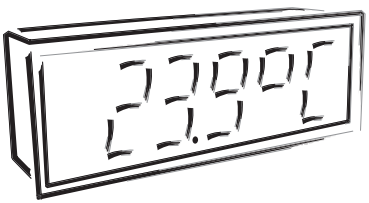
GUARANTEE 2 YEARS

OMD 201

4/6 DIGIT PROGRAMMABLE
LARGE DISPLAY

IMPULSE COUNTER
FREQUENCY-/PHASE-/PERIOD-METER
STOP-WATCH/WATCH



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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1. CONTENS

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

Measuring modes

SINGLE	Single-channel counter/frequency meter/phase/repeat	S
UP/DW	Single-channel UP/DW counter/frequency meter	U/D
DUAL	Double-channel counter/frequency meter	D
QVADR	Counter/frequency meter for IRC sensors	Q
Stop-watch	Watch/stop-watch	H

Programmable display projection

Calibration	calibration coefficient may be set in „CM" independently for every channel
Projection	-99999...999999 with fixed or floating DP in adjustable format 10/24/60
Measuring channels	A and B, two independent functions may be evaluated from each input
Time base:	0,05/0,5/1/2/5/10/20/50 s

Digital filters

Input filter:	the instrument allows to filter the input signal and thus suppress undesirable interfering signals (e.g. relay back-swings). The set parameter indicates maximum possible measured frequency, that the instrument will process, 10 Hz...2 kHz
Exponential average	from 2...100 measurements
n-th value	from 2...100 measurements
Radius of insensitiveness	adjustable in digits

Functions

Preset	initial non-zero value which is read always after instrument resetting
Summation	registration of the number upon shift operation
Interface constant	increases calibration constant 1/10/60/100/1000/3600
Min/max. value	registration of min./max. value reached during measurement
Tare	assigned to reset the display upon non-zero input signal
Top value	only max. (min.) value is displayed
Rounding	setting the projection step for the display
Mathem. operation	between inputs A a B, A+B, A-B, A*B, A/B, (A-B)/B, Polynome, 1/x, Logarithm

** These instruments have separate instructions for use*

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.

EXTENSION

Excitation is suitable for feeding of sensors and converters. It has a galvanic isolation with continuously adjustable value in the range of 2...24 VDC

Comparators are assigned to control two limit values with relay output. The limits have adjustbale hysteresis as well as selectable delay of the switch-on. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

Data outputs are for their rate and accuracy suitable for transmission of measured data for further projection or directly into the control systems. We offer isolated RS232 and RS485 with the DIN-MessBus /ASCII protocols.

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.

Time back-up by the RTC circuit is designed for the „Stop-watch" measuring mode and secures time measurement even when the instrument is switched off (without projection on the display).

FIRMWARE *www.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 of course 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.

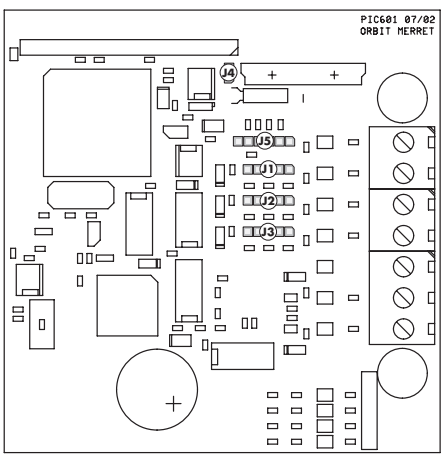
J1 - Input "A"
J2 - Input "B"
J3 - Input "Reset C"

	L > H	H > L	Typ
*not**	1,7 V	2,4 V	TTL
1 - 2	contact	contact	NPN
3 - 4	9,4 V	13,0 V	(PNP)
4 - 5	4,7 V	6,7 V	PNP

** open input may by itself read impulses, signal has to be connected*

J4 - Connection of 3 V battery

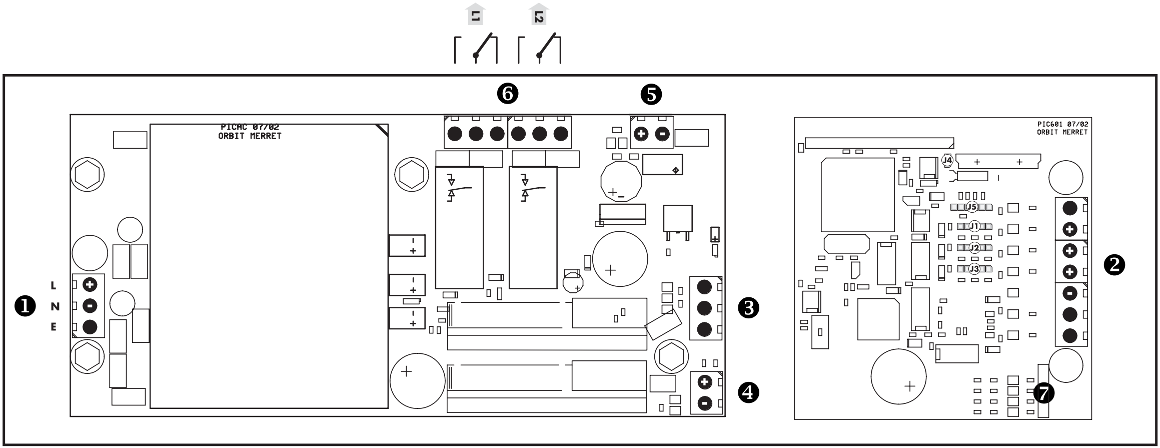
not	OFF
1 - 2	ON



! *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*



❶ Power supply

❷ Input

UQC

- not
- INPUT A
- INPUT B
- INPUT C/Reset
- GND
- Hold
- Lock

RS

- Rx/Tx+ (485)
- Rx/Tx- (485)
- RxD (232)
- TxD (232)
- GND
- Hold
- Lock

❸ Data output

232	485
RxD	Rx/Tx+
TxD	Rx/Tx-
GND	GND

❹ Analog output

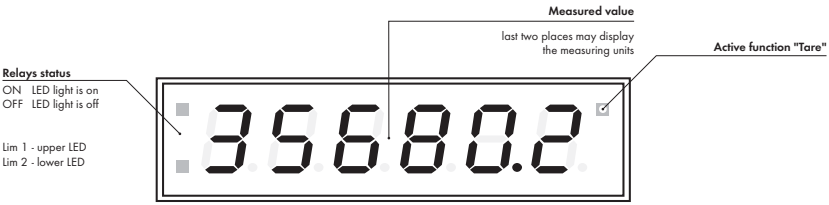
❺ Excitation

❻ Relays

❼ Connection of control keyboard

4. INSTRUMENT SETTING

The instrument is set and controlled by 4 control keys located on the front panel. By means of these control keys it is possible to browse through the operting 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

DEF Items indicated this way are preset from manufacture

S U/D D Q H Indicates the setting for given type of instrument

CONTROL KEYS FUNCTIONS

MENU	ENTER	LEFT	UP
Measuring mode			
menu access	tare	temporary value	min/max value
Moving around in the menu			
exit the menu without saving	move to next level	back to previous level	move to enxt 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 edited number in the menu the decimal point is set by key ◀ with transition beyond the highest decade, when the decimal point starts flashing. Positioning is performed by ▲, and confirmation by ▼ with return into number editing.

Decimal point for display projection is set in item „CHAN. A - FORMAT" and „CHAN. B - FORMAT" by selection from preset values.

MINUS SIGN

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

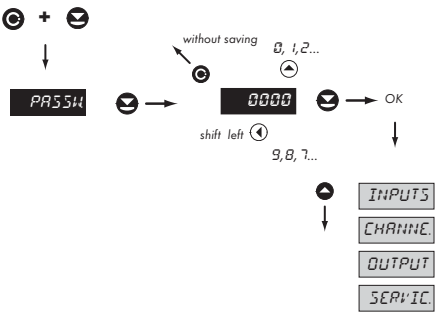
The minus sign is in numeric row (0, 1, 2, 3...9, –).

