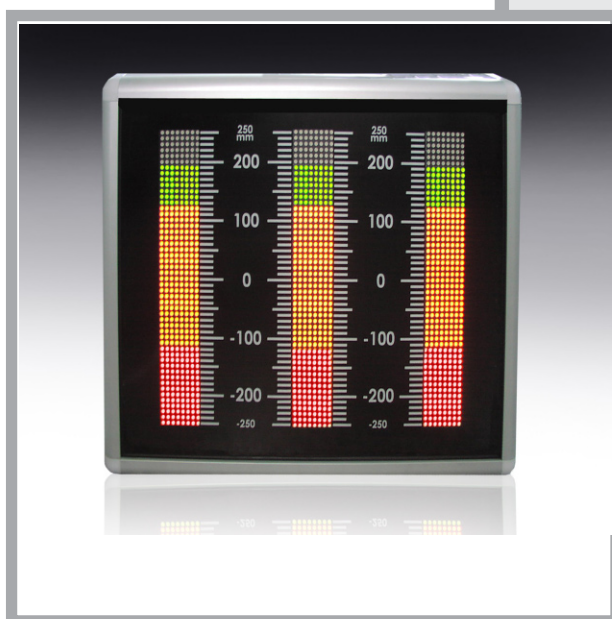


MEASURING PANELS WITH MULTICOLOUR BARGRAPHS DB2 SERIES



USER'S MANUAL

**MEASURING PANELS WITH MULTICOLOUR
BARGRAPHS - DB2 SERIES**

USER'S MANUAL

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1. APPLICATION

Measuring panels with multicolour bargraphs have inputs destined to measure temperature and standard signal: d.c. voltage and d.c. current.

The input can be also an RS-485 digital signal to connect transducers of physical quantities.

These panels can find application in various industrial fields, e.g. food industry, environmental engineering, weather stations. They are destined to visualise measured quantities and evaluate change trends of supervised technological processes.

They can find application in automation systems where programmed controllers are installed.

Situated in a visible place, information helps in the efficient work of technological, logistic, sales and quality inspection teams. Panels display information in the shape of a multicolour bargraph where the readout field can assume colours: red, green or yellow. Colour change is defined in 5 thresholds. Measuring panels with multicolour bargraphs of DB2 type co-operate with external measuring devices equipped with RS-485 interface with MODBUS RTU protocol.

It is possible to visualise technological processes, transmit messages from devices about the link state or the programmed quantity exceeding.

The basic panel version includes two, three or four multicolour bargraphs.

Inputs are the combination of 4 kinds of inputs: digital, Pt100, 4...20 mA and 0...10 V.

After agreeing with the manufacturer it is possible to realise individual, custom-made projects.

2. PANEL SET

The panel set is composed of:

- DB2 measuring panel 1 pc
- „DB2-Configurator” software 1 pc
- Assembly jigs 2 pcs
- User's manual 1 pc
- Guarantee card 1 pc

3. BASIC REQUIREMENTS, SAFETY INFORMATION

Symbols located in this user's manual mean:



WARNING!

Warning of potential, hazardous situations.

Especially important. One must be familiar with this before connecting the panel. The non-observance of notices marked by these symbols can occasion severe injuries of the personnel and the damage of the panel.



CAUTION!

Designates a general useful note. If you observe it, handling of the panel is made easier. One must take note of this, when the panel is working inconsistently to the expectations. Possible consequences if disregarded !

In the security scope the panelmodule meets the requirements of the EEC Low-Voltage Directive - EN 61010-1

Remarks concerning the operator safety:



1. General

- The panel is destined to co-operate with other devices.
- Non-authorized removal of the required housing, inappropriate use, incorrect installation or operation creates the risk of injury to personnel or damage to equipment. For more detailed information please study the user's manual.
- All operations concerning transport, installation, and commissioning as well as maintenance must be carried out by qualified, skilled personnel and national regulations for the prevention of accidents must be observed.
- According to this basic safety information, qualified, skilled personnel are persons who are familiar with the installation, assembly, commissioning, and operation of the product and who have qualifications necessary for their occupation.

2. Transport, storage

Please observe the notes on transport, storage and appropriate handling.

Observe the climatic conditions given in Technical Data.

3. Installation

- The panel must be installed according to the regulation and instructions given in this user's manual.
- Ensure proper handling and avoid mechanical stress.
- Do not bend any components and do not change any insulation distances.
- Do not touch any electronic components and contacts.
- Electronic devices may contain electrostatically sensitive components, which can easily be damaged by inappropriate handling.
- Do not install panels outside buildings
- Do not damage or destroy any electrical components since this might endanger your health!

4. Electrical connection

- Before switching the panel on, one must check the correctness of connection to the network.
- In case of the protection terminal connection with a separate lead one must remember to connect it before the panel connection to the mains.
- When working on live panels, the applicable national regulations for the prevention of accidents must be observed.
- The electrical installation must be carried out according to the appropriate regulations (cable cross-sections, fuses, PE connection). Additional information can be obtained from the user's guide.
- The documentation contains information about installation in compliance with EMC (shielding, grounding, filters and cables). These notes must be observed for all CE-marked products.
- The manufacturer of the measuring system or installed devices is responsible for the compliance with the required limit values demanded by the EMC legislation.
- One must protect unused wires and terminals against their incidental touch.

5. Operation

- Measuring systems including DB2 measuring panels must be equipped protection devices according to the corresponding standard and regulations for prevention of accidents.
- After the panel has been disconnected from the supply voltage, live components and power connections must not be touched immediately because capacitors can be charged.
- The housing must be closed during operation.
- The sockets serve only to connect the interfaces (Fig. 4)

6. Maintenance and servicing.

Please observe the manufacturer's documentation.

Read all product-specific safety and application notes in this user's manual.

- Before taking the panel housing out, one must turn the supply off.
- The removal of the panel housing during the guarantee contract period may cause its cancellation.

4. DESIGN DESCRIPTION AND INSTALLATION

The panel housing is made of aluminium.

The safety degree ensured by the housing is IP40.

Panel dimensions depending of versions are presented in the table 1.

The panel has two jigs enabling the suspension or the assembly on a wall.

