

# Standard Counter SZ 9648

## Totalizing counter - Preselect counter

### Features

- LED-Display 14,2 mm red
- Indicating range 0 ... 999999
- Count value zero voltage safe
- Up-counter function
- Inputs for contact operating max. 30 Hz and electronic pulses max. 15 kHz
- Integrated transmitter supply 24/8 V DC
- Auto reset or external reset
- Max. 4 preselect outputs, relay (SPDT) or transistor
- Front protection IP65



DIN 96x48 mm

### General

The Standard-Counter SZ9648 is available as totalizing counter or preselect counter. It operates in up-counting function. The device offers separate counting inputs for proximity switch, light barriers, other electronic signals and for mechanical contacts

### Short information

Programming	Parameters are programmed via front-side membrane keypad
Transmitter-supply	The integrated transmitter-supply allows direct connection of pnp initiators, light barriers, mechanical switch contacts, proximity switches, rotary encoders and Namur initiators (8 V DC).
Preselect outputs	The preselect outputs can be programmed as continuous contact or pulse contact.
Function / reset	The counter can be resetted by external signal. The preselection counter mode additional offers an auto-reset-function to realize a ring-counter. In this mode the counter set back to "Zero" automatically when reaching the preselected value, programmed on output A1. A new counting cycle starts again.

For more features like math functions- summing, difference and products of inputs, down counting etc. please choose Universal-Counter **UZ9648**.

## Technical data

### Power supply

Supply voltage : 230 V AC  $\pm 10\%$ ; 115 V AC  $\pm 10\%$ ; 24 V AC  $\pm 10\%$  or 24 V DC  $\pm 15\%$   
 Power consumption : max. 3.5 VA  
 Operating temperature : -10 ... +55 °C  
 Rated voltage : 250 V AC acc. VDE 0110 between input/output/supply voltage  
 Degree of pollution 2, over-voltage categoric III  
 Test voltage : 4 kV DC, between input/output/supply voltage  
 CE-conformity : EN55022, EN60555, IEC61000-4-3/4/5/11/13

### Input

npn-input :  $R_i = 6.3\text{ k}\Omega$  level: < 4 V low; > 8.5 V high;  
 hysteresis > 2.5 V, max. 35 V DC  
 Namur input :  $R_i$  appr. 1 k $\Omega$  (<4 mA) level: < 1 mA low; >2.2 mA high;  
 hysteresis > 0.5 mA max. 35 V DC  
 Counting frequency max. : input A = 30 Hz, debounced  
 input B = 15 kHz, DC pulse  
 Counting loss : 100  $\mu$ s at reset; 20 ms change of preselect value  
 Min. pulse width : electronic pulse 50  $\mu$ s, switch contact 5 ms  
 External reset : min. puls width 10 ms  
 Transmitter-supply : 8 V DC (Namur), 24 V DC (npn),  $R_i$  appr. 150  $\Omega$ ,  
 max. 50 mA (25 mA with 4 relay outputs)

### Display

: LED red, 14.2 mm  
 Indicating range : 0 ... 999999 Digit with leading zero suppression  
 Additional display : LED 2-digit red, 7 mm (parameter - and output indicator )

### Output

Relay : SPDT < 250 V AC < 250 VA < 2 A, < 300 V DC < 50 W < 2 A  
 Transistor : max. 35 V AC/DC max.100 mA, short circuit protected

### Panel case

: DIN 96x48 Material PA6-GF; UL94V-0

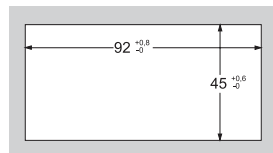
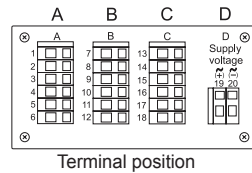
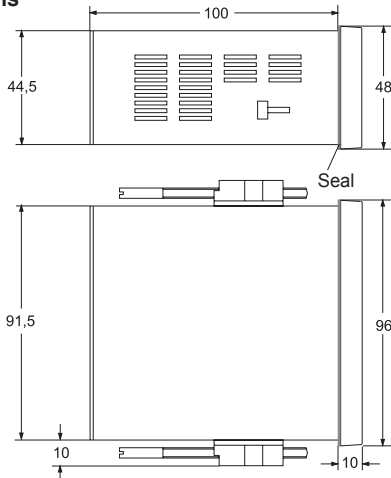
Dimensions : Front DIN96x48 mm, depth 100 mm,

Weight : max. 390 g

Connection : Clamp terminals, 2 mm<sup>2</sup> wire, 1,5 mm<sup>2</sup> flexible wire, AWG14

