



OMD 201

**4/6 DIGIT PROGRAMMABLE
LARGE DISPLAY**
DATA DISPLAY



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

Large displays OMD 201 series conform to European regulation 89/336/EWG and Ordinance 168/1997 Coll.

They 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

Power supply from the main line has to be isolated from the measuring leads.



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2. INSTRUMENT DESCRIPTION

DESCRIPTION

The OMD 201 model series are 4 and 6 digit large panel displays manufactured in the following alternatives:

OMD 201DC	*DC voltmeter/ammeter
OMD 201PWR	*Nets analyser - AC voltmeter/ammeter/wattmeter
OMD 201PM	*Process monitor
OMD 201RTD	*Thermometer for Pt 100/500/1 000, Ni 1 000/2 226/10 000
OMD 201T/C	*Thermometer for thermocouples
OMD 201DU	*Display instrument for linear potentiometers
OMD 201OHM	*Ohmmeter
OMD 201UQC	*Universal counter, frequency meter, watch, stop-watch
OMD 201RS	Data display for RS 232/485

The OMD 601RS model is a 6 digit panel display device for transmission of data from serial lines of standard RS 232 and RS 485. Communication runs via the ASCII protocol.

The display may project all ASCII characters employable for 7-segment display.

OPERATION

The instrument is set and controlled by four control keys located on the control module attached to the display with 5 meter cable. All programmable settings of the instrument are realised in two adjusting modes:

Configuration menu (hereinafter referred to as „CM“) is protected by an optional numeric code and contains complete instrument setting

User menu may contain arbitrary programming setting defined in CM with another selective restriction (see, change)

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

The measured units may be projected on the display.

OPTIONS

Comparators are assigned to monitor the two limit values with relay output. The limits have adjustable hysteresis as well as selectable delay of the switch-on in 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 in external devices is required. We offer universal analog output with the option of selection of the output type - voltage/current. The analog output value corresponds with the displayed data and its type and range are selectable in the programming mode.

FIRMWAREwww.orbit.merret.cz/update

Considering the continuous development and innovation of our products it is now possible to download the most recent versions of the program for all instruments. Because program upgrade is performed via RS 232 data line it is naturally necessary that the instrument be equipped with this interface as well.

The upgrade and the program setup is performed automatically after the instrument is connected to a PC. After it is completed all customer settings of the instrument are replaced by manufacturer's setting, i.e. repeated item setting is required.

Number of the current program version in your instrument you can find in the „Configuration menu - service - identification“

! *The function for recording the new Firmware is supported in all instruments from version 004*

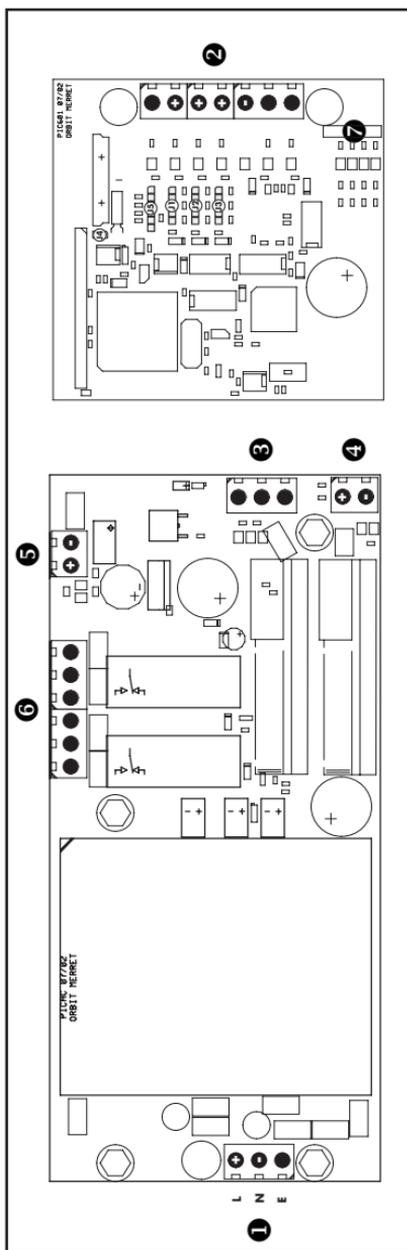
3. CONNECTION

The supply lead for feeding the instrument should not be in the proximity of low-potential signals. Contactors, motors with larger input and other efficient elements should not be in the proximity of the instrument. The lead into the instrument input (the 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.

! *Grounding on terminal „E“ must be connected at all times*

! *Relay parameters specified in the technical data apply for resistance load. Upon connection of the induction load we recommend to fit the leads to relay 1 A with a fuse for maximum load protection.*

! *Construction of the control keyboard does not allow its permanent connection to the instrument*



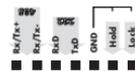
1 Power supply

2 Input

UOC



AS



3 Data output



4 Analog output

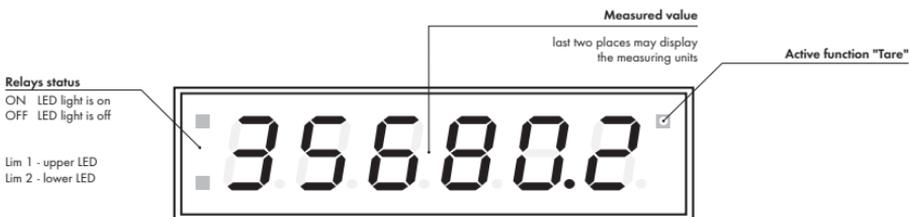
5 Excitation

6 Relays

7 Connection of control keyboard

4. INSTRUMENT SETTING

The instrument is set and controlled by 4 control keys located on an independent box of the remote control, by means of which it is possible to browse through the operating program, to select and set the required values.



CONFIGURATION MODE

- designated for professional service and maintenance
- complete instrument setting
- access is password protected
- authorization for "User mode"

USER MODE

- designated for instrument service
- may contain setting the limits, analog and data output and brightness, with restriction as per the setting in "Configuration mode"

SYMBOLS USED IN THE INSTRUCTIONS



Items indicated this way are preset from manufacture

CONTROL KEYS FUNCTIONS

MENU	ENTER	LEFT	UP
Measuring mode			
menu access	tare	temporary value	min/max value
Moving around in the menu			
exit menu without saving	move to next level	back to previous level	move to next item
Setting/selecting - items			
cancel setting without saving	confirm selected item		move up
Setting - numbers			
cancel setting without saving	cancel selected number	move to higher decade	change of current figure - up -

SETTING THE DECIMAL POINT AND THE MINUS SIGN

DECIMAL POINT

Upon modification of the set number selection of the decimal point performed by key with transition beyond the highest decade, when the decimal point starts flashing. Positioning is performed by .

Decimal point for display projection is set in item „CHAN. A - PROJECTION“.

MINUS SIGN

Setting the minus sign is performed on the highest valid degree by key .

The minus sign is in numeric row (0, 1, 2, 3...9, -).

