



GfG Instrumentation
Worldwide Supplier of Gas Detection Solutions

Stand Alone

DYNAGARD SP

Operation Manual



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General Description

The Standalone DYNAGARD SP is an "intelligent" measuring system in a wall mount enclosure for continuous detection of gas concentrations and for warning from toxic gases and oxygen deficiency in ambient air. The comprehensive electronics takes over many tasks which facilitate operation and service and considerably increase operational safety and measuring accuracy. Its special features are:

- Plug-in Smart Sensors
- Scalable detection ranges
- Large illuminated display
- Easy 3 button operation
- AutoCal function
- 4-20mA output for recorders, etc.

The DYNAGARD SP provides two alarm relays, one fault relay and the relevant status displays. The backlight illumination allows the display to be read even under poor lighting conditions.

The DYNAGARD SP continuously indicates the measured gas concentration, exceeded thresholds and operational status. Should the gas concentration exceed one of the two pre-set threshold values, the DYNAGARD SP gives an immediate warning by means of its LED's and horn, and controls the relevant alarm relays. In addition to this, the DYNAGARD SP provides the measurement value as an analog output signal for further processing.

The DYNAGARD SP is easy to operate. Should there be any faults or system failure, the comprehensive fault recognition of the DYNAGARD SP indicates the specific fault to aid servicing.

Detection Principle

The sensors used in the Standalone DYNAGARD SP are electrochemical cells. Electrochemical cells consist of an electrolyte, a working electrode (anode), a counter electrode (cathode) and a reference electrode. The cells are adapted to the gas to be monitored by specific electrodes and a suitable electrolyte. The electrochemical reaction generates an electrical signal, which is proportional to the gas concentration. This signal is amplified by the DYNAGARD SP and used for display transmission. The sensor cells use capillary diffusion barrier technology, which, in combination with the additional temperature compensation circuitry, inhibits effects caused by changing atmospheric pressure and temperature. Some sensor cells are available with a pre-filter to improve their selectivity.

For Your Safety

This manual must be carefully read by all individuals who have or will have the responsibility for using and servicing this product. This product can only do the job designed to do, if it is used and serviced in accordance with the manufacturer's instructions. The warranties made by GfG Instrumentation Inc. with respect to the product are voided, if the adjustment of functions or parameters is changed without GfG Instrumentation Inc.'s permission. They are also voided, if the product is not used and serviced in accordance with the instructions in this manual. Please protect yourself and your employees by following them. The above does not alter statements regarding GfG Instrumentation Inc.'s warranties and conditions of sale and delivery.



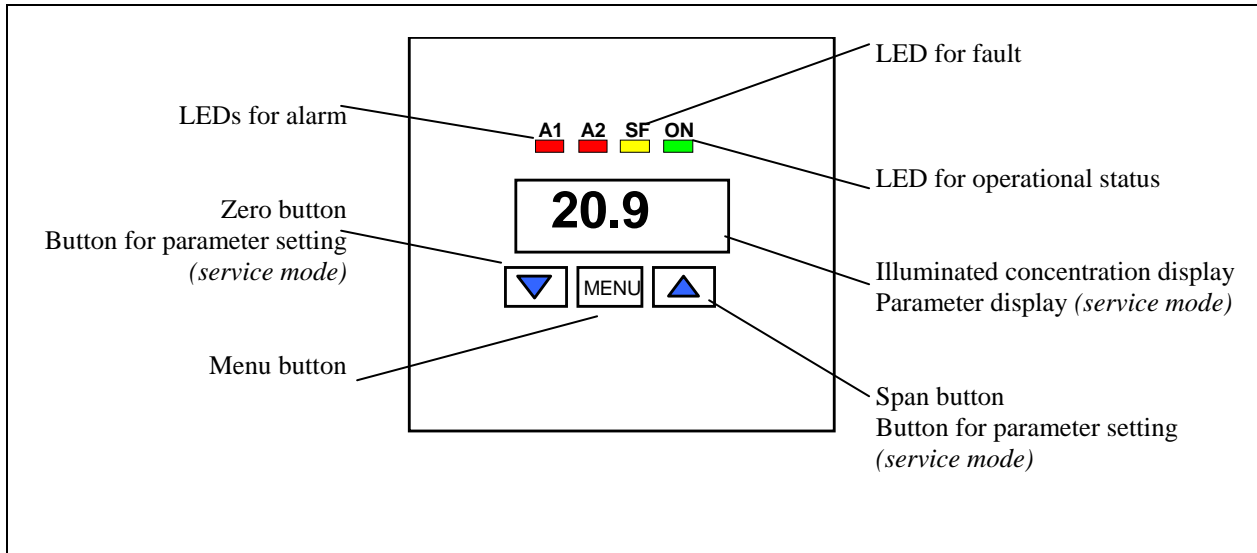
For the set parameters please refer to the test report. Changing functions or parameters may affect the approval. Please contact your GfG service for adapting the detection system to your specific needs.

