

## Metran-900 Multichannel Recorder

OKP code: 42 2700



- **Capability of connecting different types of primary elements in arbitrary combination (12 maximum)**
- **Simultaneous control of various process parameters**
- **Integral interface: RS232/RS485**
- **Digital and graphical data indicating on built-in display**
- **Visualization and informativity of displayed real-time data via all 12 channels simultaneously**
- **Capability of obtaining all the necessary information about parameter state at any time during recording period**
- **Data printing function**
- **Minimum mounting costs**

Metran-900 Multichannel Recorder is designed to collect and process data from transmitters with unified output signal, mutual induction signal and from temperature transmitters measuring process parameters.

Excellent alternative to paper chart recorders (no need for ink, stylus or repair).

### DESIGN AND OPERATING PRINCIPLE

Metran-900 Recorder consists of a switching unit and a recorder in the independent housings.

The switching unit collects, converts and transmits signals of primary elements to the recorder or a computer in digital form. The switching unit is designed considering particularity of existing stock of primary elements in Russia. It is possible to connect all types of RTDs, including with outdated graduation marks, thermocouples, transmitters with analog signals and also directly connect transmitters with mutual inductance signals of 0-10 mH. Up to 12 transmitters of different types according to a switching unit model can be connected. There are four models of switching units: K1201, K1202, K1203, K1204 delivered complete with a remote control unit for device adjustment according to required graduated characteristics of primary elements.

The multi-purpose remote control unit is suitable for adjustment of any switching units. One control unit is enough for parcel of devices.

Switching units can be used independently as converters of analog input signals into RS485, which is a part of process control systems.

The Recorder reads and displays the information in RS485 digital format from the switching unit, records and keeps the data in nonvolatile operating storage, converts the data into RS232/RS 485 digital output signal, prints the data for required time period, alarms if controlled parameters do not correspond to set values.

Maximum distance between the Recorder and the switching unit is 1300 m; mounting should be performed with the help of one cable (instead of 12).

### BASIC SPECIFICATIONS

- Number of connected transmitters (different types): 1 to 12.
- The data on switching units is given in Table 1.

Table 1

Switchin Unit Model	Connected Transmitters Name and Type				Galvanic isolation RS485	Galvanic isolation of channels
	Resistance Temperature Detectors (arbitrary calibration, 3-, 4-wire connection diagram)	Thermocouples: THA, THK, TVR, TPR, TPP, T, E, J	Transmitters with 0-5, 0-20, 4-20 mA analog output	Transmitters with analog output of mutual inductance 0-10 mH		
K1201	+	-	-	-	-	-
K1202	+	-	+	-	-	-
K1203	+	-	+	+	+	-
K1204	+	+	+	-	+	-

- Root-extracting function for current signal and mutual inductance signal
- Limits of reference accuracy:
  - resistance, max:  $\pm 0.1\%$  from max thermometer resistance, specified in the Product Data Sheet;
  - 0-5 mA analog signal, max:  $\pm 0.2\%$ ;
  - 0-20, 4-20 mA analog signals, max:  $\pm 0.1\%$ ;
  - mutual inductance signal, max:  $\pm 1.0\%$
- Limits of reference accuracy for thermo-emf signal are given in Table 2.

Table 2

Sensor Type	Temperature Range, °C	Limits of Reference Accuracy, $\pm$ °C
VR(A-1)	0-2500	5
PR(B)	1000-1810	4
	300-1000	5
PP(S)	500-1760	3
	-50-500	5
HA(K)	-270-1370	2
HK(L)	-210-800	2
E	-270-1000	2
J	-210-760	2
T	-270-400	1

## SETUP AND CALIBRATION

Setup is performed separately for the switching unit (with the help of a remote control) and the recorder (with the help of front panel buttons).

### Switching unit setup:

- connected transmitter type for each channel;
- graduated characteristics and operating ranges of connected transmitters;
- user and service passwords;
- calibrated characteristics of input signal conversion (at release and repair).

### Recorder setup:

- operating ranges of controlled parameters for each channel;
- actuation levels of output relays for each channel;
- measurement units of controlled parameters;
- data record intervals;
- current time.

## DATA RECORD AND ARCHIVING

Data record interval: 5-48 s (assigned by operator).

Data archiving depth in nonvolatile memory: 3-33 days (depending on record interval).

