

## Medium – Control – Systeme

Franke & Hagenest GmbH

Borngasse 1a \* 04600 Altenburg

Telefon : 03447 – 499313-0

Telefax : 03447 – 499313-6

E-Mail : info@mcs-gaswarnanlagen.de

# MCS

### OPERATING INSTRUCTIONS

### MCS 2000-2D/4D



***Before using this device you must be fully aware of and comply with these operating instructions.***

#### **Liability for operation or damage**

Liability for operation of the device is transferred to the owner or operator insofar as the device is serviced or maintained improperly by individuals who do not belong to the manufacturer's service department or if it is not used as intended or specified.

The manufacturer is not liable for damages that occur due to noncompliance with the instructions above.

#### **Maintenance / servicing**

***The device must be subjected to regular, six-monthly inspections by qualified technicians.***

It is recommended that you conclude a service agreement with the manufacturer's service department.

## Designated use

The purpose of the device is:

- To measure and analyse toxic and combustible gas concentrations.
- To issue / control alarm signals (warning lights, sirens, safety valves, exhaust and ventilation, etc.).

## Sensor connection

Two sensors can be connected.

To power the sensors the device provides 24V of direct current. The sensors can be wired individually or in a star network.

Shielded cable such as JY(St)Y 2x2x0.8mm should be used as the sensor feed cable.

The lead colours should be arranged as follows:

**red → +24V (cl 1)    black → GND (cl 2)    white → signal 4-20mA (cl 3)    yellow → reserve**

**The drain wire should be twisted with the yellow lead and connected in the device to the PE clamp (protective earth conductor).**

The drain wire is connected with the shielding in the cable.

At the sensors – when using sensor enclosures made of metal, the drain wire should be connected with the metal enclosure.

When assembling, make sure the bare drain wire cannot come into contact with the circuitry.

## Relay outputs

The alarm relay outputs in the basic device are equipped with two contacts.

The relays can be programmed with software as opened or closed.

The closed relay is closed when signals are to be output, i.e. with pending alarms or absence of a fault report.

**CAUTION The relays are activated and deactivated after a five second time delay.**

## SHE operation

The device has a SHE input (smoke and heat exhaust system). SHE sensors or smoke detectors can be connected to it. Its purpose is to trigger alarm stages 1+2 in all output zones, in order to be able to enable ventilation in case of fire.

## Timer

Apart from operating the sensor the A1... A2 can be activated using a timer.

Setting the times is done using the software.

## Alarm signals

The device is equipped with four alarm signal thresholds. If a measuring signal reaches a switch-point, the appropriate alarm is triggered. The alarm LED lights up and the relevant programmed relay is *activated after a five second delay* or is *deactivated after a five second delay* if the alarm is reset.

The specification of measuring parameters and signal thresholds for individual measuring points and the allocation of output relays for alarm signals are programmed.

The set parameters can be found in the test log.

Individual alarm signals may continue after the cause that triggers them is discontinued. This is the case if a time lag for the alarm stage is to be observed or is programmed as self-stored in order to provide sufficient ventilation or minimum ventilation periods.

This can only be reset by activating the

*Alarm reset*  button.

Resetting a saved sensor alarm can only be carried out after the cause of the alarm is eliminated.

Otherwise, after going through a signal hysteresis (at least three digits) the alarm is automatically turned off again when the cause of the alarm is eliminated.

If acoustic alarm signals are connected, they can also be reset if the alarm goes off with the

*Klaxon reset*  button.

## Device fault report

A device fault report is issued under the following conditions:

- Power failure (\*)
- A cold start 1 min after power is restored
- Blown fuse
- Device defect
- Fall in power supply voltage to the sensors (< 18 V) (\*)
- Interruption or short circuit of the sensor supply line, (\*)
- Measurement signal goes outside the maximum measuring range (<2.5mA or >25mA) (\*)  
Monitoring the sensors for defects includes this condition.
- Software failure
- Loss of parameter settings (\*)

In case of faults the appropriate programmed fault relay is activated.

The Standby LED goes out and a device fault report LED flashes regularly.

In the case of a power cut the Standby LED flashes for several days.

