Nokeval

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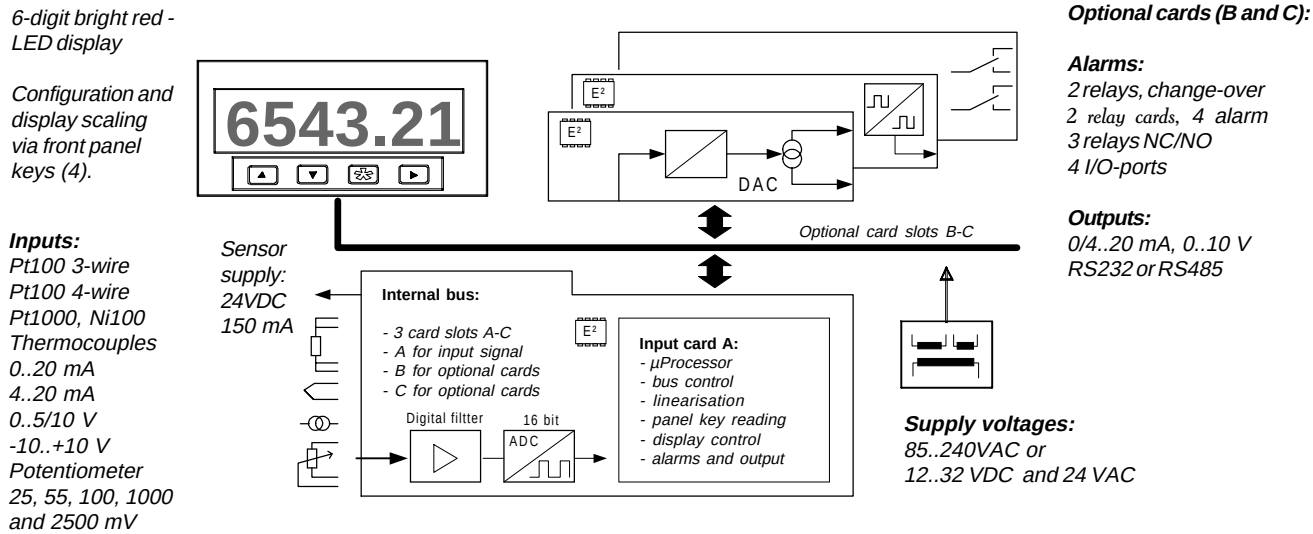
Modular panelmeter 2021

- **6-digit processor based display**
- **Thermocouples B, C, D, E, G, J, K, L, N, R, S and T Pt100/1000, Ni100, 0/4..20 mA, 0..5/10 V, -10..+10 V, potentiom.**
- **Input selection and scaling by front panel keys**
- **Min/Max memory (Peak & Valley function)**
- **Galvanically isolated output 0/4..20 mA, 0/10V**
- **2..4 adjustable alarm relays**
- **Serial output RS-485 and RS-232**
- **Linearity for process inputs < 0.005% FS**
- **Wide supply voltage range 85..240 VAC or 12..32 VDC**
- **Front panel protection IP65**

Panel meter 2021 is designed specially for temperature sensors and for common process inputs. 2021 base card has three card slots: One (slot A) for measuring card and two (slots B, C) for output and alarm cards.
Unit 2021 can be fitted with several interchangeable option cards mounted into slots B and C. If e.g. four alarms are needed, user may select two separate 2-relay alarm cards (2000-REL2) or one card with four logic I/O-ports (2000-I/O4) and leave the third slot C for e.g. output card (2000-OUT). Extension card installation doesn't require any kind of recalibration, changes take affect after activating them in configuration mode. Input card can also be easily changed, e.g. for pulse sensors (model type changes to 2051) or for strain gage sensors (2041) etc. When input card is changed it changes also unit type, each type has own brochure.
Supply voltage can be selected from two versions: one for mains voltage 85..240VAC and the other for 12..32 VDC or 24 VAC, both are galvanically isolated from input and output. Unit has 24 VDC / 150 mA voltage supply for sensors.
Analog conversion is 16 bit, resolution 64000, 15 measurings/second. Display update speed can be selected 3..15 times per second. Environments where interference may occur or maesuring range is narrow 2021 display can be filtered digitally (like RC-filter). Continuous autocalibration ensures long term calibration stability. Separate access codes for alarms and configuration stage. Min / Max values are indicated via front panel LEDs (red). Adjustable display brightness, frontpanel protection IP65.