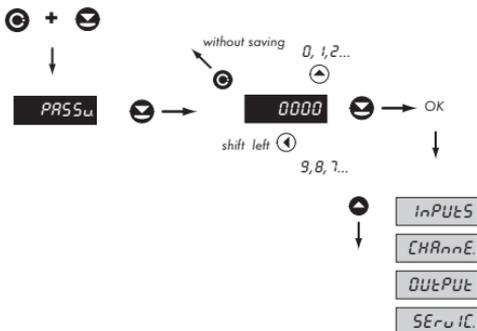


Setting

⇒ after transition beyond the highest decade the decimal point starts flashing

⇒ by pressing you will place the DP and you confirm it by

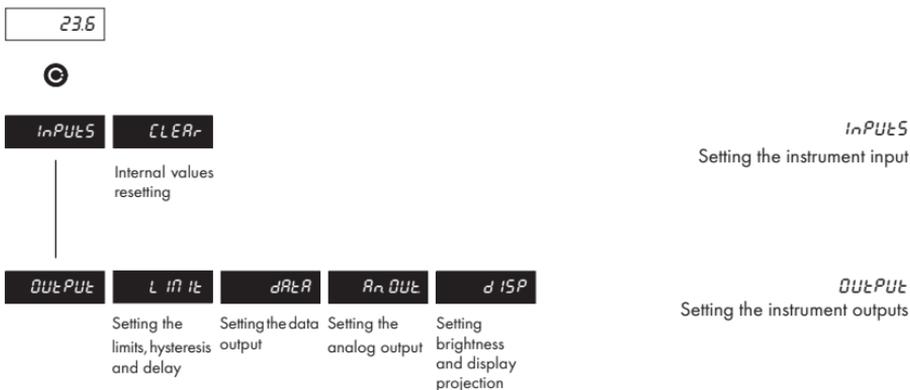
ACCESS INTO THE CONFIGURATION MODE



The code is always preset from manufacture to 0000. In case of loss of access password it is possible to use universal access code "8177"

4.2 USER MENU

- designated for instrument service
- may contain setting the limits, analog data output and brightness, with restriction as per the setting in "Configuration mode"

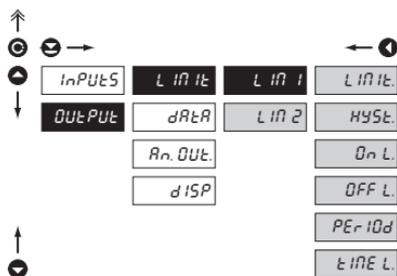


4.2.1.1 USER MENU - RESETTING THE INTERNAL VALUES



 Adjustable authorization of access into items, see page 31

4.2.2.1 LIMITS - ENTERING VALUES



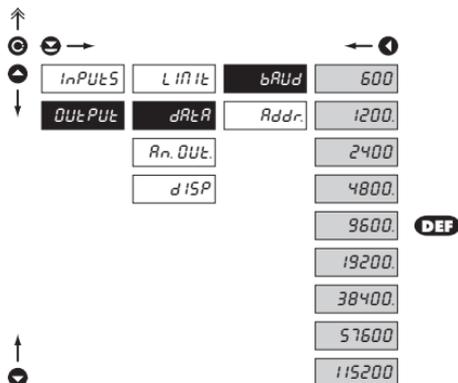
Adjustable authorization of access into items, see page 32

! Projection of individual items depends on the set „Type“ of the limits

L IN - Entering limit values for status evaluation

- L IN 1E** Setting limit for relay switch-on
- in full display range
- HYSL** Setting hysteresis only in (+) values
- in 1/10 of the display range
- On L.** Setting the beginning of the range of the limit switch-on
- in full display range
- OFF L.** Setting the end of the range of the limit switch-on
- in full display range
- PERIOD** Setting the period of the limit switch-on
- in full display range
- tINE L.** Setting the delayed switch-on of the limit
- in range 0...99,9 s

4.2.2.2 DATA OUTPUT - SETTING THE RATE



Adjustable authorization of access into items, see page 32

bAUD Setting the data output rate (baud)

- 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

4.2.2.3 DATA OUTPUT - SETTING THE INSTRUMENT ADDRESS

**Addr.** Setting the instrument address

- setting in the range of 0...31
- manufacture setting 00 **DEF**

Adjustable authorization of access into items, see page 32

4.2.2.4 ANALOG OUTPUT - SETTING THE RANGE

**Rn. OUt.** Setting the Analog output range

- Analog output is isolated and its value corresponds with the 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

R0. nIn Assignment of the display value to the beginning of the analog output range

- range of the setting is -99 999...100 000

R0. nRH Assignment of the display value to the beginning of the analog output range

- range of the setting is -99 999...100 000

Adjustable authorization of access into items, see page 32

4.2.2.5 SETTING THE DISPLAY BRIGHTNESS

**br IGHE** Setting the display brightness

100% Brightness 100%

0% Brightness 0%, display is switched off

- display switches off after approx. 10 s and switches on after pressing any key

25% Brightness 25%

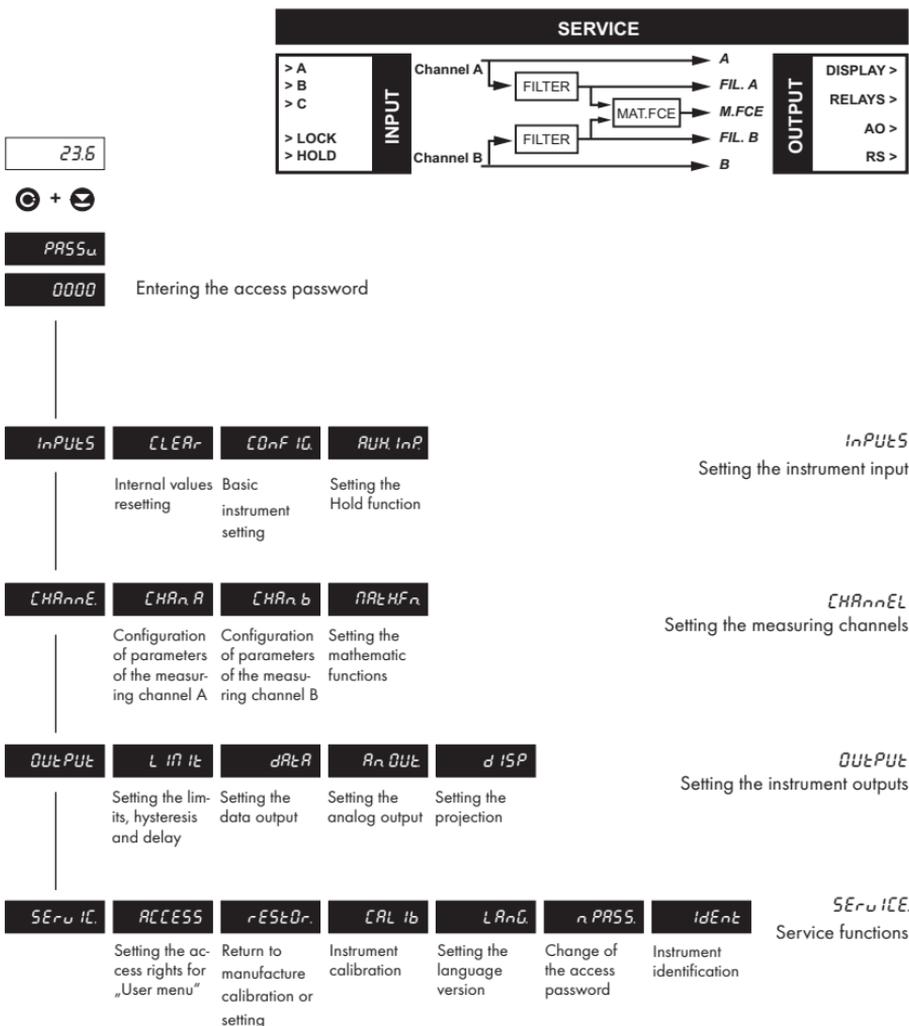
50% Brightness 50%

75% Brightness 75%

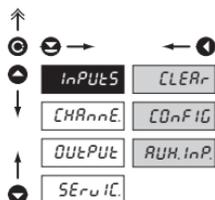
Adjustable authorization of access into items, see page 33

