Nokeval

No 051201

Manual

Model 2026
Totalizer / Batch controller
for analog inputs

Contents

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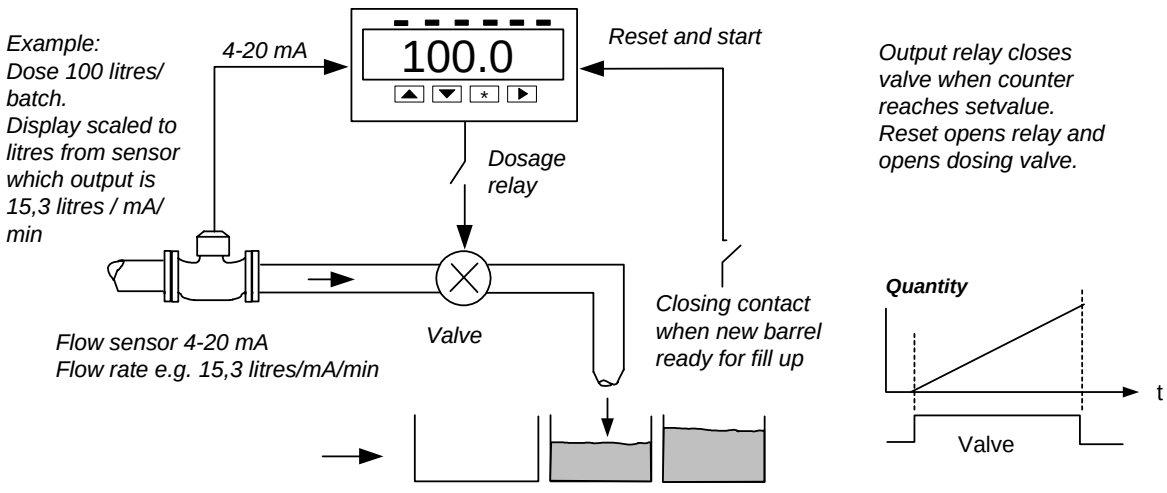
Rate / Batch controller 2026 for analog inputs

- **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**
- **One alarm level 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 remote contact or configure unit to stars 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.

Mass flow display of weighing sensor alteration
Fillng or emptying rate container according to weighing sensor. Counts alternation between two measurement in time unit. Display e.g. ton/h (rate-of-change = Flow).

Function of output relay
Alarm relay is set by front panel keys. Only one relay is available for totalizer function, batch controller.

Dosage function (batch)
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 outside key 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
Power demand	3 VA
Front panel protection	IP65 with gasket
Weight	240 g

Optional:

Field enclosure	2000IP65-1

Type specification

2026-REL2-MEM-24VDC

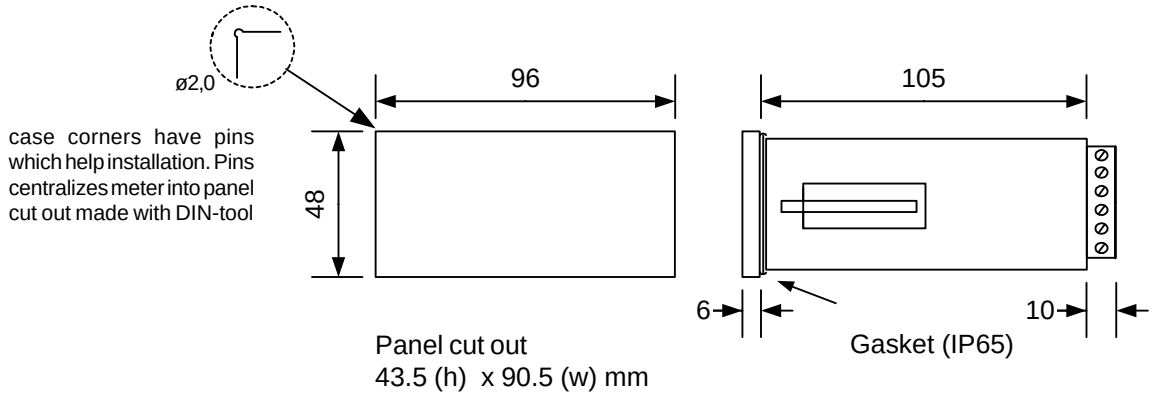
2026 red display
2026GR green display
Relay card REL2
Memory card MEM
Power
12 -32 VDC, 24VAC
or 85-240VAC

