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.
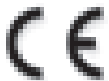
They are up to the following European:
EN 55 022, class B
EN 61000-4-2, -4, -5, -6, -8, -9, -10, -11

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.

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1. Contens

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	C
FREQUENCY	Frequencymeter	F
STOPWATCH	Stopwatch	H
TIMER	Timer	H

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 unwatnted 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
Resettting	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   **Simple programming menu**
          - contains only items necessary for instrument setting and is protected by an optional numeral code

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

USER   **User programmable menu**
          - 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).

OMLINK   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 visualizatiion 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).

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.
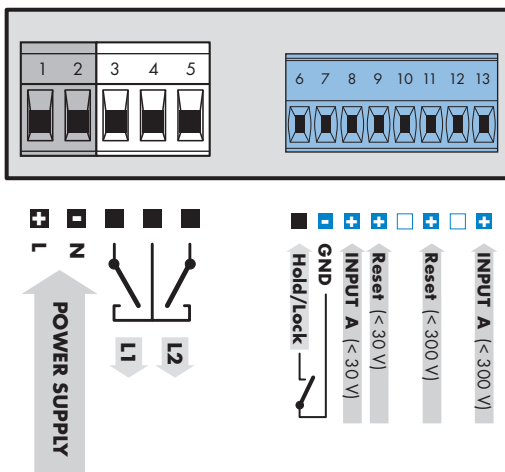
CONNECTION

	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 comparation levels

Input	Type of input	Maximum input voltage (Level A, C)	Maximum comparation 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

SETTING PROFI

profi

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

SETTING LIGHT

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

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

Measured value

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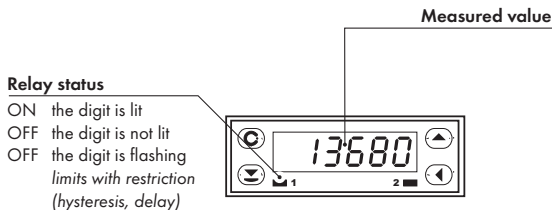
Symbols used in the instructions

H	Indicates the setting for given type of instrument
DEF	values preset from manufacture
42	symbol indicates a flashing light (symbol)
П lп	inverted triangle indicates the item that can be placed in USER menu
ᵗ ⁱⁿᵋ	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
C	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
C + ▼	access into LIGHT/PROFI menu		
C + ▲	direct access into PROFI menu - temporary (remains LIGHT)		
▼ + ▲		confi guration 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

▲ →   *return to item*

`---`   ▼ + ▲   `nO`   `YES`   `SHO`   C   ▼   →   `---`

`nO`	item will not be displayed in USER menu
`YES`	item will be displayed in USER menu with the option of setting
`SHO`	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

- • **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**
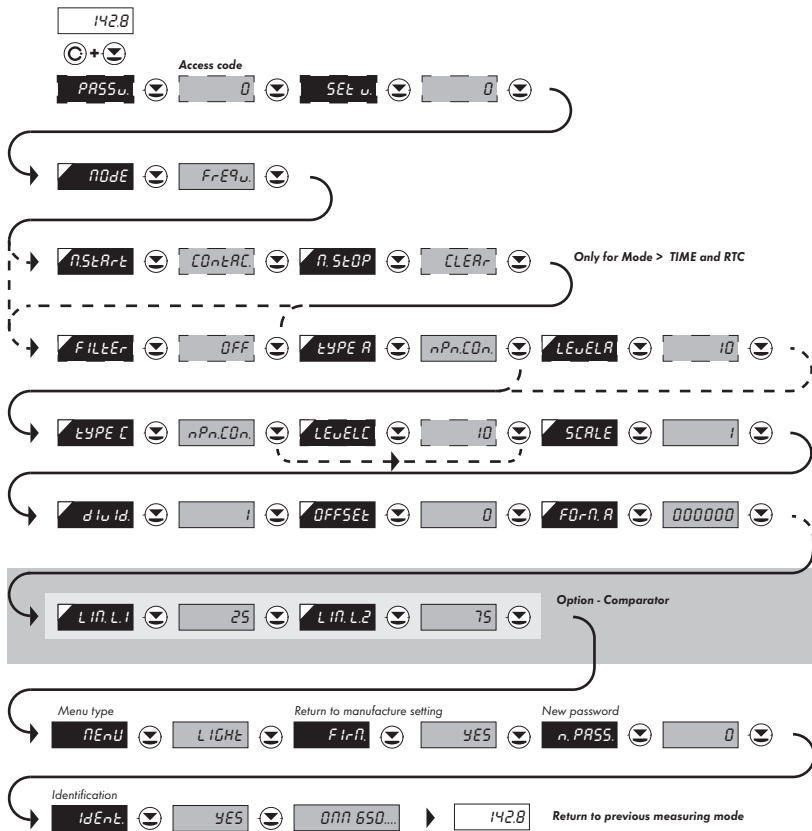
142.8

