WARRANTY 5 YEARS

OMR 700

PAPERLESS RECORDER

SAFETY INSTRUCTIONS

Please read carefully the enclosed safety instructions and observe them!

Installation, all operational interventions, maintenance and service must be performed by a qualified personnel and in accordance with the attached information and safety regulations. The manufacturer is not liable for damage caused by improper installation, configuration, maintenance, and service.

The recorder must be installed according to the respective application. Incorrect installation can cause a malfunction, which can result in damage or accident.

The recorder uses dangerous voltages that can cause a fatal accident. Before you start solving problems (e.g. in case of failure or disassembly), the device must be disconnected from the power supply. For safety information the EN 61 010-1 + A2 standard must be observed.

When removing or inserting a card, observe the safety instructions and follow the recommended procedure. During any intervention the recorder must be disconnected from the power supply.

Do not attempt to repair or modify the device. A defective recorder must be sent for repair to the manufacturer.

These devices should be safeguarded by isolated or common fuses (breakers)!

The recorder is not designed for installation in potentially explosive surroundings (Ex). Use it only outside potentially explosive surroundings.

TECHNICAL DATA

Paperless recorders of the OMR 700 series conform to the Europen regulations 3/23/EU and 2014/30/EU.

They are up to the following European and Czech standards:
EN 61010-1, Electrical safety
EN 61326-1, Electronic measuring, control and laboratory devices - Requirements for EMC „Industrial use"

Seismic capacity:
IEC 980: 1993, art. 6

The recorders are applicable for unlimited use in agricultural and industrial areas.

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2.1 DESCRIPTION

Company ORBIT MERRET launches a new product in its portfolio: Paperless recorder OMR 700.

This recorder is intended for technologies and workings, where it is needed to display and/or record a number of electrical and nonelectrical values at one place. Universality, versatility and in particular good value for money predestine the recorder to fulfil most of your demanding needs including the IP64 front panel cover.

Our paperless recorder has been developed with versatility and intuitive control in mind. Thanks to its modularity the user can insert input or output cards into any of the 8 existing slots. Maximal configuration of the recorder thus allows to measure and record up to 96 inputs. In order to increase reliability, the recorder has two systems - primary and backup.

Always on board are digital control iputs and outputs, serial line RS 485, Ethernet 10/100, USB connector as well as a 512 MB internal memory to record the measured data.

Projection

Color 5,7" TFT display with fine resolution dominates the device. The display is multi-touch and it therefore allows an ease of use.

Control

The recorder is controlled by both the touch screen and the push buttons with adjustable functions, positioned underneath a sliding front door. Two LEDs indicate run/error and the state of data recording.

Setting

All functions and settings can be performed directly on the instrument´s display in a clear graphical menu. For a more comfortable setting a USB keyboard or mouse can be connected.

Data recording

The OMR 700 can record measured data from any of its active inputs, nodes and mathematical functions. Data are stored in the internal 512 MB memory with compression that allows up to four-fold increase in its physical memory without slowing down. Data can also be stored on an external SD card or USB flash drive. In case of a limited number of measuring inputs, measurement data can be stored with a period of up to 1 ms.

The records can be either in BIN or „CVS" format. However, the latter is much more demanding on memory.

Recording speed according to number of channels / memory space

Recording speed	16 inputs	48 inputs	80 inputs	96 inputs
1 ms	2 hours	x	x	x
10 ms	20 hours	7,5 hours	x	x
1 s	2,5 months	1 months	16 days	13 days
1 min	13 years	5 years	2,5 years	2,2 years
10 min	132 years	52 years	26 years	22 years

Modules

The development of the device has been performed with an increased emphasis on technical solutions and universality. Card design not only allows their use in any position of the recorder, but also their additional insertion into vacant slots. Thus, if new requirements to increase the number or type of inputs and outputs occur in the course of using the recorder, just order another card and insert it into a vacant slot. In this way the instrument can „grow" in compliance with your requirements.

All analogue modules are fully isolated from the internal bus, and some cards have galvanic isolation even between individual channels.

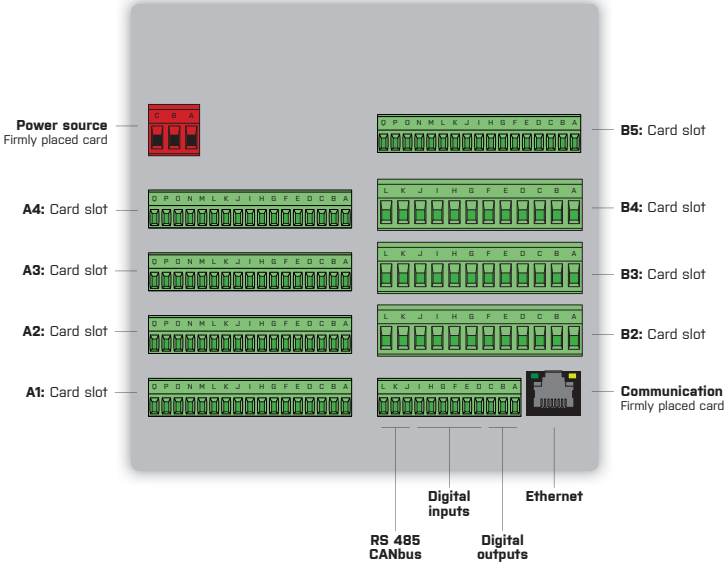
Basic version of the recorder includes power supply module and communication module with Ethernet 10/100, RS 485 (ASCII, MODBUS), five digital inputs and two digital outputs.

Supply lines of the instrument should not be situated in proximity of the incoming low-voltage signals.

Contactors, motors with larger input power and other power elements should not be situated close to the recorder.

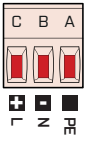
Supply lines to the instrument input (measured quantity) should be situated at a sufficient distance from all power lines and appliances. If this can not be secured, it is necessary to use shielded leads with connection to the ground (terminal E).

The devices are tested according to the standards for use in industrial area, yet we recommend to abide by the above principles.

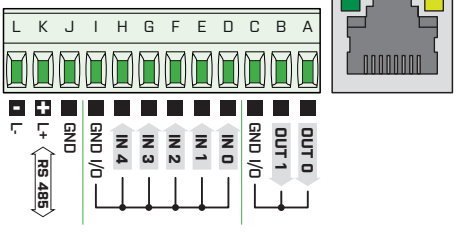


Slots A are designated for fast analogue cards.
Slot B5 is designated for cards DO.1/2.
There are no rectrictions for placements of other cards.

A5 - Power supply

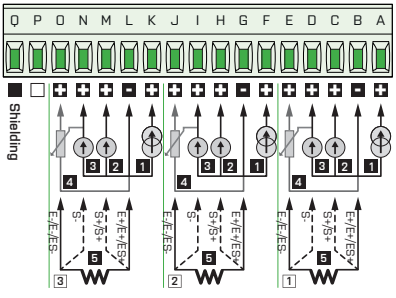


B1



IN.1 3x Universal input

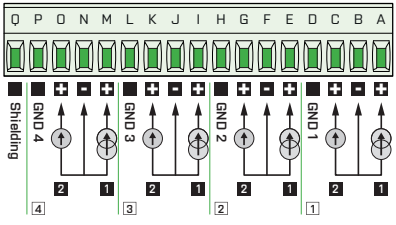
IN.1



1 **PM:** 0...5/20 mA/4...20 mA
2 **PM:** ±2 V/±5 V/±10 V/±40 V
3 **DC:** ±60/±150/±300/±1 200 mV
T/C: J/K/T/E/B/S/R/N/L
4 **DU:** Lin. potentiometer (> 500 Ω)
5 **OHM:** 0...0,1/1/10/30 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.2 4x PM input U-I

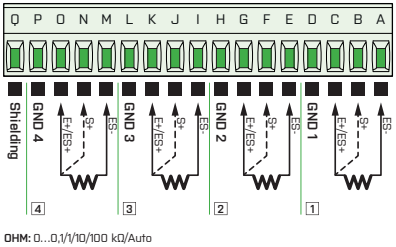
IN.2



1 **DC - I:** ±5/±20 mA/4...20 mA
2 **DC - U:** ±2/±5/±10/40 V

IN.3 4x RTD input

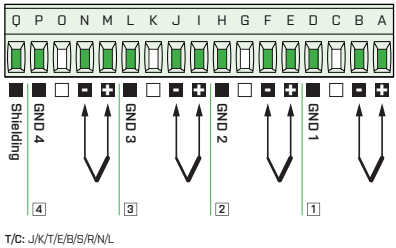
IN.3



OHM: 0...0,1/1/10/100 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.4 4x T/C input

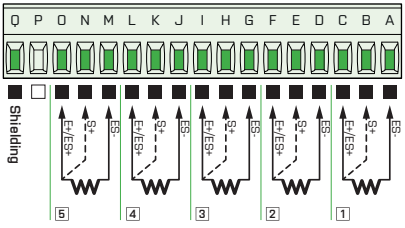
IN.4



T/C: J/K/T/E/B/S/R/N/L

IN.5 5x RTD input

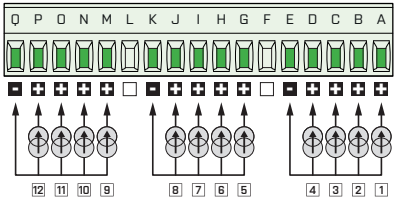
IN.5



OHM: 0...0,1/1/10/100 kΩ/Auto
RTD: Pt 50/100/500/1 000
Cu: Cu 50/100
Ni: Ni 1 000/10 000

IN.6 12x DC input, current

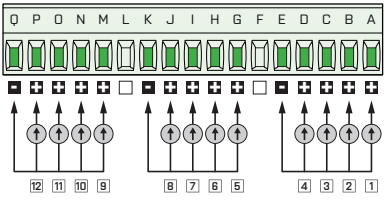
IN.6



DC - I: ±5/±20 mA/4...20 mA

IN.7 12x DC input, voltage

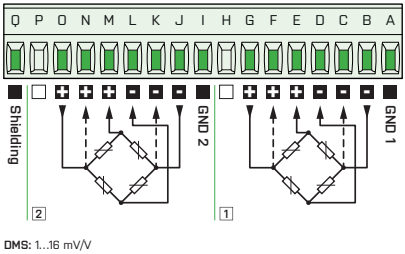
IN.7



DC - U: ±2/±5/±10/40 V

IN.8 2x input for strain gauges

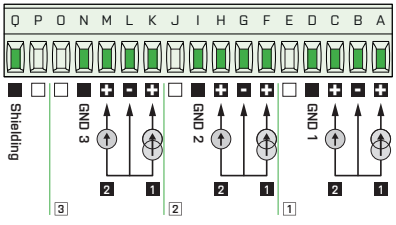
IN.8



DMS: 1...16 mV/V

IN.9 3x PM input U-I

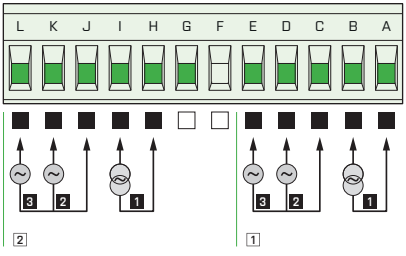
IN.9



1 **DC - I:** ±5/±20 mA/4...20 mA
2 **DC - U:** ±2/±5/±10/40 V

IN.10 2x AC/PWR input

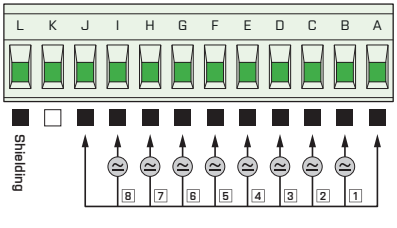
IN.10



1 **AC - I:** 0...60/150/300 mV
0...1/2,5/5 A
2 **AC - U1:** 0...10/250 V
3 **AC - U2:** 0...120/450 V

IN.11 8x Digital input

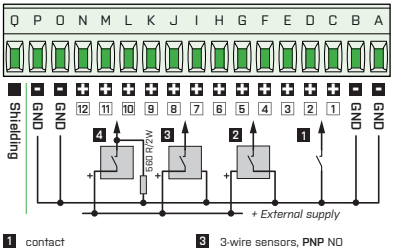
IN.11



AC/DC: 12...250 V AC/DC

IN.12 12x Pulse input

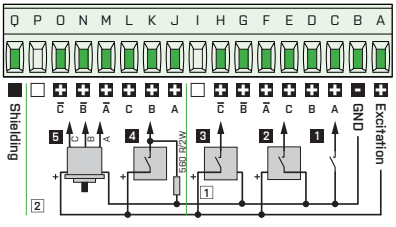
IN.12



1 contact
2 2-wire sensors, **PNP** NO
3 3-wire sensors, **PNP** NO
4 3-wire sensors, **NPN** NO

IN.13 2x Fast pulse input

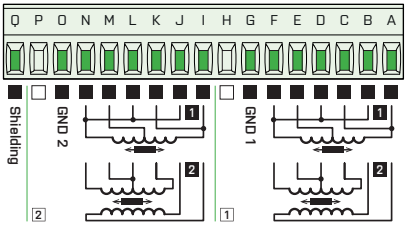
IN.13



1 contact
2 2-wire sensors, **PNP** NO
3 3-wire sensors, **PNP** NO
4 3-wire sensors, **NPN** NO
5 IRC sensors, **NPN** NO