Optional add-on cards:

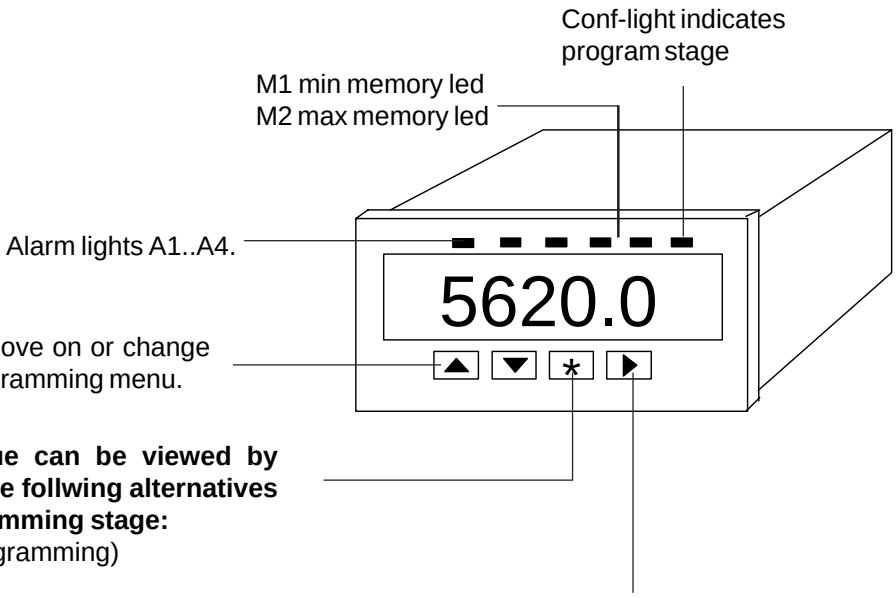
Memory	2000-MEM (for slot B)
Relay card for 2 relays	2000-REL2 (for slot C)

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

Dimensions



Front panel indicators and buttons



Another measuring value can be viewed by pressing the ★-button, the follwing alternatives can be selected in programming stage:
(See closer in chapter programming)

1. Rate-of-change value (flow)
2. Scaled display (function **de_nor** selected)

1. Scaled display (e.g. 4..20 mA = 0..100,0%)
2. Rate-of-change value (function **nor_de** selected)

1. Totalizer
2 Scaled display (function **to_nor** selected)

1. Scaled display
2. Totalizer (function **nor_to** selected)

Configuration

You can enter configuration stage by pressing two seconds ▲ and ★-keys at same time. In program stage f. ex. scaling of display, sensor selection and alarm mode are chosen.
See closer in chapter programming.

Reset of configuration parameters

Forgotten secret code may be reset by connecting power supply and pressing ▲,▼ and ➤ -keys at same time. Then you can enter configuration stage by keys ▲▲▲▲▲▲. Change secret code and exit by **SAVE**.

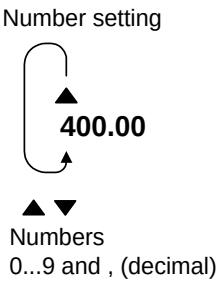
Checking of alarm value
First pressing of ➤ key shows setpoint of alarm one (A1), correspondingly second pressing shows setpoint of alarm two (A2) etc. Alarm indication light blinks in display informing that alarm level is displayed (if you do not touch keys during 8 seconds display returns to normal state automatically).

Preventing of entering alarms (secret code)
If you have set secret code for alarms you must feed it before you can change alarms (see chapter "settings of secret codes" Page 8).

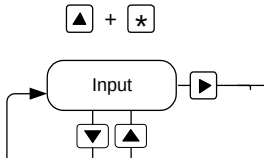
Change of alarm value
See chapter "Alarm settings by front panel key" Page 8.

Setting of alarm value

You can set alarm value by ▲▼-keys number by number. Setting starts from largest number from left to right. You may go to next number by ➤ -key. Exit by ★-key.