4.3 CONFIGURATION MENU

- designated for professional service and maintenance
- complete instrument setting
- the access is password protected



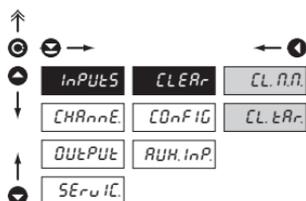
4.3.1 CONFIGURATION MODE - INPUTS



Here the basic instrument parameters are set

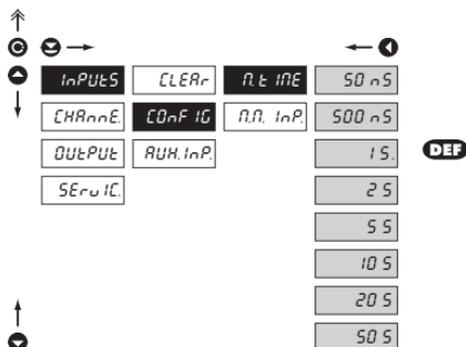
CLERr	Resetting the internal values
CDnFIG	Basic instrument setting
AUH.InP.	Setting the „Hold“ function

4.3.1.1 RESETTING INTERNAL VALUES



CLERr	Resetting internal values of the instrument
CL.n.n.	Resetting minimum and maximum measuring value
CL.tAR.	Tare resetting

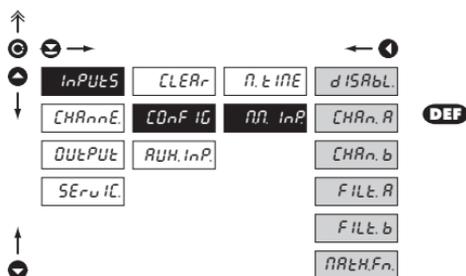
4.3.1.2.1 SETTING THE TIME OF MEASUREMENT/TIME BASE



n.t.nE Setting the period of data reading

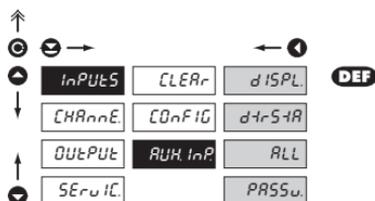
- setting the period of data reading from subordinate instrument in the READ mode

4.3.1.2.2 SETTING THE INPUT FILTER PARAMETERS


n. InP Setting the input
 „quantity“ for evaluation
 of the min/max. value

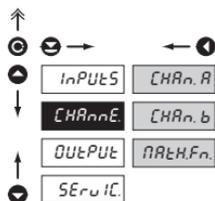
d ISAbL.	Min/max value is switched-off
CHAn. A	From Channel A value
CHAn. b	From Channel B value
FILt. A	From filtered value of Channel A
FILt. b	From filtered value of Channel B
MATH.Fn.	From mathematic function

4.3.1.3 SETTING THE AUXILIARY INPUT


AUH. InP Setting the auxiliary
 input - the HOLD function

d ISPL.	HOLD blocks only display
d rS rA	HOLD blocks the display, data and analog output
ALL	HOLD blocks the entire instrument
PASSw.	HOLD blocks the access into „Configuration menu“, access password cannot be set

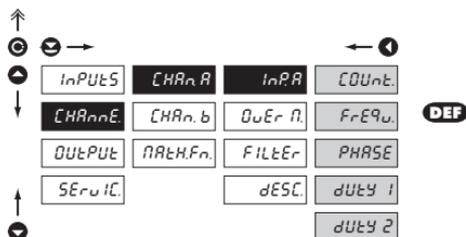
4.3.2 CONFIGURATION MODE - CHANNELS



Here the basic parameters of the instrument input values are set

CHAn.A	Setting the parameters and range of the meas. channel
CHAn.b	Function is not supported in RS monitor
PAth.Fn	Setting the instrument mathematic functions

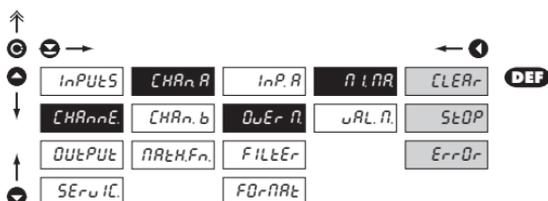
4.3.2.1.1 SETTING THE MEASURING „CHANNEL A“



SEt A Setting the input parameters of channel A

COUnT.	Function is not supported in RS monitor
FrEQ.	Fixed setting for RS monitor
PHASE	Function is not supported in RS monitor
dUTY 1	Function is not supported in RS monitor
dUTY 2	Function is not supported in RS monitor

4.3.2.1.2 FUNCTIONS UPON READING THE DISPLAY/VALUE



! Function is not supported in RS monitor

nI.nR Setting the instrument status when reading the display

CLEAR The instrument is automatically set to zero and counts on

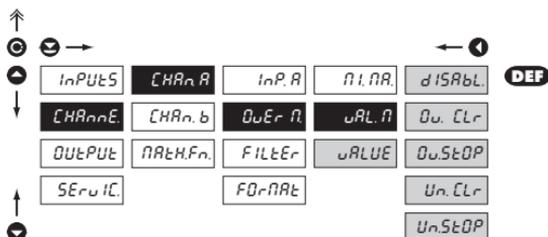
StDP The measuring stops

- the display continues showing the max. resp. min. projectable value

ErrDr Measuring stops

- the display shows error statements „E.UND.“ or „E.OVER.“

4.3.2.1.3 EXTENDED FUNCTION UPON OVERFLOWING THE DISPLAY/VALUE



uAL.n Setting the instrument status upon reaching the set display value

dISAbL Instrument is automatically reset and counts on

OU. CLR Display is reset upon overflow

OUStDP Measuring stops upon overflow

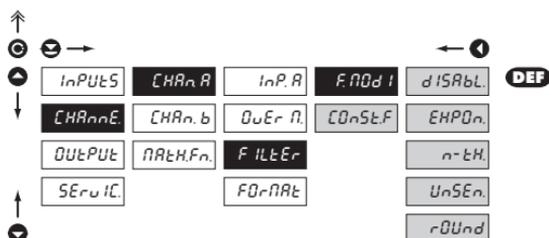
Un. CLR Display is reset upon underflow

UnStDP Measuring stops upon underflow

Above referred-to functions apply for the value set in menu „VALUE“

uALUE Display value after evaluation „VAL. M.“

4.3.2.1.4 SETTING THE DIGITAL FILTERS

**FADd.1** Setting the digital filters

- into the filter enter values adjusted from „SET. A”