## OUTPUT DEVICES

- Emergency relays: 2 units.  
Switched current, voltage, power:  
0.1 A; 220 V, 50 Hz;  
25 VA at  $\cos \varphi \leq 0.7$ ;  
10 W; 250 V dc.
  - Control relays: 24 units, 2 units per channel (optional).  
Switched current, voltage:  
0.1 A; 220 V, 50 Hz;  
110 V dc.
- It is possible to change relay parameters by separate order. ●  
Setup of relay actuation levels: independent for each channel.
- Interface of digital output signal:
    - switching unit: RS485;
    - recording unit: RS232 or RS485.
  - Printer interface: CENTRONICS.

## SUPPLY VOLTAGE

- Recorder: 220 V, 50 Hz;
- K1201, K1202 units: 24 V from Recorder;
- K1203, K1204 units: 220 V, 50 Hz.

## OPERATION CONDITIONS

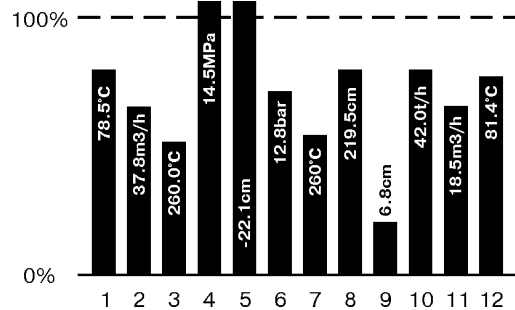
- Ambient temperature:
- Recorder: 5...50°C;
  - Switching unit: -20...50°C.
- Humidity (for Recorder): up to 95% at 35°C.
- Dust and water tightness:
- Recorder: IP30;
  - Switching unit: IP65.

## RELIABILITY

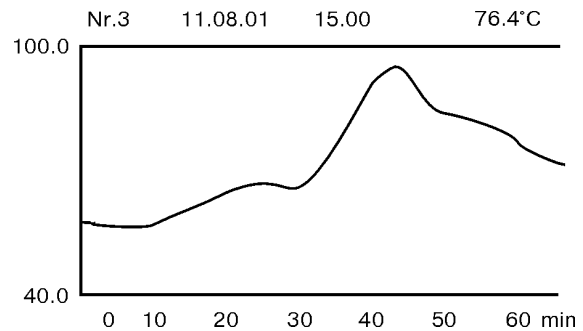
Time between failures: 50 000 h.  
Average service life: 8 years.

## DATA INDICATED ON LCD

In indication mode: current values are indicated in graphic-digital form through 12 channels simultaneously.



In chronological mode: changes of parameters for a selected channel are indicated in hourly or daily scale.



Emergency set-point is accompanied by indication pulsating, well-marked from 10-15 m; at the same time alarm initiation command is given.

## VERIFICATION

Verification interval: 2 years.

## WARRANTY

Warranty period: 18 months from the date of commissioning.

## ORDERING INFORMATION

Metran-900/RS232-K1202-350 Ohm-24 relays-GP-TU...

1	2	3	4	5	6	7
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1. Recorder type.
2. Built-in RS232 or RS485 interface.
3. Switching unit module.
4. Max resistance of RTD.
5. Control card with 24 output relays (indicate in case of installation need).
6. Acceptance Type GP - State Verification.
7. Specification: TU 422700-001-54904815-01.