IN.14 2x input for LVDT sensors

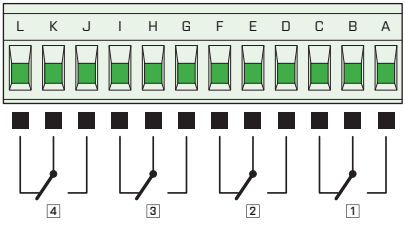
IN.14



1 3-wire LVDT sensors
2 5-wire LVDT sensors

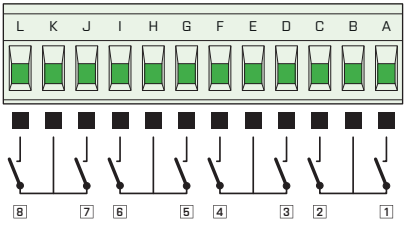
OUT.1 4x Relay, switch-over contact

OUT.1



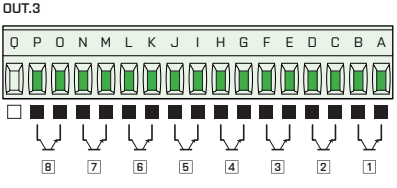
OUT.2 8x Relay, switch-on contact

OUT.2



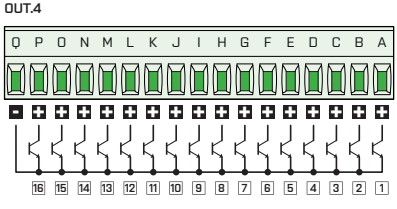
OUT.3 8x OC, NPN

OUT.3



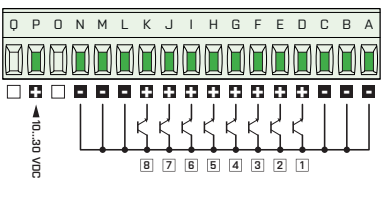
OUT.4 16x OC, NPN

OUT.4



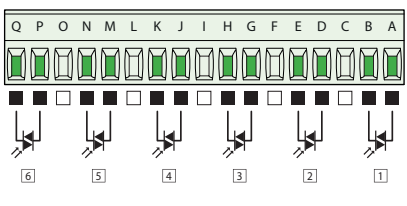
OUT.5 8x OC, PNP

OUT.5



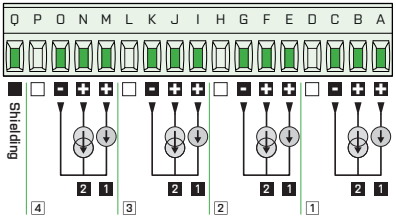
OUT.6 6x SSR

OUT.6



AO.1/2 2/4x Analogue output

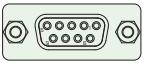
AO.1/AO.2



1 Analog output - voltage
2 Analog output - current

DO.1 1x PROFIBUS

DO.1

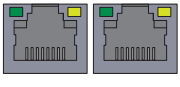


Pin asignment

3 **B:** RxD/TxD-P data reception/transmission, positive
4 **CNTR:** signal for repeater control
5 **DGND:** reference potential for data and +5 V
6 **VP:** +5 V
8 **A:** RxD/TxD-N data reception/transmission, negative

DO.2 1x PROFINET

DO.2



Port 1 **Port 2**

Elements under the hinged lid

Com	MicroUSB for connection to PC
SD Card	Slot for SD card
USD	USB connector for Flash drive
Rec	Blue LED - active data recording
1	Button „1", button function can be set in menu
Stat	Blue LED - active data recording
2	Button „2", button function can be set in menu
Rst	Reset button

!

Toensurethe I P64 cover oftheinstrunt it is necessary to arrange for proper panel mounting and proper click of the front lid. Proper snap of the front lid.

Elements under the hinged lid

If necessary, a seal can be fitted to the hinged lid as a mechanical security against possible accidental opening.
Your SD card or USB Flash drive will remain safely stored.

LED signalling

Signalling during device start up

STAT 1	REC	DISPLAY	MEANING
off	off	inactive	Device is not powered
flashes rapidly	off	inactive	Normal state
on	off	inactive	Undervoltage, processor not running
flashes rapidly	off	inactive	Undervoltage, processor running

Signalling while device is running

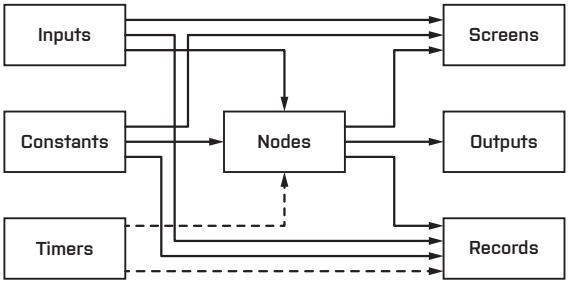
STAT 1	REC	DISPLAY	MEANING
flashes	off	active	Normal state
flashes	off	active	General error
-	flashes	active	Recording in progress
flashes	off	inactive	Short term power outage
on	off	inactive	Long term power outage

5.1 INTRODUCTION

BASIC BUILDING BLOCKS **OMR 700**

Functionality of the paperless recorder OMR700 is based on the following parts:

- **Inputs and outputs**
  - come from the IO cards (fixed B1 or expanding A1 - A4, B2 - B5). They themselves contain conversions
- **Nodes**
  - mathematical or other calculations with the goal of providing requested adjustments of the measured signals or preparation of the output values
- **Screens**
  - graphical representation of the measured or calculated values on the recorder display.
- **Records**
  - what, where, how often, in what format, and other parameters of measured or calculated data for recording
- **Timers**
  - provide periodic execution of linked blocks with a given period
- **Constants**
  - spontaneously unchangeable named values for calculations



Block chart of the recorder OMR 700

From the block chart it is apparent that the central point of the recorder is created by **Nodes**. They process the measured inputs, constants, other nodes, and using the preset calculations they calculate a new value. The calculation is kept in time by the timer. The calculated values of the nodes can be displayed on the screen and recorded on the media. The outputs can also be equipped by them. An important feature of the nodes is the fact that they can have a history (they remember previous values). This is an optional configuration offering the advantage of displaying the value of the node with its history (running chart).

Timers have an optional setting period. The client can set the period within the rangeof 1ms up to 40 days (by 1ms, while the dialog limits the settings to the order of ms, s, minutes, hours, and days). There are N timers in the recorder (8 at the moment) so that it is necessary to choose a proper setting for each timer to cover the needs of the entire recorder. The timers control calculations of the nodes and recording on the media, while the internal mechanism guarantees that the nodes are calculated first and only then the new values are recorded on the media.

Inputs and Outputs provide rate, which is different for each type of the card and even for each register on the card. The IO cards are in fact designed as intelligent ones = they conduct their operations in order to relieve the main processor. They are organized into a set of registers. Some of the registers are configurable (e.g. those of input range), some are designated for measured values under different phases of processing. A typical input card provides several values for each input – direct input value of the converter (converter bits), value converted into electrical value (e.g. mA), and the resulting converted value (e.g. in case of weight, the strain gauge input card recalculates the voltage of the strain gauge into weight by a preset formula - range, tare). Similarly, it is possible to control also the outputs. For example: You set the requested turns of a ventilator and the card will itself, according to the preset parameters, recalculate the measured value into voltage and set it on its output.

Constants are designated for easy and well-arranged changes of the settings, e.g. of the required values, filtration parameters... On one place the value can be changed, used for calculations, displayed and recorded.

Screens are used for displaying the measured values. There are N screens (16 at the moment) and each of them can occupy up to M different elements (16 at the moment) like running chart, bar chart, normal text value, finger measuring indicator... You set the element type, size, location, number of displayed values, color, range... So you can build very diverse screens. The redraw period is set in such a manner that it enables a smooth and fast enough drawing, which, at the same time, relieves the main processor. Some elements (as e.g. the running chart) display, besides the current values, also their previous ones. By these elements it is therefore advantageous if the displayed node has a history that is used for filling up the chart when switching over to the screen.

Records serve for recording values on the media. There are N of them (16 at the moment). To each record you can assign a name, frequency, file format, number of records in the file, where you want to record, and, of course, what you want to record (max. 16 values at the moment). All records can be viewed in the record browser. They can also be downloaded to a PC and displayed there.

5.2 CONTROL BAR

In the upper part of the display there is a dark blue **Control Bar**. It shows the main control elements.

Main screen after switching on the recorder

Bar without a logged user

The appearance of the bar without a logged-in user. Control buttons are disabled and therefore you can not change the screen, enter the menu or view errors, logs and capacity utilization of the memory media.

Control bar without a logged user

Bar with a logged user - level „User“

User with access rights „User" has the right of switching over screens, viewing errors, logs and memory media.

Control bar with a logged user (level „User“)

Bar with a logged user - level „Advanced user“ and beyond

User with access rights „Advanced user" and beyond has, in addition, access to the menu.

Control bar with a logged user (level „Advanced user“)

Time and date

Indication of the current time and date.

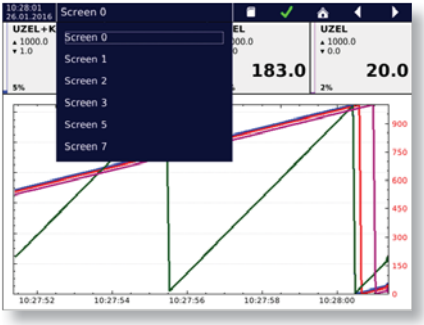
Time and date

Name of the currently displayed screen

Space in the control bar, which shows the name of the currently displayed screen.

Name of the currently displayed screen

Click into this space opens the offer with an overview of all defined screens for a fast screen selection.



Fast screen selection

Overwiev of the memory media

State of the recorder

The recorder always operates in one of its four states (further details in the chapter Errors and warnings).

"**OK**" - device has not detected any function problem.

"**Warning**" - device outside the specified values, but without consequences on its functioning. This state can be caused for instance by an undervoltage greater than 10%, by filling the memory in excess of 80%, and by many other causes. If the device returns within the specified values, „Warning" state will disappear and the log record will be carried out.

"**Error**" - device outside the specified values, but with possible consequences on its functioning. his state can be caused for instance by an undervoltage greater than 20%, by filling the memory in excess of 90%, and by many other causes. At the „Error" state an error window is displayed, through which you can view the errors. If the device returns within the specified values, „Error" state will disappear and the logrecord will be carried out.

Error window of the „Error" state

"**Critical error**" - device outside the specified values with consequences on its functioning. This state can be caused for instance by an undervoltage greater than 50% or by filling the memory up to 100 % so that it is not possible to make records. At the „Critical error" state an error window is displayed, through which you can view the errors. If the device returns within the specified values, both „Critical error" and the error window remain displayed until a confirmation (acknowledgment) of the „Critical error" is done. After confir mation the log record will be carried out.

Error window of the „Critical error" state

!
Date and time of each error is recorded in the log.

USER LOGIN OR ENTRY INTO THE MENU

Anonymous - no one is logged and the function keys are disabled. The icon is used to open the log-in dialog.

Logged on the level „User" - the icon is used for the user log-out.

Logged on the level „Advanced user" and beyond - the icon is used to enter the menu.

SWITCHING THE PREVIOUS OR THE NEXT SCREEN

Switching over to another screen. If you have defined only one screen, the screen remains unchanged.

Switching over to the previous screen. If you have defined only one screen, the screen remains unchanged.

5.3 LOGIN

PRINCIPLE

In the recorder´s factory setting the device can be logged with the name **UNIVERSAL**, under which you can create another user name and set the device incl. its functions. Access password is sent together with the delivery note.

Login dialogue

The dialogue consists of three lines and two buttons.

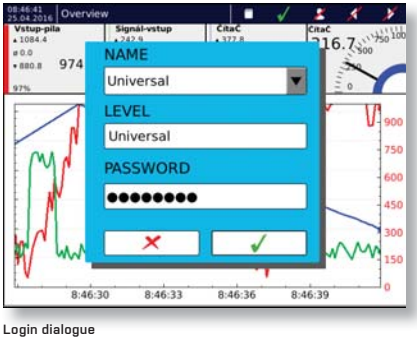
Name from the list of created user names kindly select the one, under which you want to log-in.

Level level of access rights of the selected user.

Password after a click on the line a keyboard appears. Then enter the password to log-in.

✓ button **„Confirm"** confirms the login. If the password is OK, the dialogue disappears and the icon in the control bar will change. If the password is incorrect, an error window will appear. You can close it and start the login dialogue again.

✗ button **„Cancel"** will close the login dialogue.



Login dialogue

Warning window of a failed login

5.4 MENU

Entering the menu

THREE BASIC GROUPS OF THE MENU

Device setting basic settings of the OMR 700 from time and date setting via language setting, connection, users, sounds and display, up to copying all settings and updating the device.

Functions setting setting the computing part of the OMR700. Here you will find settings for the input and output cards, timers, named constants, nodes, groups, records, and graphics.

Viewing instruments for viewing measured data, errors and warnings, recorded logs, and for diagnostics of the recorder.

DEVICE SETTING


Current date and time setting.


Time zone setting.


Language setting.


Setting network connection, connectivity via WiFi and USB.