Device faults marked (\*) can be programmed in such a way that they automatically switch on the alarms 1... 4 and therefore trigger such items as ventilation systems, warning lights, klaxons, and safety valves.

The other faults can only have an impact on the fault report relay if the alarm relays are looped.

## **Power failure alarm suppression**

The device has a programmable time delay, which is activated after any failure of the power supply (cold start) and suppresses alarms until the sensor system is operational. The Servicing LED flashes during this time.

If the time delay is switched on, the device becomes operational one minute after supplying power, as long as there are no other faults.

## **RS 232 C port**

The RS 232 C port serves as a connection for a computer or terminal to program the control centre and to issue test, measurement and alarm logs.

The port is provided as a 9-pin plug.

The input and output device is connected via a serial port.

The length of the connecting cable to the computer or terminal as a direct connection without additional measures should not exceed 15m.

A commercially available null modem cable should be used for the connection.

## **Programming the control centre**

Programming the control centre should only be carried out by our service technicians or authorised specialists.

**TMCS2000 software is required for programming.**

## Operational controls

Button Test/menu	Function	LED display	LCD display
Press 1x	System in programming mode	Servicing flashes	<b>Send mode</b>
Press 2x	Sensor signal is displayed in mA 1st row sensor 1 2nd row sensor 2	All LEDs are activated	<b>1: 15,00mA</b> <b>2: 04.00mA</b>
Press 3x	Alarm 1 relays activated	Servicing flashes Alarm 1 flashes	<b>Test</b> <b>Alarm 1</b>
Press 4x	Alarm 2 relays activated	Servicing flashes Alarm 2 flashes	<b>Test</b> <b>Alarm 2</b>
Press 5x	Alarm 3 relays activated	Servicing flashes Alarm 3 flashes	<b>Test</b> <b>Alarm 3</b>
Press 6x	Alarm 4 relays activated	Servicing flashes Alarm 4 flashes	<b>Test</b> <b>Alarm 4</b>
Press 7x	Optical relays activated	Servicing flashes Optical flashes	<b>Test</b> <b>Optical</b>
Press 8x	Acoustic relays activated	Servicing flashes Acoustic flashes	<b>Test</b> <b>Akustik</b>
Press 9x	Fault relays activated	Servicing flashes Fault flashes	<b>Test</b> <b>Fault</b>

**With the Reset button any menu / test point can be aborted.  
The system returns to regular mode and the Servicing LED goes out.**

## Operational controls

Reset button	Function	LED display
Press 1x	Stops the acoustic signal	Acoustic goes out
Press 2x	Stops the alarms and is self-sustaining <b>Is only possible when it goes below the alarm switch-point</b>	Alarm LED goes out

## LED display

LED	Colour	Status	Notes	Miscellaneous
POWER	Green	Steady Blinking	No fault in the system Cold start false alarm suppression	
FAULT	Yellow	Steady Blinking Flashing	Fault in the system Fault with sensor Power failure	Fault in the main unit LED for each sensor
A1	Red	Steady Blinking	Collective alarm 1 triggered Fallen below alarm threshold	Alarm can be cancelled
A2	Red	Steady	Collective alarm 2 triggered Fallen below alarm threshold	Alarm can be cancelled
A3	Red	Steady	Collective alarm 3 triggered Fallen below alarm threshold	Alarm can be cancelled
A4	Red	Steady	Collective alarm 3 triggered Fallen below alarm threshold	Alarm can be cancelled
Servicing	Yellow		Servicing required	After servicing date expires
Fire alarm / SHE	Yellow		Fire alarm / SHE input triggered	
Klaxon	Red		Klaxon relay triggered	Alarm can be cancelled prematurely

## Internal buzzer

The internal buzzer is activated with the programmed acoustic alarm.

