



Installation and operating manual

Digital indicator for standard signals

GIA 2448



WEEE-Reg.-Nr. DE 93889386



Senseca Germany GmbH

Tenter Weg 2-8 | 42897 Remscheid | GERMANY

Tel.: +49 2191 9672-0 | info@senseca.com | www.senseca.com

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1 General Note

Read this document carefully and get used to the operation of the device before you use it. Keep this document within easy reach near the device for consulting in case of doubt.

Mounting, start-up, operating, maintenance and removing from operation must be done by qualified, specially trained staff that have carefully read and understood this manual before starting any work.

The manufacturer will assume no liability or warranty in case of usage for other purpose than the intended one, ignoring this manual, operating by unqualified staff as well as unauthorized modifications to the device. The manufacturer is not liable for any costs or damages incurred at the user or third parties because of the usage or application of this device, in particular in case of improper use of the device, misuse or malfunction of the connection or of the device.

2 Safety

2.1 Intended Use

The GIA 2448 / GIA 2448 WE is a digital indicator module; only actuate it in the intended use.

2.2 Safety signs and symbols

Warnings are labelled in this document with the followings signs:



Caution! This symbol warns of imminent danger, death, serious injuries and significant damage to property at non-observance.



Attention! This symbol warns of possible dangers or dangerous situations which can provoke damage to the device or environment at non-observance.



Note! This symbol point out processes which can indirectly influence operation or provoke unforeseen reactions at non-observance.

2.3 Safety guidelines

Make it a rule to always observe the following points to exclude any risk whatsoever for the operator.

- a) In case of any obvious damage and/or functional problems disconnect device immediately
- b) Prior to opening it, disconnect device and supply voltage source. Make sure that all parts of the device are protected against direct touching when mounting the device and setting its connections.
- c) Please always adhere to the standard safety regulations for electric devices, power systems and light-current installations, and make sure that your national safety regulations (e.g. VDE 0100) are observed.
- d) If device is to be connected to other devices (e.g. via serial interface) the circuitry has to be designed most carefully. Internal connection in third party devices may result in not-permissible voltages.

1.  Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated under "Specification". If the device is transported from a cold to a warm environment condensation may cause in a failure of the function. In such a case make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.
2.  If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting. Operator safety may be a risk if:
 - there is visible damage to the device
 - the device is not working as specified
 - the device has been stored under unsuitable conditions for a longer time.
 In case of doubt, please return device to manufacturer for repair or maintenance.
3. When connecting the device to other devices the connection has to be designed most thoroughly as internal connections in third-party devices (e.g. connection GND with protective earth) may lead to undesired voltage potentials that can lead to malfunctions or destroying of the device and the connected devices.



This device must not be run with a defective or damaged power supply unit.
Danger to life due to electrical shock!

4.



Do not use these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury or material damage. Failure to comply with these instructions could result in death or serious injury and material damage.

Skilled personnel:

These are persons who are familiar with the installation, mounting, commissioning and the operation of the product and have acquired a qualification for their job:

- Training or instructions or qualification to switch on/off, isolate, ground and apply markings to circuits and devices/systems in accordance with the latest state of the art standards of safety technology.
- Training or instructions regarding the proper care and use of suitable safety equipment in accordance with the latest state of the art standards of safety technology.
- First aid training.

3 Scope of supply

The scope of supply includes:

- Digital introducer module GIA 2448 or GIA 2448 WE
- User's guide

Accessories: (small selection – for our complete accessories refer to our catalogue)

GNG220/2-12V	power supply (230VAC)	input: 230V AC; output: 2 x 12V DC stabilized, max. 30mA
GNG12/24V	power supply (12VDC)	input: 12V DC; output: 24V DC electr. isolated, max. 80mA
GNG24/24V	power supply (24VDC)	input: 24V DC; output: 24V DC electr. isolated, max. 80mA

4 Electric Connection

Electric connections for the GIA 2448 are located at the back of the device.

Connection is made via screw-type/plug-in terminals (max. terminal range 1,5mm²).

Make it a rule to always mount screw-type/plug-in terminals while they are still loose and connect only later. If terminals are mounted after connection there is a risk that soldering eyes may come loose. Please use suitable screw-driver and do not tighten screws by force.

Supply voltage: 12 V DC or 24 V DC
Terminal assignment: + Uv = supply voltage +
 GND = supply voltage –

Please make sure to check if supply voltage and voltage range set conform to each other.

