
Operating Instructions

Limit Monitors

GWZ-S2, -S4, -S6

- Read prior to operation!
- Observe all safety instructions!
- Keep for further reference!

CE



Table of contents

1. For your safety	2
1.1 Safety information and tips	3
1.2 Intended use	3
1.3 Qualification of personnel	5
2. Product description	6
2.1 GWZ-S6 limit monitor	6
2.2 GWZ-S2 and -S4 limit monitors	8
2.3 Technical data	10
2.4 Certification	14
3. Transport and installation	14
3.1 Transport	14
3.2 Storage	14
3.3 Installation	14
3.4 Electrical connection	14
4. Controls and displays	17
5. Commissioning	18
6. Operation	19
6.1 Rolling measured value display	20
6.2 Menu 1: Special functions	21
6.3 Menu 2: Parameter display	24
6.4 Menu 2 for analog inputs	24
6.5 Menu 2 for digital inputs	29
6.6 Fault display with fault code	31
7. Configuration	31
8. Maintenance and servicing	31
9. Decommissioning	33
10. Packaging and transport	33
11. Disposal	33
12. Appendix	33
12.1 Copyright	33
12.2 Warranty	33

1. For your safety

Observe the instructions for use

Any person handling or operating the limit monitor must first be fully familiar with and observe these instructions for use. The limit monitor is to be used only for the described purpose (see section 1.2).

Servicing

The limit monitor must be inspected and serviced regularly by trained personnel. Maintenance work on the limit monitor must only be carried out by trained personnel. (See sections 1.3 and 7.)

Do not operate in areas subject to explosion hazards

The limit monitor is not approved for operation in areas subject to explosion hazards. Do not operate it in any areas where combustible or explosive gas mixtures are likely to occur.





WARNING!

These operating instructions do not contain all the information necessary for the safe operation of the device. Please acquaint yourself with the regulations and operator's obligations that apply in your area. In addition to these operating instructions, for example, you should observe and instruct others concerning the universally valid legal and other binding regulations for the prevention of accidents and protection against accidents.

1.1 Safety information and tips

A number of warnings are used in these instructions concerning some of the risks and dangers that may occur during the use of the limit monitor. These warnings contain "signal words" designed to draw attention to the degree of danger that is to be expected.

These signal words and the associated hazards are as follows:

	<p><u>DANGER!</u> Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.</p>
	<p><u>WARNING!</u> Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.</p>
	<p><u>CAUTION!</u> Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or material damage. It may also be used to alert against unsafe practices.</p>
	<p><u>IMPORTANT!</u> Indicates information concerning use and other useful information.</p>

1.2 Intended use

The GWZ-S2, GWZ-S4 and GWZ-S6 limit monitors may be used exclusively for:

- monitoring the lower explosive limit of explosive gases and vapours in air,
- monitoring the concentration of toxic gases and vapours in air,
- monitoring the oxygen or carbon dioxide concentration in the air mixture,
- monitoring the temperature profile of air/solid mixture (GWZ-S6 only)

Only gas and temperature measuring systems made by Euro-Gas may be connected to GWZ-S2, -S4 and -S6 limit monitors.



WARNING!

In order for the limit monitor to monitor gas concentrations and temperature profiles, it is essential that the limit monitor is **correctly configured by the operator**.

You must therefore without fail observe the relevant MAC (toxic gases and vapours) and LEL values (explosive gases and vapours).

Set the 1st alarm threshold, for example, significantly below the MAC or LEL value (e.g. 20% LEL).

Please bear in mind that high temperatures in air/solid mixtures may trigger fires.

Consider carefully the most sensible way to group the alarms for the individual measuring systems and which actuators are to control the output relays.

Act responsibly - this concerns the protection of people and protection against explosions!



WARNING!

The GWZ-S2, -S4 and -S6 limit monitors may not be operated in areas where ignitable or explosive gas mixtures can arise.

Danger of fire and explosion due to sparks!

For this reason the limit monitors must not, for example, be used to monitor the upper explosion limit.



WARNING!

Limit monitors are safety devices and must only be repaired by the manufacturer.

Do not tamper with or modify the limit monitors.

The limit monitor might otherwise no longer reliably monitor potentially explosive or toxic gas mixtures.

Danger of fire, explosion and poisoning!



**DANGER!**

Mains voltage (230 V, 50 Hz).

Danger to life due to electric shock or burns.

Do not bring into contact with water.

Before opening the limit monitor, safely disconnect the mains voltage (safe electrical isolation).

Electrical work should only be carried out by a qualified electrician.

Only install in a voltage-free state.

**IMPORTANT!**

It is essential to observe the information given in these operating instructions with regard to operation, maintenance and servicing.

Faults must be rectified immediately as they impair safety.

The ambient temperature must be between -10 and +50° C.

1.3 Qualification of personnel

Only qualified mechatronic engineers or persons with comparable training may mount, install, configure or commission the limit monitor or carry out maintenance and servicing work.

Only qualified electricians may carry out work on the electrical system.

The operator must instruct all users of the system on the basis of these operating instructions.

The minimum age is 16 years. An experienced person must supervise juveniles and apprentices when working on the limit monitor.

Any work that is not described in these operating instructions must be executed by the manufacturer.

2. Product description

2.1 GWZ-S6 limit monitor

The GWZ-S6 limit monitor is a freely programmable gas warning unit with a rolling display to which a max. of 6 gas measuring systems made by Euro-Gas may be connected. It is possible to monitor various types of gas with one GWZ-S6. GWZ-S6 can trigger the alarm in 1, 2, 3 and 4 stages if measured values rise above or fall below a limit value. It is possible to group alarms. The GWZ-S6 limit monitor has 6 output relays: 4 freely assignable alarm relays, one horn relay and one relay for fault signals.

Alternatively, it is also possible to connect a temperature measuring system made by Euro-Gas to the GWZ-S6 limit monitor in order to monitor temperature profiles. This will not be referred to separately in the following information.



Fig. 1: GWZ-S6 limit monitor.

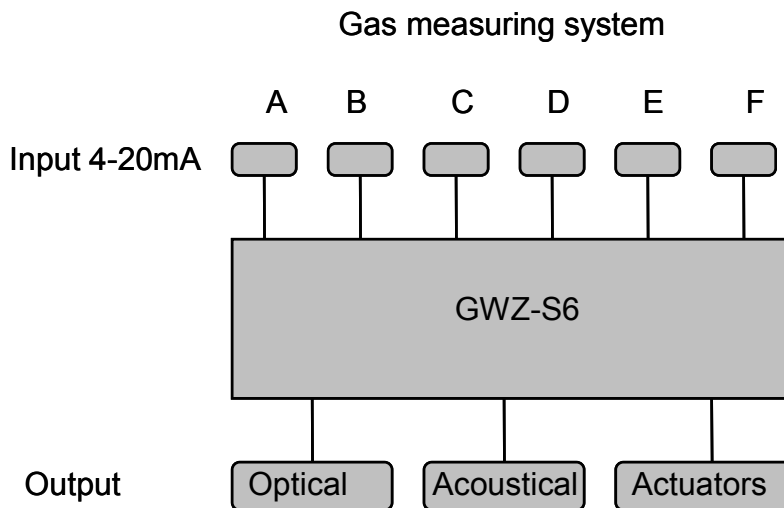


Fig. 2: GWZ-S6 limit monitor, mode of operation.

