not currently projected on the display
- error on the displayed active input is always indicated

DECS. Error statements are displayed as text on the display of measuring units

- signalization "E" + no. of input/channel indicating where a measuring error occurred

DOT Error statement is signalled only by flashing of the decimal point by the indicated channel number

6.4.3 RESTORATION OF MANUFACTURE SETTING

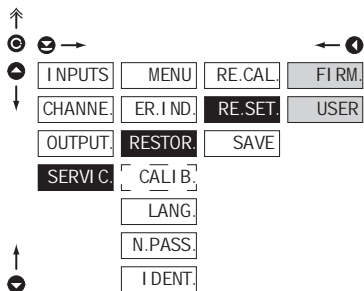| INPUTS | MENU | RE.CAL. | YES |
CHANNE.	ER.IND.	RE.SET.	
OUTPUT.	RESTOR.	SAVE	
SERVIC.	CALIB.		
	LANG.		
	N.PASS.		
	IDENT.		

RESTOR. Restoration of manufacture setting

- in the event of error setting or calibration, manufacture setting may be restored

RE.CAL. Restoration of manufacture calibration of the instrument

- prior executing the changes you will be asked to confirm you selection „YES"

6. SETTING **PROFI**

I NPUTS	MENU	RE.CAL.	FI RM.
CHANNE.	ER.I ND.	RE.SET.	USER
OUTPUT.	RESTOR.	SAVE	
SERVI C.	CALI B.		
	LANG.		
	N.PASS.		
	I DENT.		

RE.SET. | **Restoration of instrument manufacture setting**

FI RM. | Restoration of instrument manufacture setting

- generating the manufacture setting for currently selected type of instrument (items marked **DEF**)

USER | Restoration of instrument user setting

- generating the instrument user setting, i.e. setting stored under **SERVIC./RESTOR./SAVE**

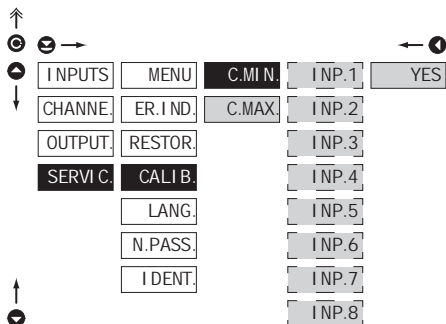**SAVE** | Save instrument user setting

- storing the user setting allows the operator to restore it in future if needed

!

After restoration the instrument switches off for couple seconds

---

6.4.4 CALIBRATION - INPUT RANGE **DU**

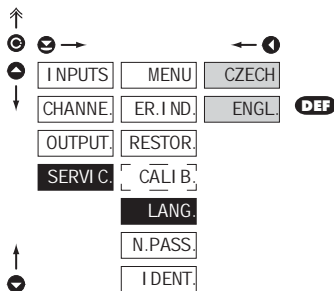|				
I NPUTS	MENU	C.MI N.	I NP.1	YES
CHANNE.	ER.I ND.	C.MAX.	I NP.2	
OUTPUT.	RESTOR.		I NP.3	
SERVI C.	CALI B.		I NP.4	
	LANG.		I NP.5	
	N.PASS.		I NP.6	
	I DENT.		I NP.7	
			I NP.8	

CALI B. | **Calibration - Input range**

- only active "DU" inputs can be found in the selection
- when "**C. MIN**" is displayed, move the potentiometer traveller to the required minimum position and confirm by „Enter", calibration is confirmed by "**YES**"
- when "**C. MAX**" is displayed, move the potentiometer traveller to required maximum position and confirm by „Enter", calibration is confirmed by "**YES**"
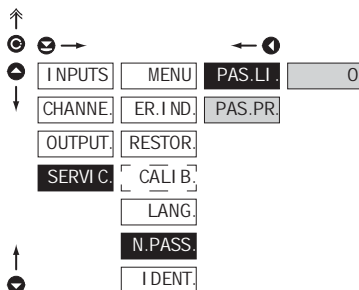
6.4.5 SELECTION OF INSTRUMENT MENU LANGUAGE VERSION

INPUTS	MENU	CZECH
CHANNE.	ER.IND.	ENGL. **DEF**
OUTPUT.	RESTOR.	
SERVIC.	CALIB.	
	LANG.	
	N.PASS.	
	IDENT.	