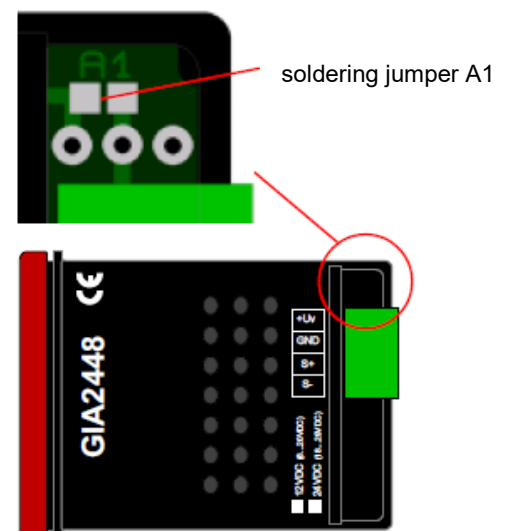
Use the soldering jumper next to the connection terminal to select supply voltage:

Jumper "A1" open: 24 V (18 - 29 V DC)
 Jumper "A1" closed: 12 V (8 - 20 V DC)

Signal connection: standard signals (0-200mV, 0-1V, 0-2V, 0-10V, 0-20V, 0-20mA or 4-20mA)

Terminal assignment: S+ = signal +
 S- = signal –

Please note: The terminal S- (signal –) and GND (supply voltage –) are connected within the device!



Both the connection and commissioning of the device must only be carried out by skilled personnel. In case of a wrong connection, the device may be destroyed - no warranty claims can be accepted!

5 Setting of the GIA2448

Below you will find a description as to how a GIA2448 can be adapted to its signal source.

5.1 Remove PC-board from housing:

To be able to reach the soldering jumpers on the bottom of the PC-board or the potentiometers the PC-board has to be taken out of its housing.

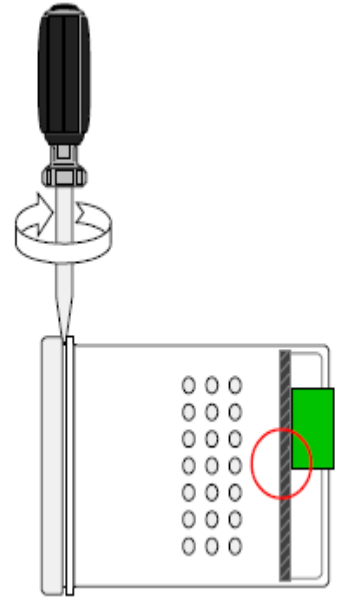
How to remove the front screen:

- Place screw driver in the gap between screen and housing.
- Separate front screen from housing by turning the screw driver carefully.

How to remove the back screen bolt:

- Carefully insert small screw driver between housing and back screen bolt.
- Use screw driver to push bolt backwards and slightly lift it till the bolt locking is visible.
- Pull back screen upwards and remove it.

Push PC-board out of its housing (do not forget to take off the screw-type/plug-in terminals prior to doing so).

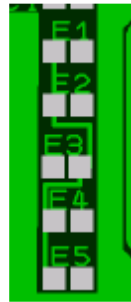


5.2 Selection of input signal:

Use soldering jumpers E1 to E5 to select the input signal required.

Please refer to the opposite table for information which soldering jumper needs to be set for the required input signal.

PLEASE NOTE ! Never set any other soldering jumpers but the ones required. All other soldering jumpers need to be open..

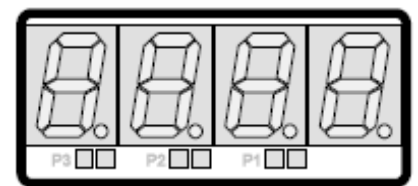


Input signal	Soldering jumpers to select				
	E1	E2	E3	E4	E5
0 ... 200mV	X	--	--	--	--
0 .. 1 V	--	X	--	--	--
0 ... 2 V	--	--	X	--	--
0 ... 10 V	--	--	--	X	--
0 ... 20 V	--	--	--	--	--
0 ... 20 mA	X	--	--	--	X
4 ... 20 mA	X	--	--	--	X

5.3 Selection of decimal point

One soldering jumper is located beneath each of the first 3 LEDs on the PC-board. To set the decimal point use the soldering jumper

- P3 – soldering jumper for position 1000 (display e.g. 1.234)
- P2 - soldering jumper for position 100 (display e.g. 12.34)
- P1 - soldering jumper for position 10 (display e.g. 123.4)



5.4 Display adjustment

To adjust the GIA 2448 a transducer corresponding to the input signal selected is required.

