GE
Security

KM300 Carbon Monoxide Detection System User Manual

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European representative for manufacture (EMC): GE Security B.V., Kelvinstraat 7, 6003 DH Weert, The Netherlands.

Content

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Agency compliance

The KM300 has been designed to conform to the requirements of UNE 23300:1984.

Introduction

Product description

The GE Security KM300 series panels are the ideal solution for the detection of dangerous levels of carbon monoxide (CO) gas in enclosed spaces.

System features

The KM300 offers robust and efficient CO detection with the following characteristics:

- Detection response of less than 10 seconds (using GE Security KM170 or KMD300 CO Detectors).
- Up to 15 detectors per zone.
- Coverage from 300 m^2 (single zone) up to 18,000 m^2 (four zones) using a single cabinet.
- Three relay outputs (two for ventilation, one for alarm) triggered by user-defined CO levels.
- Advanced system testing and self-testing functions to ensure reliable detection at all times.

Product range

The KM300 series comprises four models:

Table 1: KM300 series models

Model	Number of zones	Cabinet size
KM301	1	297 x 307 x 109 mm
KM302	2	297 x 307 x 109 mm
KM303	3	420 x 336 x 118 mm
KM304	4	420 x 336 x 118 mm

Product compatibility

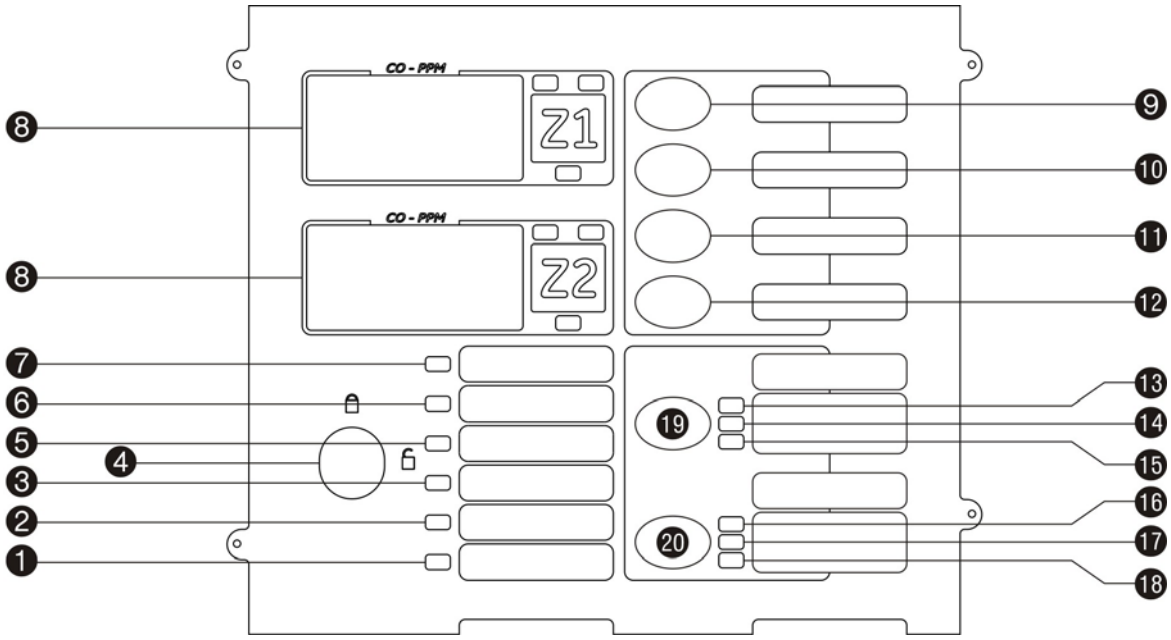
All models are compatible with GE Security KM170 and KMD300 CO detectors. Compatibility with third-party products cannot be guaranteed. Contact your local supplier for further information.