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

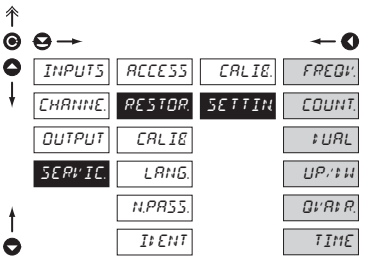


The code is always preset from manufacture to 0000. In case of loss of access password it is possible to use universal access code "8177"

4.1 MINIMUM INSTRUMENT SETTING

All settings are performed in the „Configuration menu"

❶ Presetting values in the menu



SETTIN **Return to manufacture setting**

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

FREQV Manufacture setting for Frequency measurement

COUNT. Manufacture setting for counter

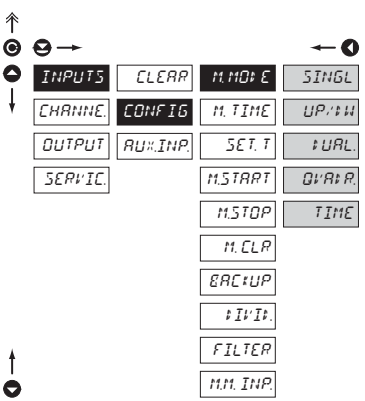
↕UAL Manufacture setting for „DUAL"

UP/↕W Manufacture setting for „UP/DW"

OVAR Manufacture setting for„Counter - IRC"

TIME Manufacture setting for „Watch/stop-watch"

❷ Selecting the measuring mode



M.MOD↕E **Setting the instrument measuring mode**

SINGL Single impulse counter/ frequency meter

- *measures at input A and may display numbers/frequency (phase/repeat)*

UP/↕W UP/DW impulse counter/ frequency meter

- *measures at inputs A, B (direction) and may display numbers/frequency*

↕UAL. Dual impulse counter/ frequency meter

- *measures at two inputs and may display numbers/frequency*

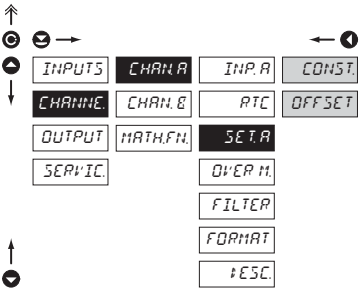
OVAR. Impulse counter/frequency meter for IRC sensors

- *measures at two inputs A+B and may display numbers/frequency*

TIME Stop-watch/watch

- *control at input B*

❸ Setting display projection



SET.A **Setting basic parameters of channel A**

CONST. Calibration constant

- *calibration constant is for the conversion of input value to required display value*
- *provided that the calibration constant range is insufficient, it may be enlarged by setting the pre-division constant (Config.menu)*
- *by setting the minus value the direction of counting changes, i.e. we count down*
- *range: -0,00001...999999*
- **DEF** = 1

OFFSET Additive constant, „PRESET"

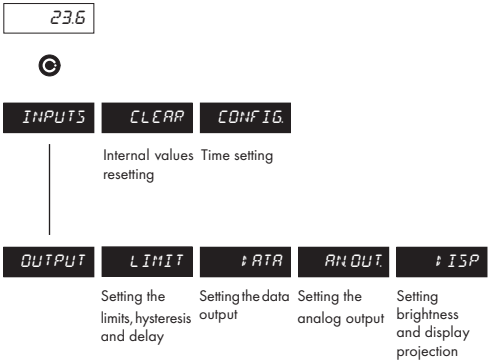
- *shifting the beginning of measurement by a set value which will always be read upon resetting the instrument to zero*
- *range: -99999...999999*
- **DEF** = 0

ITEMS ESSENTIAL FOR MINIMUM INSTRUMENT SETTING

Type	SERVICE > RESTOR.	INPUTS	CHANNELS	OUTPUT
Counter	> SETTIN. > COUNT.	> M.MODE > SINGL	> CHAN. A > SET. A > CONST.	
Frequency	> SETTIN. > FREQV	> M.MODE > SINGL	> CHAN. A > INP. A > FREQV > CHAN. A > SET. A > CONST.	
Counter/frequency	> SETTIN. > FREQV	> M.MODE > SINGL	> CHAN. A > SET. A > CONST. > CHAN. B > INP. B > FREQV > CHAN. B > SET. B > CONST.	> DISP > SETTIN. > TEMPOR. > CHAN.B > LIMIT > LIM 2 > INP. L > CHAN.B
UP/DW	> SETTIN. > UP/DW	> M.MODE > UP/DW	> CHAN. A > SET. A > CONST.	
IRC counter	> SETTIN. > QVADR	> M.MODE > QVADR	> CHAN. A > SET. A > CONST.	
Watch/stop-watch	> SETTIN. > TIME	> M.MODE > TIME	> CHAN. A > FORMAT	

4.2 USER MENU

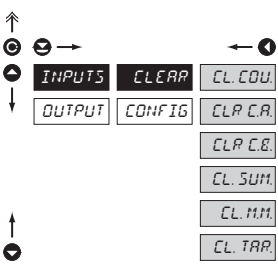
- designated for instrument service
- may contain setting the limits, analog data output and brightness, with restriction as per the setting in "Configuration mode"



INPUTS
Setting the instrument input

OUTPUT
Setting the instrument outputs

4.2.1.1 USER MENU - RESETTING THE INTERNAL VALUES



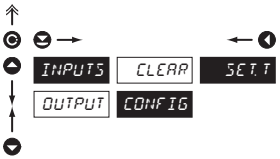
CLEAR **Resetting the instrument internal values to zero**

CL.COU.	Resetting all counters
CLR C.A.	Resetting counter A
N.CIT.B	Resetting counter B
CL.SUM.	Resetting acummulated value (Total)
CL.M.M.	Resetting minimum and maximum measuring value
CL.TAR.	Tare resetting

Adjustable authorization of access into items, see page 39

4.2.1.2 TIME SETTING

H

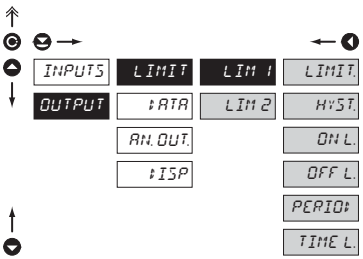


SET.T **Time setting, mode „Stop-watch" with RTC**

- *after setting the time in format HH.MM.SS (set after pressing „ENTER") next is set the date in format DD.MM.YY, confirmation is made by pressing „ENTER"*

Adjustable authorization of access into items, see page 42

4.2.2.1 LIMITS - ENTERING VALUES



Adjustable authorization of access into items, see page 40

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

LIM - **Entering limit values for status evaluation**

LIMIT Setting limit for relay switch-on
- *in full display range*

HYST. Setting hysteresis only in (+) values
- *in 1/10 of the display range*

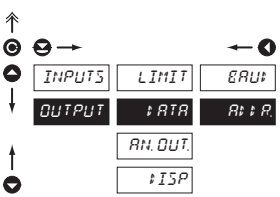
ON L. Setting the beginning of the range of the limit switch-on
- *in full display range*

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*

TIME.L Setting the delayed switch-on of the limit
- *in range 0...99,9 s*

4.2.2.2 DATA OUTPUT - SETTING THE INSTRUMENT ADDRESS

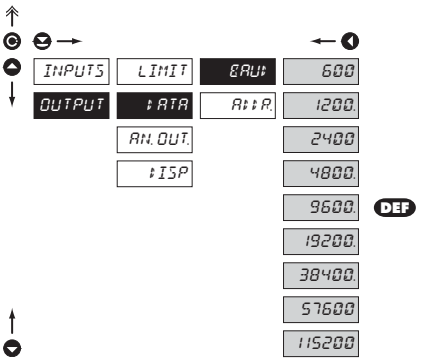


ADDR. **Setting the instrument address**

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

Adjustable authorization of access into items, see page 40

4.2.2.3 DATA OUTPUT - SETTING THE RATE

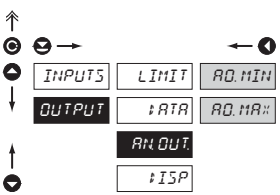


Adjustable authorization of access into items, see page 40

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

4.2.2.4 ANALOG OUTPUT - SETTING THE RANGE



Adjustable authorization of access into items, see page 40

AN.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*

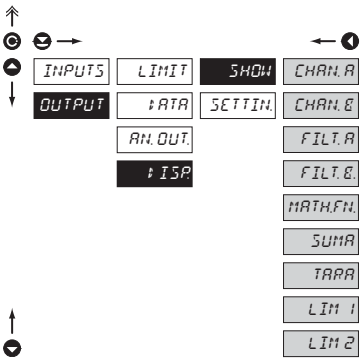
AO.MIN Assignment of the display value to the beginning of the analog output range

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

AO.MAX Assignment of the display value to the beginning of the analog output range

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

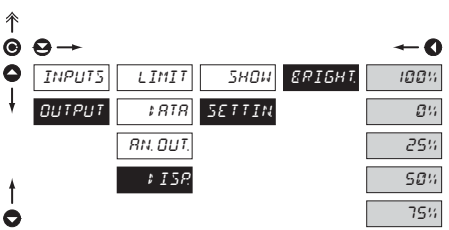
4.2.2.5 PROJECTION OF DATA ON THE DISPLAY



Adjustable authorization of access into items, see page 41

SHOW	**In this menu item the following data may be displayed**
CHAN.A	Value of „Channel A“
CHAN.B	Value of „Channel B“
FILT.A	Value of „Channel A“ after filtration
FILT.B	Value of „Channel B“ after filtration
MATH.FN.	Value of „Mathematic function“
SUMA	Value of „Accumulated quantity“
TARA	Tare value
LIM 1	Value of „Limit 1“
LIM 2	Value of „Limit 2“

4.2.2.6 SETTING THE DISPLAY BRIGHTNESS



Adjustable authorization of access into items, see page 41

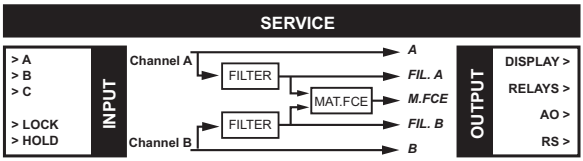
BRIGHT	**Setting the display brightness**
100%	Brightness 100 %
0%	Brightness 0 %, display switched-off

- *display switches off after approximately 10 s and it switches on after pressing any key*

25%	Brightness 25 %
50%	Brightness 50 %
75%	Brightness 75 %

4.3 CONFIGURATION MENU

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



23.6

C + ✉

PASSW

0000 Entering the access password

INPUTS | CLEAR | CONFIG. | AV=INP.

