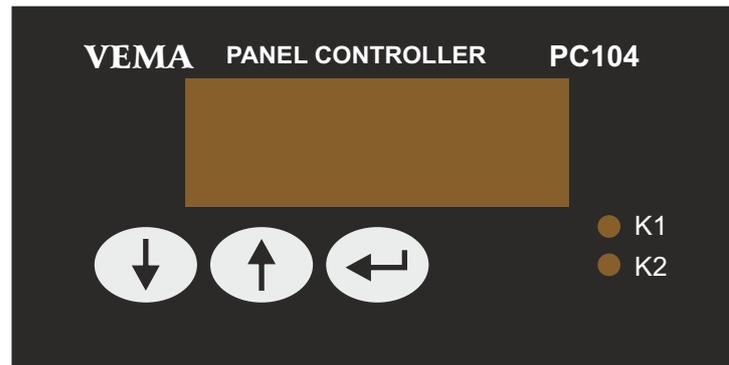




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Process controller PC104



- ◆ *programmable functions;*
- ◆ *voltage or current input;*
- ◆ *option to connect to tenso- or magneto-resistive bridge;*
- ◆ *outputs with programmable switching thresholds.*

INSTRUCTION MANUAL

Introduction

The microprocessor panel controllers PC104 offer optimal comfort of service and visualization of information.

They are assigned to work with any type of transmitters or direct sensors with DC output, weight controllers with tenso-sensors or magneto-resistive sensors.

The output signal is given either as a relay or a direct current output.

The outputs of the controller can be set as On/Off regulator or alarm relay from the front panel keys.

The Process Value is constantly displayed in the Working mode. The controller can also display the set value SP (Set Point) in this mode by pressing and holding the (↓) or (↑) button.

The processes of control and alarm are indicated by separate light diodes.

All parameters of the controller can be set (changed) in Program mode. In this case the mnemonics of the parameters are shown on the display for 0.5 s., and the current values of the parameters are shown on the display for 2 s. Using the arrow buttons (↓) and (↑), the parameters' values can be changed by one unit or at a faster rate (when the button is held pressed for a longer time). The values of the parameters are automatically restricted within their possible limits.

Technical specifications

1. Process range..... 0.0 up to 999.9
2. Control modes.....On/Off, Alarm or Off
3. Indication.....four digits, seven-segment LED, h=14.2 mm
4. Control outputs:
 - relay type.....max 2A/250V $\cos\Phi=1$
 - open collector (on request).....0/24V to 30 mA
5. Supply voltage.....187 up to 242 V/48-62 Hz
6. Dimensions.....96x48x100 mm
7. Ambient temperature.....0 to 50 °C

Input-output configuration

PC104 controllers can be preset in one of the following configurations:

PC104-1 - outputs with *specific algorithm*, analog input 4-20 mA DC;

PC104-2 - analog input resistive bridge;

PC104-3 - additional digital input for zeroing the reading (tare button), analog input resistive bridge;

PC104-4 - analog input 4-20 mA DC

PC104-5 - analog input 0-5 mA AC;

PC104-6 - analog input 0-10 V DC.

Mnemonics of the parameters

The parameters can be reached by pressing of button (←) and modified by pressing (↑) or (↓) buttons:

$SP^{(1)}$ - Set point. Trespassing this value will switch output K1;

$PRE^{(1)}/HYH/$ - advance value /hysteresis/ of K1;

For controllers *PC104-4/5/6* in *On/Off* mode, K1 will switch off when PV is above SP and switch on under $SP - HYH$. For *PC104-2/3*, K1 will switch off above $SP - PRE$ and switch on under $SP - PRE$.

ctr - control mode for K1: *On/Off* regulator or simple meter (*Off*);

out - polarity of the control output K1:

nc - normally closed;

no - normally open.

$lAL^{(2)}$ - lower threshold for alarm output K2;

$uAU^{(2)}$ - upper threshold for alarm output K2;

$ALn^{(2)}$ - alarm mode [$0-15$]. Table below shows the state of the alarm output K2 depending on the position of the process value PV along the alarm strip ($AS=[lAL, uAU]$) in all possible alarm modes:

ALn	under AS $PV < lAL$	inside AS $lAL < PV < uAU$	above AS $PV > uAU$
$ALn=0$			
$ALn=1$	X		
$ALn=2$			X
$ALn=3$	X		X
$ALn=4$	X	X	X
$ALn=5$		X	X
$ALn=6$	X	X	
$ALn=7$		X	
$ALn=8$			
$ALn=9$	X		
$ALn=10$			X
$ALn=11$	X		X
$ALn=12$	X	X	X
$ALn=13$		X	X
$ALn=14$	X	X	
$ALn=15$		X	

alarm output is OFF, display is not blinking.

alarm output is ON, display is not blinking.

standby sequence. If PV is within this zone upon power-up, then the display will blink and the alarm output will be ON until PV goes out of this zone. If this zone is entered from any other zone, the alarm output is OFF and the display is not blinking.

standby sequence. If PV is within this zone upon power-up, then the display will blink and the alarm output will be OFF until PV goes out of this zone. If this zone is entered from any other zone, the alarm output is ON and the display is not blinking.

dP - position of the decimal point ($0-4$);

rt - period of the digital low pass filtration of the analog input value;

PL - lower calibration level (see "Navigation and calibration" section);

PH - upper calibration level (see "Navigation and calibration" section).

(1) the outputs' logic for *PC104-1* is following:

- above SP : K1 switches on and K2 switches off;

- while K2 is on: the maximal value of PV is monitored, and when PV drops below $PVmax - PRE$ K2 switches off, K1 switches on;

- under $SP/2$: K1 switches on, K2 switches off.

(2) these parameters are not available for *PC104-1*.

Navigation and calibration

In Working mode the controller displays the process value (PV). The set value SP (Set Point) in this mode can be displayed by pressing and holding the (\downarrow) or (\uparrow) button.

Program mode of the controller is set by pressing the button (\leftarrow). Any parameter can be reached by pressing several times the button (\leftarrow) until its mnemonics show up. To increase/decrease its value, press (\uparrow) or (\downarrow) button. Holding an arrow button depressed will speed up the change of the value. Saving the new value is done by pressing (\leftarrow) once again. Working mode of the controller can be reached after the last parameter.

Calibration mode is reached by pressing and holding the button (\downarrow), and then the button (\uparrow) is pressed and held for 1 s. five times in a row. This will make the display read PL , and using the arrow buttons the desired calibration value for the present moment input can be selected and saved by the button (\leftarrow). This way the controller will be calibrated at lower value and will show the value of PL . The same routine can be done with an upper value PH , only the arrow buttons will change place.

The tare button input on **PC104-3** can read the current tare and recalibrate both PL and PH , so that the new reading will be PL , and the old difference $PH-PL$ is preserved as well.

Mechanical connection and mounting

The controller is assigned for mounting on facet panels of electrical units. The slot for mounting should have a shape of $(92+0.3) \times (45+0.3)$ mm. To secure the controller on the panel, use the attaching screws.

The connector pin attachment of the Controller is pictured on its rear panel. The connecting wires must be isolated and have diameter of 0.35 to 0.75 mm².

Schema for monitoring and limitation of actual current