Interface

Panel Interface

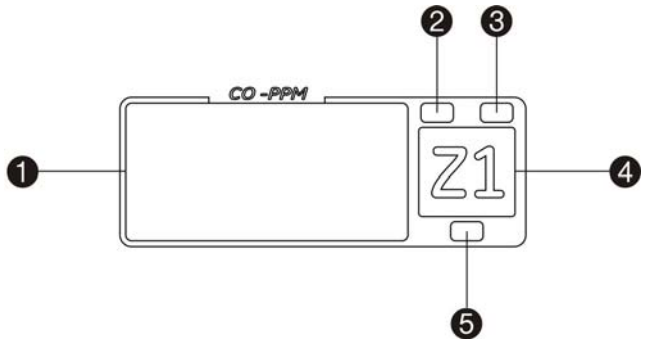
The common user interface is used to control and configure the CO detection system and each of its zones.

Figure 1: Two-zone panel interface



1. Battery LED
2. Fault LED
3. Ventilation LED
4. Key switch
5. Alarm LED
6. Out of Service LED
7. Supply On LED
8. Zone display window
9. Enable/Disable button
10. Silence Buzzer button
11. Auto Search/Test button
12. Configure button
13. LOW ventilation level 1 LED
14. MEDIUM ventilation level 1 LED
15. HIGH ventilation level 1 LED
16. Automatic mode LED
17. Manual mode LED
18. Stop mode LED
19. Level button
20. Mode button

Figure 2: Zone display window



1. Zone display
2. Alarm LED
3. Fault LED
4. Zone selection button
5. Zone selection LED
6.

Panel interface buttons

The buttons on the panel interface are used to configure the system.

Note: Each zone is configured individually and buttons only affect a selected zone. To select a zone press the corresponding Zone selection button before starting the configuration.

The panel interface buttons have the following functions.

Zone selection button

The zone selection button (see Figure 2 above) enables the configuration, test and disabling of a zone.

Zone Enabled/Disabled button

The Zone Enable/Disable button switches the selected zone on and off. The status of each zone is indicated in the zone display.

Silence Buzzer button

The Silence Buzzer button silences the internal buzzer and disables the alarm output relay. This will silence the alarm only when there is no alarm condition active.

Auto Search/Test button

The Auto Search/Test button is used to test all LEDs (including the zone seven-segment zone LEDs) and the internal buzzer. Pressing this button also reads the number of active detectors in the selected zone (this information is used for error checking purposes).

Configure button

The Configure button is used to configure the detection zones and cycle through the different configuration options.

Level button

The Level button is used to define the CO concentration level that will trigger the ventilation relay output.

Mode button

The Mode button is used to select the different ventilation modes. These are:

- **Automatic**: Automatic ventilation mode enables the system to trigger the ventilation output automatically when a detector reaches the predefined alarm level. A short user-defined delay in which the ventilation LED flashes precedes ventilation. This LED will be constantly lit during ventilation. Ventilation will continue for a short period after CO levels have decreased.
- **Manual**: Manual mode requires a manual activation of the ventilation relay output. Pressing the button will trigger the ventilation.
- **Stop**: Stop mode disables the ventilation system.

Panel interface LEDs

The LEDs on the common user interface indicate system settings, modes of operation, and tasks performed by the system.

Supply On LED

A green LED indicates that mains power is connected and the panel is powered up.

Out of Service LED

A yellow LED indicates that the panel CPU is not active (the entire system is out of service and dangerous CO levels will not be indicated).

Alarm LED

A red LED indicates an alarm in one or more of the zones (the default or user-configured alarm CO levels have been detected).

Ventilation LED

A green LED indicates that a zone has reached the predefined ventilation ppm level and ventilation is active. The display of the zone in ventilation will flash.

Fault LED

A yellow LED indicates that a fault has been detected. If a zone fault LED is also lit it indicates a fault in the corresponding zone. If no zone fault LED is lit it indicates a system fault.

The Zone Fault LED will flash if the option to automatically activate the alarm relay when an alarm is detected has been disabled.

Battery LED

A constant yellow LED indicates that a powered battery is connected. The LED will flash if the battery is discharged.

