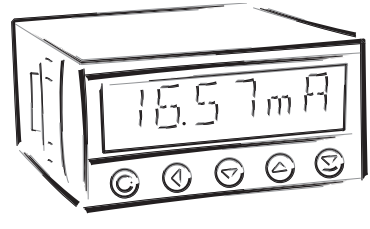
WARRANTY 5 YEARS

OM 602AV

6 DIGIL PROGRAMMABLE ANALOG OUTPUT



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 OM 602 series conform to the European regulation 89/336/EWG.

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.

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2. INSTRUMENT DESCRIPTION

2.1 DESCRIPTION

The OM 602AV is a programmable analog output.

The instrument is based on a microcontroller, which secures high precision, stability and easy operation of the instrument.

The instrument generates analog output signal, which is set by buttons on the front panel, contacts on external inputs (EXT. 1, 2, 3) or automatically selected function.

PROGRAMMABLE PROJECTION

Setting:	manual, optional projection on the display may be set in the menu for both limit values of the output signal, e.g. input 0...20 mA > 0...850,0
Projection:	-99999...999999

ANALOG OUTPUTS

Type:	isoloted, programmable with 16 bits D/A convertor
Setting:	type and range is selectable in the menu
Output:	manual, sinus, ramp, triangle, square or at random generated sinus

LINEARIZATION

Linearization:	by linear interpolation in 50 points (solely via OM Link) - enables the user to set the path of the analog output curve

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

EXTERNAL CONTROL

Lock:	control keys blocking
Hold:	display/instrument blocking
Function:	selectable in the instrument menu

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.eu) 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 OPTIONS

Excitation is suitable for supplying power to sensors and transmitters. It has a galvanic separation.

Comparators are assigned to monitor one, two, three or four 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.

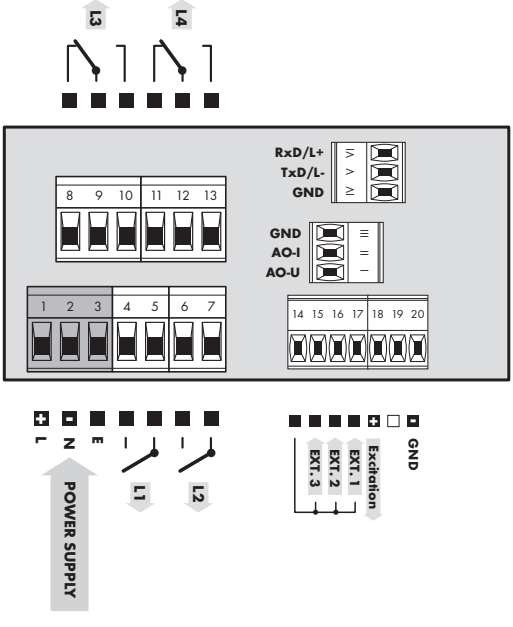
3. INSTRUMENT CONECTION

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.



EXTERNAL INPUTS

	DESCRIPTION	CONNECTION
EXT.	According to setting in Menu (see. Menu > EXT. IN., page. 46)	upon contact, bracket (No. 14 + 15/16/17)

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

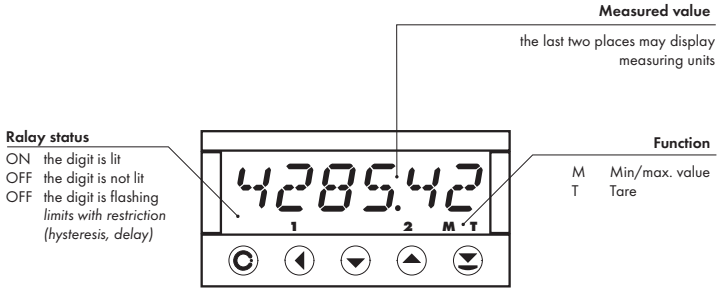
Complete instrument operation and setting may be performed via OM Link communication interface, which is a standard equipment of all instruments.

The operation program is freely accessible (www.orbit.merret.eu) 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).

4. INSTRUMENT SETTING

Setting and controlling the instrument is performed by means of 5 control keys located on the front panel. With the aid of these keys it is possble to browse through the operation menu and to select and set required values.



Symbols used in the instructions

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

PRIPOJ — 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)

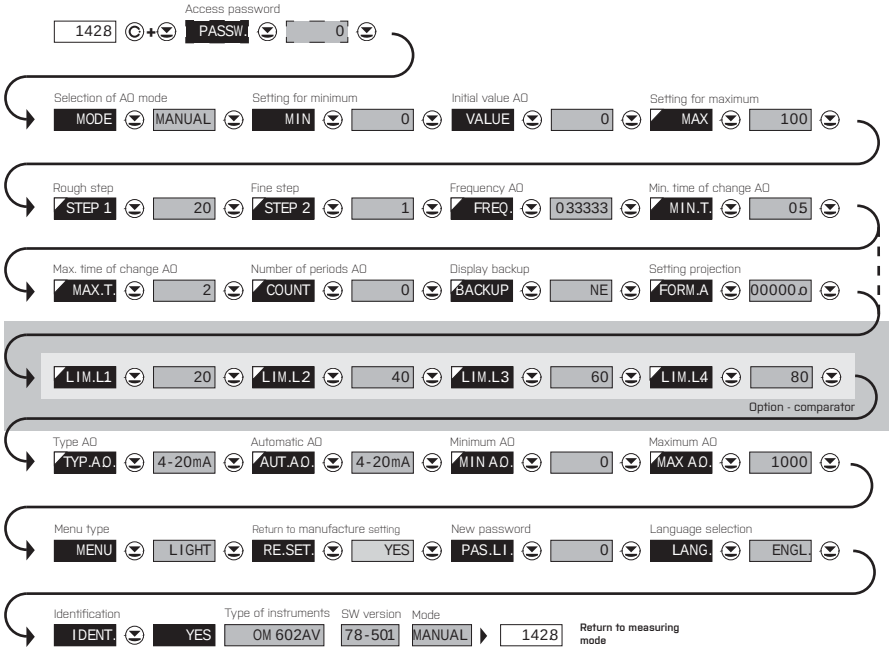
Control keys functions

KEY	MEASUREMENT	MENU	SETTING NUMBERS/SELECTION
	step 1 (rough step) - UP		
	step 1 (rough step) - DOWN		
	step 2 (fine step) - UP		
	step 2 (fine step) - DOWN		
	maximum AO		
	minimum AO		
	display AO value		
	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	

The rate of setting new values on the display is dynamic, i.e. it increases with the period the button is held for
< 1 s - repeat 300 ms • < 2 s - repeat 200 ms • < 3 s - repeat 100 ms

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



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

!

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

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©+⏬

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 "Password" = 42 = 42 — Example

0 ▲ 1 ▲ 2 ◀ 02 ▲ 12 ▲ 22 ▲
32 ▲ 42 ⏬ MODE

MODE ©↗ ⏬ → MANUAL SINUS RAMP TRIANG. SQUARE RANDOM ©✕ ⏬💾 ▲

MODE **Selection of analog output mode**

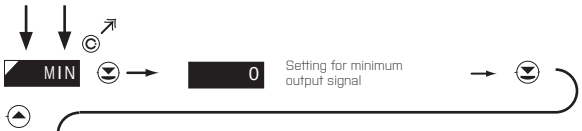
- primary selection of the type of instrument

DEF = MANUAL

MODD	Menu	Output mode
	MANUAL	Manual setting
	SINUS	Sinus signal
	RAMP	Ramp signal
	TRIANG.	Triangle signal
	SQUARE	Square signal
	RANDOM	Random signal

Mode „SINUS" — Example

MANUAL ▲ SINUS ⏬ MIN



MIN **Setting display projection for minimum value of output signal**

- range of the setting: -99999...999999

DEF = 0

- position of the DP does not affect display projection
- the DP is automatically shifted after the value is confirmed

