



OMD 201RS

**4/6 DIGIT PROGRAMMABLE
LAGRE DISPLAY**

DATA DISPLAY
PROTOCOL - MODBUS



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

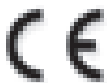
Measuring instruments of the OMD 201 series conform to the European regulation 89/336/EWG and the Ordinance 168/1997 Coll.

The instruments are up to the following European standards:
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.	Contents	3
2.	Instrument description	4
3.	Instrument connection	6
4.	Instrument setting	8
	Symbols used in the instructions	10
	Setting the DP and the (-) sign	10
	Control keys function	11
	Setting/permitting items into "USER" menu	11
5.	Setting "LIGHT" menu	12
5.0	Description "LIGHT" menu	12
	Setting input value	14
	Setting projection	26
	Setting Limits	28
	Setting analog output	30
	Setting display colors	32
	Selection of programming menu „LIGHT"/„PROFI"	34
	Restoration of manufacture setting	35
	Selection of instrument menu language version	35
	Setting new access password	36
	Instrument identification	36
6.	Setting "PROFI" menu	38
6.0	Description of "PROFI" menu	38
6.1	"PROFI" menu - INPUT	
6.1.1	Resetting internal values	40
6.1.2	Setting measuring range	41
6.1.3	External input function selection	49
6.1.4	Optional accessory functions of the keys	50
6.2	"PROFI" menu - CHANNEL	
6.2.1	Setting measuring parameters (projection, filters, decimal point, description)	54
6.2.2	Setting mathematic functions	57
6.2.3	Selection of evaluation of min/max. value	59
6.3	"PROFI" menu - OUTPUT	
6.3.1	Setting Limits	60
6.3.2	Setting analog output	64
6.3.3	Selection of display projection	65
6.4	"PROFI" menu - SERVICE	
6.4.1	Setting the address of IR remote control	68
6.4.2	Selection of programming menu „LIGHT"/„PROFI"	69
6.4.3	Restoration manufacture setting	69
6.4.4	Selection of instrument menu language version	70
6.4.5	Setting new access password	70
6.4.6	Instrument identification	70
7.	Setting items into "USER" menu	72
7.0	Configuration "USER" menu	72
8.	Data protocol	74
9.	Error statements	76
10.	Table of symbols	77
11.	Technical data	78
12.	Instrument dimensions and installation	80
13.	Certificate of guarantee	81
	Declaration of conformity	84

2.1

Description

The OM 602RS - Modbus type is a 6 digit panel display device for data from serial lines of RS 232 and RS 485 standard.

Communication with Modbus protocol. All ASCII symbols may be displayed which are usable for 7-segment display.

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

PROGRAMMABLE PROJECTION

Setting:	Selection of integer/float input range manual, optional projection on the display may be set in the menu for both limit values of the input signal, e.g. input $2^{31} \dots 2^{31} > 0 \dots 850,0$
Protocol:	ASCII/MESSBUS* MODBUS - RTU PROFIBUS DP*
Projection:	-9999...9999 (-99999...999999)

DIGITAL FILTERS

Exponen.average:	from 2...100 measurements
Rounding:	setting the projection step for display

MATHEMATIC FUCTIONS

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

EXTERNAL CONTROL

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

2.2 Operation

The instrument is set and controlled by IR Remote control. 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) |
| | - access without password |

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



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

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

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

2.3 Options

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

Comparators are assigned to monitor one, two, three or four limit values with relay output. The user may select limits regime: LIMIT/DOSING/FROM-TO. The limits have adjustable hysteresis within the full range of the display as well as selectable delay of the switch-on in the range of 0...99.9 s. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

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

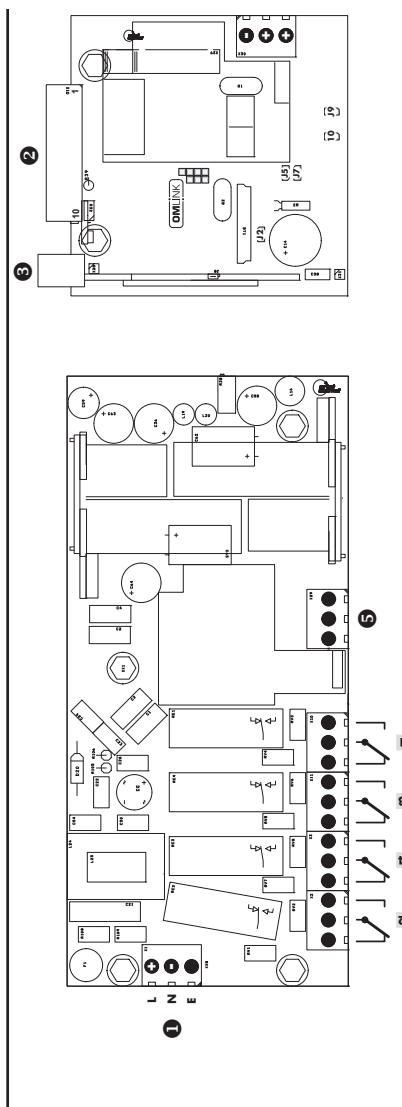
Measured data record is an internal time control of data collection. It is suitable where it is necessary to register measured values. Two modes may be used. FAST is designed for fast storage (40 records/s) of all measured values up to 8 000 records. Second mode is RTC, where data record is governed by Real Time with data storage in a selected time segment and cycle. Up to 130 000 values may be stored in the instrument memory. Data transmission into PC via serial interface RS232/485 and OM Link.

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

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

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

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



- 1 Power supply
 - GND
 - AO - I
 - AO - U
- 2 Analog output
 - GND
 - TxD
 - RxD
- 3 Data output
 - GND
 - TxD
 - RxD
- 4 Relays
 - GND
 - L
 - L+
- 5 Input - vertical
 - RxD
 - TxD
 - GND
 - L+
 - L
- 6 Input - horizontal
 - KXT-3
 - KXT-2
 - KXT-1
 - Excitation
 - GND
 - 10
 - 1

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 IR Remote control. All programmable settings of the instrument are performed in three adjusting modes:

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

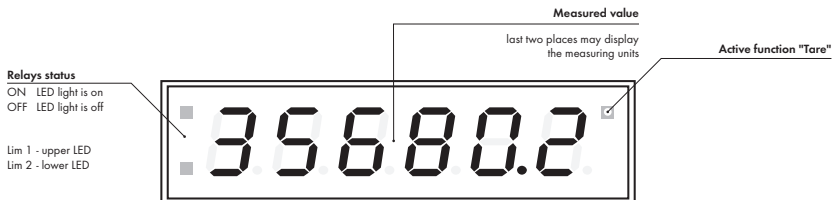
All programmable parameters are stored in the EEPROM memory (they hold even after the instrument is switched off).

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

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

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

Setting and controlling the instrument is performed by means of the Remote control. With the aid of the Remote control it is possible to browse through the operation menu and to select and set the required values.



Symbols used in the instructions

- DEF** 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	quit editing
	programmable key function	back to previous level	move to higher decade *
	programmable key function	move to previous item	move down *
	programmable key function	move to next item	move up *
	programmable key function	confirm selection	confirm setting/selection
	access into LIGHT/PROFI menu		
>3 s 	direct access into PROFI menu		
		configuration of an item for "USER" menu	
		determine the sequence of items in "USER - LIGHT" menu	

* alternatively, the setting may be done from the numeric keys of the remote control by selecting directly the number required

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 number code

SETTING LIGHT



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

Preset from manufacture

Password	"0"
Menu	LIGHT
USER menu	off
Setting the items	DEF



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

Access password

1428  PASSW 0

Baud rate: bAUD 9600 Instrument address: Addr 1 Data protocol: PR0t SLRwE Commaand: CONNn CON 04

Setting - Integer: rEG 15t 1 Setting - Communi. failure: nOd t.0 dRSHES Setting - Timeout: t mEOU 1.0 Setting - Format: F0rNAE U. Int. 16

Setting - Order: 0-rdE- LO-H1

Setting - minimum input value: n In LO 0 Setting - maximum input value: nAH H1 65535

FORMAT > U. INT. 16 / I. INT. 16

Setting - minimum input value Lo: n In LO 0 Setting - maximum input value Lo: nAH LO 0 Setting - minimum input value Hi: n In H1 65535 Setting - maximum input value Hi: nAH H1 65535

FORMAT > U. INT. 32 / I. INT. 32

Setting - minimum input value: n In 0 Setting - maximum input value: nAH 100

FORMAT > FLOAT

Selection input range - min: n In R 00000 Selection input range - max: nAH R 10000 Projection: F0rNA 0000.00

Option - comparator

L In L1 20 L In L2 40 L In L3 60 L In L4 80

Option - Analog output

tYP. R.0 120 n In R.0 0 nAH R.0 100

Primary color: COL 0 GrEEe First color limit: d'IS. L1 3333 Color beyond first limit: COL 1 0-rAnGE d'IS. L2 6667

Color beyond second limit: COL 2 rEd Menu type: nEnU LIGHT Return to manufacture setting: rE SEt Firn Language selection: LAng ENG

New password: PAS L1 0 Identification: IdEnt YES Instrument type: 0nD20 1r-S SW number: 66 1428 Return to measuring mode

1428



PASSw



0

Entering access password
for access into the menu



PASSw

Access into instrument
menu

PAS = 0

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

PAS > 0

- access into menu is protected by number
code

Set "Password" = 42

Example



bAUD



bAUD

Selection of data output
baud rate

DEF = 9 600 Baud

Rate 57 600 > BAUD = 57600

Example





Addr.

Setting instrument address

DEF = 0

Address 10 > ADDR. = 10

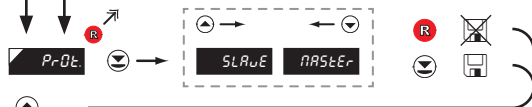
Example

0

00

10

PrOt.



PrOt.

Selection of data protocol

DEF = SLAVE

SLAVE > display shows data entered through commands 0x06 nebo 0x10

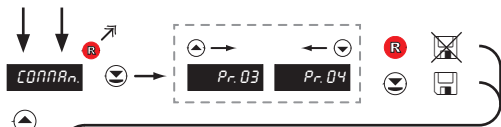
MASTER > instrument solicits data by selected command from given register

Protocol SLAVE > PROT. = SLAVE

Example

SLAVE

CONFIRM



COMMAND

Selection of register

PR. 03 > reading setup (holding) registers at address 4xxxx

PR. 04 > reading input (input) registers at address 3xxxx

- applies only for option "MASTER"

DEF = PR. 04

Register at address 4xxxx > **COMMAND** = PR. 04

Example

Pr. 04

rEGIST



rEGIST

Setting register address

- range of setting 0...65 535

- the address usually entered is 0...999 (without highest digit)

- defines address of the register to be read

DEF = 1

Register address 3 > **REGIST** = 1

Example

000.t0



MOD t.O. Selecting display mode in case of communication failure

DEF = DASHES

Menu	Description
NO	No reaction
BLANK	Display goes off
FLASH	Last displayed value starts flashing
DASHES	Dash symbols displayed
DOT	Decimal point is displayed

Select mode > Dashes

Example

DASHES **tIMEOU**

!