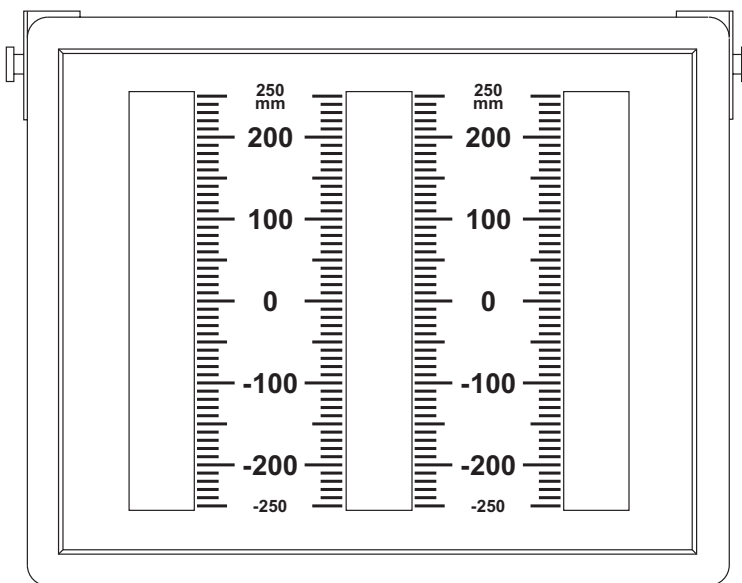


Fig. 1 DB2 panel

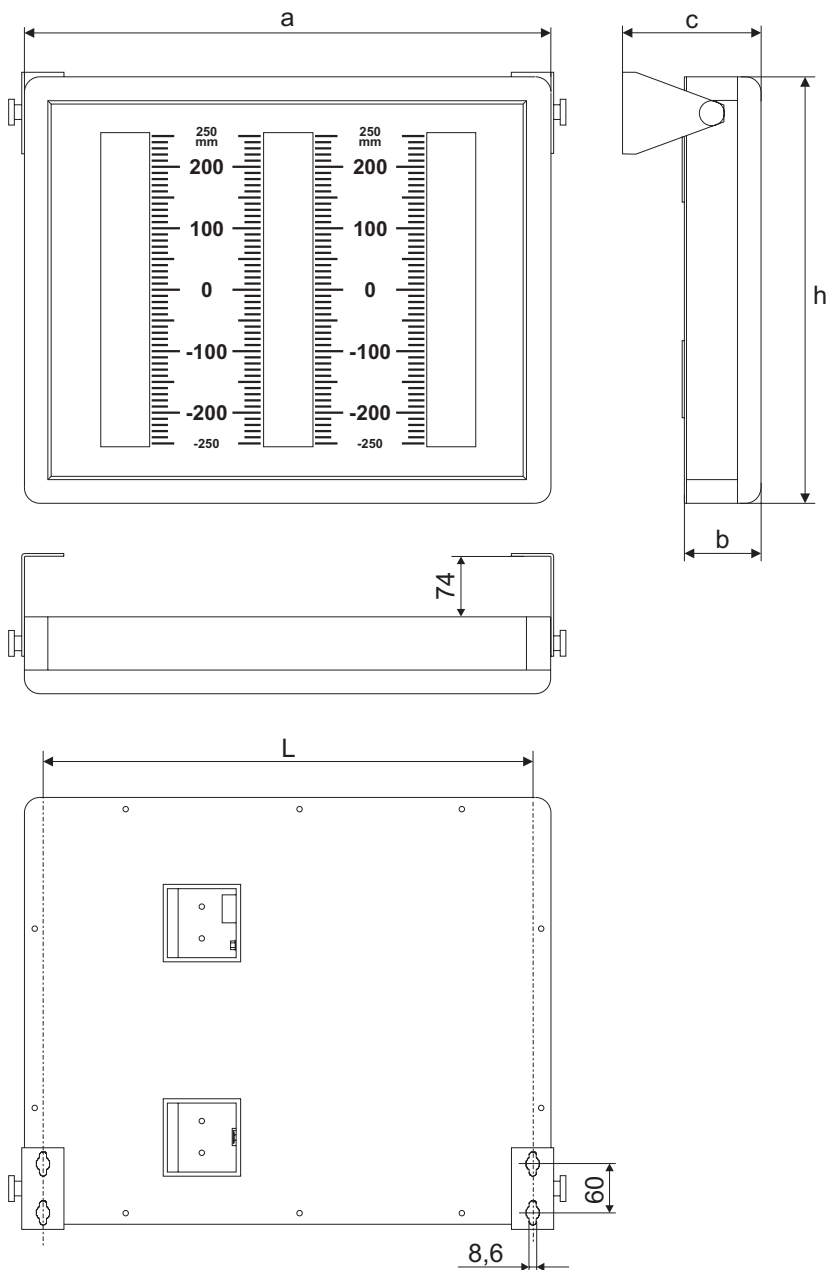


Fig. 2 Panel dimensions, holes and fixing holder arrangement

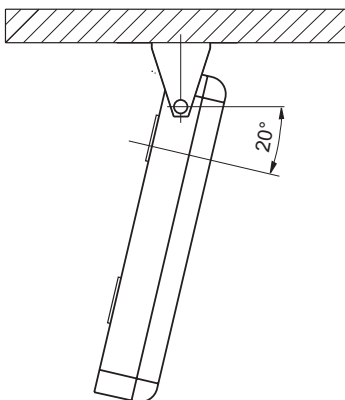


Fig. 3 Panel suspension

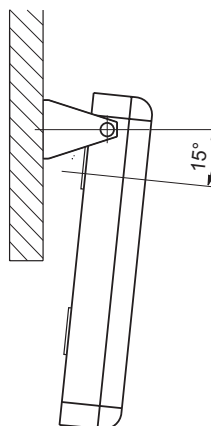


Fig. 4 Panel fixing on a wall

Table 1

Panel type	Readout field	Panel overall dimensions (a × b × c × h) [mm]	Spacing of fixing holes [mm] (L)
01	2 bargraphs	449 × 94.5 × 168.5 × 552	399
02	3 bargraphs	649 × 94.5 × 168.5 × 552	599
03	4 bargraphs	849 × 94.5 × 168.5 × 552	799

Panel dimensions, arrangement of holes and fixing holders

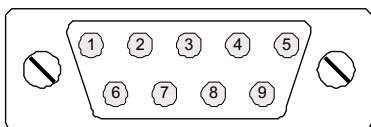
5. ELECTRICAL CONNECTION

Two connection boxes are situated on the rear side of the panel. The upper box serves to connect the mains to the panel.

The lower box is destined to connect control signals and the PC computer in order to configure and monitor the panel.

For the connection with the computer, one must use a shielded conductor ended on both sides by a pin of DB9 type. This conductor should have a simple connection of end pins (without wire crossings)

Description of pins on the RS-485 link.