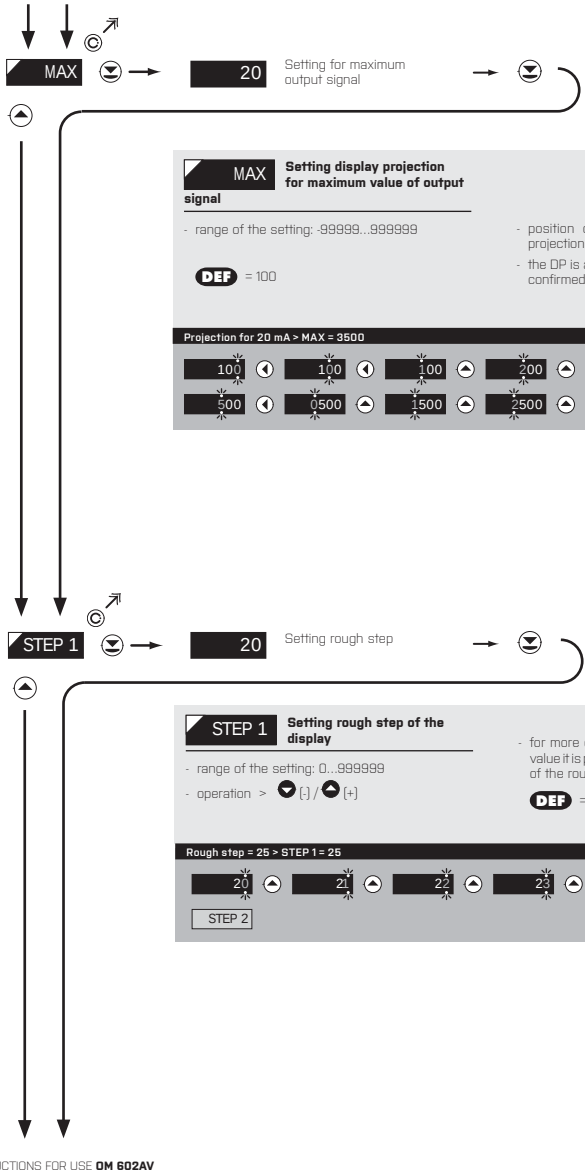
Projection for 0 mA > MIN = 0 Example

VALUE **Setting the initial analog output value**

- range of the setting: -99999...999999
- only for "**MODE - MANUAL**"
- analog output value which is set after the instrument is connected to the mains and provided that the backup function "BACKUP" is not active

DEF = 0

Beginning = 50 > VALUE = 50 Example

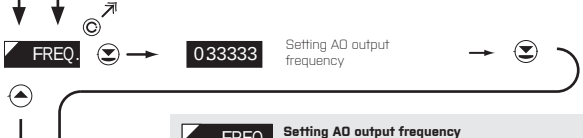

MAX
20
Setting for maximum output signal
MAX
Setting display projection for maximum value of output signal
- range of the setting: -99999...999999
DEF = 100
- position of the DP does not affect display projection
- the DP is automatically shifted after the value is confirmed
Projection for 20 mA > MAX = 3500
Example
100
100
100
200
300
400
500
0500
1500
2500
3500
STEP 1
STEP 1
20
Setting rough step
STEP 1
Setting rough step of the display
- range of the setting: 0...999999
- operation > [-] / [+]
- for more comfortable change of setting the AO value it is possible in this item to preset the format of the rough step
DEF = 20
Rough step = 25 > STEP 1 = 25
Example
20
21
22
23
24
25
STEP 2

STEP 2 **Setting fine step operation of the display**

- range of the setting: 0...999999
- operation > ◀ + ▼ (-) / ◀ + ▲ (+)
- for more comfortable change of setting the AO value it is possible in this item to preset the format of the fine step

DEF = 1

Fine step = 1 > STEP 2 = 1 — Example

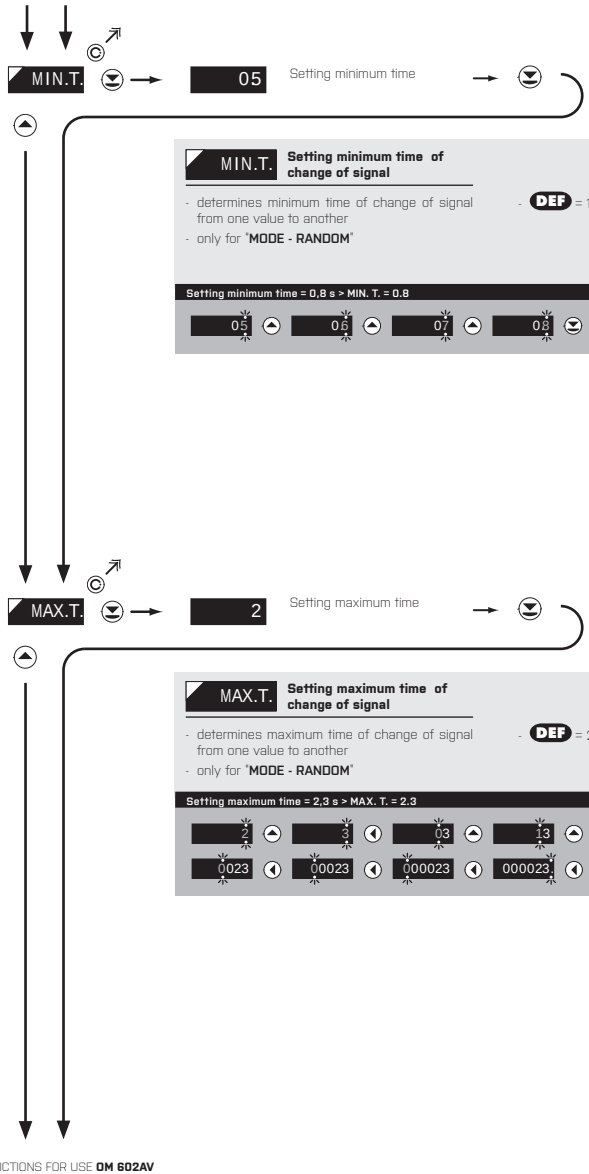


FREQ. **Setting AO output frequency**

- range of the setting: 0,001...3 Hz
- only for "MODE" - "**SINUS**", "**RAMP**", "**TRIANG.**", "**OBDEL.**"

DEF = 0,33333 Hz

Frequency = 1 Hz > FREQ. = 1 — Example



MIN.T. **Setting minimum time of change of signal**

- determines minimum time of change of signal from one value to another
- only for "**MODE - RANDOM**"

- DEF = 1

Setting minimum time = 0,8 s > MIN. T. = 0.8 Example

05 → 06 → 07 → 08 → MAX.T

MAX.T. **Setting maximum time of change of signal**

- determines maximum time of change of signal from one value to another
- only for "**MODE - RANDOM**"

- DEF = 2

Setting maximum time = 2,3 s > MAX. T. = 2.3 Example

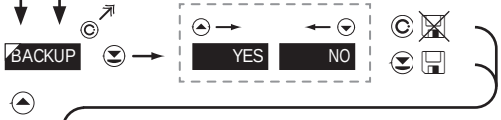
2 → 3 → 03 → 13 → 23 → 023 → 0023 → 00023 → 000023 → 000023. → 000023 → COUNT

COUNT **Setting defined number of periods**

- range of the setting: 0...65535
- if "**0**" value is set, the output signal is permanently generated
- if non-zero value is set, the signal will be generated after pushing a button or the switch-on by control input in a selected number of periods

- only for "MODE" - "**SINUS**", "**RAMP**", "**TRIANG.**", "**SQUARE**"
- **DEF** = 0

Number of cykles > COUNT = 24 Example



BACKUP **Selection of display status backup**

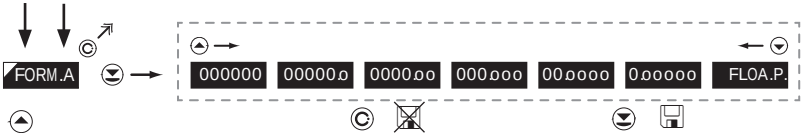
- only for "**MODE - MANUAL**"
- **DEF** = YES

NO — Instrument is set to "VALUE" after switch-on

- value is set in "**VALUE**"

YES — After switch-on the instrument restores status prior switch-off

Backup - YES > BACKUP = YES Example



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

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

DEF = 000.000

Projection of DP on display > 000.000 Example

000000 TYP.A0. *subsequent item on the menu depends on instrument equipment

LIM L1 **Setting boundary for limit 1**

- range of the setting: -99999...999999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 20

DEF „Hystresis"=0, „Delay"=0

Setting limit 1 > L 1 = 32 Example

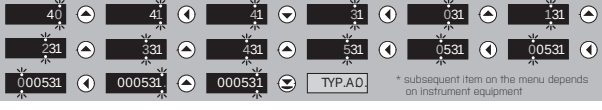
LIM L2 **Setting boundary for limit 2**

- range of the setting: -99999...999999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 40

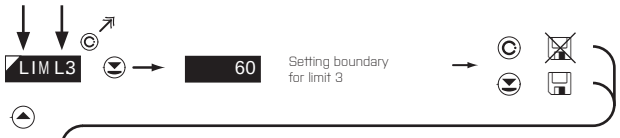
DEF „Hystresis"=0, „Delay"=0

Setting limit 2 > L 2 = 53.1 Example



!

