# DIGITAL METERS WITH BARGRAPH NA2 series


## 1. APPLICATION

**NA21 and NA22 digital meters with bargraph are destined to measure d.c. voltage and d.c. current, temperature, resistance or other physical quantities converted into an electrical signal.**

They ensure a precise measurement and a quick evaluation of the measured quantity change trend. The presentation of measurement results and alarm states are very well visible from a long distance due to the use of indicators of bargraph type. Alarm thresholds are indicated on the bargraph as lighting or blank segments. The RS-485 interface enables the application of these meters in computer systems.

The protection level ensured by the housing is IP50 from the frontal side and IP00 from the terminal side.

**Additional functions:**

- alarm settings with a relay output,
- programmable bargraph resolution,
- possibility to introduce an individual characteristic,
- signalling of the measuring range overrunning,
- two-wire supply of object transducers (24 V) in executions with ranges: 0/4...20 mA, 0...1 V, 0...10 V (NA2 only),
- programmable continuous output,
- RS-485 serial interface.

## 2. TECHNICAL DATA

**Input signals:**

| | |
|---|---|
| - voltage | 0... 200 V, ranges acc. table 1;<br>basic error: 0.2% of the range ± 1 digit |
| - current | 0... 2 A, ranges acc. table 1,<br>basic error: 0.2% of the range ± 1 digit |
| - temperature and resistance | sensor type, ranges and basic error acc. table 1,<br>- automatic compensation of terminal temperature changes<br>- automatic compensation of conductor temperature changes |

**Display fields:**

- **NA21** 1 fluorescent display (green-blue), 3 digits, 5 mm high, 1 bargraph 84 mm long, (with 100 segments)
- **NA22** 2 LED displays (red, green or red + green) 3 digits, 7.6 mm high, 2 bargraphs 92 mm long, (with 64 segments)

| | |
|---|---|
| **Indication range of the digital display** | - 199... 999 |
| **Bar-graph accuracy** | ± 1 segment |
| **Output:** | |
| - relay output | electromagnetic relay with voltage-less make contacts<br>maximal load:<br>250 V a.c. or 220 V d.c.<br>1 A d.c, a.c.<br>125 VA or 60 W |
| - analogue programmable | 0/4...20 mA or 0...10 V<br>basic error: 0.2% of the range |
| - digital output | communication with computer<br>RS-485 interface<br>baud rate: 9600 bauds |
| **Rated operating conditions:** | |
| - supply voltage | 90...230...253 V a.c., d.c.<br>20...24...40 V a.c, d.c. |
| - supply a.c. voltage frequency | 40...50...440 Hz |
| - ambient temperature | 0...23...50°C |
| - air relative humidity | ≤ 75% (no condensation) |
| - working position | vertical |
| **Power consumption** | maximum 10 VA |
| **Storage temperature** | - 20... + 70°C |
| **Protection grade ensured by the housing:** | |
| - from the frontal side | IP 50 |
| - from the terminal side | IP 00 |
| **Safety requirements:** | acc. EN 61010-1 |
| - installation class | III |
| - pollution level | 2 |
| - max. voltage in relation to the ground | 300 V a.c. |
| **Electromagnetic compatibility:** | |
| - immunity | EN 61000-6-2 |
| - emission | EN 61000-6-4 |
| **Preliminary heating time:** | 5 minutes |
| **Overall dimensions** | 36 × 144 × 130 mm |
| **Panel cut-out dimensions** | $34^{+0.6} \times 137^{+1}$ mm |
| **Maximal panel thickness** | 20 mm |
| **Weight** | 700 g |

