

TELEFIRE

TFGC-750

Carbon Monoxide (CO) Detector

Technical Manual



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Revision 1.01
February 2026

PN TFGC-750En

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Fire alarm systems are composed and assembled of different devices and subsystems, such as control panels, annunciators, smoke detectors, heat detectors, manual call points, extinguishing activation devices, and annunciating devices intended to alert to fire and/or smoke.

Using this system does not ensure protection from or prevention of fire and/or smoke damages, but proper use of the system may reduce fire and smoke damages.

Proper system configuration design – including all of its components and infrastructure, as well as proper installation according to the manufacturers' instructions and the applicable standards – are a conditioned precedent for the proper and efficient function of the system.

The designer and installer should have the appropriate skills and qualifications for performing said installation and it must be performed by a licensed electrician in accordance with all applicable laws (including the directives of the national fire and rescue authority) and the manufacturer's instructions accompanying the product. Any damages or losses resulting from improper design and/or installation lie with the designer and/or installer alone.

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Note

The intent and meaning of the term **"Trouble"** are as used in **NFPA 72** guideline and **UL** standard.

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Note

Do not attempt to install, operate, maintain or inspect this product until you have read through this instruction manual and appended documents carefully and can use the equipment correctly. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

1 Introduction

Telefire's TFGC-750 addressable carbon monoxide (CO) detector is an advanced detector that offers the following advantages:

- Advanced electrochemical CO sensing that can operate in either level activation or accumulation mode according to UL and EN requirements.

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Note

CO detectors are intended to initiate a CO gas alarm only. In the control panel, a CO gas alarm is defined as a "Status" event and must be annunciated distinctly from a fire alarm. CO detectors should not be used to initiate a fire alarm.

- Selectable gas detection operation modes, Gas Accumulation or Gas Level, with configurable sensitivity settings.
- The TFGC-750 contains a powerful microprocessor that performs initial signal processing locally. The final processing and decision making is performed by the control panel.
- The TFGC-750's microprocessor offers a high level of noise immunity. The microprocessor also performs signal processing, manages the communication process with the control panel and performs a self-test for the CO sensor to help ensure steady and solid functionality.
- Operational testing of the TFGC-750 can be performed with a test magnet or remotely from the control panel. This test is not a substitution for a functional CO gas test using an approved canned CO testing agent.
- Soft-set address – the detector's address is programmed into its memory without the use of mechanical switches or moving parts.
- The sensitivity of the detector can be adjusted by selecting the operation mode, level or accumulation from the control panel (see section 3.2.2 for further details).
- The detector contains an alarm LED that has 360° visibility. This LED flashes during normal operation and is latched on during an alarm.

2 Compatibility

2.1 Control Panels

The TFGC-750 is compatible with Telefire's 7000 series of Analog Addressable Control Panels.

To support the TFGC-750, the control panel requires the following:

- Control panel software version 5.75 or above

2.2 Detector Bases

The TFGC-750 is compatible with Telefire's TFB-180 Standard Detector Base.

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Warning

Do not connect these detectors to control panels made by manufacturers other than Telefire.

3 Installation

Planning of quantity and location of detectors shall be done according to the local codes and regulations and in accordance to the planning consultant's requirements.

3.1 Pre-Installation Planning

3.1.1 Capacity Planning

Ensure that the total number of initiating devices (detectors, switches, call points, etc.) does not exceed the maximum allowed per detection zone, floor area, or other limitations as specified by the applicable standards and regulations. Ensure that the Control Panel has an available address for each detector.

3.1.2 Cabling Planning

The detector is connected to the control panel via a TFB-180 standard detector base via a two-wire connection (the control panel's SLC loop). The detector has an output for activating a TFL-1AN Auxiliary Signaling Indicator for Analog Addressable Detectors. It is recommended that you use a twisted pair cable for SLC connection.

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Note

Notify the operator or the security personnel that the system will be temporarily disconnected before adding detectors to the control panel.

3.2 Installation

3.2.1 Address Programming

Assign the TFGC-750's address in the range of 1 – 127 prior to installation either by using the PROG-4000 Analog Addressable Detector and Accessory Programmer or directly from the control panel's built-in programmer. Please refer to the PROG-4000 manual or control panel's manual for additional details.

3.2.2 Control Panel Configuration

Configure the detector as a "**Gas Detector**" with Mode "**CO**" in the control panel.

The TFGC-750 has two operation modes:

1. **Gas Accumulation mode** – in this mode, a gas alarm is generated by CO level readings that are accumulated over time. The following table describes the accumulation time (in minutes) required to trigger a gas alarm for each sensitivity level.

Sensitivity	CO Level (ppm)		
	75ppm	150ppm	400ppm
1	67	14	6
2	81	17	7
3	94	19	8
4	107	22	9
5	121	25	10
6	134	27	11
7	147	30	12

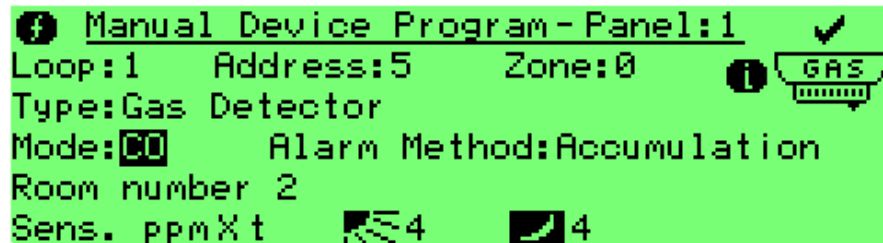


Figure 1 Device Programming – Gas Detector (Gas Accumulation Mode)

2. **Gas Level mode** – This mode activates a gas alarm within 10 seconds of detection.

