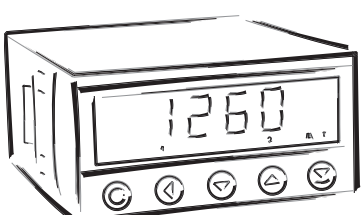
GUARANTEE 2 YEARS

OM 351

3 1/2 DIGIT PROGRAMMABLE

DC VOLTMETER/AMMETER
PROCESS MONITOR
OHMMETER
THERMOMETER FOR PT 100/500/1 000
THERMOMETER FOR NI 1 000/2 226/10 000
THERMOMETER FOR THERMOCOUPLES
DISPLAY INSTRUMENT FOR LIN.
POTENTIOMETERS



SAFETY INSTRUCTIONS

Please, read the enclosed safety instructions carefully and observe them!
These instruments should be safeguarded by isolated or common fuses (breakers)!
For safety information the EN 61 010-1 + A2 standard must be observed.
This instrument is not explosion-safe!

TECHNICAL DATA

Measuring instruments of the OM 351 series conform to the European regulation 89/336/EWG.

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

Supply of energy from the main line has to be isolated from the measuring leads.

CE

ORBIT MERRET, spol. s r.o.
Vodnanska 675/30
198 00 Prague 9
Czech Republic

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


1. CONTENTS

2. INSTRUMENT DESCRIPTION

DESCRIPTION

The OM 351 model series are 3 1/2 digit programmable panel instruments, manufactured in the following alternatives:

OM 351DC	DC voltmeter/ammeter
OM 351PWR	*Nets analyser - AC voltmeter/ammeter/wattmeter
OM 351PM	Process monitor
OM 351RTD	Thermometer for Pt 100/500/1 000, Ni 1 000/2 226/10 000
OM 351T/C	Thermometer for thermocouples
OM 351DU	Display instrument for linear potentiometers
OM 351OHM	Ohmmeter

The instruments are based on an 8-bit microcontroller with A/D converter, that secures high accuracy, stability and easy operation of the instrument.

Programmable projection of the display

Calibration	projection for the beginning and the end of the output range setting the output type
Projection	±1999

Digital filters

Radius of insensitiveness adjustable in process units

Exponential average	from 2...100 measurements

Mathematic functions

Tare	assigned to reset the display in case of non-zero input signal

External control

Hold	display/instrument blocking
Lock	locking the control keys or the access into Configuration menu
Tare	tare activation

** These instruments have separate Instructions for use*

OPERATION

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

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

User menu may contain arbitrary programming settings, defined in „CM" with another selective restric tion (see, change)

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

EXTENSION

Excitation is suitable for feeding sensors and converters. It has a galvanic isolation of 15 VDC.

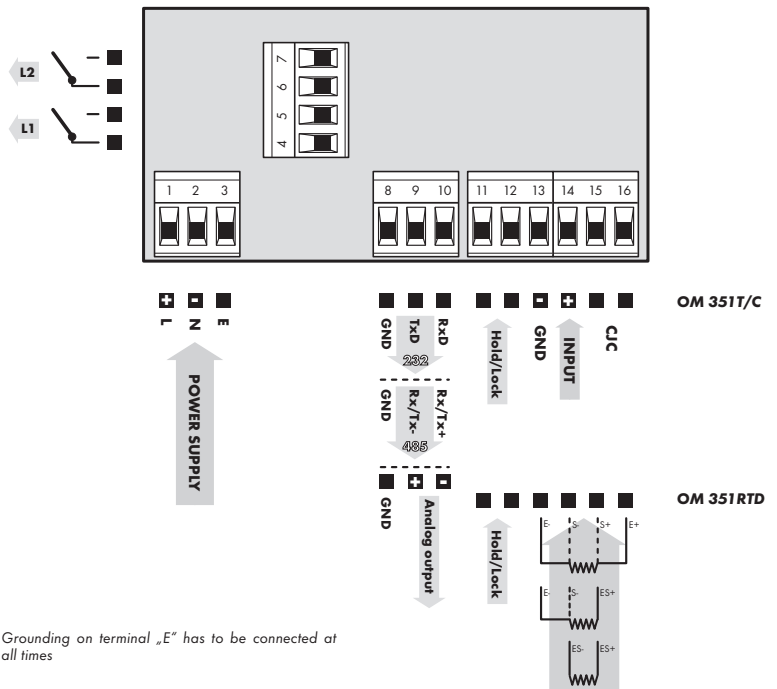
Comparators are assigned to control two limit values with relay output. The limits have adjustbale hysteresis as well as selectable delay of the switch-on. Reaching the preset limits is signalled by LED and simultaneously by the switch-on of the relevant relay.

Data outputs are for their rate and accuracy suitable for transmission of the measured data for further projection or directly into the control systems. We offer an isolated RS 232 and RS 485 with the ASCII protocol.

Analogue 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 type of output - voltage/current. The value of analog output corresponds with the displayed data and its type and range are selectable in the programming mode.