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



LIM L3 Setting boundary for limit 3

- range of the setting: -99999...999999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 60

DEF „Hystresis"=0, „Delay"=0

Setting limit 3 > L 3 = 85 Example

* subsequent item on the menu depends on instrument equipment

LIM L4 Setting boundary for limit 4

- range of the setting: -99999...999999
- contingent modification of hysteresis or delay may be performed in "**PROFI**" menu

DEF = 80

DEF „Hystresis"=0, „Delay"=0

Setting limit 4 > L 4 = 103 Example

* subsequent item on the menu depends on instrument equipment

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

TYP. A.O.	Menu	Range	Description
	0-20mA	0...20 mA	
	Er.4-20mA	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	
	+-10 V	±10 V	

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 ▼ AUT.A.O.

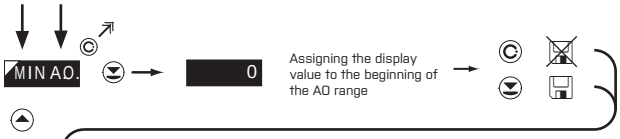
AUT.A.O. Automatic presetting of analog output type

AUT. A.O.	Menu	Range	Description
	0-20mA	0...20 mA	
	Er.4-20mA	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	
	+-10 V	±10 V	

DEF = 4...20 mA

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

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

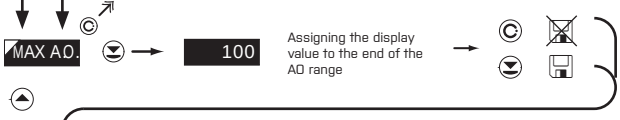


MIN AO. **Assigning the display value to the beginning of the AO range**

- range of the setting: -99999...999999

DEF = 0

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

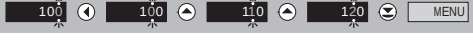


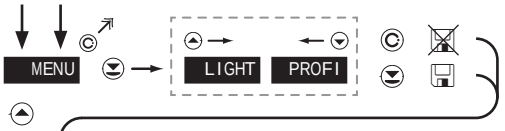
MAX AO. **Assigning the display value to the end of the AO range**

- range of the setting: -99999...999999

DEF = 100

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





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

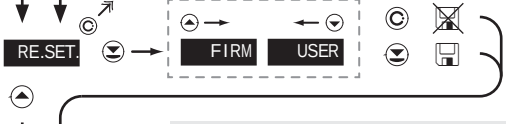
PROFI > menu PROFI, a complete menu for complete instrument setting

> tree menu structure

DEF = LIGHT

Menu LIGHT > MENU = LIGHT — Example

LIGHT → RE.SET



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

- loading manufacture calibration and primary setting of items on the menu (DEF)

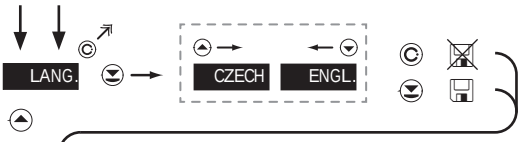
FIRM Restoration of instrument manufacture setting

USER Restoration of instrument user setting

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

Restoration of manufacture setting > FIRM — Example

FIRM → LANG

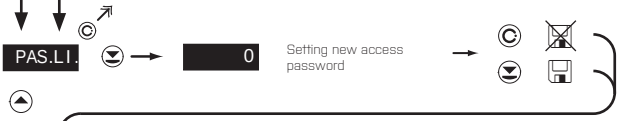


LANG. **Selection of language in instrument menu**

- selection of language version of the instrument menu

DEF = ENGL.

Language selection - ENGLISH > LANG. = ENGL. Example

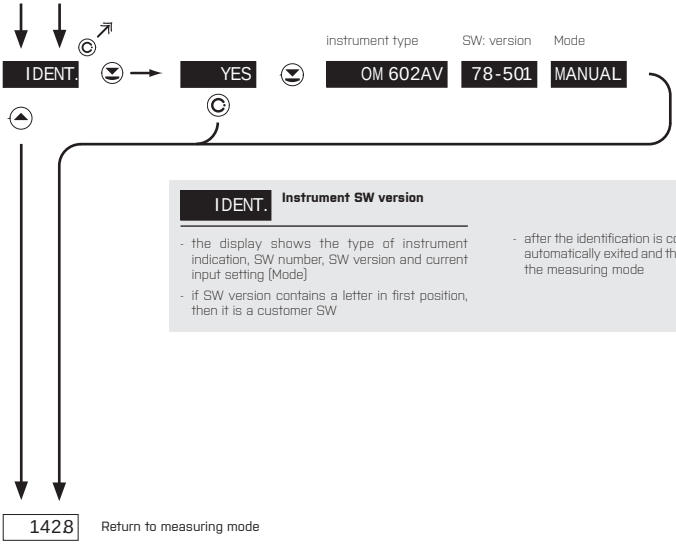


PAS.LI. **Setting new access password**

- 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



IDENT. **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

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**

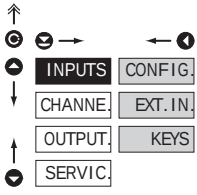
- contains complete instrument menu and is protected by optional number code
- designed for expert users
- preset from manufacture is menu **LIGHT**

Switching over to "PROFI" menu

C + ▼
- 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)

C + ✉
- 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

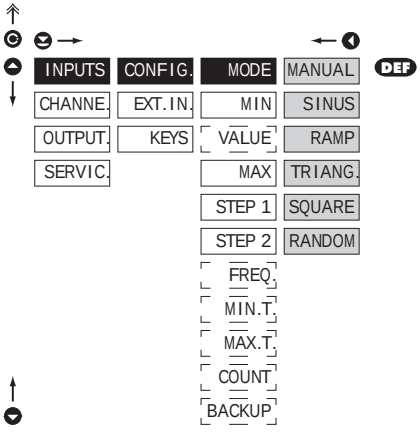
6.1 SETTING "PROFI" - INPUT



The primary instrument parameters are set in this menu

CONFIG.	Selection of measuring range and parameters
EXT. IN.	Setting external inputs functions
KEYS	Assigning further functions to keys on the instrument

6.1.1a SELECTION OF OPERATION MODE



MODE — **Selection of operation mode**

MANUAL — Manual setting of output value

- instrument generates signal in the range from „MIN A.O." to „MAX A.O."

SINUS — Output signal - Sinus

- instrument generates sinus signal in range from „MIN A.O." to „MAX A.O." at frequency set under „FREQ."

RAMP — Output signal - Ramp

- instrument generates ramp signal in range from „MIN A.O." to „MAX A.O." at frequency set under „FREQ."

TRIANG. — Output signal - Trojúhelník

- instrument generates triangle signal in range from „MIN A.O." to „MAX A.O." at frequency set under „FREQ."

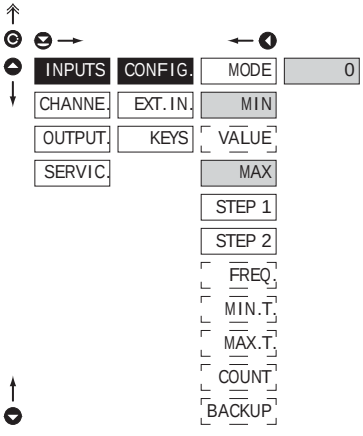
SQUARE — Output signal - Square

- instrument generates square signal in range from „MIN A.O." to „MAX A.O." at frequency set under „FREQ."

RANDOM — Output signal generated at random

- instrument generates signal composite from sections with linear change of value. Extent of the change is random in the range from „MIN A.O." to „MAX A.O." The time of change is set at random in interval „MIN T." to „MAX T."

6.1.1b SETTING DISPLAY PROJECTION

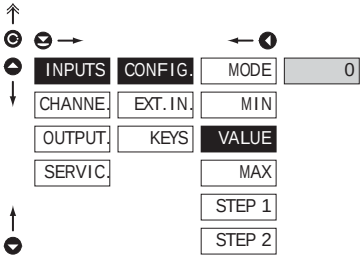


MIN Setting display projection for minimum value of output signal

MAX Setting display projection for maximum value of output signal

- setting display projection may be set for both limit values of the output signal in the menu, (OUTPUT./ANALOG)
- e.g. output 4...20 mA > 0...100, „MIN" = 0, „MAX" = 100

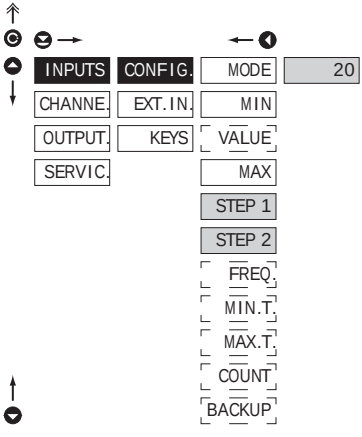
6.1.1c SETTING THE INITIAL ANALOG OUTPUT VALUE



VALUE **Setting the initial analog output value**

- analog output value which is set after the instrument is connected to the mains and provided that the backup function "BACKUP" is not active
- range of the setting: 0...999999
- only for „MODE - MANUAL"
- DEF = 0

