"ESA Control" Ltd

DIGITAL

REVOLUTION COUNTERS

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Digital Revolution Counter CMD6-1

Features

The CMD6-1 digital revolution counter is a compact microprocessor device, which serves to measure revolutions of rotation of axles, motor rotors and other turning objects. It is designed for combined work with inductive, photoelectric and other sensors, from which pulses are sent to the input of the rev-counter. For the correct work of the system “rev-counter - sensor" it is necessary to sending one impulse from the sensor to the revolution counter for one full rotation of the object.

Type parameters		
Type	Supply voltage	Consumption
CMD6-1 / 220V	220VAC ±10%	16mA (4W)
CMD6-1 / 12-24V	11 ÷ 31 VDC 11 ÷ 27 VAC	85mA (2W)

Technical parameters

LED indicator (green/red), 6 digits	h=10mm (height)
Range of revolutions measurement, W	3 … 60’000 rpm
Supply voltage, Us	220VAC / 12÷24V ac/dc
Power consumption, P	4W (16mA) / 2W (85mA)
Maximum input frequency, Fmax	1 KHz (11KHz option)
Measurement error	±0,05%
Operating temperature range, Tamb	-20º...+50º C
Degree of protection	IP40
Joining	Terminal
Sizes	95x49x113mm

Input - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).
It is provided constant voltage 11÷23Vdc (40mA) for sensor's supply.

Schemes of connection

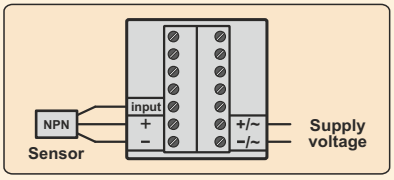


fig.1

Connecting NPN type sensor

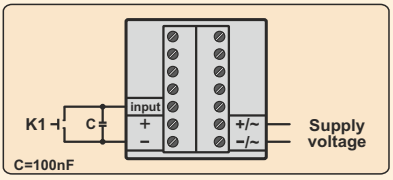


fig.2

Connecting a mechanical key "K1"

Digital Revolution Counter CMD6-2

Features

The CMD6-2 digital revolution counter is a compact microprocessor device, which serves to measure and controlling revolutions of rotation of axles, motor rotors and other turning objects. It is designed for combined work with inductive, photoelectric and other sensors, from which pulses are sent to the input of the rev-counter. For the correct work of the system “rev-counter - sensor" it is necessary to sending one impulse from the sensor to the revolution counter for one full rotation of the object. There can be assign two limit values of the revolutions “W1" and "W2" the reaching of which, activates the respective output relay. By pressing the "sec" and "Hz" buttons, the period of rotation of the axis in seconds (sec) and the frequency in hertz (Hz) is shown on the display of the revolution counter.

Type parameters		
Type	Supply voltage	Consumption
CMD6-2 / 220V	220VAC ±10%	16mA (4W)
CMD6-2 / 12-24V	11 ÷ 31 VDC 11 ÷ 27 VAC	125mA (3W)

Technical parameters

LED indicator (green/red), 6 digits	h=10mm (height)
Range of revolutions measurement, W	3 … 60’000 rpm
Supply voltage, Us	220VAC / 12÷24V ac/dc
Power consumption, P	4W (16mA) / 3W (125mA)
Output: Relay-1 (W1); Relay-2 (W2)	4A/220VAC, 2x(NO+NC)
Maximum input frequency, Fmax	1 KHz (11KHz option)
Measurement error	±0,05%
Operating temperature range, Tamb	-20º...+50º C
Degree of protection	IP40
Joining	Terminal
Sizes	95x49x113mm

Energy-independent memory for the programmable parameters.
Input - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).
It is provided constant voltage 11÷23Vdc (40mA) for sensor's supply.

Programmable parameters

Limit value, W1 (rpm)	3 ÷ 600’000
Limit value, W2 (rpm)	3 ÷ 600’000

Schemes of connection

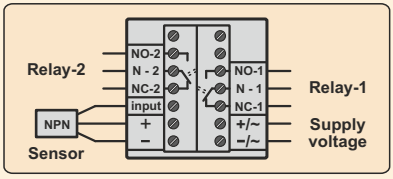


fig.1

Connecting NPN type sensor

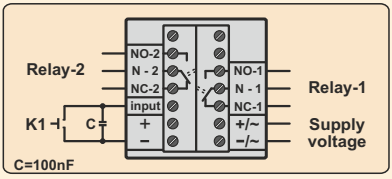


fig.2

Connecting a mechanical key "K1"