© + ▼

Access code

PASSw. ▼ 0 ▼ SEt u.1 ▼ 0 ▼

nOdE ▼ FrE9u. ▼

n.StArt ▼ COntAC. ▼ n.StOP ▼ CLEAr ▼   *Only for Mode > TIME and RTC*

FILtEr ▼ OFF ▼ tYPE A ▼ nPn.COn. ▼ LEuELA ▼ 10 ▼

tYPE C ▼ nPn.COn. ▼ LEuELC ▼ 10 ▼ SCALE ▼ 1 ▼

d1u1d. ▼ 1 ▼ OFFSEt ▼ 0 ▼ FOrn.A ▼ 000000 ▼

Option - Comparator

L1n.L.1 ▼ 25 ▼ L1n.L.2 ▼ 75 ▼

Menu type   *Return to manufacture setting*   *New password*

nEnU ▼ L1GHt ▼ F1rn. ▼ YES ▼ n.PASS. ▼ 0 ▼

Identification

IdEnt. ▼ YES ▼ Onn 650.... ▶ 142.8   *Return to previous measuring mode*

!

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

`142.8`

Ⓒ + ⊻

`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 ny numeric code

Set "PASS." = 42   *Example*

`0` ⌃ `1` ⌃ `2` ◁ `02` ⌃ `12` ⌃ `22` ⌃
`32` ⌃ `42` ⊻ `SEt u.`

Ⓒ

`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*

`0` ⌃ `1` ⌃ `2` ⌃ `3` ◁ `03` ⌃ `13` ⌃
`23` ⌃ `33` ◁ `033` ⌃ `133` ⌃ `233` ⊻ `ПОdE`

!

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

NOdE — Selection of instrument measuring mode

- elementary selection of instrument type

DEF = FREQU.

	Menu	Instrument mode
MODE	COUNT.	Counter
	FREQU.	Frequencymeter
	TIME	Stopwatch/timer
	RTC	Stopwatch/backup timer

Selection of "TIME" mode *Example*

FrE9u. ▲ → tIME ▼ → FILtEr

N.StArt — Selection of stopwatch/timer control

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

COntIn. 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

rUn.St.C. 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

C.rUn.St. 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

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

CL.rU.rE. 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 ▼ → N.StOP

Only for measuring mode **TIME · RTC**

N.StOP

CLEAr **St.CLr.** **StOP**

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**

FILtEr

OFF **1000** **100** **40** **5**
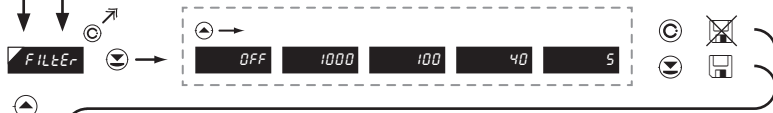
FILtEr — Selection of digital filter

- 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 A.**

!

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

ᴛYPᴇ 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*

!

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

  Setting input level

LᴇᴠᴇL.A **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*

ᵗYPE C

Selection of type of input

- setting applies for resetting input

DEF = NPN.CON.

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

Selection of type of input > NPN   *Example*

nPn.COn → LEᵤEL.C

!

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

LEᵤEL.C → 10   Setting input level

LEᵤEL.C   **Setting input level for resetting input**

- setting the level (only for PNP type) of 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 levels = 34 V   *Example*

10 → 11 → 12 → 13 → 14 → 14
24 → 34 → SCALE

SCALE → 1   Setting multiplying-constant →

Setting multiplying constant

SCALE

- 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

- **DEF** = 1

Calibration constant = 3,12   *Example*

1   2   02   12   012   112
212   312   0312   312   312   312

d lu ld.

d lu ld. → 1   Setting division constant →

Setting division constant

d lu ld.

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

- **DEF** = 1

Division constant = 22   *Example*

1   2   02   12   22   OFFSEt

OFFSEt → `0` Setting PRESET →

Setting additive constant - PRESET

OFFSEt

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

- **DEF** = 0

Setting „PRESET" = 24 Example

`0` `1` `2` `3` `4` `04` `14` `24` `FOr.N.A`

FOr.N.A

F C

`000000` `00000.o` `0000.oo` `000.ooo` `00.oooo` `0.ooooo` `FLOA. P.`

H

`HH.NN.SS` `99.NN.SS` `HH.NN` `HHHH.NN` `NNNN.SS` `NN.SS.CC` `99.SS.CC` `H.NN.SS.C`

Selection of projection format

FOr.N.A

- 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.o Example

`000000` `00000.o` `L IN. L. 1` * subsequent menu item depends on instrument equipment

Only with option > Dual Comparator
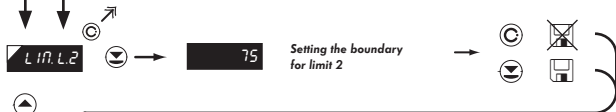
L IN. L.1 Setting the boundary for limit 1

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

- contingent change of hysteresis or offset of the switch-on may be performed in the PROFI menu

DEF = 25

Setting limit 1 > L 1 = 30   Example

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

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

- contingent change of hysteresis or offset of the switch-on may be performed in the PROFI menu

DEF = 75

Setting limit 2 > L 2 = 230   Example

* 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.