3. CONNECTION

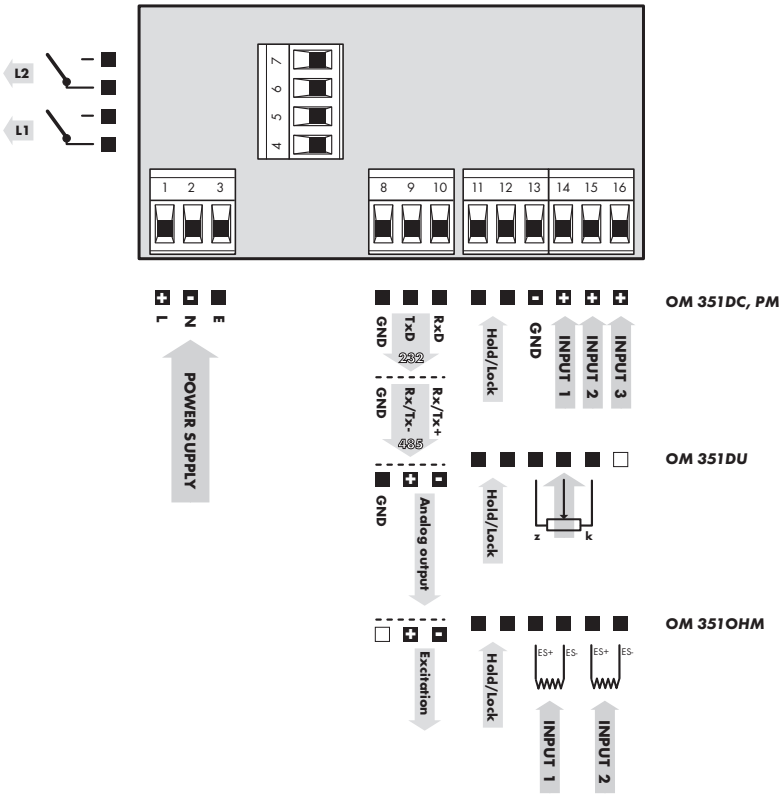
The lead for feeding the instrrument should not be in the proximity of the incoming low-potential signals.
Contactors, motors with larger input power and other efficient elements should not be in the proximity of the instrument.
The lead into the input of the instrument (the measured quantity) should 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" has to be connected at all times*

! *In RTD input with 2- or 3-wire connection it is necessary to link the unconnected inputs (13+14/15+16 or 15+16)*

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

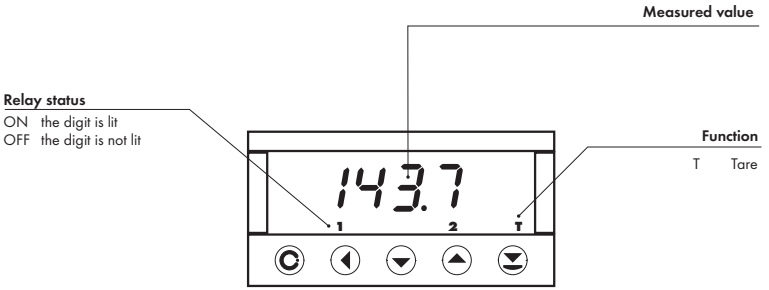


MEASURING RANGES

Type	Input 1	Input 2	Input 3
OM 351 DC	0...1/5 A	0...10/50 V	0...100/300 V
OM 351 DC	±2/±20 mA	±0,2/±2 V	±20/±200 V
OM 351 DC	0...1/5 A	0...60/150 mV	
OM 351 PM	0/4...20 mA	0...2 V	0...5/10 V
OM 351 OHM	0...2/20 kOhm	5...105 Ohm	

4. INSTRUMENT SETTING

Setting and controlling the instrument is performed through 5 control keys on the front panel. By means of these controls it is possible to browse through the operating program and 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

DC **PM** **DU** **OHM** **RTD** **T/C** Indicates the setting for given type of instrument

CONTROL KEYS FUNCTIONS

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

SETTING THE DECIMAL POINT AND THE MINUS SIGN

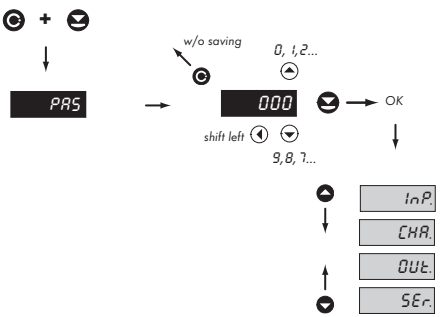
DECIMAL POINT

Its selection in calibration modes, upon modification of the number to be adjusted is performed by the control key ◀ with transition behind the highest decade, when the decimal point starts flashing. Positioning is performed by ▲ /▼.

MINUS SIGN

Setting of the minus sign is performed by the control key ▼ on higher decade. When editing the item the subtraction must be made from the current number (e.g.: 13 > ▼ , on class 100 > -87)

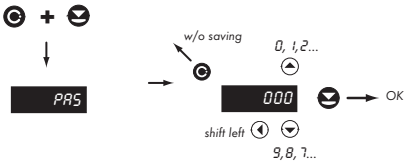
ACCESS INTO THE CONFIGURATION MODE



The code from manufacture is always preset to 000
In case of loss of access password it is possible to use the universal access code "177"

4.1 GUIDE THROUGH MINIMUM INSTRUMENT SETTING

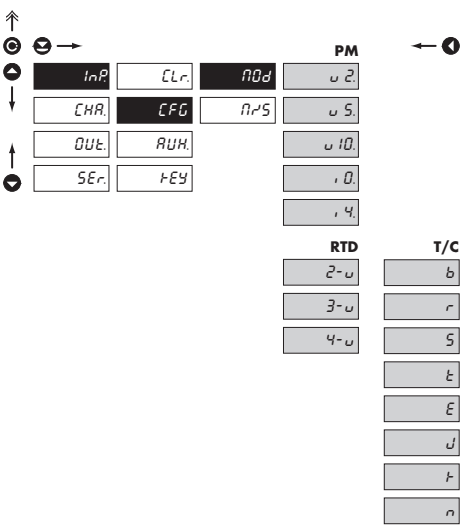
❶ Access into the „Configuration menu“



PAS **Entering the introductory access password**

000 Standard manufacture setting of the access password

❷ Selection of the measuring range/input type **DC** **PM** **RTD** **T/C**



nOd **Setting the instrument measuring range**

PM Input

- *setting the input range*

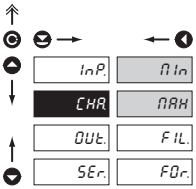
RTD Input

- *setting the type of connection*
- *RTD input with 2- or 3-wire connection it is necessary to link the unconnected inputs (13+14/15+16 or 15+16)*

T/C Input

- *setting the type of thermocouple*
- *B type B*
  R type R
  S type S
  T type T
  E type E
  J type J
  K type K
  N type N