Device update. It opens a dialogue for firmware updates and device software.


Cards update.
Opens dialogue for FW card update.


User setting. Dialog for creating and managing users.


Screen setting and screen saver setting.


Configuration management. Dialog for copying or saving configurations from a portable media.


Volume of sound effects setting.

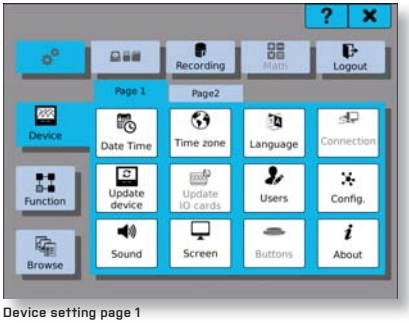

Programmable buttons setting.


Basic information about the device.

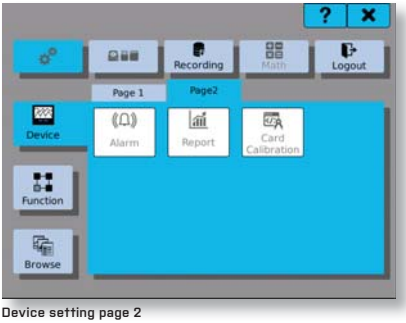

Alarms setting
(under preparation).


Report setting
(under preparation).


Custom card calibration



Device setting page 1



Device setting page 2

Functions setting

I/O setting. Window for input and output cards setting.

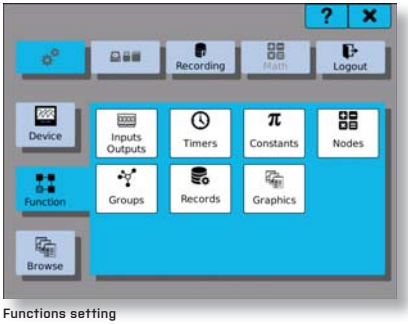
Timer settings. Creating and managing timers for further use with the device settings.

Nodes setting. Creation and management of the nodes.

Groups setting. Creation and management of the groups of any functional elements, e.g. nodes and input or output channels.

Records setting. Creation and management of the records for recording and backup of the measured data.

Screens setting. Creation and management of the screens for graphical display of the measured data.



Functions setting

Viewing

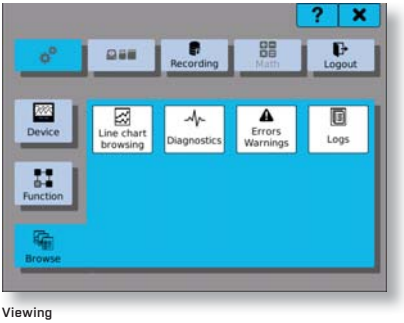
Viewing the stored values of the entries recorded in the internal memory.

Functionality diagnostics. Diagnostics of the secondary core running, and functions of the plug-in cards.

Tool to copy, move and delete the stored logs and measured records in internal memory.

Viewing errors and their acknowledgment, and viewing warnings for running of the OMR 700.

Viewing logs of the OMR700.



Viewing

Upper bar

Switches to the menu setting.

Switches to the media filling.

Storing records - turn on/off. If saving is active, the button is tinged green.

Mathematical functions - turn on/off. If counting is active, the button is tinged green.

User logout.

5.5 SETTING THE INPUT PART

Channels setting. Here you will find all settings from the I/O cards.

Setting named constants. Here you will find all settings of the named cards

Timers setting. Here you will find all timer settings.

Nodes setting. Here you will find all nodes settings.

5.5.1. INPUT AND OUTPUT CARDS

Each of the I/O cards has at least one channel, which, on its own, performs some recalculations.

The following parameters can be edited in the settings:

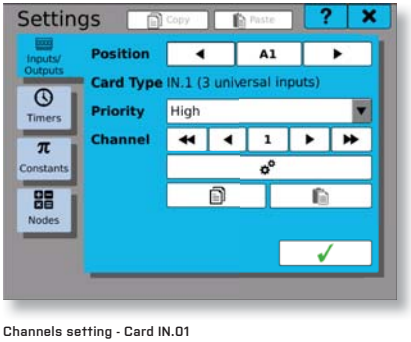
Position Position of the card that we want to set. Buttons ◀ ▶ serve for rollingamong the plugged-in cards *(e.g. if there is no plugged-in card on position 3, the setting will not offer it).*

Card Type Type of the card that is logged-in on a specified position. Type of the card cannot be changed. This is just an informative text.

Priority Data transfer priority of a selected card
With a rising number of IO cards the data flow on the bus slows down.
HIGH – will communicate non-stop (1100 or 550 / s)
MEDIUM – every second framework will communicated (550 or 275 / s)
LOW - every fifth framework will communicated (220 or 110 / s

Channel Number of the channel that we want to set. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the channels. Number of possible adjustable channels is determined by the card, which we set.

Button is used to navigate to the settings of the selected channel.

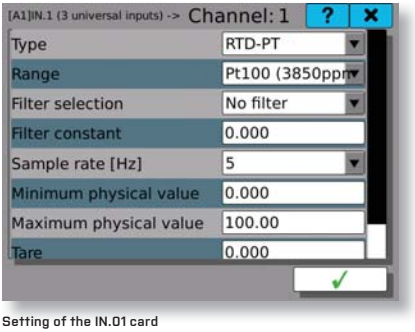


Channels setting - Card IN.01

5.1.1 CHANNEL SETTING

In the input and output settings you will find a summary of all setting parameters, which may be performed on the respective card and on the respective input or output. These are e.g. the range, filter and filter constants settings, measurement rate, minimum and maximum limit value, tare and many others.

Setting of individual cards is described in the following chapters.



Setting of the IN.01 card

5.5.2 TIMER

Timers provide a periodic execution of various tasks of the recorder.

The following parameters are edited in the settings:

Timer Number of the currently viewed or edited timer. Its values range from 0 to 7. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the nodes.

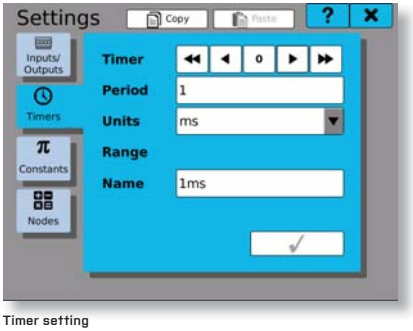
Name Name of the timer. Under this name you will see the timer in the next settings of the device. The name can consist of up to 32 characters.

Units Unit value reported in the Period.

Range Range of permitted values that can be entered into the Period.

Period Time, after which the timer related operations will repeat.

Using buttons **Copy** and **Paste** you can copy complete settings among the channels.



Timer setting

5.5.3 CONSTANT

Constants are spontaneously unchangeable named values for further use.

The following parameters are edited in the settings:

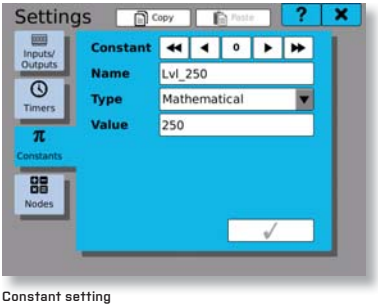
Constant Number of the currently viewed or edited constant. Its values range from 0 to 63. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the constants.

Name Name of the constant. Under this name you will see the con stant in the next settings of the device. The name can consist of up to 32 characters.

Type Type of the constant. Mathematical type indicates the number with a decimal point. Logical type indicates state 0 (untruth) or 1 (truth).

Value Value of the constant. In case of a mathematical type, it relates to numerical value, in case of a logical type, you can enter 0 (untruth) or 1 (truth).

Using buttons **Copy** and **Paste** you can copy complete settings among the constants.



Constant setting

5.5.4 NODES

Mathematical or other calculations, the aim of which is to make the requested adjustments of the measured signals or to prepare values for the outputs.

The following parameters are edited in the settings:

Node Number of the currently edited node. Its value ranges from 0 to 255. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the nodes.

Name Name of the node. Under this name you will see the node in the next settings of the device. The name can consist of up to 32 characters.

Timer Selection of all defined timers. The timers determine with what period values will be prepared, calculations made or value storage filled in.

History Number of values that are recorded in the node and that can be pictured later as a chart or similar. These values get lost when power is turned off. When a preset number is reached, values are overwritten.

Function Specifies the function that will be performed by the node.

Not used The node does not count and is taken for invalid.

Mathematics The node counts from preset mathematical formulas.

IO Memory The node stores the measured values in memory.

Comparator The node compares two values.

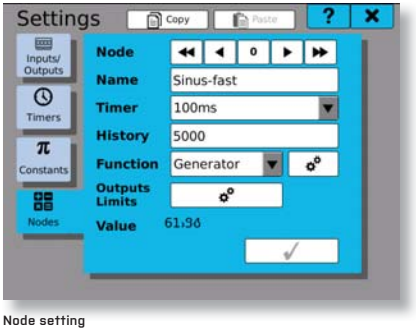
Generator The node generates values.

Further function setups and specifications of input and output values can be managed when using button ⚙ next to the selection.

Output limits A click on the setting button ⚙ takes you to the dialogue for setting limits and outputs of the current node.

Value Calculated value of the node with specified settings.

Using buttons **Copy** and **Paste** you can copy complete settings among the nodes.



Node setting

5.5.4.1 MATHEMATICAL FUNCTIONS

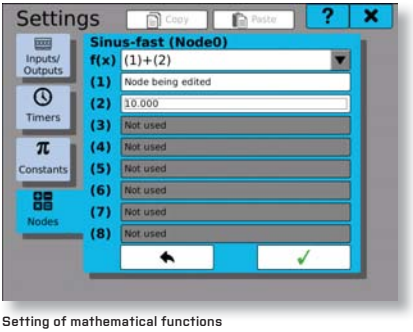
They make calculations of basic mathematical operations like adding, subtracting, multiplying and dividing between two to eight parameters.

The following parameters are edited in the settings:

f(x) Function used for calculations. The name matches the order of calculation and parameters. For example: Entering (1) + (2) means that parameter 2 should be added to parameter 1.

(1),(2)… …(7),(8) Parameters of the functions.

On the function parameter line you will find the name of the node used, of the input, output, named constant or numeric value. If no value is assigned to the parameter, inscription „**Not used**" appears on its line. Clicking on the parameter line opens a window for parameter selection (see chapter „**Parameter selection window**"), where you can add, change or remove the parameter value.

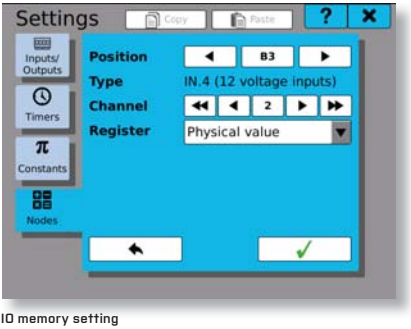


Setting of mathematical functions

5.5.4.2 IO MEMORY

It is used mainly for displaying the measured values on the screen. It stores the input or output data into memory and when a running chart is displayed, we can also see their throughout history. The storage capacity is determined by the entry in the setup of the **History** node. Storage data do not serve as a record and therefore no backup is available. If the recorder is switched-off or switched-on, the storage data will be lost.

The following parameters are edited in the IO storage settings:



IO memory setting

5.5.4.3 COMPARATOR

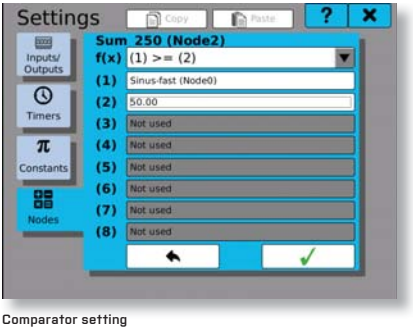
Compares two or more parameters among themselves and on the basis of the comparison result it sets the value of the node on 1 (truth) or 0 (untruth).

The following parameters are edited in the comparator settings:

f(x) Function used for comparison. The name matches the order of calculation and parameters. For example: Entering (1) >= (2) means that we compare whether parameter 1 is bigger than or equals parameter 2.

(1),(2)... ...(7),(8) Parameters of the comparator.

On the line of the comparator parameter there is the name of the node used, of the input, output, named constant or numeric value. If no value is assigned to the parameter, inscription „**Not used**" appears on its line. Clicking on the parameter line opens a window for parameter selection (see chapter „**Parameter selection window**"), where you can add, change or remove the parameter value.



Comparator setting

5.5.4.4 OUTPUTS AND LIMITS SETTING

By clicking on the tab you can switch between limits setting and outputs setting.

The following parameters are set in the limits setting:

Minimum Clicking and ticking the square authorizes the lower limit. Limits of the lower limit can be set by clicking on the value line.

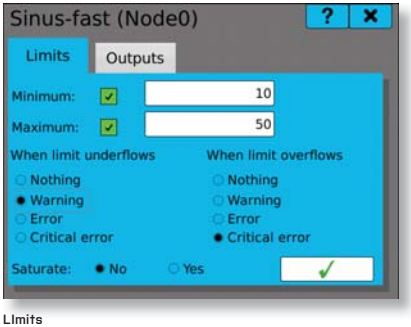
Maximum Clicking and ticking the square authorizes the upper limit. Limits of the upper limit can be set by clicking on the value line.