Digital Revolution Counter CMD6-2W

Features

The CMD6-2W digital revolution counter is used for measuring and controlling the revolutions of rotation of axles, motor rotors and other rotating objects within a certain range between two limits of revolutions "Down" and "Up". It is designed for combined work with inductive, photoelectric and other sensors, from which pulses are sent to the input of the rev-counter. For the correct work of the system “rev-counter - sensor" it is necessary to sending one impulse from the sensor to the revolution counter for one full rotation of the object. There can be assign two limit values of the revolutions “Down" and "Up". If the measured revolutions are greater than the "Down" and less than "Up" output relays are off, otherwise they are turn-on. By pressing the "sec" and "Hz" buttons, the period of rotation of the axis in seconds (sec) and the frequency in hertz (Hz) is shown on the display of the revolution counter.

Type parameters		
Type	Supply voltage	Consumption
CMD6-2W / 220V	220VAC ±10%	16mA (4W)
CMD6-2W / 12-24V	11 ÷ 31 VDC 11 ÷ 27 VAC	125mA (3W)

Technical parameters

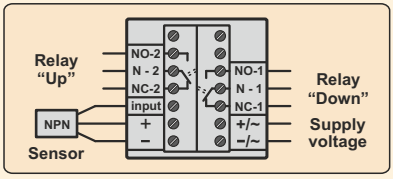
LED indicator (green/red), 6 digits	h=10mm (height)
Range of revolutions measurement, W	3 … 60’000 rpm
Supply voltage, Us	220VAC / 12÷24V ac/dc
Power consumption, P	4W (16mA) / 3W (125mA)
Output: Relay-1 (Down); Relay-2 (Up)	4A/220VAC, 2x(NO+NC)
Maximum input frequency, Fmax	1 KHz (11KHz option)
Measurement error	±0,05%
Operating temperature range, Tamb	-20º...+50º C
Degree of protection	IP40
Joining	Terminal
Sizes	95x49x113mm

Energy-independent memory for the programmable parameters.
Input - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).
It is provided constant voltage 11÷23Vdc (40mA) for sensor's supply.

Programmable parameters

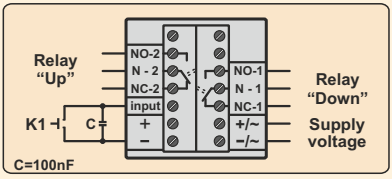
Limit value, Down (rpm)	3 ÷ 600’000
Limit value, Up (rpm)	3 ÷ 600’000

Schemes of connection



Pic.1

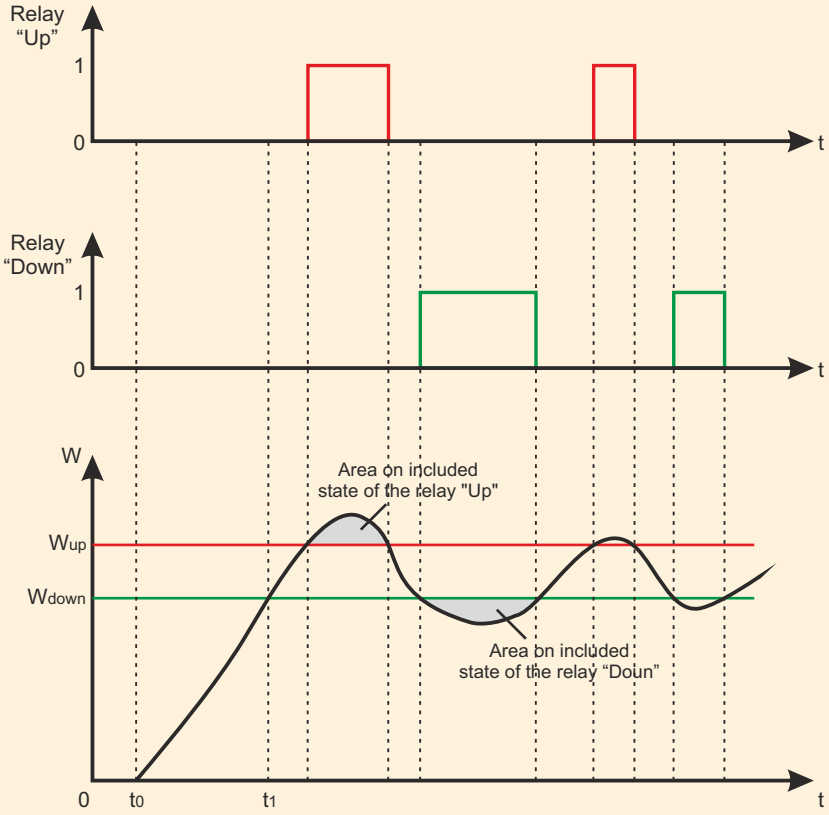
Connecting NPN type sensor



Pic.2

Connecting a mechanical key "K1"