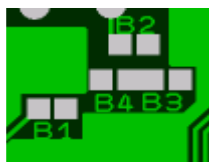
Please note: The accuracy of the adjustment and thus of your GIA 2448 is highly dependant on the transducer accuracy. To guarantee optimum adjustment results your transducer accuracy should be 0.05%, preferably better.

5.4.1 Preliminary Adjustment

Use soldering jumpers B1, B2 or B4 to roughly divide the display range.

5.4.1.1 Measuring range

To facilitate setting of the device its measuring range (difference between max. and min. display value) has been roughly divided into 2 areas. Please refer to the opposite table for the soldering jumper to be set.



measuring range	B2	B4
100 ... ~500 at all input signals	X	--
~500 ... ~750 at input signal: 0...? V, 0 ... 20 mA	X	--
~500 ... ~750 at input signal : 4-20mA und gesetzter B1	refer note	
~500 ... ~750 at input signal : 4-20mA und gesetzter B1	--	X
~750 ... ~ 3998 at all input signals	--	X

Note: Due to tolerances the jumper to be set cannot be established for the range 500 to 750. If your measuring range is within this area, please select the area next to your measuring range (e.g. for 600 select range 100 to 500 (jumper 2)). To set device proceed according to the description under 5.4.2. If setting is not working, set alternative jumper (for our example jumper 4) and repeat setting procedure.

5.4.1.2 Zero point displacement

A zero point displacement is possible for the range of +/- of the measuring range selected (display value for 0V, 0mA or 4 mA). The zero point displacement has also been divided into two areas.

- Set soldering jumper B1 for a positive displacement (display for 0V or 0mA exceeding 0).
- Do not set soldering jumper B1 (display for 0V or 0mA less than 0).

For 4-20mA the area assignment changes - p.r.t. table.

input signal	possible Zero point adjustment	B1
0 ... 200mV, 0 ... x V; 0 ... 20 mA	- measuring range span ... 0	--
	0 ... measuring range span	X
4 ... 20 mA	- meas. span 1/5* meas. span.	--
	1/5* meas. span. ... meas. span.	X

5.4.2 Adjustment

Below you will find 2 different procedures for the adjustment of the GIA2448:

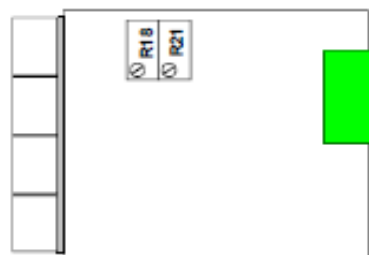
- Interactive adjustment: Advantage: simple, no calculation required
Disadvantage: slow as adjustment is carried out in several runs
- Adjustment with calculation: Advantage: adjustment in only one run.
Disadvantage: the values to be set need to be calculated

5.4.2.1 Interactive Adjustment

a) Zero adjustment:

- Use transducer to apply an input signal of 0V, 0mA or 4mA.
- Set display of GIA2448 to the value desired using the R21 potentiometer. (2nd potentiometer after the display)

If this value cannot be set, use R18 potentiometer.



b.) Adjustment of lead:

- Use transducer to apply an input signal of 200mV, 1V, 2V, 10V, 20V or 20mA.
- Set display to the value desired using the R18 (the potentiometer directly after the display)

Repeat points a.) and b.) till the display values for 0V, 0mA or 4mA and for 200mV, 1V, 2V, 10V, 20V or 20mA are correct. (The procedure should be completed after a max. of 10 runs.).

5.4.2.2 Adjustment with calculation:**a.) Zero point calculation:**

- Calculate input signal required for the display value 0:

Calculation for input signals: 0 - ? V or 20mA

$$\text{Input signal for display "0"} = - \frac{200\text{mV}, 1\text{V}, 2\text{V}, 10\text{V}, 20\text{V}, 20\text{mA}}{\text{span of measuring range}} * \text{display for 0V or 0mA}$$

Calculation for input signal: 4 - 20mA

$$\text{Input signal for display "0"} = - \frac{16\text{mA}}{\text{span of measuring range}} * \text{display 4mA} + 4\text{mA}$$

b.) Zero point adjustment:

- Use transducer to apply calculated value of input signal.
- Set the display of the GIA2448 to 0 using the R21 potentiometer (2nd potentiometer after the display).

