



OMM 650UC

6 DIGIT PROGRAMMABLE

IMPULSE COUNTER/FREQUENCY METER
STOPWATCH/TIMER



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 OMM 650 series conform to the European regulation 89/336/EWG and the Ordinance 168/1997 Coll.

They are up to the following European:

EN 55 022, class B

EN 61000-4-2, -4, -5, -6, -8, -9, -10, -11

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.





ORBIT MERRET, spol. s r.o.

Vodňanská 675/30
198 00 Prague 9
Czech Republic

Tel: +420 - 281 040 200
Fax: +420 - 281 040 299
e-mail: orbit@merret.cz
www.orbit.merret.cz



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2.1

Description

The OMM 650UC model is a universal 6 digit panel programmable impulse counter/frequencymeter and stopwatch/timer.

The instrument is based on an 8-bit microprocessor, which secures high accuracy, stability and easy operation of the instrument.

Measuring modes

COUNTER	Single-channel counter
FREQUENCY	Frequencymeter
STOPWATCH	Stopwatch
TIMER	Timer

**PROGRAMMABLE PROJECTION**

Calibration	calibration coefficient may be set in „CM“
Projection	.99999...999999 with fixed or floating DP, for measuring modes STOPWATCH/TIMER with the option of setting in format 10/24/60
Time base:	0,5/1/5/10 s

DIGITAL FILTERS

Input filter	the instrument enables filtering the input signal and thus suppress unwanted interfering signals (e.g. relay backswings). The parameter set gives maximum feasible measured frequency processed by the instrument, 5/40/100/1 000 Hz
Exponen.average:	from 2...100 measurements

LINEARIZATION

Linearization:*	by linear interpolation in 25 points (solely via OM Link)
-----------------	---

FUCTIONS

Preset	initial non-zero value, unloaded always after instrument resetting
Rounding	setting projection step for display
Tare*:	designed to reset display upon non-zero input signal
OM Link	company interface for control, setting and instrument update

EXTERNAL CONTROL


Hold	display/instrument blocking
Lock	locking the control keys for access into Configuration menu
Resetting	resetting/pre-setting the counter
Tare*	tare activation
Start/Stop	stopwatch/timer control

2.2 Operation

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

- | | |
|--------------|--|
| LIGHT | <p>Simple programming menu</p> <ul style="list-style-type: none"> - contains only items necessary for instrument setting and is protected by an optional numeral code |
| PROFI | <p>Complete programming menu</p> <ul style="list-style-type: none"> - contains complete instrument menu and is protected by an optional numeral code |
| USER | <p>User programmable menu</p> <ul style="list-style-type: none"> - may contain arbitrary items selected from programmable menu (LIGHT/PROFI), which determines the authorization (see or change) - access is without password |

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

- 
- Complete operation and setting of the instrument may be performed via communication interface OM Link, which is a standard equipment of every instrument.
- The operation program is freely available (www.orbit.merret.cz) and the only requirement is the purchase of OML cable for connecting the instrument to PC. It is manufactured in version RS 232 and USB and is compatible with all ORBIT MERRET instruments.
- The OM LINK program version „Standard“ allows you to connect an unlimited number of instruments with the option of visualization and storage in PC.

2.3 Extension

- Comparators** are assigned to control two limit values with relay output. The limits have adjustable hysteresis as well as selectable delay of the switch-on. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.
- Time backup** by means of RTC circuit is designed for the „TIMER“ measuring mode and secures time measuring even if the instrument is switched-off (without display projection).

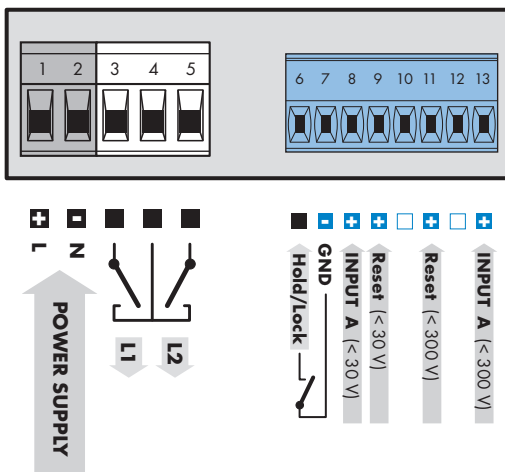
3 INSTRUMENT CONNECTION

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.

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



CONNECTION

	Description	Connection
Input A (< 30 V)	input signal < 43 V (absolute 60 V)	GND + Input A (< 30 V)
Input A (< 300 V)	input signal < 300 V	GND + Input A (< 300 V)
Resetting (< 30 V)	input signal < 43 V	GND + Resetting (< 30 V)
Resetting (< 300 V)	input signal < 300 V	GND + Resetting (< 300 V)

Function	Description	Control
Hold	Blocking display and instrument outputs	upon contact, bracket (no. 6/7)
Lock	Control keys blocking	upon contact, bracket (no. 6/7)
Tare	Tare activation	upon contact, bracket (no. 6/7)

Table of comparison levels

Input	Type of input	Maximum input voltage (Level A, C)	Maximum comparison levels	
			L > H	H > L
Input A Resetting (< 30 V)	NPN, Contact	xxx	0,5 V	4,5 V
	PNP	9,7 V	0,5 V	4,5 V
	PNP	14,4 V	1,0 V	9,0 V
	PNP	19,2 V	1,5 V	13,3 V
	PNP	23,9 V	2,0 V	17,8 V
	PNP	28,7 V	2,5 V	22,1 V
	PNP	33,5 V	3,0 V	26,6 V
	PNP	38,3 V	3,4 V	31,0 V
	PNP	43,0 V	3,9 V	35,5 V
Input A Resetting (< 300 V)	NPN, Contact	!!! prohibited !!!		
	PNP	84 V	4,9 V	39,8 V
	PNP	128 V	9,2 V	78,0 V
	PNP	170 V	13,6 V	117,8 V
	PNP	211 V	17,8 V	156,0 V
	PNP	253 V	22,3 V	195,8 V
	PNP	295 V	26,5 V	234,1 V
	PNP	301 V	30,9 V	273,9 V

PROFI

SETTING

profi

- ▶ For expert users
- ▶ Complete instrument menu
- ▶ Access is password protected
- ▶ Possibility to arrange items of the „User“ menu
- ▶ Tree menu structure

LIGHT

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

USER

SETTING

*profi light**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 for control keys located on the front panel. All programmable settings of the instrument are performed in three adjusting modes:

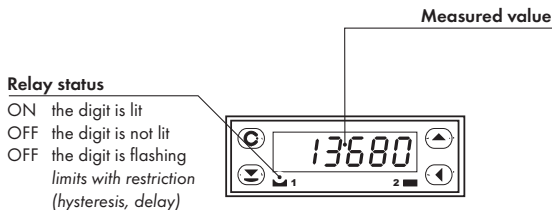
- LIGHT** **Simple programming menu**
- contains solely items necessary for instrument setting and is protected by optional number code
- PROFI** **Complete programming menu**
- contains complete instrument menu and is protected by optional number code
- USER** **User programming menu**
- may contain 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.

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 possible to browse through the operation menu and to select and set required values.