Item will not appear in "MASTER" protocol



tIMEOU Setting the time constant for Timeout

- range: 0...99,9 s

- **DEF** = 1.0 s

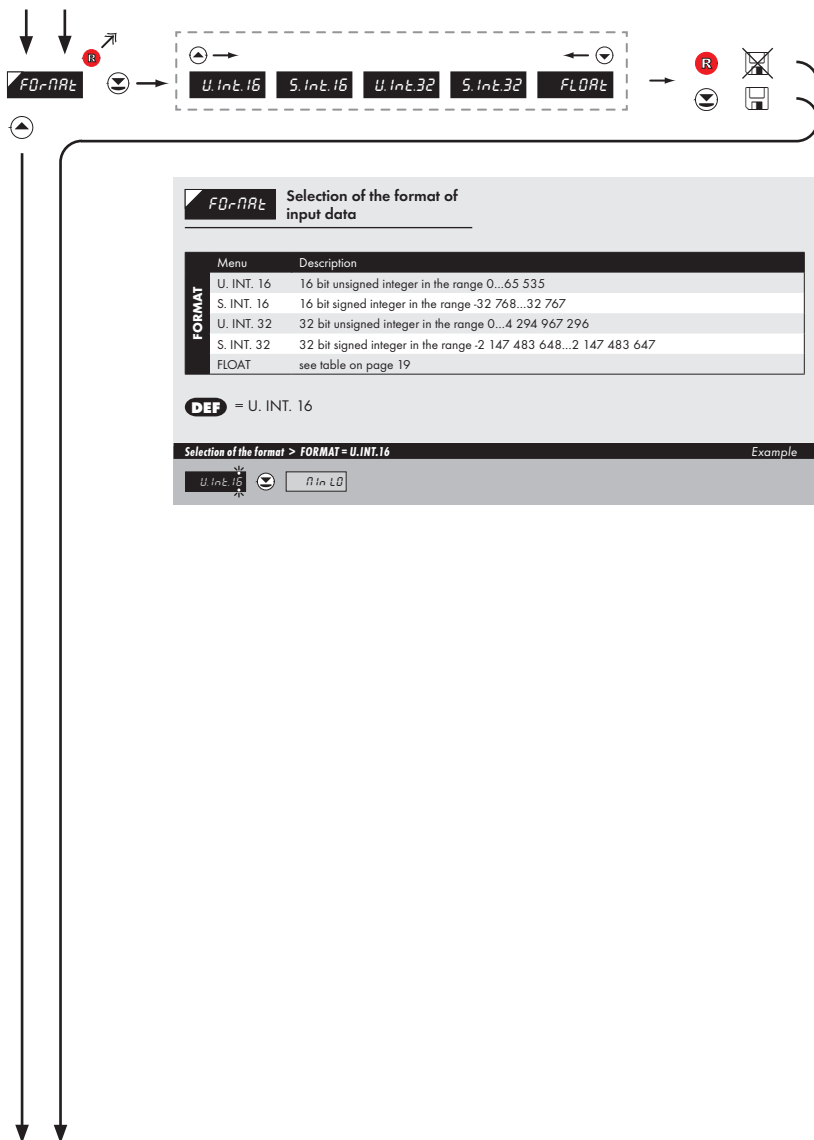
Setting - Constant > tIMEOU = 1

Example

1.0 **FD-PRt**

!

Item will not appear in "MASTER" protocol and when "MOD t.O." is disabled



FORMAT	ORDER	COMMAND	DATA
U. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
S. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
FLOAT	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
FLOAT	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>

LEGEND

#	Beginning of command
<AA>	Instrument address (1...247)
<Word xx>	16-bit data
<Lo Word xx>	32 bit data (lower part)
<Hi Word xx>	32 bit data (higher part)



Min Lo Setting minimum value of input data

- setting minimum input value
- range of setting 0...65 535

MIN Lo **DEF** = 0 (U.INT.16)
MIN Lo **DEF** = 32 768 (S.INT.16)

Setting for minimum Lo > MIN Lo = 0 Example

0 Min Lo



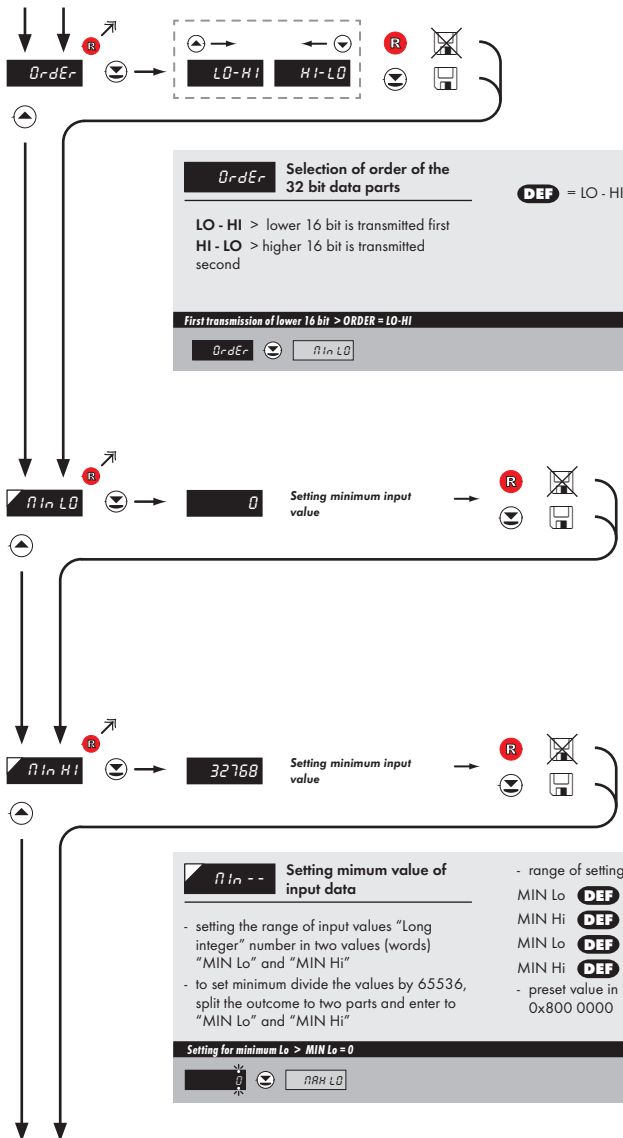
Max Lo Setting maximum value of input data

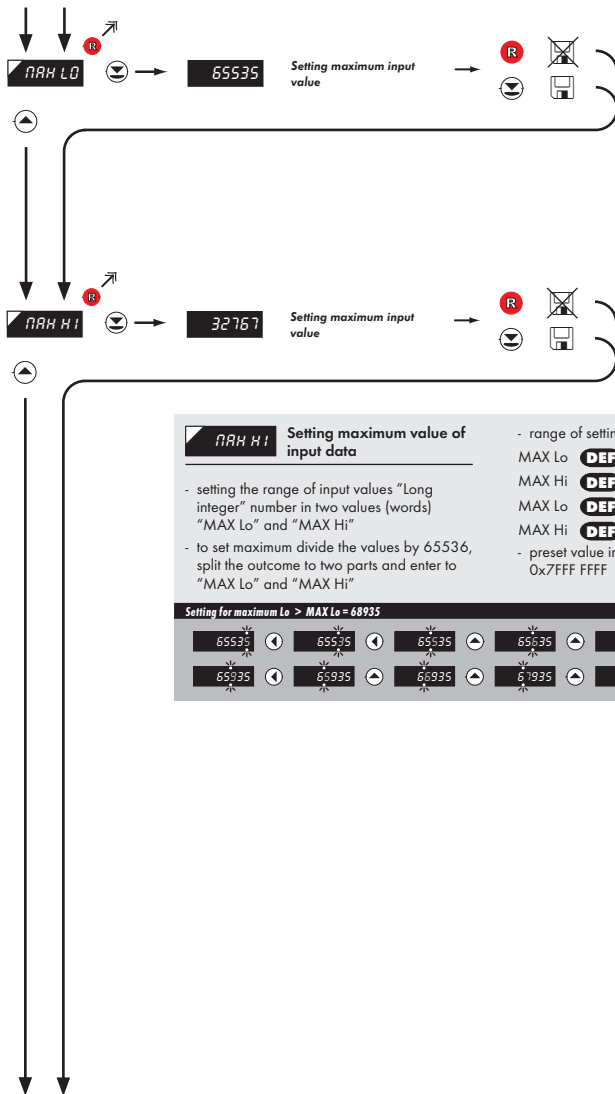
- setting maximum input value
- range of setting 0...65 535

MAX Lo **DEF** = 65 535 (U.INT.16)
MIN Lo **DEF** = 32 767 (S.INT.16)

Setting for maximum Lo > MAX Lo = 65535 Example

65535	65535	65535	65535	65535	65535
65535	65535	65535	65535	65535	Min R





MAX Hi

Setting maximum value of input data

- setting the range of input values "Long integer" number in two values (words) "MAX Lo" and "MAX Hi"
- to set maximum divide the values by 65536, split the outcome to two parts and enter to "MAX Lo" and "MAX Hi"

- range of setting -99999...999999
MAX Lo **DEF** = 65535 (U.INT.32)
MAX Hi **DEF** = 65535 (U.INT.32)
MAX Lo **DEF** = 65535 (S.INT.32)
MAX Hi **DEF** = 32767 (S.INT.32)
- preset value in HEX format equals 0x7FFF FFFF

Setting for maximum Lo > MAX Lo = 68935

Example

65535	65535	65535	65535	65535	65535
65535	65535	68935	67935	68935	68935

Order

Selection of order of the 32 bit data parts

DEF = LO - HI

LO - HI > lower 16 bit is transmitted first
HI - LO > higher 16 bit is transmitted second