Design

The design of the DYNAGARD SP is shown below. The type label indicates the type of transmitter. The sensor cell is built into the sensor holder.

The enclosure includes the main unit, consisting of display and main board, and the supply board. The electronics of the main unit converts the measurement signal for the display and the output. The supply board carries the connections for the voltage supply, the output and the relays.

For accessing the buttons of the DYNAGARD SP you must open the polycarbonate lid.



Mounting

Mounting Position of DYNAGARD SP

It is essential to know exactly the ambient conditions, which must be taken into consideration before deciding on the mounting position. To achieve representative measurement results, take note of

- the **room ventilation** and
- the **gas density**.

Install the DYNAGARD SP at a place where the gases pass the sensor even in case of poor ventilation. If necessary, use a smoke cartridge to check air flow patterns.

Furthermore, take the following into consideration as well:

- **Rain water, hose water, dripping water, condensation** and
- **dust in the atmosphere**.

The DYNAGARD SP is designed to be protected against the entering of water and dust (Ingress Protection rating, IP 51).



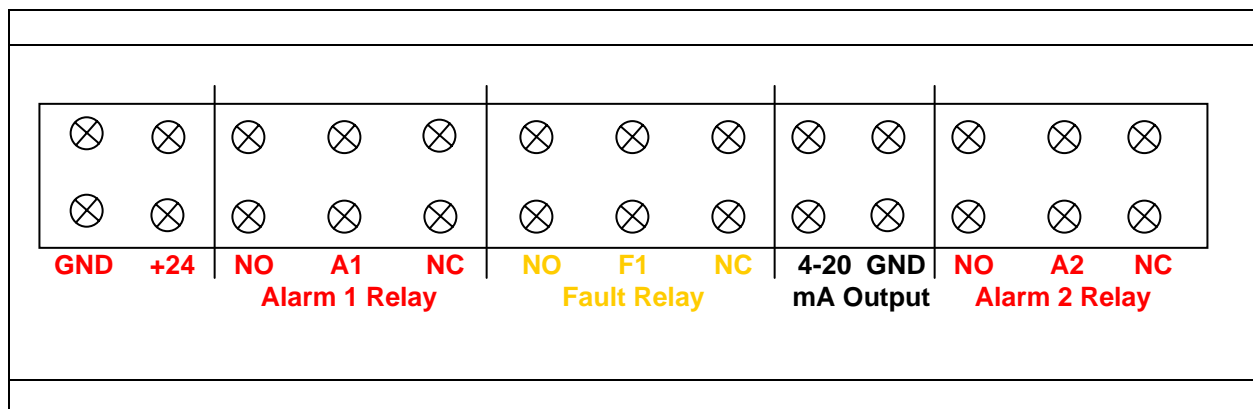
Warranty may be voided, if the sensor is exposed to ambient conditions, which were unknown to GfG during planning, production or delivery.

When deciding on the position make sure that the sensor is always accessible for service and maintenance. It is recommended that the DYNAGARD SP be mounted with the sensor oriented towards the floor. Alternate positioning, however, does not affect the measurement accuracy.