**Remote control:** quantity (one may be ordered for parcel of devices).

EXTERNAL WIRING DIAGRAMS

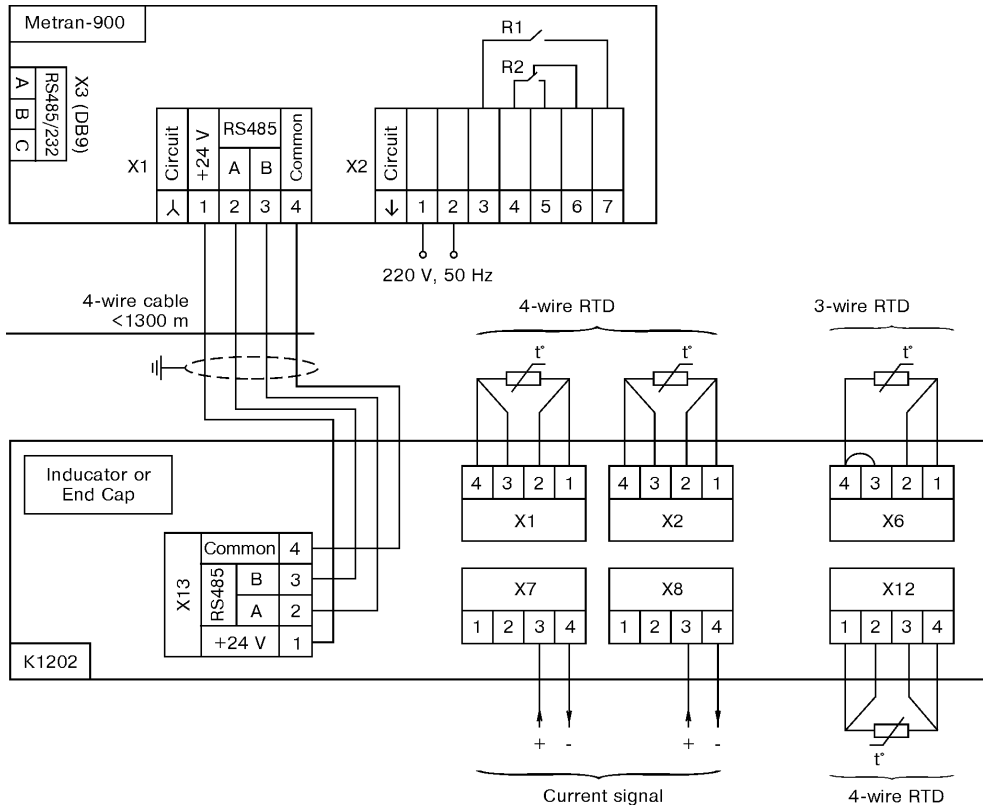
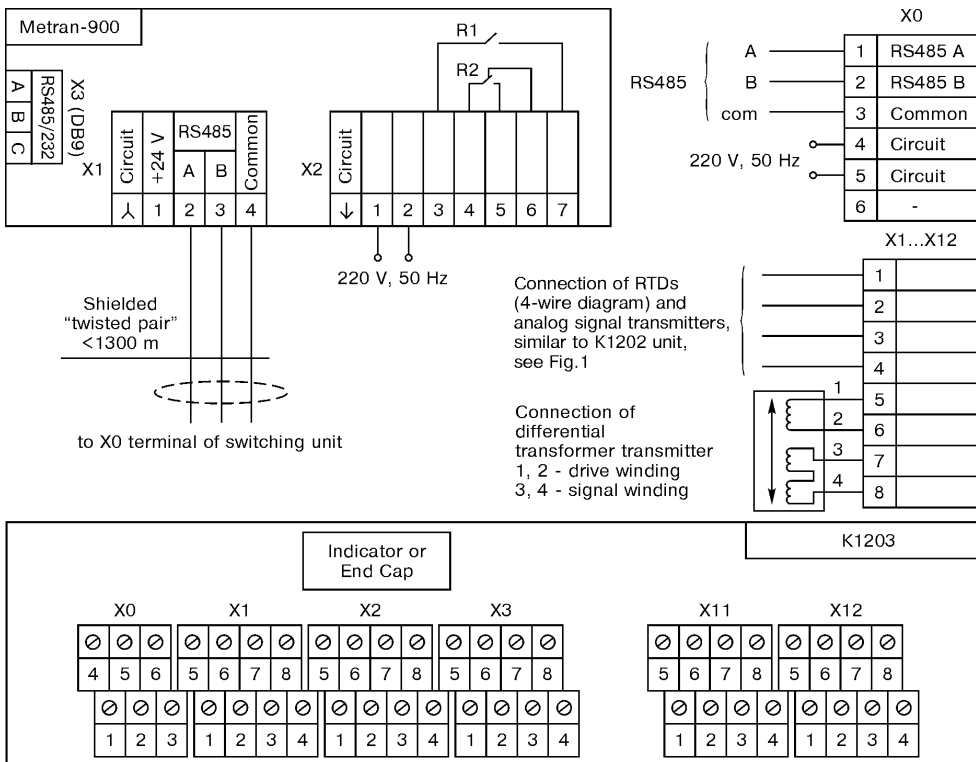


Fig.1. External Wiring Diagram of Recorder Complete with K1201, K1202 Switching Units.



Terminals position and numeration in switching unit

Fig.2. External Wiring Diagram of Recorder Complete with K1203 Switching Unit.