First transmission of lower 16 bit > ORDER = LO-HI

Example

Min

Setting minimum input value

MIN DEF = 0

- range of setting -99999...99999

Setting for minimum > MIN = 0

Example

Max

Setting maximum value of input data

- range of setting -99999...99999

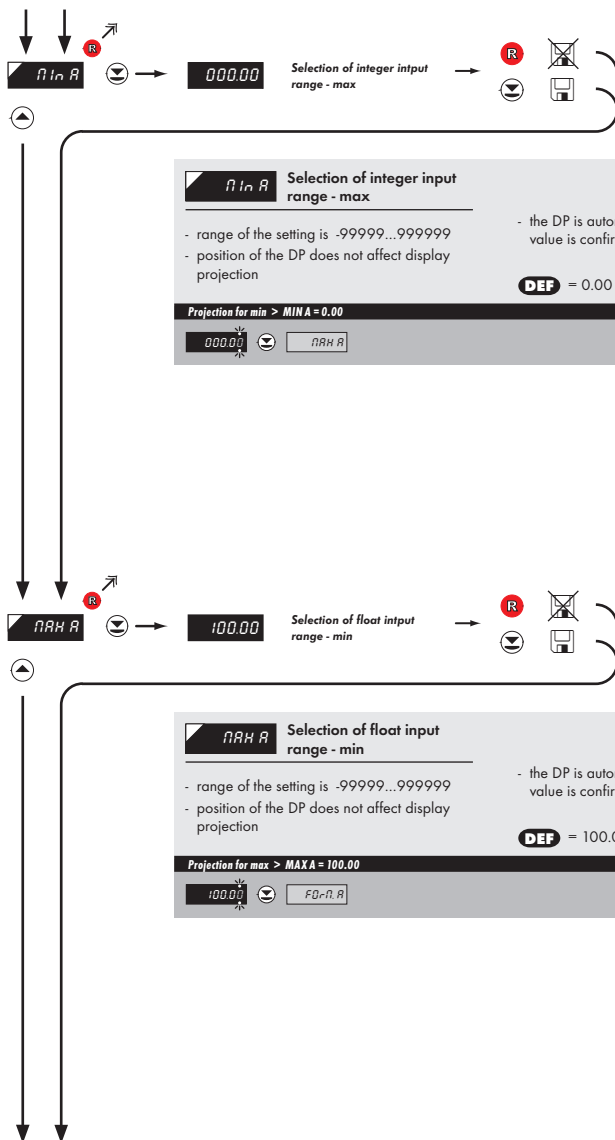
MAX DEF = 100

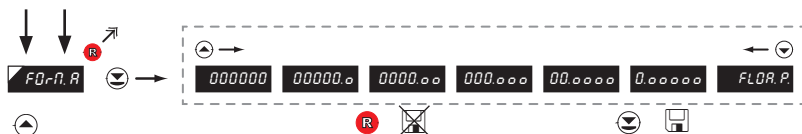
Setting for maximum > MAX = 300

Example

100 100 100 200 300

26





F0rD.R

Setting projection of the decimal point

DEF = 0000.00

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

Projection of DP on display > 00000.0

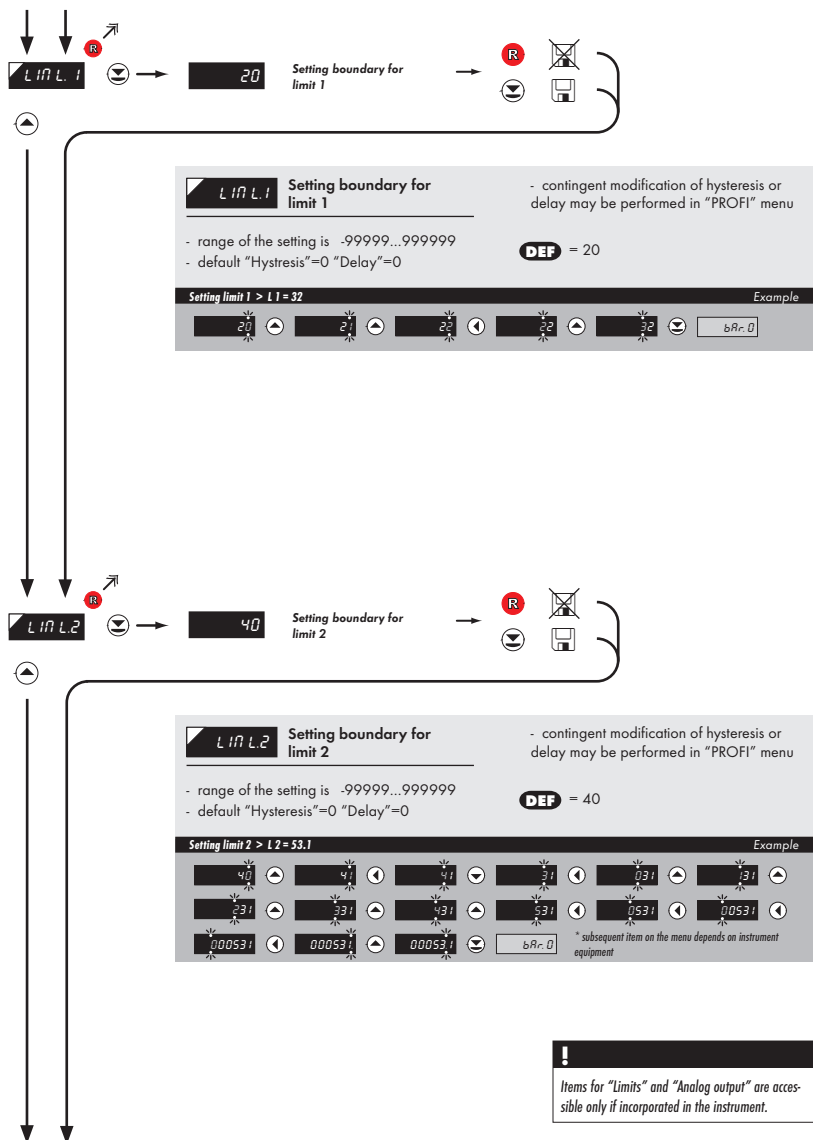
Example

0000.00

00000.0

RENU

*subsequent item on the menu depends on instrument equipment





L17 L3

Setting boundary for limit 3

- range of the setting is -99999...999999
- default "Hysteresis"=0 "Delay"=0

DEF = 60

Setting limit 3 > L3 = 85

Example

60

61

62

63

64

65

65

15

85

bAr 0

* subsequent item on the menu depends on instrument equipment



L17 L4

Setting boundary for limit 4

- range of the setting is -99999...999999
- default "Hysteresis"=0 "Delay"=0

DEF = 80

Setting limit 4 > L4 = 103

Example

80

81

82

83

84

85

03

103

103

bAr 0

* subsequent item on the menu depends on instrument equipment

Diagram illustrating the settings for the Analog Output (A.O.) range and the display value assignment.

Top Section: A.O. Range Setting

The top section shows the A.O. range setting menu. The menu is titled "tYP.A.O." and displays the current range "0-20 mA". The range is set to "E. 4-20 mA". The range is set to "4-20 mA". The range is set to "0-5 mA". The range is set to "0-2 V". The range is set to "0-5 V". The range is set to "0-10 V".

Bottom Section: Display Value Assignment

The bottom section shows the display value assignment menu. The menu is titled "nIn A.O." and displays the current value "0". The value is assigned to the beginning of the A.O. range. The value is assigned to the beginning of the A.O. range. The value is assigned to the beginning of the A.O. range.

Example: Setting the type of analog output

Menu	Range	Description
0-20mA	0...20 mA	
E. 4-20mA	4...20 mA	with indication of error statement (<3,6 mA)
4-20mA	4...20 mA	
0.5mA	0...5 mA	
0.2 V	0...2 V	
0.5 V	0...5 V	
0-10 V	0...10 V	

DEF = 4...20 mA

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

Example: 4-20 mA, 0-5 mA, 0-2 V, 0-5 V, 0-10 V, nIn A.O.

Example: Assigning the display value to the beginning of the AO range

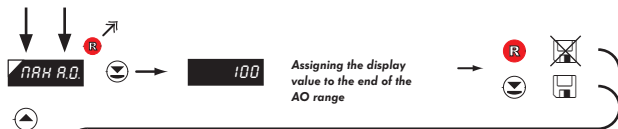
Assigning the display value to the beginning of the AO range

range of the setting is -99999...999999

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

Example: 0, nIn A.O.

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



MAX A.O.

Assigning the display value to the end of the AO range

DEF = 100

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

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

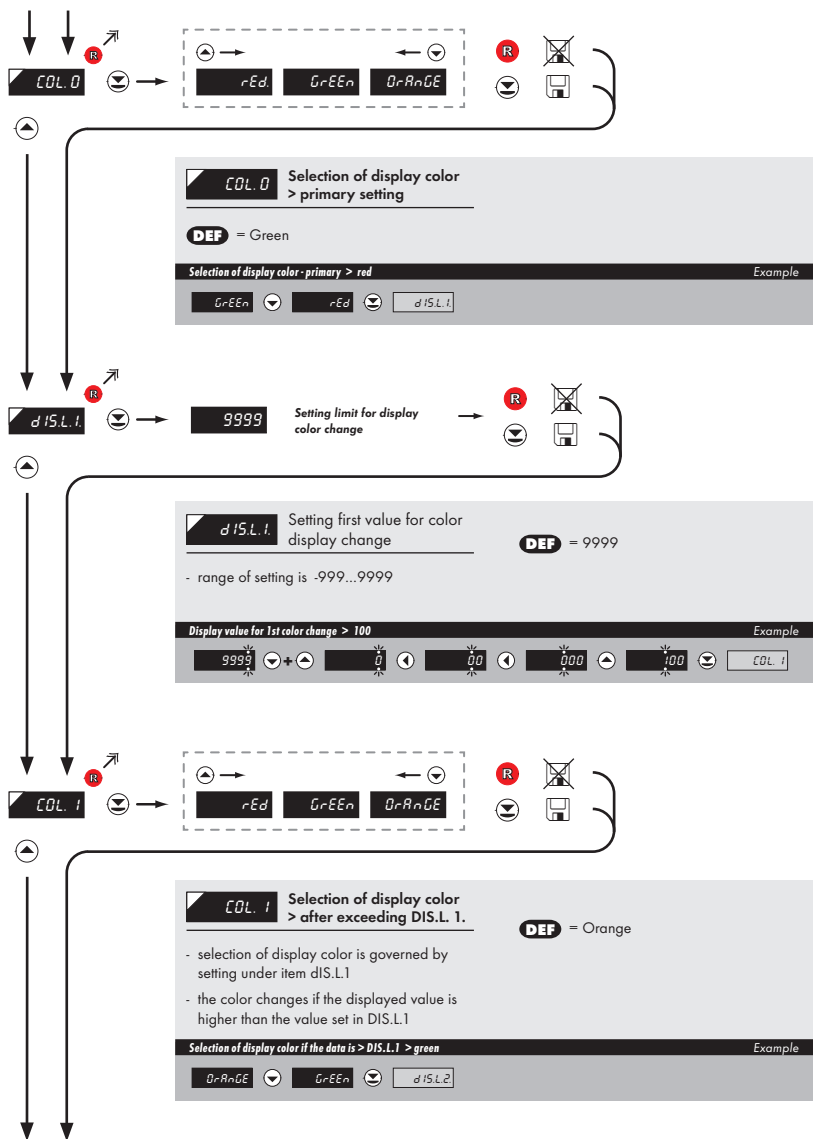
100

100

110

120

COL 0





d 15.L.2. Setting second value for display color change **DEF** = 9999

- range of setting is -999...9999

Display value for 1st color change > 400 Example

9999	+	0	00	000
200		300	400	COL 2



COL 2 Selection of display color > after exceeding DIS.L. 2 **DEF** = Red

- selection of display color is governed by setting under item DIS.L.2

- the color changes if the displayed value is higher than the value set in DIS.L.2

Selection of display color if the data is > DIS.L.2 > orange Example

rEd	OrAnGE	NEvU
-----	--------	------



Adr. Ir Setting the address of IR remote control

- setting the remote control address is inevitable only in case there are other large displays OMD 201 within the reach of IR remote control