CONSt.F Setting the filtration constants

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

dISAbL. Filters are turned off

EHPDn Selection of exponential filter

- value is calculated from a number of measurements selected in „CONSt. F”

n-tH Selection of n-th value

- this filter allows to leave out n-1 values and for further projection use every n-th measured value

- range 2...100 measurements

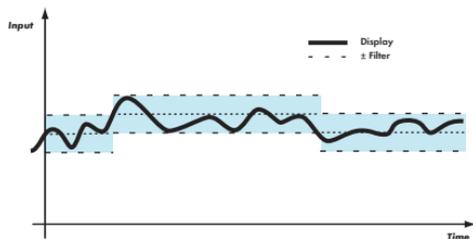
USEn. Setting the band of insensitiveness

- this filter allows to stabilize the resultant value. The previous value is taken as the measuring result, if the measured value is not larger than the previous + P or smaller than the previous - P. The value „±P” defines the band of insensitiveness in which the measured value can be changed without the change having any impact on the result - change of data on the display

- range 0,00001...100 000

rOUnd Rounding of the measured value

- it is set by an optional number which determines the projection step (e.g. step 2,5 - 0, 2,5, 5, 7,5, etc.)



4.3.2.1.5 PROJECTION FORMAT

↑	⊖ →			← ⊖	
⊖		INPUTS	CHAR.A	InP.A	000000 DEF
⊖		CHAR.nE	CHAR.n.b	OUER.n	000000
		OUTPUT	NRtH.Fn	FILtEr	0000.00
		SERuIC		FDRNRt	000.000
					00.0000
					0.00000
					FLOARt.P

FDRNRt

Setting the projection format for Channel A

- the instrument enables projection of a number with decimal positioning of the decimal point and projection with floating point, which allows projection of numbers in the most precise form „FLOAT. P.“
- for the projection of time there are also other forms of projection

! So that the evaluation of limits and analog outputs was not restricted it is required to enter projection in the format FLOAT.P, i.e. w/o fixed decimal point

4.3.2.2.1 MATHEMATIC FUNCTIONS

↑	⊖ →			← ⊖	
⊖		INPUTS	CHAR.A	NRtH.F	OFF DEF
⊖		CHAR.nE	CHAR.n.b	CONSt.A	POL in.
		OUTPUT	NRtH.Fn	CONSt.b	1/POL
		SERuIC		CONSt.C	LOGAR.
				CONSt.d	
				CONSt.E	
				CONSt.F	
				FDRNRt	

NRtH.F

Selection of mathematic functions

CONSt.-

Setting the constants for calculation of mat. functions

- this menu is displayed always after selection of particular mathematic functions with the option to set constants A, B, C, D, E or F

OFF

Mathematic functions are off

POL in

Polynome

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

1/POL

1/x

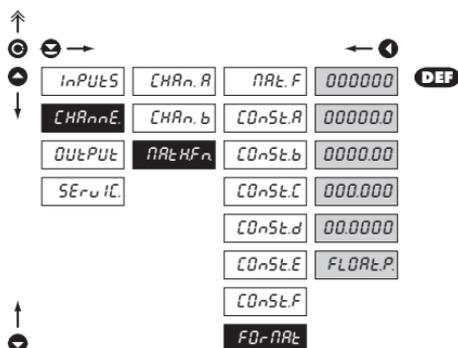
$$\frac{A}{x^3} + \frac{B}{x^4} + \frac{C}{x^3} + \frac{D}{x^2} + \frac{E}{x} + F$$

LOGAR.

Logarithm

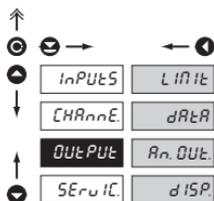
$$A \times \ln\left(\frac{Bx + C}{Dx + E}\right) + F$$

4.3.2.2.2 MATHEMATIC FUNCTIONS - PROJECTION FORMAT


F0-PRJ Setting the format of projection on display for „MATH.FN“

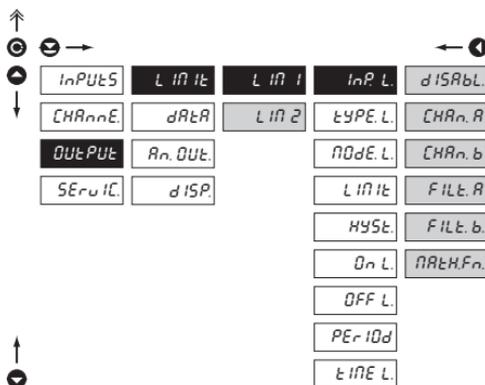
- the instrument enables classic projection of a number with positioning of the decimal point (000000/000000,0/.../0,00000) and projection with floating point, which allows projection of numbers in its most precise form „FLOAT.P.“

4.3.3 CONFIGURATION MODE - OUTPUT



- LImIt** Setting the functions and type of limits switch-on
- dRAr** Setting the type and parameters of data output
- An. OUt.** Setting the type and parameters of analog output
- dISP.** Setting the permanent and temporary projection on display and adding another projection of internal data on arbitrary keys of instrument

4.3.3.1.1 LIMITS - SETTING DATA FOR EVALUATION



InP.L. Setting the input „quantities“ for limits evaluation

- dISAbL.** The limit will not be evaluated
- CHAn.A** The limit will be evaluated from output of „Channel A“
- CHAn.b** Function is not supported in RS monitor
- FILt.A** The limit will be evaluated from output of „Channel A“ after their modification by digital filters
- FILt.b** Function is not supported in RS monitor
- nARtHFn.** The limit will be evaluated from the mathematic functions output

4.3.3.1.2 LIMITS - SETTING THE TYPE OF LIMITS

INPUTS	L IN 1t	L IN 1	InP.L.	HYS tEr.	DEF
CHARnNE	dARtR	L IN 2	tYPE.L.	FrDn	
OUTPUtE	An. OUT.		nOdE.L.	dOS InG	
SERuIC.	dISP.		L IN tE.		
			HYS t.		
			On L.		
			OFF L.		
			PERIOD		
			tINE L.		

tYPE.L. Setting the type of limits

HYS tEr. The limit has a boundary, hysteresis and delay

- for this regime we set the parameters „LIMIT“, at which the limit shall react and is adjustable in full range of the display, „HYST.“ is an auxiliary parameter preventing the vibration at unsteady value and is adjustable only in plus values. The limit parameter is „TIME L.“ determining the delay of relay switch-on from exceeding the set boundary in range 0,0... 99,9 s

FrDn The limit is in the switch-on regime „from - to“

- for this regime we set parameters „ON L.“ and „OFF L.“ adjustable in full range of the display between which the limit shall be switched on

dOS InG The limit is in the regime „dosing“

- in this regime we set two parameters „PERIOD“ in full range, determining at which value the relay shall switch on and by how much higher shall be the next value. Second parameter is „TIME L.“ in range 0,0... 99,9 s determining the time for which the relay shall be switched on. Upon resetting the counter to zero the value is set, at which the relay shall switch on to value „PERIOD“