LANG.	**Selection of instrument menu language version**
CZECH	Instrument menu is in Czech
ENGL.	Instrument menu is in English

6.4.6 SETTING NEW ACCESS PASSWORD

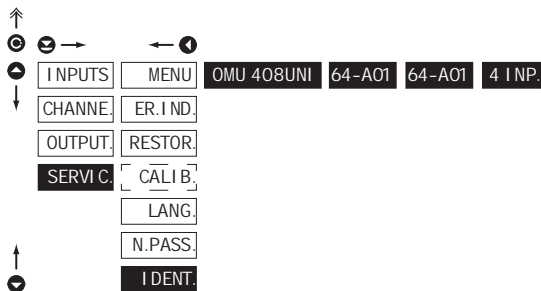|			
INPUTS	MENU	PAS.LI.	0
CHANNE.	ER.IND.	PAS.PR.	
OUTPUT.	RESTOR.		
SERVIC.	CALIB.		
	LANG.		
	N.PASS.		
	IDENT.		

N.PASS. **Setting new password for access to LIGHT and PROFI menu**

- this option allows to change the numeric code, which blocks the access into LIGHT and PROFI menu.
- numerci code range: 0...9999
- universal passwords in the event of loss:
  LIGHT Menu > „8177"
  PROFI Menu > „7915"

6.4.7 INSTRUMENT IDENTIFICATION

INPUTS   MENU   OMU 408UNI   64-A01   64-A01   4 INP.
CHANNE.   ER.IND.
OUTPUT.   RESTOR.
SERVIC.   CALIB.
         LANG.
         N.PASS.
         IDENT.

IDENT. **Projection of instrument SW version**

- display shows type identification of the instrument, SW number, SW version and current input setting (Mode)
- if the SW version reads a letter on first position, it is a customer SW

Pos.	Description
1.	type of instrument
2.	no.of program version - processor 1
3.	no.of program version - processor 2
4.	no. of active measuring inputs

IDENT.

SETTING
USER

For user operation
Menu items are set by the user (Profi/Light) as per request
Access is not password protected
Optional menu structure either tree (PROFI) or linear (LIGHT)

7.0	SETTING ITEMS INTO "USER" MENU

- **USER** menu is designed for users who need to change only several items of the setting without the option to change the primary instrument setting (e.g. repeated change of limit setting)
- there are no items from manufacture permitted in **USER** menu
- on items indicated by inverse triangle `LIM 1`
- setting may be performed in **LIGHT** or **PROFI** menu, with the **USER** menu then overtaking the given menu structure

Setting

flashing legend - current setting is displayed

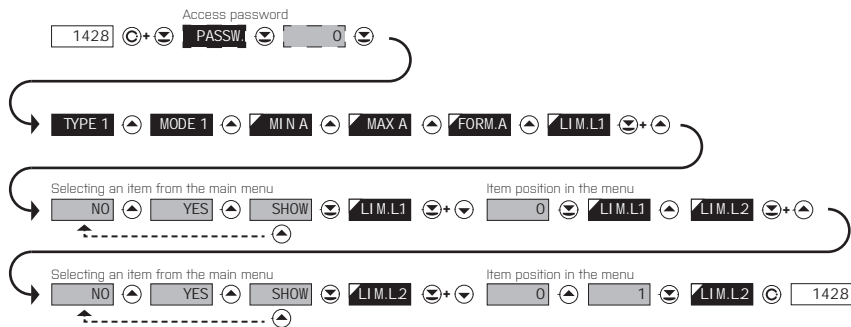| `NO` | item will not be displayed in USER menu |
| `YES` | item will be displayed in USER menu with editing option |
| `SHOW` | item will be solely displayed in USER menu |

Setting sequence of items in "USER" menu

In compiling USER menu from active LIGHT menu the items (max. 10) may be assigned a sequence, in which they will be projected in the menu

setting projection sequence

`---` 🔽 + 🔽 `0`

Example of ranking the order of menu items in the "USER" menu

In this example we want to have a direct access to menu items Limit 1 and Limit 2 (example show is for the Light menu, but can equaly be used in the Profi menu).