Signals on the link:

1 - B

2 - A

5 - GND

Housing - conductor shield

Electrical connections must be carry out in accordance with the Fig. 5

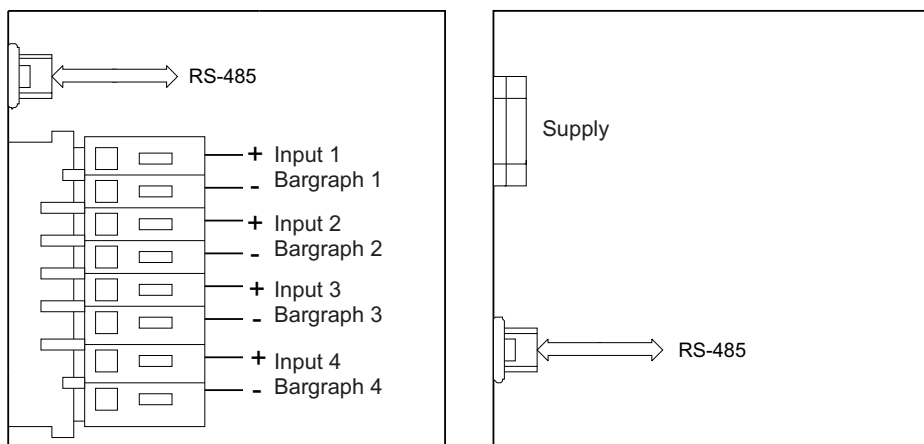


Fig. 5 Electrical connections

In order to facilitate the assembly, all terminals are described on the housing



To carry out the interface installation a double wire spiral in a shield is recommended. Connect the shield to The PE terminal.

Note:

All panel communication connections should be carried out when the supply is switched off. Before switching the panel, it is recommended to check the assembly correctness in respect of terminal colouring preservation and corresponding signals to them, in accordance with above fig. 5.

6. DB2 PANEL FUNCTIONS

The DB2 Configurator software is destined to configure the DB2 bargraph panel according to user's requirements.

After starting the DB2 Configurator software, the main software window is displayed.

In the main software window, the user has the possibility to configure and start dialogues destined to:

- configure the serial transmission port in the PC computer,
- change connection parameters between the panel and the computer,
- configure the panel brightness.
- set the date and time on the DB2 panel,
- configure slave devices connected to the DB2 panel,
- read out and display the DB2 panel state,
- display information about the software,
- display and start the panel monitoring.

Moreover, on the main software window, buttons are placed to:

- write the serial port configuration into the file,
- read out the DB2 panel configuration,
- write the DB2 panel configuration.

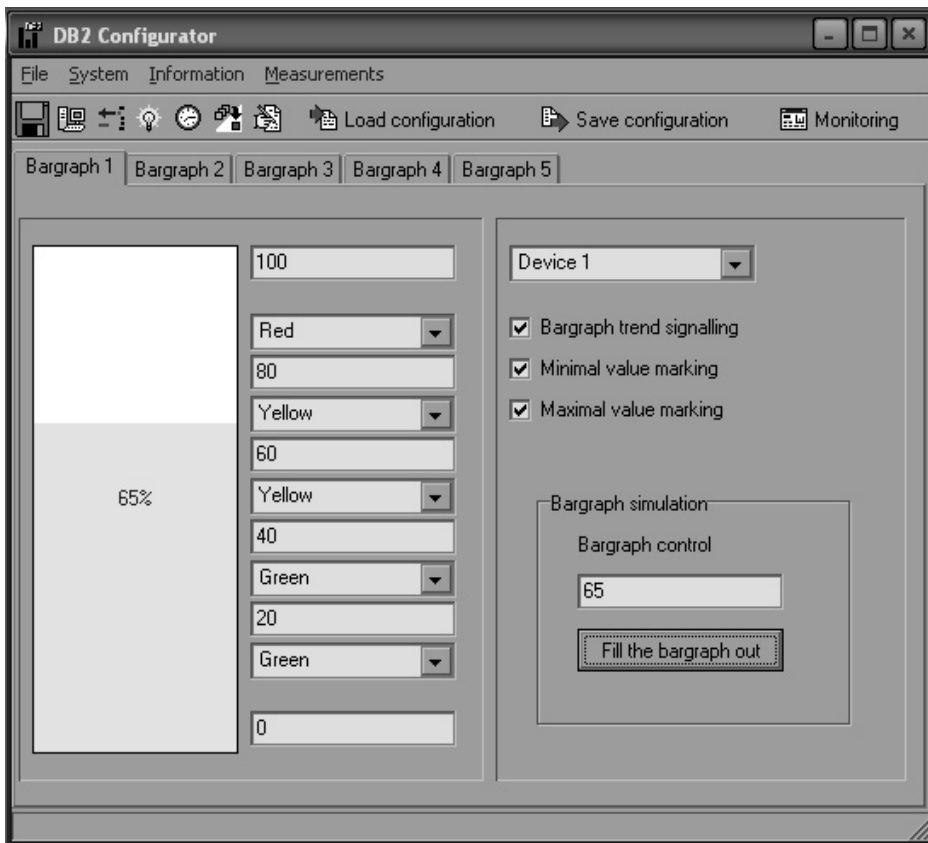


Fig. 6 Main window of the DB2-Configurator software

6.1. Connection configuration - setting of serial port parameters

The configuration of transmission parameters is carried out in the dialog window presented on the fig. 7.

The panel has a large range of serviced baud rates for both communication interfaces: from 2400 b/s up to 115200 b/s.

In order to establish the communication with the panel, the user must define:

- serial port which the panel is connected to,
- type of transmission frame,

- connection baud rate,
- waiting for answer,
- DB2 panel address,

The introduction of an incorrect value is signaled by the software with request to correct the value of the given wrong parameter.

Note: The panel is configured by default to work with the 8n2 frame and a baud rate equal to 9600 bit/sec.

The default address is the address 1.

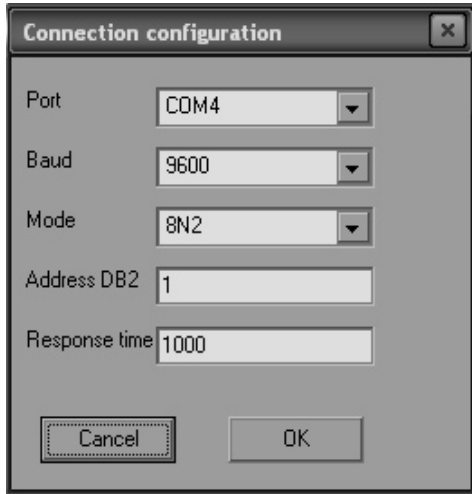


Fig. 7 Serial port configuration

6.2. change of connection parameters between the panel and the computer

The change of connection parameters between the computer and the panel can only take place when the serial port in the computer is correctly configured. In order to change transmission parameters, one must start the „Connection change” dialog.