Configuration menu functions



You can enter configuration stage by pressing two seconds ▲ and ★ keys at same time. By arrow keys you can move upwards and downwards in main menu. By pressing ➤ key you can enter configuration stage at wished point. From setting stage you can skip direct to save stage or to previous level with ★-key.

InPut Input selection. See chapter 'Selection of input'.

DEC Decimal selection. Select 1..5

Lo Display scaling whit minimum input signal. e.g. 4 mA.
Counting downwards the display's minimum value is being set for negative (-).
Look for e.g. page 7. (Zero shift for non scalable inputs)

Hi Display scaling whit maximum input signal. e.g. 20 mA.
Counting downwards the maximum value of the display is being set for negative (-) .
Look for e.g. page 7. (multiplier function for mV- and R inputs)

OPErAt

	Normal display	display with *-button
FL_nor	Rate-of-change (flow rate) Empty (-) 20-4 mA, Fill (+) 4-20 mA	Scaled display e.g. 4..20 mA = 0..100,0%
nor_FL	Scaled display without time factor	Rate-of-change (Flow/time unit)
to_nor	**Totalizer, e.g. litre/1mA/h**	**Scaled display**
nor_to	Scaled display	Totalizer

TimE Counting time in seconds, e.g. 500 litres / mA /min, set time to 60 s (=1 min).

StArt Display value where counting starts (batching). Default value = 0.
When counting downwards display will show negative values if the **Start** value is set to zero.

Halt Halt value prevents counting under this display value (posive). By giving any negative value, totalizer can be counted also down when input is under Low -value (eg. < 4 mA).
For example: Scale 4-20 mA=0-1000, Halt=10 (4.16 mA), counting only between 10....1000.

rESEt

Undo	Return without resetting the totalizer value (counter)
rESEt	Totalized value reset to **Start**-value settinga (new batch) Press and hold ➤-button for 2 seconds. See also remote reset, page 10.

FiLt Digital filter for input signal (damping) selectable 0,01...1.0 (1.0= no filter)
0.2 = factory setting = 2 new and 8 old values

dISP 1= display update time 15/s. 7= 2/s. (average of 7 measurements)

PEAK Min/max function: On=enabled, Off=disabled
Indicators M1=min, M2=max

CALib For factory settings

SEtCod Secret code settings ▼ (▲ back): ALCod= Code for alarm settings
CFCode= Code for configuration. See also section 'Secret code setting.

Slot b Alarm level setting. See also section 'Alarm functions'.

Slot c Alarm level setting. See also section 'Alarm functions'.

SAVE Save with ➤ key and exit from configuration

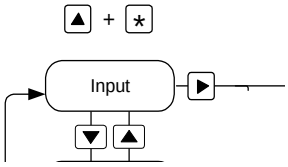
Undo Undo changes and exit from configuration

Example downwards counting

Typical downwards counting application is emptying of container. Normally in the container has 1000 litres of water. When you empty it, it is necessary to know how much water is discharged. In the bottom of container is flow meter, which has a scaling of 0..100 litres / min and output signal of 4..20 mA. Set follows: **Lo** = 0, **Hi** = -100, **Start** = 1000, **Time** = 60. (By Hi-value +100 counting would start upwards).

Selection of input

Units accept input from below list. Move with arrows into desired input and select with *-key. Default selection is 4-20 mA. You can enter configuration stage by pressing two seconds ▲ and ★ keys at same time.



Input selection

Voltage and mA-inputs

25 mV
55 mV
100 mV
1000 mV
2500 mV
5000 mV

mV-input accepts both ***Bibolar**** and ***Unipolar****

* Bibolar e.g. ± 25 mV
** Unipolar e.g. 0-25 mV
Unipolar measurement has double accuracy on positive side

4-20 mA
0-20 mA
0-10V

Square root selection
***sqr* = ON**
***lin* = OFF**

Following inputs are designed only for special applications and they can be skipped without notice.