nEnU
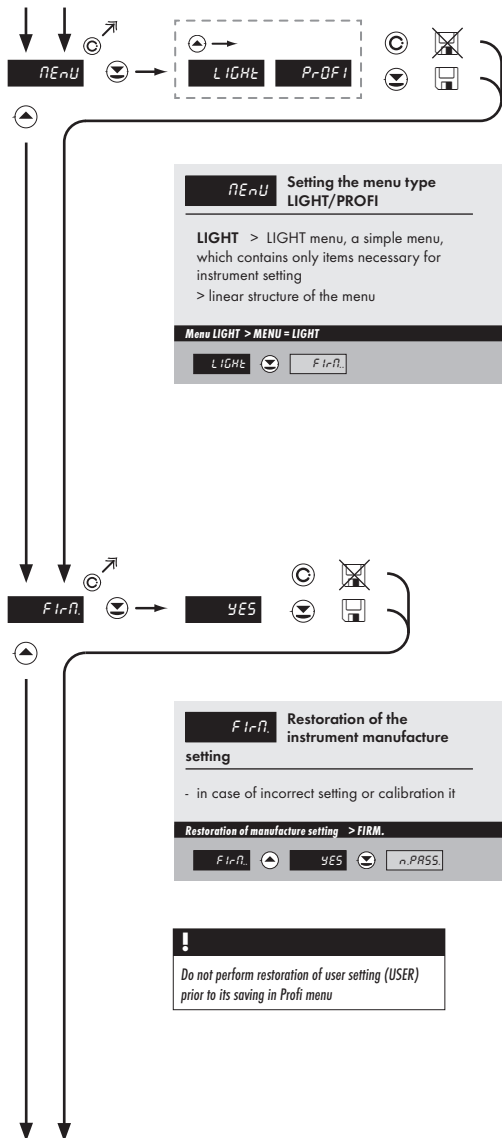
LIGHt PrOFI

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

DEF = LIGHT

Menu LIGHT > MENU = LIGHT   *Example*

LIGHt   ⊗   FIrN.

FIrN.   →   YES

FIrN.   **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*

FIrN.   ⊙   YES   ⊗   n.PASS

!

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

`n.PASS.` → `0` *Setting new access password* →

Setting new access password

`n.PASS.`

- 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` ▲ `01` ◄ `11` ▲ `21` ▲ `31` ▲
`41` ◄ `041` ▲ `141` ▲ `241` ▲ `341` ▼ `IdEnt`

`IdEnt.` → `YES` `ONN 650` `61-` `001` `FrEQu.`

Instrument type   *SW number*   *SW version*   *setting the input type*
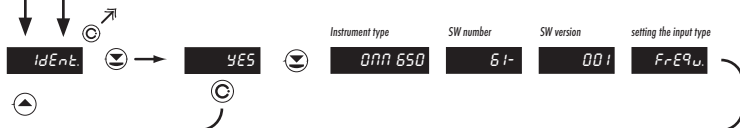
SW version of the instrument

`IdEnt.`

- 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

`142.8` *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**

- **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
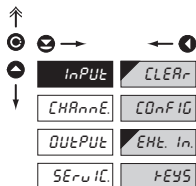
The basic instrument parameters are set in this menu

CLEAr	Resetting internal values
COnFIG	Primary instrument setting
EHt. In.	Setting the external input function
rEYS	Setting the ENTER key function

6.1.1 Resetting internal values
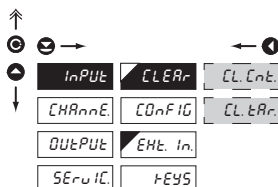
CLEAr	**Resetting internal values**
CL.Cnt.	Counter resetting
CL.tAr.	Tare resetting

6.1.2 | **Instrument configurtion**
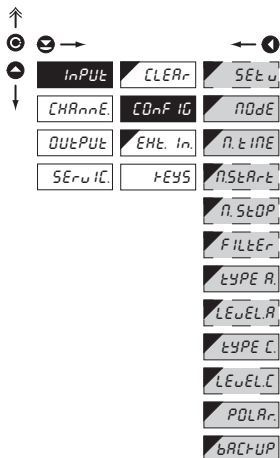
				COnF IG	Primary instrument setting
InPUt	CLEAr	SEt u		SEt u.	Setting the initial value
CHAnnE.	COnF IG	nOdE		nOdE	Setting the instrument measuring mode
OUtPUt	EHt. In.	n. t InE		n. t InE	Setting the time base
SEru IC.	hEYS	n.StArt		n.StArt	Setting the stopwatch control
		n. StOP		n. StOP	Setting stopwatch resetting
		F ILtEr		F ILtEr	Setting the input filtration constant
		tYPE A.		tYPE -	Setting the type of input
		LEuEL.A		LEuEL.-	Setting the input level
		tYPE C.		POLAr.	Selection of active level/edge
		LEuEL.C		bAChUP	Setting data backup/time
		POLAr.			
		bAChUP			