Protection : Front IP65, terminals IP20, fingersafe acc. BGV A3

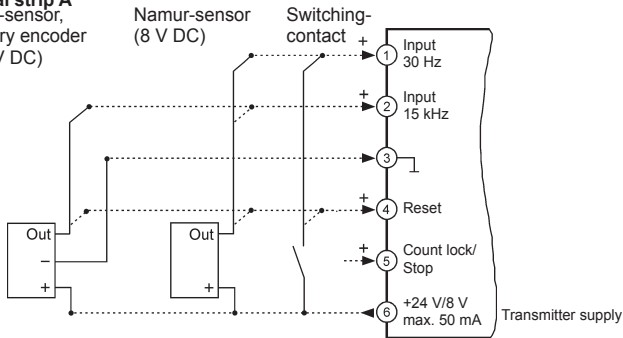
## Dimensions



Panel cut-out  
 acc. to DIN 43700-96x48

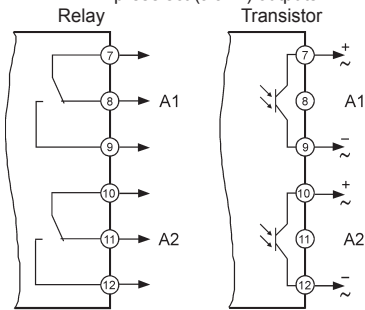
## Connection diagrams

**Terminal strip A**  
PNP-sensor,  
Rotary encoder  
(24 V DC)



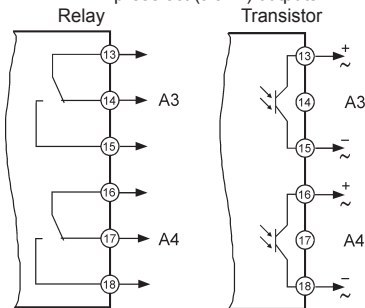
**Terminal strip B (varies with version)**

2 preselect (alarm) outputs

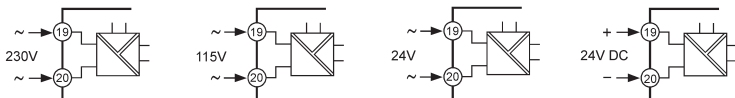


**Terminal strip C (varies with version)**

2 preselect (alarm) outputs



**Terminal strip D supply voltage (varies with version)**



## Controls and indicators



## Description

Operation of the device is arranged in 2 levels. The requested parameter can be called by button. For selection within a parameter or for entering data, use buttons ▲ and ▼. Parameters and actual count value are stored zero-voltage safe in the EEPROM.

Button combinations:

- ▲ + ▼ + ⌂ pressing all buttons together will reset the actual display to zero.
- ⌂ + ▼ one parameter back.
- ⌂ + ▲ setting parameter to zero or minimum value.

After power-on, the device initializes itself. After the initializing procedure the device is located in the **Working level**. Set points of the alarm outputs can be preselected.

Pressing the button ⌂ for more than 2 seconds, activates the **Configuration level**. Now all the parameters which defines the function of the counter can be programmed.

After finishing the configuration or when no button was pushed for more than 2 minutes, the program returns to the working level. Leaving the configuration level is possible at any time by pressing the button ⌂ for 2 seconds.

### Error messages:

*P E* Reading this message in the parameter display, parameter failure has been occurred. The display flashes. When pushing one of the buttons the error code will be deleted and the device is running with factory settings. Configuration and function of the device must be checked. If error occurs again, please ship the device to factory for repair service.

*L o c* Programming lock active => see configuration page 7

*o F* Overflow

### Operational startup reference!

The device is preset with an ex-works default setting. Therefore it must be adapted to each special application. See Page 6.

### Notes to representation



Parameter is only displayed if configured



Parameter is only displayed if included (see order code)

**Note:** All parameters can be called if they are not blocked by other programmed parameters and if they are available. Factory settings are shown in the **display graphic**.

### Working level

Button	Display	Description
		Count value (stored zero-voltage safe)
		Output indication (only if installed and activated).
		Setpoint output A1
		Setting possible from 0 ... 999999 digit, with button  and .
		Note: when operating as a ring-counter, reset will activated on setpoint A1.
		Setpoint output A2
		Setting possible from 0 ... 999999 digit, with button  and .
		Setpoint output A3
		Setting possible from 0 ... 999999 digit, with button  and .
		Setpoint output A4
		Setting possible from 0 ... 999999 digit, with button  and .