Internal values resetting — Basic instrument setting — Setting the Hold function

INPUTS
Setting the instrument input

CHANNEL | CHAN A | CHAN B | MATHFN

Configuration of parameters of the measuring channel A — Configuration of parameters of the measuring channel B — Setting the mathematic functions

CHANNEL
Setting the measuring channels

OUTPUT | LIMIT | DATA | AN OUT. | DISP

Setting the limits, hysteresis and delay — Setting the data output — Setting the analog output — Setting the projection

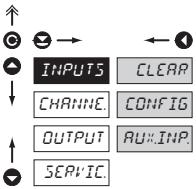
OUTPUT
Setting the instrument outputs

SERVIC. | ACCESS | RESTOR. | CALIB | LANG. | N PASS. | IDENT

Setting the access rights for „User menu" — Return to manufacture calibration or setting — Instrument calibration — Setting the language version — Change of the access password — Instrument identification

SERVICE
Service functions

4.3.1 CONFIGURATION MODE - INPUTS



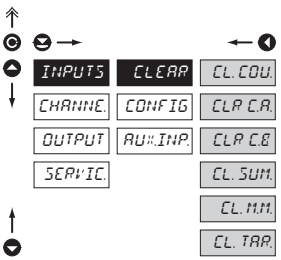
Here the basic instrument parameters are set

CLEAR — Resetting the internal values

CONFIG — Basic instrument setting

AU%.INP. — Setting the „Hold" function

4.3.1.1 RESETTING INTERNAL VALUES



CLEAR — Resetting internal values of the instrument

CL.COU. — Resetting all counters

CLR.C.A. — Resetting the counter (input A)

- *upon resetting, the value will be added to the total sum (accumulated value) in the internal memory of the instrument*

CLR C.B. — Resetting the counter (input B)

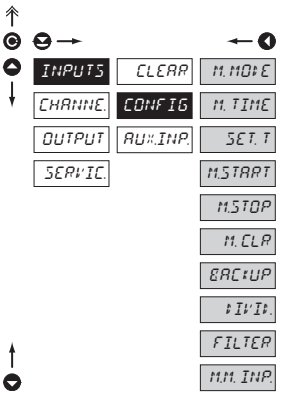
CL.SUM. — Resetting the total

- *summation serves for cumulative sums of values (e.g. shift operation), when after resetting the counter the display value is added to total sum*

CL.M.M. — Resetting minimum and maximum measuring value

CL.TAR. — Tare resetting

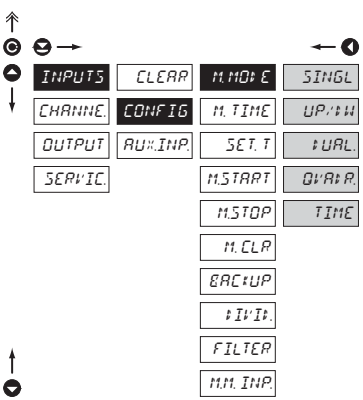
4.3.1.2 INSTRUMENT CONFIGURATION



CONFIG — **Basic instrument setting**

- **M.MODE** — Setting the instrument measuring mode
- **M.TIME** — Setting the time of measurement - time base
- **SET.T** — Setting the current time
- **M.START** — Setting the switch-on of the stop-watch/watch
- **M.STOP** — Setting the resetting of the stop-watch/watch
- **M.CLR** — Setting the instrument resetting
- **BACKUP** — Setting the data backup
- **DIVID** — Setting the pre-division constant
- **FILTER** — Setting the input filter parameters
- **MM.INP.** — Setting the source for evaluation of min/max. value

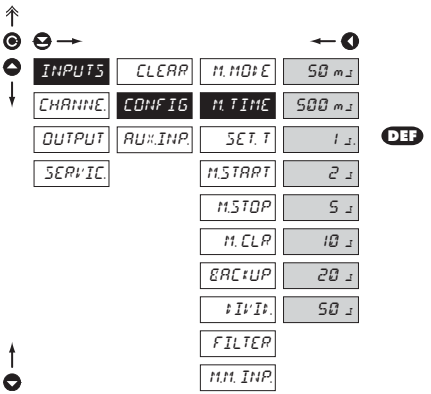
4.3.1.2.1 SETTING THE MEASURING MODE



M.MODE — **Setting the measuring mode of the instrument**

- **SINGL** — Single impulse counter/ frequency meter
  - *measures at input A and may display numbers/frequency (phase/repeat)*
- **UP/DW** — UP/DW impulse counter/ frequency meter
  - *measures at inputs A, B (direction) and may display numbers/frequency*
- **DUAL.** — Dual impulse counter/ frequency meter
  - *measures at two inputs and may display numbers/frequency*
- **OVAR.** — Impulse counter/frequency meter for IRC sensors
  - *measures at two inputs A+B and may display numbers/frequency*
  - *in this regime both edges of signals A and B are taken into account*
- **TIME** — Stop-watch/Watch
  - *START/STOP control is at input B*

4.3.1.2.2 SETTING THE TIME OF MEASUREMENT/TIME BASE



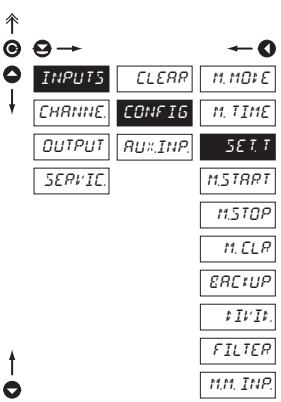
M.TIME **Setting the time of measurement - time base**

- *if you set the time of measurement for example to 1 s, the measuring time is approximately from 1 s to 2 s (1 s + maximum one period of measured signal). If no impulse comes within 2 s , it is understood that the signal has zero frequency*
- *for DUAL regime the time of measurement is exactly defined*
- *range of the setting of the time base is 50 ms to 50 s*

- *in the „RTC" regime with projection of date the set time determines the period of switching between time/date, min. is 5 s, the date is displayed for approximately 2,5 s*

4.3.1.2.3 TIME SETTING

H



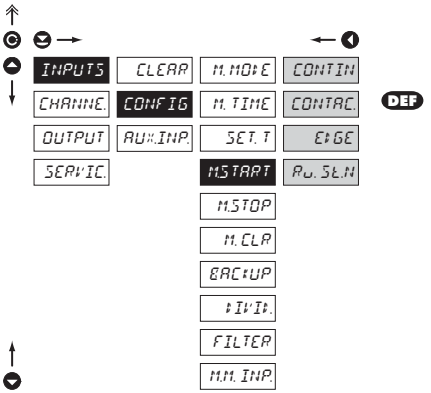
SET.T **Time setting**

- *the time setting menu is accessible only in the stop-watch/watch regime*

WITH RTC (time backup)

- *after the time is set, in the format HH.MM.SS (set after pressing the key „ENTER") next the date is set in format DD.MM.YY, confirmation is made by pressing „ENTER"*

4.3.1.2.4 SETTING THE STOP-WATCH/WATCH CONTROL H



M.START **Setting the stop-watch control**

CONTIN Stop-watch/watch is running, if the instrument is on

CONTAC. Stop-watch/watch is running at switched-on contact - Input B

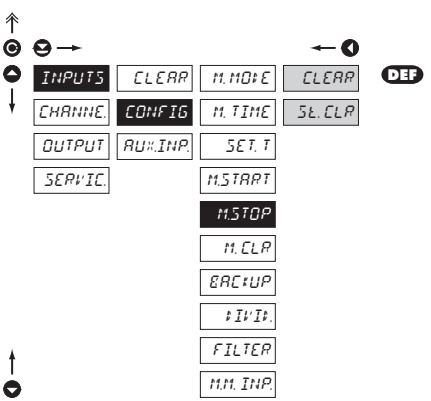
EDGE Stop-watch/watch is controlled by signal edge - Input B

