

# Standard-Signal-Panelmeter S 9648

Industry standard signals - integrated transmitter-supply - potentiometer

## Features

- LED-Display 14.2mm red
- Display range  $\pm 9999(0)$  Digit
- Indicating range and decimal point free programmable
- 2<sup>nd</sup> measuring input for difference, average value
- Max. 4 outputs, SPDT relays or transistor
- Isolated analog output 0/4 ... 20mA and 0/2 ... 10V DC
- Serial interface CANopen
- Front protection IP65



DIN 96x48mm

## General

The Standard-Signal-Panelmeter S9648 has been designed for measuring industry standard signals 0/4 ... 20mA or 0 ... 10V DC. The device offers an integrated transmitter supply for direct connection of 2- and 3-wire transmitters for e.g. pressure or temperature. The connection of potentiometers is possible as well. Indicating range and decimal point are free programmable in the range  $\pm 9999$  (standard) or  $\pm 99990$  (fixed zero selected).

## Short information

Programming	Parameters are programmed via front-side membrane keypad.
Alarm outputs	Switching performance for the alarm outputs is programmable as minimum or maximum function.
Digital filter	With activated digital filter last 16 measured values will be averaged continuously and the result shown in the display.
Analog output	Proportional to the input signal an isolated analog output signal 0 ... 20mA / 0 ... 10V DC or 4 ... 20mA / 2 ... 10V DC can be generated. Output changed automatically from current signal to voltage signal depending on burden.
2 <sup>nd</sup> measuring input*	The device can be offered with a 2 <sup>nd</sup> measuring input at the terminal strip B, for measuring difference-, average value, smaller or larger value. Please ask for further information.

\***Note:** no isolation between input 1 (terminal strip A) and 2<sup>nd</sup> measuring input

## Technical data

### Supply power

Supply voltage	: 230V AC $\pm 10\%$ ; 115V AC $\pm 10\%$ , 24V AC $\pm 10\%$ or 24 VDC $\pm 15\%$
Power consumption	: max. 3.5VA, with analog output 5VA, with CAN-Bus 6VA
Operating temperature	: -10 ... +55°C
Rated voltage	: 250V~ acc. VDE 0110 between input / output / supply voltage Degree of pollution 2, over-voltage categoric III
Test voltage	: 4kV-, between input / output / supply voltage
CE - conformity	: EN55022, EN60555, IEC1000-3/4/5/11/13

### Input

Current input	: 0/4 ... 20mA	Ri = 10 $\Omega$
Voltage input	: 0 ... 10V	Ri = >100k $\Omega$
Potentiometer	: 0 ... 1k $\Omega$ / 100k $\Omega$	
Accuracy	: < 0.1% $\pm 2$ Digit	
Temperature coefficient	: 0.004% / K	
Transmitter-supply	: U <sub>0</sub> appr. 24V, Ri appr. 150 $\Omega$ , max.50mA (25mA with 4 relay outputs)	

### Display

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

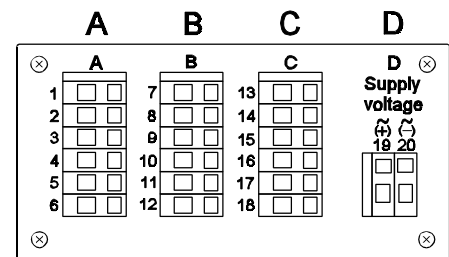
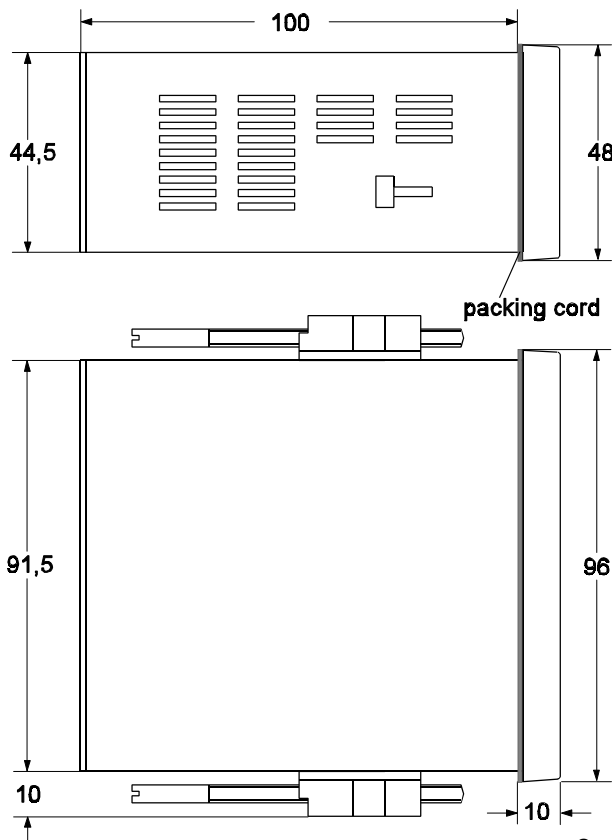
### Output