6.1.2a | **Setting the initial value**   [C] [H]
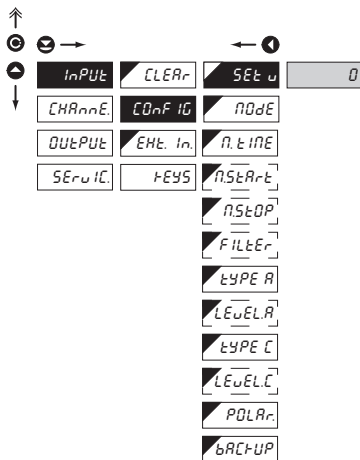
				SEt u.	Setting initial value
InPUt	CLEAr	SEt u	0		
CHAnnE.	COnF IG	nOdE			- function allows the user a one-time setting of the display initial value
OUtPUt	EHt. In.	n. t InE			
SEru IC.	hEYS	n.StArt			
		n.StOP			
		F ILtEr			
		tYPE A			
		LEuEL.A			
		tYPE C			
		LEuEL.C			
		POLAr.			
		bAChUP			

profi

Programming scheme

1428 + PASSu 0

INPUtS → CHAnnE

CLEAr → CL.Cnt • CL.tAr.

COnFIG SEt.u 0

NOdE → COUnt • FrEqu • t.INE • rtC

t.tINE → 0.5 • 10 • 50 • 100

N.StArt → COnt.In • COntAC. • EdGE • runStC. ••• run

N.StOP → CLEAr • St.CLr. • StOP

FILtEr → OFF • 1000 • 100 • 40 • 5

tYPE A → nPnCOn • PnP

LEuEL.A 10

tYPE C → nPnCOn • PnP

LEuEL.C 10

POLAr → Lo ⌐ • Hi ⌐

bACtUP → YES • nO

bACtUP → nO • uALUE • t.INE

EHt. In EHt. 1 → OFF • LOCt.t. • HOLd • tArE • CLEAr • CLr.St

tEYS ALL → nO • YES

CHAnnE

SEt.A SCALE 1

d.lu.ld 1

OFFSEt 0

FILtEr NOd.F.A → nO • EHPOn • rOUnd

COn.F.A 0

FOrN.A → 000000 • 00000o ••• 0oooooo • FLOA.P

→ HHNNSS • 99NNSS • NNSS • HHHHNN ••• HNNS9

me of **PROFI MENU**

OUTPUT

LINItS — LIN 1 — NOd.L.1 — HYStEr • C-PULS.

tYP.L.1 — CLOSE • OPEn

LIN.L.1 — 25

HYS.L.1 — 0

tIN.L.1 — 0

LIN 2 — NOd.L.2 — HYStEr • On.rUn

SC

tYP.L.2 — CLOSE • OPEn

LIN.L.2 — 75

HYS.L.2 — 0

tIN.L.2 — 0

dISP. — brIGHt. — 25', • 50', • 75', • 100',

SErvIC

NEnU — LIGHt • PrOFI

rEStOr — FIrn.

USEr

SAvE

n.PASS. — 0

IdEn — Onn 650UC...

!

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

InPut	CLEAr	SEt. u.	COUnt.
CHAnnE.	COnFIG	NOdE	FrEQu.
OUtPUt.	EHt. In.	N. tIME	tIME
SErvIC.	HEYS	n.StArt	rtC
		n.StOP	
		FILtEr	
		tYPE A	
		LEuEL.A	
		tYPE C	
		LEuEL.C	
		POLAr.	
		bACHUP	

DEF
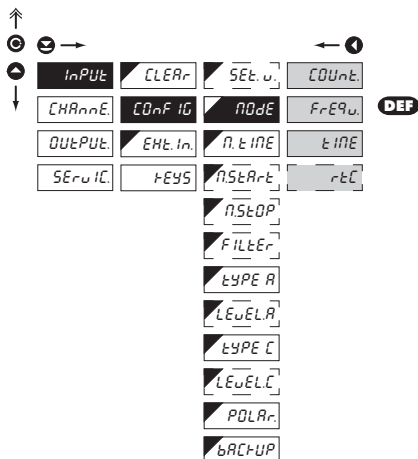
NOdE	**Selection of instrument measuring mode**

COUnt.	Mode „Counter"

- counts on input A

FrEQu.	Mode „Frequencymeter"

- measures frequency on input A

tIME	Mode „Stopwatch/timer"

rtC	Mode „Stopwatch/timer" with RTC backup

- not in standard equipment

6.1.2c Selection of measuring period/time base

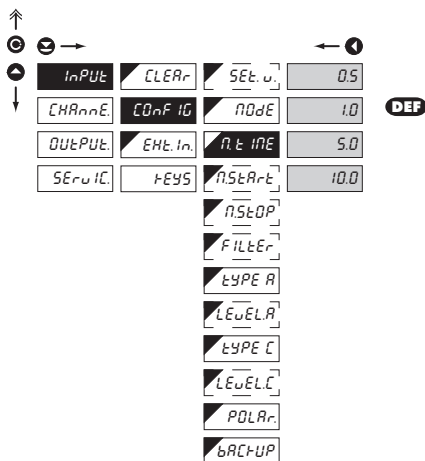|			
InPut	CLEAr	SEt. u.	0.5
CHAnnE.	COnFIG	NOdE	1.0
OUtPUt.	EHt. In.	N. t IME	5.0
SErvIC.	HEYS	n.StArt	10.0
		n.StOP	
		FILtEr	
		tYPE A	
		LEuEL.A	
		tYPE C	
		LEuEL.C	
		POLAr.	
		bACHUP	