Installation of Electrical Connections

Electrical connections must be done by a specialist only, obeying all applicable regulations. To install the connections, remove front access panel and make relay connections to terminal block.

Relay Connections to Terminal Block



Putting in Operation

The Standalone DYNAGARD SP is tested for function and response before shipment. Calibration was performed using the proper test gases. Certain deviations, however, are possible due to transport or mounting ambient conditions.

This is why a gas warning system must be put into operation and tested for readiness by the manufacturer or by an authorized, skilled person.

After turning on, allow several minutes for:

- the self-check, which tests functions, memory (ROM and RAM) and parameter memory (approx. 10 seconds),
- the warm-up of the sensor.

During the warm-up time the DYNAGARD SP sequentially indicates in the display the unit of measurement, kind of gas, detection range, alarm thresholds AL1 and AL2 and the calibration gas concentration one after the other. On the DYNAGARD SP the LED “ON” flashes and the LED “F” is lit, i.e. the fault is activated. Threshold alarms are not activated during the warm-up period. When the DYNAGARD SP re-starts after a mains failure, the gas alarms are only evaluated, once the warm-up is completed. Then the DYNAGARD SP turns automatically to detection mode.

Allow a warm-up time of 30 minutes before checking the zero point. After this time the display should have stabilized to read “000”. Depending on detection range and sensor the display may also read “20.9” (O₂) or “0.00” (Cl₂).


Detection Mode

In detection mode the digital display indicates the present gas concentration. Measurement is done continuously. The DYNAGARD SP recognizes and reports exceeded thresholds immediately. Electronic functions like parameter memory sensor are monitored permanently. During trouble-free detection mode the green LED “ON” is lit, while the yellow LED “F” is out.




Once every minute the display briefly displays the unit of measurement and the type of gas as an operational test.

Check of Display and Parameter




During these checks the measuring and warning functions are not active!

Display Test

In detection mode briefly press  to start a display test. The display reads all segments ●●●●●●.


Indication of Detection Range and Alarm Thresholds

For indication/display of the detection range and alarm thresholds press . The display reads the parameters below, in sequence one after the other:

	Display, i.e.	Description of display
1	VOL, PPM	Unit of measurement
2	O2, CO	Gas
3	SCALE	Detection range
4	A1 (value within range)	Alarm threshold #1
5	A2 (value within range)	Alarm threshold #2
6	CGAS (value within range)	Calibration gas concentration

Once the display is finished, the DYNAGARD SP automatically returns to detection mode.

Alarms

The DYNAGARD SP provides 2 alarm thresholds. An alarm is triggered as soon as the gas concentration exceeds or falls below a preset alarm threshold. The DYNAGARD SP indicates a threshold alarm by means of the relevant alarm LED. Press  or the external reset to acknowledge an activated alarm.

The DYNAGARD SP activates the relevant alarm relay simultaneously with the alarm LEDs. In the standard setting the switching function of the alarms are as shown below:


Alarm	Function	Re settable <i>during gas alarm</i>	Re settable <i>after gas alarm</i>	Remark
1	non-latching	no	no	
2	latching	no	yes	can only be reset once alarm threshold is exceeded and has fallen below

Notes in regard to alarm functions:

Exceeding/deviating alarm

When you measure gases which cause danger by falling concentrations, (e.g. oxygen deficiency), the threshold alarm is a deviating one. When a hazardous situation is caused by rising gas concentrations, (e.g. by toxic and combustible gases), the threshold alarm is an exceeding one.

Latching / Non-latching alarm

A latching alarm remains active until external measures, (e.g. pressing ), resets the alarm. A non-latching alarm turns off automatically as soon as the gas hazard is reduced and the gas concentration falls below or exceeds the relevant threshold.

Fault

A fault is indicated by the yellow LED “**F**” and the fault relay. Fault is activated, if:

- the sensor or the transmitter electronics are failing
- no sensor is installed
- the sensor life has expired
- the self monitoring function detects a failure

Once the fault is resolved, the yellow LED “**F**” goes out, the fault relay switches back and the DYNAGARD SP returns to the standard detection mode.