6.1.2d SETTING STEP OPERATION OF THE DISPLAY/VALUE AO



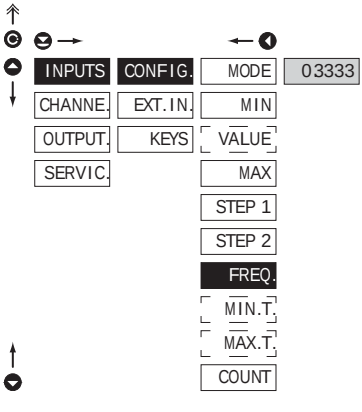
STEP 1 Setting rough step of the display

- for more comfortable change of setting the AO value it is possible in this item to preset the format of the rough step
- operation > [-] / [+]
- DEF = 20

STEP 2 Setting fine step operation of the display

- for more comfortable change of setting the AO value it is possible in this item to preset the format of the fine step
- operation > + [-] / + [+]
- DEF = 1

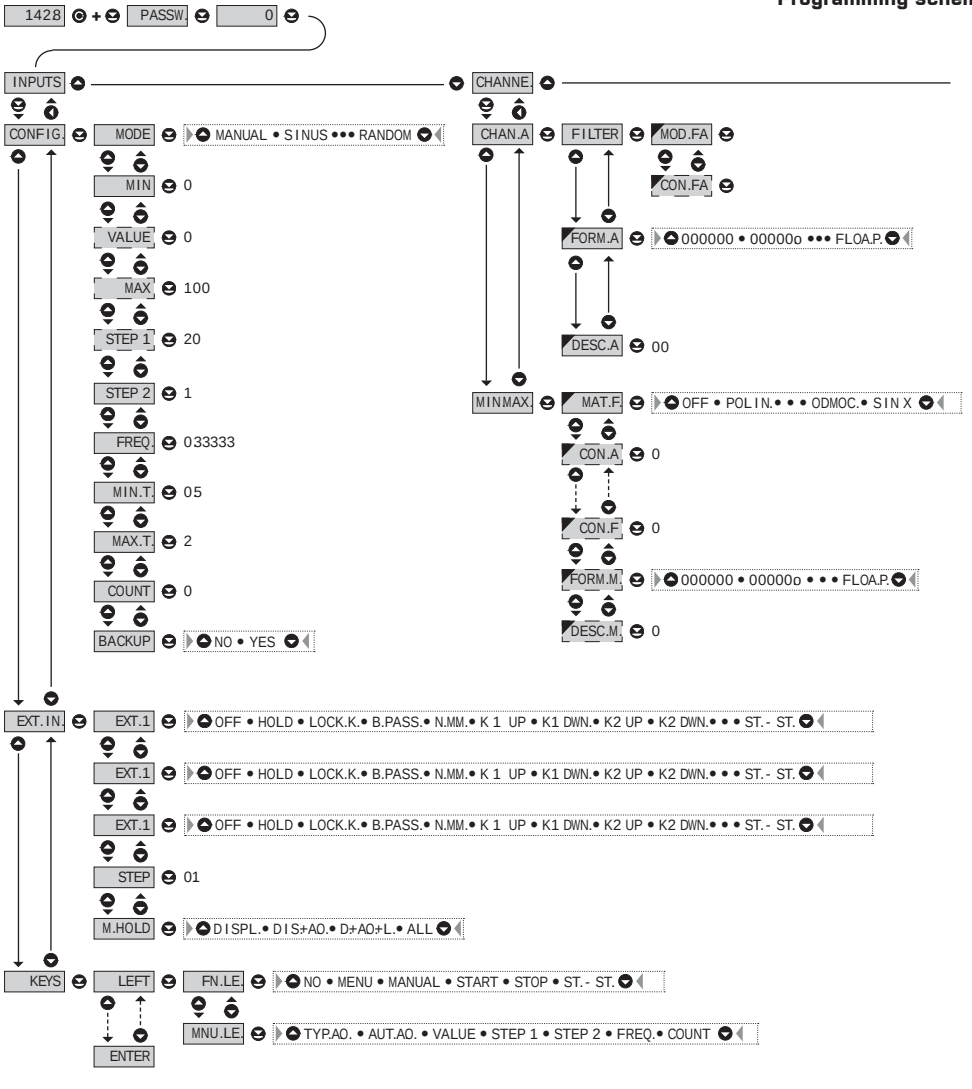
6.1.2e SETTING ANALOG OUPUT FREQUECY



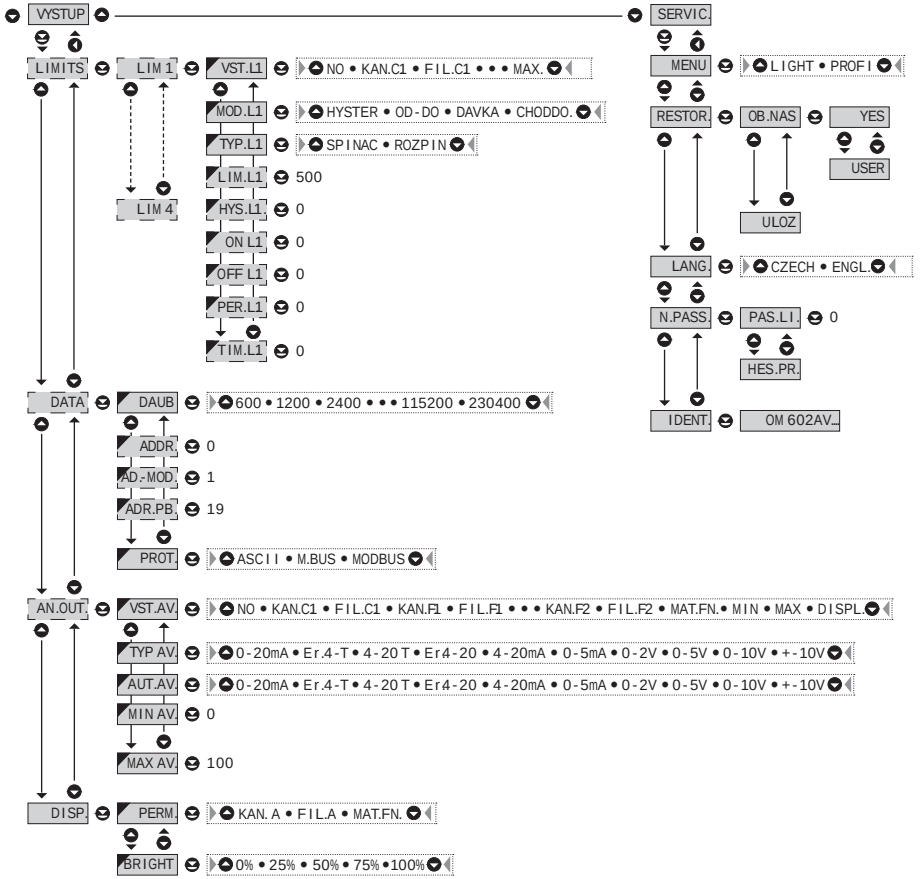
FREQ. **Setting AO output frequency**

- only for „MOD" - „SINUS", „RAMP", „TRIANG.", „SQUARE"
- range of the setting: 0,001...3 Hz
- DEF = 0,3333 Hz

Programming schen



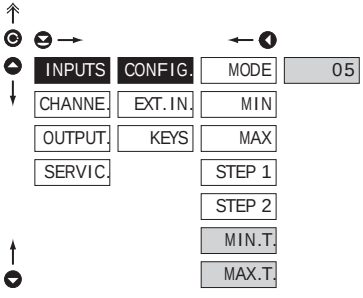
cheme PROFI MENU



!