DEF

N. t IME	**Selection of measuring period/time base**

- if you set measuring period e.g. for 1 s, the measuring runs approximtely 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, datue is displayed for approx. 2,5 s

6.1.2d Selection of stopwatch/timer control H

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

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

rUn.SEC. 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

C.rUn.SE. 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

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

CL.rU.rE. 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]

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"

Menu items shown:
InPUt / CLEAr / SEt.u. / CLEAr — DEF
CHAnnE. / COnFIG / NOdE / St.CLr.
OUtPUt. / EHt.In. / N.tINE / St.CLr.
SEruIC. / kEYS / N.StArt
N.StOP
FILtEr
tYPE A
LEuEL.A
tYPE C
LEuEL.C
POLAr.
bACkUP

6.1.2f Selection of input filter parameters [C] [H]

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

Menu items shown:
InPUt / CLEAr / SEt.u. / OFF
CHAnnE. / COnFIG / NOdE / 1000
OUtPUt. / EHt.In. / N.tINE / 100
SEruIC. / kEYS / N.StArt / 40 — DEF
N.StOP / 5
FILtEr
tYPE A
LEuEL.A
tYPE C
LEuEL.C
POLAr.
bACkUP

6.1.2g Selection of the type of input

InPut	CLEAr	SEt.u.	nPn.COn	**DEF**
CHAnnE.	COnFIG	nOdE	PnP	
OUtPUt.	EHt.In.	n. t InE		
SErviC.	KEYS	n.StArt		
		n. StOP		
		FILtEr		
		tYPE A		
		LEvEL.A		
		tYPE C		
		LEvEL.C		
		POLAr.		
		bACKUP		
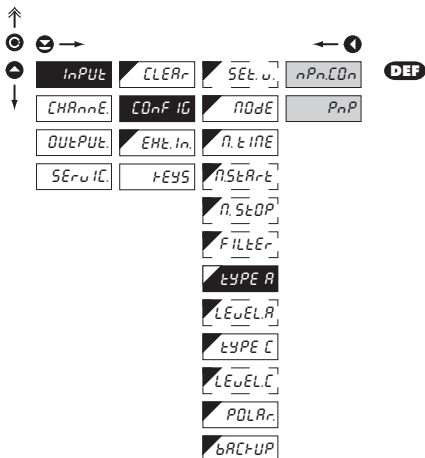
tYPE A Selection of type of input

- setting applies for Input A

nPn.COn Type of input NPN and upon contact
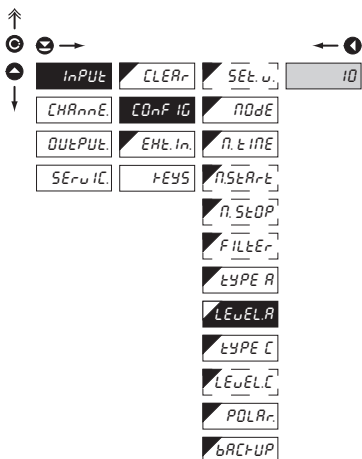
PnP Type of input PNP

!
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

InPut	CLEAr	SEt.u.	10
CHAnnE.	COnFIG	nOdE	
OUtPUt.	EHt.In.	n. t InE	
SErviC.	KEYS	n.StArt	
		n. StOP	
		FILtEr	
		tYPE A	
		LEvEL.A	
		tYPE C	
		LEvEL.C	
		POLAr.	
		bACKUP	

LEvEL.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)
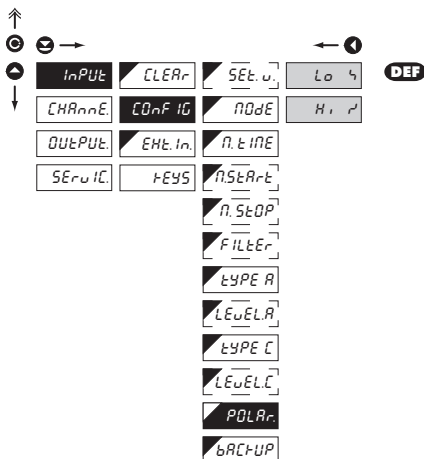- range of setting 43...300 V
  (Input A <300 V, bracket No. 13)
  (Input C <300 V, bracket No. 11)
- table of comparing levels is on page 7

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

6.1.2i Selection of active level or edge

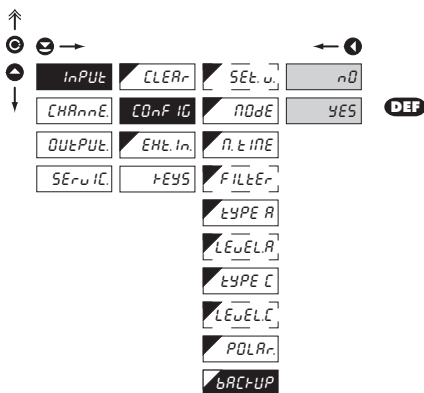**POLAr.** Selection of active level or edge

