Nokeval

No 050702

Manual

Model 2061 Scalable counter / Batch controller for pulse sensors



Manufacturer:

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Description

Counter 2061 suits well for distance measurement of various movement sensors, piece count or for dosage. Counter has red or green display, count up or down. Input pulse can be scaled to correspond desired number value, f.ex. one pulse may correspond three numbers or part of numbers in display (1 pulse=0.034 digits in display).

Display memory (option) stores calculated value for one week after power break.

You may use counter as a dosimeter by setting alarm value to correspond desired batch value. Output relay is activated when calculated batch is reached. New count starts by resetting counter by remote contact. You can also determine start level from which you count down (emptying) or up (filling). Batch level is set in measuring mode by front panel keys. Output relay can also be used as pulse devider by using internal reset (Loop function) when alarm value is reached, f.ex. 26,5 input pulses are converted to correrspond one output pulse; in this stage output relay sends only 200 mS impulse when counter resets. Count amount is set by front panel arrow keys.

Input cards of meter are a part of 2000 product series and can be changed to other type of meter by simply changing the input card. F.ex. counter for analog input signal is available as model 2026 (own data sheet). Whole 2000 series is constructed into two red or green display mother boards (low and high voltage power supply) which comprices 36 variants of digital panel meter. With optional add-on cards you can modify a meter that suits best for your application.

Technical specification:

Sensors:

NPN, PNP, Namur, closing contact Input voltage levels 0 = < 1V, 1 = 5..32V

Sensor supply

24 VDC ± 5%,max. 150 mA

Display scaling: -99999..999999

Input frequency range:

0..5 kHz

Decimal selection:

0,001..1

Measuring method:

Counting of input pulses into counter. You can multiply counter value by desired number value. Result is shown in display.

Output:

Alarm relay will be activated when set point is reached. Alternatively Loop-function; display is reset at alarm value automatically and relay is activated only 200 mS.

Relays:

You can set alarm value by front panel keys. Relay contacts max. 230 VAC, 0,5 A. Alternatively semiconductor relays 60 V / 0,5 A

Display memory:

Add-on card 2000-MEM stores display for 1 week without power supply.

General

AD-conversion Display

Power supply

Front panel Weight 16 bits (64 000) Height 14,5 mm: 6 digits bright red LED 85..240 VAC or 12..32 VDC and 24 VAC Protection IP65 with gasket 240 g

How to order:

2061GR (green)

Relay card REL2 Memory card MEM Power supply 12..32 VDC and 24 VAC

Optional cards:

Memory card	
Relay card	
I/O-card	

2000-MEM 2000-REL2 2000-I/O

Motherboard accepts two optional cards



2061- REL2-MEM-24VDC





Programming keys

Conf-LED indicates that display is in configuration stage.



Move numbers from left to right when you change alarms or settings.

Programming state

The programming state is achieved by pressing the button \star and \blacktriangle simultaneously for 2 seconds. In the programming state, among others, the scaling of the display, sensors and alarm form are being placed. See up the programming in more detail in the section.

Resetting of programming parameters

The return of programming parameters as factory arrangements will be obtained by pressing the buttons of the 2 second time \star and \blacktriangle simultaneously when the power is switched on. This resets also password (if forgotten).

Alarm setting

Alarm values can be changed and viewed in measuring stage. Other functions must be done in configuration mode. Unit has one alarm levels which can be viewed with >-button. After >-press lights A1-LED and display shows alarm1 level, A1-LED blinks to inform that unit is in alarm level stage. Second >-bush returns display into measuring stage. If buttons are not pressed with in 8 seconds unit returns automatically into measuring stage and save settings.

When A1 led blinks user can enter edit mode by pressing \blacktriangle or ∇ -key. Values can be changed as described below. Accept change by \star -key.



Programming

In the programming state the sensors, alarms and scaling of pulses are chosen. The programming state is achieved by pressing the star buttons and arrow buttons simultaneously for about 2 seconds. The text **Pulse** appears in the display. With the

Start: press ★ and ▲ buttons simultaneously with 2 seconds.

arrow keys you move upwards in submenu or in basic menu. By the desired function you move to the arrangement state with the star button and returned to the main menu with same button. When all arrangements have been made, you move to SAVE - UNDO - menu, with star key. SAVE accepts with the button ➤ the changes and UNDO cancels the changes.

Pulse scaling happens by setting multiplier and divide, which gives possibility to use a very small value of multiplier, (>6 digits), for example 0.000673 digits/pulse.



Numbers Accept settings 0...9

Select desimal point after number settings

Serial output RS485/RS232 (option)

Meter may be provided with optional serial output and you can read measurements by e.g. PC. Display programming can not be made via serial port. Additional card provides serial signal RS232 and RS485, only one of those can be selected.