Modular panelmeter 2021



Technical specifications:

Process inputs:	0/4..20 mA, 0..5/10 V, -10..+10 V
Display scaling	On whole display range
Input resistance	current input 50 Ω, voltage input >1 MΩ
Accuracy	0.01% FS
Linearity	0.005% FS
Sensor supply	24 VDC, max. 150 mA
RTD-sensors:	P100 3- and 4-wire, (Pt1000, Ni100)
Measuring range	-200..+700°C (Pt100)
Measuring current	0.3 mA
Accuracy	0.05% FS
Linearity error	< 0.03°C (-200..700°C)
Thermocouples:	Types specified below
Accuracy	0.1 % FS
Cold junction error	0.05 °C /°C
Line resitance effect	<10kΩ, no effect

Type	**Range**		**Linearisation error**:		
E	-100....	900°C	< 0.2°C	-50.... 900°C	
J	-150....	900°C	< 0.2°C	-50... 900°C	
K	-150....	1350°C	< 0.4°C	-40... 1300°C	
L	-100....	900°C	< 0.4°C	-50... 900°C	
T	-150...	400°C	< 0.2°C	-150... 400°C	
N	0....	1300°C	< 0,2°C	0.... 1300°C	
R	0....	1700°C	< 0.3°C	400.... 1700°C	(<1°C < 300 °C)
S	0....	1700°C	< 0.3°C	300.... 1700°C	(<1°C < 300 °C)
C (W5)	0....	2200°C	< 0.3°C	400.... 2200°C	(<0.4°C< 400 °C)
D (W3)	0....	2200°C	< 0.3°C	500.... 2200°C	(<1°C < 500 °C)
B	400...	1700°C	< 0.3°C	400.... 1700°C	
G (W)	1000...	2200°C	< 0.4°C	1000... 1700°C	(<3 °C >1700 °C)

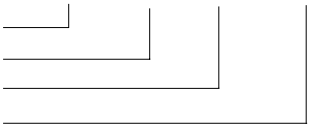
mV-inputs:	25, 55, 100, 1000 and 2500 mV Selectable scaling multiplier for max.value
Accuracy	0.01% FS, 0.02% < 100 mV
Input resistance	<10kΩ, no effect
Potentiometer:	range 100..1 kΩ, connection 2-wire
Output:	0/4..20 mA , max. load 700 Ω 0..5/10V , linearity 0.02 % FS Output freely scaleable
Alarms:	2, 3 or 4 alarms, relays max. 240 V, 2 A selectable hysteresis 0..100%, automatic or manual reset, selectable direction 4 I/O-ports, max. 60 VDC, 100 mA
Serialoutput:	RS232 (point to point) and RS485 (multi drop) Serialoutput only for measurement reading Baud rate and address (RS485) selectable

General

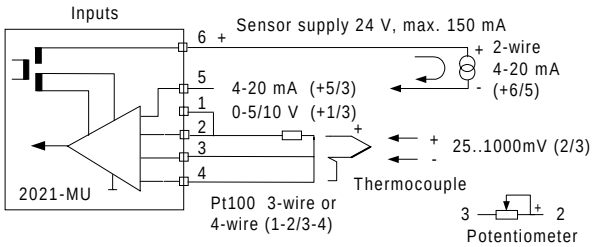
Input filter	Digital, freely selectable
A/D-converter	16 bit (64 000), uni-or bipolar
Temperature effect	0.0008°C/°C voltage inputs
Front panel indicators	Alarms 1..4, min. and max. value
Display	6-digit bright red LED, height 14.5 mm,
Power	85..240 VAC or 12..32 VDC/ 24VAC
Front panel protection	IP65 (rubber gasket)

Order type: **2021-OUT-REL2-24VDC**

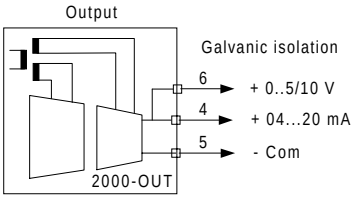
Unit type
Output
Relay card
Power
12..32 VDC, 24VAC



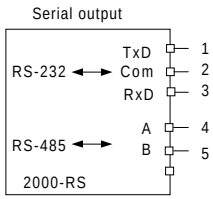
Input and output cards



Output cards for slot B (or C)

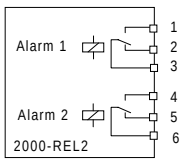


2000-OUT

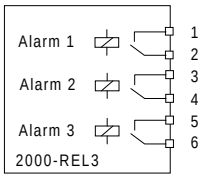


2000-232/485

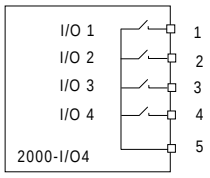
Alarm cards for slot C (or B)



