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717

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## LED - preset counters 716 and 717

- Electronic 6-digit preset counter with sign and scale factor
- Very bright 8 mm high LED display
- Programmable as a pulse counter, a frequency meter or an operating time counter
- Wide-range power supply 90-250 VAC
- Counting speed up to 20 kHz
- Extremely simple use and programming by means of only 4 keys
- 716 : one preset - 717 : two presets
- DIN 48 x 48 mm housing. Adapter for opening 50 x 50 mm
- Option : RS 232, RS 422 or RS 485 serial interface





## Description

- 6-digit LED preset counter with sign
- Very bright LED display, height 8 mm
- Indication of the active outputs and display of the preselection by means of LED's
- Programmable as a pulse counter, a frequency meter/speed indicator or a time counter/operating time counter
- Simple use and preselection setting by means of 4 keys
- Scale factor setting between 0,0001 and 99,9999 allowing an optimum matching of the measuring signal
- In time counter mode, resolution up to 1 ms!
- 2 preselections (716 one preselection)
- Relay or optocoupler outputs
- Voltage supply 90..250 VAC or 10-30 VDC
- DIN 48x48 mm housing with adapter for 50x50 mm
- Electrical connections by means of screw terminals
- Option : RS 232, RS 422 or RS 485 serial interface
- Frequency measuring principle :  
Continuous period measurement, automatic matching of the measuring principle ⇒ calculation of an average value for high frequencies
- Can be programmed :
  - Operating mode
  - Polarity of the inputs
  - Input type
  - Scale factor
  - Decimal point
  - Output signals :continuous or pulse signal
  - Automatic repetition
  - Frequency meter display mode : 1/s or 1/min
  - Resolution in s, min, h or h:min:s
  - Start and Stop for the time counter/hours meter

## Inputs

### 2 counting inputs

The maximum frequency is 20 kHz (12 kHz in the phase discriminator input mode); it can be reduced to 30 Hz.

### GATE

Static gate input. This function depends on the operating mode.

### Mode pulse counter:

No counting if the input is ON.

### Mode time counter:

Counting programmable for input ON (gate.lo) or OFF (gate.hi).

### RESET

Dynamic reset input having the same function as the reset key. Resets the counter to zero when counting up, and sets it to the preselected value when counting down.

### KEY

Static key locking input. The keys are locked as long as this input is ON. The P preselection display key remains active.

## Outputs

2 potential-free relay or optocoupler outputs, depending on the execution (716: 1 output).

## Programming

The counters 716 and 717 are programmed by means of the 4 front keys. The operator guidance on the display allows a simple and intuitive programming. All settings can be carried out by selecting the corresponding parameters in this menu.

### Programmable are:

#### Input polarity

Positive (PNP) or negative (NPN). The selection is valid for all inputs.

#### Pulse or time counting modes

- Adding with counting start at 0
- Subtracting with counting start at the preselection (716) and at preselection 2 (717)
- Adding with automatic reset when the preselection (716) or preselection 2 (717) is reached
- Subtracting with automatic positioning at the preselection (716) or at preselection 2 (717) when 0 is reached.

#### Input types in pulse counter mode

Cnt. Dir	1 counting input
	1 counting direction input
uP. Dir	Differential counting
	1 adding input
	1 subtracting input
quad	Phase discriminator to connect pulse sources with 2 signals shifted by 90°
quad2	Phase discriminator with double pulse processing, to connect pulse sources with 2 signals shifted by 90°

#### Decimal places

Data can be displayed with one, two or three decimal places.

#### Scale factor

For an optimum matching of the measuring signal, the displayed values can be weighted by a scale factor between 0,0001 and 99,9999.

#### Output signal

The function of the output signal can be preselected (independently for both outputs of model 717!) as an opening signal, a closing signal or as a positive or negative pulse signal.

### Maximum counting frequency

The maximum counting frequency can be set to 30 Hz or 20 kHz.

### Time counter

Counting can be carried out in h, min, s or in h:min:s. The number of decimal places determines the resolution. A resolution up to the ms-range can be achieved!