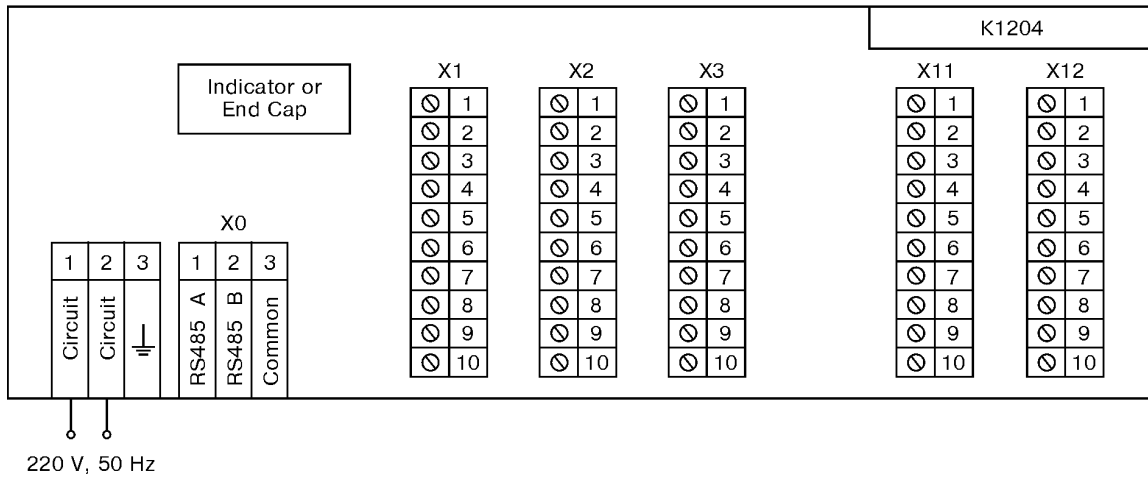
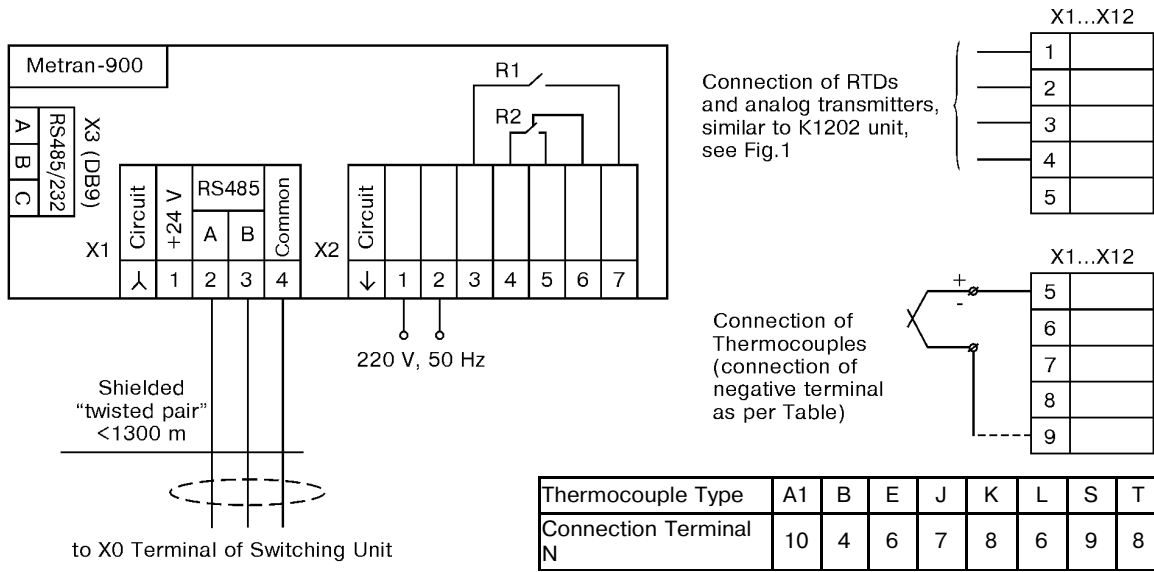


Fig.3. External Wiring Diagram of Recorder Complete with K1204 Switching Unit.

Table 3

Channel	12	11	10	9	8	7	6	5	4	3	2	1												
Connector No.	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Relay	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
Connector No.	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1

Terminal block connectors of RELAY PC BOARD are arranged in 2 rows on the rear side of the recorder. A pair of relay connectors includes the connector of the terminal block in the upper row and the underlying connector in the bottom row (refer to Table 3).

Connector arrangement in the Table corresponds to the view on the rear side of the recorder.