One must give required transmission parameters in the dialog (new transmission parameters). After pressing the „ apply” button, the parameter transmission change will follow, what will be confirmed by the panel identifier display.

6.3. Panel identification

The panel identification serves to display information about the panel and check the connection with the panel. For identification, the 17 MODBUS function is used.

The selected „System\Identification „ option from the menu occasions the data readout from the DB2 panel and the information window display (only in the case if there is no transmission errors)

The response to the identification command causes the transmission by DB2 of the identifier and panel dimension with the number of matrix and point resolution.

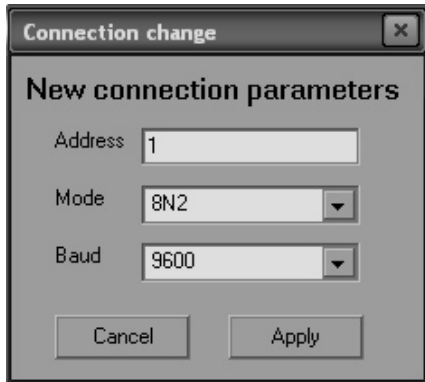


Fig. 8 Change of transmission parameters

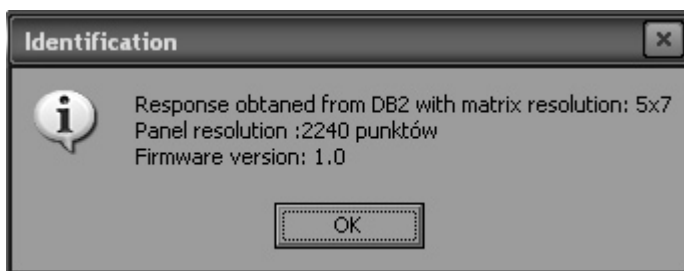


Fig. 9 Identification window

6.4 Real-time clock

The DB2 panel has an internal real-time clock with the function to support the clock in case of supply decay and change automatically the summer time into the winter time, and inversely.

The „DB2- Configurator” software allows to program the time when controlling the brightness time. The setting of the time and date is carried out in the „Time and Date” dialog window.

One can set the time and date in two ways:

- by the manual writing of time and date and pressing the „Write” push,
- by pressing the „synchronise” push, what occasions the transmission of the time and date from the PC computer to the panel.

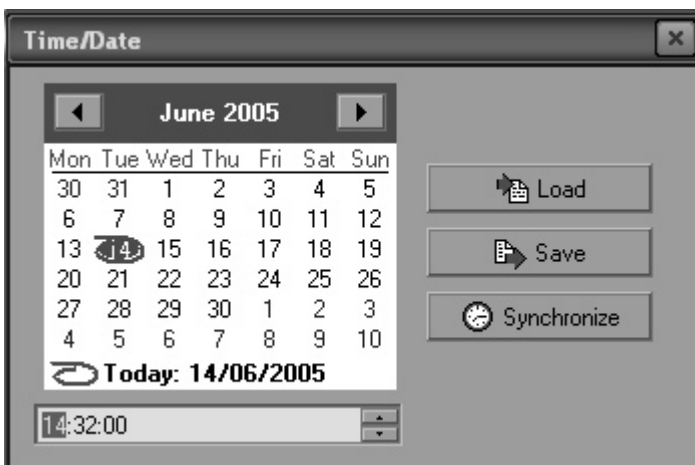


Fig 10. Setting the date and time

6.5. Data readout from external devices

For data readout from external devices (e.g. measuring devices), an extra RS-485 interface with the MODBUS RTU protocol is foreseen. The transmission parameter configuration and readout parameter configuration to/from external devices is carried out by pressing the „Slave configuration” button. The user must enter in the displayed dialog, transmission parameters on the object page and give data parameters read out from devices.

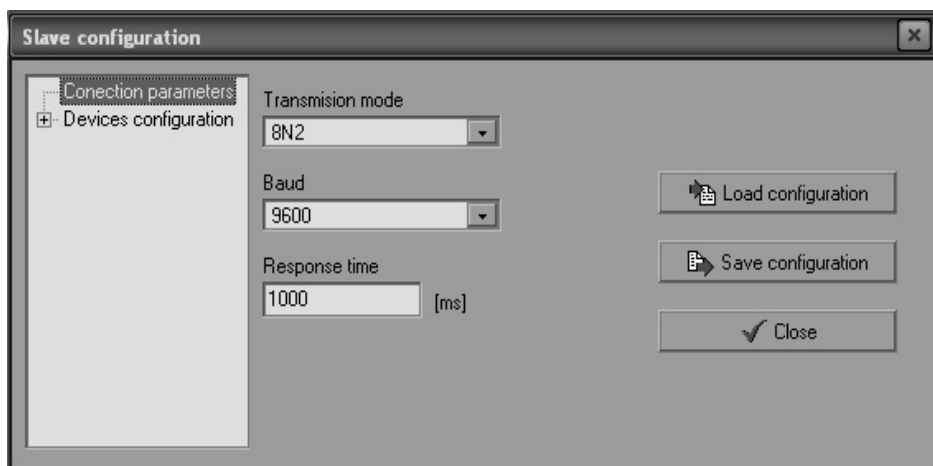


Fig. 11. Configuration of transmission parameters with slave devices

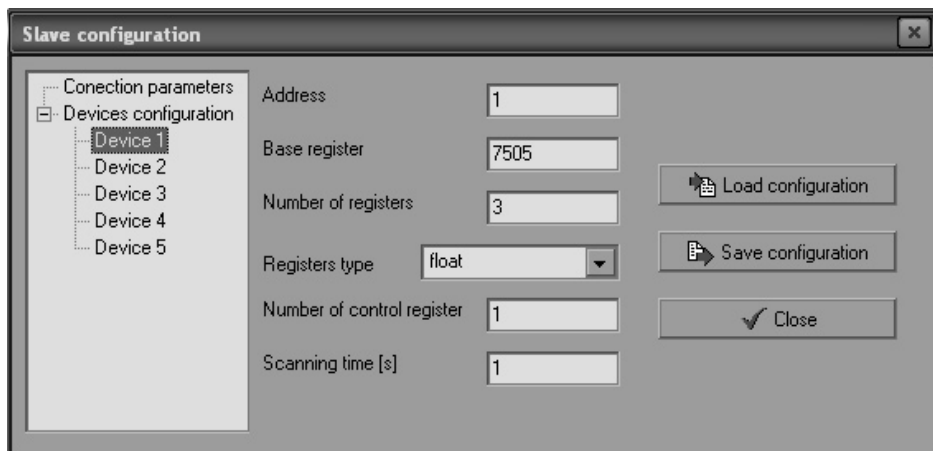


Fig. 12 Configuration of data read out from slave devices

The configuration of read out parameters (displayed data) includes following parameters:

- device address - defines the register in the device, which data are to be read out from,
- basic register - defines the register in the device, which data are to be begun from,
- number of registers - defines how many registers are to be read out from the device. The number of registers must be included in the range from 1 to 10,
- control register number - defines which from the read out register series is to be displayed on the panel in the bargraph shape,
- register type - defines which type of registers are in the device which the readout will be carried out from,
- scroll period - defines the period of query transmission though the DB2 panel to the slave device.

6.6 Diagnostic registers

Built-in diagnostic registers informing about the controller state and events.

The „DB2-Configurator” software enables the review of diagnostic registers.

In the base of presented messages, the user can state what events had occurred and what is the panel state.

The selection of the „Delete” option causes the delete of the event flag after pressing the „close” button.

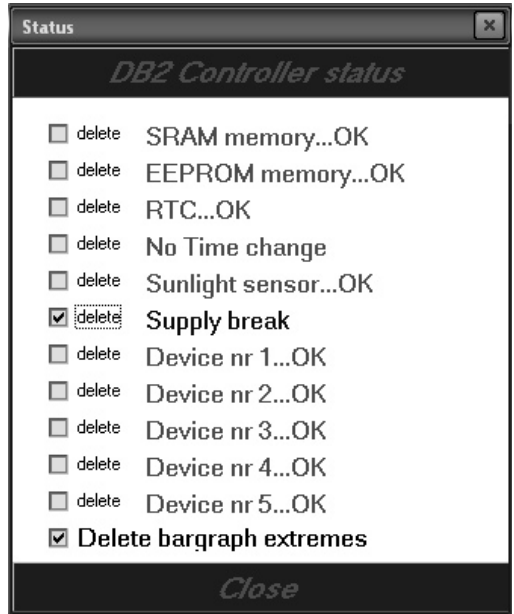


Fig. 13 Status window

6.7. Brightness control

The DB2 panel allows to define brightness changes. In order to define the brightness one should enter the time of day beginning and the time of night beginning, and define the brightness level for the day and night, expressed as the percentage of the maximal brightness.

After entering mentioned parameters one can carry out the setting write for DB2 by pressing the „Write settings” button.

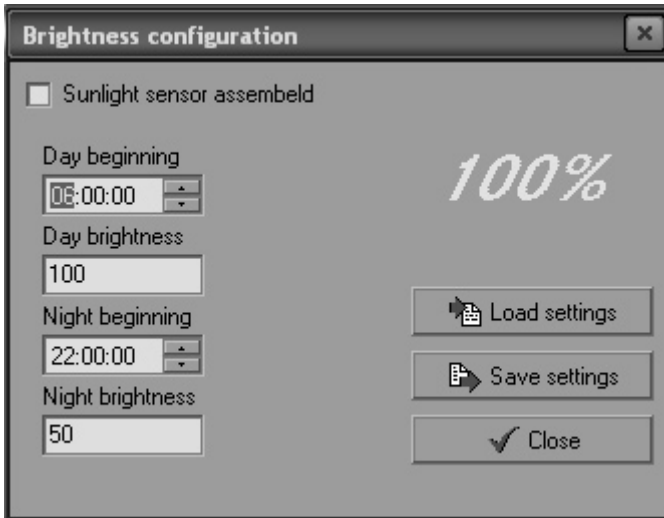


Fig. 14 Setting the brightness on the time base

Brightness configuration

☒ Sunlight sensor assembled

Minimal brightness level [%]
5

Maximal brightness level [%]
100

100%

Load settings

Save settings

Close

*Fig.15
Setting the brightness
on the base of the
sunlight sensor*

During the panel operation with the sunlight sensor one must mark the „Switch external sunlight sensor on” field, then on the panel fields will be displayed to introduce the minimal and maximal brightness level which the panel is to reach at external lighting, suitably minimal and maximal. (the version with the sensor must be define in the order).

6.8. Monitoring

The monitoring is started by pressing the „Monitoring” button on the task bar, what generates the start of the configuration data readout from the bargraph, and next the software switching over in the review mode of read out values and bargraph simulation.

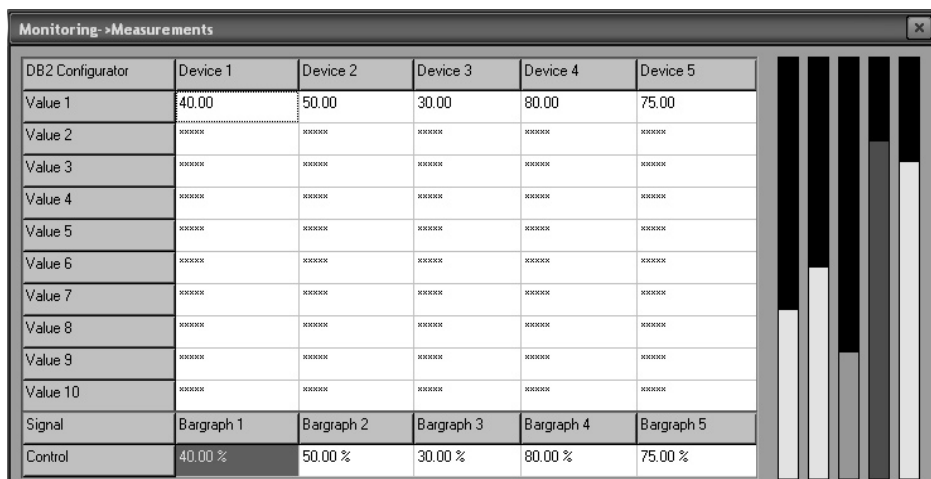


Fig 16. Monitoring window

7. INTERFACE

The panel has the possibility to communicate with a computer of C class through the RS-232 or RS-485 serial interface.