- *time is triggered by the edge (passage of the signal across the comparator level) and stopped by the next edge*

Au.St.N Stop-watch/watch is controlled and reset to zero by signal edge - Input B

- *the time is triggered by the edge (passage of the signal across the comparator level) and stopped and reset to zero by the next edge*

4.3.1.2.5 SETTING THE STOP-WATCH/WATCH CONTROL H

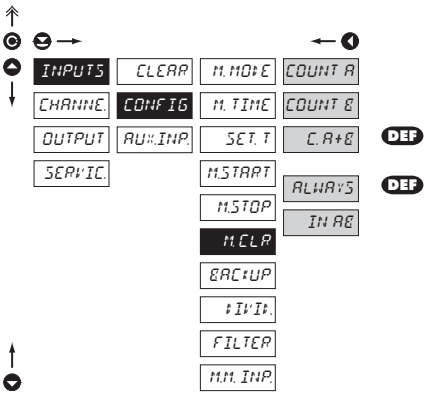


M.STOP **Setting the stop-watch resetting to zero**

CLEAR Stop-watch/watch is reset to zero by input C

St.CLR Stop-watch/watch is stopped and reset to zero by input C

4.3.1.2.6 SETTING THE ZEROIZING INPUT



M.CLR **Setting the zeroizing input**

- *setting zeroizing input (input C) and key with assigned resetting function*

Dual counter

COUNT.A Resets Channel A

COUNT.B Resets Channel B

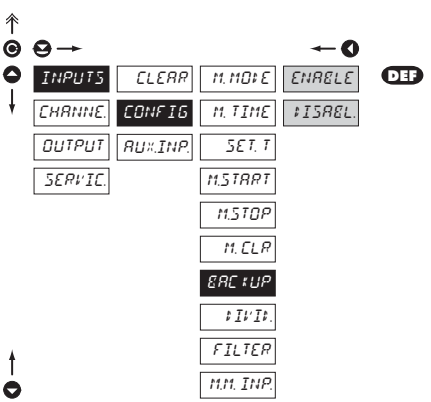
C. A+B Resets both Channel A and B **DEF**

Counter for IRC sensors

ALWAYS Resets always **DEF**

IN AB Resets only if input A and B in *log 1*

4.3.1.2.7 SETTING THE DISPLAY STATUS BACK-UP



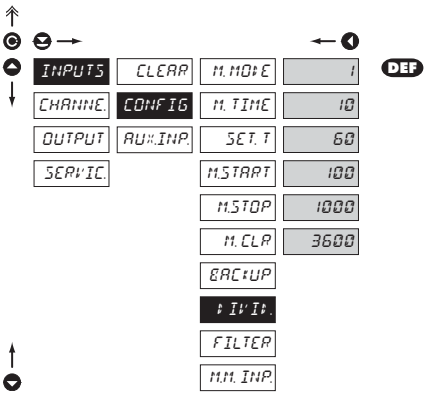
BAC.UP **Setting the display status back-up**

- *setting the renewal of the displayed value after power supply failure or switch-off of the instrument*

ENABLE The instrument will read the display status from memory

DISABL. The instrument will reset itself to zero after switch-on

4.3.1.2.8 SETTING THE PRE-DIVISION CONSTANT

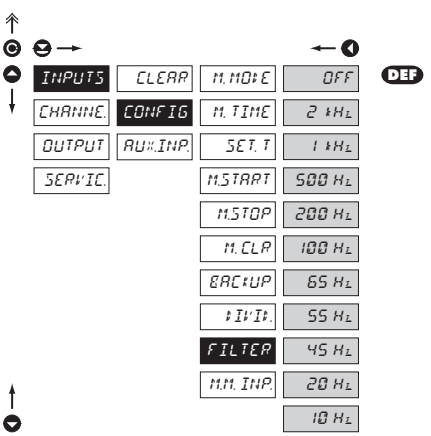


DIVID. Setting the pre-division constant

- *the pre-division constant serves to enlarge the calibration constant range*

1	Pre-division constant =1
10	Pre-division constant =10
60	Pre-division constant =60
100	Pre-division constant =100
1000	Pre-division constant =1000
3600	Pre-division constant =3600

4.3.1.2.9 SETTING THE INPUT FILTER PARAMETERS

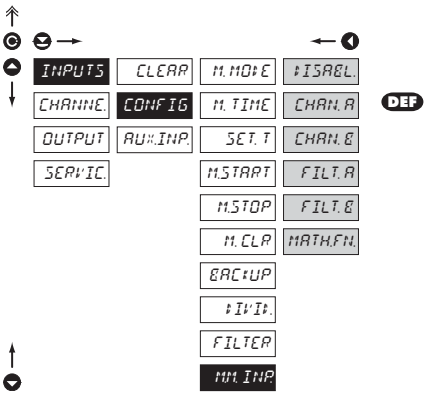


FILTER Setting the digital input filter

- *through the digital filter we may suppress undesirable interfering impulses (e.g. relay back-swings) on the input signal. The set parameter indicates the maximum possible instrument frequency, which the instrument processes without restriction*

When entering the contact and well known maximum input frequency we recommend to use the filter

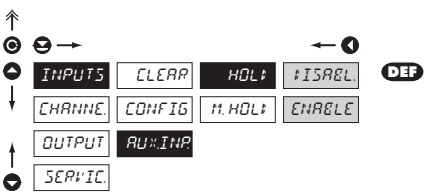
4.3.1.2.10 SETTING THE INPUT FILTER PARAMETERS



MM. INP. **Setting the input „quantity" for evaluation of the min/max. value**

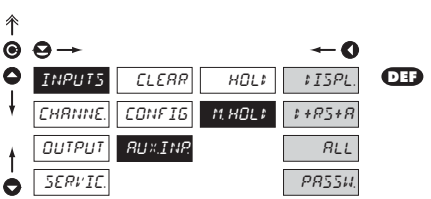
- **DISABL.** Min/max value is switched-off
- **CHAN. A** From Channel A value
- **CHAN. B** From Channel B value
- **FILT. A** From filtered value of Channel A
- **FILT. B** From filtered value of Channel B
- **MATH.FN.** From mathematic function

4.3.1.3 SETTING THE AUXILIARY INPUT



HOLD **Setting the auxiliary input**

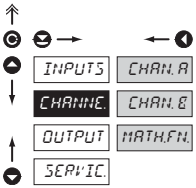
- **DISABL.** Auxiliary input controls the „LOCK" function
  - *the input controls the blocking of the keys on the front panel*
- **ENABLE** The auxiliary input controls the „HOLD" function
  - *the input controls the HOLD function according to the setting in item „M. HOLD"*



M.HOLD **Setting the auxiliary input - the HOLD function**

- **DISPL.** HOLD blocks only display
- **DIS+RS+A** 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

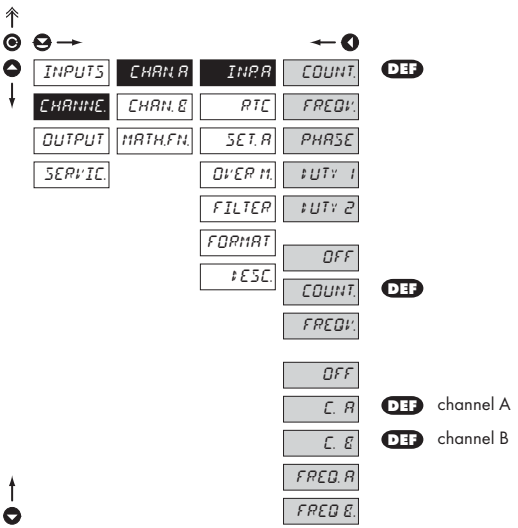
4.3.2 CONFIGURATION MODE - CHANNELS



Here the basic parameters of the instrument input values are set

CHAN.A	Setting the parameters and range of the meas. channel
CHAN.B	Setting the parameters and range of the meas. channel
MATH.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**

For measuring mode SINGLE

COUNT.	Input A is assigned with the measuring regime „Counter“
FREQU.	Input A is assigned with the meas. regime „Frequency“
PHASE	Input A is assigned with the measuring regime „Phase“
DUTY 1	Input A is assigned with the measuring regime „Repeat“
DUTY 2	Input A is assigned with the measuring regime „Repeat“

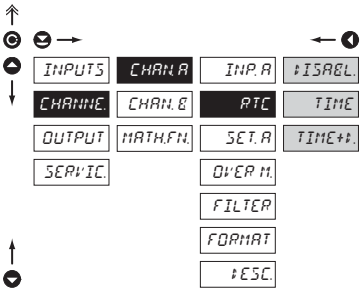
For measuring mode UP/DW and QVADR

OFF	No input is assigned
COUNT.	Inputs A+B are assigned to measuring regime „Counter“
FREQU.	Inputs A+B are assigned to measuring regime „Frequency“