Timing diagram of operation of the CMD6-2W revolution counter



Notation:

W_{up} - an upper limit of the revolutions
W_{down} - a lower limit of the revolutions
t_0 - the time of system startup
t_1 - the time of reaching the lower limit of the revolutions Wdown
t_1-t_0 - initial interval of time to reach the lower limit Wdown, during which the output relay "Down" does not turn.

Digital Revolution Counter CMD6-3R

Features

The CMD6-3R digital revolution counter is used to measuring revolutions of rotation of axles and other turning objects, and shows the direction of their rotation. The rev counter is designed to work with NPN type sensor with two dephased outputs "OVM1-18.24.F" (encoder type) or with a combination of two NPN type sensors. For the correct work of the system “revolution counter - sensor" is necessary to enter one impulse from the sensor to the revolution counter for one full rotation of the object.

Type parameters		
Type	Supply voltage	Consumption
CMD6-3R / 220V	220VAC ±10%	16mA (4W)
CMD6-3R / 12-24V	11 ÷ 31 VDC 11 ÷ 27 VAC	85mA (2W)

Technical parameters

LED indicator (green/red), 6 digits	h=10mm (height)
Range of revolutions measurement, W	3 … 60’000 rpm
Supply voltage, Us	220VAC / 12÷24V ac/dc
Power consumption, P	4W (16mA) / 2W (85mA)
Maximum input frequency, Fmax	1 KHz (11KHz option)
Measurement error	±0,05%
Operating temperature range, Tamb	-20º...+50º C
Degree of protection	IP40
Joining	Terminal
Sizes	95x49x113mm

Inputs “A” and “B” - they are meant to operate with sensors type NPN (fig.1, fig.2).
It is provided constant voltage 11÷23Vdc (40mA) for sensor's supply.

Schemes of connection

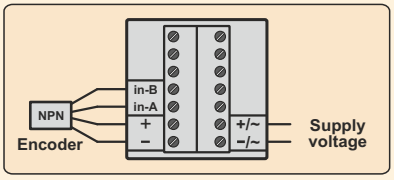


fig.1

Connecting NPN type encoder with two dephased outputs

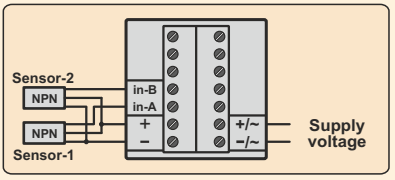
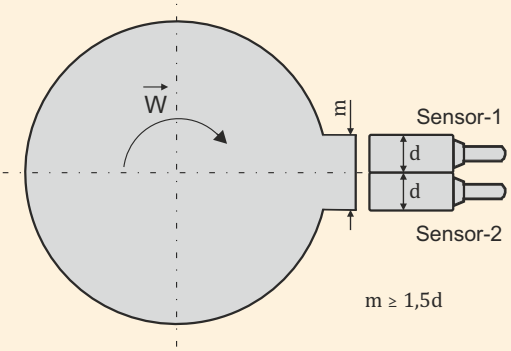


fig.2

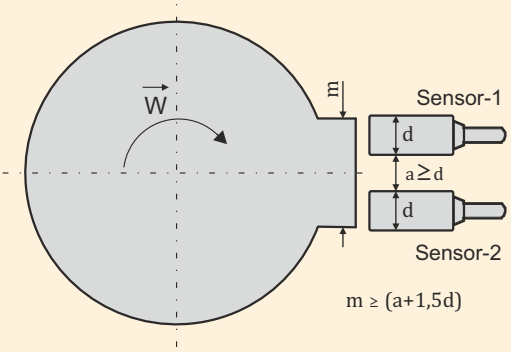
Connecting two NPN type sensors

Kinematics

Method of mounting shielded sensors for determining the direction of rotation of shafts using the CMD6-3R revolution counter.



Method of mounting unshielded sensors for determining the direction of rotation of shafts using the CMD6-3R revolution counter.