4.3.3.1.3 LIMITS - SETTING THE RELAY MODE

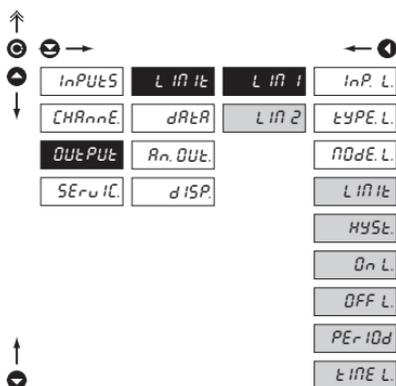
INPUTS	L IN 1t	L IN 1	InP.L.	CLOSE	DEF
CHARnNE	dARtR	L IN 2	tYPE.L.	OPEN	
OUTPUtE	An. OUT.		nOdE.L.		
SERuIC.	dISP.		L IN tE.		
			HYS t.		
			On L.		
			OFF L.		
			PERIOD		
			tINE L.		

nOdE.L. Setting the relay switching mode

CLOSE The relay switches on when the condition is met

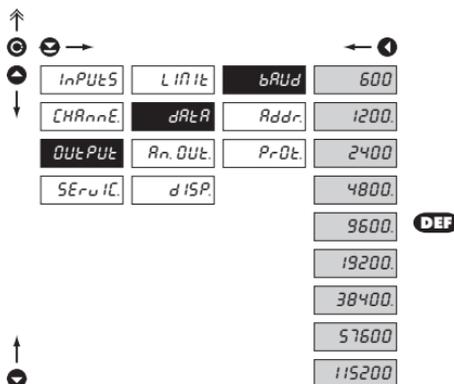
OPEN The relay switches off when the condition is met

4.3.3.1.4 LIMITS - SETTING THE BOUNDARIES

**L IN -** Setting the values for limits evaluation

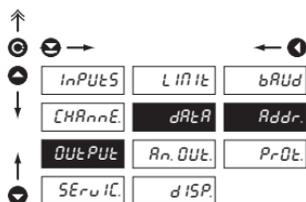
- L IN 1t** Setting limit for relay switch on
 - in full display range
- HYS1t** Setting hysteresis only in (+) values
 - in 1/10 of the display range
- ON L.** Setting the beginning of the range of limit switch-on
 - in full display range
- OFF L.** Setting the end of the range of limit switch-on
 - in full display range
- PERIOD** Setting the period of the limit switch-on
 - in full display range
- TIME L.** Setting the delay of the limit switch-on
 - in range 0...99,9 s

4.3.3.2.1 DATA OUTPUT - SETTING THE TRANSMISSION RATE

**bAUD** Setting the rate of data output (baud)

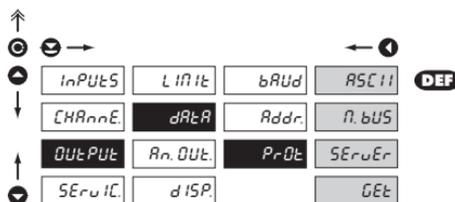
- 600** Rate - 600 Baud
- 1200** Rate - 1 200 Baud
- 2400** Rate - 2 400 Baud
- 4800** Rate - 4 800 Baud
- 9600** Rate - 9 600 Baud
- 19200** Rate - 19 200 Baud
- 38400** Rate - 38 400 Baud
- 57600** Rate - 57 600 Baud
- 115200** Rate - 115 200 Baud

4.3.3.2.2 DATA OUTPUT - SETTING THE INSTRUMENT ADDRESS

**Addr.** Setting the instrument address

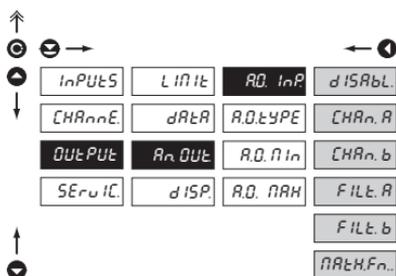
- setting in the range of 0...31
- manufacture setting 00 **DEF**

4.3.3.2.3 DATA OUTPUT - SETTING THE DATA PROTOCOL

**PrOt.** Setting the type of the data protocol

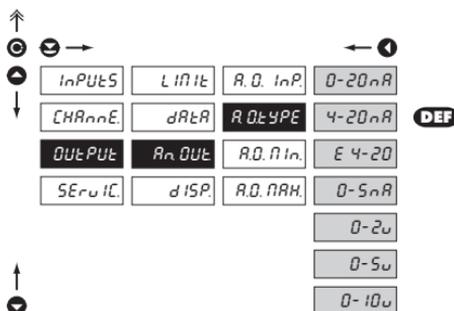
- ASCI I** ASCII protocol
- PrOt.** DIN MessBus protocol
- SErvice** Instrument sends the display value
 - by entering command "9X" the data is sent to the instrument with address by one higher than the actual one (for address 19 to 10, for 26 to 30)
 - communication in the ASCII format
- GEt** Instrument requires data from the subordinate system
 - standard inquiry in ASCII, #AA<cr>, where AA is the instrument address
 - receive data >R DDDDD<cr> >flag for the use of the R value sent and the space are ignored; DDDDD is a number containing figures and DP or sign
 - in the FREQUENCY mode the Channel A value is substituted with the data received with prospective further processing (filter, math. functions)
 - reading is performed at intervals preset in the menu M.time

4.3.3.3.1 ANALOG OUTPUT - SETTING THE DATA FOR EVALUATION


RD.InP Setting the input
 „quantity“ for evaluation
 of the analog output

dISAbL.	AO will not be evaluated
CHAn.R	AO will be evaluated from output of „Channel A“
CHAn.b	Function is not supported in RS monitor
FiLr.R	AO will be evaluated from output of „Channel A“ after their modification by digital filters
FiLr.b	Function is not supported in RS monitor
NRtHFn.	AO will be evaluated from the mathematic functions output

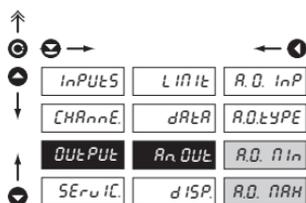
4.3.3.3.2 ANALOG OUTPUT - SETTING THE TYPE


RD.tYPE Setting the type of analog
 output

- current and voltage outputs are galvanically separated

0-20mA	Output: 0...20 mA
4-20mA	Output: 4...20 mA
E 4-20	Output: 4...20 mA with Error status indication
- upon this Error statement the output value is < 3,6 mA	
0-5mA	Output: 0...5 mA
0-2V	Output: 0...2 V
0-5V	Output: 0...5 V
0-10V	Output: 0...10 V

4.3.3.3.3 ANALOG OUTPUT - SETTING THE RANGE



Rn OUT Setting the range of the analog output

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

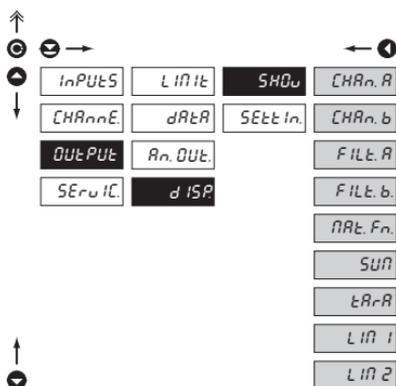
R.O. nIn Assigning the display value to the beginning of the range of the analog output

- range of the setting is -99 999...100 000

R.O. nRH Assigning the display value to the end of the range of the analog output