Symbols used in the instructions


-  Indicates the setting for given type of instrument
-  values preset from manufacture
-  symbol indicates a flashing light (symbol)
-  inverted triangle indicates the item that can be placed in USER menu
-  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 subtraction 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 w/o saving	transition to next item w/o saving
	tare value	return to previous level	move to higher decade
	cancel Tare	move to next item	move up
	Tare	confirm selection	setting/selection confirmation
+			numeric value is set to zero
+	access into LIGHT/PROFI menu		
+	direct access into PROFI menu - temporary (remains LIGHT)		
+		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



Legend is flashing - current setting is displayed



- item will not be displayed in USER menu
- item will be displayed in USER menu with the option of setting
- item will be solely displayed in USER menu

5.0

Setting "LIGHT"

LIGHT

Simple programming menu

- contains only items necessary for instrument setting and is protected by optional numeral code

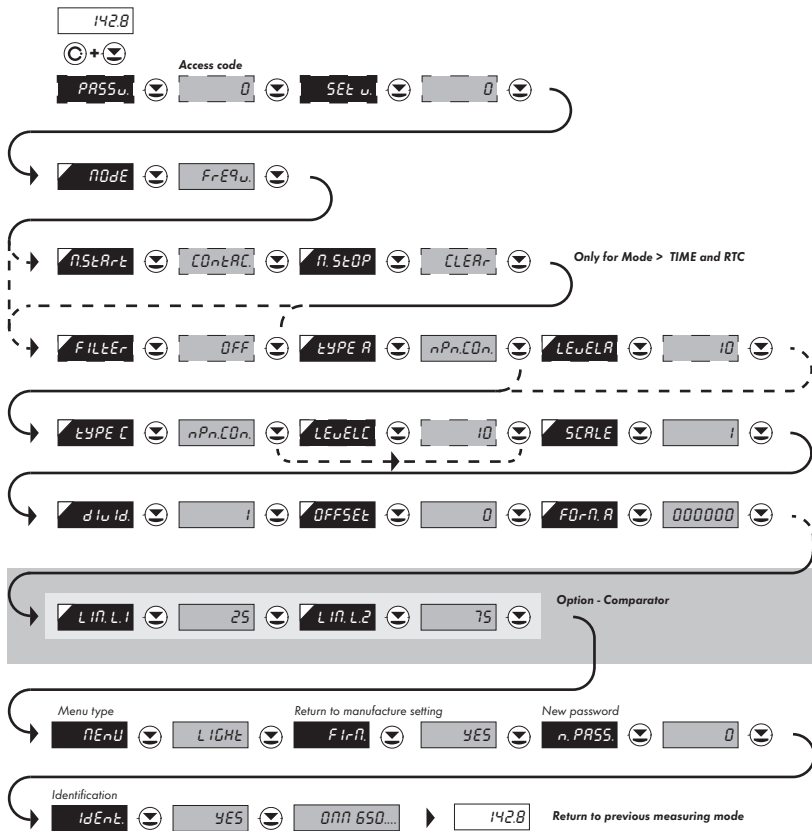
SETTING LIGHT

light

- For capable users
- Only items necessary for instrument setting
- Password protected access
- Possibility to arrange items of the „User“ menu
- Linear menu structure

Preset from manufacture

Password	"0"
Menu	LIGHT
USR 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



PASS



0

Entering access password
for access into the menu



PASS.

Access into instrument menu

PAS = 0

- access into menu is unrestricted, after releasing keys you automatically move to first item of the menu

PAS > 0

- access into menu is protected by numeric code

Set "PASS." = 42

Example



SET u.



0

Setting initial value



SET u.

Setting initial value

- the function allows the user a single-time setting of initial value of display projection
- the instrument is preset from manufacture into "FREQU." measuring mode and unless another mode is set the item remains hidden
- if you need to set initial value for another mode it is necessary to do so upon next access to programming menu > after

change of measuring mode

- setting "SET V." is a one-time operation unlike the "OFFSET" option, i.e. after resetting the display value is "0", provided there is no other value set in the "OFFSET" item

DEF = 0

Set "SET V." = 233

Example



!
The item „SET V.“ is not projected for measuring mode „FREQU.“

COUNT.

FREQU.

TIME

rEtC

MODE Selection of instrument measuring mode

- elementary selection of instrument type

DEF = FREQU.

MODE	Menu	Instrument mode
	COUNT.	Counter
	FREQU.	Frequencymeter
	TIME	Stopwatch/timer
	RTC	Stopwatch/back-up timer

Selection of "TIME" mode

Example

FREQU.

TIME

FILTER

COnt In.

COntAC.

EdGE

rUnStC.

ASTARt Selection of stopwatch/timer control

- menu for time setting is accessible only in the stopwatch/timer mode

COnt In. Stopwatch/timer is running constantly if the instrument is turned on

COntAC. Stopwatch/timer is running upon contact making

EdGE Stopwatch/timer is controlled by the priming signal edge

- time is set off by the edge (by the signal passing across the comparing level) and stopped by the next edge

rUnStC. Stopwatch/timer is controlled and reset by the edge of the priming signal

- time is set off by the edge (by the signal

passing across the comparing level) and stopped by the next edge

rUnStC. Stopwatch/timer is controlled and reset by the edge of the priming signal

- time is set off by the edge (by the signal passing across the comparing level) and stopped by the next edge

ELrrUn. Stopwatch/timer is reset and set off by the edge of the priming signal

ELrUrE. Stopwatch/timer is reset and set off by the edge of the priming signal, the cycle is repeated with every other edge

rUn Stopwatch/timer is only set off by the edge

DEF = COntAC.

Selection of stopwatch control > EdGE

Example

COntAC.

EdGE

ASTOP

 Only for measuring mode
TIME • RTC

Only for measuring mode
TIME • RTC

n.STOP Selection of stopwatch resetting

- menu of the resetting option is accessible only in the stopwatch/timer regime

DEF = CLEAR

CLEAR Stopwatch/timer is reset through input „Clear“

St. CLR Stopwatch/timer is stopped and reset through input „Clear“

StOP Stopwatch/timer is stopped through input „Clear“

Selection of type of stopwatch resetting > St. CLR Example

CLEAR **St. CLR** **FILTER**

Only for measuring mode
COUNT • TIME • RTC

FILTER Selection of digital filter

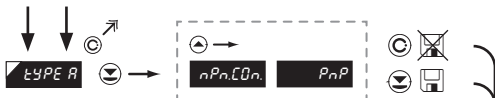
- digital filter may suppress unwanted interfering impulses (e.g. relay backswings) on the input signal. The set parameter gives maximum possible frequency, which the instrument processes w/o limitation

DEF = OFF

Maximum input frequency 100 Hz > 100 Example

OFF **1000** **100** **TYPE R**

!
When accessing upon contact and available maximum input frequency we recommend using filter



TYPE A Selection of type of input

- setting applies for Input A

DEF = NPN.CON.