Access password

`1428` ©+🔽 PASSW. 🔽 `0` 🔽

TYPE 1 🔼 MODE 1 🔼 MIN A 🔼 MAX A 🔼 FORM.A 🔼 LIM.L1 🔽+🔼

Selecting an item from the main menu   Item position in the menu

NO 🔼 YES 🔼 SHOW 🔽 LIM.L1 🔽+🔽 `0` 🔽 LIM.L1 🔼 LIM.L2 🔽+🔼

Selecting an item from the main menu   Item position in the menu

NO 🔼 YES 🔼 SHOW 🔽 LIM.L2 🔽+🔽 `0` 🔼 `1` 🔽 LIM.L2 © `1428`

The result of this setting is that when the © button is pressed, the display will read „LIM. L.1". By pressing 🔽 button you confirm your selection and then you can set the desired limit value, or by pressing the 🔼 button you can go to setting of „LIM. L.2" where you can proceed identically as with Limit one.

You can exit the setting by pressing the 🔽 button by which you store the latest setting and pressing the © button will take you back to the measuring mode

8. METHOD OF MEASURING THE CJC

Instrument with input for temperature measurement with thermocouple allows to set two types of measurement of cold junction.

Measuring thermocouple

OM xxx T/C

Reference thermocouple
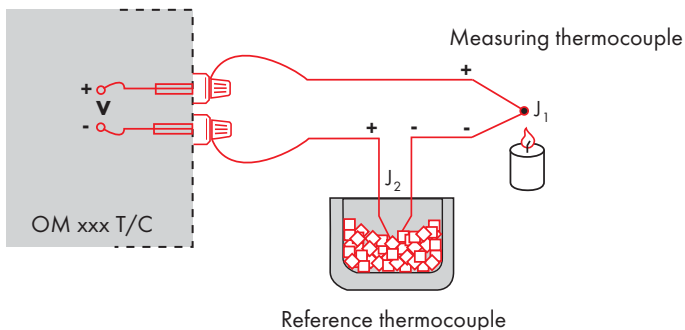
WITH REFERENCE THERMOCOUPLE

– a reference thermocouple may be located in the same place as the measuring instrument or in place with stable temperature/compensation box

– when measuring with reference thermocouple set CONECT.in the instrument menu to I NT2TC or EXT2TC

– when using a thermostat (a compensation box or environment with constant temperature) set in the instrument menu CJC.TEM. its temperature (applies for setting CONECT. to EXT2TC)

– if the reference thermocouple is located in the same environment as the measuring instrument then set in the instrument menu CONECT. to I NT2TC.Based on this selection the measurement of the ambient temperatureis performed by a sensor located in the instrument terminal board

WITHOUT REFERENCE THERMOCOUPLE

– inaccuracy originating from the creation of dissimilar thermocouples on the transition point terminal/conductor of the thermocouple is not compensated for in the instrument

– when measuring without reference thermocouple set CONECT. in the instrument menu to I NT.1 TC or EXT.1 TC

– when measuring temperature without reference thermocouple the error in measured data may be as much as 10°C (applies for setting CONECT. to EXT.1 TC)

9. DATA PROTOCOL

The instruments communicate via serial line RS232 or RS485. For communication they use the ASCII protocol. Communication runs in the following format:

ASCII: 8 bit, no parity, one stop bit
DIN MessBus: 7 bit, even parity, one stop bit

The transfer rate is adjustable in the instrument menu. The instrument address is set in the instrument menu in the range of 0 ÷ 31. The manufacture setting always presets the ASCII protocol, rate of 9600 Baud, address 00. The type of line used - RS232 / RS485 - is determined by an output board automatically identified by the instrument.
The commands are described in specifications you can find at www.orbit.merret.cz or OM lInk.