Sensor Life

The lifetime of the electrochemical sensors depends on the gas to be measured. The DYNAGARD SP indicates the expired lifetime by reading **CHNG SENS** and measurement value alternately. The sensor should be replaced as soon as possible.








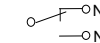







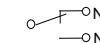







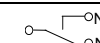
Relays

The DYNAGARD SP provides 3 relays:

- 2 alarm relays for activation of external alarm devices, valves, etc.
- 1 fault relay for failure report.

The switching behavior of the relays is the same as for alarm or fault signals. Every relay is a change-over type and 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 connections. The alarm relays are typically operated as open circuit system, the fault relay is a closed circuit.

In the standard setting the switching function of the relays is shown below:

Relays for:	The Relay Switches:							
	in detection mode (no gas)	during gas alarm		after gas alarm		during mains failure	during failure	during gas alarm and failure
		not reset	reset	not reset	reset			
Alarm 1								
Alarm 2								
Fault								





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


Check and AutoCal Adjustment of Zero point

The zero check for TOX sensors can be accomplished in ambient air provided the air is clean, minus the presence of interfering gases. Otherwise you have to supply synthetic/zero air to the sensor. An oxygen sensor has to be exposed to 100 % Vol. nitrogen (N₂) to check and adjust zero point.

Attach the calibration adapter to the sensor holder. Supply synthetic air (or 100 % N₂) at a flow rate of approx. 0.5 l/min.(1 SCFH) Observe the display. If it does not read 0, you have to adjust the zero point. When the display value is constant, the zero point adjustment can be done by means of the AutoCal program. The AutoCal program provides the automatic setting of the zero signal to the zero gas.


1. Press  for a minimum of 3 seconds to activate the AutoCal program.
2. The display alternates between the current measurement value and the indication of **ZERO**. If the measurement value remains constant during a defined period, it is overwritten by the zero value. The AutoCal program then stops automatically.

The AutoCal program can be shortened by holding down . The display briefly reads **SAVE** and the measurement value is overwritten by the zero value.



Should you want to leave the AutoCal without zero point adjustment, just press  briefly. The display momentarily reads **ESC**.

During adjustment, the following error messages may be reported:

Display	Remark
CAL ERR.1	No test gas recognized
CAL ERR.2	Test gas signal is unstable
CAL ERR.3	Calibration data incorrect

Error messages during adjustment procedure have to be acknowledged by pressing .


Check and AutoCal Adjustment of Sensitivity


First check the calibration gas concentration. Briefly press  to read the parameter from the display. The test gas concentration should be at least 20 % above the 2nd alarm threshold. The alarm settings can also be seen from the parameter display by briefly pressing .




Dealing with toxic gases requires special safety measures. TLVs (Threshold Limit Values) give hints in regard to hazards caused by toxic gases.

Attach the calibration adapter to the sensor holder. Supply the test gas (fresh air or synthetic air for adjustment of an oxygen sensor) at a flow rate of approx. 0.5 l/min.(1 SCFH). Look at the display. If the display value is different from the test gas concentration, a sensitivity adjustment is necessary. When the display value remains constant, the sensitivity adjustment can be done by means of the AutoCal program. The AutoCal program provides the automatic setting of the measurement signal to the test gas.


1. Press  for a minimum of 3 seconds to activate the AutoCal program.
2. The display alternates between the current measurement value and the indication **SPAN**. If the measurement value remains constant during a defined time interval, it is overwritten by the test gas value. The AutoCal program then stops automatically.

The AutoCal program can be shortened by holding down . The display briefly reads **SAVE** and the measurement value is overwritten by the value of the test gas concentration.

Should you want to leave the AutoCal without sensitivity adjustment, just press  briefly. The display momentarily reads **ESC**.

During adjustment, the following error messages may be reported:

Display	Remark
CAL ERR.1	No test gas recognized
CAL ERR.2	Test gas signal is unstable
CAL ERR.3	Calibration data incorrect


Error messages during adjustment procedure have to be acknowledged by pressing the .

