

Connection and operating manual

GIA0420 and GIA0420 SP

Version: 1.0



Introduction

The GIA0420 is a microprocessor controlled display device for 4 to 20 mA standard signal that can be universally applied. It does not require its own auxiliary voltage source but can be supplied directly from the measuring current.

The measuring value is displayed on a 4-digit LCD display with the max. display area ranging from -1999 to +9999 digits. The GIA0420 is designed for the connection of any measuring transducers (with a 4 to 20 mA output). The operating range of the display device can be directly adjusted to the transmitter without any accessories being required by simply entering the maximum and minimum measuring range limits as well as the decimal point position.

Parameter and limit values are entered via three keys located at the back side of the device.

The front side of the display is splash-water and wipe resistant, thus conforming to the IP65 requirements. All programmable parameters of the GIA0420 are saved in an EEPROM; in case of a current failure they will remain there for at least 10 years. The GIA0420 is equipped with a self-diagnosis system continuously monitoring the essential parts of the device for their perfect functioning. Both the self-diagnosis and the monitoring system for the measuring sensor for "sensor damage" and "short circuit in sensor" or values exceeding or falling below permissible limits ensure maximum operational reliability of the device.

Prior to delivery the GIA0420 will be tested and completely calibrated.

However, prior to you starting your operation make sure to configure the device for your application. Please also refer to chapter "Configuration".

Safety advice

In order to exclude any risk whatsoever for the operator the following points have to be observed:

- Immediately switch off the device in case of visible damage or obvious malfunctions.
- Make it a rule to always disconnect voltage source and device before opening it up. The entire device and its connection have to be fingerproof after installation.
- Standard regulations for operation and safety for electrical, light and heavy current equipment have to be observed, with particular attention having to be paid to national safety regulations (e.g. VDE 0100).
- When connecting a GIA0420 to other devices (e.g. PC) the interconnection 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.



Attention: When running electric devices parts of these devices will always be highly energised. Unless the warnings are observed serious personal injuries or damage to property may result. Skilled personnel only should be allowed to work with this device. For trouble-free and safe operation of the device please ensure professional transport, storage, installation and connection as well as proper operation and maintenance.



Warning:

Do not use these product 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.

Electric connection

All connections for the GIA0420 are on the back side of the device.

Connection is made via screw-type/plug-in terminals.

Make it a rule to mount screw-type/plug-in terminals while they are still loose and to put them on only afterwards. When mounting terminals already put on there is a risk that soldering eyelets may be pulled out. Please use suitable screw driver and do not tighten screws by force.

Supply voltage: device takes power directly from measuring current

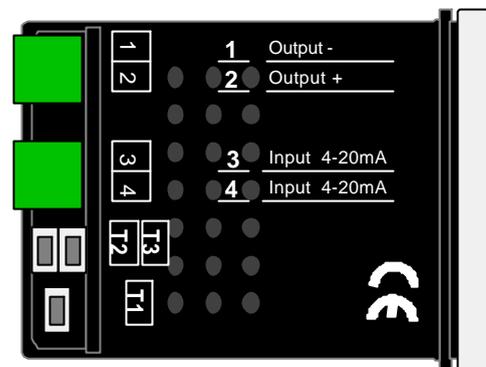
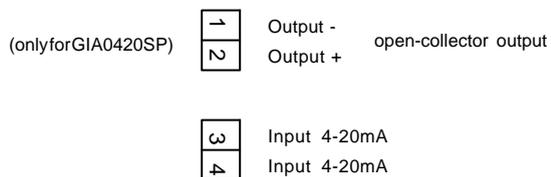
Switching output: (only for GIA0420SP) 1 open-collector-switching output, electrically isolated!