Combination options for alarms

6 gas measuring systems	1 alarm threshold	4 alarm groups
6 gas measuring systems	2 alarm thresholds	2 alarm groups
6 gas measuring systems	3 alarm thresholds	1 alarm group
6 gas measuring systems	4 alarm thresholds	1 alarm group

Product features

- Designed for standard field distributors
- 24 V DC supply voltage
- Connection of up to 6 gas measuring systems, each via a 4-20 mA interface, or 1 temperature measuring system via a total of five 4-20 mA interfaces from Euro-Gas
- RS232 interface for configuration
- 1 fault signal via relay
- 1 horn via relay
- Up to 4 alarm signals via relay
- Up to 4 freely adjustable limit values
- Alarm outputs optionally with hysteresis, latch circuit or latching and prematurely acknowledgeable. The alarm relay can be assigned a time function (minimum pulse time, maximum pulse time, delayed on/off).
- Display of concentrations
- Test function for checking the output relays
- Monitoring of cabling and short circuits in the gas measuring system wiring
- 1 reset button for horn and alarms
- 9 LEDs for operation, fault, horn and alarm for 6 input channels

2.2 GWZ-S2 and GWZ-S4 limit monitors

The GWZ-S2 (GWZ-S4) limit monitor is a freely programmable gas warning unit with a rolling display to which a max. of 2 (4) gas measuring systems made by Euro-Gas may be connected. It is possible to monitor various types of gas with one GWZ-S2 (GWZ-S4). GWZ-S2 (GWZ-S4) can trigger the alarm in 1 or 2 stages if measured values rise above or fall below a limit value. It is possible to group alarms. The GWZ-S2 and GWZ-S4 limit monitors each have 4 output relays: 2 freely assignable alarm relays, one horn relay and one relay for fault signals. GWZ-S2 has 2 input channels: A and B; GWZ-S4 has 4 input channels: A, B, C and D (cf. Fig. 2).



Fig. 3: GWZ-S2/4 limit monitor.

Combination options for alarms on the GWZ-S2

2 gas measuring systems	1 alarm threshold	2 alarm groups
2 gas measuring systems	2 alarm thresholds	1 alarm group

Combination options for alarms on the GWZ-S4

4 gas measuring systems	1 alarm threshold	2 alarm groups
4 gas measuring systems	2 alarm thresholds	1 alarm group

Product features, GWZ-S2 (GWZ-S4)

- Waterproof housing for wall mounting
- 230 V AC supply voltage
- Connection of up to 2 (4) gas measuring systems from Euro-Gas, each via a 4-20 mA interface
- One digital input for connecting a digital signalling contact (e.g. pressure, water level)
- One digital input for the external horn reset
- RS232 interface for configuration
- 1 fault signal via relay
- 1 horn via relay
- Up to 2 alarm signals via relay
- Up to 2 freely adjustable limit values
- Alarm outputs optionally with hysteresis, latch circuit or latching and prematurely acknowledgeable. The alarm relay can be assigned a time function (minimum pulse time, maximum pulse time, delayed on/off).
- Display of concentrations
- Test function for checking the output relays
- Monitoring of cabling and short circuits in the gas measuring system wiring
- 1 reset button for horn and alarms
- LEDs for operation, fault, horn and alarm for 2 (4) input channels

2.3 Technical data

GWZ-S6

General information		
Power supply		Screw terminals
	Voltage	24 V DC $\pm 5\%$
Nominal power	Without measuring systems	Approx. 3 W
Ambient temperature	-10° C to +50° C	
Air pressure	900 hPa to 1,100 hPa	
Permissible humidity	15-95% relative humidity	Non-condensing
Housing	Plastic	Grey, for mounting on DIN rails
Protection class of housing	IP 20	
Housing weight	Approx. 400 g	
Housing dimensions	Approx. W105 x H71 x D90 mm	
Connections		
Channel A (measuring system 1)	Terminal 18 (out)	24 V DC $\pm 5\%$
	Terminal 19 (in)	4–20 mA; max. load 370 Ω
	Terminal 20 (out)	0 V
Channel B (measuring system 2)	Terminal 21 (out)	24 V DC $\pm 5\%$
	Terminal 22 (in)	4–20 mA; max. load 370 Ω
	Terminal 23 (out)	0 V
Channel C (measuring system 3)	Terminal 24 (out)	24 V DC $\pm 5\%$
	Terminal 25 (in)	4–20 mA; max. load 370 Ω
	Terminal 26 (out)	0 V
Channel D (measuring system 4)	Terminal 27 (out)	24 V DC $\pm 5\%$
	Terminal 28 (in)	4–20 mA; max. load 370 Ω
	Terminal 29 (out)	0 V
Channel E (measuring system 5)	Terminal 30 (out)	24 V DC $\pm 5\%$
	Terminal 31 (in)	4–20 mA; max. load 370 Ω
	Terminal 32 (out)	0 V
Channel F (measuring system 6)	Terminal 33 (out)	24 V DC $\pm 5\%$
	Terminal 34 (in)	4–20 mA; max. load 370 Ω
	Terminal 35 (out)	0 V
Fault relay	Terminal 6	Two-way switch
	Terminal 7	NC contact
	Idle state	Fault
Relay alarm 1	Terminal 8	Two-way switch

	Terminal 9	NC contact
	Idle state	Alarm 1
Relay alarm 2	Terminal 10	Two-way switch
	Terminal 11	NC contact
	Idle state	Alarm 2
Relay alarm 3	Terminal 12	Two-way switch
	Terminal 13	NC contact
	Idle state	Alarm 3
Relay alarm 4	Terminal 14	Two-way switch
	Terminal 15	NC contact
	Idle state	Alarm 4
Relay horn	Terminal 16	Two-way switch
	Terminal 17	NO contact
	Idle state	Horn off
External power supply	Terminal 1	+24 V DC \pm 5%
	Terminal 2	0 V
Relay	Floating contacts	Load 250 V AC, 1 A
	System switched off	All relays in idle state
Digital interface X1	RS232	Configuration
Visual displays		
Yellow LED Error	Fault signal	
Green LED Power	Operation	
Red LED Horn (Hupe)	Acoustic alarm	
Red LEDs A, B, C, D, E, F	Alarm of channels A, B, C, D, E, F	
Controls		
Buttons F1 and F2	Function buttons	
Reset button	Reset horn	Reset alarm
Alphanumeric display		
Measuring level	Concentration, status, fault, limit value exceeded	
Parameter display	Display measuring ranges, limit values, alarm groups	
Special functions	Relay function test, inhibit function	