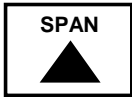
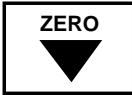
Service





Activation of Service Menu

The service menu permits selection and change to all important parameters of the DYNAGARD SP.

Here is how to access the menu:

1. Press  for a minimum of 3 seconds. The display reads **CGAS**. Use the navigation keys to select the different menu points.





	Menu Display	Description
 Initial menu point 	INFO	Display of software version and serial number
	SCAL	Changing of detection range
	P2	Changing of alarm function for Alarm 2
	P1	Changing of alarm function for Alarm 1
	H2	Changing of hysteresis for Alarm 2
	H1	Changing of hysteresis for Alarm 1
	A2	Changing of alarm threshold for Alarm 2
	A1	Changing of alarm threshold for Alarm 1
	CGAS	Changing of calibration gas concentration
	SAVE	Leaving detector settings with storing of changed parameters
	ESC	Changing of detector settings without storing of changed parameters

Briefly press  to activate the requested menu point once you have selected it. For adjusting the parameters use  and . Briefly press  again to leave the menu point.





In the service mode the threshold alarms are blocked! The DYNAGARD SP turns to fault. The LEDs “ON“ and “F“ are lit, and the fault relay is activated.

Adjustments in Service Mode

Check and Adjustment of Calibration Gas Concentration CGAS

1. Briefly press  to activate menu point **CGAS**.
2. The display shows the current set value for the calibration gas concentration.
3. Use  and  to adjust the value.
4. Briefly press  to leave menu point **CGAS**.
5. Store the parameter (see above chart for **SAVE** instructions)

Check and Adjustment of Alarm Thresholds A1 & A2

1. Briefly press  to activate menu point A1 & A2.
2. The display shows the current set value for the alarm threshold.
3. Use  and  to adjust the value.
4. Briefly press  to leave menu point A1 & A2.
5. Store the parameter (see chart on page 10 for SAVE instructions)

Check and Adjustment of Hysteresis of Alarm Thresholds H1 & H2





This function permits adjustment to the hysteresis (de-activation point) of the alarm thresholds. The setting of the parameter is effected in the unit of the gas to be measured.

Example:


The de-activation points for Alarm 1 and Alarm 2 of an DYNAGARD SP, which provides a detection range of 0...100 ppm, have been set to 4 ppm below Alarm 1 and to 10 ppm below Alarm 2. This results in alarm activation as shown below:

	Alarm 1	Alarm 2
Alarm threshold	= 10 ppm	= 50 ppm
Alarm activation	≥ 10 ppm	≥ 50 ppm
Hysteresis	4 ppm	10 ppm
Alarm de-activation	≤ 6 ppm	≤ 40 ppm

Adjustment of Hysteresis:

1. Briefly press  to activate menu point H1 & H2.
2. The display shows the current set value for the hysteresis.
3. Use  and  to change the value.
4. Briefly press  to leave menu point H1 & H2.
5. Store the parameter (see chart on page 10 for SAVE instructions)




Check and Adjustment of Alarm Functions P1 & P2

1. Briefly press  to activate menu point P1 & P2.
2. The display shows the current set code for the alarm function (see chapter: Alarms).

Parameter Display	Description
L S . C	Deviating alarm, storing, always re-settable
L S C	Deviating alarm, storing, re-settable only when gas concentration exceeds the alarm threshold
L N S	Deviating alarm
H N S	Exceeding alarm
H S C	Exceeding alarm, storing, re-settable only when gas concentration has fallen below the alarm threshold
H S . C	Exceeding alarm, storing, always re-settable

Code

L Low	H High	S Store	N No Store	C Confirm
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



3. Use  and  to set the parameter.
4. Briefly press  to leave menu point.
5. Store the parameter (see chart on page 10 for SAVE instructions)

Check and Adjustment of Detection Range SCAL



The scaling function of the DYNAGARD SP permits the use of one single sensor in the EC30 system for differing detection ranges. This means that most applications are covered by max. 2 different sensors for one gas.