Digital Revolution Counter CMD6-4

Features

The CMD6-4 digital revolution counter is a compact microprocessor device, which serves to measure and controlling revolutions of rotation of axles, motor rotors and other turning objects. It is designed for combined work with inductive, photoelectric and other sensors, from which pulses are sent to the input of the rev-counter. There is option given for converting the number of impulses received in one turn and it is made by a factor "n". This makes possible the measuring of the revolutions of turning shaft with the help of a reducer. There can be assign two limit values of the revolutions “W1" and "W2" the reaching of which, activates the respective output relay. By pressing the "sec" and "Hz" buttons, the period of rotation of the axis in seconds (sec) and the frequency in hertz (Hz) is shown on the display of the revolution counter.

Type parameters		
Type	Supply voltage	Consumption
CMD6-4 / 220V	220VAC ±10%	16mA (4W)
CMD6-4 / 12-24V	11 ÷ 31 VDC 11 ÷ 27 VAC	125mA (3W)

Technical parameters

LED indicator (green/red), 6 digits	h=10mm (height)
Range of revolutions measurement, W	1 … 999’999 rpm
Supply voltage, Us	220VAC / 12÷24V ac/dc
Power consumption, P	4W (16mA) / 3W (125mA)
Output: Relay-1 (W1); Relay-2 (W2)	4A/220VAC, 2x(NO+NC)
Frequency range of the input pulses, f	0,05Hz ... 1KHz (11KHz)
Measurement error	±0,05%
Operating temperature range, Tamb	-20º...+50º C
Degree of protection	IP40
Joining	Terminal
Sizes	95x49x113mm

Energy-independent memory for the programmable parameters.
Input - it is meant to operate with sensor type NPN (fig.1) or switch K1 (fig.2).
It is provided constant voltage 11÷23Vdc (40mA) for sensor's supply.

Programmable parameters

Limit value, W1 (rpm)	1 ÷ 999’999
Limit value, W2 (rpm)	1 ÷ 999’999
Value of factor, n	0.01 ÷ 99.99

Schemes of connection

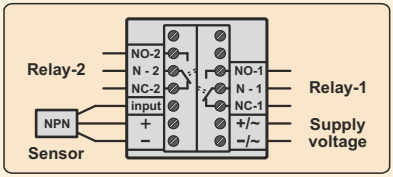


fig.1

Connecting NPN type sensor

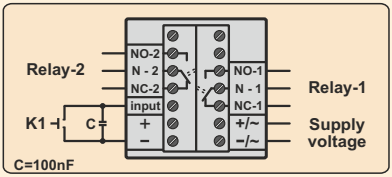
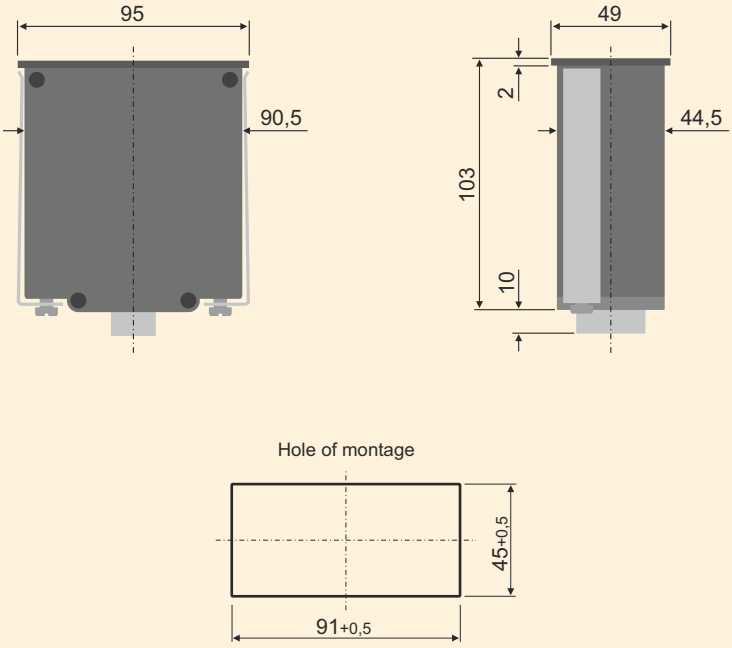


fig.2

Connecting a mechanical key "K1"


95
90,5
49
2
44,5
103
10
Hole of montage
45+0,5
91+0,5