GWZ-S2 and -S4

General information		
Power supply		Screw terminals
	Voltage	230 V AC
Nominal power	Without measuring systems	Approx. 13 W
Ambient temperature	-10° C to +50° C	
Air pressure	900 hPa to 1,100 hPa	
Permissible humidity	15-95% relative humidity	Non-condensing
Housing	Plastic	Grey, wall mounting
Protection class of housing	IP 65	
Housing weight	Approx. 1,000 g	
Housing dimensions	Approx. W240 x H120 x D190 mm	
Connections		
Channel A (measuring system 1)	Terminal 1 (out)	24 V DC \pm 5%
	Terminal 2 (in)	4–20 mA; max. load 370 Ω
	Terminal 3 (out)	0 V
Channel B (measuring system 2)	Terminal 4 (out)	24 V DC \pm 5%
	Terminal 5 (in)	4–20 mA; max. load 370 Ω
	Terminal 6 (out)	0 V
Channel C (measuring system 3)	Terminal 19 (out)	24 V DC \pm 5%
	Terminal 20 (in)	4–20 mA; max. load 370 Ω
	Terminal 21 (out)	0 V
Channel D (measuring system 4)	Terminal 22 (out)	24 V DC \pm 5%
	Terminal 23 (in)	4–20 mA; max. load 370 Ω
	Terminal 24 (out)	0 V
Channels C and D	GWZ-S4 only	
Fault relay	Terminal 7	NO contact
	Terminal 8	Two-way switch
	Terminal 9	NC contact
	Idle state	Fault

Relay alarm 2	Terminal 10	NO contact
	Terminal 11	Two-way switch
	Terminal 12	NC contact
	Idle state	Alarm 2
Relay alarm 1	Terminal 13	NO contact
	Terminal 14	Two-way switch
	Terminal 15	NC contact
	Idle state	Alarm 1
Relay horn	Terminal 16	NO contact
	Terminal 17	Two-way switch
	Terminal 18	NC contact
	Idle state	Horn off
External power supply	Terminals N, PE, L	
Relay	Floating changeover contacts	Load 250 V AC, 1 A
	System switched off	All relays in idle state
Digital interface X1	RS232	Configuration
Digital input	External horn reset	Or digital alarm input
	Terminal +	24 V DC $\pm 5\%$
	Terminal D	High = 24 V, LOW = 0 V
	Terminal HU	High = 24 V, LOW = 0 V
	Terminal GND	0 V
Visual displays		
Yellow LED Error	Fault signal	
Green LED Power	Operation	
Red LED Horn (Hupe)	Acoustic alarm	
Red LEDs A, B, C, D	Alarm via channels A, B, C, D	Channels C and D GWZ-S4.1 only
Controls		
Buttons F1 and F2	Function buttons	
Reset button	Reset horn	Reset alarm
Alphanumeric display		
Measuring level	Concentration, status, fault, limit value exceeded	
Parameter display	Display measuring ranges, limit values, alarm groups	
Special functions	Relay function test, inhibit function	

2.4 Certification

The limit monitors comply with EMC Directives 89/336/EEC and 92/31/EEC and Low Voltage Directives 73/23/EEC and 93/68/EEC.

3. Transport and installation

3.1 Transport

The limit monitor is supplied together with these operating instructions. Please check the packaging for any damage when the product is delivered. Report any damage immediately to the forwarding agency and dealer. Do not throw or drop. The limit monitor may be damaged or scratched. Protect it against wet conditions, humidity, dirt and dust.

3.2 Storage

The limit monitor may be stored in its packaging in dry rooms at temperatures between +10° C and +50° C. Protect it against wet conditions, humidity, dirt and dust.

3.3 Installation

i	<p><u>IMPORTANT!</u> Mount the limit monitor at eye height on a level, firm and dry wall so that it is freely accessible and visible at all times. The ambient temperature should be between -10 and +50° C at all times. If mounted outdoors the device must not be directly exposed to the weather. The limit monitor must not be reached by water or splash water. The limit monitor must not be installed in damp locations or areas subject to explosion hazards.</p>
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3.4 Electrical connection

Connect the limit monitor to the mains according to the valid legal regulations (e.g. GWZ-S2 and GWZ-S4 with fixed wiring NYM-J 3 x 1.5 mm²). The wire supplying the limit monitor must be separately fused. Dimensioning of the fuse has to take into account the valid legal regulations as well as the connected gas measuring systems (e.g. GWZ-S2 and GWZ-S4 max. 2A). Do not lay these wires next to a high-tension power cable as there is a danger of radiated interference. The cable must be capable of withstanding the anticipated mechanical, chemical and thermal stresses.



DANGER!

Mains voltage (230 V, 50 Hz).

Danger to life due to electric shock or burns.

Do not bring into contact with water.

Before opening the limit monitor, safely disconnect the mains voltage (safe electrical isolation).

Electrical work should only be carried out by a qualified electrician.

Only install in a voltage-free state.

GWZ-S6 wiring diagram

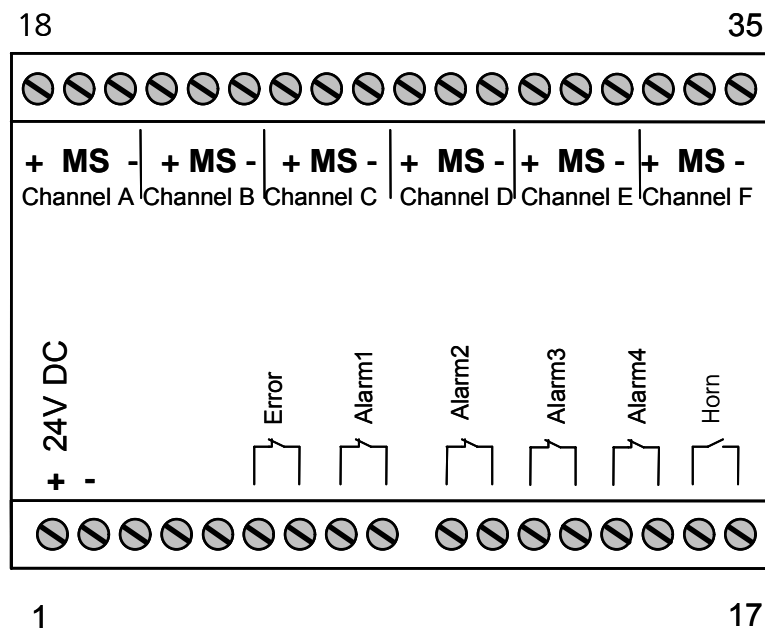


Fig. 4: GWZ-S6 wiring diagram.

All relays are shown in idle state with the system switched off. For the GWZ-S6, the idle state of the Error output relay is "Fault" and that of the output relays Alarm 1 to 4 is "Alarm". The idle state of the horn output relay is "Horn off".

Connect limit monitor and measuring systems with a three-core, shielded cable (channels A to F). Connect the limit monitor to the electric circuit via terminals 1 and 2. The error, alarm and horn relay outputs should be wired to the downstream actuators according to the application required.

GWZ-S2 and GWZ-S4 wiring diagram

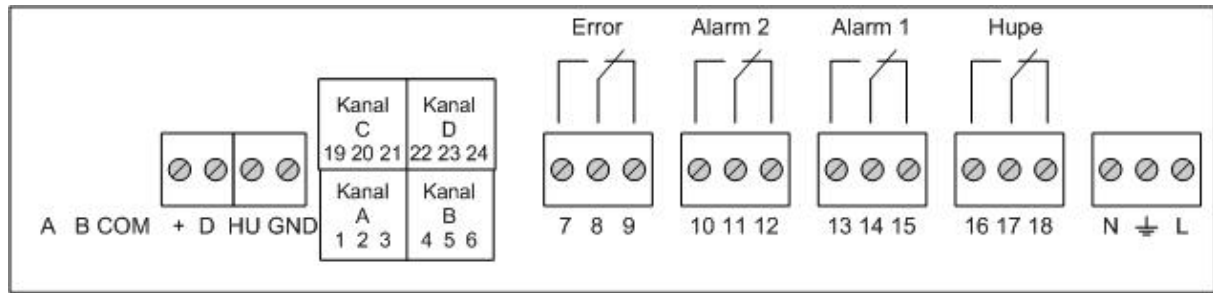


Fig. 5: GWZ-S2 and -S4 wiring diagram. Kanal = Channel; Hupe = Horn.