### Frequency meter/Tachometer/Speed indicator

Display in 1/min or 1/s with automatic conversion.

## Interfaces

The devices can be fitted with the optional RS 232, RS 422 or RS 485 interfaces. These interfaces can be used to program the devices as well as for remote reading. They are simply controlled by ESC sequences.

## Technical data

Display:	6 digits, 7 segment LED's, number height 8 mm
Preselection:	2 preset values for model 717 1 preset value for model 716
Counting inputs:	2 counting inputs, 4 types of programmable inputs
Polarity of the inputs:	programmable, common to all inputs
Input resistance:	about 10 k $\Omega$
Maximum counting frequency:	20 kHz, can be reduced to 30 Hz by programming
Minimum pulse duration for control inputs:	5 ms
Input switching level:	For AC power supply: Log "0": 0..4 VDC, log "1": 12..30 VDC For DC UB power supply: Log "0": 0..0,2 x UB Log "1": 0,6xUB..30 VDC
Pulse shape:	any shape (Schmitt-trigger)
Output 1:	Relay with potential-free opening or closing programmable switching contact Switching voltage max. 250 VAC / 125 VDC Switching current max. 3 A Switching voltage DC min. 30 mA Switching power DC 90 W AC 750 VA max. or NPN optocoupler NPN with open collector and emitter
Switching power:	30 VDC / 15 mA $U_{SAT}$ for $I_c = 15$ mA: max 2,0 VDC $U_{SAT}$ for $I_c = 5$ mA : max 0,4 VDC
Output 2:	Relay with potential-free opening or closing programmable switching contact Switching voltage max. 250 VAC / 300 VDC Switching current max. 3 A Switching voltage DC min. 30 mA Switching power DC 50 W AC 2000 VA or NPN optocoupler NPN with open collector and emitter Switching power: 30 VDC / 15 mA

$U_{SAT}$  for  $I_c = 15$  mA: max 2,0 VDC

$U_{SAT}$  for  $I_c = 5$  mA: max 0,4 VDC

Supply voltage:

90..250 VAC, 5VA max, or

10..30 VDC, 1W max

Supply voltage output for external sensors:

24 VDC, 100mA (at AC versions)

Accuracy in the frequency meter/speed indicator mode:

< 0,1 %

Accuracy in the time counter/operating time counter mode:

$\pm$  50 ppm

Output response time:

Relay: about 7 ms

Optocoupler: about 2 ms

Data storage:

at least 10 years or 10<sup>6</sup> recording cycles

Interference immunity:

EN 61000-3-3, EN 55011 class B and EN

50082-2 with shielded control lines

Operating temperature:

-10°C..+50°C

Storage temperature:

-25°C..+70°C

Weight: about 200 g. (AC version with relay)

Protection: IP 65 (front side)

## Order code

6.XXX.01X.XXX

Option:

00 = none

05 = RS 232 serial interface

06 = RS 422 serial interface

07 = RS 485 serial interface

Supply voltage:

0 = 90..250 VAC

3 = 10..30 VDC

Outputs:

0 = relay

1 = optocoupler

Model:

716 = counter with 1 preselection

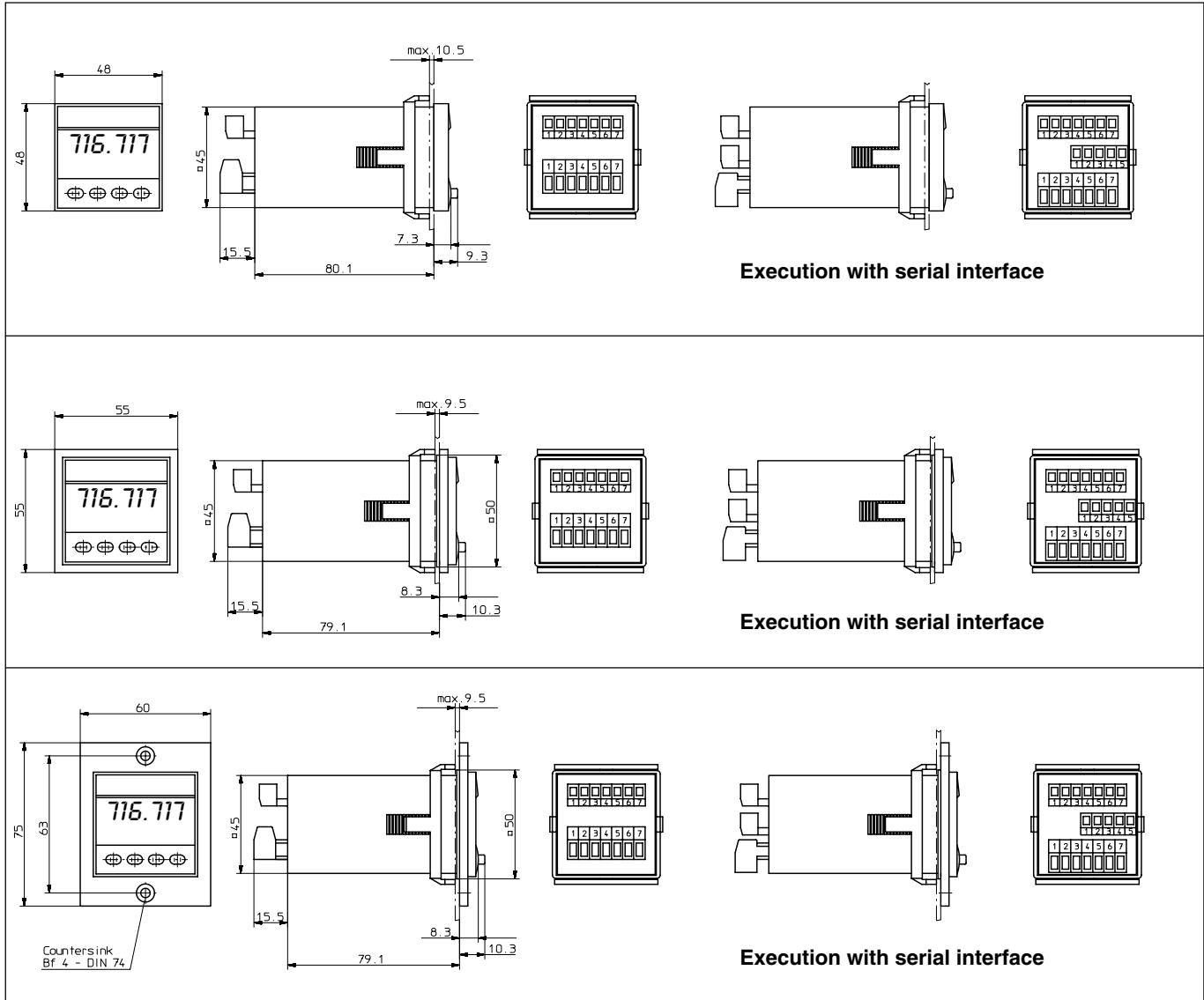
717 = counter with 2 preselections

## Delivery specification

- Counter 716 or 717
- Screw terminal (7 poles) Pitch 5,08 mm
- Screw terminal (7 poles) Pitch 3,81 mm
- Frame for screw mounting  
Cut-out 50 x 50 mm
- Frame for clamp mounting  
Cut-out 50 x 50 mm
- Clamping clip
- Seal
- Cut-out template

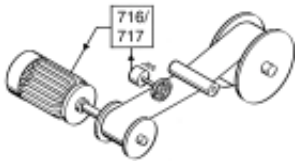


## Dimensions:



## Application examples

Preselection of the number of parts, length measurement, positioning, dosage, time control, rotational and displacement speed control, throughput measurement

 <p><b>Length measurement</b></p>	<p><b>Preselection of the number of parts</b></p>
<p><b>Time control</b></p>	<p><b>Winding</b></p>

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