Preset counter electronical

Kübler

Your benefit

- very bright 8 mm high display
- programmable as a pulse counter, frequency meter or an operating time counter
- Wide range Power supply
  90 ... 260 V AC or
  10 ... 30 V DC
- $_c\mathbf{N}_{us}$ approval

- ⟨Ex⟩ -proof version

Further product features

- Display range −199 999 ... 999 999 with zero blanking
- easy to use and programmable with only 4 keys
- Option: serial interface RS 232, RS 422, RS 485
- Relay or optocoupler output
- Scaling factor 0.0001 ... 99.9999

716: one preset
717: two presets

Technical data

Supply voltage:	10 ... 30 V DC, max. 1,2 W with reverse polarity protection 90 ... 260 V AC, max. 5 VA
Display:	6-digit red 7 segment LED; 8 mm high
Counting inputs:	2 counting inputs, 4 types of programmable inputs
Polarity of the inputs:	programmable, common for all inputs
Input resistance:	appr. 10 kΩ
Counting frequency:	20 kHz, cab be reduced to 30 Hz
Minimum pulse duration for inputs:	5 ms
Input switching level:	DC version: Low: 0 ... 0,2 x U_B [V DC] High: 0.6 x U_B ... 30 V DC AC version: Low 0 ... 4 V DC High 12 ... 30 V DC
Pulse shape:	any shape (Schmitt-Trigger)
Output 1 Relay:	with potential-free contacts, programmable as normally-closed (NC) or normally-open (NO) switching voltage max. 250 V AC/125 V DC, switching current max. 3 A. switching current min. at DC 30 mA switching power max. DC 90 W max. AC 750 VA
or npn optocoupler:	with open collector and emitter switching power 30 V DC/15 mA
Output 2 Relay:	with potential free switching contact, programmable opening or closing.

	switching voltage max. 250 V AC/300 V DC, switching current max. 3 A. switching current at DC min. 30 mA switching power at DC 50 W at AC max. 2000 VA
or npn-optocoupler:	with open collector an d emitter switching power 30 V DC/15 mA
Accuracy:	<0,1 % (at frequency meter mode) ±50 ppm (at time counter mode)
Output response time:	Relay: appr. 7 ms Optocoupler: appr. 2 ms
Data storage:	min. 10 years or 10^6 memory cycles
Transmitter voltage:	24 V DC −40 %/+15 %, 100 mA at AC version
Ambient temperature:	−10 ... +50 °C
Storage temperature:	−25 ... +70 °C
EMC:	according to EC EMC directive 89/36/EWG
EMC:	EN 61 000-6-4/EN 55011 class B EN 61 000-6-2
Protection:	IP65 (front) EX-proof IP54
Weight:	appr. 200 g, Ex-execution 2 kg
only for ex proof:	Counter in EX proof version acc. to explosion-proof class EEx D IIC T6, with encapsulated cable 2 x 3 m PTB approval no. Ex-96.D. 1024 hartcoated AL-housing function mode as type 717 Note: the Ex-proof version has an additional fuse.

Inputs

2 counting inputs
The maximum frequency is 20 kHz (20 kHz in the phase discriminator mode); it can be reduced to 30 Hz

Gate
Static gate input
pulse count mode: no counting, when the input is active
timer mode: Counting when active gate.lo or not activated Gate.hi programmable

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

Key
Static key lock input. The keys are locked as long as this input is on. The preselection display key remains active.

Interfaces:

The devices can be fitted with the optional RS 232, RS422 or with the 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, max. 4800 Baud

Programming

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

The follow modes can be programmed
1. Pulse counter
2. Frequency meter
3. Time meter

Programmable are:

Input polarity:

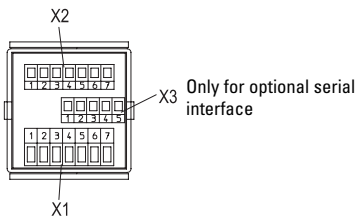Positive (pnp) or negative (npn). The selection is valid for all inputs

Pulse or time counting modes:

– adding with counting; start at 0
– subtracting with counting start at the preset (716) and at preselection 2 (717)
– adding with automatic reset when the preset (716) or the preset 2 (717)
– subtracting with automatic positioning at the preset (716) or preset 2 (717) when 0 is reached

Input types in pulse counter mode:

Cnt.Dir	1 counting input
	1 counting direction input
uP.dn	Differential counting
	1 adding input
	1 subtracting input

quad	Phase discriminator
	to connect encoders with 2 signals shifted by 90°
quad2	Phase discriminator
	with double pulse processing, to connect pulse sources with 2 signals shifted by 90°

Decimal place:

Data can be displayed with with one, two or three decimal point

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 a normally-closed, normally open or a negative pulse signal.