All relays are shown in idle state with the system switched off. For the GWZ-S2 and GWZ-S4, the idle state for the Error output relay is "Fault" and that for the output relays Alarm 1 to 2 is "Alarm". The idle state for the horn output relay is "Horn off". GWZ-S2: input channels A and B, GWZ-S4: input channels A, B, C, D.

Connect limit monitor and measuring systems with a three-core, shielded cable (channels A to D). Connect the limit monitor to the electric circuit via terminals N and L. The error, alarm and horn relay outputs should be wired to the downstream actuators according to the application required.

A digital signal contact can be connected via + and D; + and Hu must be connected for the external horn reset.

Output relay connection

The output signals from the GWZ can be picked up by floating relay contacts. These relay contacts trigger the safety shutdown. The electrical wiring must be effected such that the power supply is interrupted in the event of an alarm. In normal operation the error output relay and output relays for the alarms are picked up and the contacts are open; if there is an alarm they are in idle state and the contacts are closed. The "Horn" output relay is open during normal operation and closed when there is an alarm.



CAUTION!

Switching off inductive loads causes voltage peaks which considerably impair the functions of electrical systems and can destroy the switching contact. Therefore connect inductive loads to conventional RC combinations, e.g. 0.1 μ F/100 Ohm.

4. Controls and displays

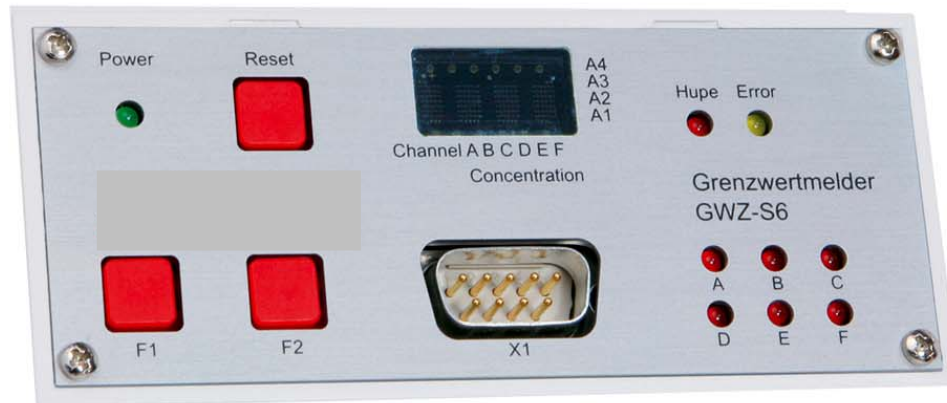


Fig. 6: GWZ-S6 controls and displays. GWZ-S2 and GWZ-S4 displays are similar. GWZ-S2 has 2 LEDs for channels A and B; GWZ-S4 has 4 LEDs for channels A - D.

Button F1	Activate menu
Button F2	Activate submenu
Reset button	Reset horn and alarm
Green Power LED	Power supply
Red Horn LED (Hupe)	Horn
Yellow Error LED	Fault
Red LEDs A to F (GWZ-S6)	Alarm
Red LEDs A to D (GWZ-S4)	Alarm
Red LEDs A and B (GWZ-S2)	Alarm

- Button F2 pressed once: continuous display is stopped
- Button F2 pressed again: continuous display continues to roll

The following applies to all measuring points:

- Joint relay for error and horn
- One button to reset horn and alarm
- There is an integrated alarm memory
- LEDs display operating states

The limit monitor has a rolling display and 3 operating levels.

The following are shown in the measuring level (main menu):

- Concentration
- Status
- Fault
- Limit value exceeded

The following are shown in the parameter level:

- Measuring ranges
- Limit values
- Alarm groups

The following are shown, queried and tested in the "Special functions" level:

- Relay function test
- Inhibit function

All parameters are configured via the RS232 interface.

5. Commissioning

Before commissioning use the following list to check whether all requirements for normal operation are met:

- Have the gas measuring systems been installed? (How to install the gas measuring systems is described in the relevant set of operating instructions.)
- Has the limit monitor been mounted at eye height?
- Are the gas measuring systems and limit monitor accessible and visible?
- Has the ambient temperature been taken into account?
- Have the limit monitor output relays been connected?
- Have the gas measuring systems and limit monitor been connected?
- Have all housings been screwed down again?
- Are you sure that the connection cable is not laid next to high voltage power cable?
- Has the power supply (GWZ-S6: 24V DC; GWZ-S2 and -S4: 230 V AC) been connected?

The device can then be switched on. All LEDs and display segments light up for five seconds to enable the lights and display to be tested. After this, the limit monitor checks which gas measuring system connections (channels A to F) are assigned and functioning. During this time (10 seconds) the message "WAIT" is shown in the display. After this, the limit monitor opens the main menu.

6. Operation

The four-digit alphanumeric LED display alternately shows the measured value with the relevant channel identification for the various inputs. If a system fault occurs, a fault code appears in place of the measured value. Button F1 activates Menu 1 "Special functions" and button F2 activates Menu 2 "Parameter display" (see Fig. 7). The menus are terminated automatically after 20 minutes if neither 'F1' nor 'F2' is pressed. For this reason any special functions that have been activated are limited to a period of 20 minutes.