Saturate If at least one of the limits is permitted, we can authorize or prohibit saturation (cutting down to minimum or maximum).

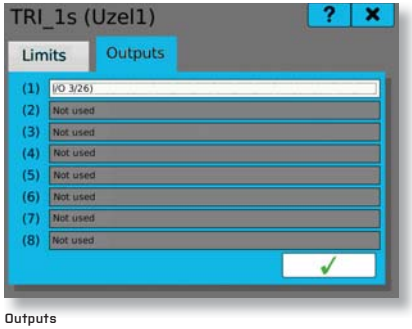
Limit underflow We select in the table what should happen in case of underflow of the lower limit. The options are: Nothing, Warning, Error or Critical error.

Limit overflow We select in the table what should happen in case of overflow of the upper limit. The options are: Nothing, Warning, Error or Critical error.

In the output settings we connect e.g. relay outputs on the cards, analogue outputs or logical outputs. Clicking on the authorized line opens the parameter selection window, in which we find and connect the desired output to the edited node.



LImits



Outputs

5.5.4.5 GENERATOR

It is is used to generate signals sinus, saw, triangle, rectangle, or a random course.

The following parameters are edited in the generator settings:

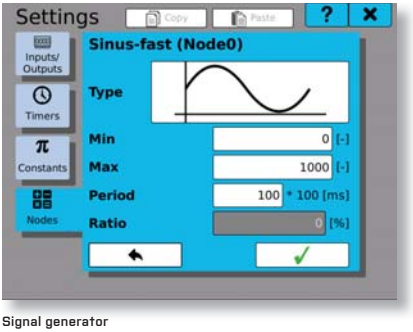
Type Click on the button displays a choice of six types. The types are rising saw, declining saw, triangular waveform, rectangular waveform, sinus function graph and random data.

Minimum Minimum function range.

Maximum Maximum function range.

Period Time to replay the function. Period can be set only for the functions that require it.

Duty cycle The percentage signal ratio between the length of the front and rear edges, or if the signal is in its maximum or minimum. The specified percentage always indicates the length of each front edge or the length of the maximum value (e.g. if we have 20% - 20% of the period is in maximum and 80% of the period is in minimum). Duty cycle can be set only for the functions that require it.

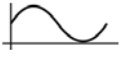


Signal generator

List of signal types


Declining saw.
Setting minimum, maximum and period.


Rising saw.
Setting minimum, maximum and period.


Function sinus.
Setting minimum, maximum and period.


Rectangle.
Setting minimum, maximum, period and duty cycle.


Triangle.
Setting minimum, maximum, period and duty cycle.


Random signal.
Setting minimum and maximum.

5.6 INPUT AND OUTPUT CARDS

Configuration of cards is described in respective annexes which are part of this user manual.

5.7 SETTING OUTPUT AND GRAPHIC PARTS

Entering setup

Groups setting

Records setting

Screens setting

5.7.1 GROUPS

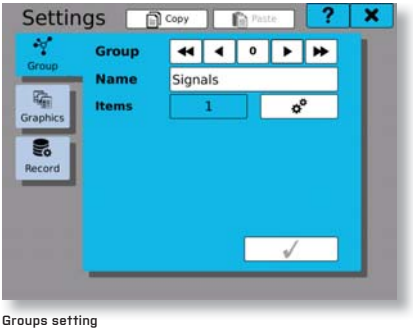
It serves to simplify the settings by grouping signals from the card channels, nodes or outputs (both relay and analogue), and it also simplifies their subsequent preset, which can be further used to create screens or records.

Group Numberofthecurrentlyviewedoreditedgroup.Itsvaluerangesfrom0to16.Buttons serve for rolling among the groups.

Name Name of the group. Under this name you will see the group in the next settings of the device. The name can consist of up to 32 characters.

Items Number of assigned values in the group. The button opens management of the items in the group, where you can edit, add or delete them.

Using buttons **Copy** and **Paste** you can copy complete settings among the groups.



Groups setting

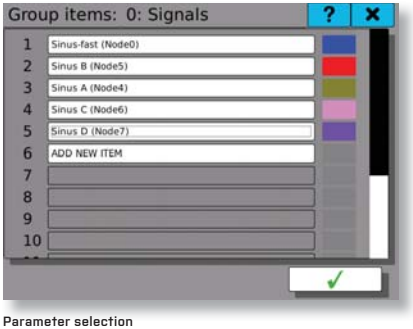
5.7.3.1 ADDING PARAMETERS INTO GROUP

There is a list of 16 buttons in the window for adding parameters and for their management.

The logic of adding and deleting parameters is as follows:

Adding parameters: From top to bottom by clicking the button „**Add new parameter**" (parameter is added and the next button is released).

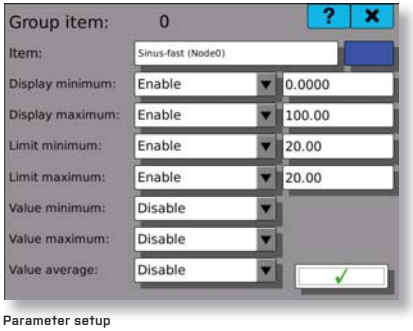
Deleting parameters: From bottom to top by clicking the last button with a parameter, and by selecting the option „**Not used**" in the parameter selection window (see chapter „**Parameter selection window**"). Clicking the button „**Add new parameter**" or a line with an item opens the window with a selection of colors and with settings of the range.



Parameter selection

5.7.3.2 EDITING PARAMETERS

Selection of the item is done in the window for parameter selection and editing. Click on the white line opens parameter selection dialogue. The color is chosen by clicking on the colored box with a selection of colors from a color palette. There are 3 options for the selection of display and of a limit minimum and maximum: „**Disable**" means that it is not possible to use the display range from the group.„**Enable**" means that values entered in the lines can be used in other settings from the group. „**Inherited**" means that values entered in the parameter can be used in other settings from the group.For minimum, maximum and average values we specify, whether the values should be displayed on a graphical element or not.



Parameter setup

5.7.2 SCREENS

Setting graphic display of the measured values.

The following parameters can be edited in the settings:

Screen Number of the currently edited screen. Its values range from 0 to 15. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the screens.

Name Giving name to the screen. Under this name you will see the screen in the next device settings. The name can consist of up to 32 characters.

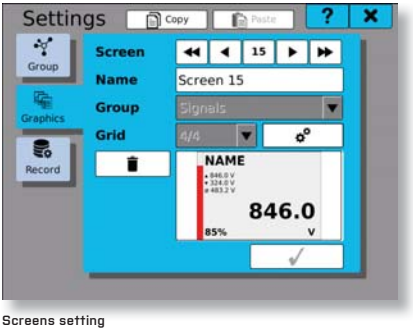
Group Selection of one of the preset parameter groups. If there is one preset element on the screen (from or without the group), the selection cannot be changed. To be able to change it, you have to erase settings of all the graphic elements of the screen.

Arrangem. Selection of a grid for the arrangement of graphic elements. Standard arrangement is 4x4. Another options are 5x5, 3x4 a 4x3.

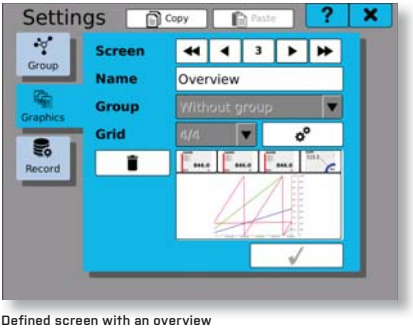
Using button you get to setting and arrangement of graphic elements on the screen. Under the grid there is a graphical preview of the screen and of the elements arranged in the screen. If there is any vacant part in the graphical preview of the screen, it is filled in by the symbol

Using buttons **Copy** and **Paste** you can copy complete settings among the screens.

Button **Delete** is used to delete all graphic parameters of the screen.



Screens setting



Defined screen with an overview

5.7.2a CONFIGURATION OF DISPLAY ELEMENTS

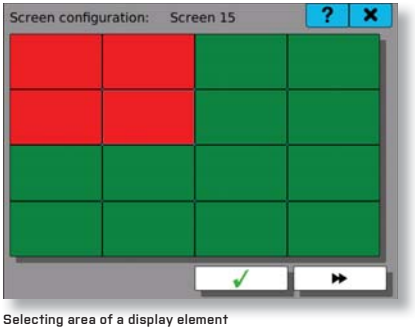
It is used for a practical configuration of various visual elements on the screen.

In this configuration we see a grid of green rectangles. Into each of the rectangles you can insert one element. You can choose more than one rectangle at a time and the display element takes the size of the marked field. You can select the rectangle by clicking on one of them (upper left corner of the element) and it will turn red. Any other click on each rectangle under or to the right from the selected one (lower right corner of the element) will select the area of the display element with red color.

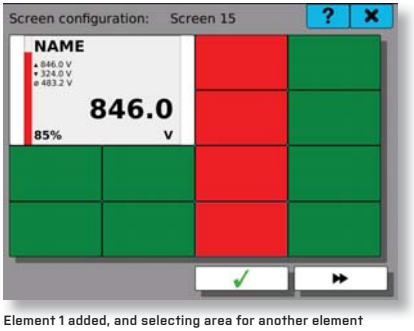
After selection of the desired area, clicking the button ⏩ takes you to the screen for setting the display element, its style and parameters.

Upon completion of setting styles and parameters of the display element, the selected area will change into the image of this element. By clicking on the icon you can edit or erase the respective element. If there is space on the screen, you can add another element by selecting again the rectangle area and by clicking the button.

Setting of the graphic elements on the screen is saved by the button ✓



Selecting area of a display element



Element 1 added, and selecting area for another element

5.7.2b SETTING STYLE AND PARAMETERS

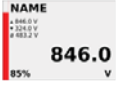
It is used for setting the appearance of the graphic element and the quantity, which it displays.

The following parameters can be edited in the style and parameter settings:

Range Clicking on the button displays a choice of six types of display elements. Button takes you to the advanced options that are specific for each display element.
The range of values visible on the display element.

Parameters One to four parameters displayed on the display element. Clicking on the line takes you to the parameter selection window (see chapter „**Parameter selection window**" and „**Selecting items from the group**"). By clicking on the colored rectangle next to the parameter line you can choose the color of the parameter.

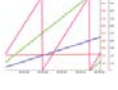
Types of display elements



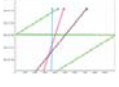
Numeric display with bargraph. Percentage figure indicates the input value in proportion to the given range. There is a possibility of displaying minimum, maximum and average of the measured values.

Bar chart indicating minimum and maximum value range and the percentage displayed in the element.

Pointer measuring instrument with numeric values.



Running chart with X-axis as a time axis (horizontal). Up to four parameters simultaneously.

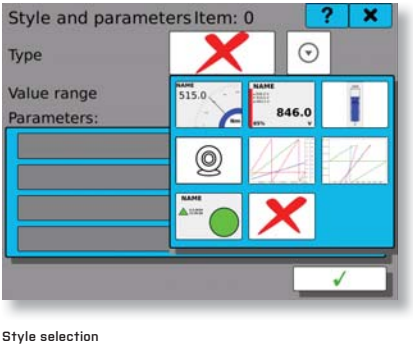


Running chart with Y-axis as a time axis (vertical). Up to four parameters simultaneously.

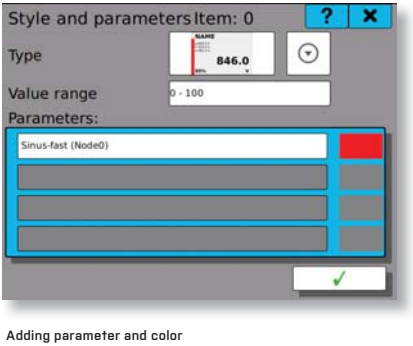
IP camera.

Binary image ON/OFF

No style selected



Style selection



Adding parameter and color

5.7.3 RECORDS

They determine what, when, how and where should be recorded. There is a possibility of setting recorded value from measured or calculated values, of determining period of recording in compliance with the timers, selecting format of the output file and a memory media to be recorded in.

The following parameters are edited in the records settings:

Record Number of the currently viewed or edited record. Its values range from 0 to 16. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the nodes.

Name Name of the record. Under this name you will see the record in the next settings of the device. The name can consist of up to 32 characters.

File name Name of the file, which has a fixed beginning in the form of RECXX_YYYYY, where XX is the number of the record. Thus from 00 to 15 and YYYYY makes the serial number of the file. Sequential file number increases by one each time when the number of records in one file reaches the value specified in the „Entries in the file", or if you interrupt recording and start it again.

File type Supported types of stored files are: Binary files or CSV.

Timer Selection from all defined timers. It determines with what period the values will be recorded.

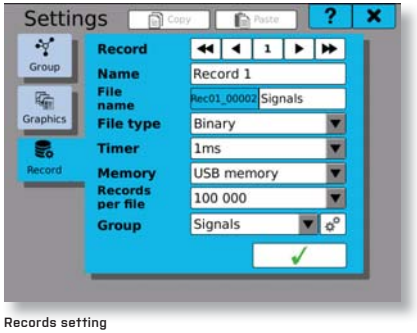
Memory Memory medium, on which the logs will be recorded. USB, SD card or internal memory of the recorder.

Record in the file Maximum number of values recorded into one file. Exceeding this value will create a new file.

