



GfG Instrumentation
Worldwide Supplier of Gas Detection Solutions

Key-Operated Switch

GMA 41 / GMA 44 SW

Operation Manual

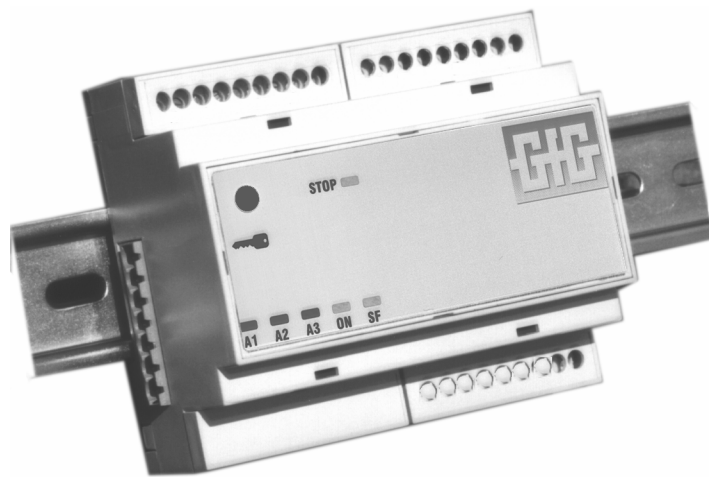


Table of contents

	Page
Introduction	4
Key function	4
Distinction of GMA 41/44 SW models	4
Relays.....	5
P.C. boards of GMA 41/44 SW	7
Terminal Diagram GMA 41/44 SW.....	8
Trouble shooting	9
Technical data	9

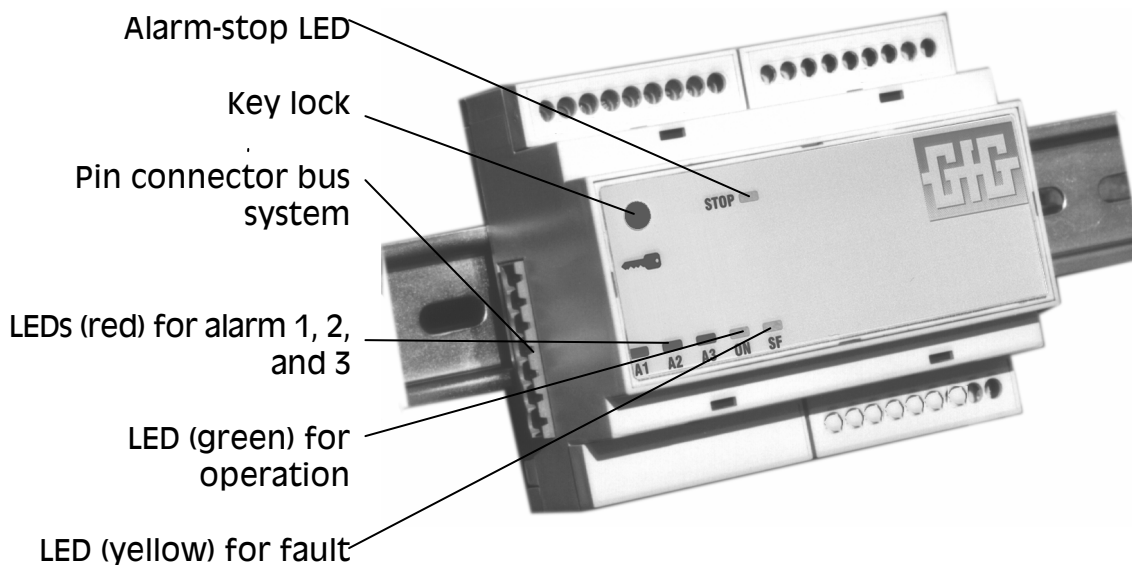
Introduction

The key-operated switch GMA 41/44 SW serves as **collective alarm** for gas monitors, which consists of any quantity of GMA 41 B, GMA 41 ECB, GMA 44 B, or GMA 44 ECB. The gas monitors and the key-operated switch have to be connected by means of the bus system. Plug the key in to activate the key-operated switch. Now any **new** alarm to connected alarm devices or signal lines is suppressed. This may be useful for service and maintenance.

Key function

The key-operated switch provides 5 voltage-free relay contacts. These relays can be used to control external buzzers, lamps, or telephone lines in case of alarm or system fault. When the key is plugged in, the alarm-stop relay is activated and the stop LED flashes. *In the standard configuration (non-deleting alarms)*, already reported alarms remain valid. New alarm signals, however, will be suppressed and the alarm relays (relays 1, 2, and 3) will not be activated in case of a new alarm. The GMA will **not** give a warning. This is particularly important during service and maintenance, e.g. when the sensitivity calibration of the connected transmitters is to be checked.