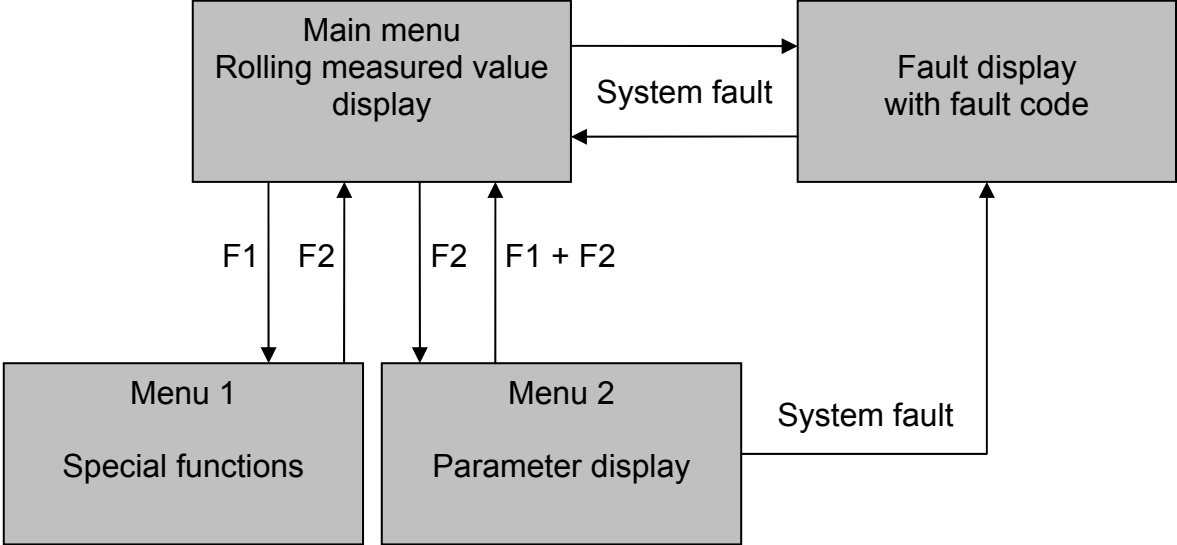


Fig. 7: Menu structure

6.1 Rolling measured value display

The rolling display shows first the measured value of each activated channel for 4 seconds each. If the value is a moving average, this is indicated by means of a line above the channel identification. Apart from the measured value, the channel fault or a fault in the display parameter may also appear after the channel identification (see Fig. 8). After this, the display shows for which channel the alarm has been triggered.

The analogue inputs are indicated with the channel identifications A to F according to the connections; the digital inputs are indicated with D1 or D2 (GWZ-S2 and GWZ-S4 only). L signifies Low (0 V) and H High (+24 V).

If a special function is active, it appears in addition in the display for two seconds ("Inhibit" or "Bridge average").

A123	Channel identification with continuous measured value display
$\bar{A}123$	Channel identification with moving average display
A E ₋	Measured signal is lower than the lower fault limit
A E ⁻	Measured signal is greater than the upper fault limit
A E ₋ ⁻	Measured signal is alternating between the fault limits
A EP	The parameters for converting the measuring range are unknown
D1 L	Channel identification with level of a digital input, here Low
L	Triggered alarms of analog inputs

Fig. 8: Examples of measured value displays.

The alarm field L that appears after the program has been executed is structured as follows:

x-axis: GWZ-S6: channels A to F
 GWZ-S4: channels A to D
 GWZ-S2: channels A and B

y-axis: GWZ-S6: Alarm relays A1 to A4
 GWZ-S4: Alarm relays A1 and A2
 GWZ-S2: Alarm relays A1 and A2

Example: If a light appears in row A1 and column A, gas measuring system A has exceeded or fallen below a threshold and the alarm is output via alarm relay A1.

6.2 Menu 1: Special functions

Menu 1 enables special functions such as "Inhibit", "Bridge average" and "Relay test". These special functions are protected by a code input. In addition, the software status, setting of the limit monitor slave interface and the status of the internal logger may be called up in this menu.

Special function: Inhibit "INHI"

The special function freezes the relay states for up to 20 minutes. This prevents alarms being triggered during servicing. After this function is activated "INHI" appears additionally in the rolling display. The changing display can be stopped by pressing button F2. To return to the rolling display, press button F1.

Special function: Bridge average "MOFF"

With the special function "Bridge average", the continuous measured value is used to evaluate the limit instead of the moving average. After the function is activated the continuous measured value appears in the rolling display and, in addition, "MOFF". The changing display can be stopped by pressing button F2. To return to the rolling display, press button F1.

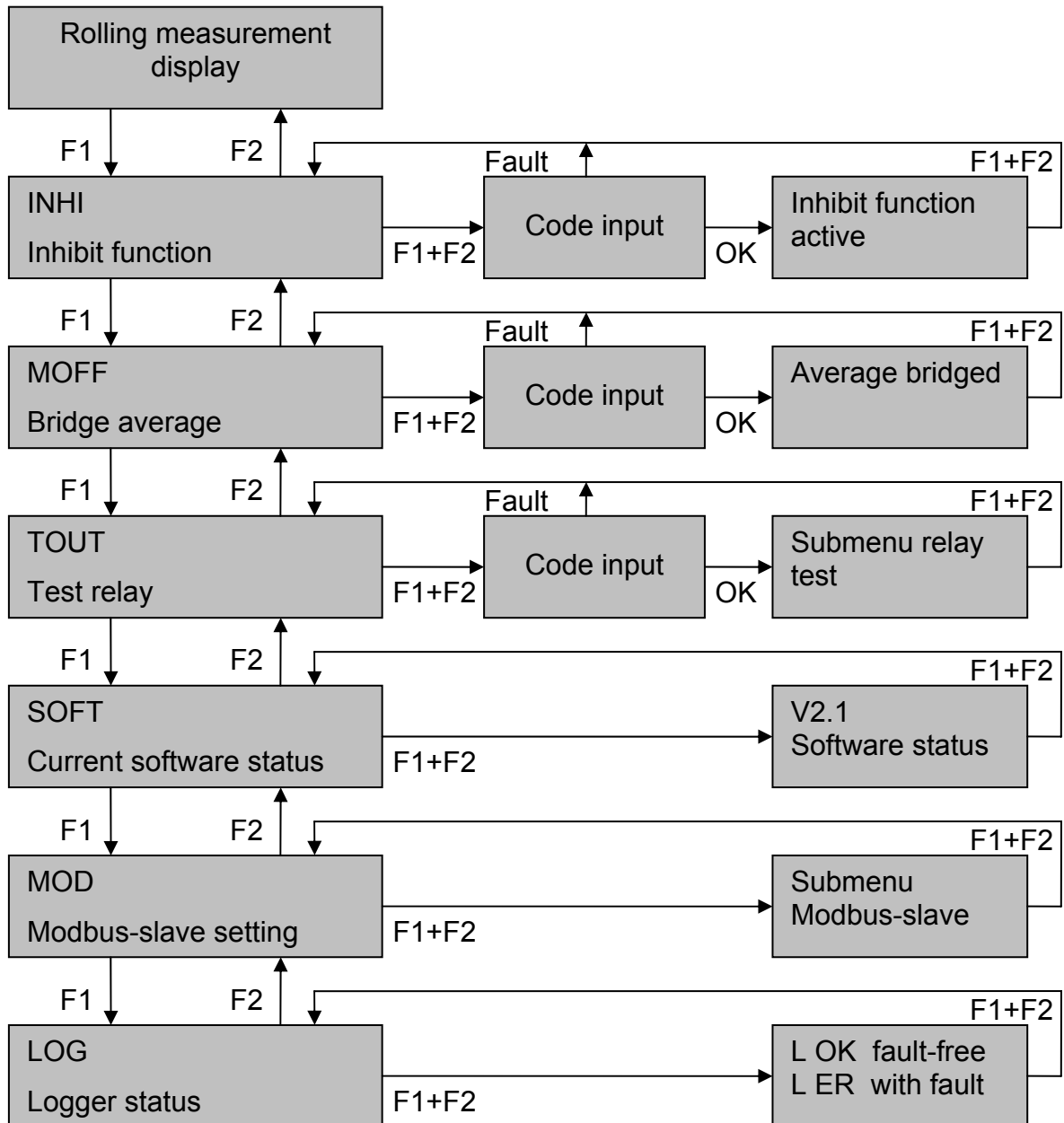


Fig. 9: Menu 1: Special functions.