Pt100 4W
Pt100 3W
Pt1000 4W
Pt1000 3W
Ni100 4W
Ni100 3W
tc-**b**, tc-**c, Chr-Co**, Tc-**d**,
tc-**E**, tc-**G**, tc-**J**, tc-**k**, tc-**L**
tc-**n**, tc-**r**, tc-**S**, tc-**t**,
Ir 440 factory settings

Alarm functions

General description

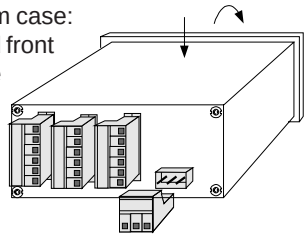
Panelmeter default relay card is REL2. In comissioning you have to ensure the hardware setup before programming. You can find description of alarm card and its place on meter plate (def slot C).
When basic selections are done in program stage, normal use by front panel keys is very simple.

Alarm cards:

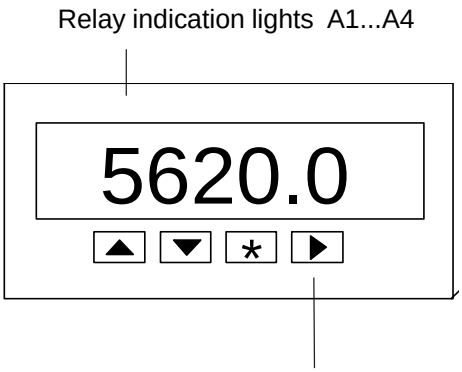
REL 2 = two relays with changeable contacts (grey connector colour).

Grey connectors are designed for mains voltage 230 VAC, 2A and green connectors for 36 VDC, 100 mA.

Removing electronics from case: Press meter gently behind front plate and draw front frame upwards at upper edge.



Alarm settings by front panel keys



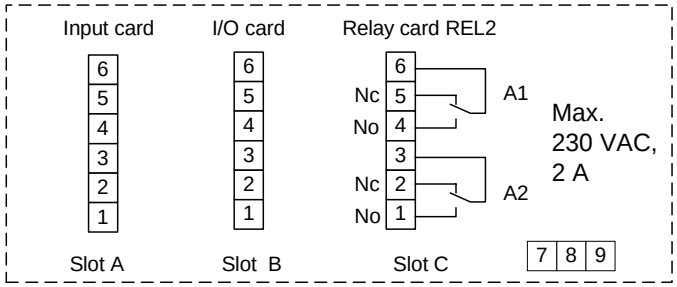
Checking of alarm value
Pressing ➤ once shows setpoint of alarm one (A1), correspondingly second pressing shows setpoint of alarm two (A2) etc. Alarm indication light blinks in display informing that alarm level is displayed (if you do not touch keys during 8 seconds the display returns to normal state automatically).

Preventing of entering alarms (secret code)
If you have set secret code for alarms you must feed it before you can change alarms (see chapter ”settings of secret codes” Page 14).

Changeing alarm value
First pressing of ➤ key shows setpoint of alarm one (A1), second pressing shows setpoint of alarm two etc. When indication light (A1..A4) blinks you can change alarm level by pressing ▲or▼-key. You can change setpoint of relay in question with keys ▲,▼, ➤. Accept change by ★-key (if you do not touch keys during 8 seconds display returns to normal state with automatically and save with same made changes).

Alarm mode, hysteresis and other settings are done in configuration state.

