

# Setpoint adjuster SG 9648

Output industry standard signals 0/4 ... 20mA und 0/2...10V DC

## Features

- LED-Display 14.2mm red
- Display range  $\pm 9999(0)$  digit
- Indicating range and decimal point free programmable
- Set point adjustment with front buttons or external control signals
- Set point limit programmable
- Regulating time programmable
- Max. 2 outputs SPDT relay or transistor
- Isolated analog output  
0/4 ... 20mA and 0/2 ... 10V DC
- Front protection IP65



DIN 96x48mm

## General

The Set point adjuster SG9648 has been designed for generating adjustable set point value signals 0/4... 20mA and 0/2... 10V DC. Any display value can be assigned to the respective output signal. The floating time of the output signal (upward gradient of the desired value ramp) is programmable.

## Short information

Programming	Parameters are programmed via front-side membrane keypad.
Alarm outputs	Switching performance of the alarm output is programmable as minimum or maximum function.
Int. setpoint adjustment	The setpoint can be adjusted with front buttons. The adjustment is running dynamically, i.e. the regulating speed increases with operation time of the buttons.
Ext. setpoint adjustment	The setpoint is adjusted with external control contacts. Adjustment is running alternatively dynamic or linear. In case of linear adjustment the regulating speed is constant, i.e. the output signal changes linear. The full range regulating time is programmable from 1 to 100s.
Power-on-reset	Setpoint can be set to the last stored value or to a programmed reset value.
External reset	The setpoint will be set to a programmed reset value.
Analog output	Proportional to the display value an isolated analog output signal 0 ... 20mA / 0 ... 10V DC or 4 ... 20mA / 2 ... 10V DC will be generated. The output signal is limited to the range of the minimum and maximum value. Output changed automatically from current signal to voltage signal depending on burden.

## Technical data

### Power supply

Supply voltage	: 230V AC $\pm 10\%$ ; 115V AC $\pm 10\%$ ; 24V AC $\pm 10\%$ or 24V DC $\pm 15\%$
Power consumption	: 5VA,
Operating temperature	: -10 ... +55°C
Rated voltage	: 250V~ acc to VDE 0110 between input / output / supply voltage Degree of pollution 2, over voltage category III
Test voltage	: 4kV-, between input / output / supply voltage
CE - conformity	: EN55022, EN60555, IEC1000-4-3/4/5/11/13

### Input

Control input	: setpoint increasing and decreasing, reset; 0 / 24V DC Ri 6.3kOhm <4V low, > 8.5V high, hysteresis >2.5V, max. 35V DC
Switch contact supply	: 24V DC (pnp), Ri appr. 150Ω, max.50mA

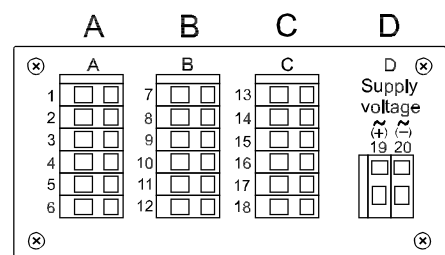
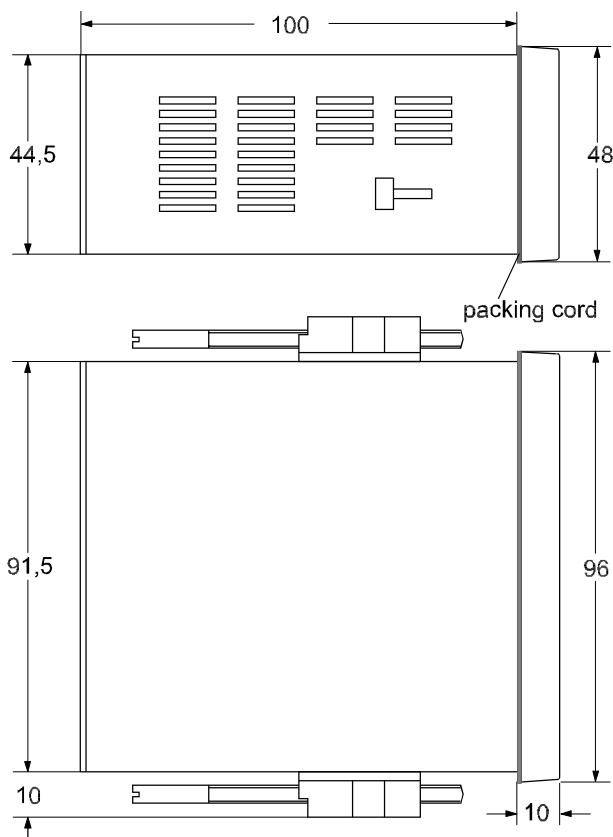
### Display