Special function: test relay "TOUT"

The special function "Test relay" selectively switches the relay output. The relays is selected by pressing button F1, while button F2 changes the relay status between L and H or "Relay de-energised" and "Relay energised".

Once the function starts, the relay's current voltage states appear in the display.

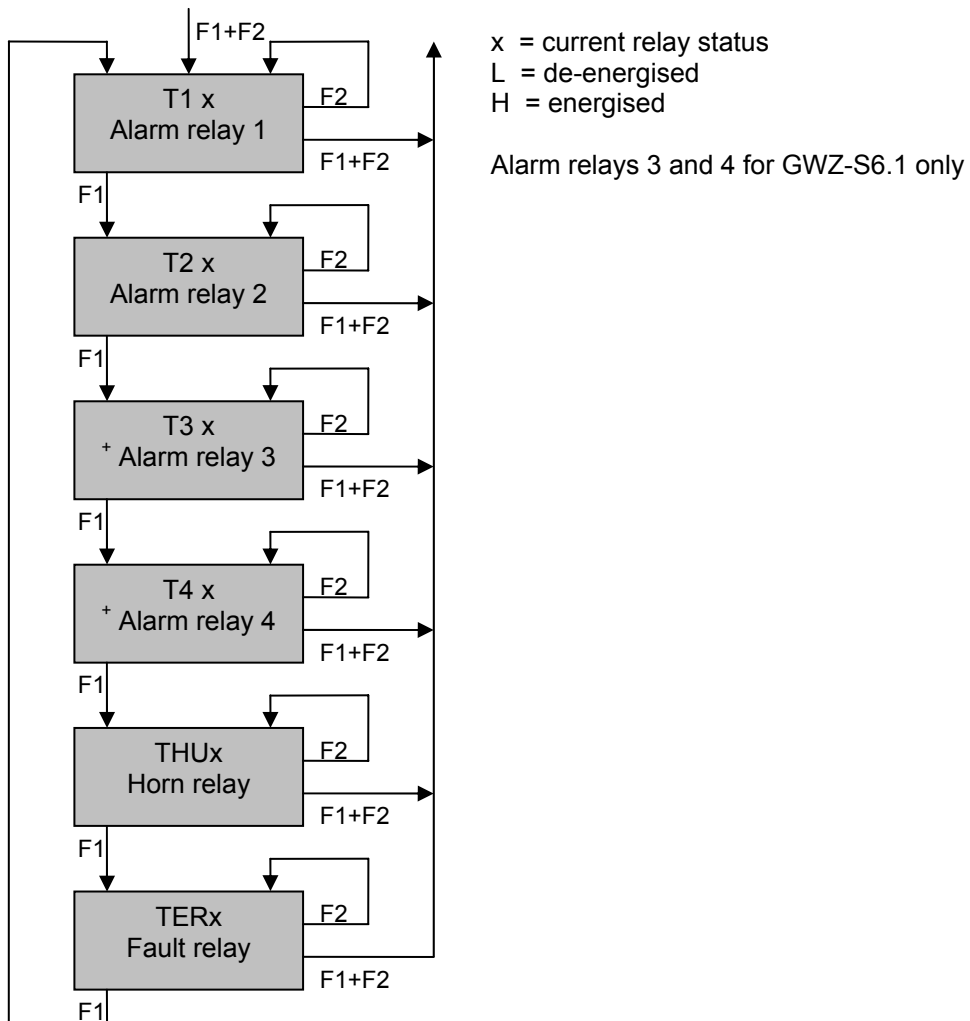


Fig. 10: Special function "Test relay".

Software version "SOFT"

Displays the current software status of the limit monitor.

Modbus-slave setting

Displays the current setting of the slave interface.

Status of the internal data logger "LOG"

Displays whether the data logger is working (OK) or whether a logging fault has occurred (ER).

6.3 Menu 2: Parameter display

Menu 2 is used to check the parameterisation of the activated channels. It can be ended at any time by pressing buttons F1 and F2 simultaneously. Once Menu 2 has been activated, the rolling display remains stationary. It is now possible to query the parameter settings for the currently displayed channel using buttons F1 or F2. The type of parameter and value of the parameter are displayed alternately. The structure of the parameter query for analogue and digital inputs differs.

6.4 Menu 2 for analogue inputs

The structure can vary depending on the GWZ model (number of relays). The display only shows the specific settings for the activated channels.

The analogue input identification is abbreviated to X, the level number to Y and the alarm relay number to Z.

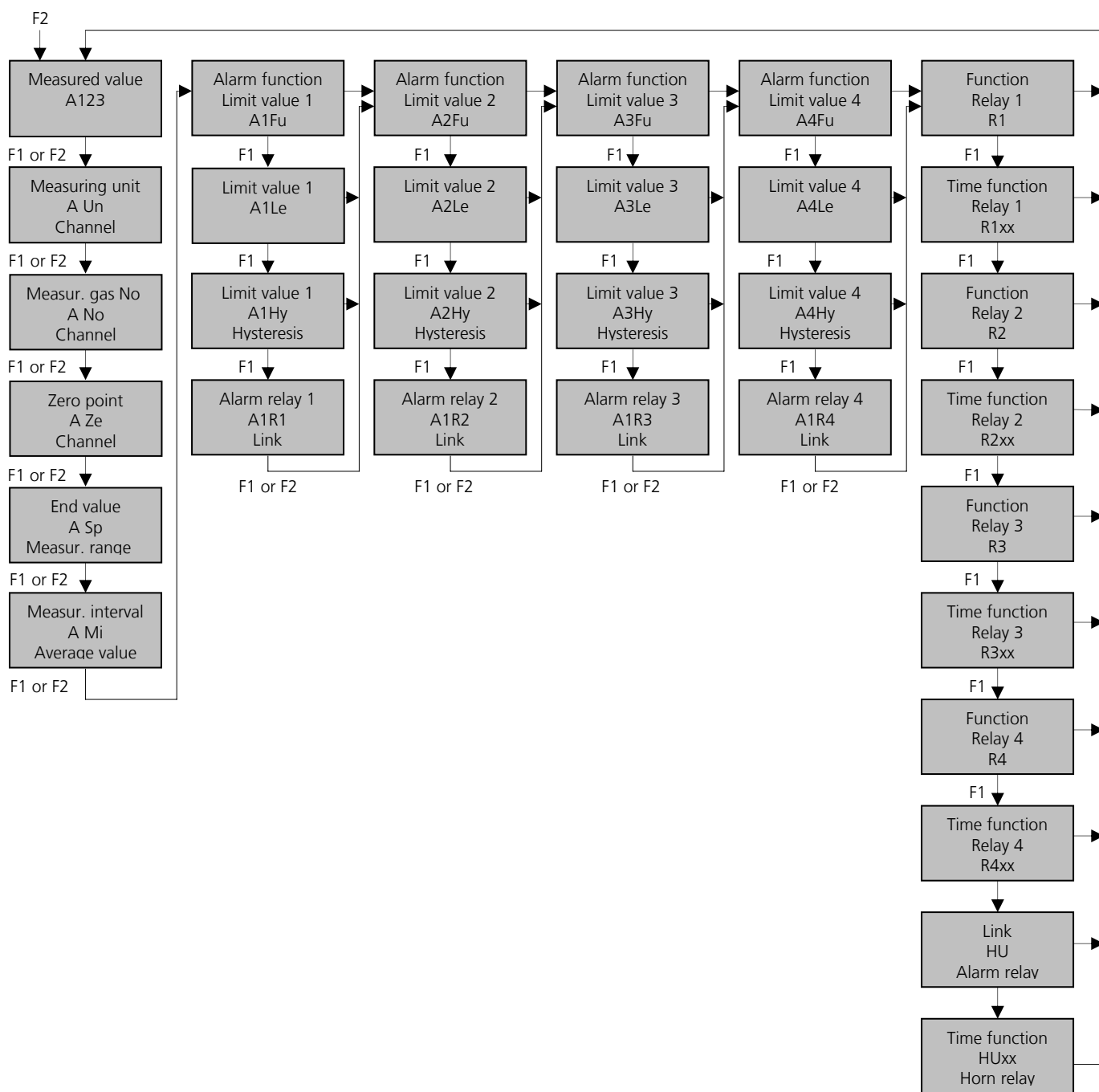


Fig. 11: Menu structure 2 for analogue inputs.