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

6.1.1f SETTING OF CHANGE SIGNAL IN "RANDOM" MODE



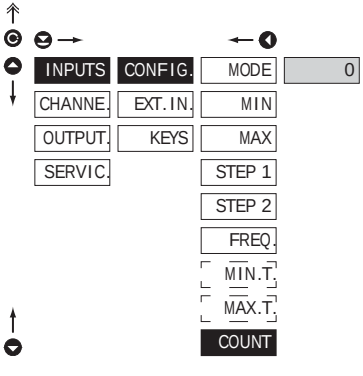
MIN.T. **Setting minimum time of change of signal**

- determines minimum time of change of signal from one value to another
- only for „MODE - RANDOM"
- DEF = 0,5

MAX.T. **Setting maximum time of change of signal**

- determines maximum time of change of signal from one value to another
- only for „MODE - RANDOM"
- DEF = 2,0

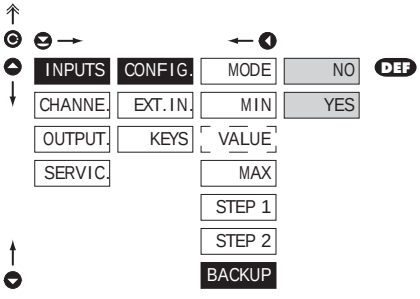
6.1.1g SETTING DEFINED NUMBER OF PERIODS



COUNT **Setting defined number of periods**

- if „0" value is set, the output signal is permanently generated
- if non-zero value is set, the signal will be generated after pushing a button or the switch-on by control input in a selected number of periods
- only for „MOD" - „SINUS", „RAMP", „TRIANG.", „SQUARE"
- DEF = 0

6.1.1h SELECTION OF DISPLAY STATUS BACKUP



BACKUP **Selection of display status backup**

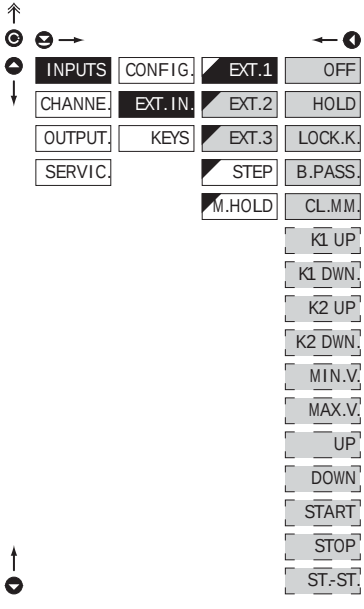
- only for „MODE - MANUAL"

NO Instrument is set to "VALUE" after switch-on

- value is set in "VALUE"

YES After switch-on the instrument restores status prior switch-off

6.1.2a EXTERNAL INPUT FUNCTION SELECTION



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

- **CL.MM.** — Resetting min/max value
- **K1 UP** — Rough step 1 - UP
- **K1 DWN.** — Rough step 1 - DOWN
- **K2 UP** — Fine step 2 - UP
- **K2 DWN.** — Fine step 2 - DOWN
- **MIN.V.** — Minimum range
- **MAX.V.** — Maximum range
- **UP** — Increases output signal value
  - with active input the „STEP" is added every 10 ms
- **DOWN** — Decreases output signal value
  - with active input the „STEP" is subtracted every 10 ms
- **START** — Start cycle
  - if „NUMBER" > „0", it will start anew from the beginning
- **STOP** — Stop cycle
- **ST.-ST.** — Start/Stop cycle
  - if „NUMBER" > „0", it will start anew from the beginning

!

Response to change of input is approx. 100 ms

!

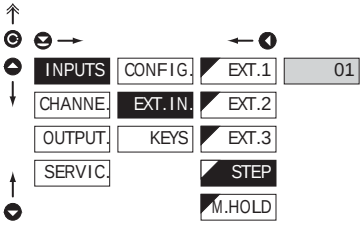
Preset values of the ext. inputs DEF

Ext. 1	Hold
Ext. 2	STEP 1 - UP
Ext. 3	STEP 1 - DOWN

*****

Procedure identical for **EXT. 2** and **EXT. 3**

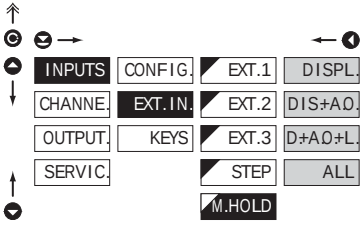
6.1.2b SETTING THE "STEP" FOR EXTERNAL CONTROL



STEP **Setting "STEP" for ext. control**

- with active input the AO value will be changing every 10 ms by preset value
- range of the setting: 0...999999
- DEF = 0,1

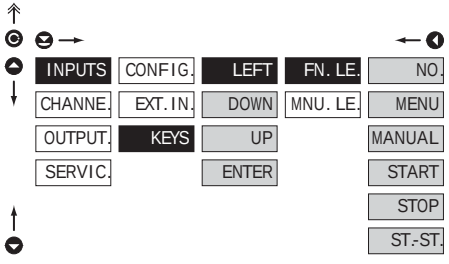
6.1.2c SELECTION OF FUNCTION "HOLD"



M.HOLD **Selection of function "HOLD"**

- **DISPL.** "HOLD" locks only the value displayed
- **DIS+AO.** "HOLD" locks the value displayed and on AO
- **D+AO+L.** "HOLD" locks the value displayed, on AO and limit evaluation
- **ALL** "HOLD" locks the entire instrument

6.1.3a OPTIONAL ACCESSORY FUNCTIONS OF THE KEYS



FN. LE.	**Assigning further functions to instrument keys**
NO	Key has no further function
MENU	Direct access into menu on selected item

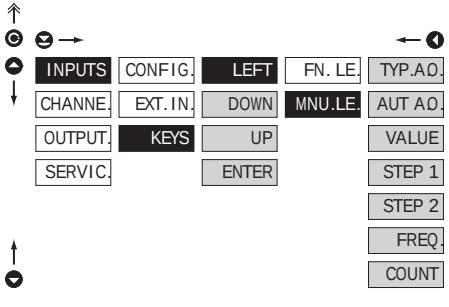
- after confirmation of this selection the "**MENU**" item is displayed on superior menu level, where required selection is performed

MANUAL	Manual setting
START	Start cycle
STOP	Stop cycle
ST.-ST.	Start/Stop cycle

!

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

6.1.3b OPTIONAL ACCESSORY FUNCTIONS OF THE KEYS - DIRECT ACCESS TO ITEM

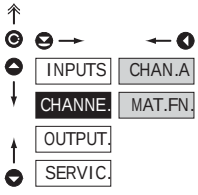


MNU.LE.	**Assigning access to selected menu item**
TYP.AO.	Direct access to item "TYP. A.O."
AUT.AO.	Direct access to item "AUT. A.O."
VALUE	Direct access to item "VALUE"
STEP 1	Direct access to item "STEP 1"
STEP 2	Direct access to item "STEP 2"
FREQ.	Direct access to item "FREQ."
COUNT	Direct access to item "COUNT"

!

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

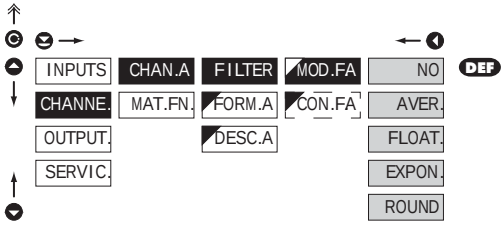
6.2 SETTING "PROFI" - CHANNELS

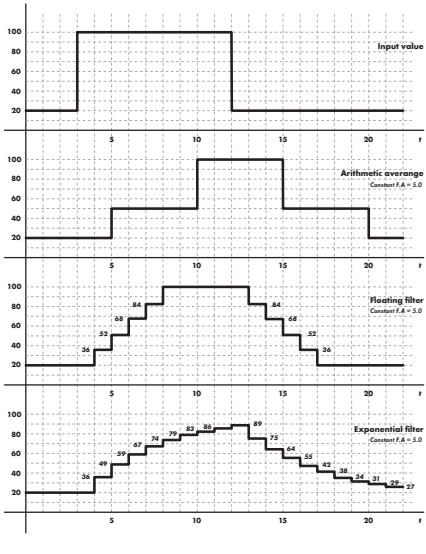


The primary instrument parameters are set in this menu

CHAN.A	Setting parameters of measuring "Channel A"
MAT.FN.	Setting parameters of mathematic functions

6.2.1a DIGITAL FILTERS





MOD.FA **Selection of digital filters**

- 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 prvního grade with time constant („CON. F.A") measurement
- range 2...100

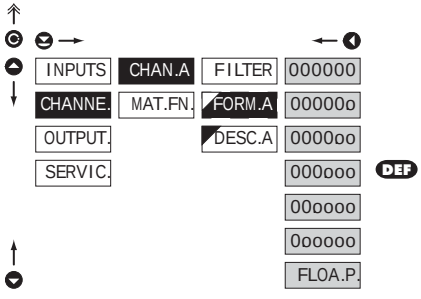
ROUND	Measured value rounding

- 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

6.2.1b PROJECTION FORMAT - POSITIONING OF DECIMAL POINT

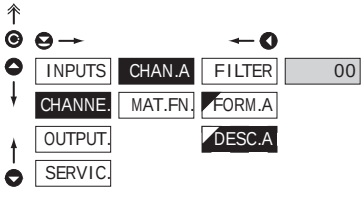


FORM. M **Selection of decimal point**

- 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 „**FLOAT. P.**"

000000.	Setting DT - XXXXXX
00000.0	Setting DT - XXXXX.x
0000.00	Setting DT - XXXX.xx
000.000	Setting DT - XXX.xxx
- **DEF**	
00.0000	Setting DT - XXxxxx
0.00000	Setting DT - X.xxxxx
FLOA.P.	Floating DP