LED rot	: 14.2mm
Display range	: $\pm 9999(0)$ digit, with leading zero suppression.
Parameter display	: LED 2-digit red, 7mm (parameter - and output indicator)

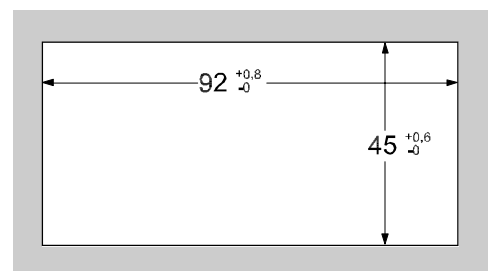
### Output

Relay	: SPDT <250V AC<250VA<2A, <300V DC<50W<2A
Transistor	: max. 35V AC/DC / 100mA, short circuit protected
Analog output	: 0/4 ... 20mA burden $\leq 500\Omega$ ; 0/2 ... 10V burden $>500\Omega$ , isolated Automatic output switching (burden dependent)
CAN-Bus	: CANopen, standard
Panel case	: DIN 96x48mm, material PA6-GF; UL94V-0
Dimensions	: Front 96x48mm, mounting depth 100mm,
Weight	: max. 390g
Electrical connection	: Clamp terminals, 2mm <sup>2</sup> single wire, 1mm <sup>2</sup> flexible wire, AWG14
Protection	: Front IP65, terminals IP20, fingersafe acc. German BGV A2 (old VBG4)

## Dimensions



Positions terminal strips

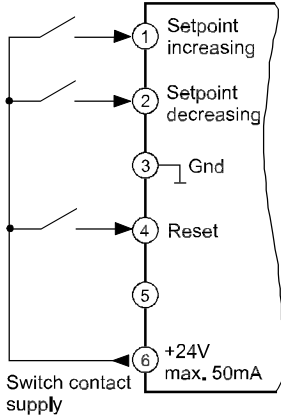


Panel cut-out  
acc. to DIN 43700-96x48mm

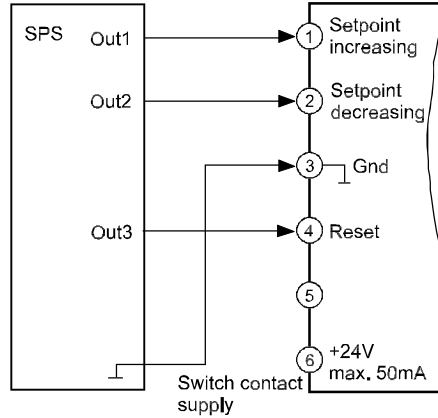
## Connection diagrams

### Terminal strip A (only installed in connection with external set point adjustment)

Actuation with voltage free contacts

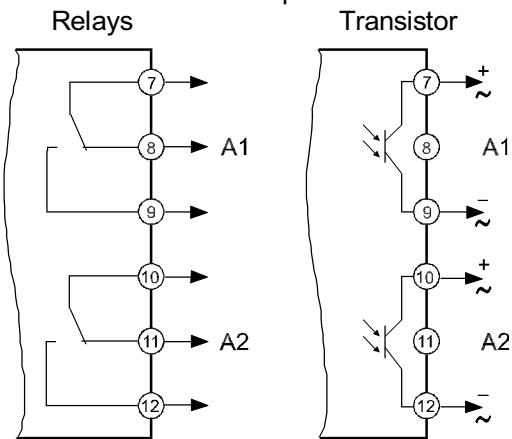


Actuation with ext. logic signals (e.g. SPS-outputs)



