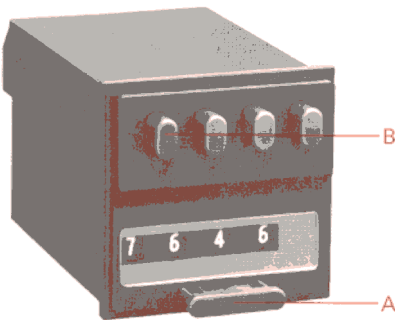


Electromechanical preselection counters CNP



Operation



The preset value is set as follows:

1. Push reset pushbutton A fully home; the previously set preset value appears.
2. Keep pushbutton A pressed in and set preset value by repeatedly pressing pushbuttons B.
3. Release pushbutton A. The counter is ready for operation.

Note: Zero not to be preselected with the supply switched on with the versions having automatic reset or the supply will be switched off.

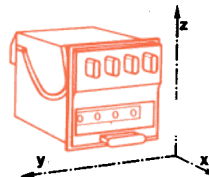


Version with key-operated manual reset

Technical data

General data

Count	
Counting capacity	9,999
Counting direction	down
Counting frequency max.	20i/s (DC) or 10i/s (AC)
Display	digit-drums, white figures on black background, 2 x 4 mm special: with fixed decimal point .9, .99, .999 with transparent label-holder above display with symbols, units, static figures etc. (on request)
Preselection	by pushbuttons (see 'Operation' for details)
Reset	to preset value; manual, manual and electrical or manual, electrical and automatic special: manual reset with key (it is not possible to freely change preset value and unintentional reset is prohibited)
Life expectancy	Count: 100 million impulses Reset: 2 million electrical reset operations
Mounting	flush-mounting, fixing with clamping spring or front frame and screws, in any mounting position (see page 27 for dimension drawings)
Connections	screw terminals (M3, for wires from min. 0.75 mm ² to max. 2 x 1.5 mm ²) in combination with tags (2.8 x 0.8 mm) for push-on connectors or soldering
Ambient temperature	operation: -10°C to +50°C
Climatic conditions	climate G in conformity with DIN 40040
Vibration strength	



Operational reliability:
5g at axes y and z, 2g at axis x,
in conformity with IEC 68-2-6,
test FC in 3 planes at 10...500 Hz

Protection class (front)	IP40 in conformity with DIN 40050 (IP54 resp. IP65: see 'Protection accessories', page 28)
Weight	215 g with manual reset 260 g with electrical reset 275 g with automatic reset

Electrical data

Inputs (count and reset)	
Supply voltage	DC: 6VDC, 12VDC, 24VDC , 48VDC, 110VDC, 220VDC; residual ripple max. 48%; voltage tolerance -15%/+10% AC: 24VAC, 100...115VAC , 220...240VAC ; 50/60Hz; voltage tolerance -15%/+10% Other supply voltages on request Note: Automatic reset is only available for the supply voltages shown in bold typeface.
Power consumption	Count: 3 W (DC) resp. 3.5 VA (AC) Reset: 12 W (DC) resp. 15 VA (AC)
Impulse generator types	contacts, electronic sensors NPN/PNP (see page 31 for SAIA® Proximity Switches)

CNP



Version with transparent label-holder
(label size: 6 x 45 mm)

Impulse data

	Count		
	20 i/s (DC)	10 i/s (AC)	
Impulse length	min. 25 ms	min. 50 ms	min. 200 ms
Impulse interval	min. 25 ms	min. 50 ms	min. 100 ms

Note: Count and reset mechanisms are not to be simultaneously actuated. No mechanical damage will ensue but the units digit-drum can fall between two places and render the changeover of the output contact impossible at the end of the counting cycle. The units digit-drum must be brought to its correct position by a reset operation under required conditions.

Duty cycle	Count: 100% Reset: 25%, max. 5 min (100% duty cycle on request)					
Insulation voltage	1.5 kVAC (6...48V) resp. 2.5 kVAC (100...240V) in conformity with VDE 435					
Coil resistance (DC)	Supply voltage	6 VDC	12 VDC	24 VDC	48 VDC	110 VDC 220 VDC
	Count	12 Ω	48 Ω	190 Ω	750 Ω	4000 Ω 16000 Ω
	Reset	3 Ω	12 Ω	48 Ω	190 Ω	950 Ω 3800 Ω

Outputs

Output type changeover contact (snap-action switch) and voltage impulse (only with versions having automatic reset)

Important notes:

- Where the preset value is zero the changeover contact remains in the operating position.
- It is possible for the changeover contact to exhibit bounce amounting to a few ms; this must be taken into account when using in electronic circuits.