Group Selection of the set group of measured or calculated values that will be recorded. If the group is selected, the record should be pre-filled by all items in the group.

Button ⚙ opens administration of the items stored under the given record.

Using buttons **Copy** and **Paste** you can copy complete settings among the records.



Records setting

5.7.3.1 ADDING PARAMETERS

There is a list of 16 buttons in the adding parameters window.

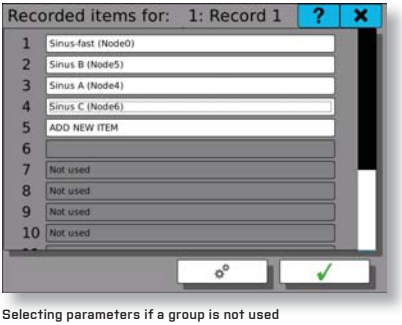
The logic of adding and deleting parameters is as follows:

If a group is not used

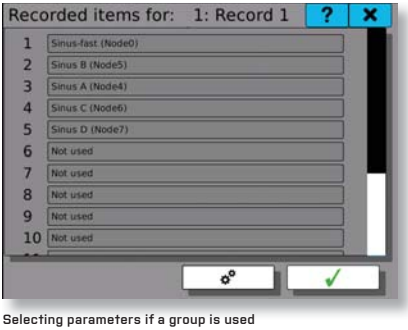
Adding parameters: From top to bottom by clicking the button **„Add new parameter"** (parameter is added and the next button is released).

Deleting parameters: From bottom to top by clicking the last button with a parameter, and by selecting the option **„Not used"** in the parameter selection window (see chapter **„Parameter selection window"**).

If a group is used, by ticking the button  we can move to the group parameter selection.



Selecting parameters if a group is not used



Selecting parameters if a group is used

5.8 PARAMETER SELECTION WINDOW

You can enter the parameter selection window from the following chapters:
Chapters **5.5.4.1 Mathematical functions setting** and **5.5.4.3 Comparator setting** (nodes setting)
Chapter **5.7.2b Style and parameter setting** (screens setting)
Chapter **5.7.3.1 Parameter adding** (groups setting)
Chapter **5.7.3.1 Adding parameter into a group** (groups setting)

Not used.
Parameter will be deleted.

Constant.
It will select one of the named constants.

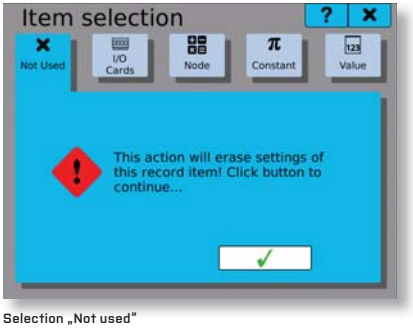
I/O cards.
It will select one of the card channels.

Value.
It will directly record the unchanging value.

Node.
It will select one of the nodes.

5.8.1. PARAMETER NOT USED

Selecting this option you will erase the symptom used while setting records, screens, mathematical functions, and similar.



Selection „Not used"

5.8.2 PARAMETER SELECTION FROM I/O CARDS

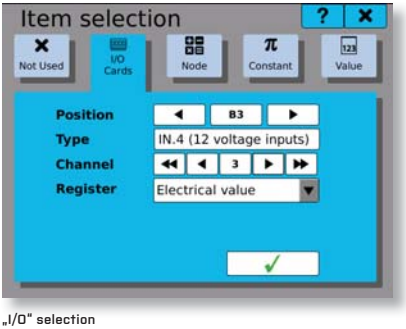
Parameter selection from the I/O cards consists of selecting the needed card position, the channel, and the actual parameter.

Position Position of the card we are going to set. Buttons ◀ ▶ serve for rolling among the plugged -in cards. (Example: If there is no card on position A3, the setting will not offer it).

Type Type of the card plugged-in on the specified position. Type of the card cannot be changed. Informative text.

Channel No. Channel number, from which we want to select the register. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the channels. Number of possible channels is determined by the card, from which we select the parameter.

Register Specific value of the channel, which is used as a parameter for settings of the nodes, screens, records and the like.



„I/O" selection

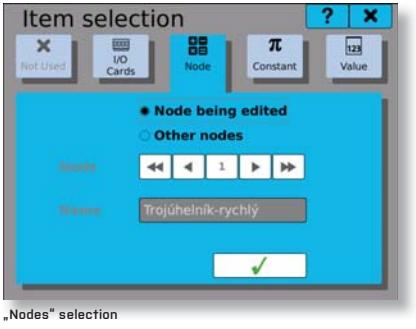
5.8.3 PARAMETER SELECTION FROM THE NODES

Parameter selection from the nodes consists of selecting one of the defined nodes. If we add a parameter into the node, we can select the option „Currently edited node", which will use the currently edited node and by copying the settings among the nodes it will change according to the current node (so e.g. for node 0 there is the parameter node 0, for node 10 there is the parameter node 10).

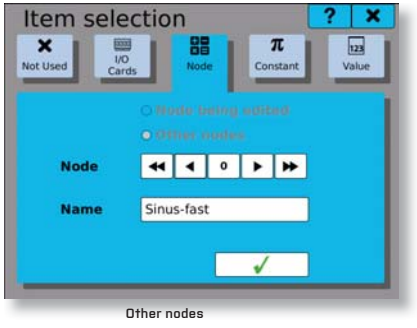
Currently edited node — If you add a parameter into any of the nodes, you can select this option. Otherwise, the option is disabled.

Other nodes — Standard option, which enables selection from all defined nodes.

Node — Node number we want to select. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the nodes. Altogether up to 256 nodes.



„Nodes" selection



Other nodes

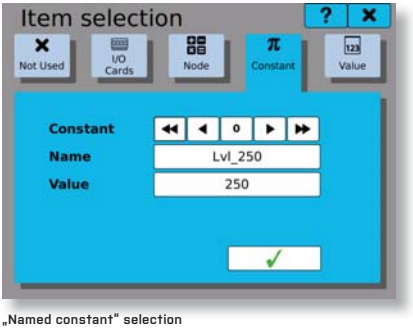
5.8.4 PARAMETER SELECTION FROM THE CONSTANTS

Parameter selection from the constants consists of selecting a defined, named constant.

Constant Number of the constant we want to select. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among constants. Altogether up to 62 constants.

Name Name of the constant, which you selected in the previous setting.

Value Value of the constant, which you selected in the previous setting.

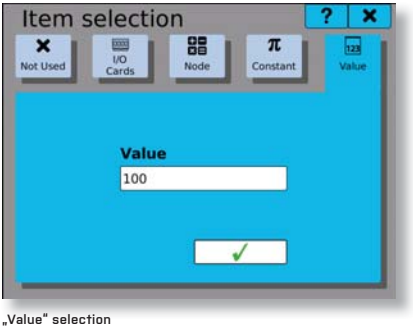


„Named constant" selection

5.8.5 PARAMETER VALUE

Setting fixed value consists of writing just a number into the box.

Value The box for setting fixed value.



„Value" selection

5.9 PARAMETER SELECTION FROM THE GROUP

In the window for selecting parameters from the group you can see a chart overview of all parameters in the group as well as the colors of each group.

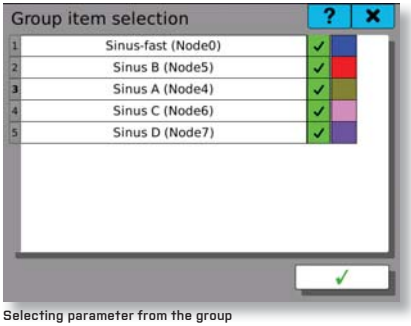
The selection is always limited to a certain number of items that you can select together.

For example, for the **records** it is up to 16 items.

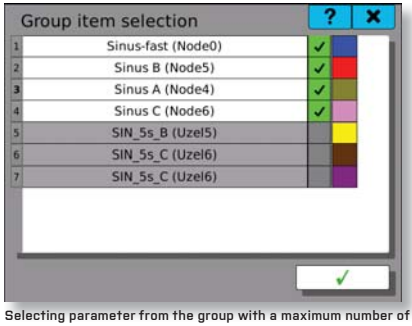
For the **running chart** it is up to 4 items.

For other **graphic elements** it is only 1 item.

As soon as the maximum number of selected items is reached, the other ones are disabled and they can not be selected.



Selecting parameter from the group



Selecting parameter from the group with a maximum number of selected parameters

5.10 DATE AND TIME SETTING

Using buttons ◀ ▶ you move among the months. A click on the current month unrolls the month selection. A click on year will display up and down arrows for the change of the year. For time setting kindly click on the hour or minute box. By the up and down arrows▼ ▲ you set the value of the marked field (hours and minutes).

Selection of a calendar field marks the current day. Click on button ✓ confirms the selection and resets the date and time. **All records must be disabled while setting date and time!**

Date and time setting

!

All records must be disabled while readjusting time zones.

5.11 TIME ZONE SETTING

Time zone can be selected by entering the name of the region and of the town where you currently are.

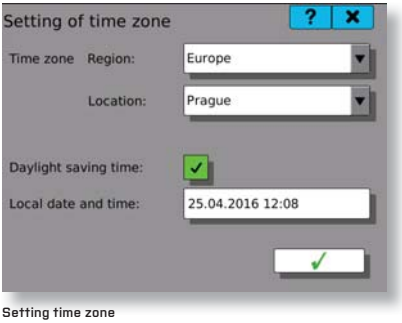
Region Selection according to the region of installation

Town Selection according to the town of installation

Summer time To secure an automatic conversion between Summer and Winter times you have to tick the box ✓

Local date, time The data vary in accordance with the daylight saving time regulations of the respective region and town.

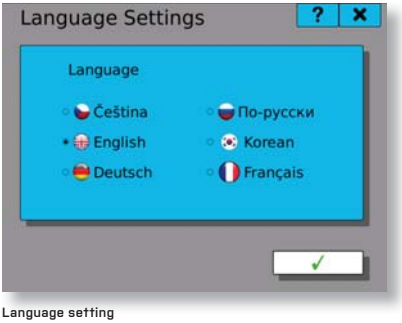
Setting of the time zone should be confirmed by a click on the button ✓



Setting time zone

5.12 LANGUAGE SETTING

Setting language of the instrument menu. There are the following options: Czech, English, German, Russian, Korean, and French.



Language setting

5.13 DIAGNOSTICS

It serves to check the functions of the OMR700. We can diagnose function of the I/O cards, run of the secondary core, information about the motherboard, connection status, and an overview of memory occupation of both fix and portable storage media.

I/O cards.
It moves you to the card overview and to the selection of one card for diagnostics.

Connection.
Information on connection via Ethernet, USB and/or WiFi.

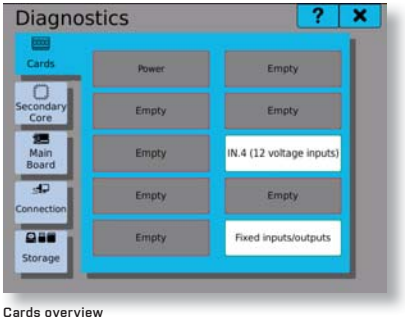
Secondary core.
It displays information on firmware and status of the secondary core.

Storage.
Overview of memory occupation of both fix and portable storage media.

Motherboard.
Information on temperature, light exposure, and power supply of the motherboard.

5.13.1 I/O CARDS

Overview window of the plugged-in cards. A click on the card field gets you to the card status report.



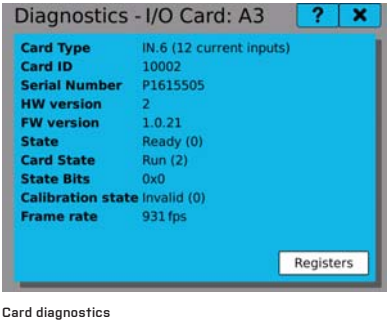
Cards overview

5.13.1.1 CARD DIAGNOSTICS

State and summary information for the card in question.

Card type	Type of the diagnosed card.
Card ID	Identification of the diagnosed card.
Serial number	Serial number of the diagnosed card.
HW version	Hardware version of the diagnosed card.
FW version	Firmware version of the diagnosed card.
State	Options are Ready or Enumeration.
Card state	Options are Reset, Initialization, Run, and Stopped.
State bits	State bits of the diagnosed card.
Calibration	State of calibration.
Transfer speed	Speed of data transfer between the card and the core (frame per second **FPS**).

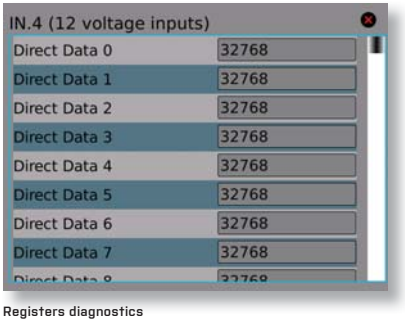
A click on the button „**Diagnostics of registers**" takes you to the diagnostics of individual values on the card in question.



Card diagnostics

5.13.1.2 CARD REGISTERS DIAGNOSTICS

Values in the card registers. Values can be either editable (from the diagnostics a value can be imposed on them), or not editable (read only, no value can be imposed on them).