Measuring unit of channel "X Un"

Displays the measuring unit of the channel by means of 4 symbols. The X stands for the relevant channel identification.

Measuring gas number of channel "X No"

Displays the measuring gas by means of 4 symbols. The X stands for the relevant channel identification.

Zero point of measuring range "X Ze"

Display value for a signal input of 4 mA. The X stands for the relevant channel identification.

End value of measuring range "X Sp"

Display value for a signal input of 20 mA. The X stands for the relevant channel identification.

Measuring interval of average value "X Mi"

Intervals in seconds at which the measured values are accepted into the 16 times moving averaging. Only for channels where moving averaging has been set.

Alarm function "XYFu"

The alarm function is characterised by its measured value source, alarm direction and link with the fault signal.

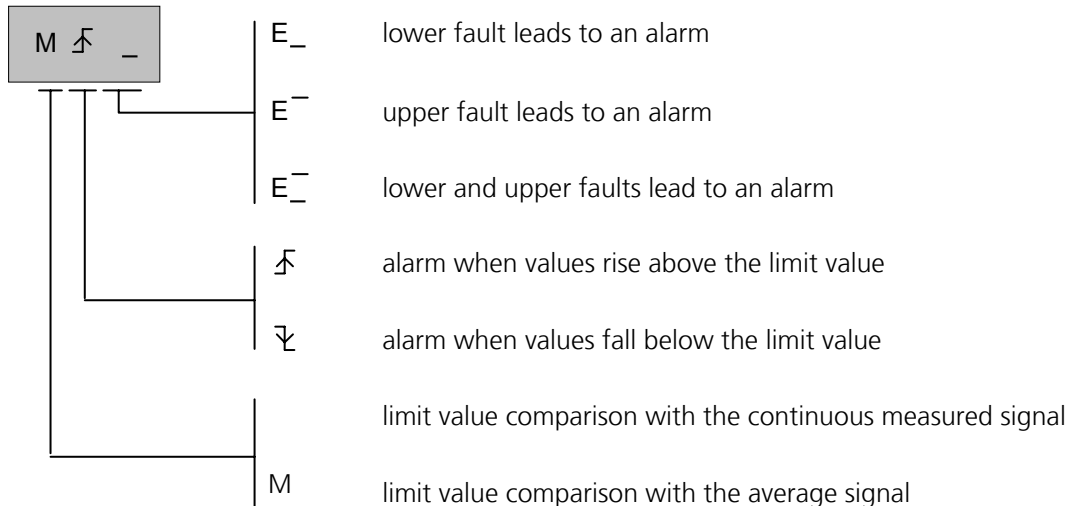


Fig. 12: Alarm functions.

Level of limit value "XYLe"

Limit value at which the alarm is triggered according to its function. The value X stands for the relevant channel identification and the value Y for the limit value.

Hysteresis of limit value "XYHy"

The parameter indicates the percentage by which the reset value of the alarm differs from the set value of the alarm. In this case the direction of the alarm evaluation must be considered: for a falling alarm evaluation (alarm when values fall below the limit value) the hysteresis relates to the difference between the alarm threshold and the end value of the measuring range (full scale); for a rising alarm (alarm when values rise above the limit value) the hysteresis relates to the difference between zero point and the alarm threshold.

Link with alarm relay "XYRZ"

Here the display shows on which alarm relay the limit value is switched and the function with which the alarm is processed. Functions H, S and SQH are available.

H	Hysteresis The alarm is not latched. When the alarm status is cleared, the alarm is cancelled independently.
S	Latching The alarm is latching. When the alarm status is cleared, the alarm must still be acknowledged.
SQH	Latching acknowledgeable The alarm is latching. When the alarm is acknowledged, it is cancelled independently.

Function of relay "RZ"

Displays the alarm function of relay Z. The functions are the same as in the section on linking with alarm relay "XYRZ".

The horn relay displays which alarm relays are relaying signals.

Time function of relay "RZxx"

Displays whether or not the relay is linked to a time function (see below). This alternates with the display of the duration of the time function in seconds.

The following displays are possible for time function 'xx':

,—,	No time function
,MI'	Minimum pulse time; if necessary, the alarm is stretched to this length.
,MA'	Maximum pulse time; the alarm relay is reset after this time interval.
,EV'	ON delay; the alarm is not transmitted to the relay until after this time interval.
,AV'	OFF delay; the relay maintains the alarm status for this time interval after the alarm status has been cancelled

6.5 Menu 2 for digital inputs

Displays the linking of the digital inputs with the alarm relay or horn reset function as well as the relay settings. Only active connections appear. The linking with the alarm relay displays the level status for setting the alarm. For the horn reset function the edge for resetting the horn relay is signalled.



Digital input: Alarm for level "High"; horn reset edge "Low High"



Digital input: Alarm for level "Low"; horn reset edge "High Low"

Once Menu 2 has been activated, the rolling display remains stationary. It is now possible to query the parameter settings for the currently displayed channel using buttons F1 or F2. The function is cancelled using both buttons F1 + F2 (see Fig. 13).