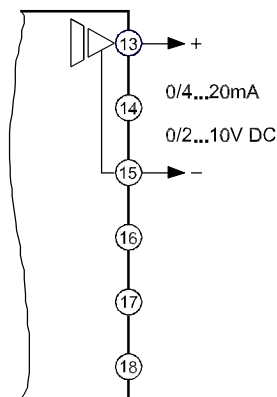
### Terminal strip B (varies with version)

2 alarm outputs

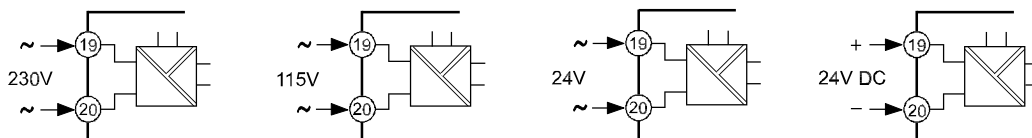


### Terminal strip C (standard)

Analog output  
AO






### 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. Selection within a parameter or entering data use button  and .

Button combinations:

-  +  one parameter back
-  +  setting parameter to zero or minimum value

After switching on the supply voltage the device is working in the **Working level**. Setpoint can be adjusted.

Activating the button  for more than 2 seconds, the program is jumping into the **Configuration level**. Now all the parameters defining the function of the device can be programmed.

After finishing the configuration or when longer than 2 minutes no button was pushed, the program jumps back to the working level. Leaving the configuration level is possible at any time when pushing the button  for 2 seconds.

### Error codes:

**PE** Reading this message in the parameter display a parameter failure has been occurred. Display flashes. When pushing one of the buttons the error code will be deleted and the counter works with factory settings. Configuration and function of the counter must be checked. If error occurs again, please ship the counter to factory for repair service.

**LoC** Programming lock active. See configuration page 7.

**oF** Overflow

### Start-up note:

Before the device can be used, it must be configured for the intended use.

⇒ see page 5

## Notes to representation




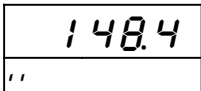



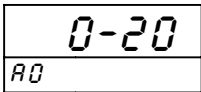



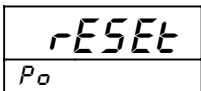



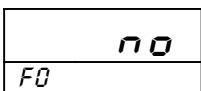



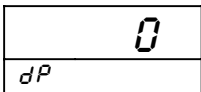



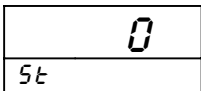



Parameter is only displayed when configured



Parameter is only displayed when feature is included (see order code)

Please 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 [ ].

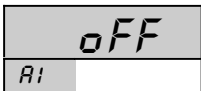



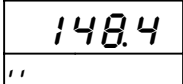
## Configuration

Button	Display	Description	[Factory settings]
 press 2 sec.		<b>Actual setpoint value</b> Setting with buttons  and  . Output indication (only if installed and activated)	
		<b>Configuration level</b> Analog output. <span style="float: right;">[0 - 20]</span> 0 - 20 mA (0 - 10 V DC) 4 - 20 mA (2 - 10 V DC). Changing from current to voltage output is load-dependent (≤ 500Ω = current output, > 500Ω = voltage output). Selection with buttons  and  .	
		Setpoint value after power-on. <span style="float: right;">[rESEt]</span> rESEt = loading reset value (rE) (⇒see page 6) rESetor = set point stored zero-voltage safe tESEt = only for factory settings Selection with buttons  and  .	
		Fixed zero 0, e.g. 3690+0. <span style="float: right;">[no]</span> no; YES Selection with buttons  and  .	
		Decimal point position. <span style="float: right;">[0.]</span> if FO = no: 0. 0 .00 if FO = YES: 0. 00 .000 Selection with buttons  and  .	
		Start value for indicating range (setpoint) <span style="float: right;">[0]</span> Setting possible from -9999(0) ... 9999(0) digit, with buttons  and  .	
			