DETAILED DESCRIPTION OF COMMUNICATION VIA SERIAL LINE

EVENT	TYPE	PROTOCOL	TRANSMITTED DATA												
Data solicitation [PC]	232	ASCII	#	A	A	<CR>									
		MessBus	No - data is transmitted permanently												
	485	ASCII	#	A	A	<CR>									
		MessBus	<SADR>	<ENQ>											
Data transmission [instrument]	232	ASCII	>	D	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<CR>	
		MessBus	<STX>	D	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<ETX>	<BCC>
	485	ASCII	>	D	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<CR>	
		MessBus	<STX>	D	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<ETX>	<BCC>
Confirmation of data acceptannce [PC] - OK	485	MessBus	<DLE>	1											
Confirmation of data acceptance [PC] - Bad			<NAK>												
Sending address [PC] prior command			<EADR>	<ENQ>											
Confirmation of address [instrument]			<SADR>	<ENQ>											
Command transmission [PC]	232	ASCII	#	A	A	N	P	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<CR>
		MessBus	<STX>	S	N	P	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<ETX>	<BCC>
	485	ASCII	#	A	A	N	P	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<CR>
		MessBus	<STX>	S	N	P	[D]	[D]	[D]	[D]	[D]	[D]	[D]	<ETX>	<BCC>
Command confirmation [instrument]	232	ASCII OK	!	A	A	<CR>									
		ASCII Bad	?	A	A	<CR>									
		Messbus	No - data is transmitted permanently												
	485	ASCII OK	!	A	A	<CR>									
		ASCII Bad	?	A	A	<CR>									
		Mess-Bus OK	<DLE>	1											
		Mess-Bus Bad	<NAK>												
Instrument identification			#	A	A	1	Y	<CR>							
HW identification			#	A	A	1	Z	<CR>							
One-time transmission			#	A	A	7	X	<CR>							
Repeated transmission			#	A	A	8	X	<CR>							

LEGEND

SING	RANGE		DESCRIPTION
#	35	23$_H$	Command beginning
A A	0...31		Two characters of instrument address (sent in ASCII - tens and units, e.g. "01", "99" universal
<CR>	13	0D$_H$	Carriage return
<SP>	32	20$_H$	Space
N, P			Number and command - command code
D			Data - usually characters "0"..."9", "-", ".", (0) - dp. and (-) may prolong data
R	30$_H$...3F$_H$		Relay and tare status
!	33	21$_H$	Positive confirmation of command (ok)
?	63	3F$_H$	Negative confirmation of command (point)
>	62	3E$_H$	Beginning of transmitted data
<STX>	2	02$_H$	Beginning of text
<ETX>	3	03$_H$	End of text
<SADR>	adresa +60$_H$		Prompt to send from address
<EADR>	adresa +40$_H$		Prompt to accept command at address
<ENQ>	5	05$_H$	Terminate address
<DLE>1	16 49	10$_H$ 31$_H$	Confirm correct statement
<NAK>	21	15$_H$	Confirm error statement
<BCC>			Check sum -XOR

RELAY, TARE

SIGN	RELAY 1	RELAY 2	TARE	CHANGE RELAY 3/4
P	0	0	0	0
Q	1	0	0	0
R	0	1	0	0
S	1	1	0	0
T	0	0	1	0
U	1	0	1	0
V	0	1	1	0
W	1	1	1	0
p	0	0	0	1
q	1	0	0	1
r	0	1	0	1
s	1	1	0	1
t	0	0	1	1
u	1	0	1	1
v	0	1	1	1
w	1	1	1	1

Relay status is generated by command #AA6X <CR>.