2000-REL2
- *2 relays*
- *Change over contacts max. 230 VAC/ 2 A*

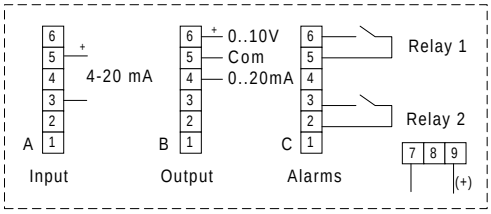


2000-REL3
- *3 relays*
- *Change over contacts*
- *max. 230 VAC, 2 A*



2000-I/O4
- *4 I/O-ports*
- *60 V, 100 mA*
- *Selectable direction*
- *Common ground*

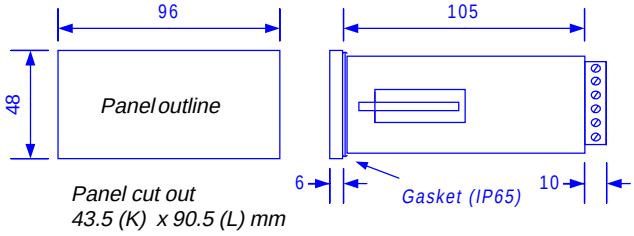
2021 typical combination



Slot A is for sensor input and slots B and C for optional cards.

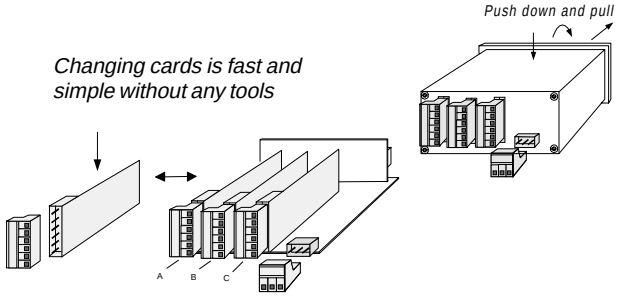
Power 85..230 VAC or 12..32 VDC / 24 VAC

Case dimensions:



Panel cut out
43.5 (K) x 90.5 (L) mm

Changing cards is fast and simple without any tools



NOTE: We reserve us the right to change these specifications, unit is under continuous development.

Nokeval

Data sheet 160899

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Rate / Batch controller 2026 for analog inputs

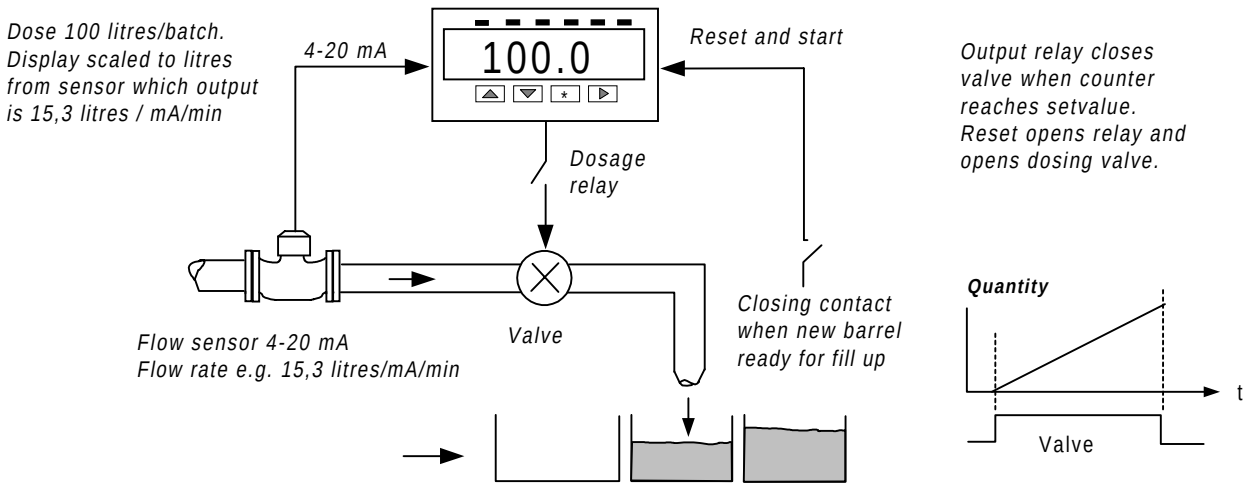
- **Input signal 0/4-20 mA, mV or 0-5/10V**
- **Kumulative counter (quantity)**
- **Mass flow display according to weighing**
- **Up or down count**
- **Rate/batch operation**
- **6 digit display 999999**
- **Counter non-volatile memory**
- **Scalable display**
- **3 Alarm levels for batch function**
- **Front panel protection IP65**
- **Sensor supply 24 VDC, max. 150 mA**
- **Power supply 90..240 VAC or 12..32 VDC**

Counter 2026 assorts as volume counter or Batch contoller for flowmeters. Up or down counter has 6-digit red or green display. Display scaling indicates flow rate corresponding to one V/mA in time unit.
Display memory (optional) stores calculated value for one week after power brake. You may use the counter as a batch controller by setting alarm value corresponding desired batch volume. Optional output relay changes its stage when alarm level is reached. You can start new count by resetting counter by external contact or configure unit to starts automatically new batch. You may also determine start level (START) from which you can count down (empty) or up (filling).