Maximum counting frequency

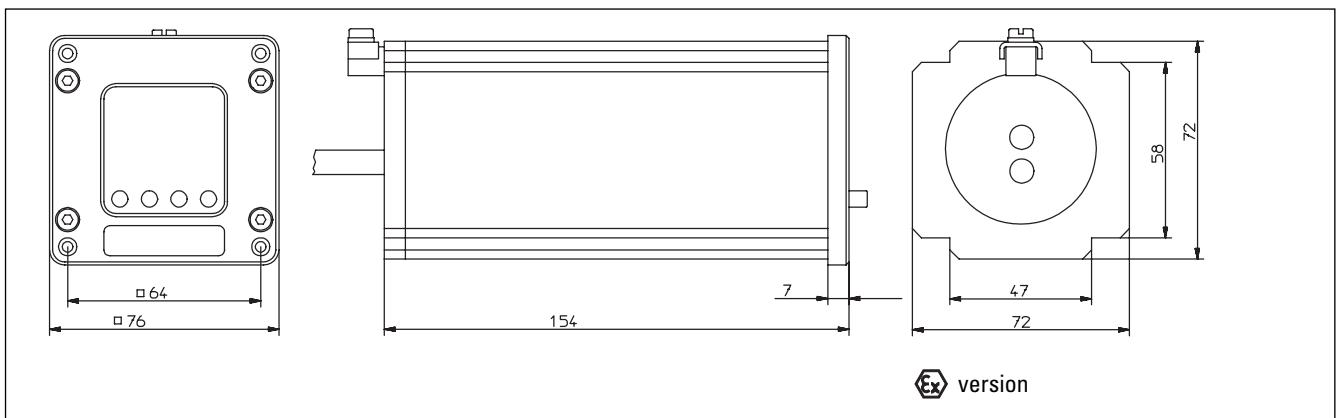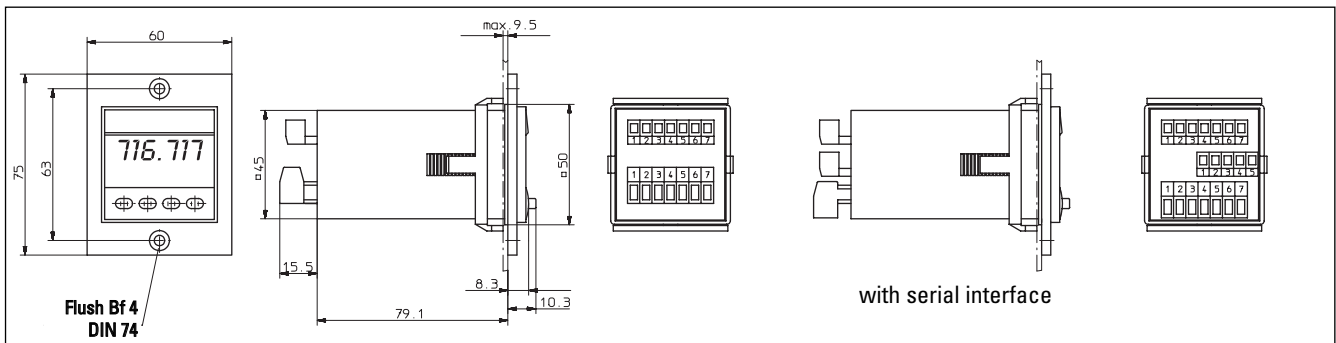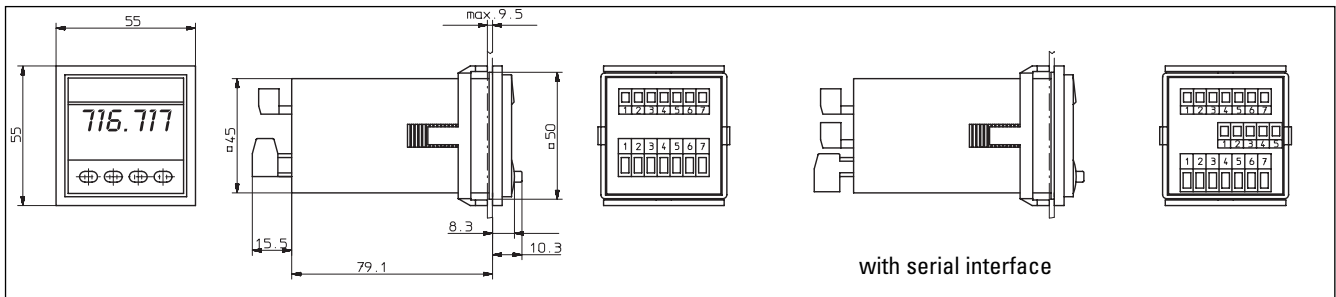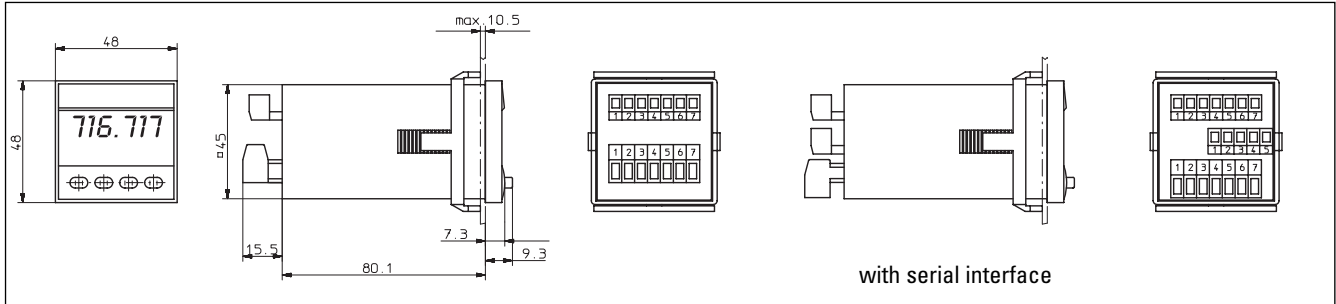The maximum counting frequency can be set to 30 Hz or 20 kHz.