Switching capacity: (only for GIA0420SP) 3 mA, 24V DC

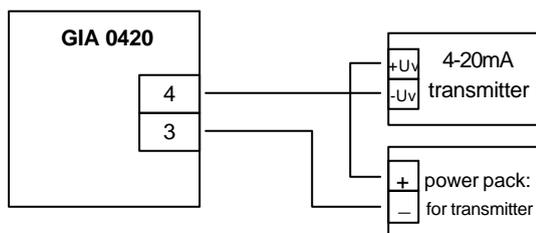
Electric connection and commissioning of the device must be carried out by trained and skilled personnel.

*Wrong connection may lead to the destruction of the display device, in which case we cannot assume any warranty. **!! Mind the maximum input current rating of 40mA under any circumstances !!***

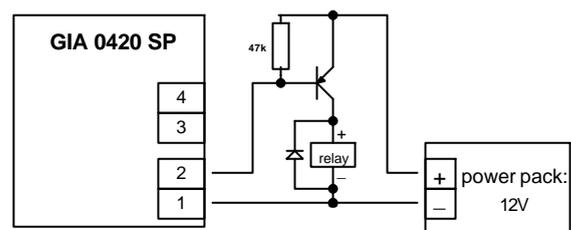
Terminal assignment:



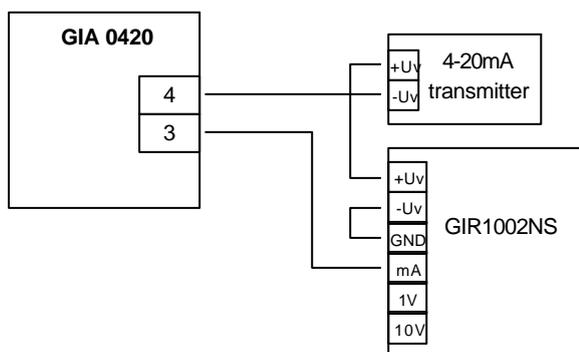
Examples for terminal assignments:



GIA0420 used as transmitter display



Connection of a relay to the switching output of a GIA0420SP



Connection of a GIA0420 used as additional on-site display unit in a control circuit

Technical Specification

Input signal:	4 ... 20 mA (2-wire)
max. allowed input current:	40 mA
Reverse voltage protection:	polarized installation
Voltage load:	approx. 3 V
Display:	10 mm high LCD-display
Display range:	starting and end value freely selectable
Maximum display value:	9999 digits
Minimum display value:	-1999 digits
Decimal point:	any position
Measuring accuracy:	0.2% ± 1 digit
Temperature drift:	100 ppm / °C
Measuring interval:	approx. 5 measurements / sec.
Filter:	3 stages can be switched on
Switching output: (only for GIA0420SP)	switching output (open collector), electrically isolated max. switching current: >3 mA switching voltage: max. 24 V DC
Switching performance: (only for GIA0420SP)	min-/max-alarm (alarm points freely selectable) <i>Alarm: open collector is open</i> <i>no Alarm: open collector is closed.</i>
Nominal temperature:	25°C
Ambient temperature:	0 to 50°C
Relative atmospheric humidity:	0 to 80% (non condensing)
Electromagnetic compatibility:	In accordance with EN61326 +A1 +A2 for unrestricted use in housing and industrial areas
additional error:	< 1%
Housing:	glass fiber reinforced Noryl. Front screen made of polycarbonat. 24 x 48 x approx. 65 mm (H x W x D) 21.7 ^{+0.5} x 45 ^{+0.5} mm (H x W)
Control panel cutout:	21.7 ^{+0.5} x 45 ^{+0.5} mm (H x W)
Connecting terminals:	screw-type/plug-in terminals max. terminal area: 1.5 mm ² .
IP rating:	front side IP54 (IP65 by means of optional O-rings)

Fault codes

In case of unacceptable conditions in the system a fault code will be displayed.

Fault codes have been defined as follows:

FE 1: Measuring range has been exceeded

This fault code indicates that the measuring range of the A/D converter has been exceeded.

Potential fault cause: transmitter damaged
short-circuit in transmitter connection

Remedies: FE 1 will be reset as soon as the measuring values are back within their permissible range. Please check your transmitter and transmitter connecting cables.