6.2.1c PROJECTION OF DESCRIPTION - THE MEASURING UNITS



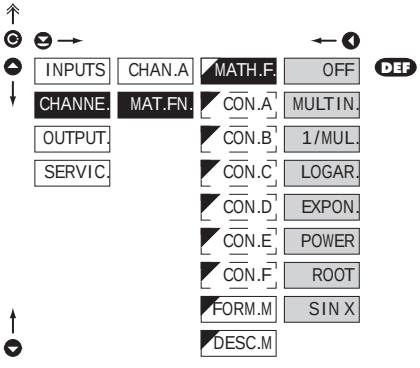
POP. A **Setting projection of descript. for "Channel A"**

- 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 67

6.2.2a MATHEMATIC FUNCTIONS



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

OFF Mathematic functions are off

MULTIN. Multinominal

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

1/MUL. 1/x

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

LOGAR. Logarithm

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

EXPON. Exponential

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

POWER Power

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

ROOT Root

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

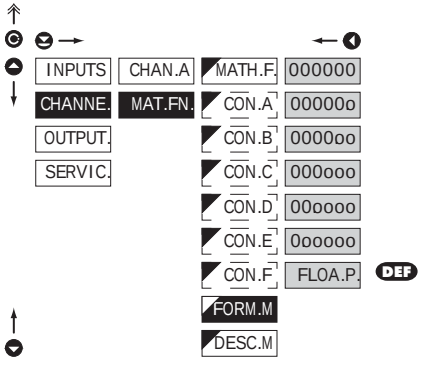
SIN X Sin x

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

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



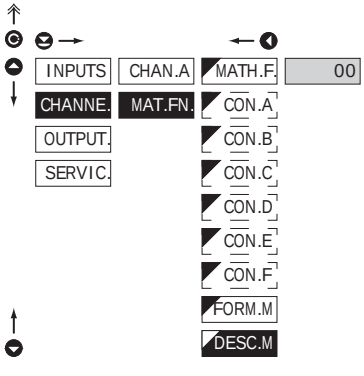
FORM.M. **Selection of decimal point**

- 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.**"

000000.	Setting DP - XXXXXX.
00000.o	Setting DP - XXXXX.x
0000.oo	Setting DP - XXXX.xx
000.ooo	Setting DP - XXX.xxx
00.oooo	Setting DP - XX.xxxx
0.ooooo	Setting DP - X.xxxxx
FLOA.P.	Floating DP

- DEF

6.2.2d MATHEMATIC FUNCTIONS - MEASURING UNITS



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

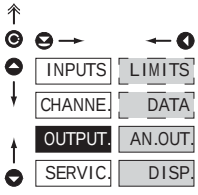
- projection of mesured data may be extended (at the expense of the number of displayed places) by two characters for description
- description is set by shifted ASCII code, when two first places show the set description and two last characters their code in period 0...95
- description is cancelled by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

- DEF = no description

!

Table of signs on page 67

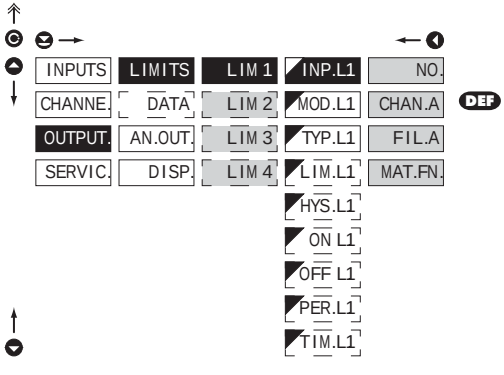
6.3 SETTING „PROFI" - OUTPUTS



In this menu it is possible to set parameters of the instrument output signals

- **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 INPUT FOR LIMITS EVALUATION



INP.L1 **Selection evaluation of limits**

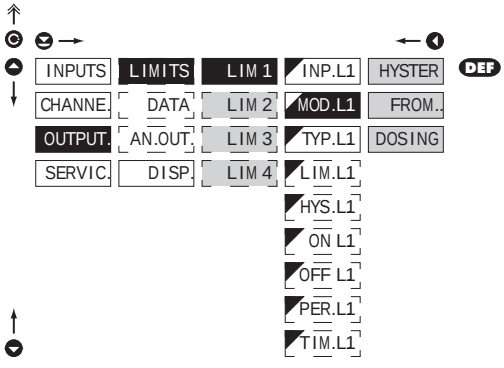
- selection of value from which the limit will be evaluated

- **NO** Limit evaluation is off
- **CHAN.A** Limit evaluation from "Channel A"
- **FIL.A** Limit evaluation from "Channel A" after digital filters processing
- **MAT.FN.** Limit evaluation from "Mathematic functions"

!

Setting is identical for **LIM 1**, **LIM 2**, **LIM 3** and **LIM 4**

6.3.1b SELECTION OF TYPE OF LIMIT



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

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

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

FROM.. Frame limit

- for this mode the parameters are set for interval "**ON. L.1**" the relay switch-on and "**OFF. L.1**" the relay switch-off

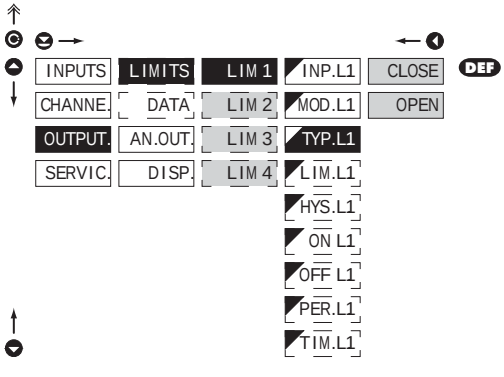
DOSING Dose limit (periodic)

- for this mode the parameters are set for "**PER. L.1**" determining the limit value as well as its multiples at which the output is active and "**TIM. L.2**" indicating the time during which is the output active

!

Setting is identical for **LIM 1**, **LIM 2**, **LIM 3** and **LIM 4**

6.3.1c SELECTION OF TYPE OF OUTPUT



TYP.L1 **Selection of type of output**

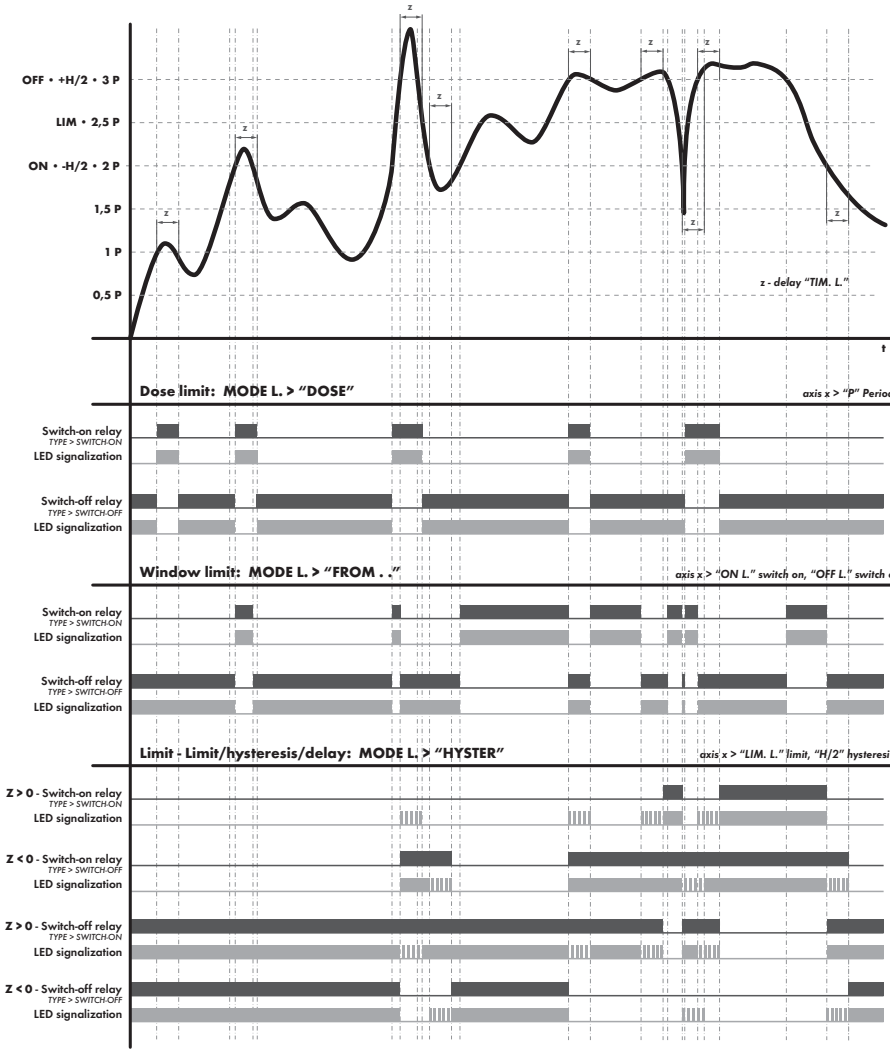
CLOSE Output switches on when condition is met

OPEN Output switches off when condition is met

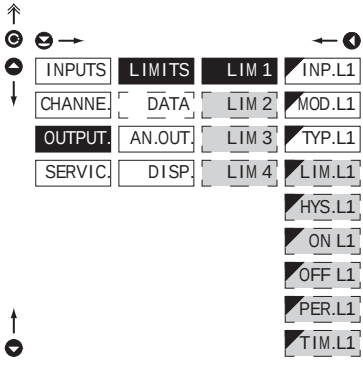
!