Lo ꞁ Active upon change of declining edge Lo >Hi
- upon entering the contact > active on switch-on

Hi ꞁ Active upon change of entering edge Hi > Lo
- upon entering the contact > active on switch-off

InPut | CLEAr | SEt.u. | Lo ꞁ — DEF
CHAnnE. | COnFIG | nOdE | Hi ꞁ
OUtPUt. | EHt.In. | n.tInE
SEruIC. | rEYS | n.StArt
n.StOP
FILtEr
tYPE A
LEuEL.A
tYPE C
LEuEL.C
POLAr.
bACrUP

6.1.2j Selection of display status backup

bACrUP Selection of display status backup

- setting display value restoration after power failure or instrument switch-off
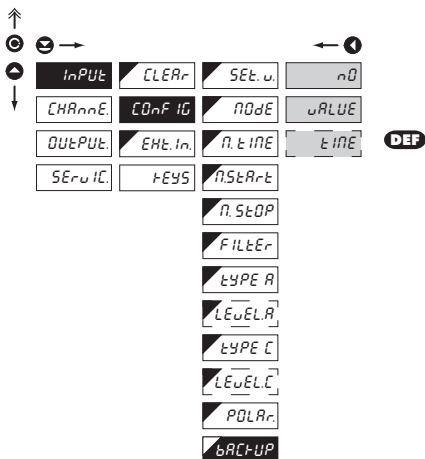
nO After switch-on the instrument loads the display status from the memory

YES Instrument resets itself after switch-on

InPut | CLEAr | SEt.u. | nO
CHAnnE. | COnFIG | nOdE | YES — DEF
OUtPUt. | EHt.In. | n.tInE
SEruIC. | rEYS | FILtEr
tYPE A
LEuEL.A
tYPE C
LEuEL.C
POLAr.
bACrUP

6.1.2k Setting the display status backup H

bACHUP 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
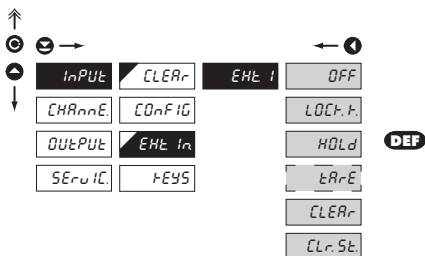
nO Instrument resets itself after every switch-on

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

tINE Instrument downloads „running" time from RTC

- item accessible only with extension „Time backup"

6.1.3 External input function selection

EHt. In. External input function selection

OFF Input is off

LOCH.H. 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

**tArE** 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, Stopwatcg stops altogether

6.1.4 | **Optional accessory functions of the keys**

	Input	CLEAr	ALL	YES	DEF
CHAnnE.	COnFIG		nO	
OUtPUt	EHt In			
SErvIC.	rEYS			
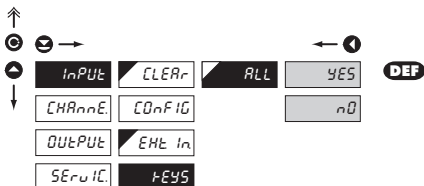
> ⚠️
> Control keys functions are described on page 11

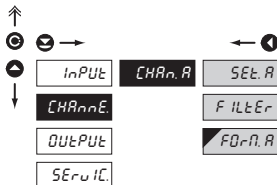**ALL** — **Assigning accessory functions of control keys**

- 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

nO — 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
`FOrN. A`	Selection of projection format

6.2.1a Setting multiplying constant
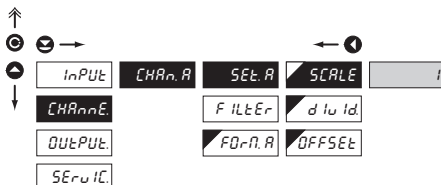
`SCALE` **Setting multiplying constant**

- 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
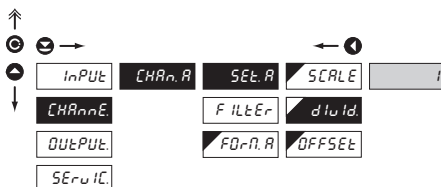
`d Iu Id` **Setting division constant**

- 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

```
InPut    CHAn. A   SEt. A    SCALE         0
CHAnnE.            F ILtEr   d iu id.
OUtPut.            FOrn. A   OFFSEt
SEru iC.
```