The MODBUS RTU communication protocol has been implemented in the panel.

Working modes: RTU8n2, RTU8n1, RTU8e1, RTU8o1.

The baud rate encloses the range from 2400b/s up to 115200 b/s.

Register values are of unsigned integer type. The word in the register is placed in older byte, younger byte sequence.

7.1. Register map of the DB2 panel with multicolour bargraphs

Applied designations:

R - readout

W - write

Configuration registers are 16-bit registers of unsigned integer type.

Table 2

Register address	Operations	Range	Description
4000	RW	1... 247	Interface No 1 address - User's interface
4001	RW	0... 3	Working mode of the interface number 1: 0: RTU 8N1 1: RTU 8N2 2: RTU 8E1 3: RTU 8O1
4002	RW	0... 9	Baud rate of the interface No 1[b/s]: 0 - 2400; 1 - 4800; 2 - 9600; 3 - 14400; 4 - 19200; 5 - 28800; 6 - 38400; 7 - 57600; 8 - 76800; 9 - 115200
4003	RW	1... 50	Waiting time to the slave device response for the port 2, expressed as the multiple of 100 ms.
4004	RW	1... 3	Working mode of the interface No 2: 0: RTU 8N1 1: RTU 8N2 2: RTU 8E1 3: RTU 8O1
4005	RW	1... 9	Baud rate of the interface No 2[b/s]: 0 - 2400; 1 - 4800; 2 - 9600; 3 - 14400; 4 - 19200; 5 - 28800; 6 - 38400; 7 - 57600; 8 - 76800; 9 - 115200
4006	RW	0... 2359	Current time in the hour.100 + minutes format. The time write causes the automatic reset of secondes.
4007	RW	1... 99	Current year in the RR format
4008	RW	101... 1231	Current datein the month. 100 + day format.

4009	RW	1... 100%	Panel brightness level for day. Used at switched sunlight sensor off. Brightness control on the time base.
4010	RW	1... 100%	Panel brightness level for night. Used at switched sunlight sensor off. Time control of brightness.
4011	RW	0... 2359	Hour of day beginning - Beginning of the day for the brightness time control. Time in the hour.100 + minutes format.
4012	RW	0... 2359	Hour of night beginning - Beginning of the night for time control of brightness.
4013	RW	1... 415	The real dimension in the panel is expressed as the number of matrix in vertical - y_matrix and number of matrix in horizontal -x_matrix. The dimension is calculated as: y_matrix.100 + x_matrix Note: one matix is equal 8 x 8 points.
4014	RW	0, 1	Bargraph direction: 0 - vertical bargraph 1 - horizontal bargraph
4015	RW	0, 1	External sunlight sensor: 0 - lack, 1 - installed
4016	RW	1... 100%	Minimal brightness level - defines the minimal level of the brightness when working with the external sunlight sensor.
4017	RW	1... 100%	Maximal brightness level - defines the maximal level of the brightness when working with the external sunlight sensor.
4018	RW	1... 100%	Current level of the panel brightness.
BARGRAPH 1			
4019	RW	0, 1	Signalling of bargraph trend: 0- OFF, 1- ON
4020	RW	0, 1	Signalling of minimal value: 0- OFF, 1- ON
4021	RW	0, 1	Signalling of maximal value: 0- OFF, 1- ON
4022	RW	0... 2	Colour of the first interval: 0-green, 1-red, 2-yellow
4023	RW	0... 2	Colour of the second interval: 0-green, 1-red, 2-yellow
4024	RW	0... 2	Colour of the third: 0-green, 1-red, 2-yellow
4025	RW	0... 2	Colour of the fourth interval: 0-green, 1-red, 2-yellow
4026	RW	0... 2	Colour of the fifth interval: 0-green, 1-red, 2-yellow
4027	RW	0... 4	Number of the bargraph controlling device.c
BARGRAPH 2			
4028	RW	0, 1	Signalling of bargraph trend: 0- OFF, 1- ON
4029	RW	0, 1	Signalling of minimal value: 0- OFF, 1- ON

4030	RW	0, 1	Signalling of maximal value: 0- OFF, 1- ON
4031	RW	0... 2	Colour of the first interval: 0-green, 1-red, 2-yellow
4032	RW	0... 2	Colour of the second interval: 0-green, 1-red, 2-yellow
4033	RW	0... 2	Colour of the third: 0-green, 1-red, 2-yellow
4034	RW	0... 2	Colour of the fourth interval: 0-green, 1-red, 2-yellow
4035	RW	0... 2	Colour of the fifth interval: 0-green, 1-red, 2-yellow
4036	RW	0... 4	Number of the bargraph controlling device.
BARGRAPH 3			
4037	RW	0, 1	Signalling of bargraph trend: 0- OFF, 1- ON
4038	RW	0, 1	Signalling of minimal value: 0- OFF, 1- ON
4039	RW	0, 1	Signalling of maximal value: 0- OFF, 1- ON
4040	RW	0... 2	Colour of the first interval: 0-green, 1-red, 2-yellow
4041	RW	0... 2	Colour of the second interval: 0-green, 1-red, 2-yellow
4042	RW	0... 2	Colour of the third: 0-green, 1-red, 2-yellow
4043	RW	0... 2	Colour of the fourth interval: 0-green, 1-red, 2-yellow
4044	RW	0... 2	Colour of the fifth interval: 0-green, 1-red, 2-yellow
4045	RW	0... 4	Number of the bargraph controlling device.
BARGRAPH 4			
4046	RW	0, 1	Signalling of bargraph trend: 0- OFF, 1- ON
4047	RW	0, 1	Signalling of minimal value: 0- OFF, 1- ON
4048	RW	0, 1	Signalling of maximal value: 0- OFF, 1- ON
4049	RW	0... 2	Colour of the first interval: 0-green, 1-red, 2-yellow
4050	RW	0... 2	Colour of the second interval: 0-green, 1-red, 2-yellow
4051	RW	0... 2	Colour of the third: 0-green, 1-red, 2-yellow
4052	RW	0... 2	Colour of the fourth interval: 0-green, 1-red, 2-yellow
4053	RW	0... 2	Colour of the fifth interval: 0-green, 1-red, 2-yellow
4054	RW	0... 4	Number of the bargraph controlling device.
BARGRAPH 5			
4055	RW	0, 1	Signalling of bargraph trend: 0- OFF, 1- ON
4056	RW	0, 1	Signalling of minimal value: 0- OFF, 1- ON
4057	RW	0, 1	Signalling of maximal value: 0- OFF, 1- ON
4058	RW	0... 2	Colour of the first interval: 0-green, 1-red, 2-yellow
4059	RW	0... 2	Colour of the second interval: 0-green, 1-red, 2-yellow
4060	RW	0... 2	Colour of the third: 0-green, 1-red, 2-yellow
4061	RW	0... 2	Colour of the fourth interval: 0-green, 1-red, 2-yellow
4062	RW	0... 2	Colour of the fifth interval: 0-green, 1-red, 2-yellow