Setting is identical for **LIM 1**, **LIM 2**, **LIM 3** and **LIM 4**

DESCRIPTION OF RELAY FUNCTION



6.3.1d SETTING VALUES FOR LIMITS EVALUATION



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"

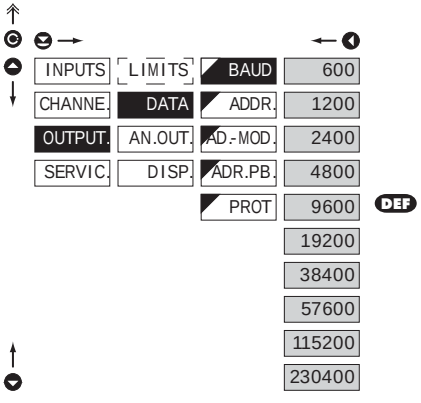
TIM.L1 Setting the time switch-on of the limit

- for type "HYSTER" and "DOSING"
- setting within the range: ±0...99,9 s
- positive time > relay switches on after crossing the limit (LIM. L.1) and the set time (TIM. L.1)
- negative time > relay switches off after crossing the limit (LIM. L.1) and the set negative time (TIM. L.1)

!

Setting is identical for LIM 1, LIM 2, LIM 3 and LIM 4

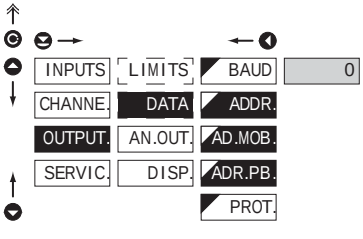
6.3.2a SELECTION OF DATA OUTPUT BAUD RATE



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

6.3.2b SETTING INSTRUMENT ADDRESS



ADDR. — **Setting instrument address**

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

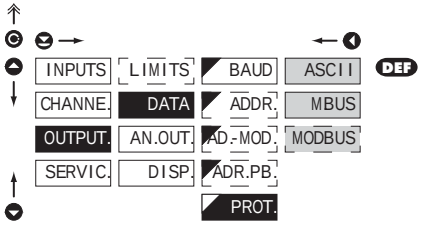
AD.-MOD. — **Setting instrument address - MODBUS**

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

ADR.PB. — **Setting instrument address - PROFIBUS**

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

6.3.2c SELECTION OF DATA OUTPUT PROTOCOL

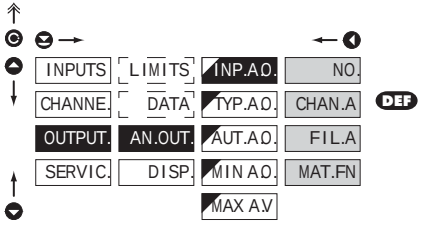


PROT. Selection of the type of analog output

- **ASCII** Data protocol ASCII
- **M.BUS** Data protocol DIN MessBus
- **MODBUS** Data protocol MODBUS-RTU

- option is available only for RS 485

6.3.3a SELECTION OF INPUT FOR ANALOG OUTPUT

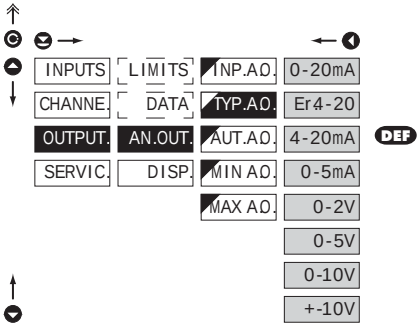


INP.AO. Selection evaluation analog output

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

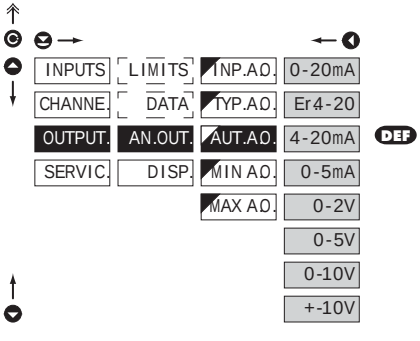
- **NO** AO evaluation is off
- **CHAN.A** AO evaluation from "Channel A"
- **FIL.A** AO evaluation from "Channel A" after digital filters processing
- **MAT.FN.** AO evaluation from "Math. functions"

6.3.3b SELECTION OF THE TYPE OF ANALOG OUTPUT



TYP.AO.	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
+-10V	Type: ±10 V

6.3.3c AUTOMATIC PRESETTING OF ANALOG OUTPUT TYPE



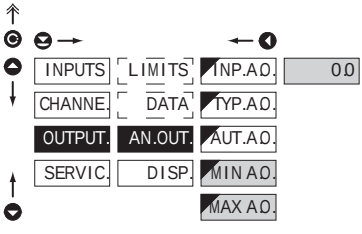
AUT.AO.	Automatic presetting of analog output type
0-20mA	Type: 0...20 mA
Er4-20	Type: 4...20 mA with indication
	- with indic. of error statement (< 3,6 mA)
4-20mA	Type: 4...20 mA
0-5mA	Type: 0...5 mA
0-2V	Type: 0...2 V
0-5V	Type: 0...5 V
0-10V	Type: 0...10 V
+-10V	Type: ±10 V

Table of automatic presetting of analog output

Automatic presetting serves for fast change of output while maintaining or recalculating the original presetting to new range. Upon the change of AO range are the values "*" from the following table dependant on the setting from which it is switching to (i.e. it changes according to current setting). As an example serve the "DEF" values from manufacture setting.

ITEM MENU /OUPUT A.O.	0-20 mA	E.4-20 mA	4-20 mA	0-5 mA	0-2 V	0-5 V	0-10 V	±10 V
MIN	0	4	4	0	0	0	0	0
VALUE.*	0	4	4	0	0	0	0	0
MAX	20	20	20	5	2	5	10	10
STEP 1*	4	3,2	3,2	1	0,4	1	2	2
STEP 2*	0,2	0,16	0,16	0,05	0,02	0,05	0,01	0,01
STEP*	0,02	0,016	0,016	0,005	0,002	0,005	0,001	0,001
FORM. A	XXXX.xx	XXXX.xx	XXXX.xx	XXXX.xx	XXXX.xx	XXXX.xx	XXXX.xx	XXXX.xx
DESC. A	mA	mA	mA	mA	V	V	V	V
MIN. A.O.	0	4	4	0	0	0	0	-10
MAX A.O.	20	20	20	5	2	5	10	10

6.3.3d SETTING THE ANALOG OUTPUT RANGE



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

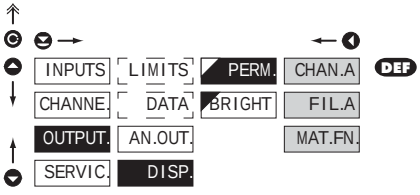
MIN AO. Assigning the display value to the beginning of the AO range

- range of the setting: -99999...999999
- DEF = 0

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

- range of the setting: -99999...999999
- DEF = 100

6.3.4a SELECTION OF INPUT FOR DISPLAY PROJECTION



PERM. **Selection display projection**

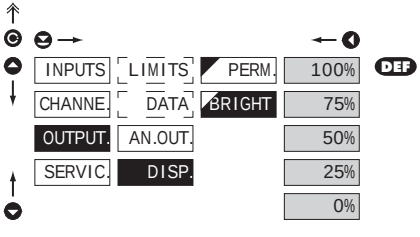
- selection of value which will be shown on the instrument display

CHAN.A — Projection of values from "Channel A"

FIL.A — Projection of values from "Channel A" after digital filters processing

MAT.FN. — Projection of values from "Math. functions"

6.3.4b SELECTION OF DISPLAY BRIGHTNESS



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

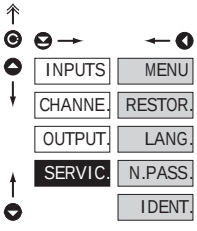
25% — Display brightness - 25%

50% — Display brightness - 50%

75% — Display brightness - 75%

100% — Display brightness - 100%

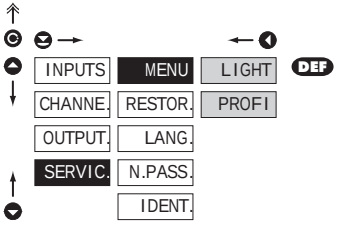
6.4 SETTING "PROFI" - SERVICE



The instrument service functions are set in this menu

MENU	Selection of menu type LIGHT/PROFI
RESTOR.	Restore instrument manufacture setting and calibration
LANG.	Language version of instrument menu
N.PASS.	Setting new access password
IDENT.	Instrument identification

6.4.1 SELECTION OF TYPE OF PROGRAMMING MENU



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

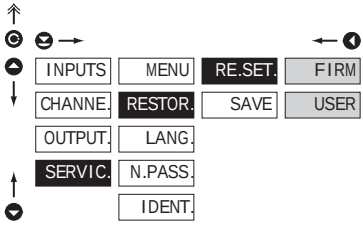
PROFI Active PROFI menu

- complete programming menu for expert users
- tree menu

!