Configuration stage gives user the possibility to specify what values can be seen in display. Alternatives are rate-of-change (flow rate), totalizer (total flow) or scaled value of the input. User may change the display between two alternatives by ★-key .
Calculated amount is set by front panel keys. Front panel protection is IP65 and meter can be mounted to cabinet door without protection cover.

Nokeval makes counter also for pulse sensors, model 2061, separate data sheet available.

Typical application



2026 Technical specifications:

Input	0..20 mA, 4..20 mA 0..5, 0..10V 20, 50, 100, 1000 mV
Display scaling	On whole display range
Input resistance	current 50 ohm voltage 1 Mohm
Accuracy	0.03% FS
Linearity	0.005% FS

Supply for sensor
24 VDC, max. 150 mA
Display scaling
Number of digits per one mA in time unit. Time setting in seconds
Count direction
Up or down. Direction changed by converting input signal.
Number of digits
6-digits, bright red LED
Function of output relay
Alarm relay is set by front panel keys.
Dosage function
When set point is reached output relay is activated and will be reset only by remote reset and that resets at the same time the display. Dosage can be started from any value up- or downwards. Output relay is mounted to additional slot. Relay contacts max. 240 VAC, 1 A, alternatively logic relays, 60V, 0,5 A.
Display memory: Add- on card 2000-MEM stores display
for one week in case of power brake
Display reset
Automatically according to the alarm border or by external contact from 2000-MEM card

General

Input filter	Digital, freely adjustable
AD-conversion	16 bits (64 000)
Temperaturestab.	0,0004 %/°C
Display	6-num. bright red LED, digit height 14.5 mm
Power	85...240 VAC or 12...30 VDC/ 24VAC

Front panel protection IP65 with gasket
Weight 240 g

Optional:
Field enclosure 2000IP65-1

Type specification

2026-MEM-REL2-24VDC

2026 red display
2026GR green display
Memory card MEM
Relay card REL2
Power
12 -32 VDC, 24VAC
or 85-240VAC

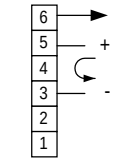
Optional add-on cards:

Memory	2000-MEM
Relay card for 2 relays	2000-REL2

Mother board has two slots (B and C) for add-on cards.

Terminal connections and dimensions (mm):

Current inputs



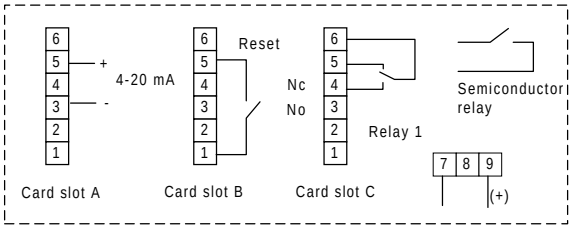
Sensor supply (terminals 6 and 4)
+24 VDC, max 150 mA

4-20 mA, terminals 5 and 3

Card slot A

Converting input connections unit counts backwards.

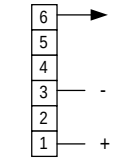
Terminals



Display reset with external contact: connect closing contact into MEM-card (Slot B) terminals 1and 5.

Power
90...230 VAC or
12...32 VDC /24 VAC

Voltage inputs

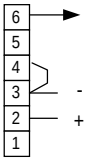


Sensor supply (6 and 4)
+24 VDC, max 150 mA

0-10V

Card slot A

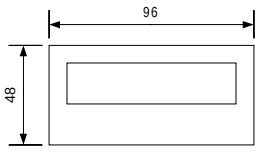
mV-inputs

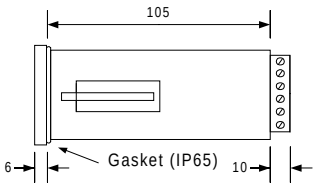


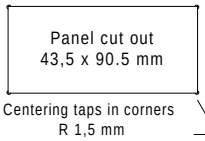
Sensor supply (6 and 4)
+24 VDC, max 150 mA

± 0-20 /100/1000 mV

Card slot A







Meter front protection is IP65 when gasket installed between front cover and panel.