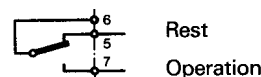
Changeover contact

Breaking capacity	direct current:	see adjacent graph; max. current 2A (with manual and/or electrical reset) or 1A (with automatic reset)	} with manual and/or electrical reset
	alternating current:	2A/250VAC (AC1, resistive load) 0.5A/250VAC (AC11, inductive load) P _{max.} (resistive) 500VA 1A/250VAC (AC1, resistive load) 0.1A/250VAC (AC11, inductive load) P _{max.} (resistive) 250VA in conformity with VDE0660, sections 1 and 2	

Life expectancy

mechanical: 50 million operations
electrical: 0.8 million operations at 1A/250VAC, resistive load
0.3 million operations at 2A/24VDC, resistive load
With an inductive load a spark suppression is imperative for protection of the contacts (see page 30).

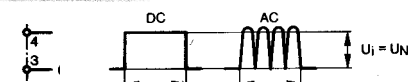
Connection diagram



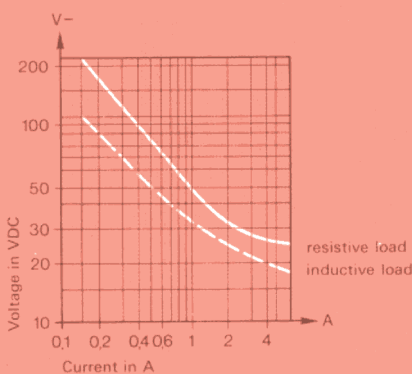
Voltage impulse (only with automatic reset)

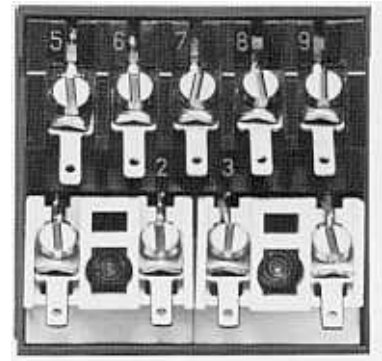
Impulse duration t _i	150...250 ms Note: Impulse duration of changeover contact with automatic reset 20...100 ms (standard) or 100...200 ms (special)
Rating	max. 1A, impulse voltage U _i = supply voltage U _N , P _{max.} (resistive) 50W resp. 50VA

Connection diagram



Breaking capacity direct current

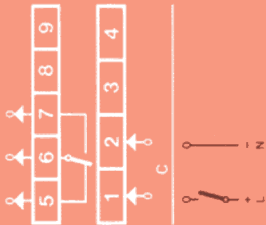




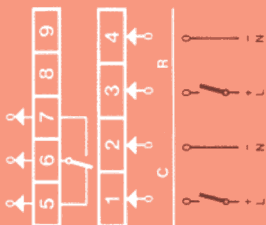
View of the universal connection possibilities
(Version with electrical and automatic reset)

Connection diagrams

with manual reset

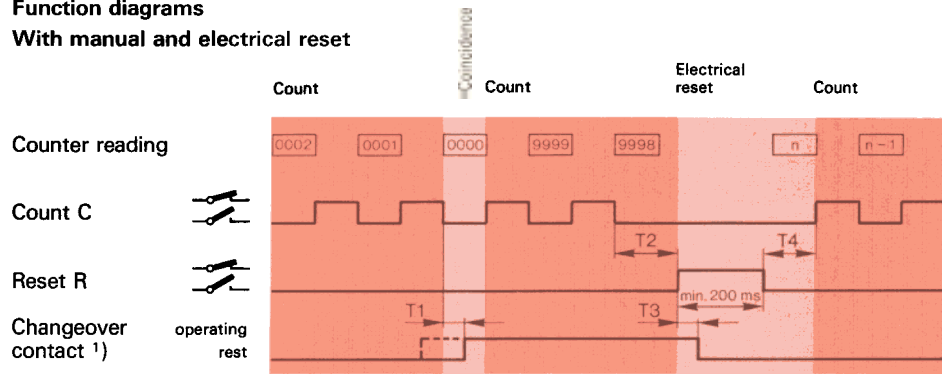


with manual and electrical reset

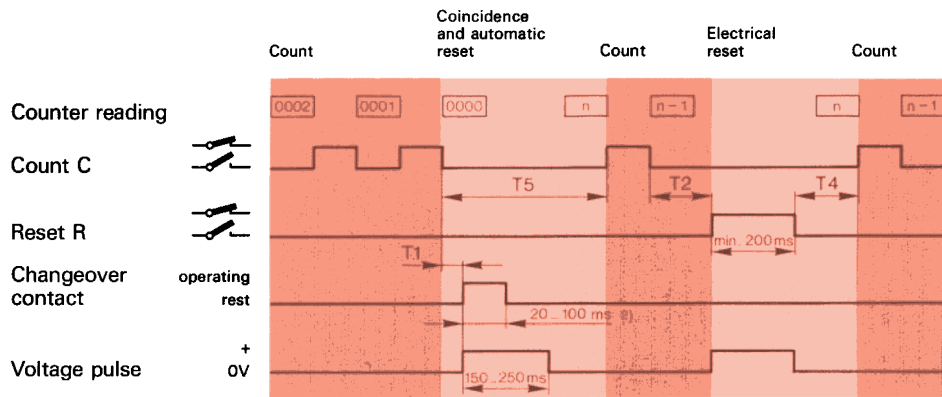


Important: To provide protection for the impulse generator (count and reset), a spark suppressor should be provided with direct current supply (see page 30).