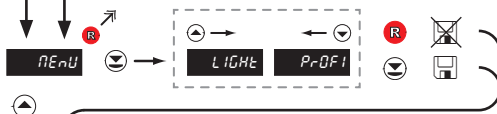
- range of the setting is 0...99

DEF = 0

New address - 21 > Adr. Ir = 21 Example

0 1 0 1 0 1

Menu



MENU Setting the menu type LIGHT/PROFI

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

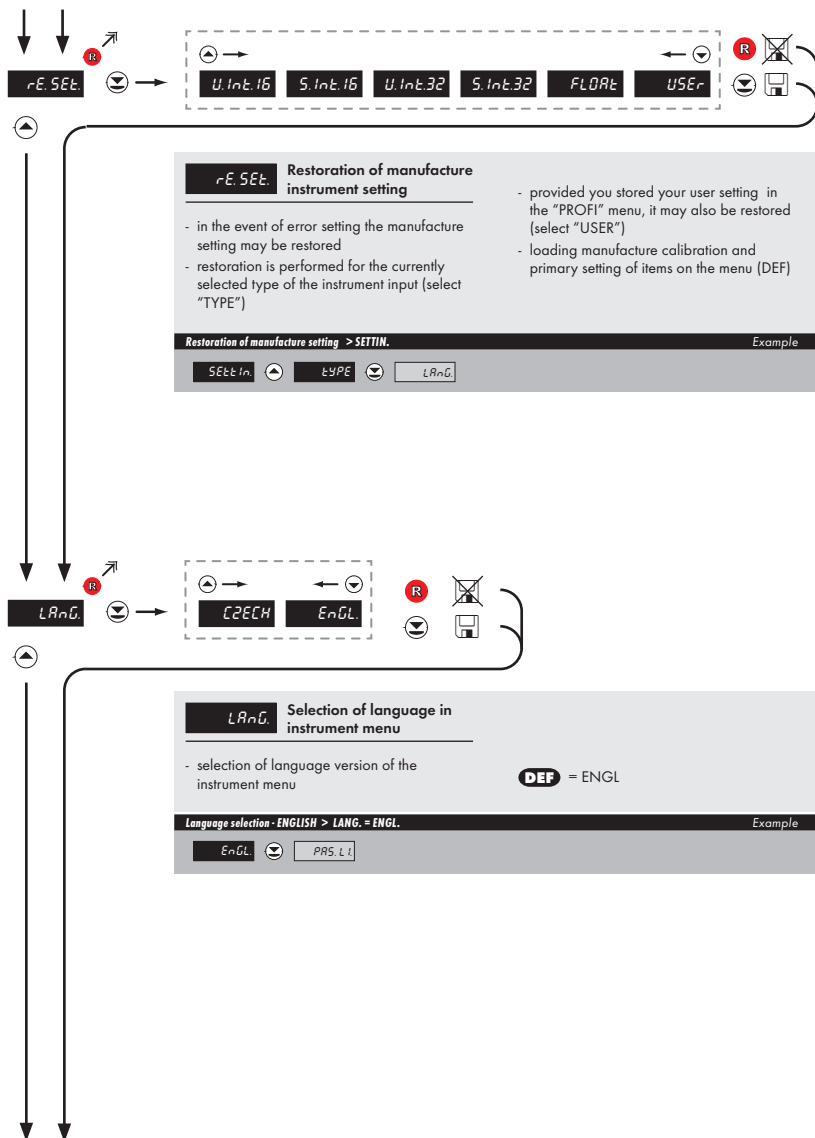
PROFI > menu PROFi, a complete menu for complete instrument setting > tree menu structure

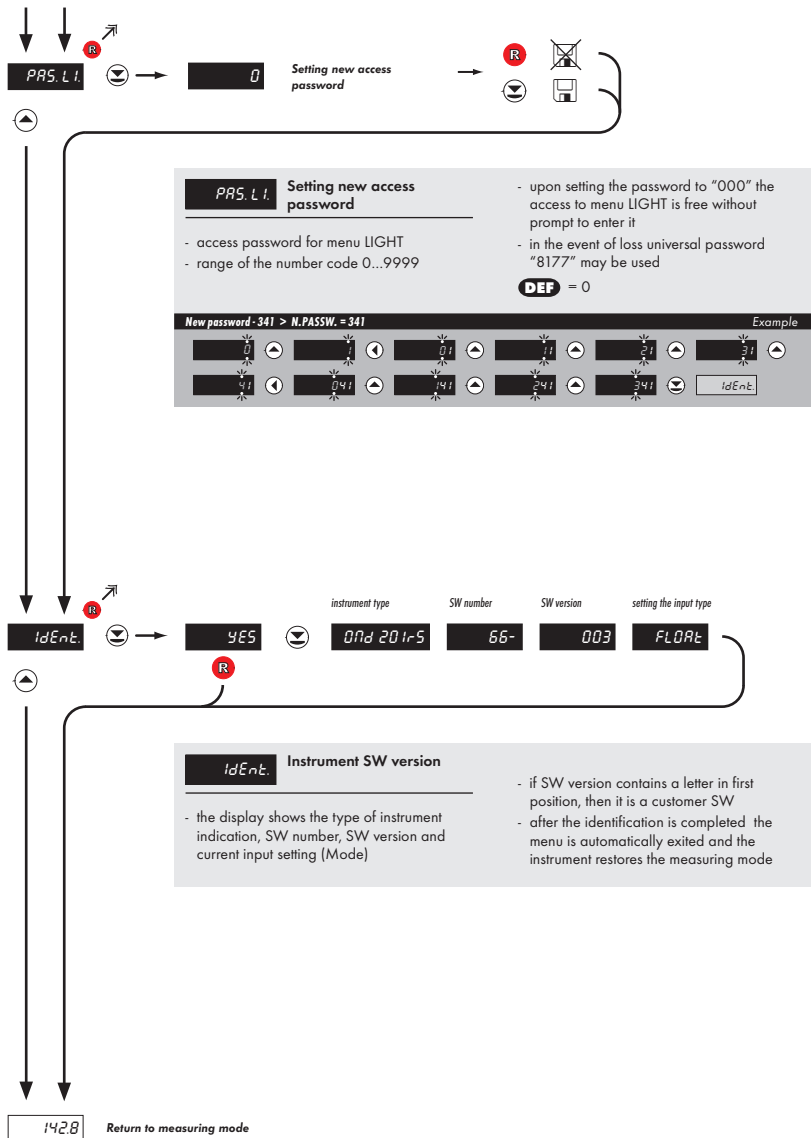
DEF = LIGHT

Menu LIGHT > MENU = LIGHT Example

LIGHT

re Set





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

>3 s



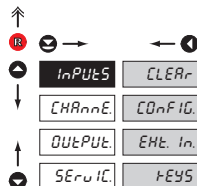
- temporary switch-over to **PROFI** menu, which is suitable to edit a few items
- after quitting **PROFI** menu the instrument automatically switches to **LIGHT** menu
- access is password protected (if it was not set under item N. PASS. =0)



- 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

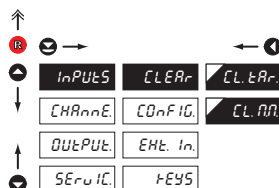


The primary instrument parameters are set in this menu

CLEAR	Resetting internal values
CONFIG.	Selection of measuring range and parameters
EXT. IN.	Setting external inputs functions
FEYS	Assigning further functions to keys on the instrument

6.1.1

Resetting internal values



CLEAR Resetting internal values

CLEAR.	Tare resetting
CLEAR.	Resetting min/max value

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

6.1.2a Selection of data baud rate

Navigation icons: Up, Down, Left, Right, Home, Back, Forward, Search, and a red circle with 'R'.

INPUTS	CLEAR	baud	600
CHARACT.	CONF ID	Addr.	1200
OUTPUT	EXT. In.	Port	2400
SERIAL	KEYS	CONNECTION	4800
		RESET	9600
		MODE	19200
		EXTENSION	38400
		FORNATE	57600
		ORDER	115200
		FIN.	230400
		NAK	

DEF

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

6.1.2b Setting instrument address

Navigation icons: Up, Down, Left, Right, Home, Back, Forward, Search, and a red circle with 'R'.

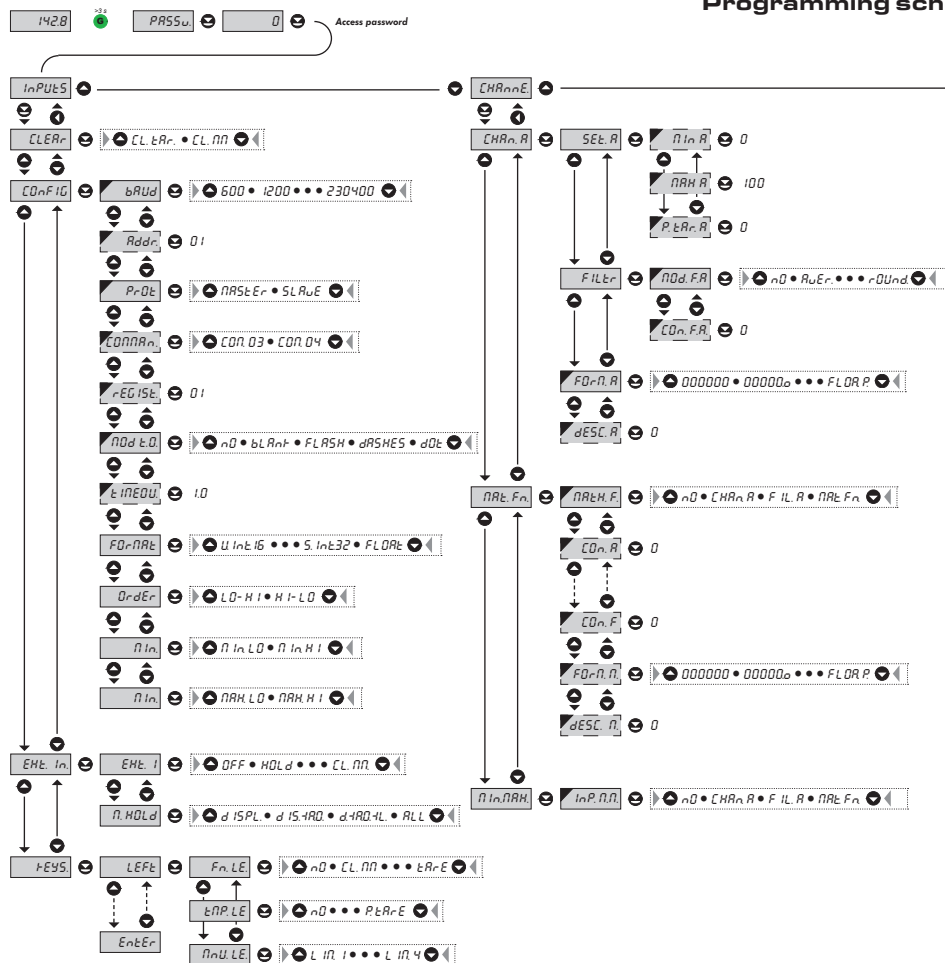
INPUTS	CLEAR	baud	1
CHARACT.	CONF ID	Addr.	
OUTPUT	EXT. In.	Port	
SERIAL	KEYS	CONNECTION	
		RESET	
		MODE	
		EXTENSION	
		FORNATE	
		ORDER	
		FIN.	
		NAK	

DEF

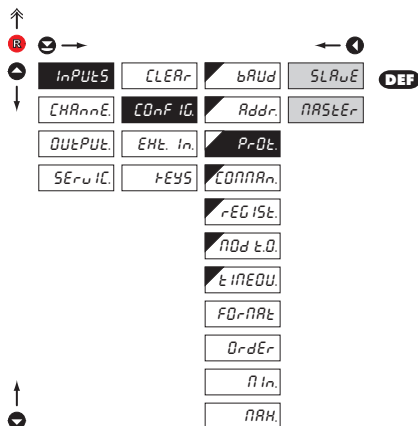
Navigation icons: Up, Down, Left, Right, Home, Back, Forward, Search, and a red circle with 'R'.