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
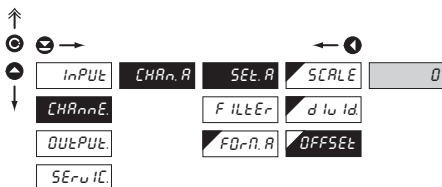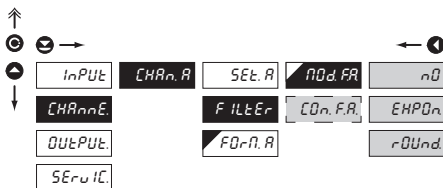
6.2.2 Setting the digital filters

```
InPut    CHAn. A   SEt. A    nOd.FA        nO
CHAnnE.            F ILtEr   COn. F.A.   EHPOn
OUtPut.            FOrn. A              rOUnd.
SEru iC.
```

nOdE — **Setting the digital filters**

COnSt. Setting the constant

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

nO Filters are switched off

EHPOn. Selection of exponential filter

- calculation of value from the number of measurements selected in „COn. F.A."

rOUnd. 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	CHRn.R	SEt.In	000000 DEF
CHRnnE.		F ILtEr	00000.0
OUtPUt.		FORM.R	0000.00
SErvIC.			000.000
			00.0000
			0.00000
			FLOR.P.

HH.MM.SS	DEF H
99.MM.SS	
HH.MM	
HHHH.MM	
MMMM.SS	
MM.SS.CC	
99.SS.CC	
H.MM.SS.C	

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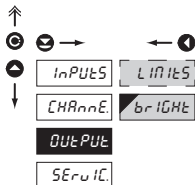
in seconds > 000000...0.00000, Floa.P., HH.MM.SS, 99.MM.SS, MMMM.SS

in minutes > HH.MM, HHHH.MM

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

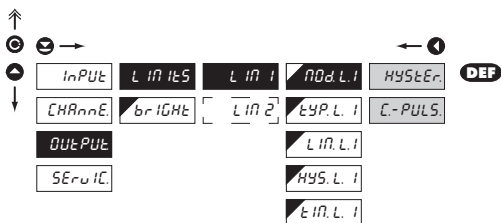*in hundredths of seconds > MM.SS.CC, 99.SS.CC*

6.3 Setting „PROFI" - OUTPUTS

InPutS | L in itS
CHAnnE. | br iGHt
OUtPut
SEru iC.

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

L in itS — Setting the type and the switching of limits

br iGHt — Setting the display brightness

6.3.1a Selection of mode of output L 1

InPut | L in itS | L in 1 | nOd. L.1 | HYStEr. | **DEF**
CHAnnE. | br iGHt | L in 2 | tYP. L. 1 | C.- PULS.
OUtPut | | | L in. L.1 |
SEru iC. | | | HYS. L. 1 |
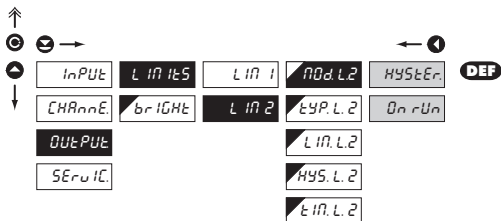| | | t in. L. 1 |

nOd. L.1 **Mode of limit 1**

HYStEr. — Standard mode - limit, hysteresis and delay

C.- PULS. — Automatic clearing of counter to preset value

!

Setting is available only for LIM 1

6.3.1b Selection of mode of output L 2

InPut | L in itS | L in 1 | nOd. L.2 | HYStEr. | **DEF**
CHAnnE. | br iGHt | L in 2 | tYP. L. 2 | On rUn
OUtPut | | | L in. L.2 |
SEru iC. | | | HYS. L. 2 |
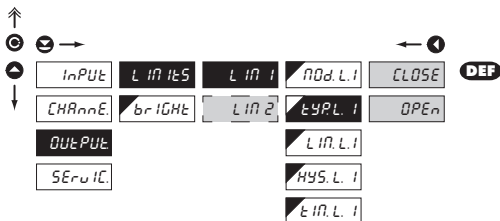| | | t in. L. 2 |

nOd. L.2 **Mode of limit 2**

HYStEr. — Standard mode - limit, hysteresis and delay

On rUn — Relay is switched on/off if the stopwatch is running

!

Setting is available only for LIM 2

6.3.1c Selectionof type of output

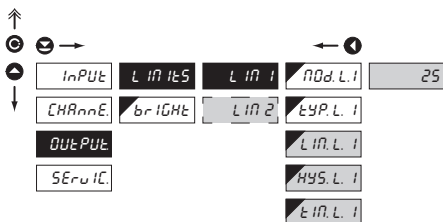| InPut	L IN ItS	L IN 1	NOd.L.1	CLOSE	DEF
CHAnnE.	br IGHt	L IN 2	tYP.L. 1	OPEn	
OUtPUt			L IN.L.1		
SEru IC.			HYS.L. 1		
			t IN.L. 1		

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

InPUt	L IN ItS	L IN 1	NOd.L.1	25
CHAnnE.	br IGHt	L IN 2	tYP.L. 1	
OUtPUt			L IN.L. 1	
SEru IC.			HYS.L. 1	
			t IN.L. 1	

L IN.L.1 — Setting the boundary for relay switch-on
- within the full display range
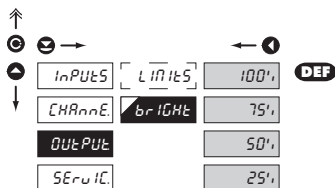- **DEF** = 25 (L 1), 75 (L 2)