Function diagrams
With manual and electrical reset



With automatic, manual and electrical reset



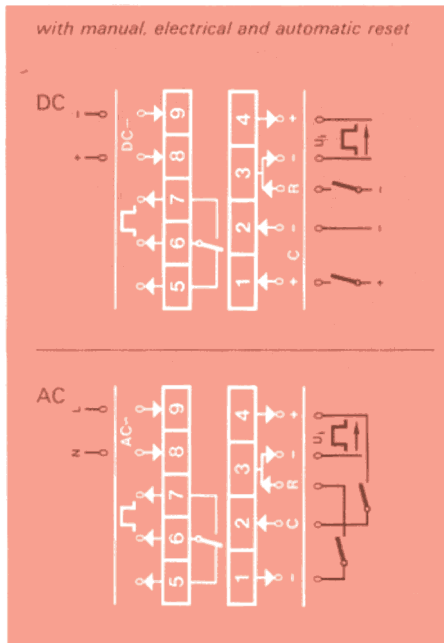
¹⁾ Special: Signal at start of counting impulse
²⁾ Special: 100...200 ms (on request)

Delay times T

- T1 Delay between negative edge of counting impulse and operating position of the changeover contact or voltage impulse max. 20 ms (DC) or max. 40 ms (AC)
- T2 Waiting period between negative edge of the counting impulse and the positive edge of the reset impulse min. 25 ms (DC) or min. 50 ms (AC)
- T3 Delay between positive edge of reset impulse and the changeover contact rest position 10...110 ms according to preset value
- T4 Waiting period between the negative edge of the reset impulse and the positive edge of the counting impulse 100 ms
- T5 Forced interruption of the count for the period of the automatic reset. Counting impulses arriving during this interruption are not taken into account and could impair the function (see also the note under 'Impulse Data', page 7). min. 370 ms (DC) or min. 390 ms (AC)
max. counting frequency without impulse loss: 2.5 i/s (DC) or 2.3 i/s (AC)

CNP

Ordering details



DC version

Count C: by means of voltage impulses

Electrical reset R:

by potential-free contact, provision of spark suppression imperative (see page 30)

Output voltage impulse U₁:
connections 3 and 4

AC version

Count C and electrical reset R:

by potential-free contact, provision of spark suppression imperative (see page 30)

Output voltage impulse U₁:
connections 3 and 4

Type of reset

- 1 manual
- 3 manual and electrical
- 5 manual, electrical and automatic
- 6 manual with key and electrical
- 7 manual with key, electrical and automatic
- 8 manual with key

Supply voltage

- L6 6VDC N1 48VDC
- M1 12VDC N8 110VDC
- M4 24VDC** P4 220VDC

- B4 24 VAC, 50/60Hz
- D1 100...115VAC, 50/60Hz**
- E1 220...240VAC, 50/60Hz**

The automatic reset is only available for the standard supply voltages (bold typeface)

Changeover contact

- N signal at the end of counting impulse
- P signal at the start of the counting impulse (not available with automatic reset)

0 without decimal point

- 1 with decimal point .9
- 2 with decimal point .99
- 3 with decimal point .999
- 8 with label-holder

Mounting (see page 27)

- A fixing with front frame 60 x 75 mm
- E fixing with clamping spring

Note:

- The bold typeface denotes the standard versions
- Other special versions on request (symbols, units, static figures with the display; other supply voltages; 100% duty cycle for the reset; changeover contact impulse duration 100...200 ms with automatic reset)

Ordering can be by means of the above ASN-code or in plain language.

Example: Electromechanical preselection counter CNP
manual, electrical and automatic reset, 24VDC,
with decimal point 999.9; mounting type E
or
CNP 512 M4 N0N1 E

Important: The earlier type classification does not correspond with this new code!

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII
C	N	P	1	2					0	N		

Dimension drawings

Dimensions	CNG/CNT/CKG DC	CNP/CKG AC/CKP/CKH
Cut-out for flush-mounting applicable to both methods of fixing		
Fixing with clamping spring. The clamping spring is supplied with the counter when mounting 'E' is quoted in the ordering details.		
Fixing with front frame and 2 countersunk-head screws M3/90°. The front frame is supplied with the counter when the ordering details include mounting 'C', 'D' or 'A'.	<p>Mounting 'C'</p> <p>Mounting 'D'</p>	<p>Mounting 'A'</p>