OVERALL AND MOUNTING DIMENSIONS

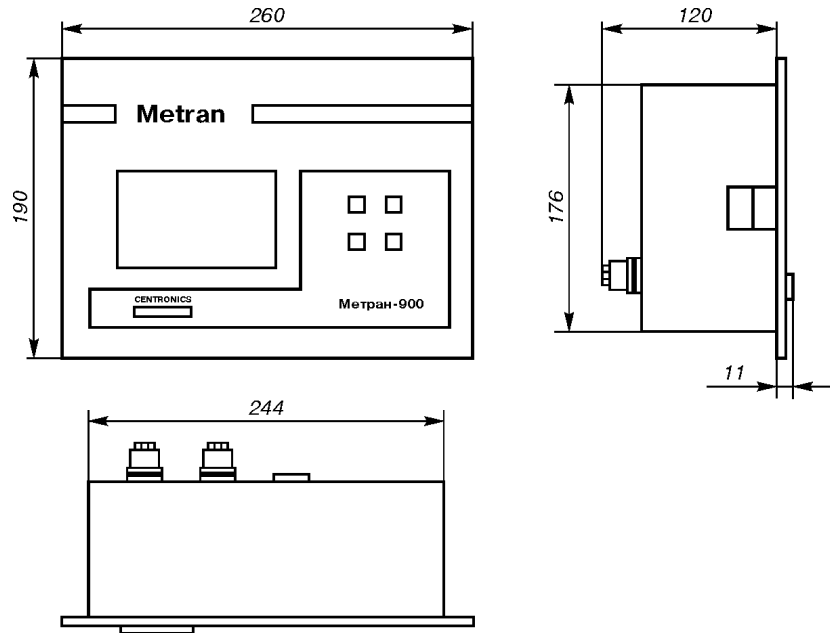


Fig.4. Metran-900 Recorder.

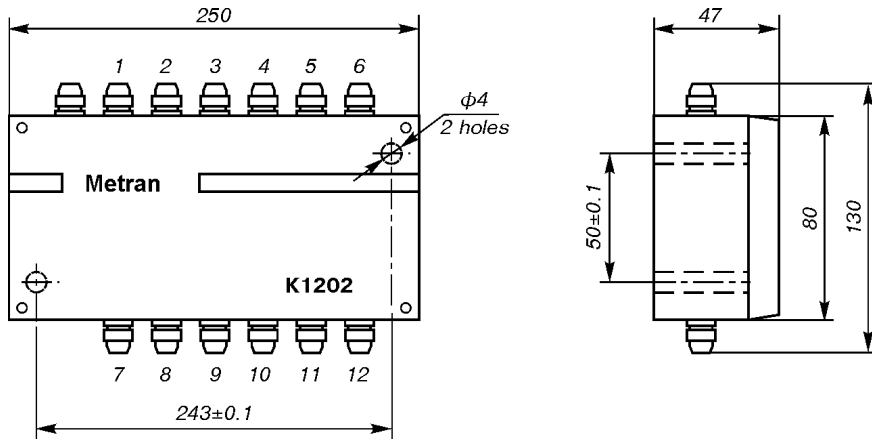


Fig.5. K1201, K1202 Switching Unit.

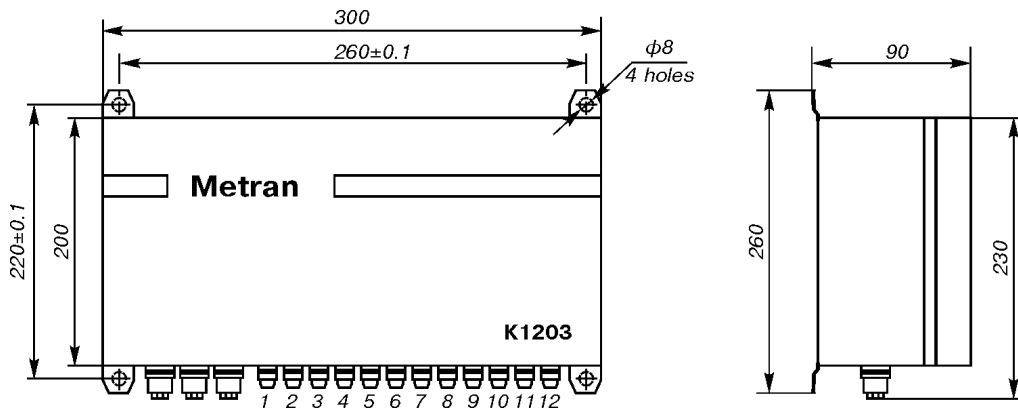


Fig.6. K1203, K1204 Switching Unit.