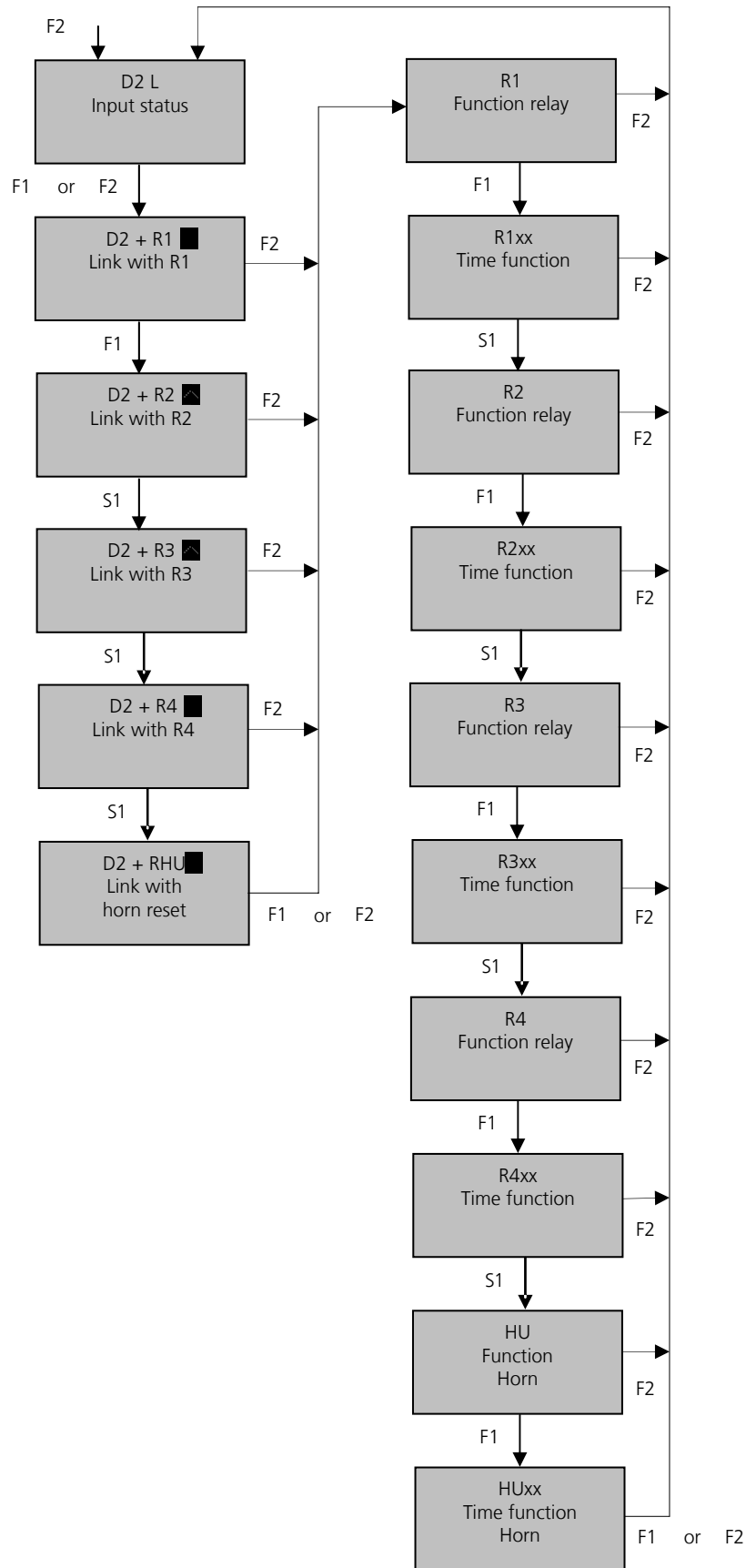



Fig. 13: Menu structure 2 for digital inputs. Black box = 

6.6 Fault display with fault code

The display ERR alternating with a relevant fault code indicates a system fault. Up to 4 fault sources are displayed in order of priority (see Fig. 14). If the system has detected more than 4 different fault sources, the symbol '+' appears in the last space.

Fault code	Designation	Cause
1	Fault in RAM or program code	Hardware faulty
2	Fault in parameter memory	Retransmit parameters or hardware faulty
3	Watchdog alarm	Hardware faulty
4	Fault in the supply voltage	The +24V supply is outside the permissible range or hardware faulty
5	Faulty parameter data	Retransmit parameters or hardware faulty
6	Relay fault	The defined target value for the relay status does not coincide with the actual status, hardware faulty
7	Parameter fault	At least 1 parameter is not within the permissible range, reset parameter

Fig. 14: Fault codes.

7. Configuration

The device is configured using special configuration software via the RS232 interface (see software description GWZ-Sx).

8. Maintenance and servicing



The limit monitor, gas measuring system and all connecting cable must be checked at least every six months by qualified personnel (see section 1.3) and a servicing report must be prepared. Always ensure that the interval between services meets safety requirements!

Check the entire system after each period of non-use or interruption of operation. This involves offering up the relevant measuring gas to each connected gas measuring system and checking the limit monitor's reaction.

Check the following points after each fault signal:

- Are the connected gas measuring systems working properly? Check with measuring gas.
- Is the limit monitor working correctly? Carry out a "TOUT" output relay test.
- Short circuit?
- Cable break?
- Is the power supply OK?
- If the measurement signal from the gas measuring system is less than 2 mA, one of the gas measuring system wires is broken. If it is greater than 22 mA, either the CPU is faulty, the cable is faulty or the measured value is outside the measuring range.

Carry out appropriate checks to ensure that the limit monitor and its environment are clean, accessible and visible at all times.

	<p><u>WARNING!</u> Limit monitors are safety devices and must only be repaired by the manufacturer. Do not modify the limit monitors and do not reconstruct them. The limit monitor might otherwise no longer reliably monitor explosive or toxic gas mixtures. Danger of fire, explosion and poisoning!</p>
	<p><u>DANGER!</u> Mains voltage (230 V, 50 Hz) in the limit monitor. Danger to life due to electric shock or burns. Do not bring into contact with water. Before opening the limit monitor, safely disconnect the mains voltage (safe electrical isolation). Electrical work should only be carried out by a qualified electrician. Only install in a voltage-free state.</p>

9. Decommissioning

Switch off the supply voltage. Please refer to section 3.2 for information on storage.

10. Packaging and transport

The limit monitor is a device with sensitive electronic components. When returning it, please use the appropriate class of packaging according to the applicable regulations.

11. Disposal

Obsolete devices should be rendered unusable immediately and disposed of according to the relevant regulations. Please contact your local authority for information about disposal.

12. Appendix

12.1 Copyright

Euro-Gas reserves the copyright to these operating instructions. Reproduction, translation and duplication, in whole or in part, are not permitted without written approval.

12.2 Warranty

Euro-Gas grants a warranty for this device for a period of 6 months from commissioning, documented by a commissioning report. Within this warranty period, we will at our discretion repair or replace the device free of charge if found to be defective as to workmanship or material.

The warranty excludes: damages attributable to improper use, normal wear, and defects that have only a negligible influence on the device's value or suitability for use.

Liability for the functioning of the limit monitor shall pass at all events to the owner or operator if the limit monitor is improperly maintained or repaired or if it is used other than for its intended purpose. Euro-Gas accepts no liability for damage caused by failure to observe the above information.

The warranty expires in the event that work is carried out by agents we have not authorised or if parts are used other than original spare parts.

Claims under the warranty may be made in all countries where this device is sold by authorised dealers.

In the event of any claim under the warranty, please return the device to us. The buyer shall bear the costs of transportation and the risk while the device is in transit. The execution of work under the warranty does not affect the warranty period in any way.

The manufacturer accepts no liability for printing errors or any damage resulting therefrom.

The data contained in this document is believed to be accurate and reliable. The data given is for guidance only.

Euro-Gas Management Services Ltd accepts no liability for any consequential losses, injury or damage resulting from the use of this datasheet or the information contained in it. Customers should test sensing equipment under their own conditions to ensure that the items are suitable for their own requirements and in accordance with the plans and circumstances of the specific project and any standards/regulations pertaining to the country in which the items will be utilised. This datasheet is not intended to form the basis of a contract and in the interest of product improvement, Euro-Gas reserves the right to alter design features and specifications without notice.