Serial signal is isolated from both input signal and power supply. Meters with RS485 can be max. 31 in same loop and longest distance 1000m. RS232 enables only connection of two devices and max. distance 10..20 m. In programming stage you can first select card type (serial) mounted to slot B or C and then address and Baud rate. Baud rates are: 300, 1200, 2400, 4800, 9600, 19200 and addresses 0...127.

Accept selection and move forward by >-key. You come back to previous level always by \star -key.

Program remembers card type mounted, if ithas been saved by save command when leaving program. In case you can not choose serial card, slot has automatically recognized card (plug and play).



Terminal connections:



By serial signal RS485 last unit must be terminated by 110 ohm resistor. you can make termination at terminal connectors or by connecting jumper J1 to ON-position.

Serial card





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Serial communication

Baudrate: 300, 1200, 2400, 4800, 9600 and 19 200 1 Start, 8 Data and 1 Stop bit, no parity.

Serial protocol (SCL):

MESSAGES: When asking the measurement data from the panelmeter 2061 through the serial port, a command sequence which is in accordance with the SCL protocol is used for the inquiry:

(Only the measurement results can be asked from the panelmeter 2061)

<ADDR+80h>COMMAND STRING<ETX><BCC>

<ADDR>

The first byte character to be sent contains the ADDR (0..127) of the address of the destination device and at the same time functions as the start bit of the command. 80H (in a decimal 128) with which an uppermost bit is set as the number one is added to the address.

COMMAND STRING: When measurement data is requested, the actual command is: MEA CH 1 ? , in which 1 means the channel number. (there is only one channel in the panelmeter 2061 so the number is always 1).

<ETX>

<ETX> mean the end mark of the command, ASCII character 03h.

<BCC>

Finally the checksum is calculated using the XOR operation on the byte characters of the actual command including the ETX. In the example the ASCII codes have been presented in hexadecimal.

e.g.

One wants the measurement result from the display unit address 1. To the channel an inquiry is sent: MEA CH 1 ? (ASCII codes shown for <BCC> calculation)

M E A C H 1 ?<ETX> <BCC> 4Dx45x41x20x43x48x20x31x20x3F x03 = 6F

(Presented the XOR operation with a character x) (ASCII code 20h corresponds to space character)

So the following bytes are sent to 2061: 81 4D 45 41 20 43 48 20 31 20 3F 03 6F

RETURNMESSAGE: The answer from the panelmeter 2061 is obtained in the following format:

<ACK>RETURN MESSAGE<ETX><BCC>

<ACK>

The first byte of the answer contains the start of the answer <ACK> (ASCII-code 06h) and the answer itself, endmark <ETX> (ASCII-03h) and the checksum of the answer which is calculated from all the byte characters of the answer including <ACK> and <ETX>. 2061 counts the checksum in which case the receiver does not need necessarily to care about it,

e.g.

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e.g. When a measurement result is for example 21.3, it will be obtained from the panelmeter in the following form

<ack></ack>	2	1		3	<etx></etx>	<bcc></bcc>
Answer: 06	32	31	2E	33	03	1B

Panelmeter 2000 construction

The 2000 series panelmeters are modular and easy to assemble. According to customers wishes. The basic construction consists of mother board with tree slots, A, B and C. Slot A determines meter type and provides always input signal. Slot B and C are interchangeable. As factory delivery input signal is always installed into slot A, mA output into slot B and alarms into slot C. In case of f.ex 4 alarms and relay card with 2 change-over contact (2+2 relays) are used, you must place second relay card into slot B. If you accept only closing or opening relay contacts, you need only one relay card with 4 relays placed into slot C. The slot B is now usable for other optional outputs.

You can have different types of meters by only changing the input card in slot A. Data sheet of each type of meter dictates the possible combinations. Recalibration of card is not needed; only scaling and other settings must be set by front panel keys.



Change of meter type:

Input card is placed always to slot A. By changing input card you can get an other type of meter. You can change meter with pulse input to meter with current input, thermocouple, strain gage etc.

Additional slots:

Additional cards provide output 4..20 mA, alarms, serial interface, BCD output etc. Meter data sheet dictates possible combinations. grey connectors allow line voltage 110..240 VAC (relay contacts).

Power supply:

There are two different mother boards power supply 85..240 VAC and 12..32 VDC. VDCmother board accepts 24 VAC. Connectors are colour coded.

Removing meter from case:

Loose connectors and front panel, draw meter out from front. You may remove mother board from rear by opening four screws in corners of case.



Press gently case behind front panel and draw frame outwards gripping upper part of frame.



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