For measuring mode DUAL

OFF	No input is assigned
C.A	Input A is assigned with the measuring regime „Counter A“ /A
C.B	Input B is assigned with the measuring regime „Counter B“ /B
FREQ.A	Input A is assigned with the meas. regime „Frequency A“
FREQ.B	Input B is assigned with the meas. regime „Frequency B“

4.3.2.1.2 SETTING THE TIME BACKUP



RTC **Setting the RTC circuit - time backup**

DISABL. RTC circuit is switched off

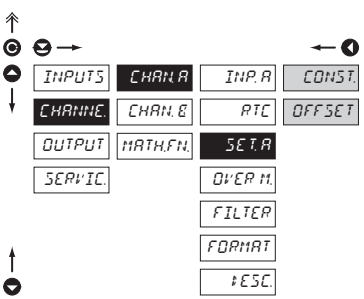
TIME RTC controls the internal time passage

- *stop-watch/watch is running without interruption even when the power supply is switched off (the display is off)*
- *projection format HH.MM.SS*

TIME+D. RTC controls the internal time passage and date

- *stop-watch/watch is running without interruption even when the power supply is switched off (the display is off)*
- *projection format HH.MM.SS/DD.MM.YY*
- *time for which the date is displayed is adjustable in the Input menu Input > Config > M.Time*

4.3.2.1.3 SETTING THE „CHANNEL A" PARAMETERS



SET.A **Setting the basic parameters of channel A**

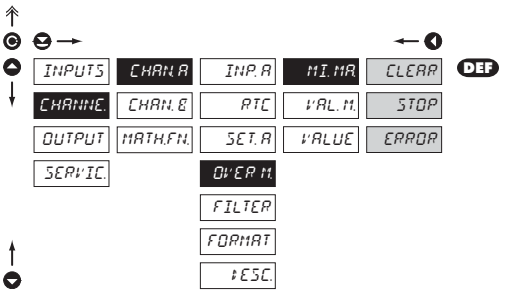
CONST. Calibration constant

- *calibration constant is for the conversion of input value to required display value*
- *if the calibration constant range is insufficient it may be enlarged by setting the pre-division constant (Configuration menu)*
- *by setting a minus value the direction of counting is changed, i.e. we count down*
- *range: -0,00001...999999*
- **DEF** = 1

OFFSET Additive constant, „PRESET"

- *shift of the beginning of the measurement by a set value which will always be read upon instrument resetting*
- *range: -99999...999999*
- **DEF** = 0

4.3.2.1.4 FUNCTIONS UPON READING THE DISPLAY/VALUE



MI.MA **Setting the instrument status when reading the display**

CLEAR The instrument is automatically set to zero and counts on

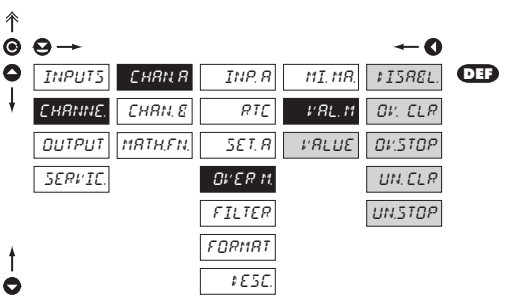
STOP The measuring stops

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

ERROR Measuring stops

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

4.3.2.1.5 EXTENDED FUNCTION UPON EXCEEDING THE SET DISPLAY VALUE



VAL.M **Setting the instrument status upon reaching the set display value**

DISABL. Instrument is automatically reset and counts on

OV. CLR Display is reset upon overflow

OV.STOP Measuring stops upon overflow

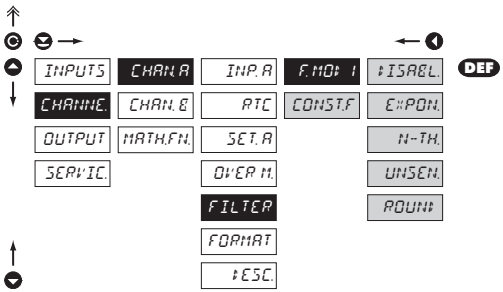
UN.CLR Display is reset upon underflow

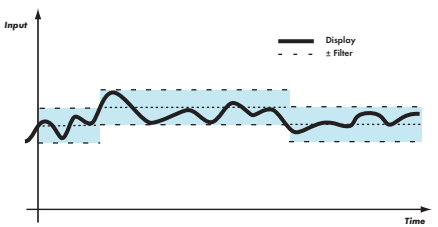
UN.STOP Measuring stops upon underflow

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

VALUE Display value after evaluation „VAL. M."

4.3.2.1.6 SETTING THE DIGITAL FILTERS





F.MOD. 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

EXPON 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*

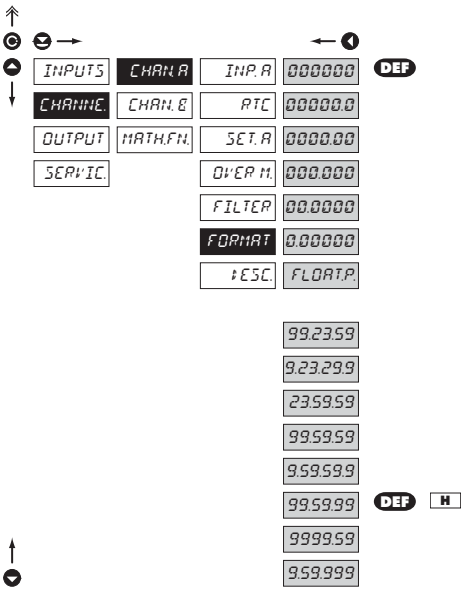
UNSEN. Setting the band of insensitiveness

- *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 then 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.)*

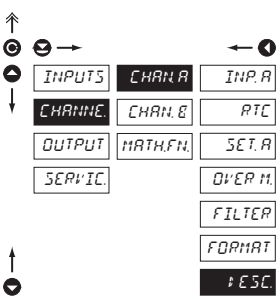
4.3.2.1.7 PROJECTION FORMAT



FORMAT **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*

4.3.2.1.8 SETTING THE MEASURING UNITS DESCRIPTION



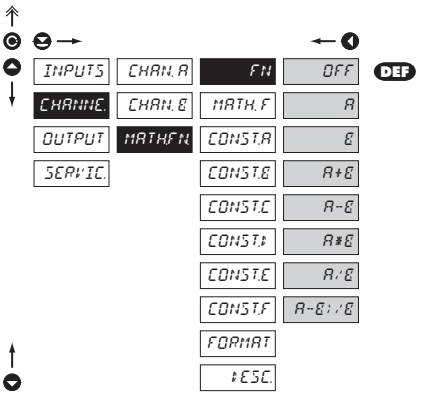
ESC. **Setting projection of the measuring units on the display for Channel A**

- *the instrument allows to add two description symbols to classical numeric formats (at the expense of number of displayed positions). Setting is performed with the aid of shifted ASCII code. Upon the setting the first two positions show the given symbols and the last two the code of the relevant symbol from 0 to 95.*

  Description is cancelled by entering 00

Table of symbols is on page 46

4.3.2.2.1 MATHEMATIC OPERATIONS BETWEEN THE INPUTS



FN **Selection of mathematic operations between inputs A and B**

OFF Mathematic operations between inputs are off

A Mathematic functions will be evaluated in Channel A

B Mathematic functions will be evaluated in Channel B

A+B Mathematic functions will be evaluated from Channels (A+B)

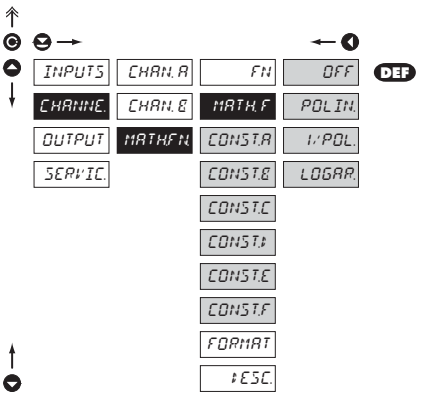
A-B Mathematic functions will be evaluated from the difference between Channels (A-B)

A*B Mathematic functions will be evaluated from the product of Channels (A*B)

A/B Mathematic functions will be evaluated from quotient of the Channels (A/B)

A-B)/B Mathematic functions will be evaluated from equation (A-B)/B

4.3.2.2.2 MATHEMATIC FUNCTIONS



MATH.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 a F*

OFF Mathematic functions are off

POLIN Polynome

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

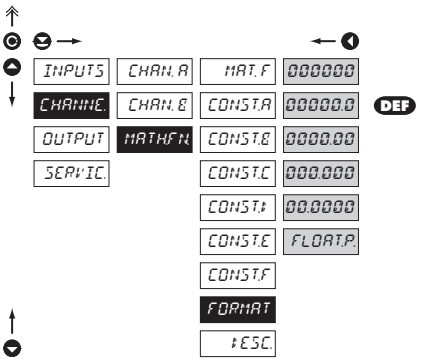
1/POL 1/x

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

LOGAR. Logarithm

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

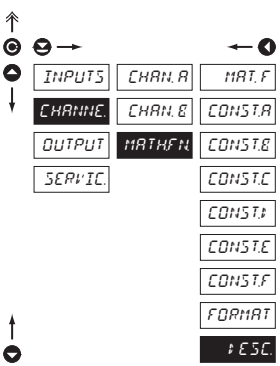
4.3.2.2.3 MATHEMATIC FUNCTIONS - PROJECTION FORMAT