TYPE	Menu	Type of input
	NPN.CON.	NPN or contact
	PNP	PNP

Selection of type of input > NPN Example

nPN.CON. LEVELA

!
Input levels (Level A) have to be set after this option



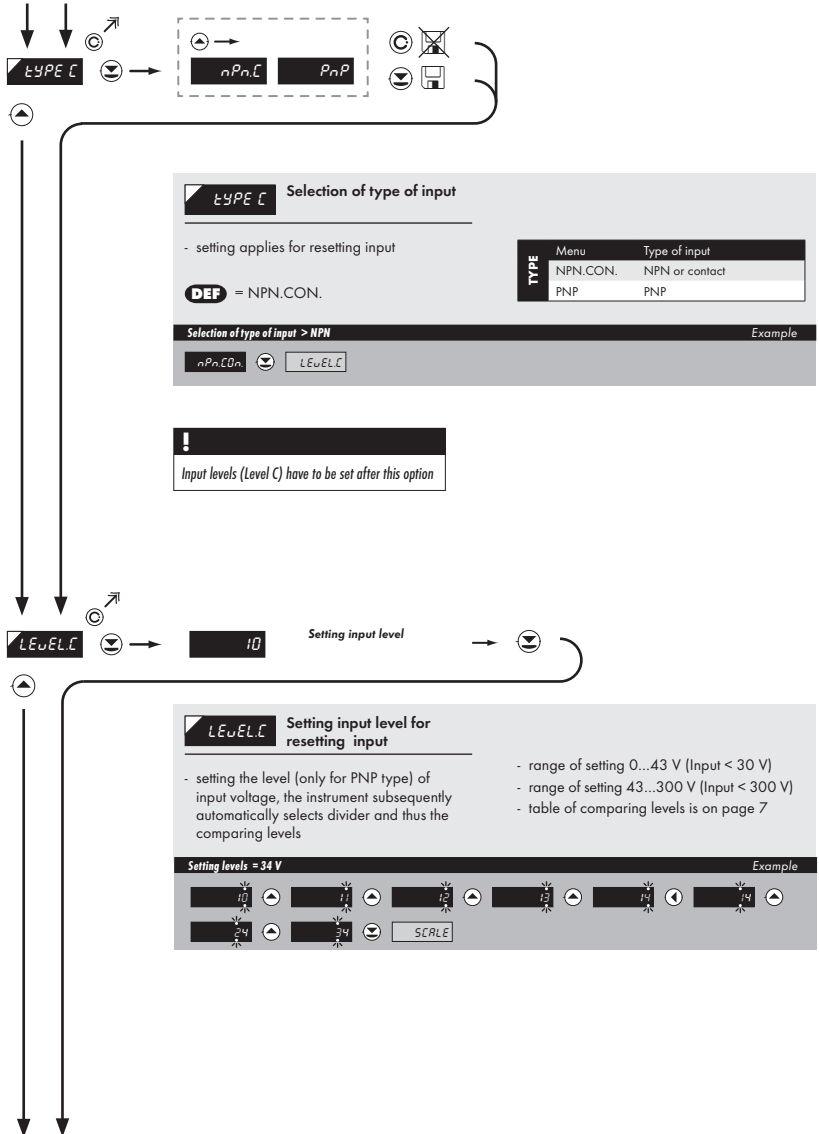
LEVELA Setting input level for Input A

- setting applies for Input A

- setting level (only for type PNP) of the input voltage, the instrument subsequently automatically selects divider and thus the comparing levels

- range of setting 0...43 V (Input < 30 V)
- range of setting 43...300 V (Input < 300 V)
- table of comparing levels is on page 7

Setting the level = 34 V Example





SCALE

Setting multiplying constant

- DEF = 1

- calibration constant serves for calculation of the input value to required display value
- by entering minus value direction of the calculation is changed, i.e. we count down
- range: -0,00001...999999

Calibration constant = 3,12

Example

1,12	2,12	0,2	1,2	0,12	1,12
2,12	3,12	03,12	3,12	31,2	3,12

d 1 u 1 d



d 1 u 1 d

Setting division constant

- DEF = 1

- calibration constant is for calculation of the input value to required display value
- range: -0,00001...999999

Division constant = 22

Example

1,12	5,12	0,2	1,2	0,2	OFFSEt
------	------	-----	-----	-----	--------

↓ ↓ ↗

OFFSEt → **Setting PRESET** → 0

↑ ↗

FO-R.R →

↑ ↗

Setting „PRESET“ = 24 Example

OFFSEt **Setting additive constant - PRESET**

- offset of the measuring by a set value, which shall be loaded always upon instrument resetting
- range: -99999...999999 (+ time formats)

- **DEF** = 0

↑ ↗

FO-R.R **F C**

000000 00000.0 0000.00 000.000 00.0000 0.000000 FLOA.P

↑ ↗

FO-R.R **H**

HH.MM.SS 99.MM.SS H.H.HH H.H.H.H.HH .MM.MM.SS .MM.SS.CC 99.SS.CC H.MM.SS.C

↑ ↗

FO-R.R **Selection of projection format**

- instrument enables classical projection of number with fixed position of decimal point as well as projection with floating allowing fo projection of number in its most precise form „FLOA. P.“

- for measuring modes „TIME“ and „RTC“ special time formats are preset

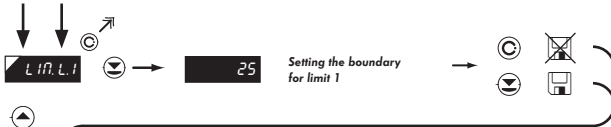
DEF = 000000

DEF = HH.MM.SS **H**

↑ ↗

Projection of DP on display > 00000.0 Example

000000 00000.0 L.N.L.I * subsequent menu item depends on instrument equipment



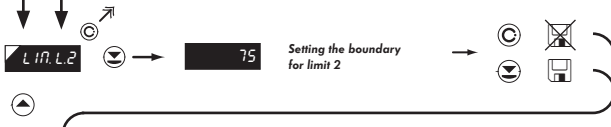
L IM.L.1 Setting the boundary for limit 1

- range of the setting is -99999...999999 (+ time formats)
- presetting "Hysteresis"=0 "Delay"=0

DEF = 25

Setting limit 1 > L1 = 30 Example

25	25	25	25	25	25	25
30	30	L IM.L.2				



L IM.L.2 Setting the boundary for limit 2

- range of the setting is -99999...999999 (+ time formats)
- presetting "Hysteresis"=0 "Delay"=0