- range of the setting is -99 999...100 000

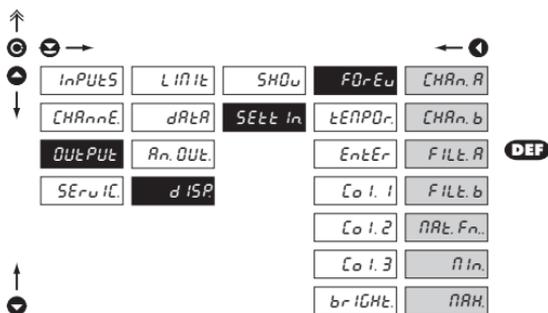
4.3.3.4 PROJECTION ON THE DISPLAY



SHOW In this menu item the following data may be projected

CHAn. A	Value of „Channel A“
CHAn. b	Function is not supported in RS monitor
FILt. A	Value of „Channel A“ after filtration
FILt. b	Function is not supported in RS monitor
nARt. Fn.	Value of „Mathematic functions“
SUN	Function is not supported in RS monitor
tAR	Tare value
L IN 1	Value of „Limit 1“
L IN 2	Value of „Limit 2“

4.3.3.4.1 PROJECTION ON THE DISPLAY - PERMANENT



FDREU Selection of values for permanent projection on the instrument display

CHAn. A	Value of „Channel A“
CHAn. b	Function is not supported in RS monitor
FILt. A	Value of „Channel A“ after filtration
FILt. b	Function is not supported in RS monitor
nARt. Fn.	Value of „Mathematic functions“
n In	Minimum value
nRH	Maximum value

! Permanent projection is transcribed with data from RS

4.3.3.4.2 DISPLAY PROJECTION - AFTER PRESSING „LEFT“

↑	←					
⊙	→			←	⊙	
↑		INPUTS	LIMIT	SHOW	FDREU	CHAR.A
↓		CHARnnE	dARA	SEtEt In	tENPQR	CHAR.b
		OUtPUt	An.OUt		EntEr	FILE.A
		SERuIC	dISP		COL.1	FILE.b
					COL.2	MAT.Fn
					COL.3	SUN
					brIGHt	tARr
						LIM 1
						LIM 2
↑	⊙					

tENPQR Projection of temporary value

- in this menu the value for temporary projection on the display may be selected (after pressing ⊙), which is displayed for approximately 2 s, with flashing decimal point

DEF

CHAR.A	Value of „Channel A“
CHAR.b	Function is not supported in RS monitor
FILE.A	Value of „Channel A“ after filtration
FILE.b	Function is not supported in RS monitor
MAT.Fn	Value of „Mathematic functions“
SUN	Function is not supported in RS monitor
tARr	Tare value
LIM 1	Value of „Limit 1“
LIM 2	Value of „Limit 2“

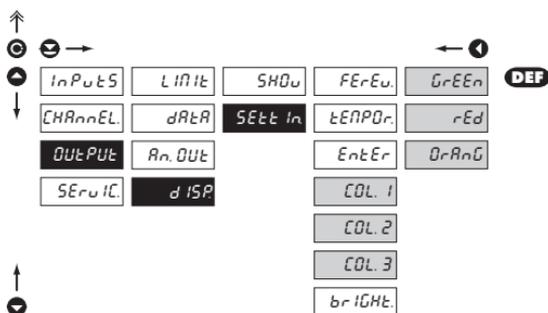
4.3.3.4.3 DISPLAY PROJECTION - AFTER PRESSING THE KEY „ENTER“

↑	←					
⊙	→			←	⊙	
↑		INPUTS	LIMIT	SHOW	FDREU	OFF
↓		CHARnnE	dARA	SEtEt In	tENPQR	tARr
		OUtPUt	An.OUt		EntEr	St.St.
		SERuIC	dISP		COL.1	SHOW
					COL.2	CL.CDU
					COL.3	
					brIGHt	
↑	⊙					

EntEr Assigning function to the key „ENTER“

OFF	The key has no function
tARr	Display taring
St.St.	Function is not supported in RS monitor
SHOW	Function is not supported in RS monitor
CL.CDU	Function is not supported in RS monitor

4.3.3.4.4 SETTING DISPLAY COLOR

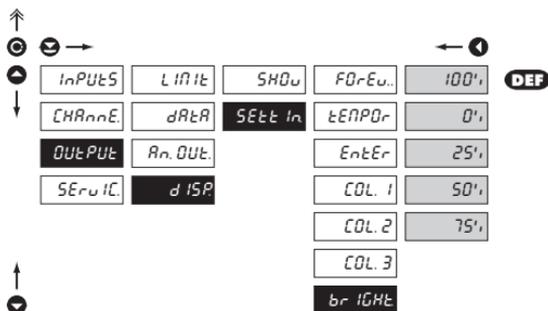


COL. - Setting display color

GREEN	Green
RED	Red
ORANGE	Orange
COL. 1	Setting display color for permanent projection
COL. 2	Setting display color for description
COL. 3	Setting display color for temporary projection

! Only for 3-color version

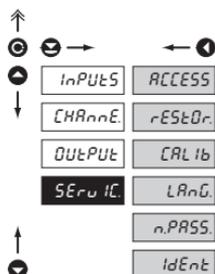
4.3.3.4.5 SETTING THE DISPLAY BRIGHTNESS



BRIGHT. Setting the display brightness

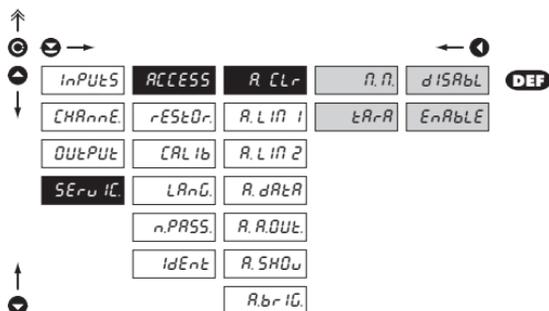
100%	Brightness 100%
0%	Brightness 0%, display is switched off
- display switches off after approx. 10 s and switches on after pressing any key	
25%	Brightness 25%
50%	Brightness 50%
75%	Brightness 75%

4.3.4 CALIBRATION MODE - SERVICE



ACCESS	Setting the access rights for „User mode“
rESTDr.	Return to manufacture calibration or setting
CLib	Instrument calibration
LANG.	Setting the language version
nPASS.	Change of the access password
IdEnt	Instrument identification

4.3.4.1.1 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - RESETTING TO ZERO



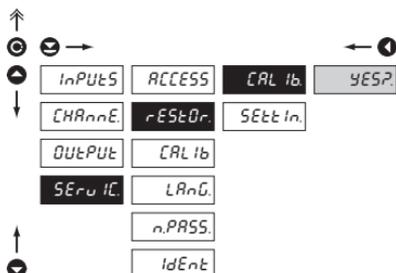
R CLR Authorization for resetting the internal values of the instrument to zero

n.n.	Authorization for item „CL. MM“, permission to reset the Min/max. value to zero
tARr	Authorization for item „CL. TAR.“, permission to reset the tare to zero

In all items the following parameters may be selected

dISAbL	The item is not projected in the „UM“
EnAbLE	The item may be reset to zero