FE 2: Measuring values have fallen below permissible range

This fault code indicates that the measuring values of the A/D converter have fallen below the permissible range.

Potential fault cause: transmitter damaged
transmitter connection interrupted

Remedies: FE 2 will be reset as soon as the measuring values are back within their permissible range. Please check your transmitter and transmitter connecting cables.

FE 6: New Startup

This error message signals that the instrument is currently performing the startup sequence.

possible cause: Input current too low

Remedies: FE6 will be reset as soon as the instrument has finished its startup sequence. Check the loop current.

Configuration

Please note: measuring current should be at least 4 mA during configuration!

1. Press button 1, "dP" (decimal point) will be displayed.
Select decimal point position desired using buttons 2 and 3.
Acknowledge decimal point position by pressing button 1. "dP" will be displayed again.
2. Press button 1 once again, "An 4" (display for 4mA) will be displayed.
Use buttons 2 and 3 to set value to be displayed on the GIA0420 for an input signal of 4mA.
Buttons 2 and 3 are equipped with a scrolling function, i.e. the value will be increased respectively decreased by 1 digit when button 2 respectively button 3 is pressed briefly (no more than 1 s). When pressing these buttons for a longer time (over 1 s) the values will start „scrolling“ upwards respectively downwards with the scrolling speed being increased after approx. 6s.
Acknowledge value displayed by pressing button 1. "An 4" will be displayed again.
3. Switch over to the next parameter by pressing button 1 once again. "An20" will be displayed (display for 20mA).
Use buttons 2 and 3 to set value to be displayed on the GIA0420 for an input signal of 20mA.
Acknowledge value displayed by pressing button 1. "An20" will be displayed again.
4. Press button 1 once again. "LI" (limit) will be displayed.
Select measuring range limits desired using buttons 2 and 3.
0 = Values exceeding/falling below limits are acceptable. (FE1, FE2 displayed for hardware limits)
1 = Values exceeding/falling below limits are not acceptable. (FE1, FE2 displayed for area limits)
Acknowledge selection made by pressing button 1. "LI" will be displayed again.
5. Press button 1 once again. "FILt" (filter) will be displayed.
Select input filter 0, 1, 2 or 3 desired using buttons 2 and 3.
0 = no filter
1 = filter 1 active
2 = filter 2 active
3 = filter 1 and filter 2 active
***Filter 1:** prevents "jumping" of the last figure, a phenomenon often found with digital displays and controllers. Make sure to always activate filter 2 if the display range exceeds 2000 digits. Additional display delay: approx. 1s*
***Filter 2:** for filtering short pikes occurring when relays and contactors are switched. Make sure to always activate filter 1 if high loads are switched in the vicinity of the GIA0420, wires or sensor or if large pikes are to be expected. Additional display delay: approx. 0.5s*
Acknowledge selection made by pressing button 1. "FILt" will be displayed again.

The adjustment of the GIA0420 to the transducer is now completed. Do not forget to set alarm limits and alarm delays if you operate a GIA0420SP (with switching output). This is not necessary for GIA0420 (without switching output). The GIA0420 can be immediately switched over to display the current measuring value by pressing button 1.

6. Press button 1. "AL.HI" (max. alarm limit) will be displayed.
Use buttons 2 and 3 to set max. alarm limit.
Acknowledge alarm limit set by pressing button 1. "AL.HI" will be displayed again.
7. Press button 1 once again. "AL.Lo" (min. alarm limit) will be displayed.
Use buttons 2 and 3 to set min. alarm limit.
Acknowledge alarm limit set by pressing button 1. "AL.Lo" will be displayed again.
8. Press button 1 once again. "dELA" (alarm delay) will be displayed.
Use buttons 2 and 3 to set alarm delay.
The value displayed corresponds to the alarm delay in minutes.
Acknowledge alarm delay set by pressing button 1. "dELA" will be displayed again.

Configuration of the GIA0420SP has now been completed. Press button 1 to switch over to the display of the current measuring value.