❸ Setting projection on the display



MIn Setting the display projection for minimum value of the input signal

- *range of the setting is* ±1999

MAX Setting the display projection for maximum value of the input signal

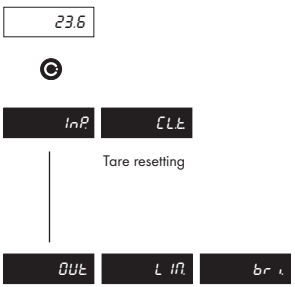
- *range of the setting is* ±1999

Input type	Displayed items of the menu
DC	MIN, MAX
PM	MIN, MAX
DU	MIN, MAX
OHM	MIN, MAX, *LEA.
RTD	*LEA., OFS.
T/C	CJC., R.TC

** only for 2-wire*

4.2 USER MENU

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

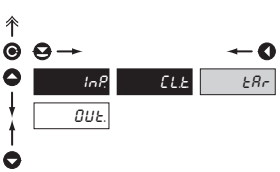


InP.
Tare resetting

OUt.
Setting limits and display brightness

! *Projection of items and their accessability depends on the setting of access rights in the „Configuration menu"*

4.2.1 RESETTING THE INTERNAL VALUES



CLr. Resetting the internal values of the instrument

tAr Tare resetting

Adjustable authorization of access into items, see page 26

4.2.2 LIMITS - ENTERING THE VALUES

Adjustable authorization of access into items, see page 27

LIN **Entering the limit values for status evaluations**

L 1 Setting for Limit 1

L 2 Setting for Limit 2

LIN. Setting the limit for relay switch-on

- *in full display range*

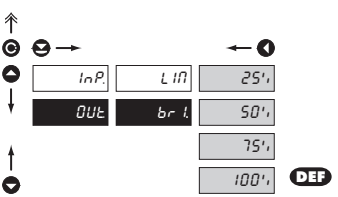
HYS. Setting hysteresis only in (+) values

- *in 1/10 display range*

tIN. Setting the delayed switch-on of the limit

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

4.2.3 DISPLAY BRIGHTNESS



br I. **Setting the display brightness**

- *by selecting the display brightness we may react properly to light conditions in place of location of the instrument*
- *brightness in the programming menu is always 100 %*

25 ' Display brightness = 25 %

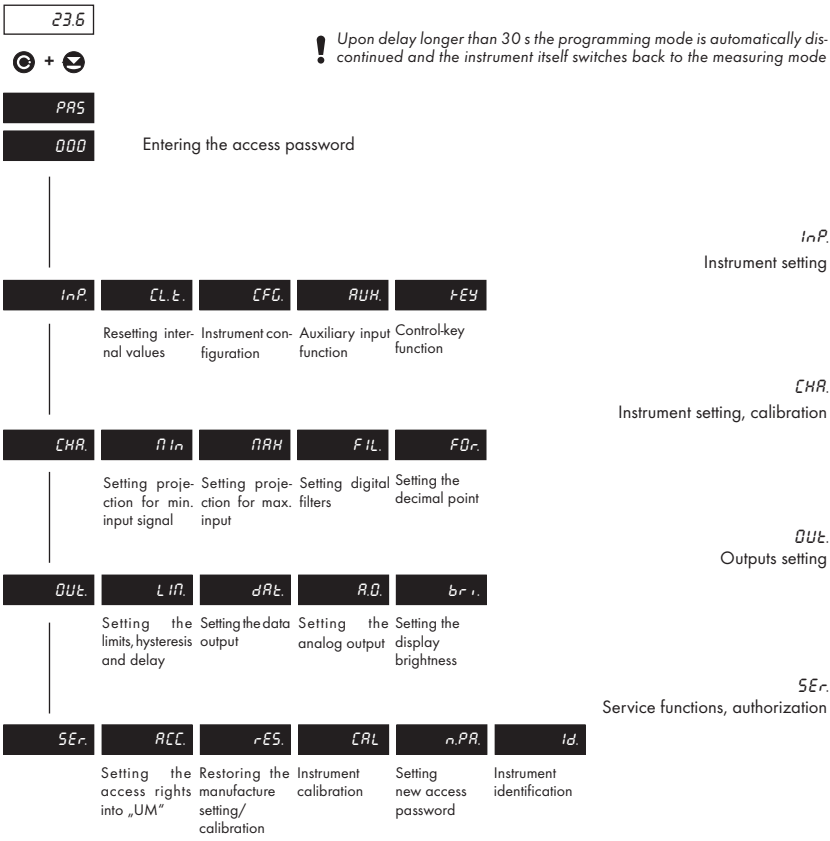
50 ' Display brightness = 50 %

75 ' Display brightness = 75 %

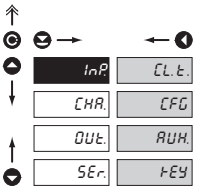
100 ' Display brightness = 100 %

4.3 CONFIGURATION MENU

- designated for professional service and maintenance
- complete instrument setting
- access is protected by password or a shorting link on the input connector
- authorization for "User mode"



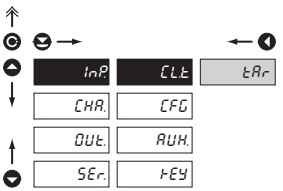
4.3.1 CONFIGURATION MODE - INPUT



The basic instrument functions are adjusted in this menu

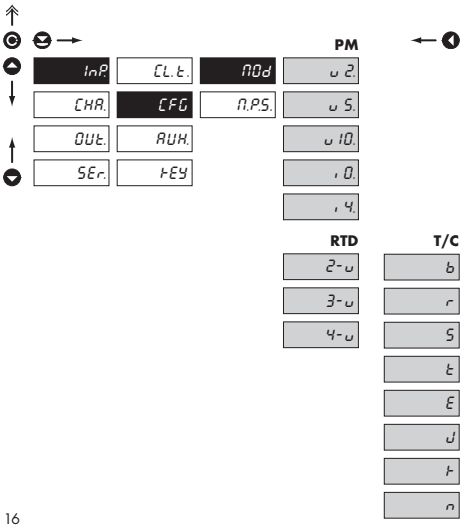
CLE.	Internal values resetting
CFG	Selecting the measuring range and measuring rate
AUX.	Setting the external control input function
FEY	Setting the control-key function