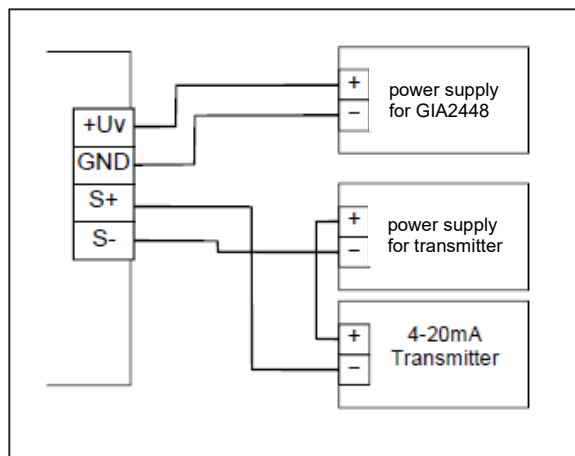
c.) Adjustment of lead:

- Use transducer to apply 200mV, 1V, 2V, 10V, 20V or 20mA.
- Set display to value desired using the R18 potentiometer (potentiometer directly after the display).

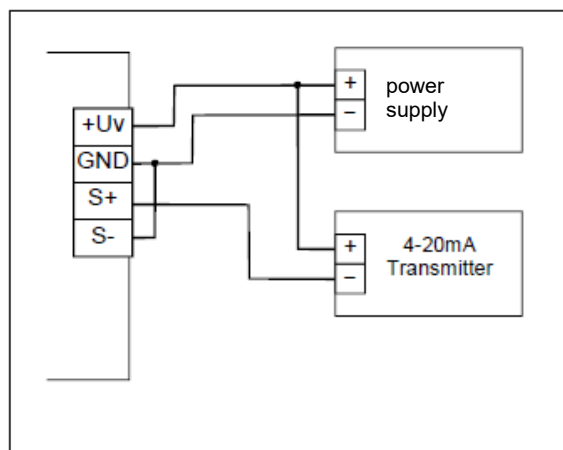
Check display values for 0V, 0mA or 4mA and for 200mV, 1V, 2V, 10V, 20V or 20mA once again.