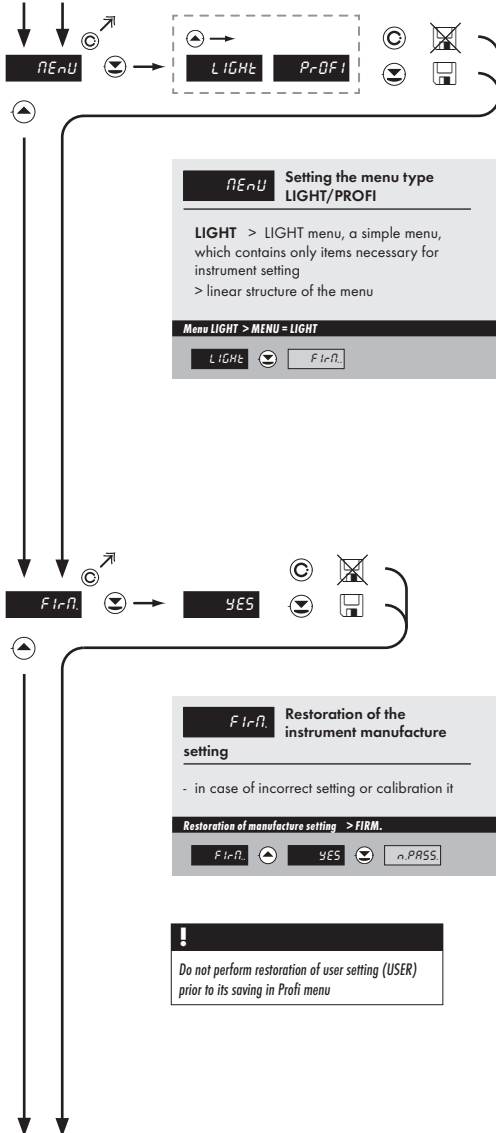
DEF = 75

Setting limit 2 > L2 = 30 Example

10	10	10	10	10	10	30
30	DEF					

* following item of the menu depends on instrument equipment, provided it has an analog output the following item is „Type“

!
Items for "Limits" are accessible only if the instrument contains them.



MENU

Setting the menu type LIGHT/PROFI

LIGHT > LIGHT menu, a simple menu, which contains only items necessary for instrument setting
> linear structure of the menu

PROFI > PROFI menu, a complete menu for entire instrument setting
> tree structure of the menu

DEP = LIGHT

Menu **LIGHT** > MENU = **LIGHT**

Example

LIGHT **FIRM.**

FIRM.

Restoration of the instrument manufacture setting

- in case of incorrect setting or calibration it

is possible to return to manufacture setting. Prior execution of the changes you will be asked to confirm your selection (YES)

- reading the manufacture calibration and original setting of items in the menu

Restoration of manufacture setting > **FIRM.**

Example

FIRM. **YES** **n.PASS**



Do not perform restoration of user setting (USER) prior to its saving in Profi menu



n.PASS. **Setting new access password**

- access password for LIGHT/PROFI menu
- range of the numeral code 0...9999
- when setting password to "0000" the

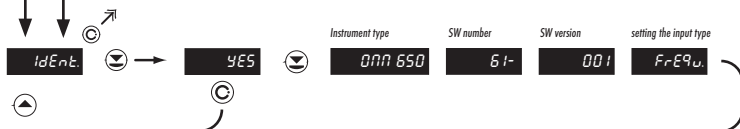
access into LIGHT/PROFI menu is accessible without call for entering it

- in case of loss of password universal password "8177" may be used

DEF = 0

New password - 341 > n.PASS. = 341 Example

0	1	2	3	4	5	6	7	8	9	IdEnt.
0	1	2	3	4	5	6	7	8	9	IdEnt.



IdEnt. **SW version of the instrument**

- the display shows the type identification of the instrument, SW number, SW version and current input setting (Mode)

- if the SW version reads a letter on the first position, then it is a customer SW
- after the identification is completed the menu automatically quits the display and measuring mode is restored

1428 **Return to measuring mode**

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**

SETTING
PROFI


- For expert users
- Complete instrument menu
- Access is password protected
- Possibility to arrange items of the „User“ menu
- Tree menu structure

Switching over to "PROFI" menu

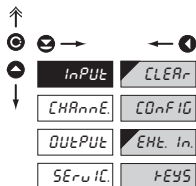


- temporary switch-over to **PROFI** menu, which is suitable to edit a few items
- after quitting **PROFI** menu the instrument automatically switches to **LIGHT** menu
- access is password protected (if it was not set under item N. PASS. =0)



- access into **LIGHT** menu and transition to item „MENU“ with subsequent selection of „PROFI“ and confirmation
- after re-entering the menu the **PROFI** type is active
- access is password protected (if it was not set under item N. PASS. =0)

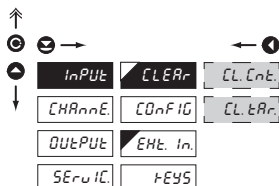
6.1 Setting "PROFI" - INPUT



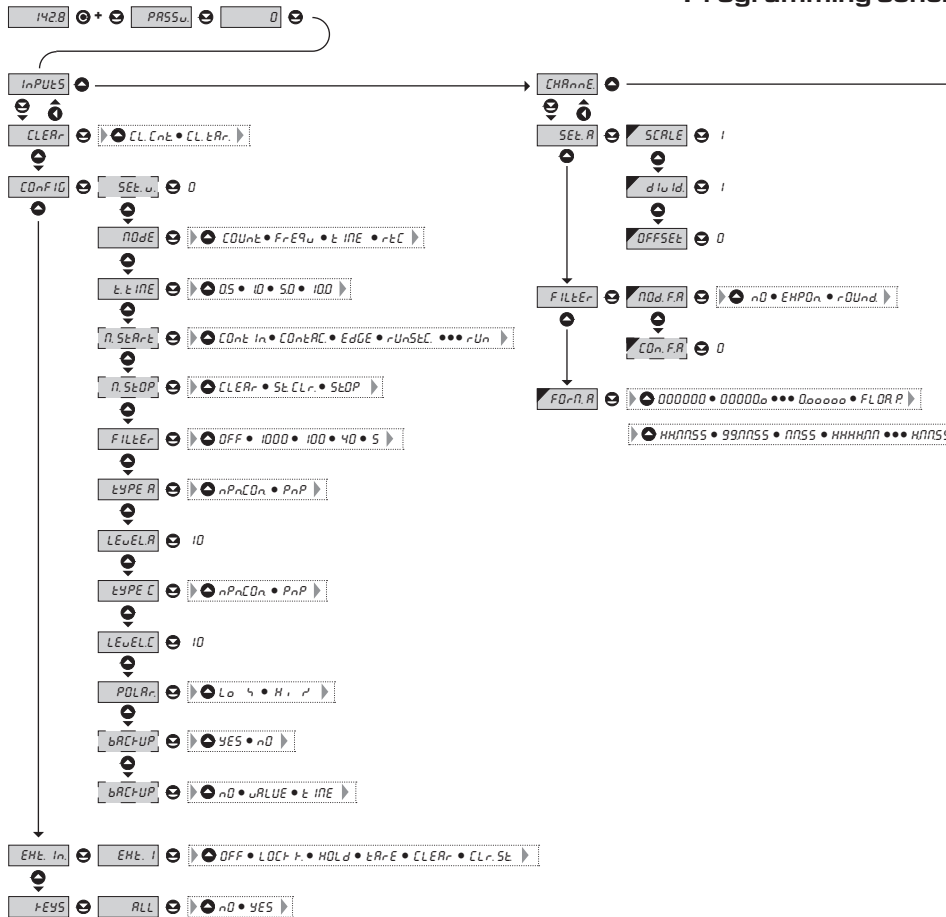
The basic instrument parameters are set in this menu

CLEAR	Resetting internal values
CONF IG	Primary instrument setting
EHE. In	Setting the external input function
FEYS	Setting the ENTER key function