Change of setting is valid upon next access into menu

6.4.2 RESTORATION OF MANUFACTURE SETTING



RE.SET. **Návrat k výrobnímu nastavení přístroje**

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

FIRM Restoration of instrument manufacture setting

USER Restoration of instrument user setting

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

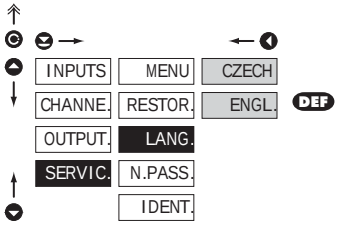
SAVE **Save instrument user setting**

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

!

After restoration the instrument switches off for couple seconds

6.4.3 SELECTION OF INSTRUMENT MENU LANGUAGE VERSION

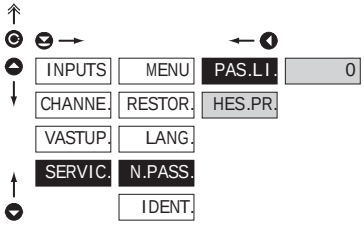


LANG. **Selection of instrument menu language version**

CZECH Instrument menu is in Czech

ENGL. Instrument menu is in English

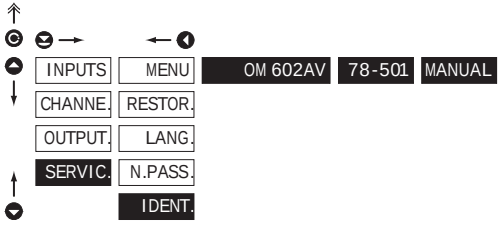
6.4.4 SETTING NEW ACCESS PASSWORD



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**"

6.4.5 INSTRUMENT IDENTIFICATION



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

IDENT.	Pos.	Description
	1.	type of instrument
	2.	SW: number - version
	3.	the input type

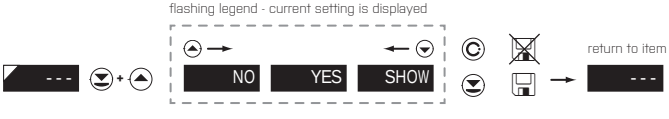
SETTING
USER

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



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

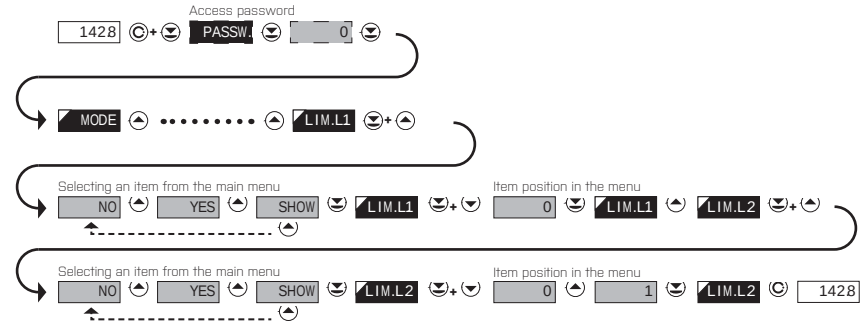
Setting sequence of items in "USER" menu

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

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).



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. 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.eu or SW 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] [D] <CR>
		MessBus		<STX> D [D] [D] [D] [D] [D] [D] [D] [D] [D] [D] <ETX> <BCC>
	485	ASCII		> D [D] [D] [D] [D] [D] [D] [D] [D] [D] [D] <CR>
		MessBus		<STX> D [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] [D] [D] [D] <CR>
		MessBus		<STX> S N P [D] [D] [D] [D] [D] [D] [D] [D] [D] [D] <ETX> <BCC>
	485	ASCII		# A A N P [D] [D] [D] [D] [D] [D] [D] [D] [D] [D] <CR>
		MessBus		<STX> S N P [D] [D] [D] [D] [D] [D] [D] [D] [D] [D] <ETX> <BCC>
Command confirmation (instrument)	232	ASCII	OK	! A A <CR>
			Bad	? A A <CR>
		Messbus		No - data is transmitted permanently
	485	ASCII	OK	! A A <CR>
			Bad	? A A <CR>
		Mess-Bus	OK	<DLE> 1
			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", "-", ".";(D) - 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"

9. 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

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

11. TECHNICAL DATA

PROJECTION

Display:	999999, intensive red or green 14 segment LED, digit height 14 mm
Projection:	-99999...999999
Decimal point:	adjustable - in menu
Brightness:	adjustbale - in menu

INSTRUMENT ACCURACY

TC:	50 ppm/°C
Digital filters:	Averaging, Floating average, Exponential filter, Rounding
Functions:	Hold - stop measuring (at contact) Lock - control key locking
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:	2x relays with switch-on contact (Form A) (230 VAC/30 VDC, 3 A)* 2x relays with switch-off contact (Form C) (230 VAC/50 VDC, 3 A)* 2x SSR (250 VAC/ 1 A)* 2x/4x open collector (30 VDC/100 mA) 2x bistabil relays (250 VAC/250 VDC, 3 A/0,3 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

ANALOG OUTPUTS

Type:	isolated, programmable with 16 bits D/A convertor, analogoutput corresponds with displayed data, type and range are adjustable
Non-linearity:	0,1 % of range
TC:	15 ppm/°C
Rate:	response to change of value < 1 ms
Voltage:	0...2 V/5 V/10 V/±10 V
Curernt:	0...5/20 mA/4...20 mA - compensation of conduct to 1 000 Ω/24 V

EXCITATION

Adjustbale:	5...24 VDC/max. 1,2 W, isolated

POWER SUPPLY

Options:	10...30 V AC/DC, max. 13,5 VA, PF ≥ 0,4, I_{STP}< 40 A/1 ms, isolated - fuse inside (T 4000 mA) 80...250 V AC/DC, max. 13,5 VA, PF ≥ 0,4, I_{STP}< 40 A/1 ms, 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

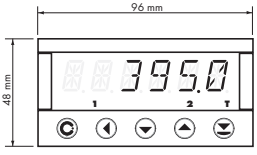
OPERATING CONDITIONS

Connection:	connector terminal board, conductor cross-section <1,5 mm^2 /<2,5 mm^2
Stabilisation period:	within 15 minutes after switch-on
Working temp.:	-20°...60°C
Storage temp.:	-20°...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

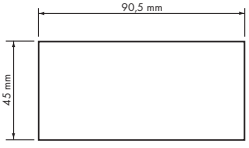
* hodnoty platí pro odporovou zátěž

PI - Primary insulation, DI - Double insulation

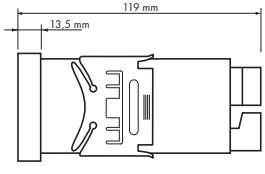
Front view



Panel cut



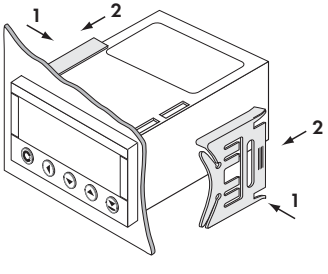
Side view

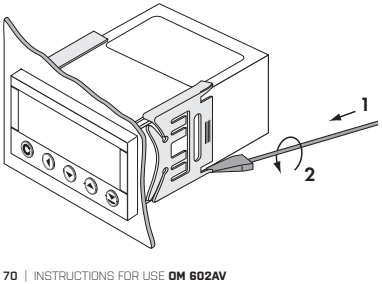


Panel thickness: 0,5...20 mm

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	**OM 602AV**
Type	. . . . .
Manufacturing No.	. . . . .
Date of sale	. . . . .

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

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: **OM 602**

Version: AV, RS, UQC

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 and 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. 80/6-332/2006 of 15/01/2007
MO CR, Testing institute of technical devices, protocol no. EMI.80/6-333/2006 of 15/01/2007
Seismic resistance VOP-026 Stemberk, protocol no.: 6430-16/2007 of 07/02/2007

Place and date of issue: Prague, 19. Juli 2009

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