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 changing (burden dependent)
-Accuracy	: 0.1%; TK 0.01% / K
CAN-Bus	: CANopen, standard

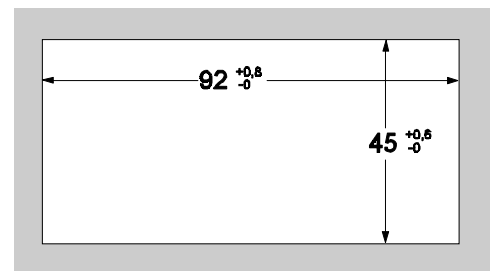
### Panel case

Dimensions	: DIN 96x48mm, material PA6-GF; UL94V-0
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



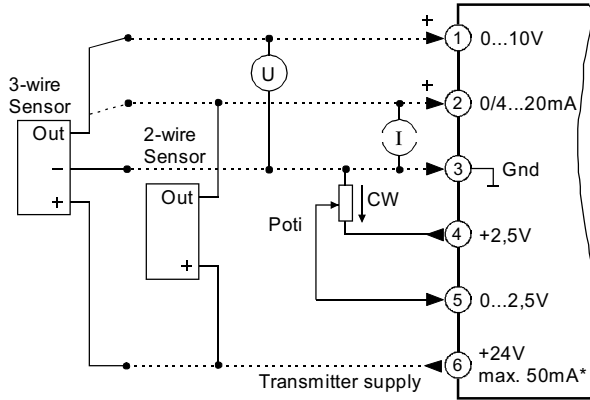
Position terminal strips



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

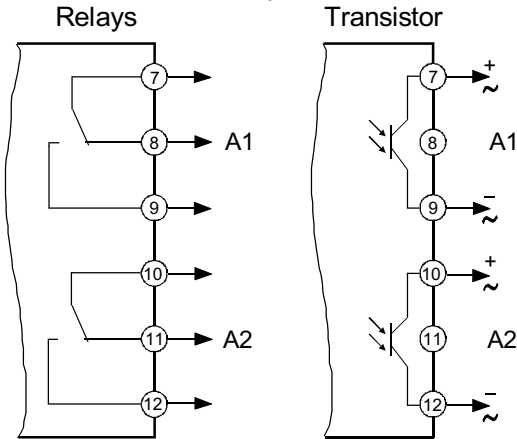
# Connection diagrams

## Terminal strip A Standard-signal input

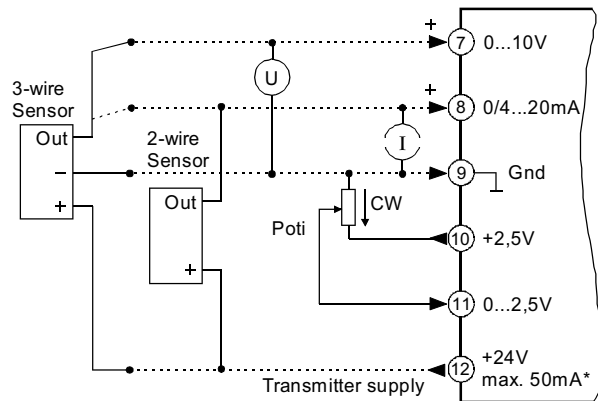


\*max. current total 50mA

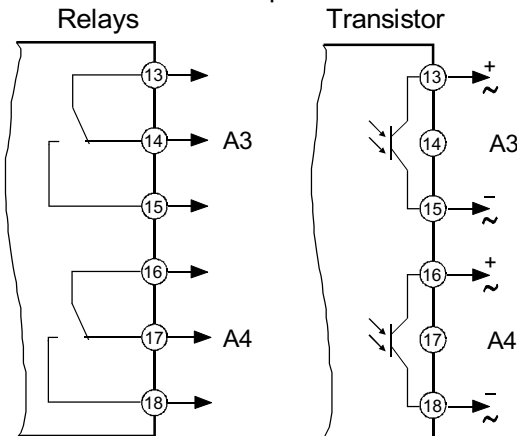
## Terminal strip B (varies with version) 2 alarm outputs



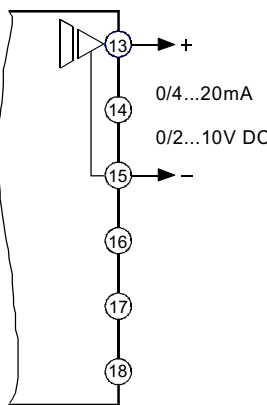
## 2<sup>nd</sup> Standard-signal input



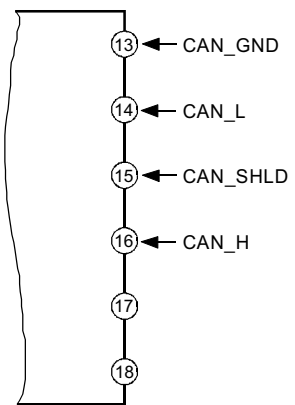
## Terminal strip C (varies with version) 2 alarm outputs