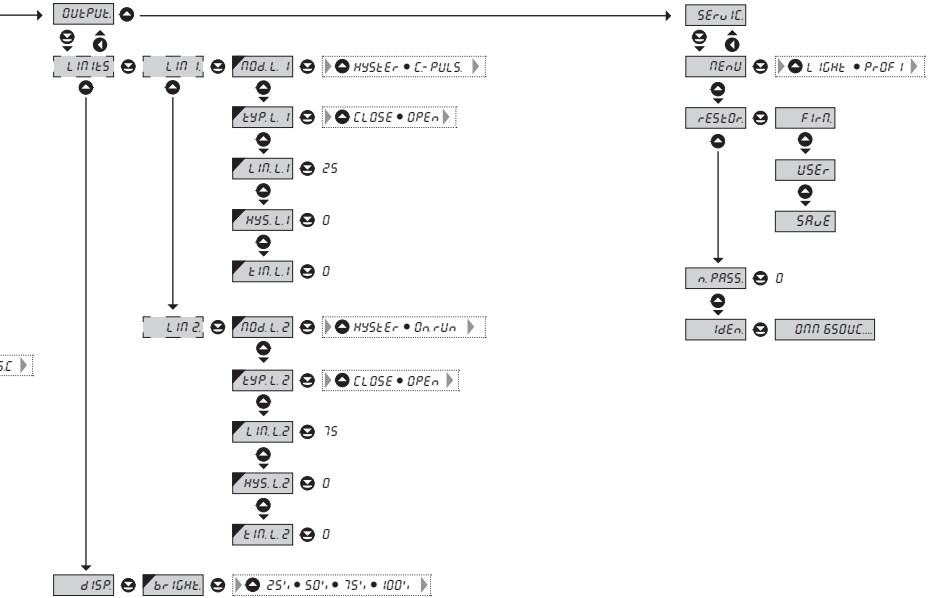
6.1.1 Resetting internal values



CLEAR	Resetting internal values
CL.Cnt	Counter resetting
CL.tAR	Tare resetting

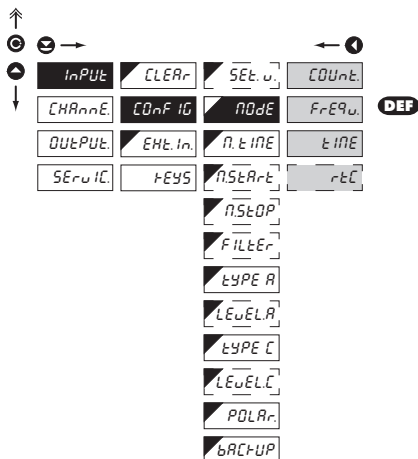


me of PROFI MENU



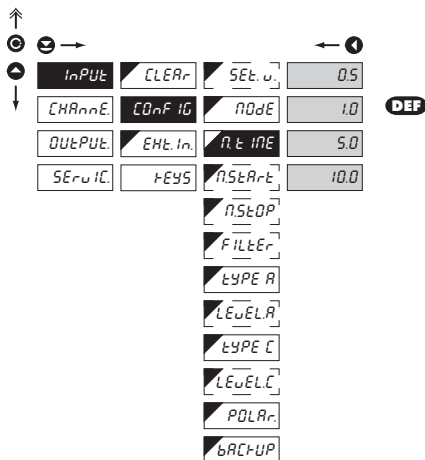
!
 Upon delay exceeding 60 s the programming mode is automatically discontinued and the instrument itself restores the measuring mode

6.1.2b Selection of measuring mode


NOdE Selection of instrument measuring mode

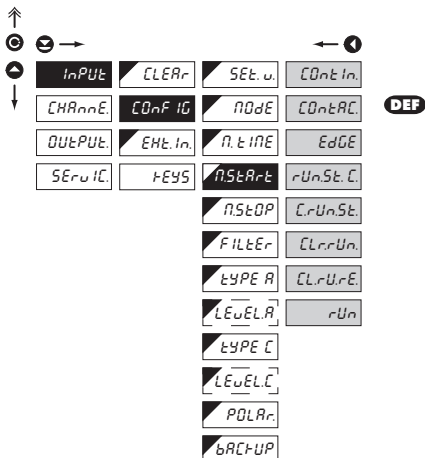
- | | |
|-------|--|
| COUnE | Mode „Counter“ |
| FrEQw | Mode „Frequencymeter“ |
| tIME | Mode „Stopwatch/timer“ |
| rtC | Mode „Stopwatch/timer“ with RTC backup |
- counts on input A
 - measures frequency on input A
 - not in standard equipment

6.1.2c Selection of measuring period/time base


n.tIME Selection of measuring period/time base

- if you set measuring period e.g. for 1 s, the measuring runs approximately from 1 s to 2 s (1 s + maximum one cycle of measured signal). If no signal arrives within 2 s it is taken that the signal has zero frequency
- range of setting of the time base is 0,5 s to 10 s
- in the „RTC“ regime with data projection the set time defines the cycle of switching between time/date, min. is 5 s, datum is displayed for approx. 2,5 s

6.1.2d Selection of stopwatch/timer control

H


nStArE Selection of stopwatch/timer control

- time setting menu is accessible only in the stopwatch/timer regime

COnt In. Stopwatch/timer is running constantly if the instrument is turned on

COntAR. Stopwatch/timer is running upon contact making

EdGE Stopwatch/timer is controlled by the priming signal edge

- time is set off by the edge (by the signal passing across the comparing level) and stopped by the next edge

rUn. St. E. Stopwatch/timer is controlled and reset by the edge of the priming signal

- time is set off by the edge (by the signal passing across the comparing level) and stopped by the next edge

CLrUn. St. E. Stopwatch/timer is controlled and reset by the edge of the priming signal

- time is set off by the edge (by the signal passing across the comparing level) and stopped by the next edge

CLrUn. Stopwatch/timer is reset and set off by the edge of the priming signal

CLrUrE. Stopwatch/timer is reset and set off by the edge of the priming signal, the cycle is repeated with every other edge

rUn Stopwatch/timer is only set off by the edge

6.1.2e Selection of stopwatch/timer resetting

H

Navigation icons: ↑, Ⓞ, ☺, →, ←, ①, ↓, ▲

INPUT	CLEAR	SEt. u.	CLEAR	DEF
CHARnE	COmF IG	ADdE	St. CLr	
DUtEPUt.	EHt. In.	n. tIME	St. CLr	
SERu IC.	KEYS	n.StOP		
		FILtEr		
		tYPE A		
		LEuELA		
		tYPE C		
		LEuELC		
		POLAR.		
		bRCLUP		

n.StOP Selection of stopwatch resetting

- menu of the resetting option is accessible only in the stopwatch/timer regime

CLEAR Stopwatch/timer is reset through input „Clear“

St. CLr Stopwatch/timer is stopped and reset through input „Clear“

StOP Stopwatch/timer is stopped through input „Clear“

6.1.2f Selection of input filter parameters

C H

Navigation icons: ↑, Ⓞ, ☺, →, ←, ①, ↓, ▲

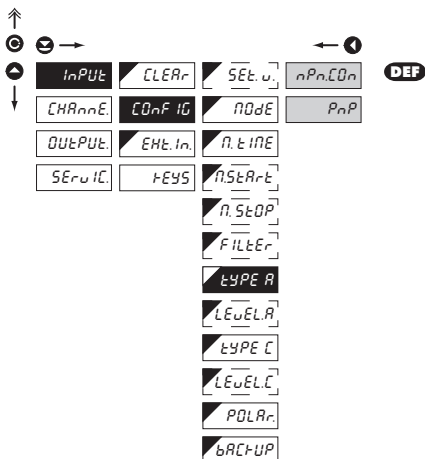
INPUT	CLEAR	SEt. u.	OFF	DEF
CHARnE	COmF IG	ADdE	1000	
DUtEPUt.	EHt. In.	n. tIME	100	
SERu IC.	KEYS	n.StOP	40	
		n.StOP	5	
		FILtEr		
		tYPE A		
		LEuELA		
		tYPE C		
		LEuELC		
		POLAR.		
		bRCLUP		