4063	RW	0... 4	Number of the bargraph controlling device.
4064	RW	0... 65535	Status register, bits present event flags or errors: Bit 15 - SRAM memory error, Bit 14 - EEPROM memory error, Bit 13 - setting error of the RTC clock or unreliable settings, Bit 12 - summer/winter time has been changed or inversely, Bit 11 - error of the external sunlight sensor (set only in case when the sensor is switched on), Bit 10 - supply break - flag set in case of supply decay, Bit 9 - delete bargraph minimum and maximum, Bit 8..5 - no used, Bit 4 - communication error with the slave device No 5 Bit 3 - communication error with the slave device No 4 Bit 2 - communication error with the slave device No 3 Bit 1 - communication error with the slave device No 2 Bit 0 - communication error with the slave device No 1

Registers of data readout configuration from external devices - registers 4300...4329

All configuration registers are 16-bit registers of unsigned integer type.

Table 3

Register address	Operations	Range	Description
DEVICE 1			
4300	RW	0...247	Slave device address. 0 - readout off
4301	RW	0...65535	Basic address
4302	RW	1...10	Number of read out registers
4303	RW	0...6	Register type: 0 - variable of char type 1 - variable of unsigned char type 2 - variable of integer type 3 - variable of unsigned char type 4 - variable of lonf type 5 - variable of unsigned long type 6 - variable of float type
4304	RW	1...10	Register number steering the bargraph
4305	RW	1...60	Reviewing period in seconds. Defines the query frequency of the slave device.
DEVICE 2			
4306	RW	0...247	Slave device address. 0 - readout off
4307	RW	0...65535	Basic address
4308	RW	1...10	Number of read out registers
4309	RW	0...6	Register type: 0 - variable of char type 1 - variable of unsigned char type 2 - variable of integer type 3 - variable of unsigned char type 4 - variable of lonf type 5 - variable of unsigned long type 6 - variable of float type
4310	RW	1...10	Register number steering the bargraph
4311	RW	1...60	Reviewing period in seconds. Defines the query frequency of the slave device.

DEVICE 3			
4312	RW	0...247	Slave device address. 0 - readout off
4313	RW	0...65535	Basic address
4314	RW	1...10	Number of read out registers
4315	RW	0...6	Register type: 0 - variable of char type 1 - variable of unsigned char type 2 - variable of integer type 3 - variable of unsigned char type 4 - variable of lonf type 5 - variable of unsigned long type 6 - variable of float type
4316	RW	1...10	Register number steering the bargraph
4317	RW	1...60	Reviewing period in seconds. Defines the query frequency of the slave device.
DEVICE 4			
4318	RW	0...247	Slave device address. 0 - readout off
4319	RW	0...65535	Basic address
4320	RW	1...10	Number of read out registers
4321	RW	0...6	Register type: 0 - variable of char type 1 - variable of unsigned char type 2 - variable of integer type 3 - variable of unsigned char type 4 - variable of lonf type 5 - variable of unsigned long type 6 - variable of float type
4322	RW	1...10	Register number steering the bargraph
4323R	W	1...60	Reviewing period in seconds. Defines the query frequency of the slave device.

DEVICE 5			
4324	RW	0...247	Slave device address. 0 - readout off
4325	RW	0...65535	Basic address
4326	RW	1...10	Number of read out registers
4327	RW	0...6	Register type: 0 - variable of char type 1 - variable of unsigned char type 2 - variable of integer type 3 - variable of unsigned char type 4 - variable of lonf type 5 - variable of unsigned long type 6 - variable of float type
4328	RW	1...10	Register number steering the bargraph
4329	RW	1...60	Reviewing period in seconds. Defines the query frequency of the slave device.

Configuration registers and values read out from external devices - registers 7500...7569

All registers are 32-bit registers of float type.

Tablica 4

Register address	Operations	Range	Description
BARGRAPH 1			
7500	RW	n.d.	Bargraph minimum
7501	RW	n.d.	Bargraph maximum
7502	RW	0...100%	End of the first threshold as the percentage filling
7503	RW	0...100%	End of the second threshold as the percentage filling
7504	RW	0...100%	End of third threshold as the percentage filling
7505	RW	0...100%	End of the fourth threshold as the percentage filling
BARGRAPH 2			
7506	RW	n.d.	Bargraph minimum
7507	RW	n.d.	Bargraph maximum
7508	RW	0...100%	End of the first threshold as the percentage filling
7509	RW	0...100%	End of the second threshold as the percentage filling
7510	RW	0...100%	End of third threshold as the percentage filling
7511	RW	0...100%	End of the fourth threshold as the percentage filling

BARGRAF 3			
7512	RW	n.d.	Bargraph minimum
7513	RW	n.d.	Bargraph maximum
7514	RW	0...100%	End of the first threshold as the percentage filling
7515	RW	0...100%	End of the second threshold as the percentage filling
7516	RW	0...100%	End of third threshold as the percentage filling
7517	RW	0...100%	End of the fourth threshold as the percentage filling
BARGRAF 4			
7518	RW	n.d.	Bargraph minimum
7519	RW	n.d.	Bargraph maximum
7520	RW	0...100%	End of the first threshold as the percentage filling
7521	RW	0...100%	End of the second threshold as the percentage filling
7522	RW	0...100%	End of third threshold as the percentage filling
7523	RW	0...100%	End of the fourth threshold as the percentage filling
BARGRAF 5			
7524	RW	n.d.	Bargraph minimum
7525	RW	n.d.	Bargraph maximum
7526	RW	0...100%	End of the first threshold as the percentage filling
7527	RW	0...100%	End of the second threshold as the percentage filling
7528	RW	0...100%	End of third threshold as the percentage filling
7529	RW	0...100%	End of the fourth threshold as the percentage filling
DATA READ OUT FROM DEVICES			
DEVICE 1			
7530	R	n.d.	DATA 0
...	...	...	...
7539	R	n.d.	DATA 9
DEVICE 2			
7540	R	n.d.	DATA 0
...	...	...	...
7549	R	n.d.	DATA 9
DEVICE 3			
7550	R	n.d.	DATA 0
...	...	...	...
7559	R	n.d.	DATA 9