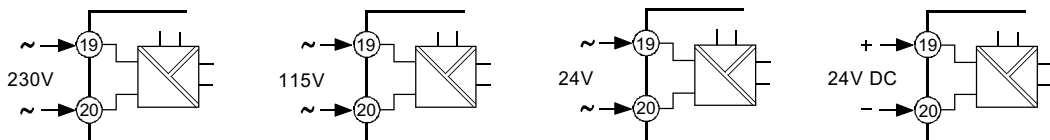
## Analog output AO



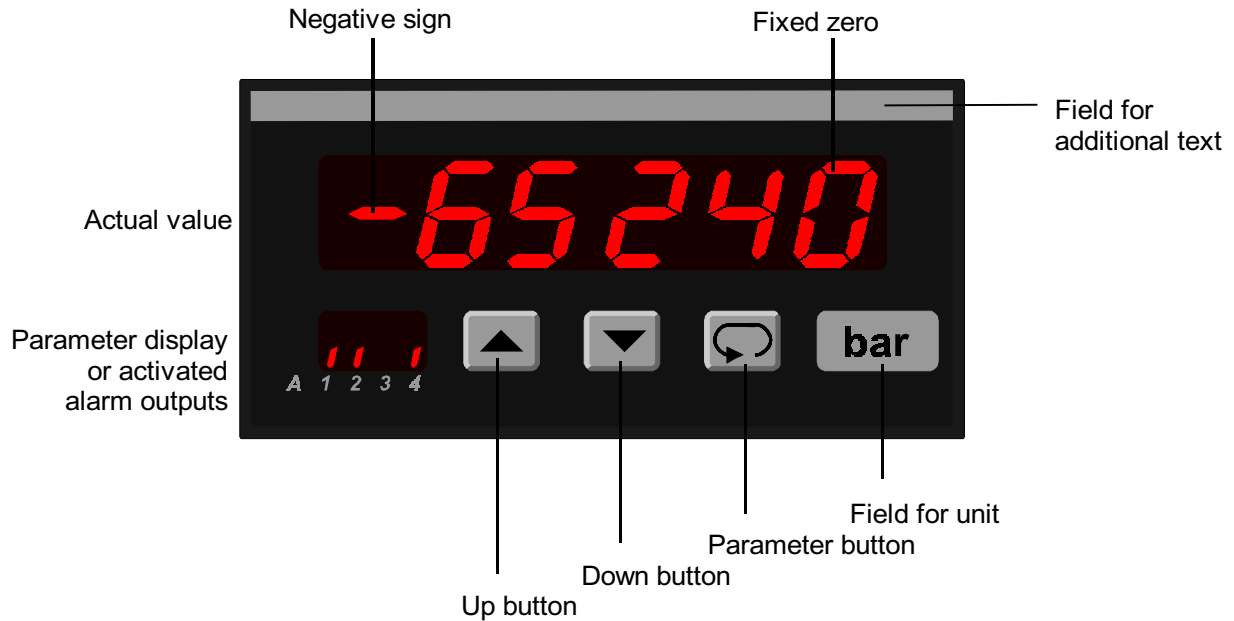
## Serial interface CAN-Bus






## Terminal strip D Supply voltage (varies with version)




## Controls and indicators




### Description

Operating of the device is arranged in 2 levels. The requested parameter can be called by  button. Selection within a parameter or entering data, use buttons  and . Parameters are stored zero-voltage safe in the EEPROM.


After switching on the supply voltage, the device initializes itself. The display shows the message *in i t*. After the initializing procedure the device is working in the **Working level**. Set points of the alarm outputs can be preselected if available.

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 panelmeter 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:

**Display flashes** If the input signal is more than 3% outside of the programmed measurement range the A/D- converter is over driven and the display flashes with appr. 1Hz

**Error!** EEPROM test. Reading this message, a program error has been occurred. When pushing the button  a copy of the EEPROM will be reloaded and the device will work with the factory settings. If this copy does not work, please ship the panelmeter to factory for repair service.


**Loc** Program lockout. See configuration page 7.


### Start-up note:

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

⇒ see page 6

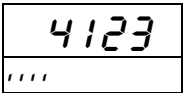

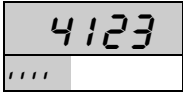



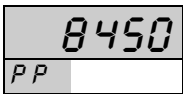



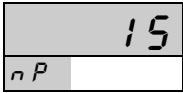