continue  
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Button	Display	Description	[ Factory settings ]
↓		End value for indicating range (set point) Setting possible from -9999(0) ... 9999(0) digit, with buttons ▲ and ▼ . If $St > E_n$ , the output works with a decreasing characteristic.	[ 100 ]
↻			
↓		Setpoint limit on - off Selection with buttons ▲ and ▼ .	[ OFF ]
↻			
↓		Lower setpoint limit Setting possible from -9999(0) ... 9999(0) digit, with buttons ▲ and ▼ .	[ 0 ]
↻			
↓		Upper setpoint limit Setting possible from -9999(0) ... 9999(0) digit, with buttons ▲ and ▼ .	[ 100 ]
↻			
↓		Reset value, after power-on or reset more details see parameter $P_0$ page 5 Setting possible from -9999(0) ... 9999(0) digit, with buttons ▲ and ▼ .	[ 0 ]
↻			
↓		Control function $11n$ = the desired value can be changed with constant rate within the programmed regulating time (see following parameters). $dY_n$ = the desired value can be changed with exponential rising rate. Selection with buttons ▲ and ▼ .	[ 11n ]
↻			
↓		Regulating time for setpoint increasing ( $St \dots E_n$ ) Setting possible from 1 ... 100 s with buttons ▲ and ▼	[ 10 ]
↻			
↓		Regulating time for setpoint decreasing ( $E_n \dots St$ ) Setting possible from 1 ... 100 s with buttons ▲ and ▼	[ 10 ]

continue  
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Button	Display	Description	[ Factory settings ]
↓		Switching performance output A1 Function <i>oFF</i> ; <i>on L</i> (min); or <i>on J</i> (max). If activated the start value will be loaded for setpoint Selection with buttons ▲ and ▼.	[ <i>oFF</i> ]
↻			
↓		Setpoint output A1 Setting possible from <i>St</i> (start value) ... <i>En</i> (end value) with buttons ▲ and ▼.	[ 0 ]
↻			
↓		Hysteresis output A1 Setting possible from 1 ... 9999 digit, with buttons ▲ and ▼.	[ 10 ]
↻		<b>Note:</b> Switching performance and setpoint of the alarm outputs A1 to A2 are identical.	
↓		Program lockout <i>oFF</i> = no lock <i>ConF.</i> = configuration level locked <i>ALL</i> = configuration level and front buttons locked <i>RAL</i> = only for factory settings Selection with buttons ▲ and ▼.	[ <i>oFF</i> ]
↻			
		Return to the working level	

## Order code

SG9648 -  1. -  2. -  3. -  4. -  5. -  6. -  7.

### 1. Terminal strip A

- 0 not installed,  
setpoint adjustment with front buttons,  
regulating time dynamic,  
power-on-reset of the last stored value or a programmed reset value
- 1 like 0, but additional 2 control inputs for external adjustment,  
external reset to a programmed reset value,  
regulating time dynamic or linear programmable

### 2. Terminal strip B

- 00 not installed
- 2R 2 alarm outputs relay
- 2T 2 alarm outputs transistor

### 3. Terminal strip C (standard)

- AO Analog output 0/4 ... 20mA or 0/2 ... 10V DC, isolated

### 4. Terminal strip D supply voltage

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

### 5. Option

- 05 without Option

### 6. Unit (appears on the unit field)

### 7. Additional text (appears on the face plate in the field for additional text max. 3mm x 90mm HxW)

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