Navigation icons: Up, Down, Left, Right, Home, Back, Forward, Search, and a red circle with 'R'.

Addr.	Setting instrument address
	- setting in range 1...247
DEF	= 1



6.1.2c Selection of data protocol



PrOt Selection of data protocol

PASSwEr

Instrument solicits data from subordinate system

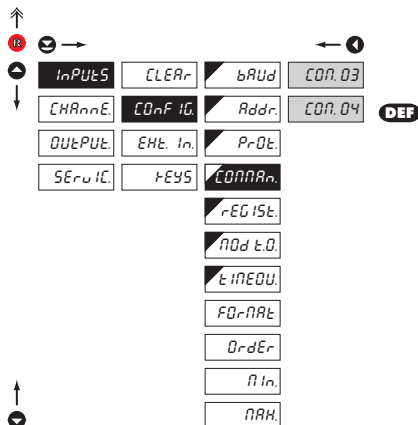
- instrument controls data transmission from subordinate system
- "COMMAND" may be used for selection of received data (for commands see data protocol)
- instrument asks 10 questions/s, if no response arrives within 2 s the display shows "----"

SLAVE

Passive Display - Slave

- passive display - slave is used where there is communication of other instruments or a computer in the "MASTER" mode. If "COMMAND" is correctly received, the instruments will display the data.

6.1.2d Selection of registers



COORD

Selection of registers

- the item is accessible only after setting "MASTER"

Pr.O3

Reading setup (holding) registers at address

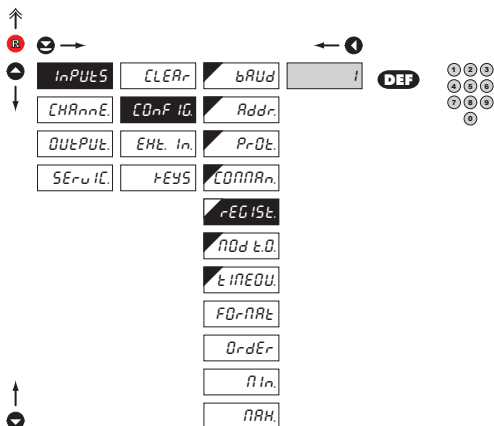
4xxxx

Pr.O4

Reading input (input) registers at address

3xxxx

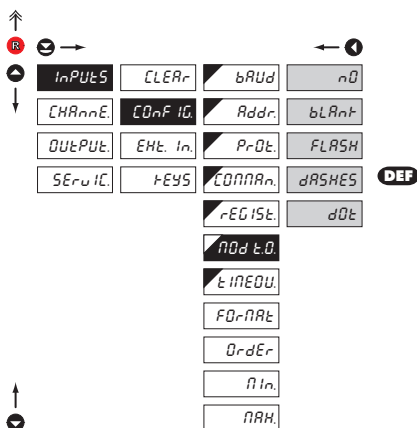
6.1.2e Setting register address



rEGIST. Setting register address

- the item is accessible only after setting "MASTER"
- defines the address of the register to be read
- allows to enter the range 0...65535, the address usually set is in range 0...9999 (without highest digits)
- **DEF** = 1

6.1.2f Selecting display mode in case of communication failure



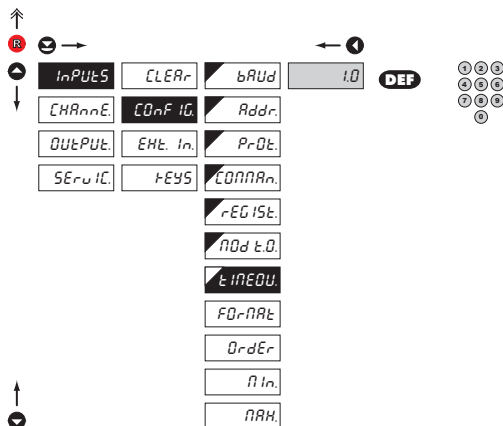
nD. Selecting display mode in case of communication failure

- nD.** No reaction
- bLAnT** Display goes off
- FLASH** Last displayed value starts flashing
- dRSHES** Dash symbols displayed
- d0t** Decimal point is displayed



Item will not appear in "MASTER" protocol

6.1.2g Setting the time constant for Timeout

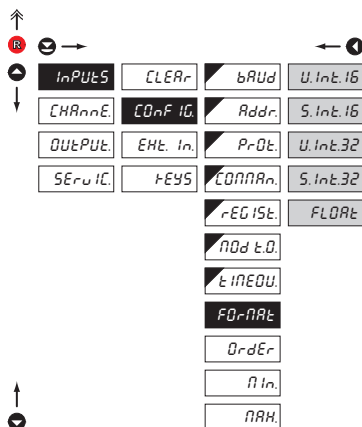
**t INEQU.** Setting the time constant for Timeout

- setting the time delay after which the indication of interrupted communication will appear on the display in the mode of "Mod t.O."
- range: 0...99,9 s
- **DEF** = 1.0 s



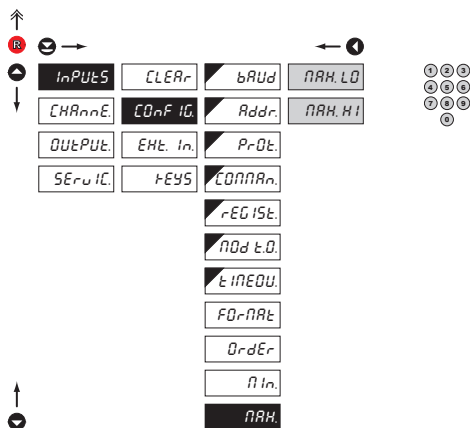
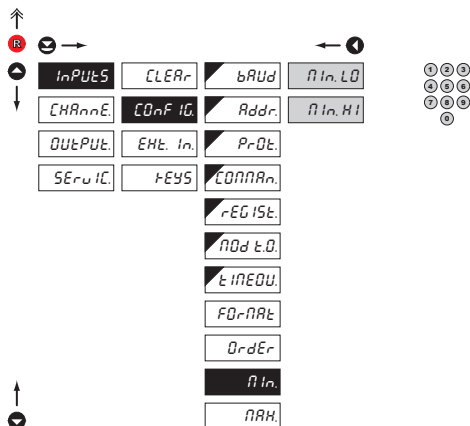
Item will not appear in "MASTER" protocol and when "MOD t.O." is disabled

6.1.2h Selection of the format of input data

**F0RNRt** Selection of the format of input data

- U. In t. 16** 16 bit unsign integer
 - in range 0...65 535
- S. In t. 16** 16 bit sign integer
 - in range -32 768...32 767
- U. In t. 32** 32 bit unsign integer
 - in range 0...4 294 967 296
- S. In t. 32** 32 bit sign integer
 - in range -2 147 483 648 ... 2 147 483 647
- FLDORt** IEEE format
 - in range $\pm 6,80564693277058E+38$
 - for description see table on page 69

6.1.2 | Setting input value



CONF IG Setting input value

„FORMAT“ > U.INT.16/S.INT.16

- range of the setting : 0...65 535

nIn. LD Setting minimum value of input data

MIN LO **DEF** = 0 (U.INT.16)

MIN LO **DEF** = 32 768 (S.INT.16)

nAH. HI Setting maximum value of input data

MAX HI **DEF** = 65 535 (U.INT.16)

MAX HI **DEF** = 32 767 (S.INT.16)

„FORMAT“ > U.INT.32/S.INT.32

- range of the setting: -99 999...999 999

- setting the range of input values "Long integer" number in two values (words) "MIN LO", "MIN HI" and "MAX LO", "MAX HI"

- to set minimum/maximum divide the values by 65536, split the outcome to two parts and enter to "MIN LO" and "MIN HI" / "MAX LO" and "MAX HI"

nIn. -- Setting minimum value of input data

MIN LO **DEF** = 0 (U.INT.32)

MIN HI **DEF** = 0 (U.INT.32)

MIN LO **DEF** = 0 (S.INT.32)

MIN HI **DEF** = 32 768 (S.INT.32)

nAH. -- Setting maximum value of input data

MAX LO **DEF** = 65 535 (U.INT.32)

MAX HI **DEF** = 65 535 (U.INT.32)

MAX LO **DEF** = 65 535 (S.INT.32)

MAX HI **DEF** = 32 767 (S.INT.32)

„FORMAT“ > FLOAT

- range of the setting: -99 999...999 999

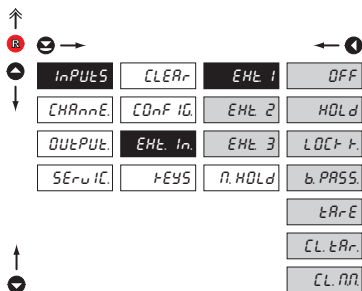
nIn. Setting minimum value of input data

DEF = 0

nAH. Setting maximum value of input data

DEF = 100

6.1.3a External input function selection



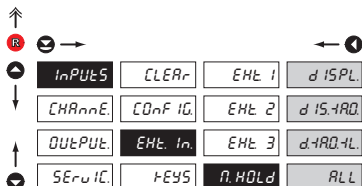
EXT. In. External input function selection

- OFF** Input is off
 - HOLD** Activation of HOLD
 - LOCK F.** Locking keys on the instrument
 - b. PASS.** Activation of locking access into programming menu LIGHT/PROFI
 - tArE** Tare activation
 - CL. tAr.** Tare resetting
 - CL. nN.** Resetting min/max value
- **DEF** EXT. 1 > HOLD
 - **DEF** EXT. 2 > LOCK K.
 - **DEF** EXT. 3 > TARE

*

Setting procedure is identical for EXT. 2 and EXT. 3

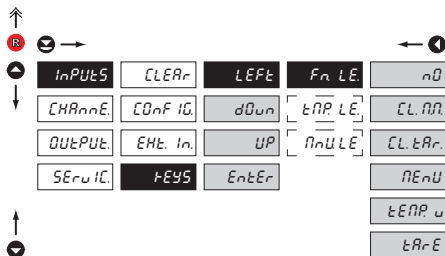
6.1.3b Selection of function "HOLD"



N. HOLD Selection of function "HOLD"

- d ISPL** "HOLD" locks only the value displayed
- d IS. tArD.** "HOLD" locks the value displayed and on AO
- d. tArD. tL.** "HOLD" locks the value displayed, on AO and limit evaluation
- ALL** "HOLD" locks the entire instrument

6.1.4a Optional accessory functions of the keys



Preset values of the control keys **DEF**:

LEFT	Show Tare
UP	Show Max. value
DOWN	Show Min. value
ENTER	w/o function



Setting is identical for LEFT, DOWN, UP and ENTER

Fn. LE Assigning further functions to instrument keys

- „FN. LE.“ > executive functions
- „TMP. LE.“ > temporary projection of selected values
- „MNU. LE.“ > direct access into menu on selected item