Alarm card connections



Only one relay is available, Relay A1 (default) or A2

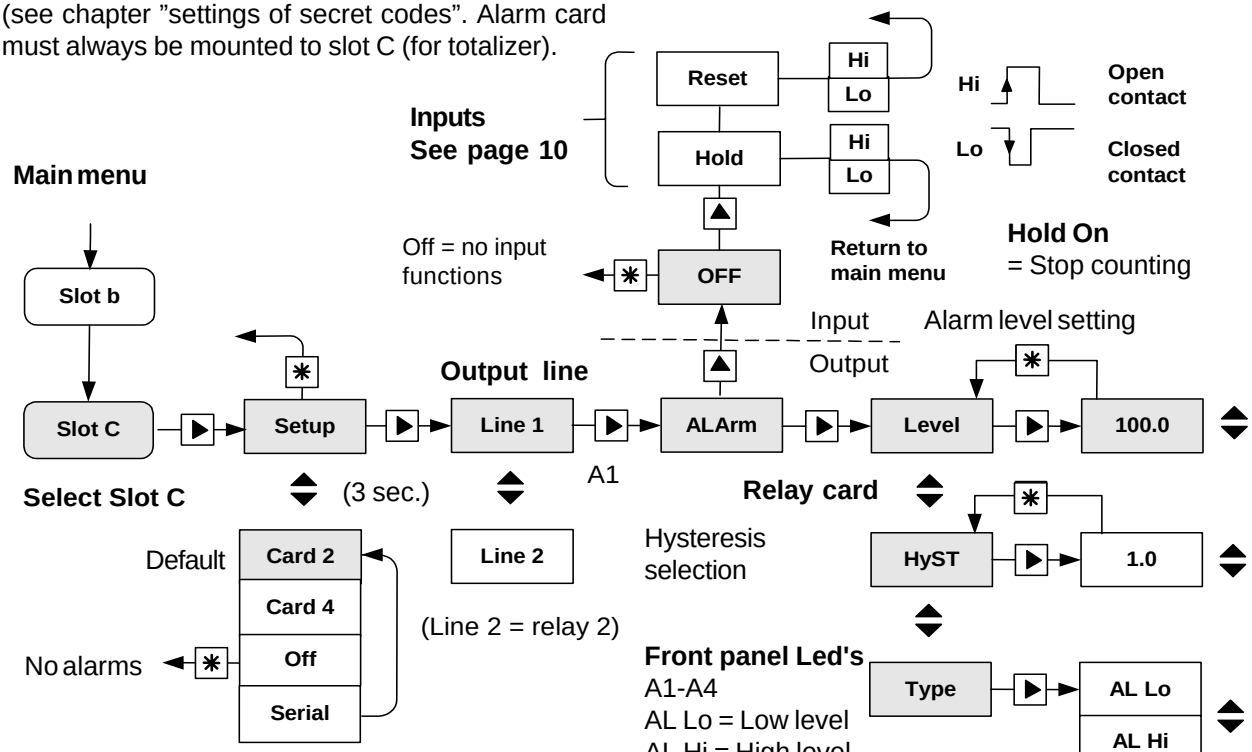
In menu:
Line1=A1
Line2=A2

Optional cards in configuration menu are named as Slot C or B

Selection of alarm card and relay-function settings

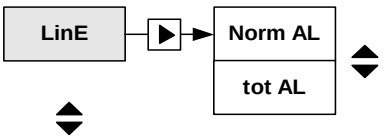
Meter has versatile alarm functions. In initial settings you can select first type of alarm card (default REL2) into slot C. There are two relays but only one of relays is available. **When initial settings have been made user can easily set alarm levels by front panel keys** (see chapter "alarm functions" Page 8). You can prevent entering to alarm change stage by secret code (see chapter "settings of secret codes". Alarm card must always be mounted to slot C (for totalizer).

Shifting in menu
You shift in menu to next level (to right) in programming stage by ➤-key. By ★ -key you return to previous level or to main menu. Only one relay (line 1 or 2) can be used for alarm or batch function.

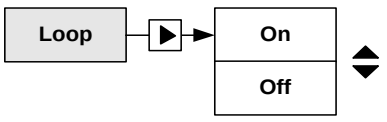


Unit remembers which card is in use and skips direct to selection of relay number (line 1). You can select new card in setup-point by holding down ▲ or ▼-keys 3 seconds. Point OFFand then ★ -key excludes the card from use. Front panel indication lights A1..A4 correspond to relay (line) numbers 1..4. Serial = serial card, see chapter 'serial output RS-485/RS-232'.