FORMAT **Setting the format of projection on display for „MATH.FN"**

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

4.3.2.2.4 MATHEMATIC FUNCTIONS - DESCRIPTION ON DISPLAY

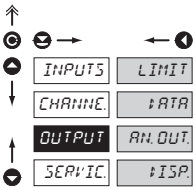


ESC. **Setting the measuring units on the display upon the projection of mathematic functions**

- *in this menu we set independent projection of the symbol of mathematic function, which is independent on projection of description of the measured quantity and is projected only with given function*
- *setting is the same as description of measured unit „Channels - CHAN. A - DESC."*

Table of symbols is on page 46

4.3.3 CONFIGURATION MODE - OUTPUT



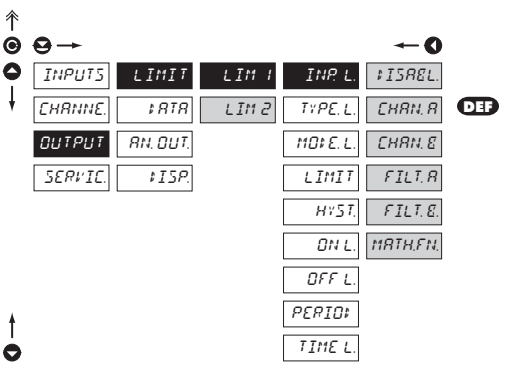
LIMIT — Setting the functions and type of limits switch-on

DATA — 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"

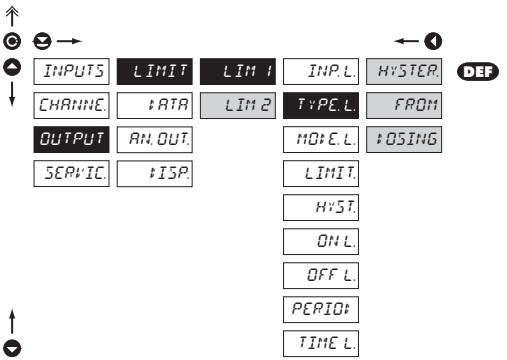
CHAN. B — The limit will be evaluated from output of „Channel B"

FILT. A — The limit will be evaluated from output of „Channel A" after their modification by digital filters

FILT. B — The limit will be evaluated from output of „Channel B" after their modification by digital filters

MATH.FN. — The limit will be evaluated from the mathematic functions output

4.3.3.1.2 LIMITS - SETTING THE TYPE OF LIMITS



TYPE. L **Setting the type of limits**

HYSTER 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*

FROM The limit is in the switch-on regime „from - to"

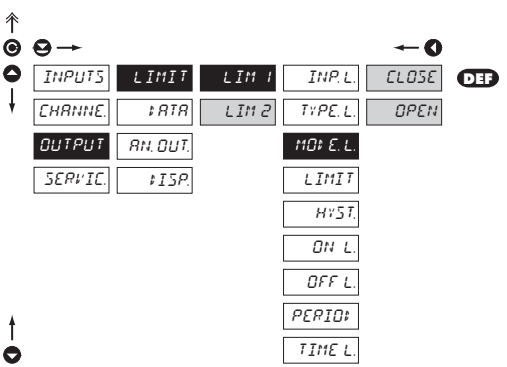
- *for this regime we set parameters „ON L." and „OFF L." adjustable in full range of the display between which the limit shall be switched on*

DOSING 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"*

! *„DOSING" regime may be set only for Limit 1*

4.3.3.1.3 LIMITS - SETTING THE RELAY MODE

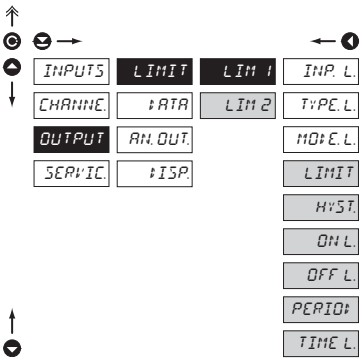


MODE. L **Setting the relay switching mode**

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



LIM - **Setting the values for limits evaluation**

LIMIT Setting limit for relay switch on

- *in full display range*

HYST. 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

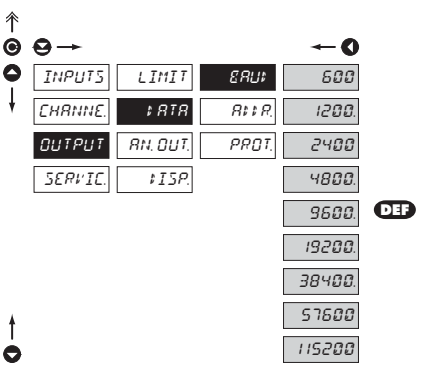
- *in full display range*

TIME L Setting the delay of the limit switch-on

- *in range 0...99,9 s*

! *Projection of individual units depends on the set „Type" of the limits*

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

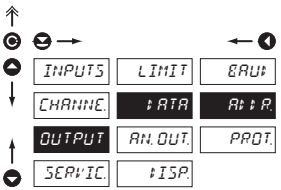
19200 Rate - 19 200 Baud

38400 Rate - 38 400 Baud

57600 Rate - 57 600 Baud

115200 Rate - 115 200 Baud

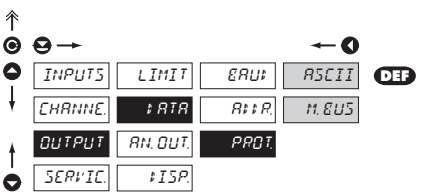
4.3.3.2.2 DATA OUTPUT - SETTING THE INSTRUMENT ADDRESS



ADDR. Setting the instrument address

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

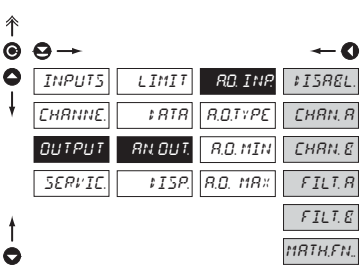
4.3.3.2.3 DATA OUTPUT - SETTING THE DATA PROTOCOL



PROT. Setting the type of the data protocol

- **ASCII** ASCII protocol
- **PROT.** DIN MessBus protocol

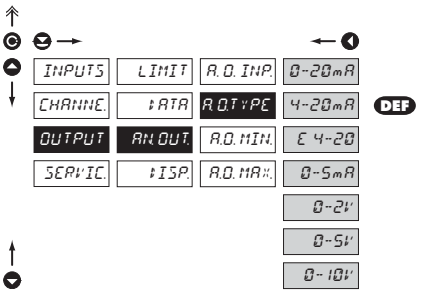
4.3.3.3.1 ANALOG OUTPUT - SETTING THE DATA FOR EVALUATION



AO.INP. Setting the input „quantity" for evaluation of the analog output

- **DISABL.** AO will not be evaluated
- **CHAN.A** AO will be evaluated from output of „Channel A"
- **CHAN.B** AO will be evaluated from output of „Channel B"
- **FILT.A** AO will be evaluated from output of „Channel A" after their modification by digital filters
- **FILT.B** AO will be evaluated from output of „Channel B" after their modification by digital filters
- **MATH.FN.** AO will be evaluated from the mathematic functions output

4.3.3.3.2 ANALOG OUTPUT - SETTING THE TYPE



A.O.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*

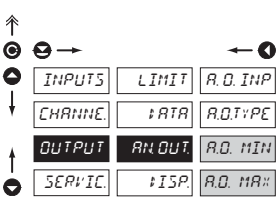
0-5mA Output: 0...5 mA

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



AN.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*

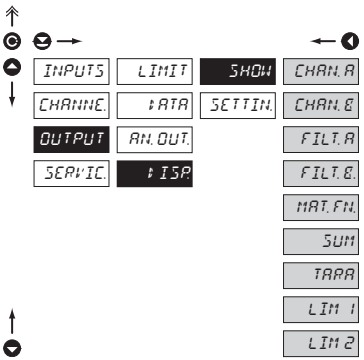
A.O.MIN Assigning the display value to the beginning of the range of the analog output