Ventilation level LEDs

A green LED indicates which of the three predefined ventilation levels is selected.

Ventilation mode LEDs

A green LED indicates which of the three predefined ventilation modes is selected.

Zone alarm LED

A red LED indicates an alarm in the corresponding zone (the default or user-configured alarm CO levels have been detected).

Zone fault LED

A yellow LED indicates that a fault has been detected in the corresponding zone.

Zone selection LED

A green LED indicates that the corresponding zone is selected and configuration for that zone is enabled.

Note: Zone alarm and zone fault LEDs always follow general indication LEDs**.**

Operating modes

The CO detection system operates in the following modes:

- Start-up
- Standby
- Alarm
- Ventilation
- Fault
- Disabled

The alarm, ventilation, and fault modes are indicated by the red, green or yellow LEDs on each zone module display. See Figure 2 on page 5.

Start-up mode

During this individual zone mode the system performs an initial test to verify if the selected zone is working properly. It checks for excessive power consumption or a short circuit in the communication bus.

After 10 seconds with no fault detected the zone automatically enters Standby mode. If any of the above mentioned faults are detected, the panel goes into Fault mode.

Standby mode

This is the normal operating mode where no event is detected. Each active zone display shows the current highest CO concentration level detected by detectors in the corresponding zone.

Alarm mode

A zone enters alarm mode when the predefined alarm level of CO is reached and once the alarm has been verified. Both the general Alarm LED indicator and the corresponding zone module alarm LED will be lit. The alarm output relay and acoustic signal for the corresponding zone will also be activated.

Once the alarm event has been fixed the panel will automatically revert to Standby mode.

Ventilation mode

This individual zone mode is activated when the CO level in a zone reaches the user-predefined ventilation level. The green Ventilation LED will be lit and the corresponding zone's display will start to flash. The ventilation LED will flash when performing a level 1 ventilation and will be constant when performing a level 2 ventilation.

Zone fault mode

If a fault is detected in a zone the system will activate an intermittent acoustic signal and both the general Fault LED indicator and the corresponding zone module Fault LED indicator will be lit. The zone module display will automatically show the error code for the detected fault.

Note: There is a user-defined delay before any fault is indicated by the system.

Once the detected fault has been fixed press the Zone Enable/Disable button to reset the zone. See Table 4 on page 13 for more information on fault codes.

System fault mode:

If a system fault is detected the system will activate an intermittent acoustic signal and the general Fault LED indicator will be lit.

Note: There is a user-defined delay before any fault is indicated by the system.

The general Fault LED will remain constant if there is a high voltage fault but the CPU is working properly. The general Fault LED will flash if the detected fault is caused by low voltage but the CPU is working properly. If there is a CPU fault the Fault LED will go off and the Out of Service LED will be lit.

Disabled mode:

This zone mode disables the selected zone.

To disable a zone, press the corresponding zone selection button and the zone Enable/Disable button.

To enable a disabled zone, press the corresponding zone selection button and the zone Enable/Disable button. The system will automatically perform a test in the enabled zone, and enter Standby mode if no fault is detected.

Caution: In Disabled mode there is no communication between the panel and the detectors of the corresponding zone.

Configuration

Configuration mode

To enter Configuration mode:

1. Press the zone selection button of a particular zone. The green LED of the corresponding zone will confirm the zone selection.
2. Use the Configure button to cycle through the configuration menu and select a configuration option (see “Configuration options” below).
3. Use the Level, Mode, and Silence alarm buttons to modify numeric parameters (as indicated below). Where configuration options are only ON/OFF use the Silence Alarm button to toggle between each state.
4. Press the Configure button to exit the configuration menu.

On entering Configuration mode, configuration option 1 (Ventilation level 1) is displayed.

Configuration mode will exit after the final option of the configuration menu or after 15 seconds if no button is pressed.

Entering configuration values

Configuration values are entered as shown below.

Button	Description
Silence Alarm	5 ppm increase OR toggle ON/OFF options
Mode	10 ppm increase
Level	100 ppm increase

Configuration options

There are 21 numbered configuration options, as shown in Table 2 below.