4.3.1.1 INTERNAL VALUES RESETTING



CLE.	**Resetting the instrument internal values**
tAr	Tare resetting

4.3.1.2.1 SETTING THE MEASURING RANGE



nOd	**Setting the instrument measuring range**

PM Input

- *setting the input range*

RTD Input

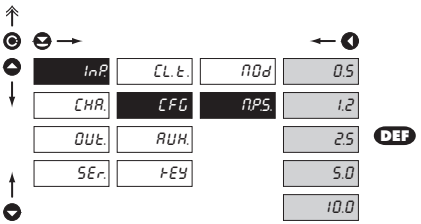
- *setting the type of connection*
- *RTD input with 2- or 3-wire connection it is necessary to link the unconnected inputs (13+14/15+16 or 15+16)*

T/C Input

- *setting the type of thermocouple*

- *B*	*type B*
R	*type R*
S	*type S*
T	*type T*
E	*type E*
J	*type J*
K	*type K*
N	*type N*

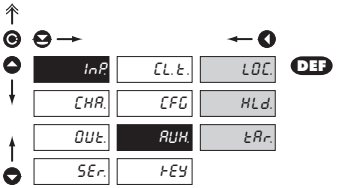
4.3.1.2.2 SETTING THE INSTRUMENT MEASURING RATE



NPS. **Setting the measuring rate**

- **0.5** Rate - 0,5 measurements/s
- **1.2** Rate - 1,2 measurements/s
- **2.5** Rate - 2,5 measurements/s
- **5.0** Rate - 5 measurements/s
- **10.0** Rate - 10 measurements/s

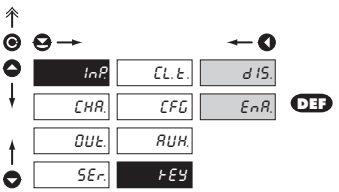
4.3.1.3 EXTERNAL INPUT FUNCTION SELECTION



AUX. **External input function selection**

- **LOC.** LOCK, locking the control keys on the instrument
- **HLd.** HOLD, stop measuring of the entire instrument
- **tAr.** TARE - Tare activation

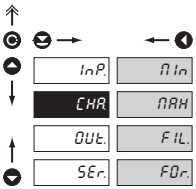
4.3.1.4 SETTING FUNCTIONS OF THE BUTTON (ENTER)



KEY **Setting other functions of the control-key ▼**

- **diS.** Without function
- **EnA.** Tare activation

4.3.2 CONFIGURATION MODE - CHANNELS



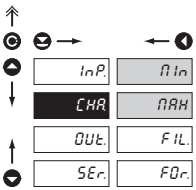
In this menu instrument parameters are set

MIn	Setting display projection for minimum value of the input signal ❶
MAX	Setting display projection for maximum value of the input signal ❷
FIL.	Setting the digital filters ❸
FOr.	Setting the decimal point ❹
POS	Shifting the beginning of the measuring range ❺
LEA.	Compensation of 2-wire lead ❻
CJC	Setting the temperature of the cold junction ❼
rtC	Method of measurement of the cold junction ❽

Input type	Setting options
DC	① ② ③ ④
PM	① ② ③ ④
DU	① ② ③ ④
OHM	① ② ③ ④ ⑤ ⑥
RTD	③ ④ ⑤ ⑥
T/C.	③ ④ ⑦ ⑧

4.3.2.1 PROJECTION ON THE DISPLAY

DC PM DU OHM



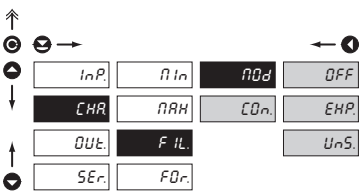
MIn. Setting display projection for minimum value of the input signal

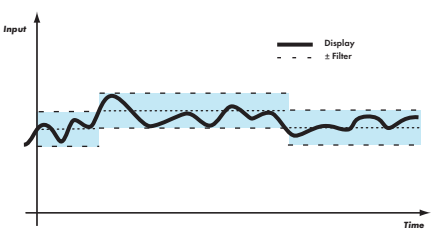
- *range of the setting is* ±1999

MAX Setting display projection for maximum value of the input signal

- *range ot the setting is* ±1999

4.3.2.2 SETTING THE DIGITAL FILTERS





FIL. Setting the digital filters

CON. Setting the filtration constant

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

OFF Filters are off

EXP Selection of exponential filter

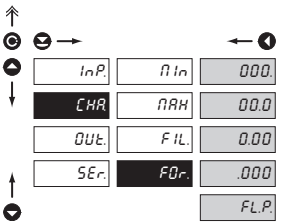
- *the value is calculated from a number of measurements selected in „CON"*
- *range 2...100*

UnS. Selection of the band of insensitiveness

- *this filter enables to stabilize the resulting value. A measuring result is understood as the previous value, provided the meqsured value is not higher than the previous + P or smaller than the previous - P. Value „±P" indicates the band of insensitiveness in which the measured value may change without affecting the result - change of the data on display*
- *range* ±1999

4.3.2.3 SETTING THE DECIMAL POINT

DC PM DU OHM



FOr. Setting the decimal point

- *the instrument allows classic projection of a number with placement of the decimal point as well as projection with floating point, allowing to display the number in its most precise form „FL.P."*

000. Setting the DP

00.0 Setting the DP

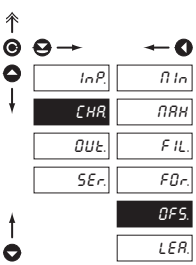
0.00 Setting the DP

.000 Setting the DP

FL.P. Setting the DP

4.3.2.4 SHIFTING THE BEGINNING OF THE RANGE

RTD OHM

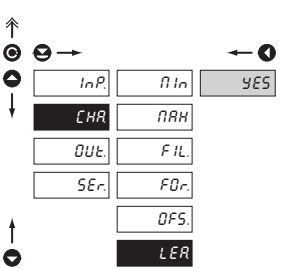


OFS. Shifting the beginning of the measuring range

- *in cases when it is necessary to shift the beginning of the range by certain value, e.g. when sensor is used in a measuring head*
- *entered directly in Ohm*