The instrument immediately returns the value in the format >HH <CR>, where HH is value in HEX format and range 00$_H$...FF$_H$. The lowest bit stands for „Relay 1", the highest for „Relay 8"

10. ERROR STATEMENTS

ERROR	CAUSE	ELIMINATION
E.d.Un.	Number is too small (large negative) to be displayed	change DP setting, channel constant setting
E.d.Ow.	Number is too large to be displayed	change DP setting, channel constant setting
E.t.Un.	Number is outside the table range	increase table values, change input setting (channel constant setting)
E.t.Ow.	Number is outside the table range	increase table values, change input setting (channel constant setting)
E.I .Un.	Input quantity is smaller than permitted input quantity range	change input signal value or input (range) setting
E.I .Ow.	Input quantity is larger than permitted input quantity range	change input signal value or input (range) setting
E.HW.	A part of the instrument does not work properly	send the instrument for repair
E.EE	Data in EEPROM corrupted	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
E.SET.	Data in EEPROM outside the range	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
E.CLR	Memory was empty (presetting carried out)	upon repeated error statement send instrument for repair, possible failure in calibration
E.OUT.	Analogue output current loop disconnected	check wire connection

Type of error signalization on channels, which are not currently displayed is selectable in menu SERVIC./Er. IND.

The instrument allows to add two descriptive characters to the classic numeric formats (at the expense of the number of displayed places). The setting is performed by means of a shifted ASCII code. Upon modification the first two places display the entered characters and the last two places the code of the relevant symbol from 0 to 95. Numeric value of given character equals the sum of the numbers on both axes of the table.

Description is cancelled by entering characters with code 00

	0	1	2	3	4	5	6	7		0	1	2	3	4	5	6	7
0		?	''	#	$	%	&	'	0		!	"	#	$	%	&	'
8	(	)	#	+	,	--		/	8	(	)	*	+	,	-	.	/
16	0	1	2	3	4	5	6	7	16	0	1	2	3	4	5	6	7
24	8	9	W	V	<	>	--	?	24	8	9	VA	Vr	<	=	>	?
32	@	A	B	C	D	E	F	G	32	@	A	B	C	D	E	F	G
40	H	I	J	K	L	M	N	O	40	H	I	J	K	L	M	N	O
48	P	Q	R	S	T	U	V	W	48	P	Q	R	S	T	U	V	W
56	X	Y	Z	C	\	J	^	_	56	X	Y	Z	[	\	]	^	_
64	`	a	b	c	d	e	f	g	64	`	a	b	c	d	e	f	g
72	h	i	j	k	l	m	n	o	72	h	i	j	k	l	m	n	o
80	p	q	r	s	t	u	v	w	80	p	q	r	s	t	u	v	w
88	x	y	z	{	Ω	}	~		88	x	y	z	{			}	~	

INPUT

range is adjustbale			**DC**
	±60 mV	>100 MΩ	Input U
	±150 mV	>100 MΩ	Input U
	±300 mV	>100 MΩ	Input U
	±1200 mV	>100 MΩ	Input U

range is adjustbale			**PM**
	0/4...20 mA	< 400 mV	Input I
	±2 V	1 MΩ	Input U
	±5 V	1 MΩ	Input U
	±10 V	1 MΩ	Input U
	±40 V	1 MΩ	Input U

range is adjustbale		**OHM**
	0...100 Ω	
	0...1 kΩ	
	0...10 kΩ	
	0...100 kΩ	
Connection:	2, 3 or 4 wire	

		RTD
Pt xxxx	-200°...850°C	
Pt xxxx/3910 ppm	-200°...1 100°C	
Ni xxxx	-50°..250°C	
Cu/4260 ppm	-50°...200°C	
Cu/4280 ppm	-200°...200°C	
Type Pt:	EU > 100/500/1 000 Ω, with 3 850 ppm/°C	
	US > 100 Ω, with 3 920 ppm/°C	
	RU > 50/100 Ω, with 3 910 ppm/°C	
Type Ni:	Ni 1 000/ Ni 10 000 with 5 000/6 180 ppm/°C	
Type Cu:	Cu 50/Cu 100 with 4 260/4 280 ppm/°C	
Connection:	2, 3 or 4 wire	

range is adjustbale in configuration menu		**T/C**
Type:	J (Fe-CuNi)	-200°...900°C
	K (NiCr-Ni)	-200°...1 300°C
	T (Cu-CuNi)	-200°...400°C
	E (NiCr-CuNi)	-200°...690°C
	B (PtRh30-PtRh6)	300°...1 820°C
	S (PtRh10-Pt)	-50°...1 760°C
	R (Pt13Rh-Pt)	-50°...1 740°C
	N (Omegalloy)	-200°...1 300°C
	L (Fe-CuNi)	-200°...900°C