CO 500 ppm	0 ... 500 ppm	400 ppm	300 ppm	250 ppm	200 ppm	100 ppm
CO 2000 ppm	0 ... 2000 ppm	1000 ppm	500 ppm	400 ppm		
NH ₃ 2000 ppm	0 ... 2000 ppm	1000 ppm	500 ppm	400 ppm		
NH ₃ 1000 ppm	0 ... 1000 ppm	500 ppm	400 ppm	300 ppm	250 ppm	200 ppm

The maximum detection range of the individual sensors can be scaled down to one sixth. This is based on the following ratios: 10, 20, 25, 30, 40, 50, 100 ...etc.

1. Press  briefly to activate the menu point SCAL.
2. The display shows the current set value for full scale.
3. Use  and  to set the value.
4. Press  briefly to leave menu point SCAL.
5. Store the parameter (see chart on page 10 for SAVE instructions)


Display of Software Version and Serial Number INFO

1. Press  briefly to activate menu point INFO.
2. The display shows the software version and the serial number.
3. Press  briefly to leave menu point INFO.


Leaving the Service Mode

You can leave the service mode either with or without storing the changed parameter:

With storing:

Press  briefly to activate menu point SAVE.

Without storing:

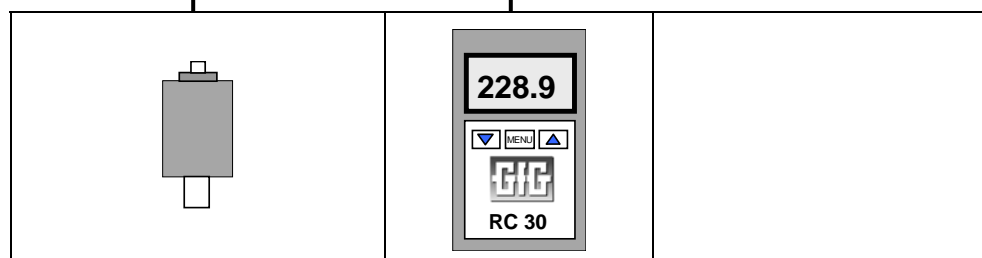
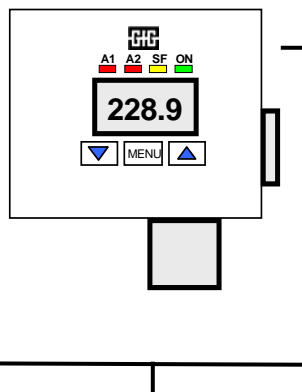
Press  briefly to activate menu point ESC.



You can change several parameters one after the other without storing them individually. One collective storing process once your settings are complete is sufficient to store all parameters in the previously selected menu point.

Optional Remote Controls

Remote control of the DYNAGARD SP can be effected by different systems. This permits adjustments, (e.g. calibration), even in hazardous areas. The remote control systems are defined by their functional possibilities. A RC port is located on the left side of the instrument case. Remove the grey rubber plug to access.



Description	Single Key Control	Remote Control	
Type	RP 30	RC 30	
Display	-	X	
Keypad	-	X	
Functions	AutoCal	all	
Memory for test gas concentration	X (max. 256 gases)	X (max. 256 gases)	
Remark	<p>Both the Single Key Control RP 30 and the Remote Control RC 30 provide a fuzzy electronic. If the calibration gas concentration for a certain gas is not programmed yet, the relevant data are automatically transmitted and stored from the connected transmitter.</p> <p>If gas and detection range are compatible, the test gas concentration stored in the remote control is transmitted to the transmitter via the connection. This allows easy calibration of several transmitters even in case of a different test gas concentration. The new test gas concentration is once set and stored with the remote control. When you are going to calibrate additional transmitters, these transmitters take the stored test gas concentration over from the remote control.</p>		

Once these remote control systems are connected to the DYNAGARD SP, the display shows measurement unit, gas, detection range, alarm thresholds AL1 and AL2 and the calibration gas concentration one after the other.