HYS.L.1 — Setting hysteresis
- defines the band around the limit (on both sides, LIM. ±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

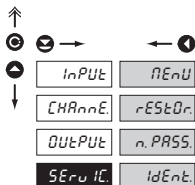|		
InPutS	L initS	100'.	DEF
CHAnnE.	br iGHt	75'.
OUtPut		50'.
SEru iC.		25'.

br iGHt. **Setting the display brightness**

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

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

profi

6.4   Setting "PROFI" - SERVICE

InPUt   NEnU
CHAnnE.   rEStOr.
OUtPUt   n.PASS.
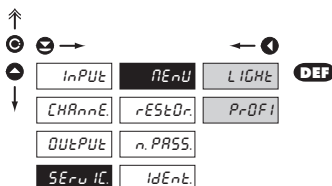SEruIC.   IdEnt.

The instrument's service functions are set in this menu

NEnU — 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

InPUt   NEnU   LIGHt   **DEF**
CHAnnE.   rEStOr.   PrOFI
OUtPUt   n.PASS.
SEruIC.   IdEnt.

NEnU   **Selection of menu type LiGHT/PROFI**

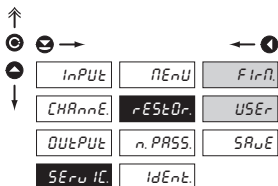- allows to set the menu complexity as per user needs and abilities

LIGHt — Active LIGHT menu

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

PrOFI — Active PROFI menu

- complete programming menu for expert users
- tree menu

!

Change of setting is valid with next access into menu

6.4.2 Restoration of the manufacture setting

InPUt	NEnU	F IrN.
CHAnnE.	rEStOr.	USEr
OUtPUt	n. PASS.	SAuE
SEru IC.	IdEnt.	

rEStOr. Restoration of the instrument manufacture setting

F IrN. 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

SAuE Storing user setting of the instrument

- storing the setting enables the operator its future contingent restoration

!

After restoration of setting the instrument switches off for several seconds

6.4.3 Setting new access password

InPUt	NEnU	0
CHAnnE.	rEStOr.	
OUtPUt	n. PASS.	
SEru IC.	IdEnt.	
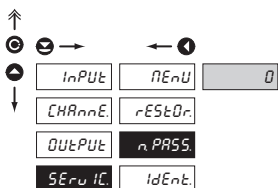
n. PASS. Setting new password for access into the LIGHT and PROFI menu

- 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

InPUt	NEnU
CHAnnE.	rEStOr.
OUtPUt	n. PASS.
SEru IC.	IdEnt
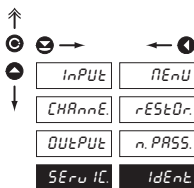
IdEnt. Projection of instrument SW version

- 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 `nod.L.1`
- 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

return to item

`nO`	item will not be displayed in USER menu
`YES`	item will be displayed in USER menu with the chance of editing
`SHO`	item will be solely displayed in USER menu

Setting sequence of items in "USER" menu

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

setting projection sequence

┌──────┐ ┌──┐ ┌──┐ ┌──────────┐
│ - - - │ │😞│+│◀│ │   0   │
└──────┘ └──┘ └──┘ └──────────┘

Example:

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
$E.d.Un$	Number is too small (large negative) to be displayed	change DP setting, channel constant
$E.d.Ou$	Number is too large to be displayed	change DP setting, channel constant
$E.t.Un$	Number is outside the table range	increase the table values, change input setting (channel constant)
$E.t.Ou$	Number is outside the table range	increase the table values, change input setting (channel constant)
$E.I.Un$	Input quantity is smaller than permitted input quantity range	change input signal value or input (range) setting
$E.I.Ou$	Input quantity is larger than permitted input quantity range	change input signal value or input (range) setting
$E.Hu$	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
$E.dAtA$	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

INPUT

Type:	upon contact, TTL, NPN/PNP
Measuring:	1x counter/frequency
	1x stopwatch/timer
	- measuring range isadjustable
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 operaion, setting and update
Watch-dog:	reset after 540 ms
Calibration:	při 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:	Noryl GFN2 SE1, incombustible UL 94 V-I
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

72 mm

24 mm

13680

Panel cut

68 mm

22,5 mm

Side view

106 mm

5 mm
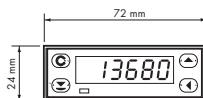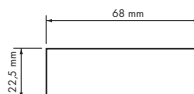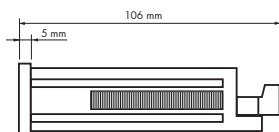
Panel thickness: 0,5...20 mm

Product **OMM 650UC**

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

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 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 61000-4-11
	EN 50130-4, chapter 8 EN 61000-4-11
	EN 50130-4, chapter 9 EN 61000-4-2
	EN 50130-4, chapter 10 EN 61000-4-3
	EN 50130-4, chapter 11 EN 61000-4-6
	EN 50130-4, chapter 12 EN 61000-4-4
	EN 50130-4, chapter 13 EN 61000-4-5
	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.