Registers diagnostics

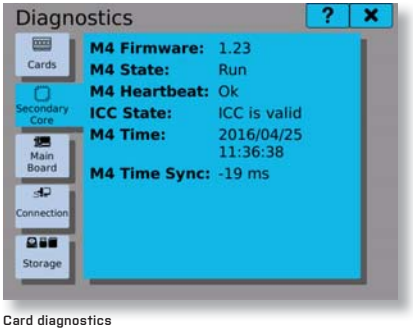
5.13.2 SECONDARY CORE DIAGNOSTICS

State and information about the secondary core of the OMR 700.

Firmware Firmware version running on the secondary core.

State State of the secondary core. There are two options: Run or Stopped.

ICC state ICC state. It checks if the ICC is valid.



Card diagnostics

5.13.3 CONNECTION DIAGNOSTICS

Status and information about the network connection of the OMR700. The diagnostics can be switched over among the tabs „Common", „Ethernet", „USB" and „WiFi".

Common Information common for all types of connection. E.g. the name of the recorder network.

Ethernet Information about the Ethernet connection. There you will find connection status, MAC address, IP address and subnet mask.

USB Information about Ethernet connection via USB. There you will find connection status, MAC address, IP address and subnet mask.

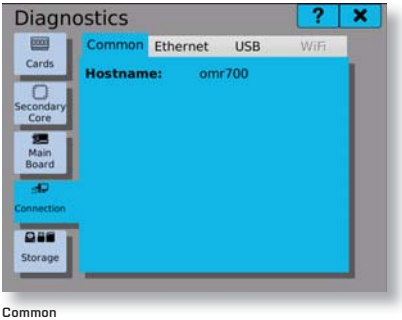
WiFi Information about wireless connection to the network. There you will find connection status, MAC address, IP address and subnet mask.

Connection status:

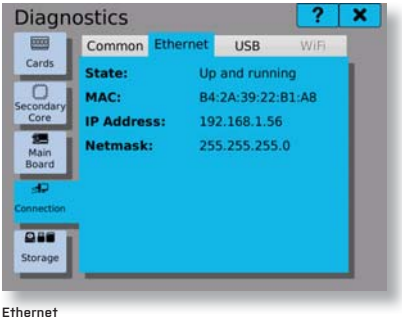
Down Interface is disabled.

Up Interface is enabled but not active.

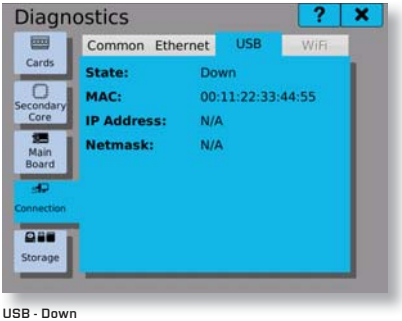
Up and running Interface is enabled and active.



Common



Ethernet



USB - Down

5.13.4 STORAGE DIAGNOSTICS

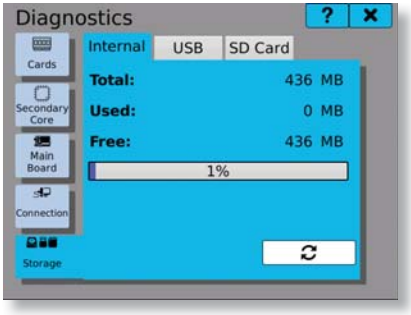
Status and information on how full is the capacity of the internal storage and of the removable storage media. The diagnostics can be switched over among the tabs „Internal", „USB" or „SD Card".

Internal Information about free space in the internal fixed memory.

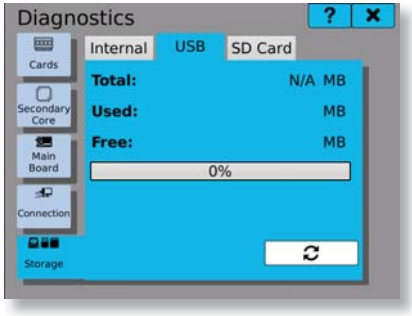
USB Information about free space on USB Flash Drive.

SD Card Information about free space on SD card.

Button updates capacity of the media.
If removable medium is not up, "N/A" is displayed.



Internal memory



USB - down

5.14 OMR 700 UPDATE

Update procedure

1) The update window opens by an enabled selection between USB flash drive and SD card. Kindly plug--in one of these two storage media, make the same selection on the screen and press the button „**Load packages**". We recommend that you create a folder „**omr700-upgrade**" on the storage media .

2) Pressing the button „**Load packages**" opens two boxes: Selection of the found firmware and selection of the found system. Empty boxes mean that no installation packages were found. Please check location and names of the installation packages. Your click on the box or on the down arrow unrolls the menu of found firmware or system installation packages. Select the requested firmware and system and continue by clicking the button „**Update**". Firmware (or software) runs under the Linux Operating System and the update can be performed either for firmware itself or for system + firmware together. Updating just the system is not possible. If you can not find the desired firmware version, the selection box turns red and it can not be edited. The error will be cleared by changing the firmware to a version that finds the required version on the storage media or by adding the correct version of the system to the storage media. Select the latest versions. Those are the ones with the highest version numbers.

3) Pressing the button „**Update**" starts firmware and system updates. The progress of updating is displayed on two indicators. The upper indicator shows the progress of the entire update process and the lower one shows the progress of the currently executed update step. The steps are: Update preparation, system update, firmware update, update end. There is a text description of the current process under the indicators .

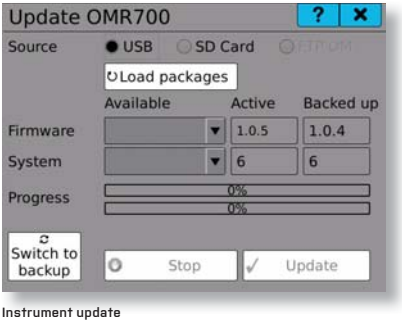
4) The process of updating can be stopped by the button „**Stop**". It is not recommended to interrupt the updating process, because it may damage the backup files. Use it only in an extreme situation. If the button „**Stop**" turns gray (you can not press it) the updating process is in progress and it can not be interrupted. Please wait for completion of this step. If the process is stopped by the button „**Stop**", the error window „**Interrupted with error**" pops up.

5) After a correct completion of the update a message pops up, which warns that changes will not take effect until the device has been restarted. You can either confirm or cancel this option. If it is canceled, switching to the backup version is possible in two ways: Either at the next start of the device or by pressing the button „**Switch to backup**".

6) If for some reason the update is unsuccessful, an error window „**Interrupted with error**" pops up and the error is described in a text form.

7) Fast troubleshooting:

MESSAGE	SOLUTION
No connection with the server.	Check connection to Internet.
Loading failed.	Check connection to Internet.
Update package not found.	Check if the packages are on the storage media and if they have been properly named.
Check sum error.	Package error. Download and save it on the storage media again.
Update is already running.	Stop the running update or restart the recorder.



Instrument update

!

In case of any other error kindly contact the manufacturer!

5.15 CARDS UPDATE

Update procedure

1. Card selection from the card menu. Only the plugged-in cards will be offered. Fill in the current version of the firmware (recorded on the selected card) into the box „**Current Firmware**".

2. Selection between USB flash drive or SD card. Kindly plug-in one of these two storage media, make the same selection on the screen and press the button „**Load packages**". We recommend that you create a folder „**omr700-upgrade**" on the storage media.

3. If the button „**Load Packages**" is pressed, the menu of available packages for the selected card will be filled in, and it will also offer the latest found firmware of the card. Subsequently the button „**Update**" will be enabled.

4. Pressing the button „**Update**" starts the update of the card firmware. Its progress is displayed. There is a text description of the current progress under the indicator. The update lasts less than one minute.
5. The process of updating can be stopped by the button „**Stop**". If the button „**Stop**" is disabled (you can not press it), the updating process is in progress and it can not be interrupted. Please wait for completion of this step. If the process is stopped by the button „**Stop**", the error window „**Interrupted with error**" pops up.

6. After completion of the update you will need to wait a short while before the cards are put into operation and start measuring again.

7. If for some reason the update is unsuccessful, an error window „**Interrupted with error**" pops up and the error is described in a text form.

8. Fast troubleshooting:

MESSAGE	SOLUTION
No connection with the server.	Check connection to Internet.
Loading failed.	Check connection to Internet.
Update package not found.	Check if the packages are on the storage media and if they have been properly named.
Check sum error.	Package error. Download and save it on the storage media again.

IO card update

!

In case of any other error kindly contact the manufacturer!

5.16 USERS ADMINISTRATION

User administration serves for creation and subsequent modification of users, their access rights and passwords.

The following can be edited in the users administration:

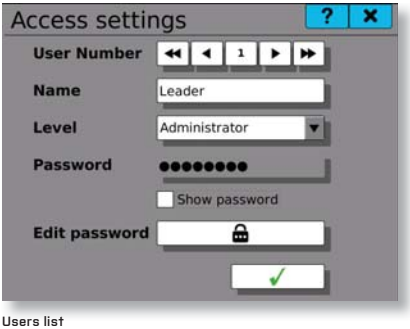
User number Number of the currently viewed or edited user. Its values range from 0 to 31. Buttons ◀◀ ◀ ▶ ▶▶ serve for rolling among the users.

Name Name of the user. Under this name you log in. The name can consist of up to 32 characters.

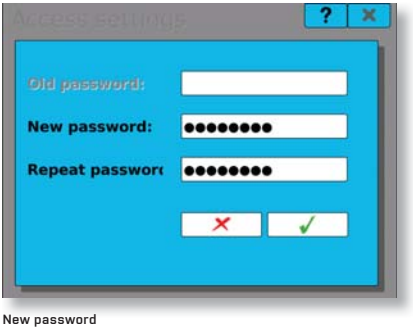
Level Level of user access rights. There are five levels: „„User", „Advanced user", „Master", „Administrator", „Service"

Password It must consist of min. four and max. eight characters. It can be composed of letters, numerals, hyphens and underscores. The password is hidden by default but you can view it.

Change password To change the password, kindly click the button , which will open boxes „Old password", „New password" and „Repeat password". If you want to change the password, you have to fill in all the three boxes. If you are authorized to change the password of a lower level user, fill in just the boxes „New password" and „Repeat password".



Users list



New password

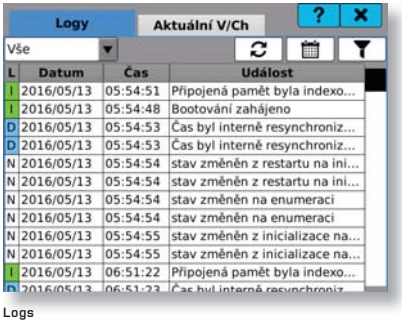
5.17 WARNING, ERROR AND CRITICAL ERROR

Tool for viewing the current warnings, errors, critical errors, and logs. If there is a critical error in the device, it must be confirmed (acknowledged). In the window you can also switch over to the logs overview. In the tab Current W/E you can switch over the levels of severity among warnings, errors, critical errors, or you can view all.

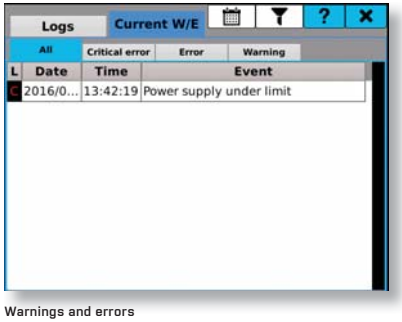
The overview of warnings and errors is presented in a spreadsheet-style divided into columns.

L	Level column (color differences)
Date	Date of warning or error.
Time	Time of warning or error.
Event	Text description of the warning or error.

A click on the warning or error tab reveals details of the event. If the error is critical, it ihas to be confirmed (acknowledged) here.



Logs



Warnings and errors

5.17.1 WARNING OR ERROR DETAILS

In a detailed description can be found:

Level Warning, error or critical error

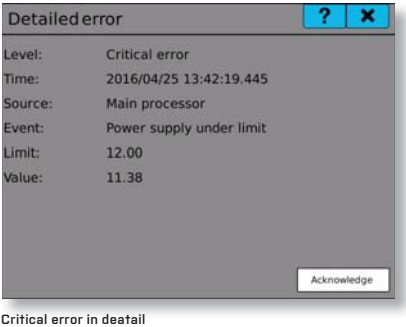
Time stamp Date and time of warning or error inception.

Source Cause of the warning or error. It can be either the main processor, secondary processor, the plugged-in cards or memory media.

Event Text description of the warning or error.

Values Values associated with the warning or error. There can be up to 4 values.

If error occurs, it is necessary to acknowledge it. Click the button „Acknowledge" and a warning window pops up. Provided that the recorder is once again within the specified limits, the error disappears immediately after its acknowledgment.



Critical error in deatail

Error acknowledgment

5.18 DISPLAY SETTING

Here you can adjust brightness (backlight) of the display or set the screensaver.

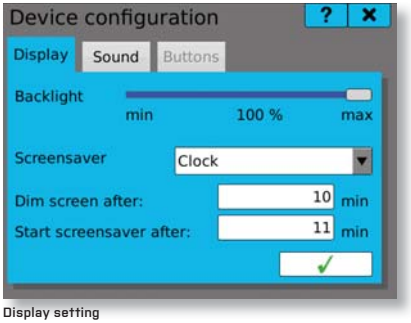
Backlight Moving the slider to the left or right changes intensity of the backlight.