4.3.2.5 COMPENSATION OF 2-WIRE CONDUCT

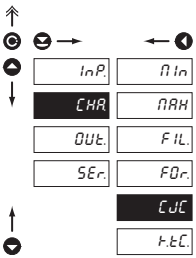
RTD OHM



LEA. Compensation of 2-wire conduct

- *for measurement accuracy it is necessary to perform compensation of the conduct always in case of 2-wire connection*
- *entered directly in Ohm*
- *prior to confirmation of the displayed challenge „YES" it is necessary to substitute the sensor at the end of the conduct by a short circuit*
- *preset from manufacture to „0"*

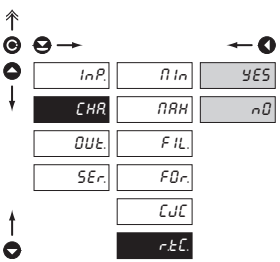
4.3.2.6 SETTING THE TEMPERATURE OF THE COLD JUNCTION T/C



CJC. Setting the temperature of the cold junction

- *range 0...98 °C with compensation box*
- *99 °C without compensation box, with/ without reference thermocouple, temperature of the cold junction is measured on the input brackets of the instrument*

4.3.2.7 SETTING THE METHODS OF EVALUATION OF THE COLD JUNCTION T/C



rEC Method of evaluation of the cold junction

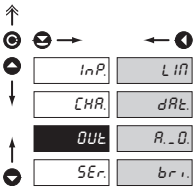
- *the method of evalutaion of the cold junction is described in chapter 5, page 30*

YES Measurements with reference thermocouple

nO Measurements without reference thermocouple

The method and the process of setting of the cold junctions is described in a separate chapter on page 30

4.3.3 CONFIGURATION MODE - OUTPUTS



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

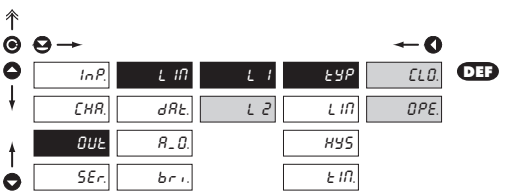
LIN Setting the type and the switching of the limits

dAt. Setting the type and the parameters of the data output

A_O. Setting the type and parameters of the analog output

br. Setting the display brightness

4.3.3.1.1 LIMITS - TYPE OF RELAY SWITCHING



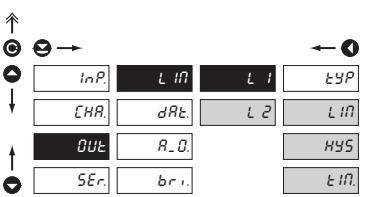
tYP Setting the type of relay evaluation

CLO. Relay switches on when the condition is met

OPE. Relay switches off when the condition is met

! *The process of setting the limit 2 is identical with the setting for Limit 1.*

4.3.3.1.2 LIMITS - SETTING THE BOUNDARIES



LIN Setting the boundary for relay switch-on

- *within the full display range*

HYS. Setting hysteresis only in (+) values

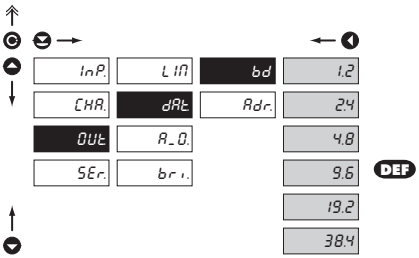
- *within 1/10 of the display range*

tIN. Setting the offset of the limit switch-on

- *within the range of 0...99,9 s*

! *The process of setting the limit 2 is identical with the setting for Limit 1.*

4.3.3.2.1 DATA OUTPUT - RATE

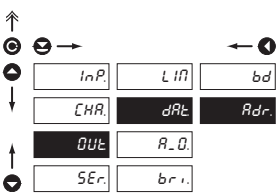


Analog and data outputs may not be fitted simultaneously

bd **Setting the data output rate**

1.2	Rate - 1 200 Baud
2.4	Rate - 2 400 Baud
4.8	Rate - 4 800 Baud
9.6	Rate - 9 600 Baud
19.2	Rate - 19 200 Baud
38.4	Rate - 38 400 Baud

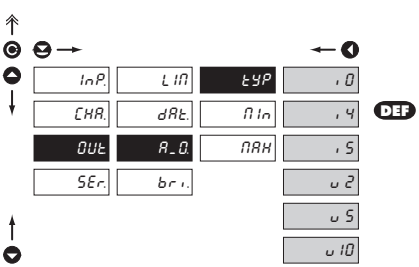
4.3.3.2.2 DATA OUTPUT - ADDRESS



Adr. **Setting the instrument address**

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

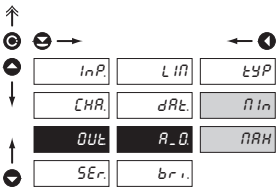
4.3.3.3.1 ANALOG OUTPUT - SETTING THE TYPE



tYP **Setting the type of analog output**

0...20	Type - 0...20 mA
4...20	Type - 4...20 mA
0...5	Type - 0...5 mA
0...2	Type - 0...2 V
0...5	Type - 0...5 V
0...10	Type - 0...10 V

4.3.3.3.2 ANALOG OUTPUT - RANGE



A_O. **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 any two arbitrary pointsof the entire measuring range*