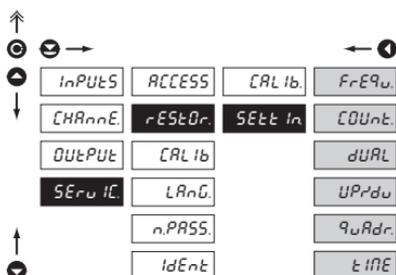
4.3.4.2 RETURN TO MANUFACTURE CALIBRATION/SETTING



rEStOr. Return to manufacture calibration and instrument 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 choice „Yes?“

CAL Ib Return to manufacture calibration of the instrument



SEtIn Return to manufacture setting

- reading the manufacture calibration and basic setting of items in the menu (DEF)

FrEQU Manufacture pre-setting for Frequency measurement

COUnT Manufacture pre-setting for counter

dUAL Manufacture pre-setting for „DUAL“

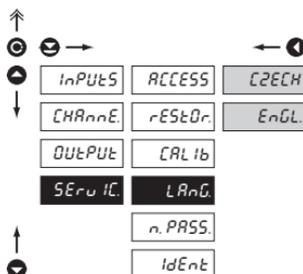
UP/dw Manufacture pre-setting for „UP/DW“

qUAdr Manufacture pre-setting for „Counter - IRC“

tIME Manufacture pre-setting for „Watch/stop-watch“

! Function is not supported in RS monitor

4.3.4.3 LANGUAGE VERSION FOR THE INSTRUMENT MENU

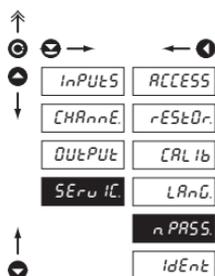


LAnG Setting the language version of the instrument menu

CZECH The instrument menu is in Czech language

EnGL The instrument menu is in English language

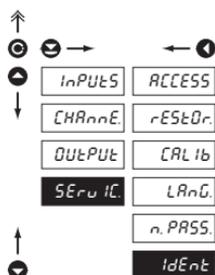
4.3.4.4 SETTING NEW ACCESS PASSWORD


n.PASS Setting new access password for „Configuration menu“

- this selection allows to change the numeric code which blocks the access into the „Configuration mode“ of the instrument. Range of the numeric code is 0...9999

 The code is always preset from manufacture to 0000. In case of loss of access password it is possible to use universal access code "8177"

4.3.4.5 INSTRUMENT IDENTIFICATION


IdEnt Projection of the instrument version

- the display shows the type identification of the instrument with the inspection number
- name of the instrument - measuring mode - version SW + hour SW - date (DD/MM/YY)

5. TABLE OF SYMBOLS

The instrument allows to add two descriptive characters to the classic numeric formats (at the expense of the number 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	,	-	.	/	8	()	*	+	,	-	.	/
16	0	1	2	3	4	5	6	7	16	0	1	2	3	4	5	6	7
24	8	9	:	;	<	=	>	?	24	8	9	:	;	<	=	>	?
32	J	K	L	M	N	O	P	Q	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	'	R	b	c	d	E	F	G	64	`	a	b	c	d	e	f	g
72	h	i	j	k	l	n	n	o	72	h	i	j	k	l	m	n	o
80	P	q	r	s	t	u	u	u	80	p	q	r	s	t	u	v	w
88	H	y	z	{		}	~		88	x	y	z	{		}	~	

6. DATA PROTOCOL

The instruments communicate via serial line RS232 or RS485. For communication they use either ASCII protocol or DIN MessBus protocol. The communication is running in the following format:

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

Transmission rate is adjustable in the instrument menu and depends on the used control processor. The instrument address is in the instrument menu in the range of 0...31. Manufacture setting always presets the ASCII protocol, rate of 9600 Baud, address 00. Type of line used - RS232 / RS485 - is determined by exchangeable card automatically identified by the instrument.

COMMANDS FOR INSTRUMENT OPERATION

The commands are described in the description which can be found at www.orbit.merret.cz/rs. The command consists of a couple number-letter, where the letter size is of importance.

Symbol	Meaning	Symbol	Meaning
	Send unit value	C	Complete number
	Set unit value	V	Selection = complete number
	Perform relevant action	D	Decimal number
		T	Text - printable ASCII characters
		H	Intel HEX format

COMMANDS NOT LISTED IN THE MENU

1M		Send minimum value
2M		Send maximum value
1X		Send display value, data format „R <SP> DDDDDDDD“
2X		Send relay status, the instrument responds in series of digits 0,1 in the order from 1st relay <i>1 means the relay is on, relays not used send back X</i>
3X		Send the status of auxiliary inputs
1Z		Send HW instrument configuration
1x		Send output value from filter of Channel A
2x		Send output value from filter of Channel B
9x		Send output value of mathematic functions

Detail description of communication via serial line

Action	Type	Protocol	Transmitted data													
Soliciting data (PC)	232	ASCII	#	A	A	<CR>										
		MessBus	Not present - data is transmitted permanently													
	485	ASCII	#	A	A	<CR>										
		MessBus	<SADR>	<ENQ>												
Sending data (OM)	232	ASCII	>	D	D	D	D	D	D	D	(D)	(D)	(D)	<CR>		
		MessBus	<SADR>	D	D	D	D	D	D	D	(D)	(D)	(D)	<ETX>	<BCC>	
	485	ASCII	>	D	D	D	D	D	D	D	(D)	(D)	(D)	<CR>		
		MessBus	<SADR>	D	D	D	D	D	D	D	(D)	(D)	(D)	<ETX>	<BCC>	
Confirmation of data receipt (PC)	232	ASCII														
		MessBus														
	485	ASCII														
		MB	ok	<DLE>	1											
		bad	<NAK>													
Sending address (PC) Prior command	232	ASCII														
		MessBus														
	485	ASCII														
		MessBus	<EADR>	<ENQ>												
Address confirmation (OM)	232	ASCII														
		MessBus														
	485	ASCII														
		MessBus	<SADR>	<ENQ>												
Sending command (PC)	232	ASCII	#	A	A	C	P	D	D	D	D	(D)	(D)	(D)	<CR>	
		MessBus	<STX>	\$	C	P	D	D	D	D	(D)	(D)	(D)	<ETX>	<BCC>	
	485	ASCII	#	A	A	C	P	D	D	D	D	(D)	(D)	(D)	<CR>	
		MessBus	<STX>	\$	C	P	D	D	D	D	(D)	(D)	(D)	<ETX>	<BCC>	
Command confirmation (OM)	232	A	ok	!	A	A	<CR>									
			bad	?	A	A	<CR>									
		MessBus	Not present - data is transmitted permanently													
	485	A	ok	!	A	A	<CR>									
			bad	?	A	A	<CR>									
		MB	ok	<DLE>	1											
		bad	<NAK>													

Legenda				
#		35	23 _H	Začátek příkazu
A	A	0...31		Dva znaky adresy přístroje (posílané v ASCII - desítky a jednotky, př. "01")
<CR>		13	0D _H	Carriage return
<SP>		32	20 _H	Mezera
Č	P	Číslo a příkaz - kód příkazu		
D		Data - obvykle znaky "0"... "9", ":", " ", " "; (D) - dt. a (-) může prodloužit data		
R		30 _H ...3F _H		Stav relé; prvnímú relé odpovídá nulý bit, druhému první bit, atd...
!		33	21 _H	Kladné potvrzení příkazu (ok)
?		63	3F _H	Záporné potvrzení příkazu (bad)
>		62	3E _H	Začátek vysílaných dat
<STX>		2	02 _H	Začátek textu
<ETX>		3	03 _H	Konec textu
<SADR>		adresa + 60 _H		Výzva k odeslání dat z adresy
<EADR>		adresa + 40 _H		Výzva k přijetí příkazu na adrese
<ENQ>		5	05 _H	Ukončení adresy
<DLE>	1	16, 49	10 _H , 31 _H	Potvrzení správné zprávy
<NAK>		21	15 _H	Potvrzení chybné zprávy