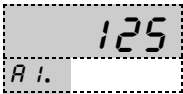



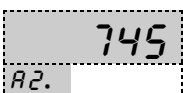



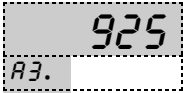



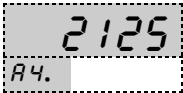


## Notes to representation

 Parameter is only displayed when configured


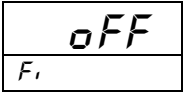



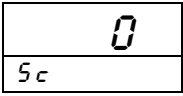



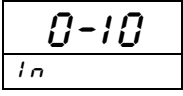



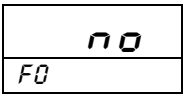



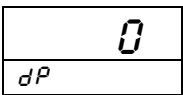



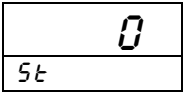



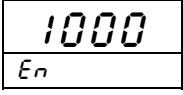



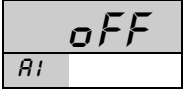



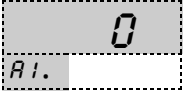


 Parameter is only displayed when feature is included (see order code)

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 [ ] .

## Working level

Button	Display	Description
		Actual value. Output indication (only if installed and activated).
		Display brightness (permanent changing possible) Setting possible in 9 steps with buttons  and  .
		Display peak reading. Reset with buttons  or  , or at every power off.
		Display valley reading. Reset with buttons  or  , or at every power off.
		Setpoint output A1. Setting possible from $S_t \dots E_n$ with buttons  and  . $S_t$ (start value) ... $E_n$ (end value)
		Setpoint output A2. Setting possible from $S_t \dots E_n$ with buttons  and  . $S_t$ (start value) ... $E_n$ (end value).
		Setpoint output A3. Setting possible from $S_t \dots E_n$ with buttons  and  . $S_t$ (start value) ... $E_n$ (end value).
		Setpoint output A4. Setting possible from $S_t \dots E_n$ with buttons  and  . $S_t$ (start value) ... $E_n$ (end value).