The *alternative configuration (deleting alarms)* allows to de-activate even an already reported alarm.



Distinction of GMA 41/44 SW models

Key-operated switch	Model	Alarms	Built-in 230V mains unit	Supply voltage	Suitable for GMA 41 and 44 models	
GMA 41/44 SW 24V	Standard	Non-deleting	No	24V DC	41 B	44 B
GMA 41/44 SW 24V	Alternative	Deleting	No	24V DC	41 B	44 B
GMA 41/44 SW 230V	Standard	Non-deleting	Yes	230V AC	41 ECB	44 ECB
GMA 41/44 SW 230V	Alternative	Deleting	Yes	230V AC	41 ECB	44 ECB

The voltage supply of the key-operated switch GMA 41/44 SW 24V is specially designed for the operation with several GMA 41 ECB and 44 ECB.

Relays

The key-operated switch GMA 41/44 SW provides 5 relays:

3 alarm relays for controlling external alarm devices

1 fault relay for failure report

1 alarm-stop relay as a signal, that the key-operated switch is activated and new alarms are suppressed

Alarm report - alarm 1, alarm 2, and alarm 3

- The relays are activated, if the relevant alarm threshold at one of the connected gas monitors is exceeded.
- Alarm reset is done at the relevant gas monitor.
- The red LED "ALARM" is lit, if the alarm relay is activated.
- For the switching behavior of the alarm relays after plugging the electronic key in please refer to the scheme below.

Fault

- The relay is activated, if the key-operated switch is faulty.
- The relay is activated, if one of the connected gas monitors is faulty.

Alarm-stop

- The relay is activated, if the key is plugged in.
- Depending on the configuration, already existing alarms will be reset or remain valid. New alarm signals will be suppressed.
- The LED "**STOP**" flashes, when the alarm-stop relay is activated.

The "ALARM-STOP" relay can be used e.g. to activate a warning panel reading "system out of order".

The switching behavior of the relays is the same as for alarm or fault signals. Every relay can be operated as NC or NO contact in closed or open circuit systems. For the switching functions as NC and NO relays you will find contact clamps. The relay operation as closed or open circuit is set by means of the gravity hook on the LED board (see "p.c. boards of GMA 41/44SW"). The alarm relays and the alarm stop relay are operated as open circuit system, the fault relay is a closed circuit.

In the standard setting and without the key being plugged in, the switching functions of the relays are as follows:

Relay for:	The relay switches:							
	In detection mode (no gas)	During gas alarm		After gas alarm		In case of mains failure	In case of failure	In case of gas alarm and failure
		Not reset	Reset	Not reset	Reset			
Alarm 1								
Alarm 2								
Alarm 3								
Alarm-stop								
Fault								

For the switching functions with the key plugged in please refer to the charts below. We must distinguish between two status before plugging the key in: normal detection mode (no alarm) and already activated alarm.

1. Detection mode (no alarm)

When the key is turned, new alarms are suppressed.

Before turning | After turning

Relay for:	Detection mode (no gas)	Detection mode (no gas)	Alarm	Mains failure	Fault
Alarm 1					
Alarm 2					
Alarm 3					
Alarm-stop					
Fault					

2. Alarm

When an alarm is already activated before the key is turned, the switching behavior differs according to the selected model.

With the **standard model (non-deleting alarms)** the already present alarms remain valid. New alarm signals are suppressed.

Before turning | After turning

Relay for:	Alarm	Alarm	Mains failure	Alarm and fault
Alarm 1				
Alarm 2				
Alarm 3				
Alarm-stop				
Fault				

With the **alternative model (deleting alarms)** the present alarms are reset, and new alarm signals are suppressed as well.

	Before turning	After turning		
Relay for:	Alarm	Alarm	Mains failure	Alarm and fault
Alarm 1				
Alarm 2				
Alarm 3				
Alarm-stop				
Fault				



It is essential to take note of the switching behavior of the relays when connecting external devices.