		DU
Voltage of lin. pot.	2,5 VDC/6 mA	
	min. potentiometer resistance is 500 Ω	

PROJECTION

Measured value:	-999...9999, red or green 14-segment LED, digit height 14 mm
Channel ident.:	9, red or green 7-segment LED, digit height 9,1 mm
Measuring units:	99, red or green 7-segment LED, digit height 9,1 mm
Изображение:	-999...9999
Decimal point:	adjustable - in menu
Brightness:	adjustbale - in menu

INSTRUMENT ACCURACY

TC:	50 ppm/°C	
Accuracy:	±0,1% of range + 1 digit	
	±0,15 % of range + 1 digit	**RTD, T/C**
Accuracy of CJ:	±1,5°C	
Resolution:	0,01°/0,1°/1°	**RTD**
Rate:	0,1..40 measurements/s**	
Overload capacity:	10x (t < 100 ms), 2x (long-term)	
Linearization:	by linear interpolation in 255 points/for 8 Chan. - solely via OM Link	
Digital filters:	Averaging, Floating average, Exponential filter, Rounding	
Comp. of conduct.:	max. 40 Ω/100 Ω	**RTD**
Comp. of cold junc.:	adjustable	**T/C**
	0°...99°C or automatic	
Functions:	Tare - display resetting	
	Hold - stop measuring (at contact)	
	Lock - control key locking	
	MM - min/max value	
	Mathematic functions	
OM Link:	company communication interface for setting, operation and update of instrument SW	
Watch-dog:	reset after 400 ms	
Calibration:	at 25°C and 40 % of r.h.	

COMPARATOR

Type:	digital, adjustable in menu
Mode:	Hysteresis, From, Dosing
Limita:	-99999...999999
Hysteresis:	0...999999
Delay:	0...99,9 s
Outputs:	4x/8x relays with switch-on contact (Form A) (230 VAC/30 VDC, 3 A)*
Relay:	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

DATA OUTPUTS

Protocols:	ASCII, DIN MessBus, MODBUS, PROBUS
Data format:	8 bit + no parity + 1 stop bit (ASCII)
	7 bit + even parity + 1 stop bit (MessBus)
Rate:	600...230 400 Baud
	9 600 Baud...12 Mbaud (PROFIBUS)
RS 232:	isolated, two-way communication
RS 485:	isolated, two-way communication, addressing (max. 31 instruments)
PROFIBUS	Data protocol SIEMENS

* values apply for resistance load

АНАЛОГОВЫЙ ВЫХОД

Type:	isolated, programmable with resolution of max. 10 000 points, AO corresponds with the displayed data, type and range are selectable in programming mode
Non-linearity:	0,2 % of range
TC:	50 ppm/°C
Rate:	response to change of value < 150 ms
Voltage:	0...2 V/5 V/10 V
Curernt:	0...5/20 mA/4...20 mA
	- compensation of conduct to 500 Ω/12 V

MEASURED DATA RECORD

Type RTC:	time-controlled logging of measured data into instrument memory, allows to log up to 250 000 values
Type FAST:	fast data logging into instrument memory, allows to log up to 8 000 values at a rate of 40 records/s

No. of channels	Number of recorded data	Length of the records at 40 m/s [s]
1	16384	409,6
2	8192	204,8
3	5461	136,5
4	4096	102,4
5	3276	81,9
6	2730	68,25
7	2340	58,5
8	2048	50,1
9	1820	45,5