## Configuration level

Button	Display	Description	[ Factory settings ]
 press 2 seconds		Digital filter. <i>oFF, on</i> Averaging of the last 16 measured values continuously. Selection with buttons  and  .	[ <i>oFF</i> ],
 ↓		Indicating correction. Setting possible from $-99(0) \dots 99(0)$ digit with buttons  and  .	[ 0 ]
 ↓		Input signal. <i>0-10; 0-20; 4-20; Pot.</i> Selection with buttons  and  .	[ 0-10 ]
 ↓		Fixed zero 0, $3690 \pm 0$ . <i>no; YES</i> Selection with buttons  and  .	[ <i>no</i> ]
 ↓		Decimal point position. if <i>F0 = no</i> : 0. 0 .00 .000 if <i>F0 = YES</i> : 0. .00 .000 .0000 Selection with buttons  and  .	[ 0 ]
 ↓		Start value for indicating range and analog output. Setting possible from $-9999 \dots 9999$ digit with buttons  and  . In case of modification new configuration of the alarm outputs is necessary.	[ 0 ]
 ↓		End value for indicating range and analog output. Setting possible from $-9999 \dots 9999$ digit with buttons  and  . In case of modification new configuration of the alarm outputs is necessary. If $S1 > E1$ , output works with a decreasing characteristic.	[ 1000 ]
 ↓		Switching performance output A1. Function <i>oFF</i> ; <i>on</i> $\downarrow$ (min); or <i>on</i> $\uparrow$ (max). If activated the start value will be loaded for set point Selection with buttons  and  .	[ <i>oFF</i> ]
 ↓		Set point output A1. Setting possible from $S1$ (start value) ... $E1$ (end value) with buttons  and  .	[ 0 ]

continue  
page 7

Button	Display	Description	[ Factory settings ]
↓ ↺		Hysteresis A1. Setting possible from 1 ... 9999 (0) digit with buttons ▲ and ▼ . <b>Note:</b> Switching performance and setpoint of the alarm outputs A1 to A4 are identical.	[ 10 ]
↓ ↺		Analog output. 0 - 20 mA (0 - 10 V DC) or 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 ▼ .	[ 0 - 20 ]
↓ ↺		Analog output Start value (option 08) Setting possible from 5ε ... εn of the display range with buttons ▲ and ▼ .	[ 0 ]
↓ ↺		Analog output End value (option 08) Setting possible from 5ε ... εn of the display range with buttons ▲ and ▼ . <b>Note:</b> If the display range would be changed afterwards, the range of the analog output get the same values. Start- and end value of the analog output can be set anywhere in the display range. If RE > RS the output works with a decreasing characteristic.	[ 1000 ]
↓ ↺		Code for factory settings.	
↓ ↺		Program lockout. oFF = no lock CoNF. = configuration level locked ALL = all parameters locked Selection with buttons ▲ and ▼ .	[ oFF ]
		Return to the working level.	

Configuration CAN-Bus: Please ask for separate instruction manual

## Order code

S9648 -  1. -  2. -  3. -  4. -  5. -  6. -  7.

### 1. Terminal strip A

1 Input standard signals  
0/4 ... 20mA, 0 ... 10V DC and potentiometer  
integrated transmitter-supply 24V DC max. 50mA

### 2. Terminal strip B

00 not installed  
2R 2 alarm outputs relay  
2T 2 alarm outputs transistor  
S1\* 2<sup>nd</sup> input standard signals  
0/4 ... 20mA, 0 ... 10V DC and potentiometer  
integrated transmitter-supply 24V DC max. 50mA  
**\*Note:** no isolation to terminal strip A

### 3. Terminal strip C

00 not installed  
2R 2 alarm outputs relay  
2T 2 alarm outputs transistor  
AO Analog output 0/4 ... 20mA and 0/2 ... 10V DC, isolated  
CA CANopen standard

### 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

00 without option  
01 Min-and Max-value -hold  
02 Difference,- average value, smaller value, larger value  
07 Display brightness programmable  
08 Analog output separately programmable in the display range

### 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)