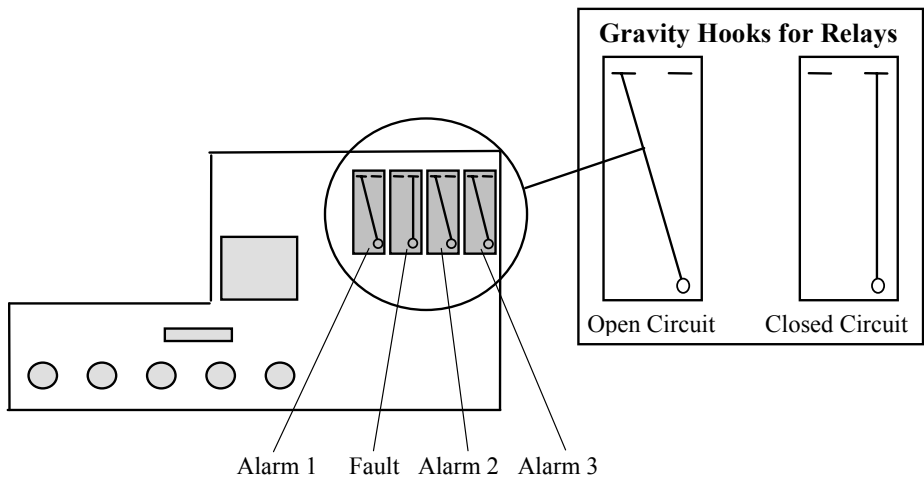
For special settings of the relay switching functions please contact your GfG service.

P.C. boards of GMA 41/44 SW

Before an expert changes any settings on the p.c. boards of the key-operated switch, he must turn off the operational voltage.

LED card

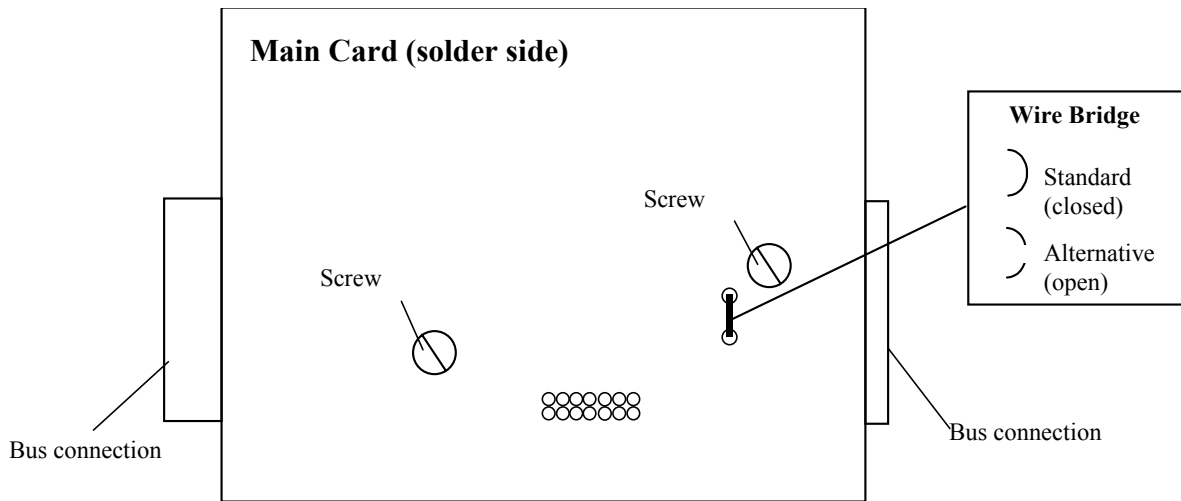
The four gravity hooks on the LED card define whether the relays are operated in open or closed circuit. Open the front cover to change the settings on the LED card.