Min Assigning the displayed value to the beginning of the AO range

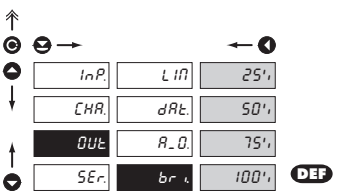
- *range of the setting is* ±1999

MAX Assigning the displayed value to the end of the AO range

- *range of the setting is* ±1999

! *Analog and data outputs may not be fitted simultaneously*

4.3.3.4 DISPLAY BRIGHTNESS



br. **Setting the display brightness**

- *by selecting the display brightness we may react properly to light conditions in place of location of the instrument*
- *brightness in the programming menu is always 100 %*

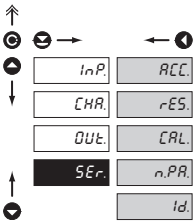
25' Display brightness = 25 %

50' Display brightness = 50 %

75' Display brightness = 75 %

100' Display brightness = 100 %

4.3.4 CONFIGURATION MODE - SERVICE



The instrument's service functions are set in this menu

ACC. Access rights into the „User mode"

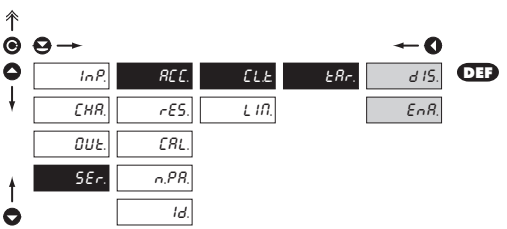
rES. Restoration of the manufacture setting and instrument calibration

CAL. Calibration of input range for version „DU"

n.PA. Setting new access password

Id. Instrument identification

4.3.4.1.1 ACCESS TO INTERNAL VALUES RESETTING



CL.t. Setting the access rights for resetting in the „UM"

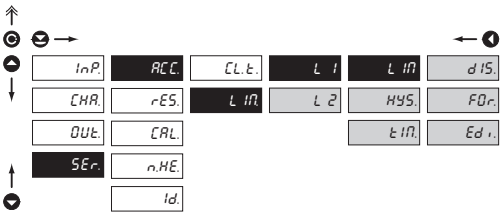
tAr. Authorization for item „TAR", tare resetting

In all items it is possible to select the following parameters

diS. The item is not displayed in the „UM"

EnA. The item is displayed in the „UM" but may be edited/ deleted

4.3.4.1.2 ACCESS INTO THE LIMITS SETTING



L IN **Setting the access rights into limits in the „UM"**

nE2. Authorization for item „LIM", setting the boundary

HYS. Authorization for item „HYS.", setting hysteresis

CAS Authorization for item „TIM.", setting delay of the switch-on

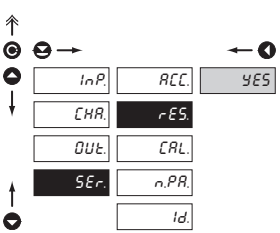
In all items it is possible to select the following parameters

diS. The item is not displayed in the „UM" DEF

FOr. The item is displayed in the „UM" but cannot be changed

Ed i. The item has full access in the „UM" including editing

4.3.4.2 RESTORATION OF THE MANUFACTURE SETTING

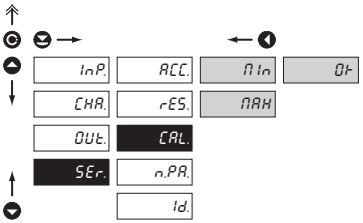


rES. **Restoration of the instrument manufacture setting**

- *in case of incorrect setting or calibration it is possible to return to manufacture setting. Prior execution of the changes you will be asked to confirm your selection „YES"*
- *reading the manufacture calibration and original setting of items in the menu (DEF)*

4.3.4.3 CALIBRATION OF THE INPUT RANGE

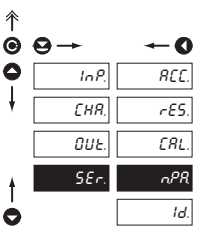
DU



CAL. Calibration of the input range

- *when MIN is displayed move the potentiometer runner into required minimum position and confirm by „Enter", calibration is confirmed by showing sign „OK"*
- *when MAX is displayed move the potentiometer runner into required maximum position and confirm by „Enter", calibration is confirmed by showing sign „OK"*

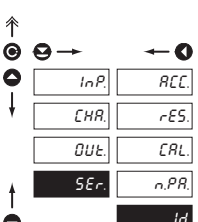
4.3.4.4 RESTORATION OF MANUFACTURE SETTING



nPA Setting new access password for the „Configuration menu"

- *this option allows to change the numeric code which blocks the access into the instrument „Configuration mode". The range of the numeric code is 0...1999*

4.3.4.5 INSTRUMENT IDENTIFICATION

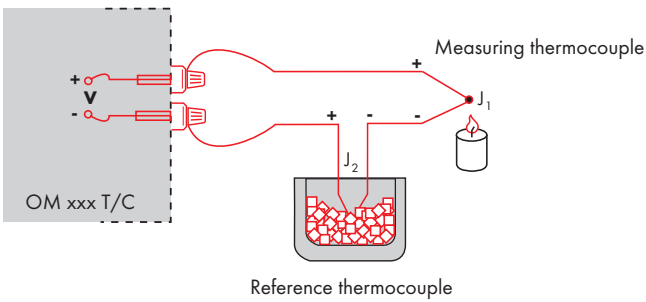


Id. Projection of the instrument version

- *the display shows the type identification of the instrument with the number of revision*
- *instrument name - program version - SW date e.g.: OM, 351, PM2, 003, 000,*

5. METHOD OF MEASUR. OF THE COLD JUNCT.

An istrument with input for temperature measurement with thermocouple allows for setting of two types of measurement of the cold junction.



WITH REFERENCE THERMOCOUPLE

■ a reference thermocouple may be located in the same place as the measuring instrument or in place with stable temperature/compensation box

■ when measuring with reference thermocouple set r. tC in the instrument menu to YES

■ when using a thermostat (a compensation box or environment with constant temperature) set in the instrument menu CJC its temperature

■ if the reference thermocouple is located in the same environment as the measuring instrument then set in the instrument menu CJC to number 99. Based on this selection the measurement of the surrounding temperature is performedby a sensor located in the instrument terminal board.