Single Key Control RP 30

The single key control RP 30 provides all functions for the calibration of the transmitter. The single key control includes an internal parameter memory, which stores calibration gas concentrations for different gases. When connected, the relevant value is transmitted to and stored in the transmitter. If the calibration gas concentration is changed, the new value is stored both in the transmitter and in the single key control.

The points mentioned in chapter “Check and AutoCal Adjustment Zero point / Sensitivity“ are also valid for the operation of the single key control RP 30.

Zero Point Adjustment

1. Press the key shortly to activate the AutoCal program zero point adjustment.
2. The display shows alternately the current measurement value and **ZERO**. If the measurement value remains constant during a defined time interval, it is overwritten by the zero value.

Long-term pressing of the key shortens the AutoCal program.

Press the key **shortly** to stop AutoCal without zero point adjustment.

Sensitivity Adjustment

1. **Long-term pressing** of the key activates the AutoCal program sensitivity adjustment.
2. The display reads alternately the current measurement value and **SPAN**. If the measurement value remains constant during a defined time interval, is overwritten by the value of the test gas concentration.

Long-term pressing of the key shortens the AutoCal program.

Press the key **shortly** to stop AutoCal without sensitivity adjustment.

Remote Control RC 30

The remote control RC 30 provides all functions and adjustments, which can be done with the keys at the Dynagard SP.

As the single key control RP30, the remote control RC30 includes an internal parameter memory, which stores calibration gas concentrations for different gases. When you plug the connection cable in, the relevant value is transmitted to and stored in the transmitter. If the calibration gas concentration is changed, the new value is stored both in the Dynagard SP and in the remote control.

Remote Display RD 30

The remote display RD 30 is a remote display for the Dynagard SP. Remote controlling of the Dynagard SP is allowed either by means of the RD 30 keypad or by connecting the single key control RP 30 or the remote control RC 30 to the RD 30. All functions and adjustments which can be done by means of the keys at the Dynagard SP, can also be effected with the remote display RD 30. The RD 30 does not need its own power supply.

Maintenance

The function test includes the check with alarm test gas and, if necessary:

- the check of zero point and sensitivity (calibration)
- the check of the response time
- the check of the gas sampling and gas processing system
- the check of the alarm signal activation
- the check of the fault alarm

This test should be done by an expert, or someone qualified to do so. The calibration intervals should not exceed 16 weeks. The function test should be done before putting into operation, and at least once a year.

Service and Inspection

Maintenance and inspection mean measures which ensure the planned status of the gas monitoring system.

The DYNAGARD SP does not require special maintenance. You should, however, take note of some points.

- Depending on the ambient conditions, gas monitoring systems may show a different behavior. It is important, therefore, to do a visual check every day.
- Check of gas processing system and filters (if any).
- Check of gas supply line for soiling or obstructions (for correct measurement the gas supply to the sensor must not be blocked).
- Electrochemical sensors are subject to ageing and exhausting. In general they need to be replaced after a period of 24 months. A sensitivity check can only be done with a suitable test gas. The sensitivity calibration is usually done by GfG's service or by authorized persons.

Trouble Shooting

Failure	Reason	Solution
Zero point cannot be adjusted	Faulty sensor	Replace sensor
Full scale cannot be adjusted	Faulty sensor	Replace sensor

Service Address

For additional questions on the product or in case of failure and problems please contact:

GfG Instrumentation, Inc.