### Coding of measuring ranges

Table 1

| Measuring range | Basic error in % of the range ± 1 digit | Code |
|---|---|---|
| 0... 60 mV | | **01** |
| 0... 150 mV | | **02** |
| 0... 200 mV | | **03** |
| 0... 300 mV | | **04** |
| 0... 1 V | | **05** |
| 0... 2 V | 0.2% | **06** |
| 0... 10 V | | **07** |
| 0... 20 V | | **08** |
| 0... 200 V | | **09** |
| 0... 20 mA | | **10** |
| 0... 200 mA | | **11** |
| 0... 2 A | | **12** |
| -199... + 850°C Pt100 | 0.1 | Ranges programmed by means of push-buttons. Write the code **00** in the order |
| -60... + 180°C Ni100 | 0.2 | |
| -50... + 180°C Cu100 | 0.2 | |
| -20... + 999°C **J** (Fe-CuNi) | 0.1 | |
| -50... + 999°C **K** (NiCr-NiAl) | 0.1 | |
| -50... + 999°C **N** (NiCrSi-NiSi) | 0.1 | |
| -20... + 800°C **E** (NiCr-CuNi) | 0.1 | |
| -50... + 999°C **S** (PtRh10-Pt) | 0.5 | |
| -50... + 999°C **R** (PtRh13-Pt) | 0.5 | |
| -5... 60 mV, voltage measurement | 0.1 | |
| 0... 400 Ω, potent. transmitter | 0.1 | |



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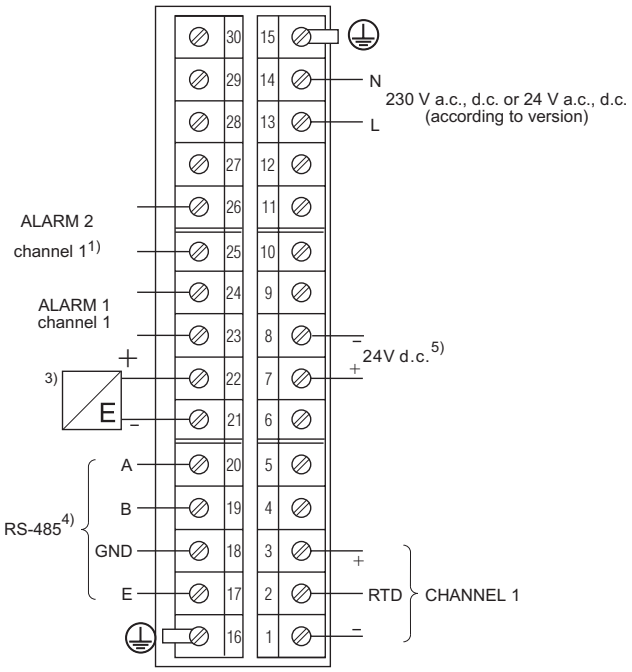
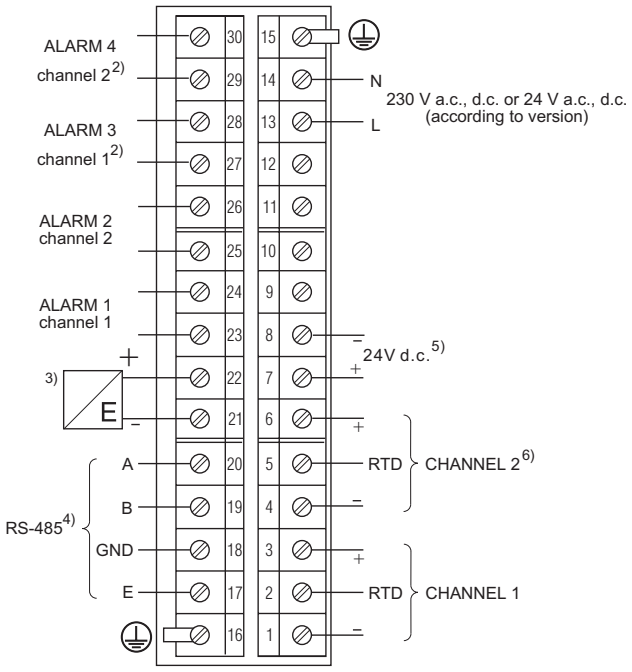
## CONNECTIONS OF NA2 METERS TO EXTERNAL CIRCUITS