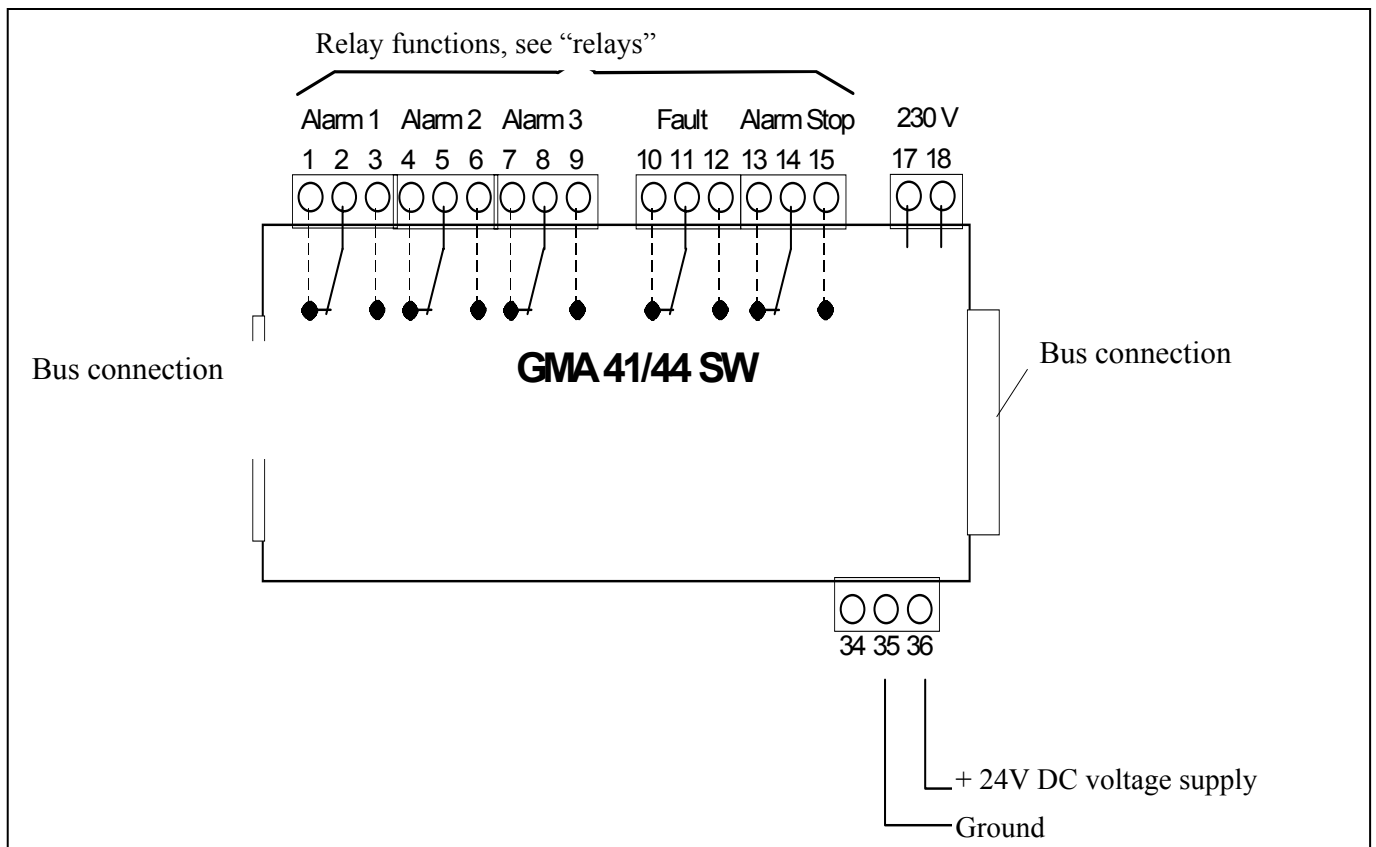
The above picture shows the standard setting: operation of alarm relays in open circuit and operation of the fault relay in closed circuit.

Reverse side of the main card

Open the back cover of the GMA 41/44 SW to reach the reverse side of the main card. A wire bridge fixes the setting "standard" or "alternative". The bridge is closed for the standard setting *alarms non-deleting*, and it is open for the alternative setting *alarms deleting*.



Terminal diagram GMA 41/44 SW



Trouble shooting

Failure	Cause	Solution
No LEDs lit	Operational voltage interrupted	Connect operational voltage or check battery back-up

Technical data

GMA 41/44 SW	
Type:	Key-operated switch for snap-on mounting to DIN rail
Dimensions:	106 x 90 x 58 mm (WxHxD)
Current supply	
Operational voltage:	<i>GMA 41/44 SW 24V</i> 24V DC <i>GMA 41/44 SW 230V</i> 230V / 50Hz or 115V / 60 Hz or 24V DC
Current consumption:	Maximum 100 mA at 24 V DC Maximum 2.6 W at 230V and 115 V
Primary fuse:	<i>GMA 41/44 SW 230V</i> T 0.08 A
Secondary fuse:	<i>GMA 41/44 SW 230V</i> T 0.50 A <i>GMA 41/44 SW 24V</i> T 0.50 A
Climate conditions	
for operation:	-10 to +55 °C, 0 to 99 % r.h., 700 to 1,300 hPa
Recommended storage conditions for GMA 41/44 SW, spares:	0 to 30 °C, 20 to 80 % r.h.
Output	
Relays:	Maximum switch voltage 250V AC 50/60 Hz or 250V DC Maximum switch current 4 A AC/DC Maximum switch performance 1,000 VA AC or depending on voltage 50 .. 200 W DC Relay outputs and mains connection are operation insulated
DIN Rail snap-on mounting:	DIN EN 50022
Safety	
Protection:	DIN 40050 - IP -20
Protective separation:	By means of safety transformer <i>GMA 41/44 SW 230V</i> Type: BV EI 306 2064 2.6VA PRI 230V / SEC 18 V 50 - 60Hz
Protective insulation:	As per EN 61010 up to over voltage category III and soiling degree 2



GfG Instrumentation

1194 Oak Valley Drive, Suite 20

Ann Arbor, Michigan 48108

United States of America

Phone: (800) 959-0329 or (734) 769-0573

Fax (734) 769-1888

E-mail: info@gfg-inc.com

Website: www.gfg-inc.com