Screensaver A click on the box unrolls selection menu. There you can select the type of the screen saver.

Dim screen after: Time after which the screen turns dim.

Screen saver after: Time after which the screensaver is put into operation.

There is an option of switching over from display settings to **sound settings** and to **programmable buttons**. Just click the tabs „**Sound**" or „**Buttons**".



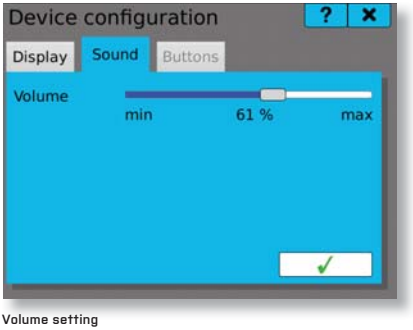
Display setting

5.19 SOUND SETTING

Here you can set volume of sounds used in the device.

Volume Moving the slider to the left or right changes the sound volume.

There is an option of switching over from sound settings to display settings and to programmable buttons. Just click the tabs „Display" or „Buttons".



Volume setting

5.20 BACKUP AND CONFIGURATION TRANSFER

There are two tabs in the configuration management „Store" and „Restore".

Backup

In the tab „**Store**" we select the storage media, where a backup package with configurations will be created. The options are USB flash drive, SD card or internal memory of the device.

Click on the button  will create a package on the selected medium, like for example:
omr700-cfg-1.0.1-2-1234567890-20160208-075908.tar.gz

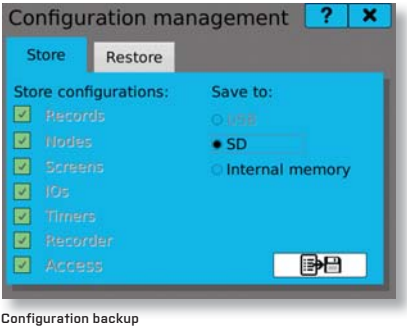
omr700-cfg-	opening, unchangeable part of the name
1.0.1-2-	firmware and system version
1234567890-	serial number with always 10 characters
20160208-075908	date and time of package creation, in this case on 08.02.2016 at 7:59:08.

Restoration

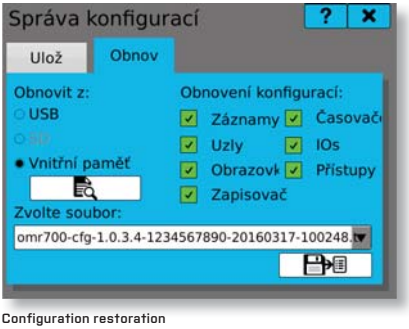
In the tab „**Restore**" we choose a storage medium, from which the restoration will be carried out and where we will look for the configuration package. The options are USB flash drive, SD card or internal memory of the device.

Select one of these media and click on the button  . If there are some valid configuration packages on the storage medium, the selection „**Select file**:" will be filled in. We again see the packages under the name **OMR700-Cfg-1.0.1-2-1234567890-20160208-075908.tar.gz** and we can select one of the offered packages.

Using the box  we decide which one of the configurations should be restored. A click on the button  restores the configurations. To be able to load and use the new configuration, **the device must be restarted**. Therefore a warning window „**Device will be restarted**" will pop up.



Configuration backup



Configuration restoration

5.21 VIEWING THE STORED VALUES

A tool for viewing the measured data. The viewing is to be set gradually from selection of the record to selection of up to four parameters from the records, setting date and time for the beginning of plotting, and selection of the time span for displaying data in a chart.

Record selection Offer of all records with valid data.

Parameter selection Offer of all parameters stored in a selected record. You can select up to four parameters to be displayed on one screen.

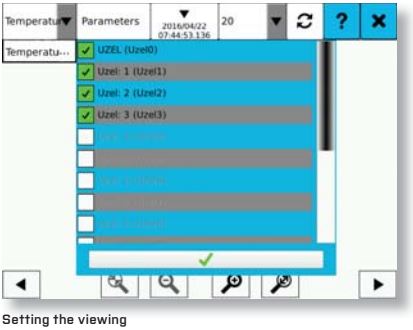
Setting date and time Since when the measured data have been loaded and displayed (date and time).

Setting time span Time span displayed in a maximum zoom out of the chart.

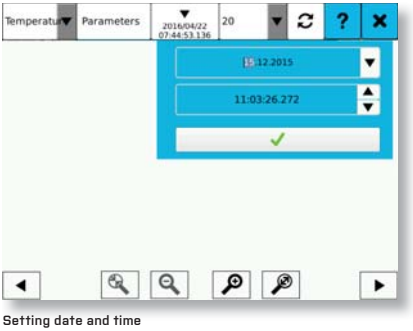
Button to confirm the setting for viewing and plotting the chart.

The chart is always plotted in a maximum zoom out. Using the buttons and we move stepwise closer (2x enlargement) or we can get the maximum zoom in. Using the buttons and we move stepwise away (2x reduction) or we can get the maximum zoom out.

If the chart is in its maximum zoom out, the buttons serve for shifting the chart to the left or right by the preset time span. However, if the chart is zoomed in, it shifts to the right or left within the time span always by 75% of the timeline.



Setting the viewing



Setting date and time

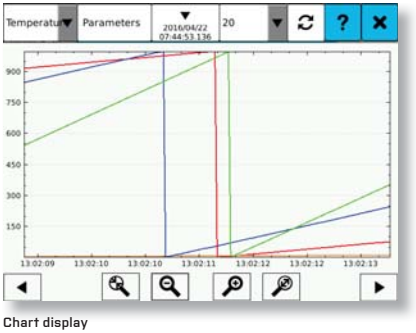


Chart display

5.22 STORAGE MANAGEMENT

A tool for copying, moving, and deleting stored logs and measured records in the internal memory.

The button to start copying logs or records. The files are copied and they stay in the internal memory.

The button to start moving logs or records. The files are copied and deleted from the internal memory. **The operation can not be undone!**

The button to start deleting logs or records. The files are deleted from the internal memory. **The operation can not be undone!**

Working with the stored logs:
By selecting a start and end date in the selection calendar (the calendar is opened by a click on ▼) all existing logs in the specified time span are searched, and the resulting number and size is displayed on the screen.

A click on one of the buttons USB flash or SD card selects the memory medium, on which the logs will be copied/moved.

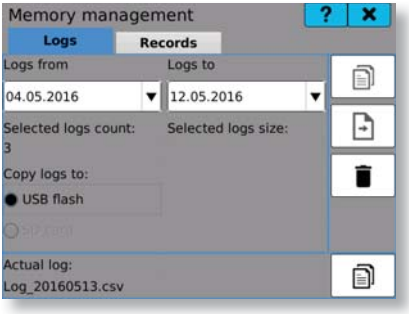
Clicking one of the buttons will start file operations.
The log of the current day is displayed on the line „**Current log**". This log can be copied only. Use the button at the end of the line.

Working with the stored logs:

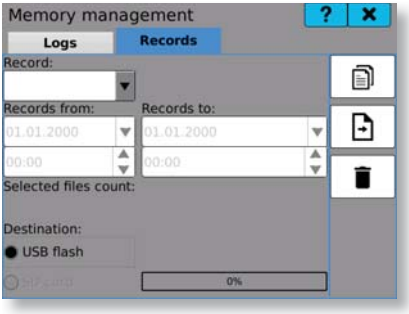
In the tab „**Records**" you can select one of the stored records in the internal memory. This record will fill in the date and time of the first and the last stored record.

A click on one of the buttons USB flash or SD card selects the memory medium, on which the records will be copied/moved.

A click on one of the buttons will start file operations. Copying progress is displayed in the progress indicator.



Logs management



Records management

6. TECHNICAL DATA

PROJECTION

Display:	5,7" color TFT display with capacitive touch screen
Brightness:	adjustable - in menu

INSTRUMENT FUNCTIONS

TK:	25 ppm/°C
Accuracy:	depending on the measuring card used
Measuring rate:	depending on the measuring card used
Accur. of the CJC:	±1,5°C
Digital inputs:	5x - optional functions
Digital outputs:	2x (open collector) - optional functions
Acoustic signal.:	sound module for acoustic signalization with 5 W loud speaker
Value recording:	into instrument memory (512 MB) with 4 fold compression USB FLASH with FAT32 up to 32 GB SD card with support of FAT32 up to 32 GB
RTC:	15 ppm/°C, time-date-value channel/display/node
Watch-dog:	reset after 500 ms
Calibration:	at 25°C and 40% of r.h.

COMMUNICATION

Protocols:	ASCII, MODBUS RTU, FTP, SMPT
Data format:	8 bits + without parity + 1 stop bit (ASCII)
Rate:	300...230 400 Baud
RS 485:	isolated, addressing (max. 31 instruments)
Ethernet:	10/100BaseT, secure communication, SMPT FTP, TCP/IP Modbus
Wi-Fi:	optional module with standard or industrial temperature range

POWER SUPPLY

Range:	10...30 V AC/DC, ±10%, PF ≥ 0,4, I_{STP} < 75 A/2 ms 80...250 V AC/DC, ±10%, PF ≥ 0,4, I_{STP} < 45 A/2 ms Power supply is protected by a fuse inside the instrument!
Consumption:	< 30 VA/< 30 W

MECHANIC PROPERTIES

Material:	Noryl GFN2 SE1, non-flammable UL 94 V-I
Dimensions:	150 x 150 x 80 mm
Depth beh. panel:	;85 mm
Panel cut-out:	138 x 138 mm
Lid securing:	the front lid can be sealed

OPERATING CONDITIONS

Connection:	connector terminal board, conductor cross-section < 1,5/2,5 mm²
Stabilisat. period:	;within 15 minutes after switch-on
Working temp.:	-20°...60°C
Storage temp.:	-20°...85°C
Cover:	IP64 (front panel only)
Execution:	safety class I
Overvoltage cat.:	EN 61010-1, A2
Dielectr. strength:	4kVAC after 1min. betw. power supply and input 3,75kVAC after 1min. betw. p. supply and cards 2,5 kVAC after 1min. betw. p. supply and card B1
Insulation resist.:	for pollutin degree II, measur. category III. instr. power supply > 670 V (ZI), 300 V (DI) input, output > 300 V (ZI), 150 V (DI)
EMC:	EN 61326-1
Seismic qualific.:	IEC 980: 1993, art. 6

* values apply for resistance load

IN.1 - 3x Universal input

Number of inputs: 3,
Galv. separation: yes

Range:			
	±60 mV	> 10 MΩ	**DC**
	±150 mV	> 10 MΩ	
	±300 mV	> 10 MΩ	
	±1200 mV	1,25 MΩ	
Range:	±5 mA	< 200 mV	**PM**
	±20 mA	< 200 mV	
	4...20 mA	< 200 mV	
	±2 V	> 10 MΩ	
	±5 V	1,25 MΩ	
	±10 V	1,25 MΩ	

Range: 0...100 Ω **OHM**
0...1 kΩ
0...10 kΩ
0...30,0 kΩ (only for 2 or 4-wire connection)
Connection: 2, 3 or 4-wire

Type Pt: EU > 100/500/1000 Ω, with 3 850 ppm/°C **RTD**
US > 100 Ω, with 3 920 ppm/°C
RU > 50/100 Ω with 3 910 ppm/°C
Type Ni: Ni 1 000/ Ni 10 000 with 5 000/6 180 ppm/°C
Type Cu: Cu 50/Cu 100 with 4 260/4 280 ppm/°C
Connection: 2, 3 or 4-wire

Range:		
	EU • Pt xxxx	-50°...450°C
	US • Pt 100	-50°...450°C
	RU • Pt 50	-200°...1 100°C
	RU • Pt 100	-200°...450°C
	Cu 100/4 280	-200°...200°C
	Cu 100/4 260	-50°...200°C
	Ni xxxx	-50°..250°C

Type:			
	J (Fe-CuNi)	-100°...900°C	**T/C**
	K (NiCr-Ni)	-100°...1 300°C	
	T (Cu-CuNi)	-200°...400°C	
	E (NiCr-CuNi)	-100°...800°C	
	B (PtRh30-PtRh6)	700°...1 820°C	
	S (PtRh10-Pt)	100°...1 760°C	
	R (Pt13Rh-Pt)	100°...1 760°C	
	N (Omegalloy)	-0°...1 300°C	
	L (Fe-CuNi)	-100°...900°C	

Power supply for lin. potentiometer: 2,5 VDC/6 mA, min. resistance 500 Ω **DU**

ACCURACY

TC: 25 ppm/°C
Accuracy: ±0,15 % of the range
Rate: 100 measur./s
Recomm. positions: A1, A2, A3, A4

IN.2 - 4x U-I input

Number of inputs: 4
Galv. separation: yes

Range:		
	0...5 mA	< 200 mV
	0...20 mA	< 200 mV
	4...20 mA	< 200 mV
	±2 V	> 10 MΩ
	±5 V	1,25 MΩ
	±10 V	1,25 MΩ
	±40 V	1,25 MΩ

TC: 25 ppm/°C
Accuracy: ±0,2 % of the range
Rate: 1000 measur./s
Recomm. positions: A1, A2, A3, A4