Timer

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.

Connection diagram:

X3 Only for optional serial interface

Pin connection X2:

Pin	description	AC version	DC-Version
1	+24 V DC	Power supply	n.c.
2	0 V DC (GND)	GND	n.c.
3	INP A	Count input A	
4	INP B	Count input B	
5	Reset	Reset input	
6	Gate	Gate input	
7	Key	input for key lock	

Pin connection X1:

Pin	AC version	DC version
1	Output1 Relay Collector at Optocoupler output	
2	Output 1 Relay Emitter at Optocoupler output	
3	Output 2 Relay common contact (C) Emitter at optocoupler output	
4	Output 2 Relay closing contact (NO)	
5	Output 2 Relay opening contact (NC) Collector at Optocoupler-output	
6	Power supply 90 ... 250 V AC	10 ... 30 V DC
7	90 ... 250 V AC	0 V DC (GND)

Pin connection X3:

PIN No.	RS232	RS 422	RS 485
1	GND	–	–
2	RxD	RI+	DO/RI+
3	TxD	RI-	DO/RI-
4	RTS	DO+	–
5	CTS	DO-	–

Für die die Zähler mit serieller Schnittstelle ist optional eine Steuersoftware lieferbar. Damit können die Zähler einfach über einen PC programmiert werden. Im Monitorprogramm werden die Messwerte online angezeigt. Weiter Informationen über die Software EzControl erhalten Sie auf Seite 185.

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Dimensions:

717

max.10.5

48

48

716.717

□45

15.5

7.3

80.1

9.3

1|2|3|4|5|6|7
1 2 3 4 5 6 7

with serial interface

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max.9.5

55

55

716.717

□45

15.5

8.3

79.1

10.3

□50

1|2|3|4|5|6|7
1 2 3 4 5 6 7

with serial interface

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max.9.5

60

75

63

716.717

□45

15.5

8.3

79.1

10.3

□50

Flush Bf 4
DIN 74

1|2|3|4|5|6|7
1 2 3 4 5 6 7

with serial interface

□64

□76

154

7

47

72

58

72

(Ex) version

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Delivery includes: 716/717

Counter 716/717
1 Screw terminal 7 poles, RM 5.08
1 Screw terminal 7 poles, RM 3.81
1 Frame for screw mounting
   panel cut-out 50 x 50 mm

1 Frame for clip mounting
   panel cut-out 50 x 50 mm
1 mounting clip
1 Template for cut-out
1 Operating instructions

Order code:

6.XXX.01X.XXX

Type
   716 = Preset counter with one preset
   717 = Preset counter with two presets

Output
   0 =   Relay
   1 =   Optocoupler

Option
   00 = no
   05 = serial interface RS 232
   06 = serial interface RS 422
   07 = serial interface RS 485

Supply voltage
   0 = 90 ... 250 V AC
   3 = 10 ... 30 V DC

Delivery includes: 717 Ex

Counter 717 in Ex-proof housing acc. to
explosion-proof class EEx D IIC T6
with encapsulated cable 2 x 3 m, various
mounting parts, PTB approval certificate

Order code for Ex proof version:

6.717.010.X00.Ex

Supply voltage
   0 = 90 ... 250 V AC
   3 = 10 ... 30 V DC