## Configuration level

**Button**      **Display**      **Description** (factory settings are shown in the display)



press  
2s



1

### Transmitter supply/input level

$U = 24$  = 24V DC for pnp sensors  
 $U = 8$  = 8V DC for Namur sensors\*  
 (\* with ext. 5V supply also useful for TTL-signals)  
 $t E 5 t$  = only for factory settings  
 Selection with buttons ▲ and ▼.



2

### Operating performance and function preselect output A1

$o n$  (max)      continuous contact: off-on      (totalizing function)  
 $0.1 \dots 9.9$       pulse contact: off-on-off [sec]      (ring-counter function)  
 $o F F$       output deactivated

Selection with buttons ▲ and ▼.

$A1 = o n$  or  $o F F$  - the counter works as totalizing counter in the full range. When reaching the value of 999999 the counter will stop.

$A1 = 0.1 \dots 9.9$  - the counter works as ring-counter between 0 and set point A1 (see next parameter)

Note :      For more information see page 7



3

### Setpoint preselect output A1

Setting possible from 0 ... 999999 digit, with buttons ▲ and ▼.



4

### Switching performance output A2

$o n$  (max)      continuous contact: off-on  
 $0.1 \dots 9.9$       pulse contact: off-on-off [sec]  
 $o F F$       output deactivated

Selection with buttons ▲ and ▼.



5

### Setpoint preselect (alarm) output A2

Setting possible from 0 ... 999999 digit, with buttons ▲ and ▼.



**Note:** The parameter settings for A2 ... A4 have to be configured in the same way.

Taste	Anzeige	Beschreibung
↓	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <div style="font-size: 0.8em; margin-bottom: 2px;">6</div> <div style="font-size: 2em; font-weight: bold; text-align: center;">OFF</div> <div style="font-size: 0.8em; margin-top: 2px; border-top: 1px solid black; padding-top: 2px;">Lc</div> </div>	Parameter lockout <i>oFF</i> = no lock <i>LoFF</i> = configuration level locked <i>AllL</i> = all parameters locked Selection with button ▲ and ▼.



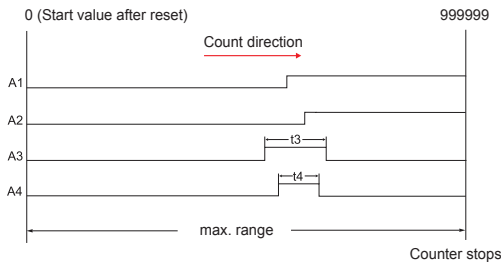
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <div style="font-size: 2em; font-weight: bold; text-align: center;">4123</div> <div style="font-size: 0.8em; margin-top: 2px; border-top: 1px solid black; padding-top: 2px;">....</div> </div>	Return to the working level (count value).
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### Explanations

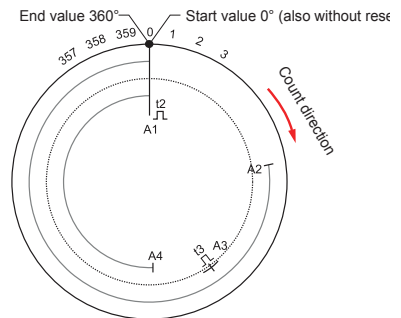
**Totalizing counter**  
 Without external reset. Counter works over the full range 0...999999, starting from 0 (see drawing).  
 Max 4 preselect outputs are programmable.

**Ring counter**  
 Counter operates from 0 and to set point A1, where an auto-reset was triggered. Then start again and so on.

Example totalizing counter



Example ring counter



## Ordering code

SZ9648 -  1. -  2. -  3. -  4. -  5. -  6. -  7.

### 1. Terminal strip A

1 2 counting inputs, 30 Hz and 15 kHz  
intergrated transmitter supply  
2 additional control inputs

### 2. Terminal strip B

00 Not installed  
2R 2 alarm outputs Relay SPDT  
2T 2 alarm outputs Transistor

### 3. Terminal strip C

00 Not installed  
2R 2 alarm outputs Relay SPDT  
2T 2 alarm outputs Transistor

### 4. Terminal strip D supply voltage

0 230 V AC ± 10 % 50-60 Hz  
1 115 V AC ± 10 % 50-60 Hz  
4 24 V AC ± 10 % 50-60 Hz  
5 24 V DC ± 15 %

### 5. Options

00 without option

### 6. Unit (on the front panel)

7. **Additional text** (on the additional text field on the panelmeter  
max. 3 x 90 mm, HxW)  
Custom configuration on request