FILtEr Selection of digital input filter

- digital filter may suppress unwanted interfering impulses (e.g. relay backswings) on the input signal. The set parameter gives maximum possible frequency (Hz) of the instrument, which the instrument w/o limitation

!
When accessing upon contact and available maximum input frequency we recommend using filter

6.1.2g Selection of the type of input



TYPE A Selection of type of input

- setting applies for Input A

nPN,CO n Type of input NPN and upon contact

PnP Type of input PNP

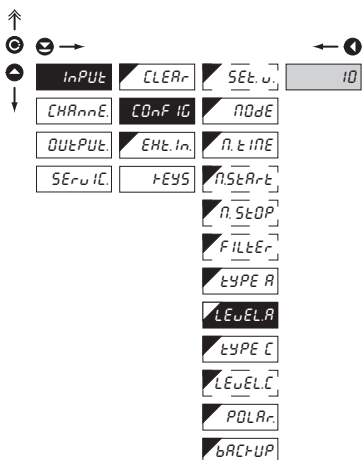


Input levels (Level A) must be set after this selection



Setting for input Resetting (type C) is identical with setting for Input A

6.1.2h Setting input level



LEuEL A Setting input level

- setting applies for Input A

- setting level (only for type PNP) of the input voltage, the instrument subsequently automatically selects divider and thus comparing levels

- range of setting 0...43 V
(Input A < 30 V, bracket No. 8)

(Input C < 30 V, bracket No. 9)

- range of setting 43...300 V
(Input A < 300 V, bracket No. 13)

(Input C < 300 V, bracket No. 11)

- table of comparing levels is on page 7



Setting for input Resetting (Level. C) is identical with setting for Input A

6.1.2i Selection of active level or edge

↑

⊙ →

↕

INPUT	CLEAR	SEt.u	Lo 4	DEF
CHARnE	CONF IG	ADdE	Hi 7	
OUTPULt	EHt.In	n.tIME		
SERvIC	KEYS	AStARt		
		n.StOP		
		FILtEr		
		tYPE A		
		LEuELA		
		tYPE C		
		LEuELC		
		POLAR		
		bRACtUP		

← 1

POLAR Selection of active level or edge

Lo 4

Active upon change of declining edge Lo > Hi

- upon entering the contact > active on switch-on

Hi 7

Active upon change of entering edge Hi > Lo

- upon entering the contact > active on switch-off

6.1.2j Selection of display status backup

↑

⊙ →

↕

INPUT	CLEAR	SEt.u	n0	DEF
CHARnE	CONF IG	ADdE	YES	
OUTPULt	EHt.In	n.tIME		
SERvIC	KEYS	FILtEr		
		tYPE A		
		LEuELA		
		tYPE C		
		LEuELC		
		POLAR		
		bRACtUP		

← 1

bRACtUP Selection of display status backup

- setting display value restoration after power failure or instrument switch-off

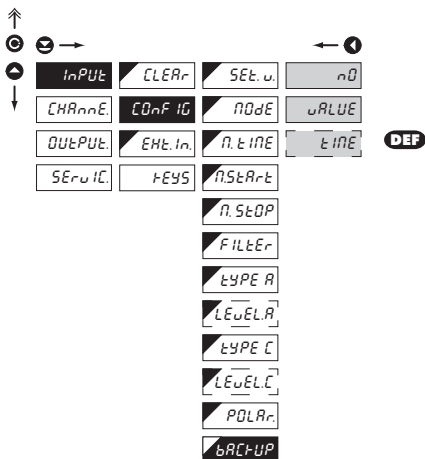
n0

After switch-on the instrument loads the display status from the memory

YES

Instrument resets itself after switch-on

6.1.2k Setting the display status backup

H


bACkUP Selection of display status backup

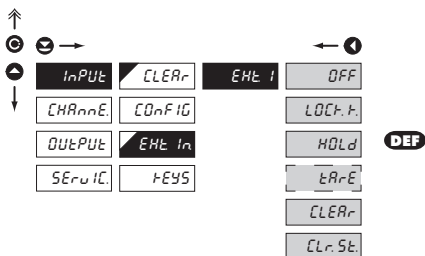
- time setting menu is accessible only in the stopwatch/timer regime
- setting display value restoration after power failure or instrument switch-off

nD Instrument resets itself after every switch-on

uALUE After switch-on the instrument loads the display status from the memory

tIME Instrument downloads „running“ time from RTC
- item accessible only with extension „Time backup“

6.1.3 External input function selection



EHE. In. External input function selection

OFF Input is off

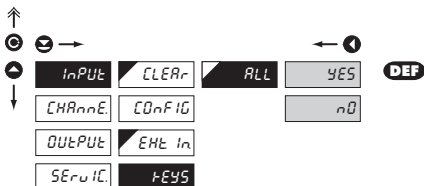
LOCK.F. Auxiliary input governs the „LOCK“ function
- the input governs the blocking of control keys on front panel

HOLD Auxiliary input governs the „HOLD“ function
- the input governs the HOLD function, which blocks all instrument functions

tARtE Auxiliary input governs the „TARE“ function
- the TARE function is activated through the input, only in the “Frequency” mode

CLEAR Auxiliary input governs the „Clear“ function
- stopwatch/counter is cleared (preset) through the input

CLr. St. Auxiliary input governs the „Clear“ function
- stopwatch/counter is cleared (preset) through the input, Stopwatch stops altogether

6.1.4 Optional accessory functions of the keys


Control keys functions are described on page 11

ALL Assigning accessory functions of control keys

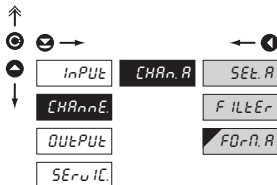
- owing to limited space in the instrument's memory it is not feasible to set the keys' functions one by one

YES Accessory functions are on

	Counter	Frequency	Stopwatch
↑	-	Resetting tare	Resetting
↓	-	Tare projection	Start
☺	Resetting	Tare	Stop

nD Accessory functions are off

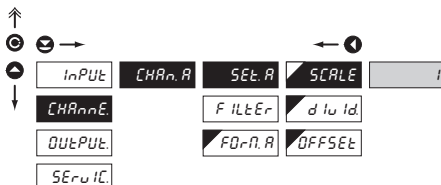
6.2 Setting "PROFI" - CHANNEL



In this menu the instrument input parameters are set

- SEt.A Setting calibration constant
- F ILtEr Setting the digital filters
- FDrn.A Selection of projection format