Commands in RS monitors

- 9D XXXXX Projection
- displays value and the point joins the previous symbol
- 9C BBBB Color setting
- B 1 red
2 green
3 orange
- 9B HHH Setting the display flashing
- 0...255, sum of the values of the following table
128 points flashing
64 1. symbol
32 2. symbol
16 3. symbol
8 4. symbol
4 5. symbol
2 6. symbol
- 9L HHH Setting the LED flashing
- 32 lower right
16 upper right
2 lower left
1 upper left

7. ERROR STATEMENTS

ERROR	REASON	ELIMINATION
<i>E. Und</i>	range underflow (A/D converter)	change the input signal value or change display projection
<i>E. OoEr</i>	range overflow (A/D converter)	change the input signal value or change display projection
<i>E. nAeH</i>	mathematic error, range of projection is out of display	change the set projection
<i>E. dAeR</i>	violation of data integrity in EEPROM, error upon data storage	in case of recurring report send the instrument for repair
<i>E. nEeR</i>	EEPROM error	the „Def“ values will be used in emergency, instrument needs to be sent for repair

8. TECHNICAL DATA

INPUT

Protocols:	ASCII; DIN MESSBUS
Data format:	8 bit + no parity + 1 stop bit (ASCII) 7 bit + even parity + 1 stop bit (DIN MESSBUS)
Rate:	150...115 200 Baud
RS 232:	isolated, two-way communication
RS 485:	isolated, two-way communication, addressing (max. 31 instruments)

PROJECTION

Display:	9999 for 4 digit 999999 for 6 digit red/green/orange 7-segment LED, - digit height of 57 or 125 mm red or green 7-segment LED, - digit heights! 100 mm 2x red LED - status of limits 2x green LED - tare, mat. functions
Projection:	-99999...999999
Decimal point:	adjustable - in programming mode
Brightness:	adjustable - in programming mode

INSTRUMENT ACCURACY

Temp. coefficient:	25 ppm/°C
Time base:	0,05/0,5/1/2/5/10/20/50 s
Type of filter:	sampling
Pre-setting:	-99999...999999
Functions:	Hold - stop measuring (upon contact) Locking the keyboard (upon contact)
Watch-dog:	reset after 1,2 s
Calibration:	at 25°C and 40 % r.h.

COMPARATOR

Type:	digital, adjustable in the menu
Limits:	-99999...999999
Hysteresis:	0...999
Delay:	0...99,9 s
Outputs:	2x relays with switch contact (230 VAC/50 VDC, 3 A)*
Relay:	1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300

DATA OUTPUTS

Protocols:	ASCII
Data format:	8 bit + no parity + 1 stop bit (ASCII)
Rate:	150...115 200 Baud
RS 232:	isolated, two-way communication
RS 485:	isolated, two-way communication, addressing (max. 31 instruments)

ANALOG OUTPUTS

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

EXCITATION

Adjustable:	2...24 VDC/50 mA, isolated
-------------	----------------------------

POWER SUPPLY

Options:	24/110/230 VAC, 50/60 Hz, ±10 %, 15 VA 10...30 VDC/max. 2 A, isolated
Protection:	bny a fuse inside the instrument VAC (T 80 mA), VDC (T 4 A)

MECHANIC PROPERTIES

Material:	anodized aluminum, black
Dimensions:	see chapter 9
Panel cut-out:	see chapter 9

OPERATING CONDITIONS

Connection:	through cable bushings to terminal boards inside the instrument, conductore section up to 2,5 mm ²
Stabilization period:	within 15 minutes after switch-on
Working temp.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP64
Construction:	safety class I
Overvoltage cat.:	EN 61010-1, A2 III. - instrument power supply (300 V) II. - input, output, excitation (300 V) for pollution degree II
EMC:	EN 61000-3-2+A12; EN 61000-4-2, 3, 4, 5, 8, 11; EN 550222, A1, A2

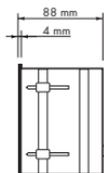
* values apply for resistance load

9. INSTRUMENT DIMENSIONS AND INSTAL.

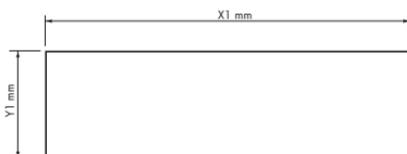
Front view



Side view



Panel cut-out



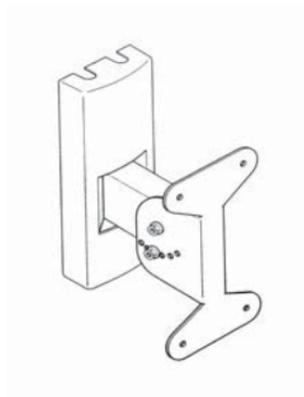
Height	X	Y	X1	Y1
57	372	116	364	108
100-4	465	181	457	173
100-6*	677	181	669	173
100-6	647	181	639	173
125-4	539	237	531	228
125-6	754	237	746	228

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.



10. CERTIFICATE OF GUARANTEE

Product **OMD 201 RS**
 Type
 Manufacturing No.
 Date of sale

A guarantee period of 24 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 instrument quality, function and construction the guarantee shall apply provided that the instrument was connected and used in compliance with the instruction for use.

The guarantee shall not apply for defects caused by:

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

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

Stamp, signature

DECLARATION OF CONFORMITY

posouzení shody podle §12, par. 4 b, d Act No.. 22/1997 Sb.

Company: **ORBIT MERRET, spol. s r.o.**
Klánova 81/141, 142 00 Prague 4, Czech Republic, IDNo: CZ00551309

Manufactured: **ORBIT MERRET, spol. s r.o.**
Vodňanská 675/30, 198 00 Prague 9, Czech Republic

The manufacturer declares at its full responsibility that the product presented hereunder meets all technical requirements, is safe for use when used under the terms and conditions determined by ORBIT MERRET, spol. s r.o., and that our company has taken all steps to ensure conformity of all products of the type referred to below, which are being brought out to the market, with technical documentation and requirements of the appurtenant Ordinance.

Product: 6 -digit Large displays

Type: **OMD 201**

Version: DC, PM, PWR, RTD, T/C, DU, OHM, UQC, RS

Conformity is assessed pursuant to the following standards:

Electrical safety:	EN 61010-1
EMC:	EN 50131-1, par. 14 and par. 15
	EN 55022
	EN 61000-3-2 +A12:1997, Cor. 1:1998, change A1, A2:1999
	EN 61000-3-3:1997, Cor. 1:1998
	EN 61000-4-2
	EN 61000-4-3
	EN 61000-4-4
	EN 61000-4-5
	EN 61000-4-6
	EN 61000-4-8
	EN 61000-4-11, par. 5.2
	EN 61000-4-11, par. 5.1
	EN 61000-3-2 +A12, Cor.1, change A1, change A2

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

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