### NA21 meter




### NA22 meter




1) Exists only in versions with two relays (NA21)

2) Exists only in versions with four relays (NA22)

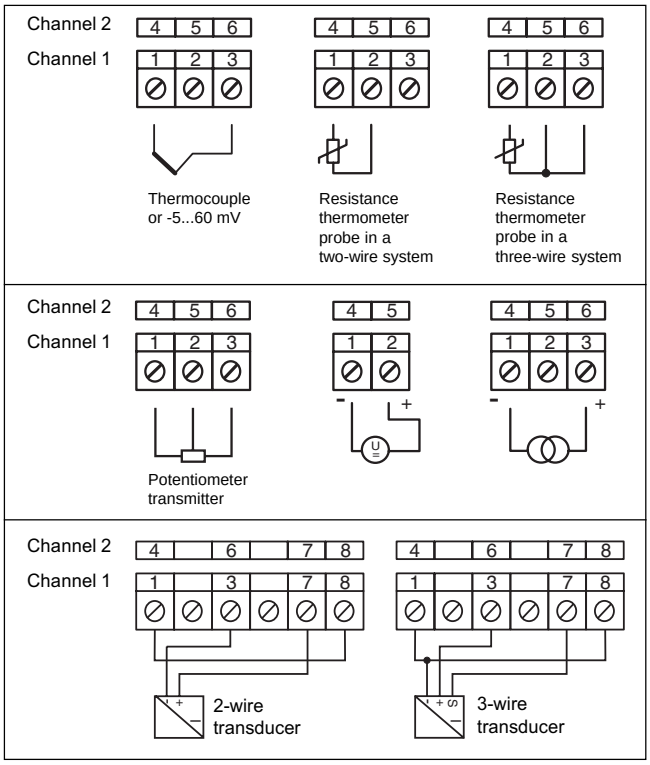
3) Exists only in versions with an analogue output: 0/4...20 mA or 0...10 V

4) Exists only in versions with RS-485 interface

5) Exists only in versions with measuring ranges: 0/4...20 mA, 0...1 V, 0...10 V.

6) Exists only in versions of NA22 meters

### Connection way of the input signal:




## 4. ORDERING CODES

Table 3

| NA2 METER | XX | X | XX | X | X | X | X |
|---|---|---|---|---|---|---|---|

**Number of channels and display colour** 1):
one channel blue-green ..... **1B**
two channels green ..... **2G**
two channels red ..... **2R**
two channels red and green ..... **2D**

**Input:**
d.c. current ..... **I**
d.c. voltage ..... **U**
temperature ..... **T**

**Measuring range:**
z tablicy 1 wpisać kod zakresu ..... **XX**
custom-made ..... **99**

**Alarm outputs:**
1 relay per channel ..... **1**
2 relays per channel ..... **2**

**Output:**
without output ..... **0**
current analogue output (0/4...20 mA) ..... **1**
voltage analogue output (0...10 V) ..... **2**
RS-485 LUMBUS protocol ..... **3**
RS-485 MODBUS protocol ..... **4**

**Supply voltage:**
95...253 V a.c., d.c. ..... **1**
20... 40 V a.c., d.c. ..... **2**

**Acceptance tests:**
without a quality inspection certificate ..... **0**
with a quality inspection certificate ..... **1**
according customer`s agreement 2) ..... **X**

1) One channel - fluorescent display. Two channels - LED displays

2) The code will be settled by the manufacturer.

**Ordering example:** code **NA2 2G T 00 2 2 2 0** means:

an NA2 meter with two channels and green display colour, programmable temperature input, for T, 2 relays per channel, voltage analogue output, supply voltage: 24 V a.c./d.c., without an extra quality inspection certificate.

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