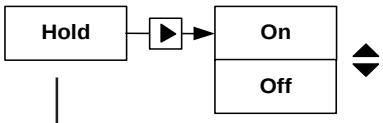
Slot B tai Slot C = Card slot B or C



What starts the alarm (Line):
Norm AL Scaled value without time unit
tot AL Totalized value or flow rate / time unit



Counter auto reset (Loop):
ON Counter reset and new start without manual reset
Off Manual reset with external button



For Hold input (I/O-line 3 in slot b):
On = relay changes its stage when hold input is closing or batch item is reached
Off = (default) relay changes its stage only when batch item is reached (alarm value)

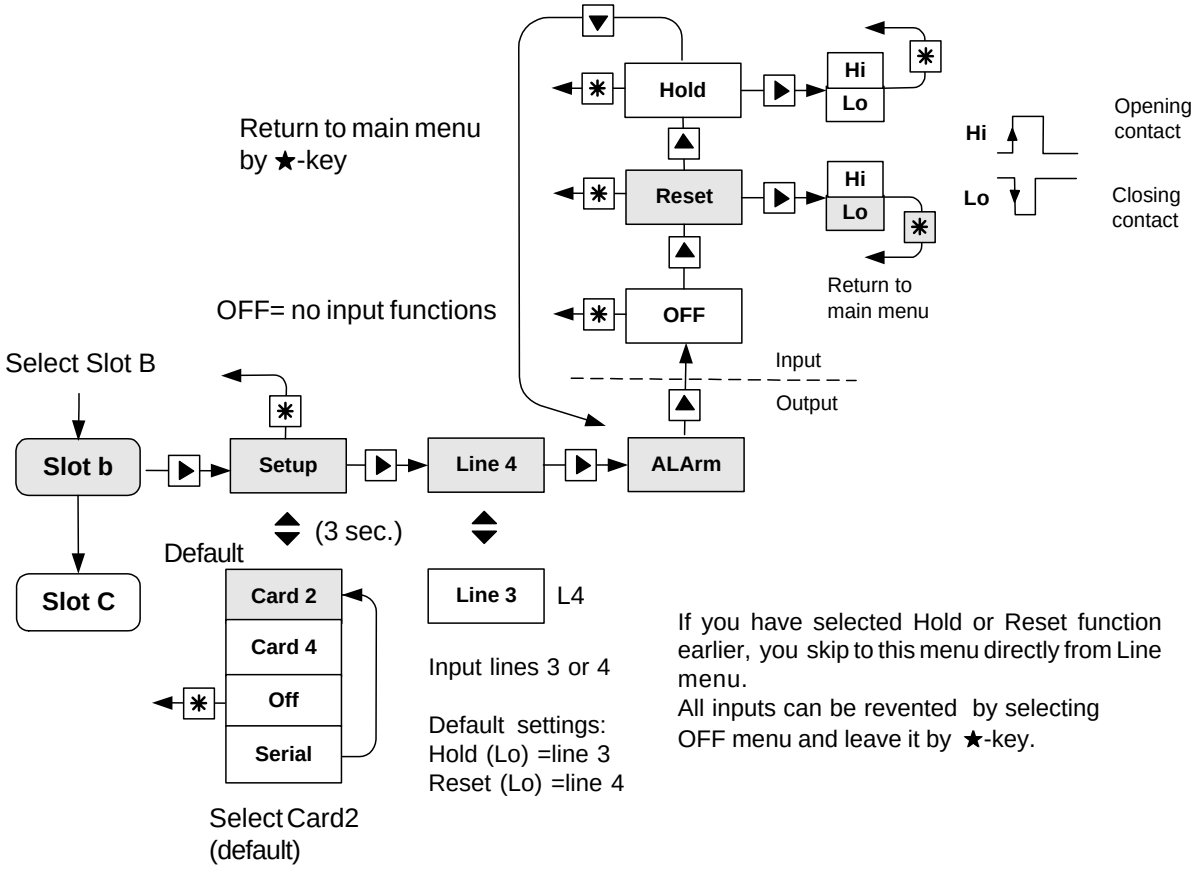
Remote reset and hold function (totalizer)

GENERAL DESCRIPTION

In addition to automatic reset you can reset also by remote contact (optional). Contact is connected to add-card 2000-MEM, which acts also as display memory. Display is stored for one week without power. Counting of display can be stopped by Hold function from I/O-line 3 or 4 installed to Slot B.