Key has no further function

Resetting min/max value

Tare resetting

Direct access into menu on selected item

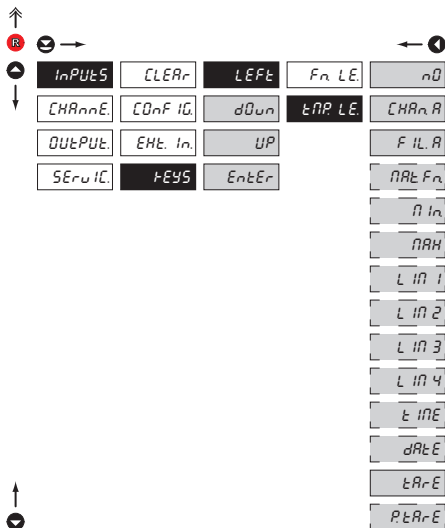
- after confirmation of this selection the „MNU. LE.“ item is displayed on superior menu level, where required selection is performed

Temporary projection of selected values

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

Tare function activation

6.1.4b Optional accessory functions of the keys - Temporary projection



TEMP. LE. Temporary projection of selected item

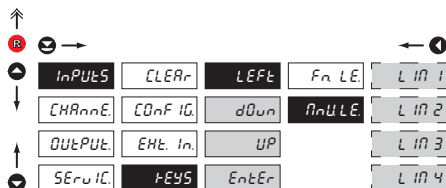
- "Temporary" projection of selected value is displayed for the time of keystroke
- "Temporary" projection may be switched to permanent by pressing **R** + "Selected key", this holds until the stroke of any key

TEMP. LE.	Temporary projection of selected item
TEMP. LE.	Temporary projection of selected value is displayed for the time of keystroke
TEMP. LE.	Temporary projection may be switched to permanent by pressing R + "Selected key", this holds until the stroke of any key
TEMP. LE.	Temporary projection is off
TEMP. LE.	Temporary projection of "Channel A" value
TEMP. LE.	Temporary projection of "Channel A" value after processing digital filters
TEMP. LE.	Temporary projection of "Mathematic functions" value
TEMP. LE.	Temporary projection of "Min. value"
TEMP. LE.	Temporary projection of "Max. value"
TEMP. LE.	Temporary projection of "Limit 1" value
TEMP. LE.	Temporary projection of "Limit 2" value
TEMP. LE.	Temporary projection of "Limit 3" value
TEMP. LE.	Temporary projection of "Limit 4" value
TEMP. LE.	Temporary projection of "TIME" value
TEMP. LE.	Temporary projection of "DATE" value
TEMP. LE.	Temporary projection of "TARE" value
TEMP. LE.	Temporary projection of "P. TARE" value



Setting is identical for LEFT, DOWN, UP and ENTER

6.1.4c Optional accessory functions of the keys - Direct access to item



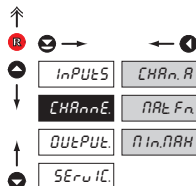
Assigning access to selected menu item

- Direct access to item "LIM 1"
- Direct access to item "LIM 2"
- Direct access to item "LIM 3"
- Direct access to item "LIM 4"



Setting is identical for LEFT, DOWN, UP and ENTER

6.2 Setting "PROFI" - CHANNELS



The primary instrument parameters are set in this menu

CHAn.A

Setting parameters of measuring "Channel"

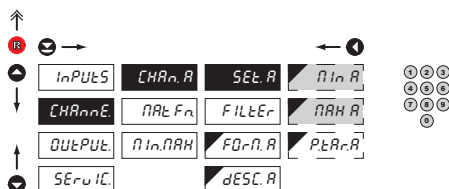
PALEFn

Setting parameters of mathematic functions

nIn.nAH

Selection of access and evaluation of Min/ max value

6.2.1a Display projection



SEt.A

Setting display projection

nIn.A

Setting display projection for minimum value of

input signal

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

- DEF = 0

nAH

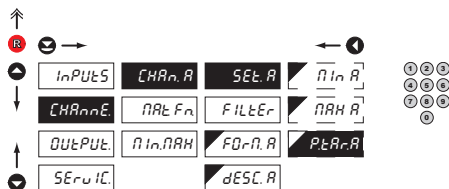
Setting display projection for maximum value of

input signal

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

- DEF = 100

6.2.1b Setting fixed tare



P.tAr.A

Setting "Fixed tare" value

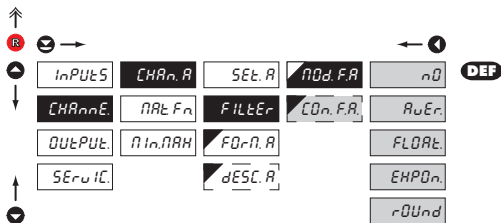
- setting is designed for the event when it is necessary to firmly shift the beginning of the range by known size

- when setting (P. TAR. A > 0) display shows "T" symbol

- range of the setting is 0...999999

- DEF = 0

6.2.1c Digital filters



NOd.F.A Selection of digital filters

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

nD Filters are off

RvEr Measured data average

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

FLORt Selection of floating filter

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

EHPOn Selection of exponential filter

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

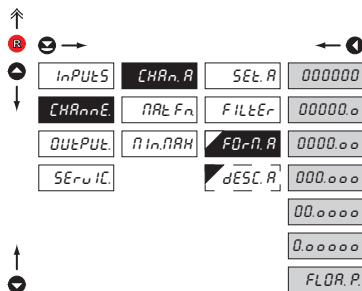
rDUnd Measured value rounding

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

CON.F.A Setting constants

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

6.2.1d Projection format - positioning of decimal point

**F0r.n.A** Selection of decimal point

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

000000 Setting DP - XXXXX.

00000.0 Setting DP - XXXX.x

0000.00 Setting DP - XXXX.xx

000.000 Setting DP - XXX.xxx

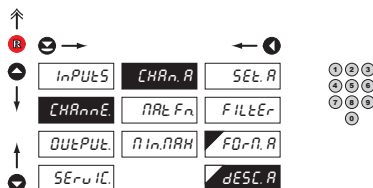
DEF

00.0000 Setting DP - XX.xxxx

0.00000 Setting DP - X.xxxxx

FLOr.P. Floating DP

6.2.1e Projection of description - the measuring units

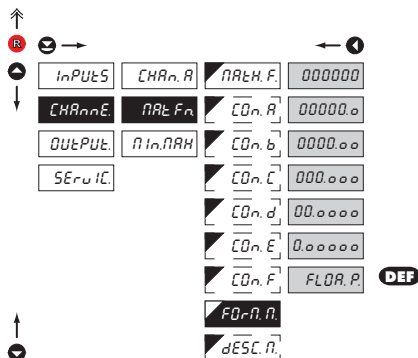
**dESC.A** Setting projection of description for "Channel A"

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

DEF = none

!
Table of signs on page 77

6.2.2b Mathematic functions - decimal point

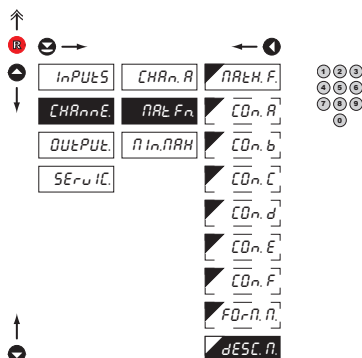


FLOOR.N Selection of decimal point

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

- 000000. Setting DP - XXXXXX.
- 00000.0 Setting DP - XXXXX.x
- 0000.00 Setting DP - XXXX.xx
- 000.000 Setting DP - XXX.xxx
- 00.0000 Setting DP - XX.xxxx
- 0.00000 Setting DP - X.xxxxx
- FLOOR.P Floating DP
- DEF

6.2.2c Mathematic functions - measuring units

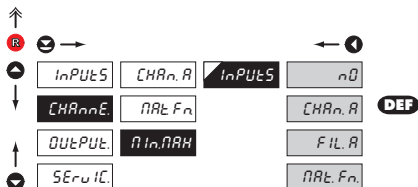


DESC.N Setting projection of description for "MAT.FN"

- projection of measured data may be extended (at the expense of the number of displayed places) by two characters for description
- description is set by shifted ASCII code, when two first places show the set description and two last characters their code in period 0...95
- description is cancelled by code 00
- DEF = no description

Table of signs on page 77

6.2.3 Selection of evaluation of min/max value



InPUtS Selection of evaluation of min/max value

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

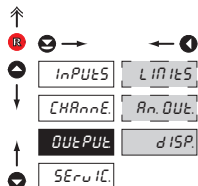
n0 Evaluation of min/max value is off

CHAn.A From "Channel A"

FIL.A From "Channel A" after digital filters processing

MAT.Fn From "Mathematic functions"

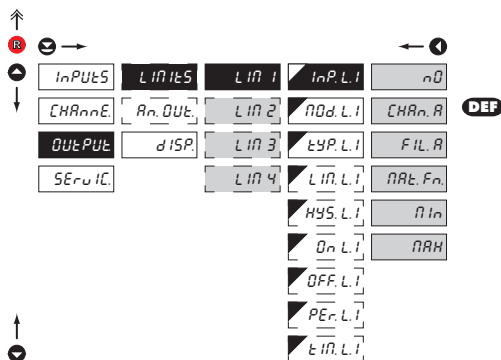
6.3 Setting „PROFI“ - OUTPUTS



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

- LiMiTS** Setting type and parameters of limits
- An.OUt** Setting type and parameters of analog output
- dISP** Setting display projection and brightness

6.3.1a Selection of input for limits evaluation



inP.L.i Selection evaluation of limits

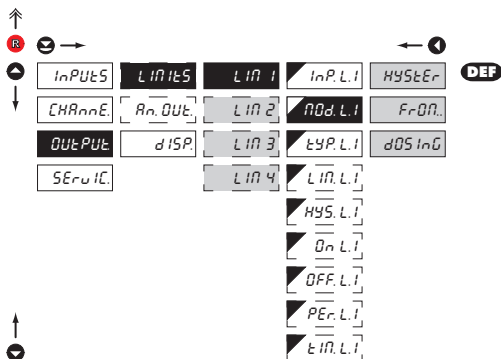
- selection of value from which the limit will be evaluated

- n0** Limit evaluation is off
- CHAn. A** Limit evaluation from "Channel A"
- FIL. A** Limit evaluation from "Channel A" after digital filters processing
- ARt. Fn.** Limit evaluation from "Mathematic functions"
- n In** Limit evaluation from "Min.value"
- ARH** Limit evaluation from "Max.value"



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

6.3.1b Selection of type of limit



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

nOd.L. Selection the type of limit

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

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

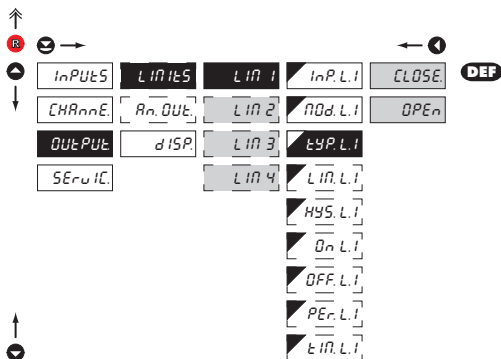
FrOn. Frame limit

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

dOS InG Dose limit (periodic)