1194 Oak Valley Drive

Suite 20

Ann Arbor, Mi. 48108

Phone: 734-769-0573

Fax: 734-769-1888

E-Mail: info@gfg-inc.com

Web: www.gfg-inc.com

Gases and Detection Ranges*

Gas	Range	MK type	Part number
Ammonia (NH ₃) for deep freezing applications	0...40 to 200 ppm 0...40 to 200 ppm	MK311-7 MK394-7	Please call GfG 2350400
Ammonia (NH ₃) for deep freezing applications	0...200 to 1000 ppm 0...200 to 1000 ppm	MK399-7 MK400-7	Please call GfG Please call GfG
Carbon monoxide (CO) (sensitive for H ₂ S)	0...100 to 500 ppm 0...400 to 2000 ppm	MK174-7 MK174-4	Please call GfG Please call GfG
Carbon monoxide (CO) (not sensitive for H ₂ S)	0...100 to 500 ppm 0...400 to 2000 ppm	MK175-7 MK175-4	2350407 Please call GfG
Chlorine (Cl ₂)	0...10 to 50 ppm 0...50 to 250 ppm	MK390-7 MK304-4	2350409 Please call GfG
Chlorine dioxide (ClO ₂)	0...0.2 to 1 ppm	MK391-7	2350412
Ethylene oxide (C ₂ H ₄ O)	0...20 to 100 ppm	MK340-7	2350413
Hydrogen (H ₂)	0...400 to 2000 ppm 0...0.2 to 1% Vol. 0...1 to 4% Vol.	MK305-7 MK402-7 MK406-7	Please call GfG Please call GfG Please call GfG
Hydrogen chloride (HCL)	0...40 to 200 ppm	MK309-7	2350417
Hydrogen cyanide (HCN)	0...10 to 50 ppm 0...40 to 200 ppm	MK409-7 MK336-7	2350418 Please call GfG
Hydrogen sulfide (H ₂ S)	0...40 to 200 ppm 0...200 to 1000 ppm	MK176-7 MK177-7	2350420 Please call GfG
Nitrogen dioxide (NO ₂)	0...10 to 50 ppm 0...40 to 200 ppm	MK310-7 MK310-4	2350422 Please call GfG
Nitrogen monoxide (NO)	0...50 to 300 ppm 0...300 to 1500 ppm	MK179-7 MK179-4	2350424 Please call GfG
Oxygen (O ₂)	0...5 to 25% Vol.	MK398-7	2350427
Ozone (O ₃)	0...1 to 5 ppm	MK397-7	Please call GfG
Sulfur dioxide (SO ₂)	0...10 to 50 ppm 0...100 to 500 ppm	MK306-7 MK307-7	2350431 Please call GfG
Silane (SiH ₄)	0...10 to 50 ppm	MK404-7	Please call GfG

* The maximum detection range of the individual sensors can be scaled down to one sixth. This is based on the following ratios: 10, 20, 25, 30, 40, 50, 100 ...etc.

Accessories

Calibration adapter

Part No.
2350-200

Technical Data

Standalone DYNAGARD SP

Type: DYNAGARD SP

Gas: Toxic gases and vapors, e.g. chlorine, ammonia or oxygen

Range: Refer to **SCAL** in menu

Gas supply: Diffusion

Detection principle: Electrochemical sensor

Response time T₉₀: < 5 s (depending on gas)

Sensor life: Toxic gases and oxygen > 2 years

Power Supply

Supply voltage: Standard Wall Pack: 100-120VAC, 0.3A, 60Hz
Optional Direct: 24 V DC @ 0.42A

Current consumption: 200 mA

Primary fuse: 200 mA

Secondary fuse: NA

Output current: 4...20 mA

Climate Conditions

Operational temperature: -15 .. +45 °C, 15 .. 96 % r. h., 920 .. 1080 hPa

Outputs

Analog output for measurement value: 4 .. 20 mA, maximum load 300 Ω

Relays: Maximum switching voltage 250 V AC 50/60 Hz or 250 V DC

Maximum switching current 4 A AC/DC

Maximum switching performance 1000 VA AC or

depending on voltage 50 .. 200 W DC

Relay outputs and mains connection are operation insulated

Enclosure

Material: UL 94 HB Polystyrene / Polycarbonate Lid

Sensor holder: Stainless steel

Diffusion surface: Stainless steel, sintered

Cable gland: Poly

Dimensions: 7.5 x 7.9 x 4.4 in. (w x h x d) (190 x 200 x 120 mm)

Weight: 2 lbs.

Safety

Ingress protection: IP 51

Specifications subject to change without notification.



GfG Instrumentation

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