PROGRAMMING

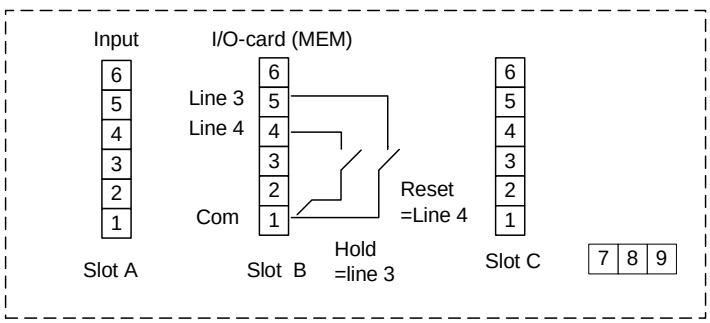
In programming state you select Slot b. By the ➤ -key you enter Setup-menu in which you select card 2 (I/O-card). Then you move to next menu by ➤-key, in which you select Line 3 or 4. In next menu you select Reset or Hold of counter. After reset selection you choose function direction of reset contact (opening or closing). You can return to main menu by ★-key.
In the Hold menu you can select opening or closing contact of hold input that stops counting. If you need to use relay together with hold function, see page 9.
The reset and hold functions (inputs) can be closed by selecting OFF menu only.



Reset (Line3):
Lo=closing contact
resets display (default)
Hi=opening contact

Hold (Line 4):
Lo=closing contact
stops counting (default)
Hi= opening contact

I/O-card connection (Slot B) for totalizer function



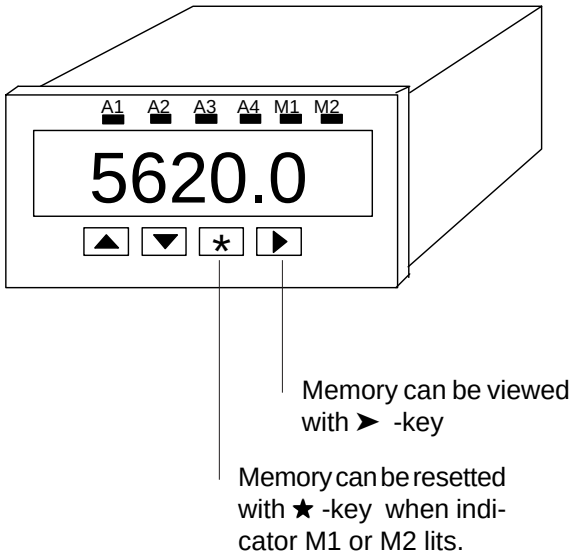
Minimum and maximum value memory

Meter has min. and max. memory as standard. This function must be selected in programmimg stage, parameter **PEAK**=ON.
You can glance values by ➤-key. When you press the ➤-key indication lights, above display, turns on in following order:

1.	A1	alarm level	A1-A4 lits if alarm card(s) is (are) fitted.
2.	A2	alarm level	
3.	A3	alarm level	
4.	A4	alarm level	
5.	**M1**	**Minimum value memory**	
6.	**M2**	**Maximum value memory**	
7.	Back to measuring stage		

Reset memeory

You may reset memory when you press ★-key when display shows memory in question, either M1 or M2.



Setting of secret codes (Programming stage/ alarms)

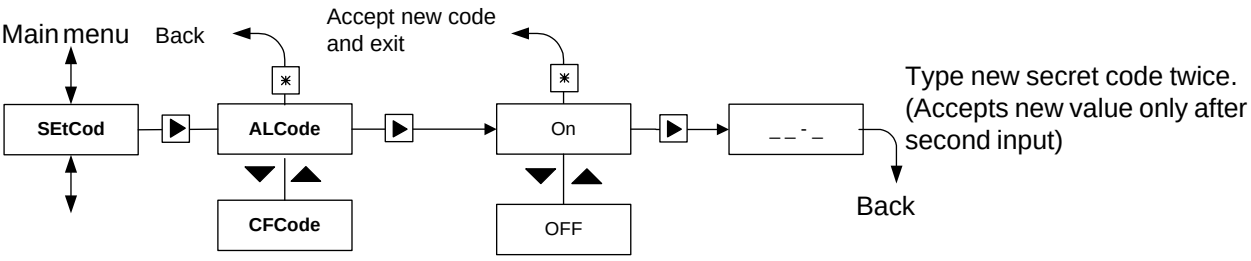
You set secret code by pressing six time keys (1-4) in wished order (lines goes forward in display). Setting must be repeated in same order before new setting is accepted.
Example: Press one after another keys ▲▲★➤▲▲ and once more ▲▲★➤▲▲. You may think the keys as numbers from left to right 1,2 3,4 in order to help recording and remembering.

e.g. ▲ ▼ ★ ▶
1 2 3 4

Input code ▲▲★➤▲▲ and once more.
Example number value would be 113411.

