

## DIGITAL MULTICHANNEL REGISTRAR (DMR)

The Digital Multichannel Registrar (DMR) is designed for operation in instrumentation and control systems. The DMR measures and records parameters and transmits the measurement data to the supervisory levels of I&C systems. It can be used at nuclear power plants (as the automation hardware), and in safety control systems. The DMR is classified as safety class 2, with the classification designation 2NU in accordance with NP 306.2.141, and corresponds to 2 (A) according to NP306.2 .202, as per the functions performed.

The DMR can be used in other fields of industry where the parameters of DMR meet the current field regulatory requirements. The DMR is designed for:

- ▶ *measurement and recording of voltage, current, resistance, and interpretation signals of these parameters to other related physical quantities (temperature, weight, concentration and other parameters)*
- ▶ *generation of discrete signals if measured values are outside specified thresholds, which can be used as emergency protection signals*
- ▶ *displaying measured parameters in digital, graphical, and histogram form via the video display*
- ▶ *storing information in the form of a database in its own non-volatile memory or on a remote server*



### Main functions of DMR

1. *The DMR can be used as a means of technological processes recording, displaying measured values in digital, graphical, and histogram form;*
2. *The DMR maintains an archive of measured values on its own storage media (with a capacity of up to 250 GB) and also transfers data to an external data storage server via the interface Ethernet 10/100 BASE-T;*
3. *DMR allows technicians to work with the archive in Emulated Viewing Mode to reproduce the sequence of events;*
4. *The DMR generates discrete warning and emergency commands in the event of reaching previously established threshold levels.*

#### Current measurement

|                             |             |
|-----------------------------|-------------|
| current measurement range 1 | 0...+5 mA   |
| current measurement range 2 | +4...+20 mA |
| current measurement range 3 | 0...+20 mA  |
| current measurement range 4 | -5...+5 mA  |

#### Resistance measurement

|                                      |            |
|--------------------------------------|------------|
| Resistance measurement in a range of | 0...5 kOhm |
|--------------------------------------|------------|

### Temperature measurement (types of connected sensors)

|  |                 |
|--|-----------------|
| resistance temperature detector 50 M (Cu) W100=1,4280, temperature range     | -100...+200 °C  |
| resistance temperature detector 53 M (Cu) W100=1,4260, temperature range     | -100...+200 °C  |
| resistance temperature detector 100 M (Cu) W100=1,4280, temperature range    | -100...+200 °C  |
| resistance temperature detector 50 П (Pt50) W100=1,3910, temperature range   | -100...+500 °C  |
| resistance temperature detector 50 П (Pt50) W100=1,3850, temperature range   | -100...+500 °C  |
| resistance temperature detector 100 П (Pt100) W100=1,3910, temperature range | -100...+500 °C  |
| resistance temperature detector 100 П (Pt100) W100=1,3850, temperature range | -100...+500 °C  |
| thermoelement TKhA KhA(K), temperature range                                 | -100...+1100 °C |
| thermoelement TKhK KhK(L), temperature range                                 | -100...+800 °C  |
| thermoelement TPP10(S), temperature range                                    | 0...+1100 °C    |
| термопреобразователь ТБР (А-1), диапазон температур                          | 0...+1100 °C    |

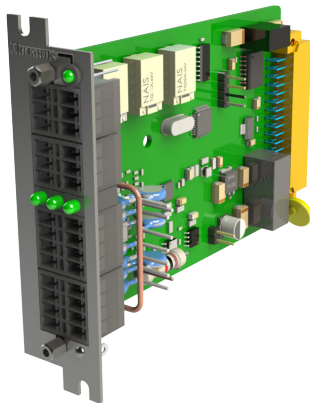
### Main technical characteristics

|   |                        |
|---|------------------------|
| reduced measuring error (for each type of measurement)    | ±0,25% ±1EMP           |
| reduced error of activation of discrete threshold outputs | ±0,25%                 |
| primary interface of external connection                  | Ethernet 10/100 BASE-T |
| optional interface of external connection                 | RS-485/422             |
| power supply voltage                                      | 220 V, 50 Hz           |
| consumption capacity                                      | No more than 50 W      |
| Overall dimensions  | 275x240x200            |
| Weight, maximum   | 15 Kg                  |

### Voltage measurement

|                             |               |
|-----------------------------|---------------|
| voltage measurement range 1 | 0...250 mV    |
| voltage measurement range 2 | 0...1 V       |
| voltage measurement range 3 | 0...10 V      |
| voltage measurement range 4 | -50...+50 mV  |
| voltage measurement range 5 | -0,1...+0,1 V |
| voltage measurement range 6 | -1...+1 V     |

### DMR SPECIFIC FEATURES



The DMR is a composite product. Measurement of input parameters is made by removable modules and each measuring module is an autonomous galvanically isolated measuring element.

The measuring module consists of three measuring channels. Each channel can measure temperature, current, voltage, or resistance according to technical specifications. Each module has three channels of discrete "dry" contact output, which can be configured with the thresholds and logical functions (i.e., "AND", "OR").

The number of installed modules in the DMR is up to 16 units.

### Design Solutions of Physical Process Analysis Design Bureau

Physical Process Analysis Design Bureau of PC "RPC Radiy" is set up for development of seismic protection systems, calibration equipment and qualification of product data at NPP. The bureau designs and implements the Seismic Sensor that is the source of seismic data for the seismic protection equipment. Other successfully designed and implemented product is the vibration measuring system for periodic calibration of seismic sensors in semi-automatic mode. Besides nuclear products the design bureau has developed the Information Acquisition and Display Unit that is the basic item in any monitoring system design including the Automatic System for Early Diagnostics of Emergencies. Additionally, the design bureau develops the angel precision gages for the wide scope of measurement.