Transmission: via data output RS 232/485 or via OM Link

POWER SUPPLY

Options:	10...30 V AC/DC, 10 VA, PF ≥ 0,4, isolated, - fuse inside (T 4000 mA)
	80...250 V AC/DC, 10 VA, PF ≥ 0,4, isolated - fuse inside (T 630 mA)

MECHANIC PROPERTIES

Material:	Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions:	96 x 48 x 120 mm
Panel cut-out:	90,5 x 45 mm

OPERATING CONDITIONS

Connection:	connector terminal board, conductor cross-section <1,5 mm² /<2,5 mm²
Stabilisation period:	within 15 minutes after switch-on
Working temp.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP64 (front panel only)
Construction:	safety class I
Dielectric strength:	4 kVAC after 1 min between supply and input
	4 kVAC after 1 min between supply and data/analog output
	4 kVAC after 1 min between supply and relay output
	2,5 kVAC after 1 min between supply and data/analog output
Overvoltage cat.:	EN 61010-1, A2
Insulation resist.:	for pollution degree II, measurement cat. III instrum.power supply > 670 V (PI), 300 V (DI) Input/output > 300 V (PI), 150 (DI)
EMC:	EN 61326-1
Seismic resistance:	IEC 980: 1993, par. 6

**Table of measuring rate on one channel, according to setting of input mode and type of measurement

Channels/Rate	40	20	10	5	2	1	0,5	0,2	0,1
Input mode > SWITCH - single channel measurement	40,00	20,00	10,00	5,00	2,00	1,00	0,50	0,20	0,10
Input mode > SWITCH - dual channel measurement	6,667	3,333	1,667	1,25	0,714	0,417	0,227	0,096	0,049
Input mode > CYKL. - 2x single channel measurement	6,667	3,333	1,667	1,25	0,714	0,417	0,227	0,096	0,049
Input mode > CYKL. - 1x single + 1x dual channel measurement	4,444	2,222	1,111	0,833	0,476	0,278	0,152	0,064	0,033
Input mode > CYKL. - 2x dual channel measurement	3,333	1,667	0,833	0,625	0,357	0,208	0,114	0,048	0,025

Measuring rate in the menu is indicated for mode SWITCH and single channel measurement.
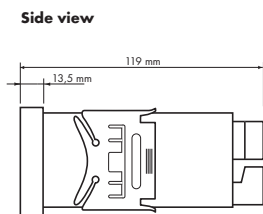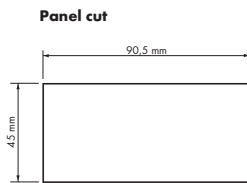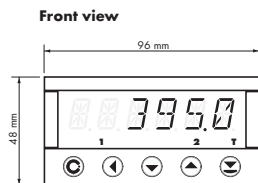
Single channel measurement > DC, PM, DU, OHM - 2/4 wire, Pt - 2/4 wire, Ni - 2/4 wire, Cu - 2/4 wire, TC on 1st input with external compensation, TC on other inputs

Dual channel measurement > OHM - 3 wire, Pt - 3 wire, Ni - 3 wire, Cu - 3 wire, TC on 1st input with internal compensation

If at least one TC measurement with internal compensation is to be used, IT HAS TO BE connected on 1st input. Cold junction value is measured here!

The instrument contains up to 4 A/D converters that always control one pair of inputs 1. + 2., 3. + 4., 5 + 6., 7. + 8. Converters measure almost simultaneously.
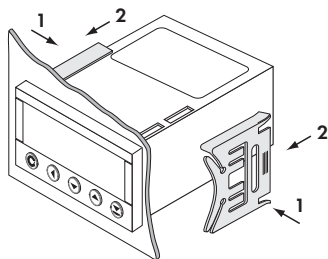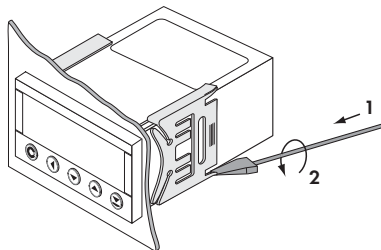
PI - Primary insulation, DI - Double insulation