WITHOUT REFERENCE THERMOCOUPLE

■ inaccuracy originating from the creation of dissimilar thermocouples on the transition point terminal-conductor of the thermocouple is not compensated for in the instrument

■ when measuring without reference thermocouple set r. tC in the instrument menu to no

■ when measuring temperature without reference thermocouple the error in the measured data may be even 10°C

6. DATA PROTOCOL

The instruments communicate via serial line RS232 or RS485. For communication they use the ASCII protocol. Communication runs in the following format:

ASCII: 8 bit, no parity, one stop bit

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

COMMANDS FOR INSTRUMENT OPERATION

The commands are described in specification you can find at **www.orbit.merret.cz/rs**.
A command consists of a number and a letter. The size of the letters have a significance. An isotype behind the command determines the type of the command and data form

DETAILED DESCRIPTION OF COMMUNICATION VIA SERIAL LINE

Activity	Type	Protocol		Data transferred												
Data solicitation (PC)	232	ASCII		#	A	A	<CR>									
	485	ASCII		#	A	A	<CR>									
Data transfer (Instrument)	232	ASCII		>	D	D	D	D	D	D	D	(D)	(D)	(D)	<CR>	
	485	ASCII		>	D	D	D	D	D	D	D	(D)	(D)	(D)	<CR>	
Command transfer (Instrument)	232	ASCII		#	A	A	N	P	D	D	D	D	(D)	(D)	(D)	<CR>
	485	ASCII		#	A	A	N	P	D	D	D	D	(D)	(D)	(D)	<CR>
Command confirmation (Instrument)	232	ASCII	ok	!	A	A	<CR>									
			bad	?	A	A	<CR>									
	485	ASCII	ok	!	A	A	<CR>									
			bad	?	A	A	<CR>									

Legend			
#	35	23_H	Beginning of the command
A A	0...31		Two signs of the inst. address (sent in ASCII - decades and units, ex."01")
<CR>	13	$0D_H$	Carriage return
<SP>	32	20_H	Space
N P			Number and command - command code
D			Data - usually signs "0"..."9","-","." ; (D) - dp. and (-) may prolong data
R	$30_H...3F_H$		Relay status; zero bit corresponds with 1st relay, 1st bit with 2nd relay, etc.
!	33	21_H	Positive command confirmation (ok)
?	63	$3F_H$	Negative command confirmation (bad)
>	62	$3E_H$	Beginning of the transmitted data

7. ERROR STATEMENTS

ERRORR	CAUSE	ELIMINATION
E.Un	range overflow (A/D converter)	change the value of input signal or change display projection
E.On	range overflow (A/D converter)	change the value of input signal or change display projection
E.nA	mathematic error, projection range is beyond the display	change the set projection
E.EE	infringement of data integrity in EEPROM, error in data storage	when reported repeatedly send the instrument for repair
E.n.	EEPROM error	„Def" values will be used in emergency, necessary to send for repair
E.C.	calibration error, loss of calibration data	necessary to send for repair

8. TECHNICAL DATA

INPUT

selectable in configuration menu			***DC***
DC 1	±2 mA	< 400 mV	Input 1
	±20 mA	< 60 mV	Input 1
	±200 mV	1 MOhm	Input 2
	±2 V	1 MOhm	Input 2
	±20 V	1 MOhm	Input 3
	±200 V	1 MOhm	Input 3
DC 2	±1 A	< 60 mV	Input 1
	±5 A	< 60 mV	Input 1
	±60 mV	1 MOhm	Input 2
	±150 mV	1 MOhm	Input 2
selectable in configuration menu			***PM***
	0/4...20 mA	< 400 mV	Input 1
	0...2 V	1 MOhm	Input 2
	0...5 V	1 MOhm	Input 3
	0...10 V	1 MOhm	Input 3
range is fixed, as per order			***OHM***
	0...2 Ohm		Input 1
	0...20 kOhm		Input 1
	5...105 Ohm		Input 2
	0...100,0 kOhm	(upon request)	Input 2
Connection:	2-wire		

RTD

Pt xxxx	±199,9°C
Ni xxxx	-30,0°...199,9°C
Type Pt:	100/500/1 000 Ohm, platinum couple s α=0,003850hm/Ohm/°C
Type Ni:	Ni 1 000, 5000 ppm/6180 ppm
Connection:	2, 3 or 4-wire

selectable in configuration menu			***T/C***
Type:	J (Fe-CuNi)	0°...900°C	
	K (NiCr-Ni)	0°...1 300°C	
	T (Cu-CuNi)	0°...400°C	
	E (NiCr-CuNi)	0°...690°C	
	B (PtRh30-PtRh6)	300°...1 820°C	
	S (PtRh10-Pt)	0°...1 760°C	
	R (Pt13Rh-Pt)	0°...1 740°C	
	N (Omegalloy)	0°...1 300°C	

- The instrument evaluates only temperatures higher than the temperature of the cold junction (CJC)

DU

Lin. pot.supply	2,5 VDC/6 mA min. potentiometer resistance is 500 Ohm

PROJECTION

Display:	9999, intensive red or green 7-segment LED, digit height 14 mm
Projection:	±1999
Decimal point:	adjustable - in programming mode
Brightness:	adjustable - in programming mode

INSTRUMENT ACCURACY

Temperature coef.:	100 ppm/°C	
Accuracy:	±0,3 % of the range	
	±0,5 % of the range	***AC***
Resolution:	0,1°	***RTD***
	1°C	***T/C***
Rate:	0,5 - 1,2 - 2,5 - 5 - 10 maeasurements/s	
Overload capacity:	10x (t < 100 ms), 2x (long-term)	
Digital filter	adjustable in configuration menu	
Comp.of conduct:	max. 40 Ohm	***RTD***
Comp.of cold junct.:	adjustable 0°...98°C or automatic (99)	***T/C***
Functions:	Tare - display resetting Hold - stop measuring (upon contact)	
Watch-dog:	reset after 25 ms	
Calibration:	at 25°C and 40 % r.h.	