6.2.1a Setting multiplying constant

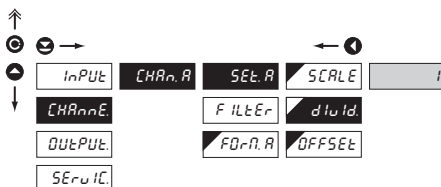


SCALE Setting multiplying constant

- multiplying constant serves for calculation of input value to required display value
- by entering minus value the direction of calculation is changed, i.e. we count down
- range: -0,00001...999999
- **DEF** = 1

! **H**
If non-zero value is set in the "TIME" or "RTC" mode in the "OFFSET" item, it applies that the multiplying constant "SCALE" is negative

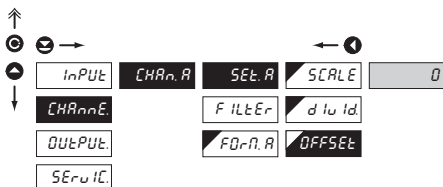
6.2.1b Setting division constant



d lu Id Setting division constant

- division constant serves for calculation of input value to required display value
- range: 0,00001...999999
- **DEF** = 1

6.2.1c Setting additive constant - PRESET



OFFSEt Setting PRESET constant

- offset of the measuring by a set value, which shall be loaded always upon instrument resetting
- range: -99999...999999

DEF = 0

! **H**
If non-zero value is set in the "TIME" or "RTC" mode in the "OFFSET" item, it applies that the multiplying constant "SCALE" is negative

6.2.2 Setting the digital filters



nD Setting the digital filters

COnSt. Setting the constant

- this menu item is always displayed after selection of a particular type of filter

DEF = 2

nD Filters are switched off

EHPDn Selection of exponential filter

- calculation of value from the number of measurements selected in „Con. F.A.“

rQUnd Selection of value round-up

- it is set by ...arbitrary number, which determines the projection step (e.g.: "Con. F.A."=2,5 > display 0, 2,5, 5,...)

6.2.3 Selection of projection format

↑
 Ⓞ →
 ⬆️
 ⬇️

inPUt	CHAN.A	SEt.In	000000	DEF
CHAN.E		FILtEr	000000	
OUTPUt		<input checked="" type="checkbox"/> FOr.A	000000	
SEruiC			000.000	
			00.0000	
			0.00000	
			FLOr.P	
			HH.MM.SS	DEF H
			99.MM.SS	
			HH.MM	
			HHHH.MM	
			MM.MM.SS	
			MM.SS.CC	
			99.SS.CC	
			H.MM.SS.C	

FOr.A Selection of projection format

- the instrument enables projection of number with decade positioning of decimal point
- for projection of time there are also other projection forms available

! **H**

In mode "TIME" or "RTC" the time base is preset according to projection format

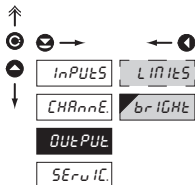
in seconds > 000000...0.00000, Floa.P., HH.MM.SS, 99.MM.SS, MMMM.SS

in minutes > HH.MM, HHHH.MM

in tenths of seconds > H.MM.SS.C

in hundredths of seconds > MM.SS.CC, 99.SS.CC

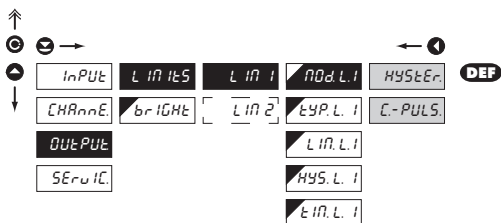
6.3 Setting „PROFI“ - OUTPUTS



It is possible to set the parameters of the instrument output signals in this menu

- Setting the type and the switching of limits
- Setting the display brightness

6.3.1a Selection of mode of output L 1

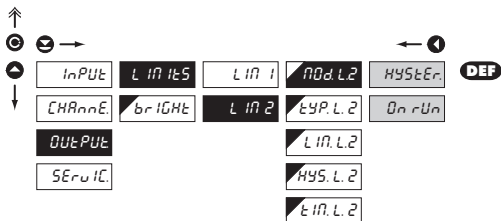


Mode of limit 1

- Standard mode - limit, hysteresis and delay
- Automatic clearing of counter to preset value

!
Setting is available only for LIM 1

6.3.1b Selection of mode of output L 2

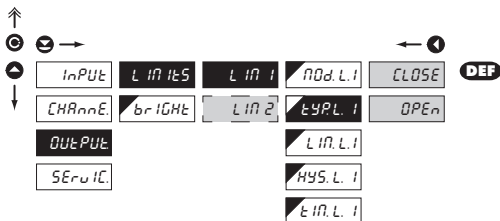


Mode of limit 2

- Standard mode - limit, hysteresis and delay
- Relay is switched on/off if the stopwatch is running

!
Setting is available only for LIM 2

6.3.1c Selection of type of output

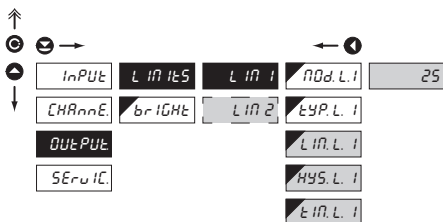


tYP.L.1 Setting the type of relay function

- CLOSE** Relay switches on when the condition is met
- OPEN** Relay switches off when the condition is met

Setting is identical for LIM 1 and LIM 2

6.3.1d Setting values for limits evaluation



L IN.L.1 Setting the boundary for relay switch-on

- within the full display range
- **DEF** = 25 (L 1), 75 (L 2)

HYS.L.1 Setting hysteresis

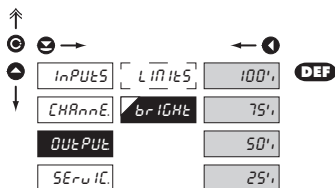
- defines the band around the limit (on both sides, LIM. $\pm 1/2$ HYS.)
- within the full display range
- **DEF** = 0

t IN.L.1 Setting the offset of the relay switch-on

- within the range 0...99,9 s
- **DEF** = 0

Setting is identical for LIM 1 and LIM 2

6.3.2 Selection of display brightness

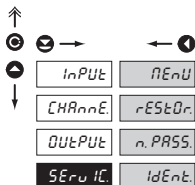


brIGHt Setting the display brightness

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

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

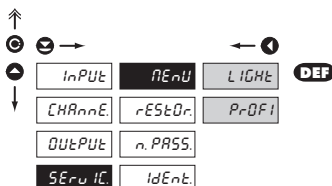
6.4 Setting "PROFI" - SERVICE



The instrument's service functions are set in this menu

MEnu	Selection of menu type LIGHT/PROFI
reStOr	Restoration of the manufacture setting and instrument calibration
n.PASS	Setting new access password
IdEnt	Instrument identification

6.4.1 Selection of the type of programming menu



Change of setting is valid with next access into menu

MEnu Selection of menu type LIGHT/PROFI

- allows to set the menu complexity as per user needs and abilities

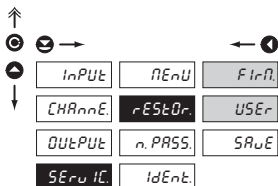
LIGHt Active LIGHT menu

- simple programming menu, contains only items necessary for instrument configuration and setting
- linear menu structure > items in succession