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

6.3.1c Selection of type of output



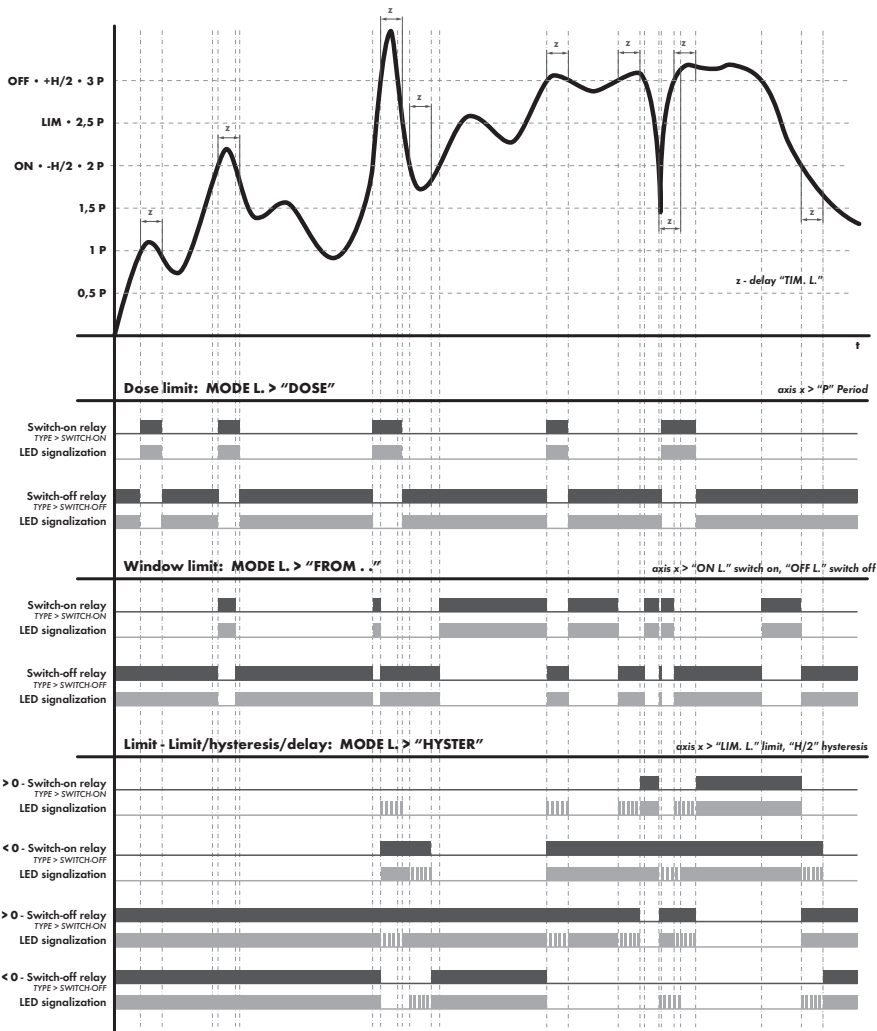
tYP.L. Selection of type of output

CLOSE Output switches on when condition is met

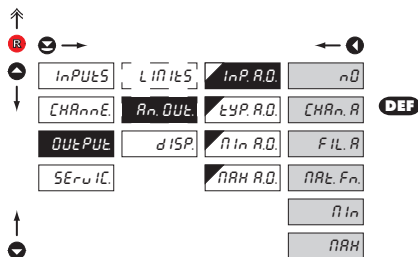
OPEn Output switches off when condition is met



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



6.3.2a Selection of input for analog output

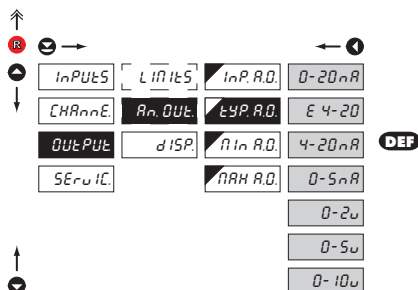


InP.A.O. Selection of evaluation of analog output

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

- ☐ nD AO evaluation is off
- ☐ Channel.A AO evaluation from "Channel A"
- ☐ Fil.A AO evaluation from "Channel A" after digital filters processing
- ☐ Mat.Fn AO evaluation from "Math.functions"
- ☐ Min AO evaluation from "Min.value"
- ☐ Max AO evaluation from "Max.value"

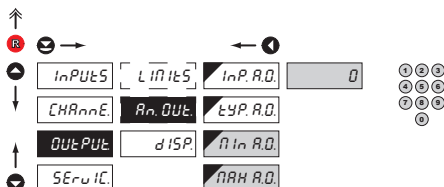
6.3.2b Selection of the type of analog output



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

- ☐ 0-20mA Type - 0...20 mA
- ☐ E 4-20 Type - 4...20 mA
- with indication of error statement (< 3,0 mA)
- ☐ 4-20mA Type - 4...20 mA
- ☐ 0-5mA Type - 0...5 mA
- ☐ 0-2V Type - 0...2 V
- ☐ 0-5V Type - 0...5 V
- ☐ 0-10V Type - 0...10 V

6.3.2c Setting the analog output range



An. OUT. Setting the analog output range

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

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

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

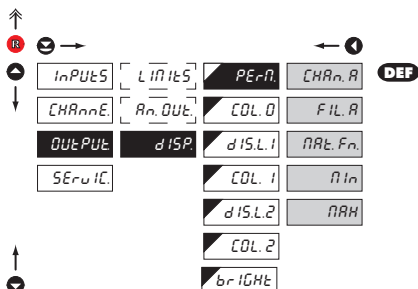
DEF = 0

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

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

DEF = 100

6.3.3a Selection of input for display projection



PERN. Selection display projection

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

CHARN. R. Projection of values from "Channel A"

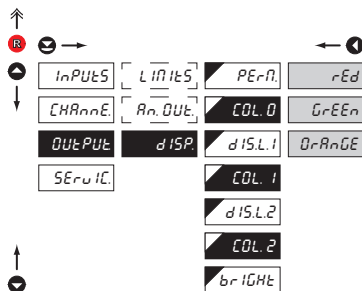
FIL. R. Projection of values from "Channel A" after digital filters processing

MATH. Fcn. Projection of values from "Math.functions"

MIN. Projection of values from "Min.value"

MAX. Projection of values from "Max.value"

6.3.3b Selection of display color



COL- Selection of display color

- the color selection is governed by setting under items "DIS.L1." and "DIS.L2."

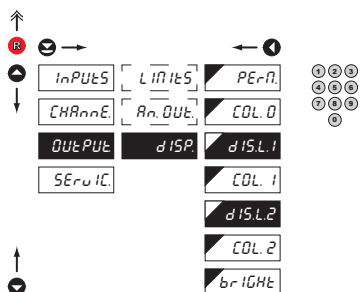
rEd Red color

GrEE n Green color

OrAnGE Orange color

- "COL 0." **DEF** = Green- "COL 1." **DEF** = Orange- "COL 2." **DEF** = Red

6.3.3c Selection of display color change

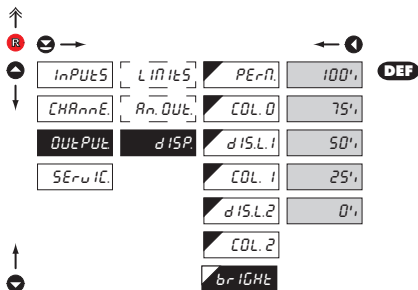


d i S L.- Selection of display color change

- under items "DIS.L 1" and "DIS.L2" the limit is set for the time when the display color shall change

- "DIS.L 1." **DEF** = 9999- "DIS.L 2." **DEF** = 9999

6.3.3d Selection of display brightness



brIGHt Selection of display brightness

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

0% Display is off

- after keystroke display turns on for 10 s

25% Display brightness - 25 %

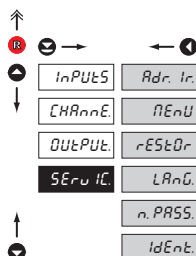
50% Display brightness - 50 %

75% Display brightness - 75 %

100% Display brightness - 100 %

6.4

Setting "PROFI" - SERVICE

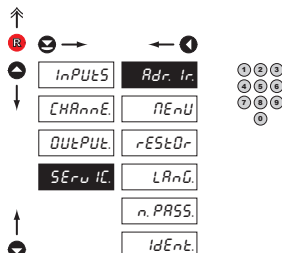


The instrument service functions are set in this menu

Adr. Ir.	Setting the address of IR control
nEnU	Selection of menu type LIGHT/PROFI
rESTOr	Restore instrument manufacture setting and calibration
LAng.	Language version of instrument menu
n.PASS.	Setting new access password
IdEnt.	Instrument identification

6.4.1

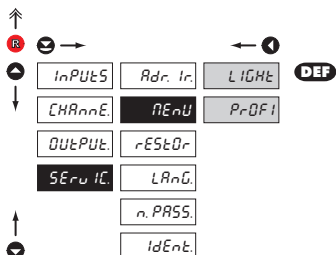
Setting the address of IR remote control



Adr. Ir. Setting the address of IR remote control

- setting the remote control address is inevitable only in case there are other large displays OMD 201 within the reach of IR remote control
- range of the setting is 0...99
- **DEF** = 0

6.4.2 Selection of type of programming menu



Change of setting is valid upon next access into menu

nEnU Selection of menu type - LIGHT/PROFi

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

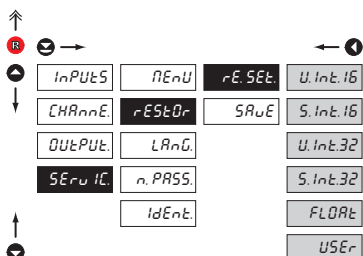
L IGHt Active LIGHT menu

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

PrOFi Active PROFi menu

- complete programming menu for expert users
- tree menu

6.4.3 Restoration of manufacture setting



After restoration the instrument switches off for couple seconds

rEStOr Return to manufacture setting of the instrument

- Return to manufacture setting of the instrument
- in the event of error setting it is possible to return to manufacture setting
- restoration is performed for currently selected type of data format
- provided you stored your user setting in the "PROFi" menu it is possible to restore it (option "USER")
- reading the primary setting of items in menu (DEF)

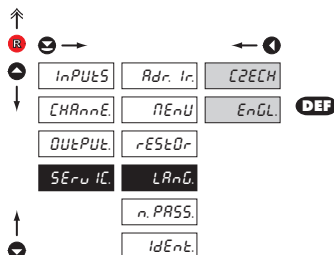
USEr Restore user setting of the instrument

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

SArE Save user setting of the instrument

- saving the setting allows the operator its future contingent restoration

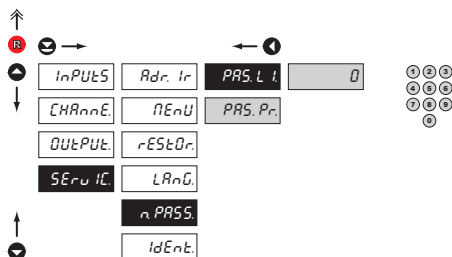
6.4.4 Selection of instrument menu language version

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

CEECH Instrument menu is in Czech

ENGL Instrument menu is in English

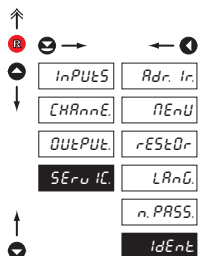
6.4.5 Setting new access password

**n. PASS.** Setting new password for access to LIGHT and

PROFI menu

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

6.4.6 Instrument identification

**Ident.** Projection of instrument SW version

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

7.0

Setting items into "USER" menu

- **USER** menu is designed for users who need to change only several items of the setting without the option to change the primary instrument setting (e.g. repeated change of limit setting)
- there are no items from manufacture permitted in **USER** menu
- on items indicated by inverse triangle  **L I**
- 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 legend - current setting is displayed



- | | |
|--|---|
|  | item will not be displayed in USER menu |
|  | item will be displayed in USER menu with editing option |
|  | 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



Example:

Into USER menu were selected these items

(keys ①) > CL. TAR., LIM 1, LIM 2, LIM 3, for which we have preset this sequence (keys ②):

CL. TAR.	5
LIM 1	0 (sequence not determined)
LIM 2	2
LIM 3	1

Upon entering USER menu

(key ③) items will be projected in the following sequence: LIM 3 > LIM 2 > CL.TAR. > LIM 1

Command 6h > Input value

<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>

where:

Word is the value in the format signed integer -32 768 (8000h) - 0 - 32 767 (7FFFh)

When displayed this value is recalculated with the aid of values entered in menu "INPUTS/CONFIG/MIN/MIN. Lo and MAX. Lo. Values "MIN. Hi" and "MAX. Hi" are of no significance in this case.