COMPARATOR

Type:	digital, adjustable in the menu
Limits:	±1999
Hysteresis:	0...999
Delay:	0...99,9 s
Outputs:	2x relays with switch-on contact (230 VAC/30 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:	1 200...38 400 Baud
RS 232:	isolated, two-way communication
RS 485:	isolated, two-way communication, addressing (max. 31 instruments)

- cannot be combined with analog output

** values apply for resistance load*

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:	odezva na změnu hodnoty < 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

- cannot be combined with data output

EXCITATION

Adjustable:	15 VDC/50 mA, isolated

- cannot be combined with data/analog output

POWER SUPPLY

Options:	24/110/230 VAC, 50/60 Hz, ±10 %, 3 VA 12...24 VDC/max. 150 mA, nonisolated (without AO and excitation) 10...30 VDC/max. 250 mA (24 VDC/100 mA),
Protection:	by a fuse inside the instrument VAC (T 80 mA), VDC (T 630 mA)

MECHANIC PROPERTIES

Material:	Noryl GFN2 SE1, incombustible UL 94 V-I
Dimensions:	96 x 48 x 120 mm
Panel cut-out:	90,5 x 45 mm

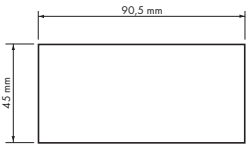
OPERATING CONDITIONS

Connection:	connector terminal board, conductor section up to 2,5 mm^2
Stabilisation period:	within 15 minutes after switch-on
Working temp.:	0°...60°C
Storage temp.:	-10°...85°C
Cover:	IP65 (front panel only)
Construction:	safety class I
Overvoltage 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

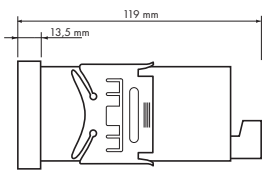
9. DIMENSIONS AND INSTALLATION INSTR.

Front view

Panel cut



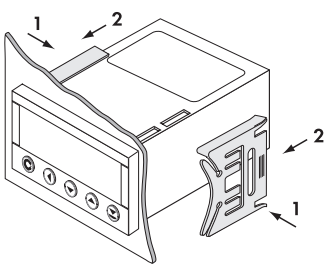
Side view

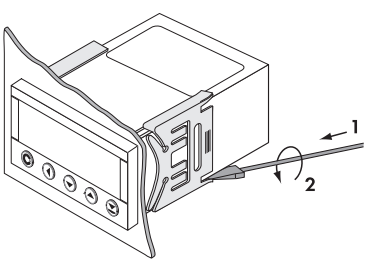


Panel thickness: 0,5...20 mm

Instrument installation

1. insert the instrument into the panel cut-out
2. fit both travellers on the box
3. press the travellers close to the panel





Instrument disassembly

1. slide a screw driver under the traveller wing
2. turn the screw driver and remove the traveller
3. take the instrument out of the panel

10. CERTIFICATE OF GUARANTEE

Product	**OM 351 DC PM DU RTD T/C OHM**
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 quality, function and construction of the instrument the guarantee shall apply provided that the instrument was connected and used in compliance with the instructions for use.

The guarantee shall not apply to defects caused by:

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

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

Stamp, signature

ORBIT MERRET, spol. s r.o.
Vodňanská 675/30
198 00 Praha 9
Czech Republic

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

Austria
ING.E.GRUBER GmbH
Edu. Kittenberger Gasse 97 Top2
A-1230 Wien
tel: +43 - 1 - 869 23 39-0
fax: +43 - 1 - 865 18 75
e-mail: office@gruber-components.at
www.gruber-components.at

The Netherlands
AE SENSORS B.V.
J. Valsterweg 92
3301 AB Dordrecht
Tel: +31 - 78 - 621 31 52
Fax: +31 - 78 - 621 31 46
e-mail: aesensors@aesensors.nl
www.aesensors.nl

Switzerland
ORBIT CONTROLS AG
Zürcherstrasse 137
8952 Schlieren
tel: +41 - 1 - 730 27 53
fax: +41 - 1 - 730 27 83
e-mail: info@orbitcontrols.ch
www.orbitcontrols.ch

USA
METRIX Instruments Co.
1711 Townhurst Dr.
Houston, Texas 77043-2899
tel: +1 - 713 - 461 21 31
fax: +1 - 713 - 461 82 83
e-mail: sales@metrix1.com
www.metrix1.com

Germany
MEGATRON Elektronik AG & Co.
Hermann-Oberth-Str. 7
85640 Putzbrunn/München
tel: +49 - 89 - 460 94 - 0
fax: +49 - 89 - 460 941 01
e-mail: sales@megatron.de
www.megatron.de

Russian Federation
PO <INTERFACE>
a.b. 3408
Krasnodar, 350044
tel: +1 - 8612 - 660 483
fax: +1 - 8612 - 623 000
e-mail: itf@au.ru
www.meter.chat.ru

Turkey
ALFA ELEKTRONIK Ltd.
Baglarbasi Mah. Ergenekon No: 33
TR - 81540 Maltepe - ISTANBUL
Tel: +90 - 216 - 442 39 49
Fax: +90 - 219 - 305 54 50
e-mail: sb@elmak.com.tr
www.alfa-technik.com

Lithuania
RIFAS UAB
Tinklu g. 29a
LT-5300 Panevėžys
tel: +370 - 5 - 510 400
fax: +370 - 5 - 582 729
e-mail: sales@metrix1.com
www.metrix1.com

Slovakia
TECHREG, s.r.o.
Dukelských hrdinov 2
984 22 Lučenec
tel: +421 - 47 - 433 15 92
fax: +421 - 47 - 433 15 92
e-mail: techreg@bb.psg.sk
www.techreg.sk

Ukraine
OOO <KOTRIS>
Nesterova 3, Office 907
030 57 Kyjev
tel: +44 - 446 - 21 42
fax: +44 - 446 - 21 42
e-mail: metrix-ua@svitonline.com