Caution: Each zone must be configured individually.

Table 2: Configuration options and default values

Option	Parameter	Default Value	Description
1	Ventilation level 1 (LOW)	50	The low CO ppm level for ventilation level 1.
2	Ventilation level 1 (MEDIUM)	100	The medium CO ppm level for ventilation level 1.
3	Ventilation level 1 (HIGH)	150	The high CO ppm level for ventilation level 1.

Option	Parameter	Default Value	Description
4	Ventilation level 2	150	The CO ppm level for ventilation level 2.
5	Peak alarm level	250	The CO ppm peak alarm level.
6	Average alarm level	200	The CO ppm average alarm level.
7	Alarm relay activated with alarm	ON	
8	Alarm relay activated with fault	OFF	
9	Alarm relay activated with ventilation	OFF	
10	Alarm relay deactivated with Silence Buzzer button	ON	
11	Missing detector detection	OFF	
12	Latch detector fault condition	ON	Panel fault indicator is latched if there has been a detector fault
13	Number of alarms detected	0	Alarm counter
14	Number of ventilation s performed	0	Ventilation counter
15	Delay time for mode button (seconds)	20	
16	Confirmation delay to activate ventilation (seconds)	60	
17	Confirmation delay to deactivate ventilation (seconds)	120	
18	Idle time to exit configuration mode (seconds)	15	
19	Confirmation time to alarm activation (seconds)	20	
20	Confirmation time to fault activation (seconds)	240	
21	Number of detectors in the zone	Test button programmed	The number of detectors in the zone. This value should be programmed by the installer (in Test mode).

* Use the Silence Alarm button to reset the alarm.

Caution: The value for Ventilation level 2 must be less than the value for Average alarm level, and the value for Average alarm level must be less than the value for Peak alarm level. The panel will not allow any configuration change that does not comply with this hierarchy.

Maintenance and safety

The following maintenance procedures should be performed. by qualified personnel adhering to any applicable local authority laws.

System maintenance

Built-in system and self-testing functions should ensure that your CO detection system is always working correctly.

For increased safety we recommend that you:

- Perform regular inspections of the system. The frequency of such inspections will be determined by environmental factors such as relative humidity, excessive dirt or dust and concentration of any other gas.
- Keep a logbook of all faults reported by the system (or the result of an inspection) and record the resolution date. Refer to the logbook regularly to ensure all faults have been repaired.

Caution: Do not tamper with zone module circuit board or electronics.

For detector lifespan information, see your detector installation sheet.

Detector calibration

A calibration service is provided by GE Security. Contact your local supplier for details.

Carbon monoxide safety levels

The following table of CO levels and health effects is provided as a guide only.

Table 3: CO EFFECTS ON HEALTH

	2 minutes	5 minutes	15 minutes	40 minutes	120 minutes
200 ppm					Headache
400 ppm				Headache	Dizziness
800 ppm			Headache	Dizziness	Unconsciousness
1600 ppm		Headache	Dizziness	Unconsciousness	Death
3200 ppm	Headache	Dizziness	Unconsciousness	Death	
6400 ppm	Dizziness	Unconsciousness	Death		
12800 ppm	Unconsciousness	Death			

Caution: Maximum recommended CO levels and exposure guidelines vary from country to country. Your detection system should be calibrated to comply with local safety levels and regulations.

Troubleshooting

Table 4: Zone fault codes

Code	Fault	Possible cause
500	Scanning fault	1. Cabling: Check that the polarities of the zone are followed on all detectors and check that the data line is correctly connected 2. Power supply: Check that there is voltage on the zone, for example confirm that the zone fuse is OK.
501	Detector fault low line	Broken filament.
502	Low line voltage	A detector is reporting low voltage in the power supply line.
503	Missing detector	One or more detectors have been disconnected.
504	Excessive power consumption	Short circuit in the zone power supply line.
505	Communication line voltage error	
506	Rectified voltage < 10 V	
507	Rectified voltage > 23 V	