Front view

96 mm

48 mm

Panel cut

90,5 mm

45 mm

Side view

119 mm

13,5 mm

Panel thickness: 0,5...20 mm

INSTRUMENT INSTALLATION

1. insert the instrument into the panel cut-out
2. fit both travellers on the box
3. press the travellers close to the panel

INSTRUMENT DISASSEMBLY

1. slide a screw driver under the traveller wing
2. turn the screw driver and remove the traveller
3. take the instrument out of the panel

Product	**OMU 408UNI**
Type	. . . .
Manufacturing No.	. . . .
Date of sale	. . . .

GUARANTEE

A guarantee period of 60 months from the date of sale to the user applies to this instrument.
Defects occuring during this period due to manufacture error or due to material faults shall be eliminated free of charge.

For quality, function and construction of the instrument the guarantee shall apply provided that the instrument was connected and used in compliance with the instructions for use.

The guarantee shall not apply to defects caused by:

- mechanic damage
- transportation
- intervention of unqualified person incl. the user
- unavoidable event
- other unprofessional interventions

The manufacturer performs guarantee and post.guarantee repairs unless provided for otherwise.

Stamp, signature

YEARS

ES DECLARATION OF CONFORMITY

Company:	**ORBIT MERRET, spol. s r.o.**
	Klánova 81/141, 142 00 Prague 4, Czech Republic, IDNo.: 00551309
Manufactured:	**ORBIT MERRET, spol. s r.o.**
	Vodňanská 675/30, 198 00 Prague 9, Czech Republic

declares at its explicit responsibility that the product presented hereunder meets all technical requirements, is safe for use when utilised under the terms and conditions determined by ORBIT MERRET, spol.s r.o. and that our company has taken all measures to ensure conformity of all products of the types referred-to hereunder, which are being brought out to the market, with technical documentation and requirements of the appurtenant Czech statutory orders.

Product:	Programmable panel instrument
Type	**OMU 408**
Version:	UNI

Thas been designed and manufactured in line with requirements of:

Statutory order no. 17/2003 Coll., on low-voltage electrical equipment (directive no. 73/23/EHS)
Statutory order no. 616/2006 Coll., on electromagnetic compatibility (directive no. 2004/108/EHS)

The product qualities are in conformity with harmonized standard:

El. safety:	EN 61010-1
EMC:	EN 61326-1
	Electronic measuring, control and laboratory devices – Requirements for EMC "Industrial use"
	EN 50131-1, chap. 14 and chap. 15, EN 50130-4, chap. 7, EN 50130-4, chap. 8 (EN 61000-4-11, ed. 2),
	EN 50130-4, chap. 9 (EN 61000-4-2), EN 50130-4, chap. 10 (EN 61000-4-3, ed. 2),
	EN 50130-4, chap. 11 (EN 61000-4-6), EN 50130-4, chap. 12 (EN 61000-4-4, ed. 2),
	EN 50130-4, chap. 13 (EN 61000-4-5), EN 61000-4-8, EN 61000-4-9, EN 61000-6-1,
	EN 61000-6-2, EN 55022, chap. 5 и chap. 6
Seismic resistance:	IEC 980: 1993, par.6

The product is furnished with CE label issued in 2007

As documentation serve the protocoles of authorized and accredited organizations:

EMC	MO CR, Testing institute of technical devices, protocol no. 80/6-278/2007 of 13/11/2007
	MO CR, Testing institute of technical devices, protocol no. 80/6-283/2007 of 26/10/2007
Seismic resistance	VOP-026 Stemberk, protocol no.: 7230-132/2012 of 12/09/2012

Place and date of issue:	Prague, 12. September 2012	Miroslav Hackl
		Company representative

Assessment of conformity pursuant to §22 of Act no. 22/1997 Coll. and changes as amended by Act no.71/2000 Coll. and 205/2002 Coll