**LCD display**

Normal operation  
Alternating display

12.01.08  
09:55:00



Displays date and time

MF1 C3H8  
052 %UEG



Sensor 1 display  
Concentration Unit Type of gas

MF2 CO2  
052 Vol%



Sensor 2 display  
Concentration Unit Type of gas

Device fault indicator

MF1 CH4  
Fault



There is a fault with  
sensor 1  
**Notify service dept.**

MF2 CO2  
Fault



There is a fault with  
sensor 2  
**Notify service dept.**

Alarm 1 signal

MF1 CH4  
Alarm 1



There is an Alarm 1 on  
sensor 1

Alarm 2 signal

MF2 CO2  
Alarm 2



There is an Alarm 2 on  
sensor 2

Alarm 3 signal

MF2 CO2  
Alarm 3



There is an Alarm 3 on  
sensor 3

Alarm 4 signal

MF2 CO2  
Alarm 4



There is an Alarm 4 on  
sensor 2

Alarm 3 signal

MF2 CO2  
Alarm 3



There is an Alarm 3 on  
sensor 2

### Power failure alarm suppression

If the alarm suppression (cold start) is programmed, the alarm output is blocked for one minute when switching on the device. The sensors can stabilise during this period.



### Fire alarm / SHE input

Fire alarm / SHE contact or time switch triggered.

The appropriately programmed relays for Alarm 1 and 2 are activated.



### **Guarantee**

The manufacturer assumes a guarantee of four years when a service agreement is concluded with its service department or that of an authorised company. If no service agreement is concluded, the guarantee expires after one year.

### **Shutdown**

During a shutdown the programmed data is not lost. The stored data for accumulated signals is also maintained.

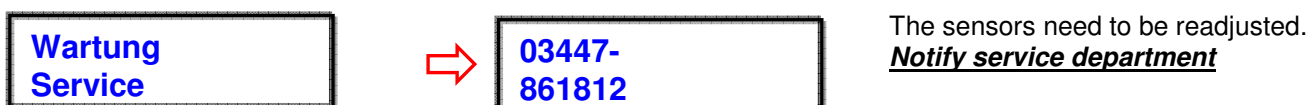
If the device is not operational for more than four weeks, when started up again the sensors have to be tested with test gas and recalibrated if necessary.

### **Maintenance / service reminders**

Gas warning systems have to be subject to six-monthly and annual inspections.

The service interval is shown on the adhesive label provided. It is recommended that you conclude a service agreement with the manufacturer's service department.

The following appears on the display as an indication that servicing is due.



The Fault LED also flashes.

**This reminder only stops flashing when servicing has been carried out.**



## Technical specifications

Subject to change

<b>Enclosure</b>	Wall-mounted, or blind frame for control cabinet or cable line installation		
<b>Assembly type</b>	Wall-mounted	Bearing rail DIN EN 50022	
<b>Enclosure material</b>	Hostyren/polystyrene	Shock resistant	
<b>Dimensions</b>	L x B x H	190x140x70mm, incl. high strength cable glands	
<b>Temperature range</b>	-20°C .... +50°C		
<b>Relative humidity</b>	15-90%		
<b>Protection system</b>	IP 50		
<b>Signal thresholds</b>	Alarm 1	self-extinguishing / storing	freely programmable
	Alarm 2	self-extinguishing / storing	freely programmable
	Alarm 3	self-extinguishing / storing	freely programmable
	Alarm 4	self-extinguishing / storing	freely programmable
<b>Switching outputs</b>	5	potential-free changer 250V/2.5A freely programmable	
<b>Operational controls</b>	1 push button	Klaxon and alarm reset	
	1 push button	System control	
<b>External connection</b>	Klaxon off	Alarm reset	
<b>Display elements</b>	LED - Display	Red Alarm 1... 4	Klaxon active Collective alarm
		Yellow Fault	Servicing Fire alarm/SHE
		Green Power	Standby
	LCD - Display	2x16 digits illuminated	
<b>Data port</b>	RS 232	D-SUB connector 9-pin	
<b>Electrical specs</b>	230V/50Hz/60W	24V/DC/60W	
<b>Sensor connection</b>	2 sensor inputs		
	Terminal 3-pin	24V/DC, measuring signal 4-20 mA, DND	
<b>Sensors</b>	All sensor with 4-20mA output		
<b>Options</b>	Emergency power supply module	24 Volt	
	Phone dialler	Forwarding of alarm signals and fault reports	
	Key switch	Block alarm outputs during service	
	Supporting bar mounting		
<b>Front plate</b>	