6 Connection layouts for GIA2448

1. Connection of a 4 – 20 mA transducer with 2-wire system

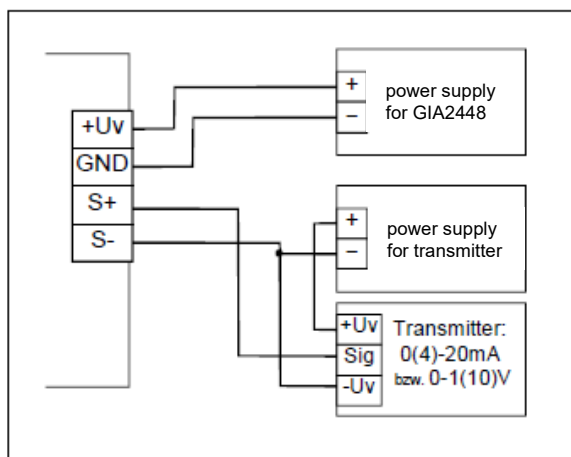


with electr. isolated power supply for GIA2448 and transmitter

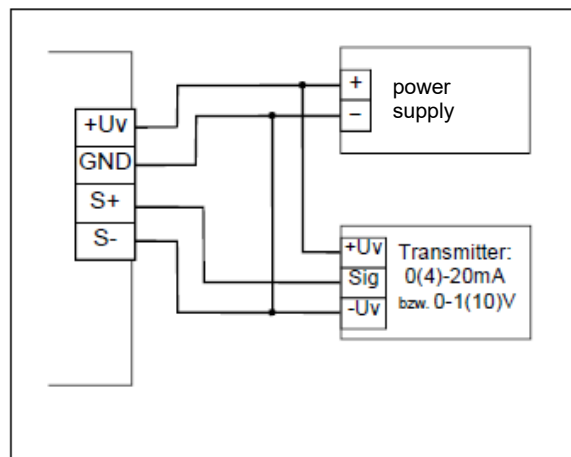


with common power supply for GIA2448 and transmitter

2. Connection of a 0(4) – 20 mA or 0 – 1 (10) V transducer with 3-wire system

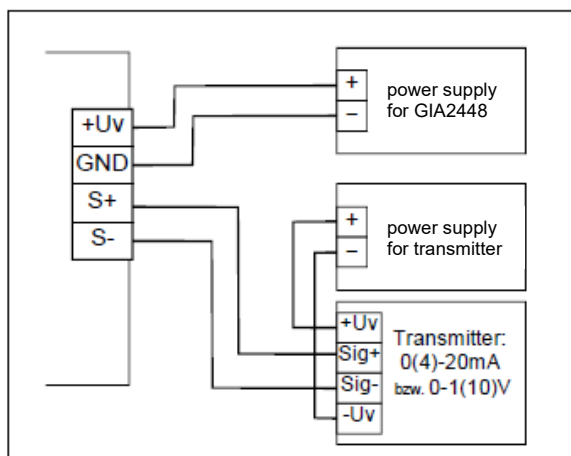


with electr. isolated power supply for GIA2448 and transmitter

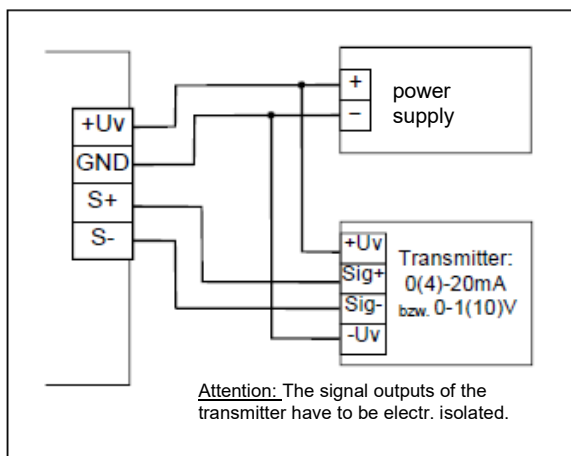


with common power supply for GIA2448 and transmitter

3. Connection of a 0 (4) – 20 mA or 0 – 1 (10) V transducer with 4-wire system



with electr. isolated power supply for GIA2448 and transmitter



Attention: The signal outputs of the transmitter have to be electr. isolated.

with common power supply for GIA2448 and transmitter

7 Specifications

Input signals:	GIA 2448:	0-200mV, 0-1V, 0-2V, 0-10V, 0-20V, 0-20mA, 4-20mA <i>to be selected via soldering jumper</i>
	GIA 2448 WE:	<i>present by manufacturer - refer to label</i>
Display range:	GIA 2448:	<i>to be set via soldering jumper and potentiometer</i>
	GIA 2448 WE:	<i>present by manufacturer - refer to label</i>
max. display range:		-1999 ... +1999 digits
Span of measuring range:		100 ... 3998 digits
Zero point offset:		max. +/- of measuring range set
Decimal point:		can be set at any position by means of soldering jumpers
Display:		3½-digit, red LED-display, 10 mm high
Scan rate:		approx. 3 measurements / sec
Accuracy:		±0.2% ±1digit (at nominal temperature).
Input resistance:		(at 0-x V) approx. 100 kOhm / V input signal range (e.g. for input signal 0-10V: approx. 1 MOhm)
Shunt resistance:		(at 0(4)-20mA) approx. 20 Ohm
Nominal temperature:		25 °C
Working conditions:		0 to 50 °C, 5 to 95 % RH (non-condensing)
Storage temperature:		-20 to 85°C
Voltage supply:		12 V DC (8 - 20 V DC) or 24 V DC (18 - 29 V DC) <i>to be selected via soldering jumper or present bay manufacturer (GIA2448WE)</i>
Power consumption:		max. 20 mA
Housing:		glass fibre reinforced Noryl, front screen PC.
Dimensions:		24 x 48 mm (H x B) (dimensions of front frame)
Mounting depth:		approx. 65 mm (incl. Screw-type/plug-in terminals)
Panel mounting:		by means of VA-elastic spike, allows panel thickness: from 1 to approx. 10 mm
Panel cut-out:		21.7 ^{+0.5} x 45 ^{+0.5} mm (H x B).
Connection terminals:		4-pin screw-type/plug-in terminals for wire dias ranging from 0.14 to 1.5 mm ²
EMC:		device is conform to EN 61326-1:2006 (device has been tested according to EN50081-1 and EN50082-2) Additional fault: <1%
IP rating:		front IP54.

8 Reshipment and Disposal

8.1 Reshipment



All devices returned to the manufacturer have to be free of any residual of measuring media and other hazardous substances. Measuring residuals at housing or sensor may be a risk for persons or environment



Use an adequate transport package for reshipment, especially for fully functional devices. Please make sure that the device is protected in the package by enough packing materials.

8.2 Disposal instructions



Batteries must not be disposed in the regular domestic waste but at the designated collecting points.

The device must not be disposed in the unsorted municipal waste! Send the device directly to us (sufficiently stamped), if it should be disposed. We will dispose the device appropriate and environmentally sound.