DEVICE 4			
7560	R	n.d.	DATA 0
...	...	...	...
7569	R	n.d.	DATA 9
DEVICE 5			
7570	R	n.d.	DATA 0
...	...	...	...
7579	R	n.d.	DATA 9

8. SPECIFICATIONS

Power consumption:

- DB2-01 ≤ 60 VA
- DB2-02 ≤ 70 VA
- DB2-03 ≤ 110 VA

Read-out field:

- DB2-01 2 bargraphs, 51 three-coloured points
- DB2-02 3 bargraphs, 51 three-coloured points
- DB2-03 4 bargraphs, 51 three-coloured points

Communication:

- serial interface (DB2→PC) RS-485
- serial interface (DB2→ measuring device) digital input RS-485
- protocol transmission MODBUS RTU

Reaction to decay and supply return:

- preservation of configuration data

Protection degree ensured by the housing

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Dimensions:

depending on version (acc. to table 1)

Environmental and rated operating conditions:

- working temperature 0... 23... 55°C
- storage temperature -20... 75°C
- humidity 25... 95%
- supply 100...230... 240 V a.c.
- frequency 45...50...60 Hz
- external magnetic field 0...40...400 A/m
- working position any

Standards fulfilled by the panels:***Electromagnetic compatibility:***

- immunity EN 61000-6-2
- emission EN 61000-6-4
- resistance against supply decay EN 61000-6-2

Safety requirements:

acc. to EN 61010-1 standard

- insulation ensured by the housing: basic
- insulation between circuits: basic
- insulation category III
- pollution degree 2
- maximal phase-to-earth voltage: 300 V for supply
50 V for interface circuit

9. ORDERING CODES

Table5

Measuring panel with multicolour bargraphs DB2	XX	X	X	X	X	XX
Panel type:						
with 2 bargraphs	01					
with 3 bargraphs	02					
with 4 bargraphs	03					
on order	XX					
Bargraph 1 - Input type:						
Digital	0					
Pt100 *	1					
4...20 mA (range 0...100%)	2					
0...10 V (range 0...100%)	3					
Bargraph 2 - Input type:						
Digital	0					
Pt100*	1					
4...20 mA (range 0...100%)	2					
0...10 V (range 0...100%)	3					
Bargraph 3 - Input type:						
Digital**	0					
Pt100*	1					
4...20 mA (range 0...100%)	2					
0...10 V (range 0...100%)	0					
Bargraph 4 - Input type:						
Digital**	0					
Pt100*	1					
4...20 mA (range 0...100%)	2					
0...10 V (range 0...100%)	3					
Version:						
Standard	00					
custom-made	XX					

* Define the measuring range in the order

** For the DB2-01 type, accept 0 for channels 3 and 4
for the DB-02,type, accept 0 for the channel 4

ORDERING EXAMPLE

The code: **DB2 01 2 1 0 0 00 (Pt100, from 10 to 60°C)** means:

- DB2** - a measuring panel with multicolour bargraphs
- 01** - with 2 bargraphs
- 2** - 0...20 mA (0...100% range) input for the bargraph 1
- 1** - Pt100 signal (10...60oC range)input for the bargraph 2
- 0** - without the channel 3
- 0** - without the channel 4
- 00** - standard version

The given range is also the bargraph graduation.

Note: There is the possibility to order a measuring panel with an embedded sunlight sensor.

DB2 communication Interface —> PC RS-485, there is also the possibility to carry out with the RS232 interface.

10. BEFORE A FAILURE WILL BE DECLARED



In case of incorrect symptoms please acquaint with the table below.

Table 6

Symptoms	Procedure
1. After the panel switching on, not any segment is displayed.	Check the connection of the network cable.
2. Bargraph flickering in the place where the value from the external device is to be found.	Transmission error, check the connection A, B and settings of the read out device (slave configuration) if they are consistent with settings of the device co-operating with the panel.
3. Bargraph flickering.	Erroneous quantity range (100% overflow of the declared range to display). Correct the range by means of the DB2-Configurator software.
4. Lack of reliability whether all character fields are efficient.	Carry out a repeated switching on. Make the panel test, and in case of abnormalities, contact an authorised workshop.
5. A result inconsistent with our expectations occurs on the readout field (result from the external device).	Check in „Slave configuration” the register compatibility and the displayed register number.
6. The panel does not establish communication with the computer through RS-485 and RS-232 interfaces.	Check the connection correctness and the correctness of introduced transmission parameters. In case, when the user does not remember the set up transmission parameters, one must check them by means of the DB2-Configurator software.

11. MAINTENANCE AND GUARANTEE

The DB2 panel does not require any periodical maintenance.

During the operation, a message about errors in the shape of bargraph flickering can occur when:

- the value exceeds 100% of the range,
- the digital connection between the panel and the measuring device is broken.

Other messages are available after agreeing with the customer, in custom-made versions.

1. From the shipping date, during the period given in the annexed guarantee card

One should take the panel down from the installation and return it to the manufacturer's Quality Inspection Dept.

If the unit has been used in compliance with the instructions, The manufacturer guarantees to repair it free of charge.

2. After the guarantee period:

One should turn over the panel to repair it in a certified service workshop.

The disassembling of the housing causes the cancellation of the granted guarantee.

Spare parts are available for the period of five years from the date of purchase.

LUMEL S.A. policy is one of continuous improvement and we reserve the right to make changes in design and specification of any products as engineering advances or necessity requires and revise the above specification without notice.

SALES PROGRAM

- DIGITAL and BARGRAPH PANEL METERS
- MEASURING TRANSDUCERS
- ANALOG PANEL METERS (DIN INSTRUMENTS)
- ANALOG and DIGITAL CLAMP-ON METERS
- INDUSTRIAL and HOUSEHOLD CONTROLLERS
- CHART AND PAPERLESS RECORDERS
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- LARGE SIZE NUMERIC and ALPHANUMERIC DISPLAYS
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WE ALSO OFFER OUR SERVICES IN THE PRODUCTION OF:

- ALUMINIUM ALLOY PRESSURE CASTINGS
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- PRESSURE CASTING DIES AND OTHER TOOLS

QUALITY PROCEDURES

According to ISO 9001 and ISO 14001 international requirements.

All our instruments have CE mark .

For more information, please write to or phone our Export Department

May 2005



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