PrDFI Active PROFi menu

- complete programming menu for expert users
- tree menu

6.4.2 Restoration of the manufacture setting



After restoration of setting the instrument switches off for several seconds

rESTOr. Restoration of the instrument manufacture setting

FIN. Return to manufacture setting of the instrument

- downloading manufacture setting for currently selected type of instrument (items described DEF)

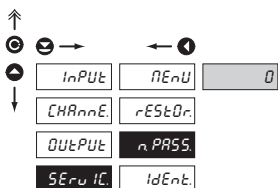
USER Return to user setting of the instrument

- downloading user setting of the instrument, i.e. setting which was stored under item SERVIC./RESTOR./SAVE

SAVE Storing user setting of the instrument

- storing the setting enables the operator its future contingent restoration

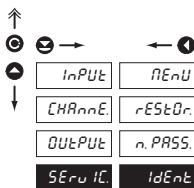
6.4.3 Setting new access password



n.PASS. Setting new password for access into the LIGHT and PROFi menu

- this option allows to change the numeral code, which protects the access into the LIGHT and PROFi Menu.
- numeral code range is 0...9999
- universal password in case of loss „8177“


6.4.4 Instrument identification



IDENT. Projection of instrument SW version

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

7.0 "USER" menu configuration

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



- For user operation
- Menu items are set by the user (Profi/Light) as per request
- Access is not password protected

SETTING

flashing sign - current setting is displayed



n0

item will not be displayed in USER menu

YES

item will be displayed in USER menu with the chance of editing

SH0

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:

Into USER menu were selected these items:

(keys ☺ + ⬅) > CL. Cnt., LIM. L 1, LIM. L 2, for which we have preset this sequence:

(tlačítky ☺ + ⬅):

CL. Cnt.	5
LIM. L 1	0 (sequence not determined)
LIM. L 2	1

Upon entering USER menu

(key ☺) items will be projected in the following sequence: LIM. L 2 > CL. Cnt. > LIM. L 1

ERROR	CAUSE	ELIMINATION
<i>E. d. U_n</i>	Number is too small (large negative) to be displayed	change DP setting, channel constant
<i>E. d. O_n</i>	Number is too large to be displayed	change DP setting, channel constant
<i>E. E. U_n</i>	Number is outside the table range	increase the table values, change input setting (channel constant)
<i>E. E. O_n</i>	Number is outside the table range	increase the table values, change input setting (channel constant)
<i>E. I. U_n</i>	Input quantity is smaller than permitted input quantity range	change input signal value or input (range) setting
<i>E. I. O_n</i>	Input quantity is larger than permitted input quantity range	change input signal value or input (range) setting
<i>E. H_n</i>	A part of the instrument does not work properly	send the instrument for repair
<i>E. EE</i>	Data in EEPROM corrupted	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
<i>E. J_n E_n L_n R</i>	Data in EEPROM outside the range	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
<i>E. C. L_r</i>	Memory was empty (presetting carried out)	upon repeated error statement send instrument for repair, possible failure in calibration

INPUT

Type:	upon contact, TTL, NPN/PNP
Measuring:	1x counter/frequency 1x stopwatch/timer - measuring range is adjustable
Input frequency:	0,1...50 kHz

PROJECTION

Display:	999999, intensive red or green 7-segment LED, digit height 9,1 mm
Projection:	-99999...999999
Decimal point:	adjustable - in programming mode
Brightness:	adjustable - in programming mode

INSTRUMENT ACCURACY

Temperature coef.:	50 ppm/°C
Accuracy:	±0,05 % of the range + 1 digit (frequency)
Time base:	0,5/1/5/10 s
Multiplying constant:	±0,00001...999999
Division constant:	±0,00001...999999
Filtration constant:	allows for setting max. valid frequency, which is processed (OFF/5...1000 Hz)
Type of filter:	digital
Preset:	-99999...999999
Data backup:	preservation of measured data even after instrument switch-off (EEPROM)
Functions:	Tare - display resetting Hold - stop measuring (upon contact) Lock - control keys locking
RTC:	the course of time is backed up by battery upon disconnection from the instrument supply (may be turned off - jumper inside the instrument) minimum lifetime 1 year
Battery:	Lithium cell CR 2032RV, 3V/220 mAh
OM Link:	Company communication interface for instrument operation, setting and update
Watch-dog:	reset after 540 ms
Calibration:	pti 25°C a 40 % r.v.

COMPARATOR

Type:	digital, adjustable in the menu, contact switch-on < 50 ms
Limits:	-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)*
Relay:	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

POWER SUPPLY

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

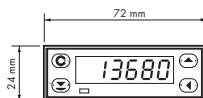
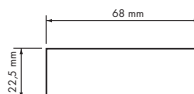
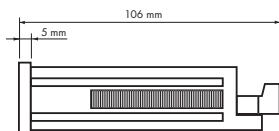
MECHANIC PROPERTIES

Material:	Naryl GFN2 SE1, incombustible UL 94 V-1
Dimensions:	72 x 24 x 106 mm
Panel cut-out:	68 x 22,5 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.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP65 (front panel only)
Construction:	safety class I
Overvoltage category:	EN 61010-1, A2
Insulation resistance:	for pollution degree II, measurement category III power/input > 300 V (PI), 150 (DI)
EMC:	EN 61000-3-2+A12; EN 61000-4-2, 3, 4, 5, 8, 11; EN 550222, A1, A2

* values apply for resistance load

Front view**Panel cut****Side view**

Panel thickness: 0,5...20 mm

Product **OMM 650UC**
 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 occurring 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.



Y E A R S

Stamp, signature

DECLARATION OF CONFORMITY

Company: **ORBIT MERRET, spol. s r.o.**
Klánská 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 full 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 type listed hereunder, which are being brought out to the market, with technical documentation and requirements of the appurtenant statutory orders.

Product: Programmable panel instrument

Type: **OMM 350/650**

Version: UC

Conformity is assessed pursuant to the following standards:

Electrical safety:	EN 61010-1
EMC:	EN 50131-1, chapter 14 and chapter 15
	EN 50130-4, chapter 7
	EN 50130-4, chapter 8
	EN 50130-4, chapter 9
	EN 50130-4, chapter 10
	EN 50130-4, chapter 11
	EN 50130-4, chapter 12
	EN 50130-4, chapter 13
	EN 50130-5, chapter 20
	prEN 50131-2-1, par. 9.3.1
	EN 61000-4-8
	EN 61000-4-9
	EN 61000-3-2 ed. 2:2001
	EN 61000-3-3: 1997, Cor. 1:1998, Z1:2002
	EN 55022, chapter 5 and chapter 6

and government ordinance:

Electrical safety:	No. 168/1997 Sb.
EMC:	No. 169/1997 Sb.

The evidence are the protocols of authorized and accredited organization:

VTÚE Praha, experimental laboratory No. 1158, accredited by ČIA
VTÚPV Vyškov, experimental laboratory No. 1103, accredited by ČIA

Place and date of issue: Prague, 18. March 2003

Miroslav Hackl
Company representative

Mode of asses. of conformity: §12, par. 4 b, d of Act No. 22/1997 Sb.