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

A.O.MAX Assigning the display value to the end of the range of the analog output

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

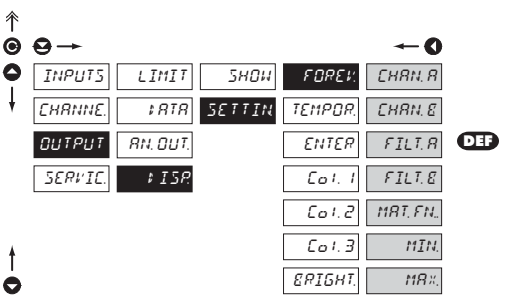
4.3.3.4 PROJECTION ON THE DISPLAY



SHOW **In this menu item the following data may be projected**

CHAN.A	Value of „Channel A“
CHAN.B	Value of „Channel B“
FILT.A	Value of „Channel A“ after filtration
FILT.B	Value of „Channel B“ after filtration
MAT.FN.	Value of „Mathematic functions“
SUM	Value of „Accumulated quantity“
TARA	Tare value
LIM 1	Value of „Limit 1“
LIM 2	Value of „Limit 2“

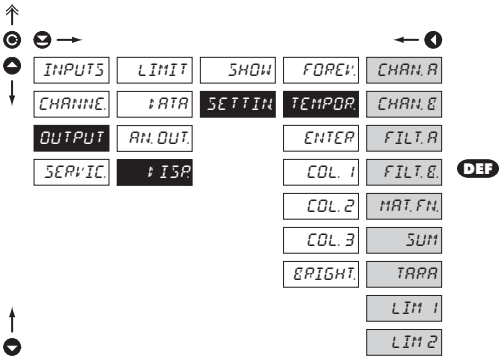
4.3.3.4.1 PROJECTION ON THE DISPLAY - PERMANENT



FOREV. **Selection of values for permanent projection on the instrument display**

CHAN.A	Value of „Channel A“
CHAN.B	Value of „Channel B“
FILT.A	Value of „Channel A“ after filtration
FILT.B	Value of „Channel B“ after filtration
MAT.FN.	Value of „Mathematic functions“
MIN	Minimum value
MAX	Maximum value

4.3.3.4.2 DISPLAY PROJECTION - AFTER PRESSING „LEFT“



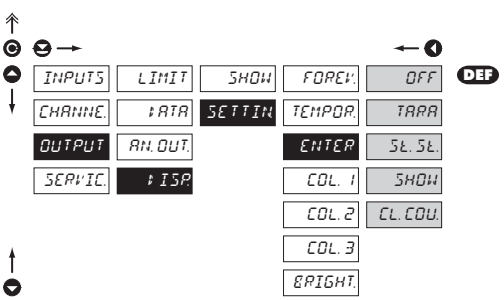
The function is suitable for quick ascertainment of the value by pressing one key

TEMPOR. 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*

CHAN.A	Value of „Channel A“
CHAN.B	Value of „Channel B“
FILT.A	Value of „Channel A“ after filtration
FILT.B	Value of „Channel B“ after filtration
MAT.FN.	Value of „Mathematic functions“
SUM	Value of „Accumulated quantity“
TARA	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“



ENTER Assigning function to the key „ENTER“

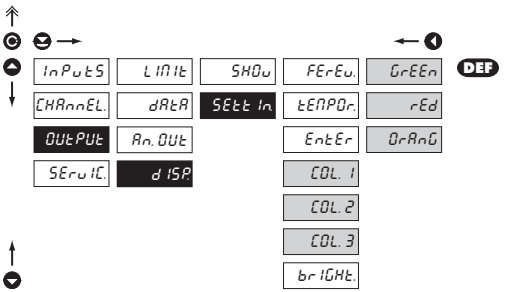
OFF	The key has no function
TARA	Display taring
St.St.	Control of the START - STOP function

- *only in the Stop-watch regime*

SHOW	Direct projection of selected values
CL.COU.	Resetting the counter (Input C)

- *as per setting > INPUT > CONFIG > M. CLR.*

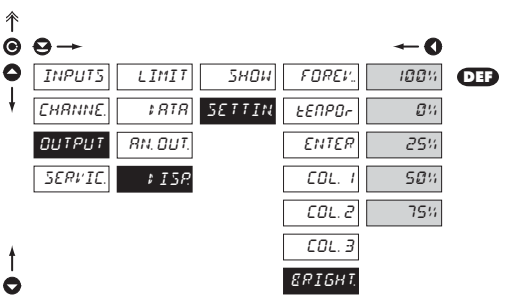
4.3.3.4.4 SETTING DISPLAY COLOR



COL.- **Setting display color**

- **GrEEn** Green
- **rEd** Red
- **OrAnG** Orange
- **COL. 1** Setting display color for permanent projection
- **COL. 2** Setting display color for description
- **COL. 3** Setting display color for temporary projection

4.3.3.4.5 SETTING THE DISPLAY BRIGHTNESS



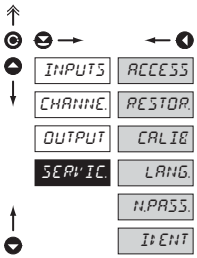
BRIGHT. **Setting the display brightness**

- **100%** Brightness 100 %
- **0%** Brightness 0 %, display is switched off

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

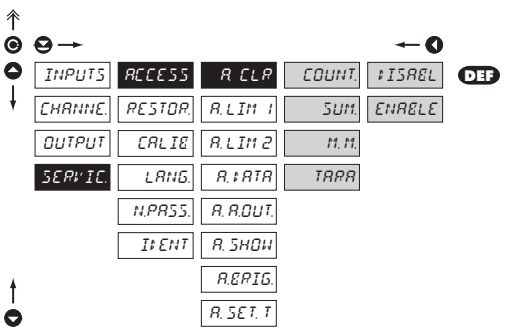
- **25%** Brightness 25 %
- **50%** Brightness 50 %
- **75%** Brightness 75 %

4.3.4 CALIBRATION MODE - SERVICE



ACCESS	Setting the access rights for „User mode“
RESTOR.	Return to manufacture calibration or setting
CALIB	Instrument calibration
LANG.	Setting the language version
N.PASS.	Change of the access password
I.ENT	Instrument identification

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



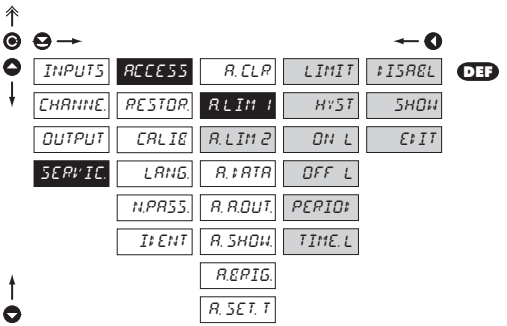
A.CLR **Authorization for resetting the internal values of the instrument to zero**

COUNT.	Authorization for item „CLR C.A.“ and „CLR C.B.“, permission to reset the counter to zero, Channel A and B
SUM.	Authorization for item „CL. SUM.“, permission to reset the total value to zero
M.M.	Authorization for item „CL. MM“, permission to reset the Min/max. value to zero
TARA	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

4.3.4.1.2 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - LIMITS



A.LIM 1 **Setting the access rights into Limits in the „UM“**

LIMIT Authorization for item „LIMIT“, setting the limits

HYST Authorization for item „HYST“, setting hysteresis

ON L Authorization for item „ON L.“, setting the beginning of the switch-on (from-to)

OFF L Authorization for item „OFF L.“, setting the end of the switch-on (from-to)

PERIO▸ Authorization for item „PERIOD“, setting the switch-on period (dose - Lim 1)

TIME.L Authorization for item „TIME L.“, setting the time delay of the switch-on

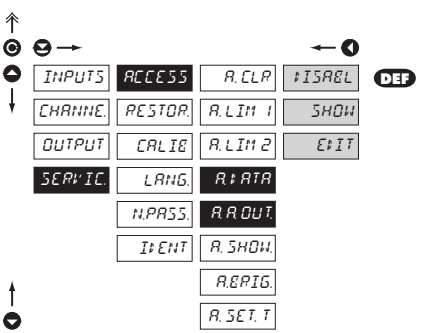
In all items the following parameters may be selected

▸ISABL The item is not projected in the „UM“

SHOW The item is projected in the „UM“ but cannot be changed

E▸IT The item has full access in the „UM“ incl. editing

4.3.4.1.3 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - OUTPUTS



A.▸ATA **Authorization for item „DATA“, setting the data output**

A.A.OUT. **Authorization for item „AN. OUT.“, setting the analog output**

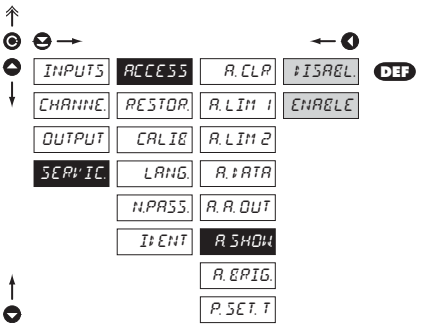
In all items the following parameters may be selected