Response:

<AA> 06 00 00 <Word Hi><Word Lo><CRC Lo><CRC Hi>.

Command 10h > Input value

<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>

where:

<Hi Word><Lo Word> together they create the value LONG INT.

Input values are calculated through the following values:

$$\text{CHAN. A} = \text{MIN. A} + \frac{(\text{MAX. A} - \text{MIN. A})}{(\text{MAX.} - \text{MIN.})} \times (\text{input data} - \text{MIN.})$$

Chan. A	value to be displayed and further processed in the instrument
MIN. A, MAX. A	values entered in menu CHANNELS/CHAN. And/SETTIN.
MIN., MAX.	values entered in menu INPUTS/CONFIG
	MIN. = MIN. Hi x 65536 + MIN. Lo
	MAX. = MAX. Hi x 65536 + MAX. Lo

Response:

Command copied without data part <AA> 10 00 00 00 02 <CRC Lo><CRC Hi>.

Command 20h > NON-STANDARD COMMAND for MODBUS

making instrument control accessible through standard commands of the OM ASCII protocol

<AA> 20 <number of symbols in standard message> standard message <CRC Lo> <CRC Hi>

Response:

provided no error occurs in MODBUS frame:

<AA> 20 <number of characters in standard message> standard message <CRC Lo> <CRC Hi>

In this format is also the response ?00, reporting error in processing standard OM command.

Address field of standard message will always be 00 - here without any significance.

ERROR STATUS

In case of wrong address or CRC nothing comes back.

In case of error command (CRC is not controlled) <AA> A0 01 <CRC Lo> <CRC Hi> comes back. If an error is in 10h command error statement "2" or "3" is reported.

If other command is used than the one corresponding with selected data format, it is evaluated as error command.

In common:

<AA> instrument address - binary 1 - 247 (set in instrument menu)

<CRC Lo> <CRC Hi> is a control word according to definitions in Appendix C of MODBUS protocol description.

TERMINATING COMMUNICATION

Communication is terminated provided no data arrives during 3 1/2 characters. This period is determined with uncertainty of $\pm 250 \mu\text{s}$. MODBUS has standard rates up to 19 200. For higher rate it is necessary to count with this uncertainty - e.g. 115 200 Baud $\rightarrow 500 \pm 250 \mu\text{s}$, 230 400 Baud $\rightarrow 250 \pm 250 \mu\text{s}$.

FORMAT	ORDER	COMMAND	DATA
U. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
S. INT. 16	n/a	0x06	<AA> 06 00 00 <Word Hi> <Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
FLOAT	LO - HI	0x10	<AA> 10 00 00 00 02 04 <Lo Word Hi> <Lo Word Lo> <Hi Word Hi> <Hi Word Lo> <CRC Lo> <CRC Hi>
U. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
S. INT. 32	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>
FLOAT	HI - LO	0x10	<AA> 10 00 00 00 02 04 <Hi Word Hi> <Hi Word Lo> <Lo Word Hi> <Lo Word Lo> <CRC Lo> <CRC Hi>

LEGEND

#	Command beginning	
<AA>	Instrument address (1...247)	
<Word xx>	16-bit data	
<Lo Word xx>	32 bit data (lower part)	
<Hi Word xx>	32 bit data (higher part)	
U.INT.16	unsigned integer	0 (0x0000)...65 535 (0xFFFF)
S.INT.16	signed integer	-32 768 (0x8000)...65 535 (0x7FFF)
U.INT.32	unsigned integer	0 (0x0000 0000)...4 294 967 295 (0xFFFF FFFF)
S.INT.32	signed integer	-2 147 483 648 (0x8000 0000)...65 535 (0x7FFF FFFF)
FLOAT	IEEE floating point	$\pm 6,80564693277058\text{E}+38$ <Hi Word Hi> = ZEEE EEE; <Hi Word Lo> = EMMM MMMM <Lo Word Hi> = MMMM MMMM; <Lo Word Lo> = MMMM MMMM Z...sign (1(0)/-1(1)); E...Exponent (-127(0x00)...0(0x7F)...128(0xFF)) M...Mantisa (1.0...2.0), highest mantisa bit is always 1 and it is covered by the lowest exponent bit e.g.: 0x3F80 0000 = $Z \cdot 2^E \cdot M = 1 \cdot 2^{(-0)} \cdot 1 = 1$

ERROR	CAUSE	ELIMINATION
<i>E. d. Un</i>	Number is too small (large negative) to be displayed	change DP setting, channel constant setting
<i>E. d. Ou</i>	Number is too large to be displayed	change DP setting, channel constant setting
<i>E. t. Un</i>	Number is outside the table range	increase table values, change input setting (channel constant setting)
<i>E. t. Ou</i>	Number is outside the table range	increase table values, change input setting (channel constant setting)
<i>E. i. Un</i>	Input quantity is smaller than permitted input quantity range	change input signal value or input (range) setting
<i>E. i. Ou</i>	Input quantity is larger than permitted input quantity range	change input signal value or input (range) setting
<i>E. Hu</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. dRtR</i>	Data in EEPROM outside the range	perform restoration of manufacture setting, upon repeated error statement send instrument for repair
<i>E. CLr.</i>	Memory was empty (presetting carried out)	upon repeated error statement send instrument for repair, possible failure in calibration

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

Description is cancelled by entering characters with code 00

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

INPUT

Protocol:	ASCII, MESSBUS, MODBUS - RTU, PROFIBUS DP
Data format:	8 bit + no parity + 1 stop bit (ASCII) 7 bit + even parity + 1 stop bit (MESSBUS)
Rate:	600...230 400 Baud (max. 12 MBaud for PROFIBUS)
RS 232:	isolated, two-way communication
RS 485:	isolated, two-way communication, addressing (in range 1...247)

PROJECTION

Display:	999999, intensive red/green/orange 7 segment LED, digit height 57 or 100 or 125 mm
Projection:	±9999 (-99999...999999)
Decimal point:	adjustable - in menu
Brightness:	adjustable - in menu

INSTRUMENT ACCURACY

Linearisation:	by linear interpolation in 50 points - solely via OM Link
Digital filters:	Averaging, Floating average, Exponential filter, Rounding
Functions:	Tare - display resetting Hold - stop measuring (at contact) Lock - control key locking MM - min/max value Mathematic functions
OM Link:	open communication interface for setting, operation and update of instrument SW
Watch-dog:	reset after 400 ms
Calibration:	at 25°C and 40 % of r.h.

COMPARATOR

Type:	digital, adjustable in menu
Mode:	Hysteresis, From, Dosing
Limits:	-99999...999999
Hysteresis:	0...999999
Delay:	0...99,9 s
Outputs:	4x relays with switch-off contact (Form C) (230 VAC/50 VDC, 3 A)*
Relay:	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

ANALOGO OUTPUTS

Type:	isolated, programmable with resolution of max.10 000 points, analog output corresponds with displayed data, type and range are adjustable
Non-linearity:	0,2 % of range
TC:	100 ppm/°C
Rate:	response to change of value < 150 ms
Voltage:	0...2 V/5 V/10 V
Current:	0...5/20 mA/4...20 mA - compensation of conduct to 500 Ohm/12 V or 1 000 Ohm/24 V

MEASURED DATA RECORD

Type RTC:	time-controlled logging of measured data into instrument memory, allows to log up to 250 000 values
Type FAST:	fast data logging into instrument memory, allows to log up to 8 000 values at a rate of 40 records/s
Transmission:	via data output RS 232/485 or via OM Link

EXCITATION

Adjustable:	5...24 VDC/max. 1,2 W, isolated
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POWER SUPPLY

Options:	10...30 V AC/DC, max. 27 VA, isolated, - fuse inside (T 4A) 80...250 V AC/DC, max. 27 VA, isolated - fuse inside (T 4A)
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MECHANIC PROPERTIES

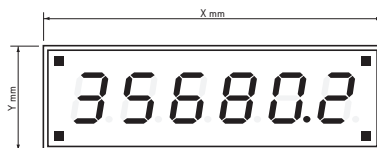
Material:	anodized aluminum, black
Dimensions:	see chapter 13
Panel cut-out:	see chapter 13

OPERATING CONDITIONS

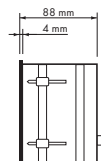
Connection:	through cable bushings to terminal boards inside the instrument, conductors section up to <1,5 mm ² / <2,5 mm ²
Stabilisation period:	within 15 minutes after switch-on
Working temp.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP64
Construction:	safety class I
Overvoltage category:	EN 61010-1, A2
Dielectric strength:	4 kVAC after 1 min between supply and input 4 kVAC after 1 min between supply and data/analog output 4 kVAC after 1 min between supply and relay output 2,5 kVAC after 1 min between input and data/analog output
Insulation resistance:	for pollution degree II, measurement category III instrum.power supply > 670 V (PI), 300 V (DI) Input/output > 300 V (PI), 150 (DI)
EMC:	EN 61326-1

* values apply for resistance load

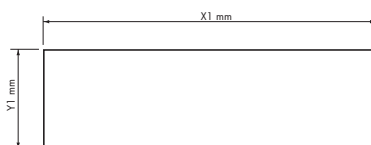
Front view



Side view



Panel cut-out



Height	X	Y	X1	Y1
57	372	116	364	108
100-4	465	181	457	173
100-6	651	181	643	173
125-4	539	237	531	228
125-6	754	237	746	228

Tolerance: ± 1 mm

Panel thickness: 0,5 ... 50 mm

Wall mounting

As a standard, large displays are designed for panel installation. Upon request we may also supply a holder for wall mounting, see picture.



Product **OMD 201RS**
 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: 4/6-digit programmable large display

Type: **OMD 201**

Version: UNI, PWR, UQC, RS

Conformity is assessed pursuant to the following standards:

El. 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 Ordinance on:

El. safety:	No. 168/1997 Coll.
EMC:	No. 169/1997 Coll.

The evidence are the protocols of authorized and accredited organizations:

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

Place and date of issue: Prague, 12. Juni 2001

Miroslav Hackl v.r.
Company representative

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