IN.3 - 4x RTD input

Number of inputs: 4
Galv. separation: yes

Type Pt: EU > 100/500/1 000 Ω, with 3 850 ppm/°C
US > 100 Ω, with 3 920 ppm/°C
RU > 50/100 Ω with 3 910 ppm/°C
Type Ni: Ni 1 000/ Ni 10 000 with 5 000/6 180 ppm/°C
Type Cu: Cu 50/Cu 100 with 4 260/4 280 ppm/°C
Connection: 2 or 3-wire

Range:		
	EU • Pt xxxx	-50°...450°C
	US • Pt 100	-50°...450°C
	RU • Pt 50	-200°...1 100°C
	RU • Pt 100	-200°...450°C
	Cu 100/4 280	-200°...200°C
	Cu 100/4 260	-50°...200°C
	Ni xxxx	-50°..250°C

TC: 25 ppm/°C
Accuracy: ±0,2 % of the range
Rate: 1000 measur./s
Recomm. positions: A1, A2, A3, A4

IN.4 - 4x T/C input

Number of inputs: 4
Galv. separation: yes

Type:		
	J (Fe-CuNi)	-100°...900°C
	K (NiCr-Ni)	-100°...1 300°C
	T (Cu-CuNi)	-200°...400°C
	E (NiCr-CuNi)	-100°...800°C
	B (PtRh30-PtRh6)	700°...1 820°C
	S (PtRh10-Pt)	100°...1 760°C
	R (Pt13Rh-Pt)	100°...1 760°C
	N (Omegalloy)	-0°...1 300°C
	L (Fe-CuNi)	-100°...900°C

TC: 25 ppm/°C
Accuracy: ±0,2 % of the range
Rate: 1000 mesur./s
Recomm. positions: A1, A2, A3, A4

ZI - Basic insulation, DI - Double insulation

IN.5 - 5x RTD input

Number of inputs:	5	
Galv. separation:	no	
Type Pt:	EU > 100/500/1 000 Ω, with 3 850 ppm/°C US > 100 Ω, with 3 920 ppm/°C RU > 50/100 Ω with 3 910 ppm/°C	
Type Ni:	Ni 1 000/ Ni 10 000 with 5 000/6 180 ppm/°C	
Type Cu:	Cu 50/Cu 100 with 4 260/4 280 ppm/°C	
Connection:	2, 3 or 4-wire	
Range:	EU • Pt xxxx	-50°...450°C
	US • Pt 100	-50°...450°C
	RU • Pt 50	-200°...1 100°C
	RU • Pt 100	-200°...450°C
	Cu 100/4 280	-200°...200°C
	Cu 100/4 260	-50°...200°C
	Ni xxxx	-50°..250°C
TC:	25 ppm/°C	
Accuracy:	±0,2 % of the range	
Rate:	1 000 measur./s	
Recomm. positions:	A1, A2, A3, A4	

IN.6 - 12x Current input

Number of inputs:	12	
Galv. separation:	no	
Range:	±5 mA	< 200 mV
	±20 mA	< 200 mV
	4...20 mA	< 200 mV
TC:	25 ppm/°C	
Accuracy:	±0,2 % of the range	
Rate:	1 000 measur./s	
Recomm. positions:	A1, A2, A3, A4	

IN.7 - 12x Voltage input

Number of inputs:	12	
Galv. separation:	no	
Range:	±2 V	> 10 MΩ
	±5 V	1,25 MΩ
	±10 V	1,25 MΩ
	±40 V	1,25 MΩ
TC:	25 ppm/°C	
Accuracy:	±0,2 % of the range	
Rate:	1 000 measur./s	
Recomm. positions:	A1, A2, A3, A4	

IN.8 - 2x Input for strain gauges

Number of inputs:	2
Galv. separation:	yes
Range:	2...4 mV/V 4...8 mV/V 8...16 mV/V
Sensor supply:	10 VDC, load ≥ 80 Ω
TC:	25 ppm/°C
Accuracy:	±0,02 % of the range
Rate:	1 000 measur./s
Recomm. positions:	A1, A2, A3, A4

IN.9 - 3x PM input U-I

Number of inputs:	3	
Galv. separation:	yes	
Range:	±5 mA	< 200 mV
	±20 mA	< 200 mV
	4...20 mA	< 200 mV
	±2 V	> 10 MΩ
	±5 V	1,25 MΩ
	±10 V	1,25 MΩ
TC:	25 ppm/°C	
Accuracy:	±0,02 % of the range	
Rate:	1 000 measur./s	
Recomm. positions:	A1, A2, A3, A4	

IN.11 - 8x Analogue/digital input

Number of inputs:	8
Galv. separation:	no
Range:	12...250 V AC/DC
TC:	25 ppm/°C
Accuracy:	±0,5 % of the range
Rate:	< 1 000 measur./s
Recomm. positions:	A1, A2, A3, A4

IN.12 - 12x Pulse input

Number of inputs:	12
Galv. separation:	no
Range:	10...30 VDC
Input:	PNP/NPN/contact, adjustable comparation levels
Frequency:	0,1 Hz...10 kHz
Mode:	Counter/Frequency
TC:	25 ppm/°C
Accuracy:	±0,01 % of the range (Frequency)
Recomm. positions:	A1, A2, A3, A4

IN.13 - 2x Fast pulse input

Number of inputs:	2
Galv. separation:	yes
Range:	5/24 VDC
Input:	PNP/NPN/contact, TTL/line adjustable comparation levels
Frequency:	0,1 Hz...1 MHz
Mode:	UP/DW Couter/Frequency IRC
Sensor supply:	12/24 VDC/200 mA
TC:	25 ppm/°C
Accuracy:	±0,01 % of the range (Frequency)

Recomm. positions: A1, A2, A3, A4

IN.14 - 2x Input for LVDT sensors

Number of inputs:	2
Galv. separation:	yes
Input:	3-/5-/6-wire connection 1/3/5 VAC with frequency 2,5/5/10 kHz
TC:	25 ppm/°C
Accuracy:	±0,02 % of the range
Rate:	< 1 000 measur./s

Recomm. positions: A1, A2, A3, A4

OUT.1 - 4x Relays

Number of outputs: 4
Galv. separation: yes
Type: digital, menu adjustable
Outputs: 4x relay, switch-over contact (Form C) (250 VAC/50 VDC, 3 A)*
Contact closure: < 10 ms
Relay: 1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300
Recomm. positions: B2, B3, B4, B5

OUT.2 - 8x Relays

Number of outputs: 8
Galv. separation: yes
Type: digital, menu adjustable
Outputs: 8x relay, switch-on contact (Form A) (250 VAC/50 VDC, 3 A)*
Contact closure: < 10 ms
Relay: 1/8 HP 277 VAC, 1/10 HP 125 V, Pilot Duty D300
Recomm. positions: B2, B3, B4, B5

OUT.3 - 8x Open collectors, NPN

Number of outputs: 8
Galv. separation: no
Type: digital, menu adjustable
Outputs: 8x open collector, NPN (30 VDC/100 mA)
Contact closure: < 0,2 ms
Recomm. positions: B2, B3, B4, B5

OUT.4 - 16x Open collectors, NPN

Number of outputs: 16 with common end
Galv. separation: no
Type: digital, menu adjustable
Outputs: 16x open collector, NPN (30 VDC/100 mA)
Contact closure: < 0,2 ms
Recomm. positions: B2, B3, B4, B5

OUT.5 - 8x Open collectors, PNP

Number of outputs: 8
Galv. separation: no
Type: digital, menu adjustable
Outputs: 8x open collector, PNP (30 VDC/700 mA)
Contact closure: < 0,2 ms
Recomm. positions: B2, B3, B4, B5

OUT.6 - 6x SSR

Number of outputs: 6
Galv. separation: no
Type: digital, menu adjustable
Outputs: 6x SSR (250 VAC/1 A)*
Contact closure: < 0,2 ms
Recomm. positions: B2, B3, B4, B5

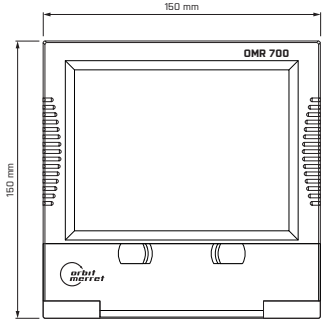
AO.1 - 2x Analogue outputs

Number of outputs: 2
Galv. separation: yes
Type: isolated, programmable with a 16 bit D/A transducer, type and range are adjustable
Nonlinearity: 0,1% of the range
TC: 15 ppm/°C
Rate: change of value response < 1 ms
Voltage: 0...2 V/5 V/10 V/± 10V
Current: 0...5/20 mA/4...20 mA
- power line compensation up to 600 Ω/12 V
Recomm. positions: B2, B3, B4, B5

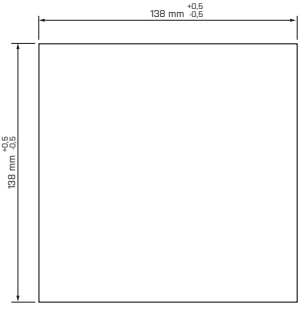
AO.1 - 2x Analogue outputs

Number of outputs: 4
Galv. separation: yes
Type: isolated, programmable with a 16 bit D/A transducer, type and range are adjustable
Nonlinearity: 0,1% of the range
TC: 15 ppm/°C
Rate: change of value response < 1 ms
Voltage: 0...2 V/5 V/10 V/± 10V
Current: 0...5/20 mA/4...20 mA
- power line compensation up to 600 Ω/12 V
Recomm. positions: B2, B3, B4, B5

Front view

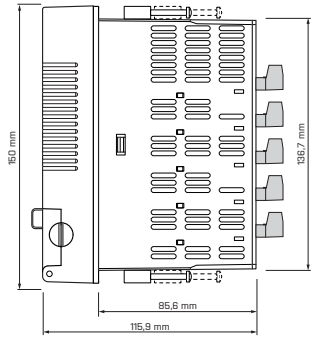


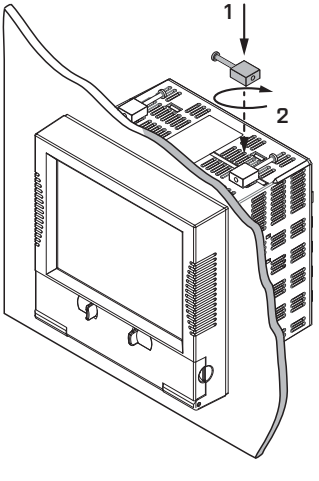
Panel cut



Panel thickness: 0,5...8,6/26,8 mm

Side view





INSTRUMENT ASSEMBLY

- insert the recorder into the panel cut-out
- apply gradually all four mounting bolts with stones into rectangular holes and fix them in a clockwise direction
- tighten the bolts with a Phillips screwdriver

Poduct	**OMR 700**
Type	. . . . .
Manufact. No.	. . . . .
Date of sale	. . . . .

WARRANTY

A guarantee period of 60 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.

The guarantee shall apply to quality, function and construction of the instrument, provided that the instrument was connected and used in compliance with the instructions for use.

The guarantee shall not apply to defects caused by:

- mechanic damage
- transportation
- intervention of unqualified person incl. the user
- unavoidable ivent
- other unprofessional interventions

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

5 YEARS

Stamp, signature

ES DECLARATION OF CONFORMITY

Company: **ORBIT MERRET, spol. s r.o.**
Klánova 81/141, 142 00 Praha 4, Czech Republic, VAT No.: 00551309

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

declares at its explicit responsibility that the product presented hereunder meets all technical requirements, is safe for use when utilised under the terms and conditions determined by ORBIT MERRET, spol.s r.o. and that our company has taken all measures to ensure conformity of all products of the types referred-to hereunder, which are being brought out to the market, with technical documentation and requirements of the respective Czech statutory orders.

Product: Paperless recorder

Type: **OMR 700**

This product has been designed and manufactured in line with the following requirements:
Low-voltage electrical equipment (directive no. 2014/35/EU)
Electromagnetic compatibility (directive no. 2014/30/EU)

The product qualities are in conformity with harmonized standards:

El. safety: EN 61010-1

EMC: EN 61326-1
Electronic measuring, control and laboratory devices - Requirements for EMC "Industrial use"
EN 50131-1, chap. 14 and chap. 15, EN 50130-4, chap. 7, EN 50130-4, chap. 8, (EN 61000-4-11, ed. 2), EN 50130-4, chap. 9 (EN 61000-4-2), EN 50130-4, chap. 10, (EN 61000-4-3, ed. 2), EN 50130-4, chap.11 (EN 61000-4-6), EN 50130-4, chap. 12, (EN 61000-4-4, ed. 2), EN 50130-4, chap. 13 (EN 61000-4-5), EN 61000-4-8, EN 61000-4-9, EN 61000-6-1, EN 61000-6-2, EN 55022, chap. 5 and chap. 6 Seismic resistance: IEC 980: 1993, art. 6

The product is furnished with a CE label issued in 2016

As documentation serve protocols of authorized and accredited organizations:

EMC ČMI Testcom, Protocol No. 8551-PT-E0099-16 of 10/05/2016
Seismic resist. VTÚ Vyškov, Protocol No. 194200-52/2014 of 07/04/2014

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Miroslav Hackl
General Director

Assessment of conformity pursuant to §22 of Act no. 22/1997 Coll. and changes as amended by Act no.71/2000 Coll. and 205/2002 Coll.