▸ISABL The item is not projected in the „UM“

SHOW The item is projected in the „UM“ but cannot be changed

E▸IT The item has full access in the „UM“ incl. editing

4.3.4.1.4 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - PROJECTION



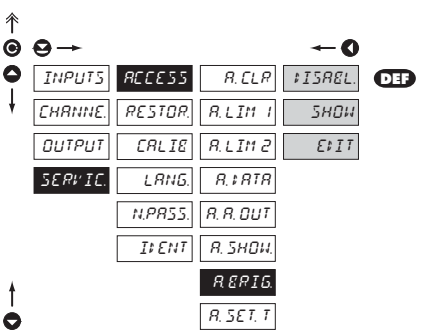
A.SHOW **Authorization for temporary projection of internal values „SHOW“ from menu „OUTPUT - DISP“**

- *sets the authorization for temporary projection of internal values of the instrument*

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

4.3.4.1.5 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - BRIGHTNESS

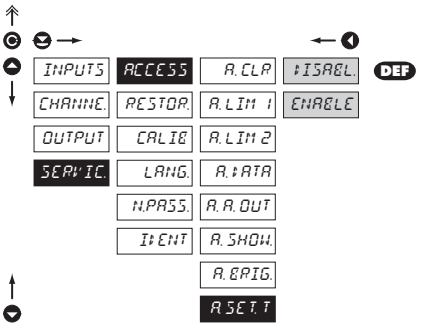


A.BRIG. **Authorization for item „BRIGHT.“, setting the display brightness**

In all items the following parameters may be selected

DISABL.	The item is not projected in the „UM“
SHOW	The item is projected in the „UM“ but cannot be changed
EDIT	The item has full access in the „UM“ incl. editing

4.3.4.1.6 SETTING THE ACCESS RIGHTS FOR „USER MODE“ - SET. T



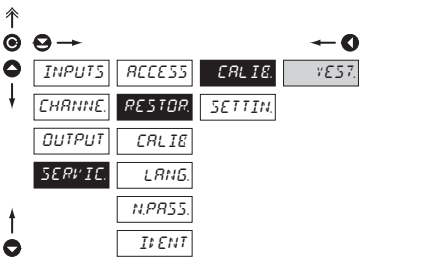
A.SET.T. **Authorization for item „SET. T.“, time setting**

In all items the following parameters may be selected

DISABL. The item is not projected in the „UM“

ENABLE The item has full access in the „UM“ incl. editing

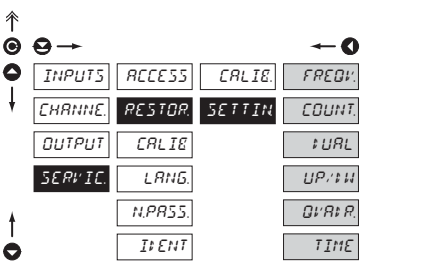
4.3.4.2 RETURN TO MANUFACTURE CALIBRATION/SETTING



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?“*

CALIB. Return to manufacture calibration of the instrument



SETTIN **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

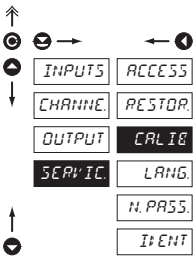
DUAL Manufacture pre-setting for „DUAL“

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

QUAD. Manufacture pre-setting for „Counter - IRC“

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

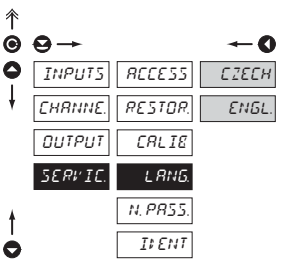
4.3.4.3 INSTRUMENT CALIBRATION



CALIB **Instrument calibration**

- *after entering this item the reference frequency is set, at which calibration is performed. To approve the set frequency, confirm the report MEAS", the instrument consequently switches to calibration measuring (% is displayed) with measuring time of approx. cca 30 s*
- *stop-watch is calibrated by means of a time normal (e.g.: audio signal on the radio/ telephone), at first signal the stop-watch gets going from zero and after approx. 10 hours at second signal your confirm by pressing ENTER the lapsed time which you set here*

4.3.4.4 LANGUAGE VERSION FOR THE INSTRUMENT MENU

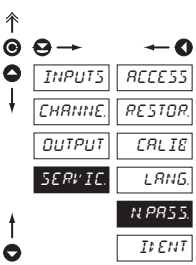


LANG. **Setting the language version of the instrument menu**

CZECH The instrument menu is in Czech language

ENGL. The instrument menu is in English language

4.3.4.5 SETTING NEW ACCESS PASSWORD

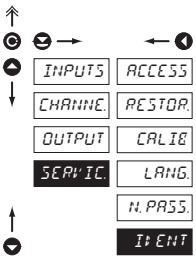


N. PASS. **Setting new access password for „Configuration menu"**

- *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"

4.3.4.6 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		!	"	#	$	%	&	'
8	(	)	*	+	,	-	.	/
16	0	1	2	3	4	5	6	7
24	8	9	:	;	<	=	>	?
32	@	A	B	C	D	E	F	G
40	H	I	J	K	L	M	N	O
48	P	Q	R	S	T	U	V	W
56	X	Y	Z	[	\	]	^	_
64	`	a	b	c	d	e	f	g
72	h	i	j	k	l	m	n	o
80	p	q	r	s	t	u	v	w
88	x	y	z	{	|	}	~	

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.

COMMANDS NOT LISTED IN THE MENU

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

7. ERROR STATEMENTS

ERROR	REASON	ELIMINATION
E. UNd	range underflow (A/D converter)	change the input signal value or change display projection
E. OVER	range overflow (A/D converter)	change the input signal value or change display projection
E. MATH.	mathematic error, range of projection is out of display	change the set projection
E. dATA	violation of data integrity in EEPROM, error upon data storage	in case of recurring report send the instrument for repair
E. MEM.	EEPROM error	the „Def" values will be used in emergency, instrument needs to be sent for repair

8. TECHNICAL DATA

INPUT

Type:	upon contact, TTL, NPN/PNP
Measurements:	1x counter/freq./repeat/phase UP or DOWN 2x counter/frequency UP nebo DOWN 1x counter/frequency UP/DOWN 1x counter/frequency UP/DOWN for IRC 1x stop-watch/watch - measuring range is adjustable
Input frequency:	0,02...100 kHz

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 heightsl 100 mm 2x red LED - status of limits 2x green LED - tare, mat. functions
Projection:	-999...9999 nebo -99999...999999
Decimal point:	adjustable - in programming mode
Brightness:	adjustable - in programming mode

INSTRUMENT ACCURACY

Temp. coefficient:	25 ppm/°C
Accuracy:	±0,01 % from range (frequency)
Time base:	0,05/0,5/1/2/5/10/20/50 s
Calibrat. coefficient:	±0,00001....99999
Filtration constant:	allows to set maximum valid frequency, which is processed (OFF/10...2 000 Hz)
Type of filter:	sampling
Pre-setting:	-99999...999999
Functions:	data backup - storing measured data even after the instrument switches off (EEPROM) summation - registration of shift operation 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:	-999...3999
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

** values apply for resistance load*

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 600 Ohm

EXCITATION *PM*

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

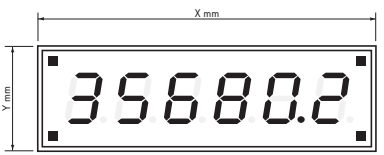
Material:	anodized aluminum, black
Dimensions:	see chapter 9
Panel cut-out:	see chapter 9

OPERATING CONDITIONS

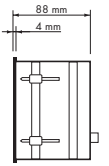
Connection:	through cable bushings to terminal boards inside the instrument, conductore section up to 2,5 mm^2
Stabilization period:	within 15 minutes after switch-on
Wirking temp.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP64
Construction:	safety class I
Overvolatege cat.:	EN 61010-1, A2 III. - 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

9. INSTRUMENT DIMENSIONS AND INSTAL.

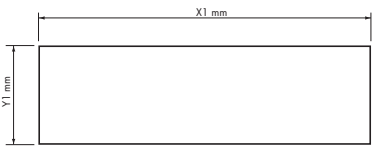
Front view



SIde view



Panel cut-out



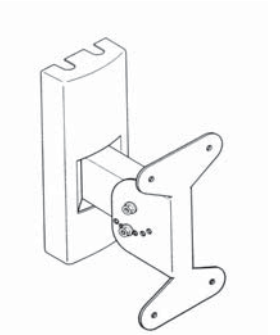
Height	X	Y	X1	Y1
57	372	116	364	108
100-4	465	181	457	173
100-6*	677	181	669	173
100-6	647	181	639	173
125-4	539	237	531	228
125-6	754	237	746	228

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 UQC**
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 occuring 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

Place and date of issue: Prague, 21. Juni 2001

Miroslav Hackl v.r.
Company representative