In Main menu position SETCod **press ➤ -key and move on to selection stage.**

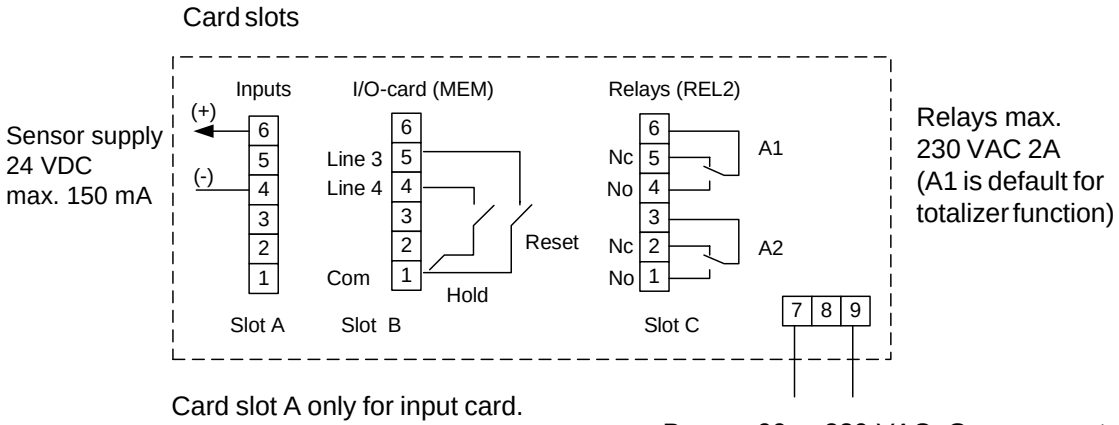
ALCode **= Secret code setting for alarms**
CFCode **= Secret code setting for Programming**



Select secret code mode:
CFCodeprogramming
ALCode for alarms

Secret code:
ON = enable
OFF = disable (default)

Terminal connections



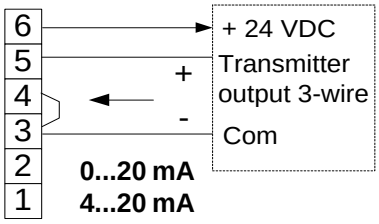
Card slot A only for input card.
Slots B and C for optional cards.

Power 90.....230 VAC, Gray connector
12.....32 VDC, 24VAC, green connector
(no polarity)

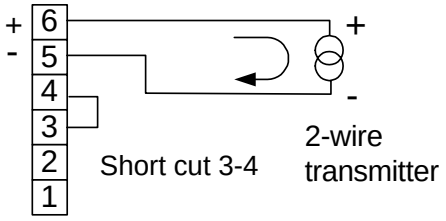
Colour codes: Gray 230 VAC
Green 24 VDC

Input:

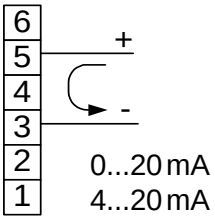
Sensor supply
24 VDC, max 150 mA



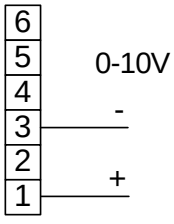
2-wire 4-20 mA



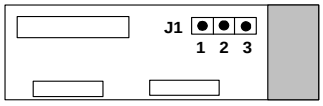
Current intput 0/4..20 mA (active transmitter)



Voltage input 0-10V



Input card 2021-MU



0/10V input

Factory settings (2-3)

0/10 V input requires shortcut jumper J1 to position 1-2, for other inputs shortcut 2-3.

Manufacturer:

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