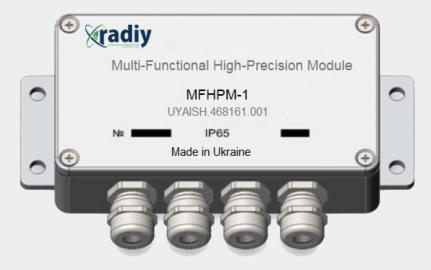


# **MULTI-FUCTIONAL HIGH-PRECISION MODULE MFHPM-1**

Multi-Functional High-Precision Module (MFHPM-1 UYAISH.468161.001) is designed to produce 24-bit digital signals from three measurement channels that can be used for voltage, current, impedance values, and bridge measurement circuits. It also provides parameter outputs via a digital interface RS 485 and control signals by two universal static discrete outputs.



### **SCOPE OF APPLICATION:**

MFHPM-1 is used when working with sensors having an output proportional to the measured values: differential and unipolar voltage up to +/- 30 V, including microstrain sources (thermocouples), current signal 0..2000 Ohm (resistance temperature detectors) including bridge conversion diagrams (strain sensors) with a speed up to 500 samples per second. It generates discrete threshold signals of the measured value for automatic process control (e.g., P, PI,PID).

Main technical characteristics		Configuration of current values measurement	
Number of measurement channels	3	Current measurement range	020 мА
Number of digits per measuring channel	24	Absolute measurement error in	
Number of discrete outputs	2	the range of ± 10 V at the conversion frequency , 16.7	± 4 nA
Application programming interface	RS 485	33,3 62,5 125 250	± 6 nA ± 10 nA ± 16 nA ± 36 nA
Supply voltage	24 V		
Power consumption	1 Watt		
	input circuits,	500	± 36 nA
Galvanic isolation	discrete outputs, 24 V	Input impedance	49,9 Ohm
power supply	The full-scale current is limited by the power dispersion	0,25 watt	

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#### Configuration of strain-gauge measurement

	Number of processed strain sensors	3
	Power supply voltage of strain sensors	5 V
	Input impedance of a measuring circuit	> 1 mOhm
Re	esolution of measurement at 4.17 Hz conversion	±1 mkV
	Types of used strain sensors	563YH, 563YSGS etc.

#### Main measurement characteristics

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A number of sampling frequencies (current or voltage) by one channel	4,17; 8,33; 16,7; 33,3; 62,5; 125; Hz
Disturbance suppress 50 Hz	Yes
Synchronization of measurements in a group transformation	Yes

## Configuration of impedance measurement

Configuration of the voltage meter			
		Number of processed channels	3
Voltage measurement range (configurable during manufacturing)	±10, ±15, ±30 V	Range of measured impedance	02000 Ом
Input impedance	>200 kOhm	Absolute error of measurement at sampling	± 0,001 Ohm
Input capacitance	No more than 1000 Pf	frequency 4,17 Hz	
Voltage limit for any configuration	200 V	Supply current of measured impedance	1,5 mA
Absolute measurement error in the range of ± 10 V at the		Type of used temperature sensors	TSM, TSP, TKh, TKhK and others
conversion frequency Hz, 16,7 33,3 62,5 125 250 500	± 2 mkV ± 3 mkV ± 5 mkV ± 8 mkV ± 18 mkV ± 18 mkV	Supported calibration of temperature transducers (TSM,TSP)	TSN50H, TSN100H, TSN50M, TSN100M,TSP50П, TSP100П, TSP500П, TSP1000П, 21GR, 22GR, 23GR.
Absolute measurement error in the range of ± 150 V at the conversion frequency Hz, 16,7 33,3 62,5 125 250	the range of ± 150 V at the conversion frequency Hz, 16,7 ± 3 mkV 33,3 ± 5 mkV 62,5 ± 8 mkV 125 ± 12 mkV		2 outputs of electronic static relay
500	± 27 mkV ± 27 mkV	Maximum value of switched voltage current	1 A alternating, 2 A direct 60 V
Configuration of microstrain			
Supported types of thermocouples	TKhK, TKh, PP-1, NS, PR-30/6, TMK	Type of switched voltage	alternating, direct

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.