

# Connection and operating manual

## GIA 0420 WK - EX



Version: 1.0



## Introduction

The GIA0420WK 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 GIA0420WK 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 which are accessible after removal of the cover.

All programmable parameters of the GIA0420WK are saved in an EEPROM; in case of a current failure they will remain there for at least 10 years. The GIA0420WK 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" and/or values exceeding or falling below permissible limits ensure maximum operational reliability of the device.

Prior to delivery the GIA0420WK 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).
- Consider the contents of the EC-Type-Examination Certificate and the regulations referring the use of electrical equipment for hazardous areas (e.g. VDE 0165).
- 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.
- Any changes or repair of the device is not allowed.  
Please return device to manufacturer for repair or maintenance.



**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

Connection: 2-wire cable.

**Supply voltage:** device takes power directly from measuring current

*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:

The connectio have no polarity



# Technical Specification

<b>Input signal:</b>	4 ... 20 mA (2-wire)
<b>max. allowed input current:</b>	40 mA
<b>Reverse voltage protection:</b>	polarized installation
<b>Voltage load:</b>	approx. 3 V
<b>Display:</b>	10 mm high LCD-display
<b>Display range:</b>	starting and end value freely selectable
<b>Maximum display value:</b>	9999 digits
<b>Minimum display value:</b>	-1999 digits
<b>Decimal point:</b>	any position
<b>Measuring accuracy:</b>	0.2% ± 1 digit
<b>Temperature drift:</b>	100 ppm / °C
<b>Measuring interval:</b>	approx. 5 measurements / sec.
<b>Filter:</b>	3 stages can be switched on
<b>Nominal temperature:</b>	25°C
<b>Ambient temperature:</b>	0 to 50°C
<b>Relative atmospheric humidity:</b>	0 to 80% (non condensing)
<b>Electromagnetic compatibility:</b>	In accordance with EN61326
additional error:	< 1% (within the range of 140 - 170MHz: < 2.5%)
<b>Ex protection:</b>	 II 2 G EEx ib IIC T4 according to EC-Type-Examination Certificate: ZELM03 ATEX 0135
<b>Housing:</b>	ABS. Front screen made of polycarbonat. 48.5 x 48.5 x 35.5 mm (L x W x D)
<b>Connection:</b>	2-wire connection cable, length approx. 2 m, no polarity
<b>IP rating:</b>	front side IP65

## 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  
GIA0420WK not/incorrectly configured

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  
GIA0420WK not/incorrectly configured

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

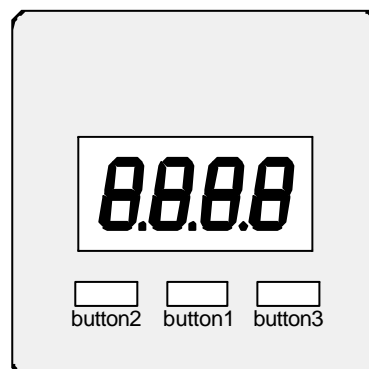
Remedies: FE6 will be reset as soon as the instrument has finished its startup sequence. Check the loop current.

# 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 GIA0420WK 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 GIA0420WK 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. For pressure measuring transducers always enter "LI 0", for relative humidity, pH and similar measuring units always enter "LI 1".
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 GIA0420WK, 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 GIA0420WK to the transmitter is now completed. The GIA0420WK can be immediately switched over to display the current measuring value by pressing button 1.





Prüf- und Zertifizierungsstelle  
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## (1) EC-TYPE-EXAMINATION CERTIFICATE

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC
- (3) EC-TYPE-EXAMINATION CERTIFICATE Number:  
**ZELM 03 ATEX 0135**
- (4) Equipment: **Display device types  
GIA 0420 - EX, GIA 0420 VO - EX and GIA 0420 WK - EX**
- (5) Manufacturer: **GREISINGER electronic GmbH**
- (6) Address: **Hans-Sachs-Straße 26, D-93128 Regenstaurf**
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
- (9) The examination and test results are recorded in the confidential report ZELM Ex 0160315177
- (10) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 50 014; 1997+A1+A2 EN 50020; 1994**
- (11) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.
- (12) This EC-type-examination Certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Certificate.
- (13) The marking of the equipment shall include the following:



Braunschweig, Mai 05, 2003

Zertifizierungsstelle ZELM Ex  
Adolf Gruber

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EC-type-examination Certificates without signature and stamp are not valid. The certificates may only be circulated without alteration. Corrections or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. This English version is based on the German text. In the case of dispute, the German text shall prevail.

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## (13) SCHEDULE

### (14) EC-TYPE-EXAMINATION CERTIFICATE ZELM 03 ATEX 0135

- (15) Description of equipment  
The display device serves as a microprocessor controlled device for display of measuring values in standard 4 to 20 mA current loops.  
The permissible ambient temperature range is 0 °C to + 50 °C.

#### Electrical data

Input circuit:  
type of protection Intrinsic Safety EEx ib IIC  
only for connection to a certified intrinsically safe circuit  
maximum values:  
 $U_i = 28 \text{ V}$   
 $I_i = 100 \text{ mA}$   
 $P_i = 800 \text{ mW}$

maximum effective internal capacitance  $C_i = 22 \text{ nF}$

The maximum effective internal inductance of the Display device types GIA 0420 VO - EX and GIA 0420 WK - EX are negligibly small.

The maximum effective internal inductance of the Display device type GIA 0420 - EX results to  
 $L_i = 220 \text{ µH}$

- (16) Report No.  
ZELM Ex 0160315177

- (17) Special conditions for safe use  
not applicable

- (18) Essential Health and Safety Requirements  
met by standards



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## EC – Declaration of Conformity

**GREISINGER electronic GmbH, Hans-Sachs-Straße 26, D-93128 Regenstauf**

declares in sole responsibility that the products

### **GIA 0420 VO - EX, GIA 0420 WK - EX**

are conform with the prescription of the following European directives

EMC Directives: 89/336/EWG, 92/31/EWG, 93/68/EWG

LV Directives : 73/23/EWG, 93/68/EWG

Ex Directive : 94/9/EC

The conformity are verified under observance of following standards or standard documents:

EMC: EN 61326 +A1 +A2

Ex: EN 50 014 : 1987 +A1 +A2

EN 50 020 : 1994

Regenstauf  
Place

2003-04-08  
Date

  
Managing Director



**GREISINGER electronic GmbH**  
Hans-Sachs-Straße 26, D-93128 Regenstauf