The configurable sensitivity levels are as follows:

- 50ppm
- 100ppm
- 150ppm
- 200ppm
- 250ppm
- 300ppm
- 400ppm

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Note

The above list of configurable modes and sensitivity settings are relevant to control panels running in EN mode only. For control panels running in UL mode, the control panel does not enable modification of the TFGC-750's configuration settings. In UL mode this device operates in Gas Accumulation mode with level 4 sensitivity in the Gas Accumulation Mode table above.

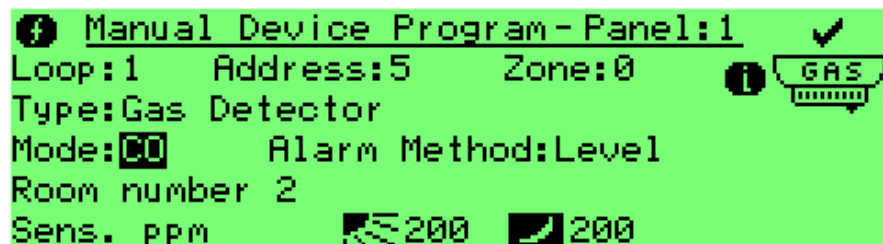


Figure 2 Device Programming – Gas Detector (Gas Level Mode)

Please refer to the control panel's technical manual for a detailed description of programming and configuration.

3.2.3 Location

Consider standard guidelines and local codes when installing the TFGC-750.

Use only Telefire's TFB-180 Standard Detector Base.

For remote signaling use only Telefire's TFL-1NA Auxiliary Signaling Indicator for Analog Addressable Detectors.

3.2.4 Connecting to the SLC Line

Connect the SLC to the detector's base. Refer to the TFB-180 technical manual for details.

All wiring must conform to applicable local codes, ordinances and regulations.

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Note

Measure the wiring to ensure there are no shorts before connecting the wiring to the control panel.

Connecting or adding detectors to the control panel shall be done when all power to the control power (AC and batteries) is disconnected.

3.2.5 Controlled Output

A carbon monoxide alarm from the TFGC-750 detector generates a status event in the control panel. Since status events do not activate a fire alarm, the CO alarm cannot be included as part of a fire alarm matrix. Therefore, for audible and visual indication of the detected CO alarm, it is necessary to install an additional output module or relay module to activate devices such as sounders, strobes and electronic signage.

Additionally, other devices such as exhaust fans, make-up air (MUA) fans and door release mechanisms can also be connected to controlled outputs and activated in the event of a CO alarm.

The addressable modules that are typically used for these applications are as follows:

- **ADR-723** – NAC outputs, dry contacts
- **ADR-741** – dry contacts
- **TLD-08 + R8** – dry contacts

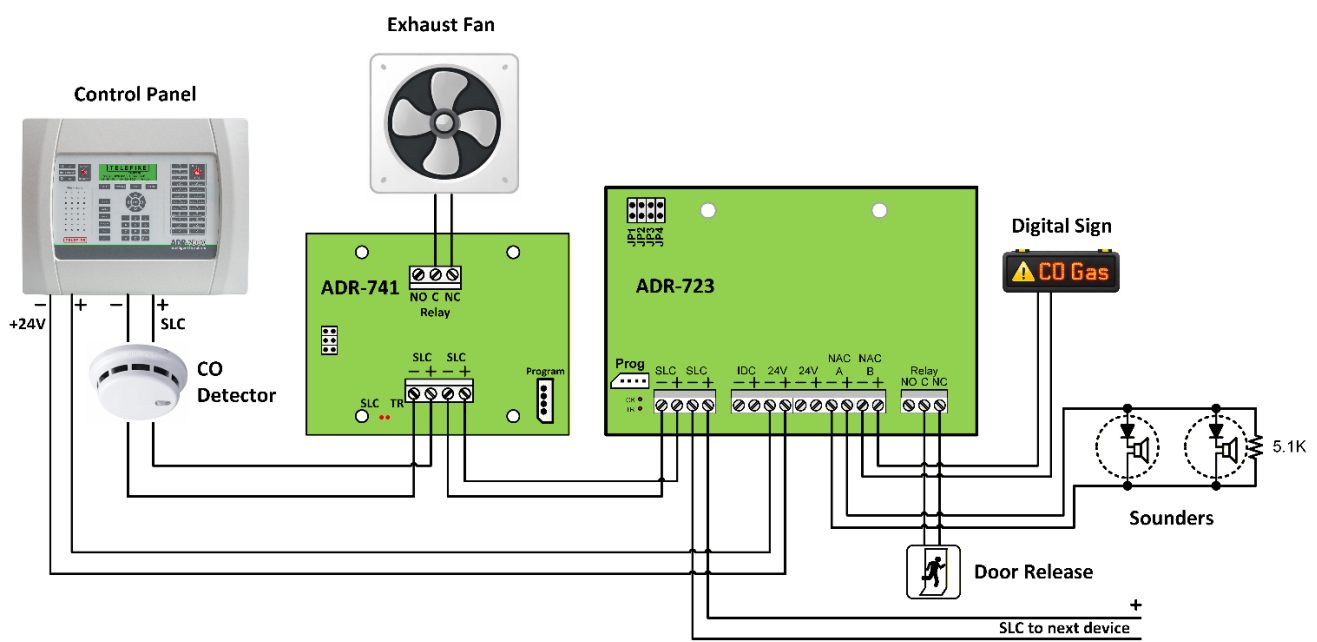


Figure 3 TFGC-750 CO Detector – Typical Installation

Each output that needs to be activated by a CO alarm should be programmed as follows:

- In Device Programming, the required address should be defined as
Type: **Control Out**, Mode: **Gas Alarm**.

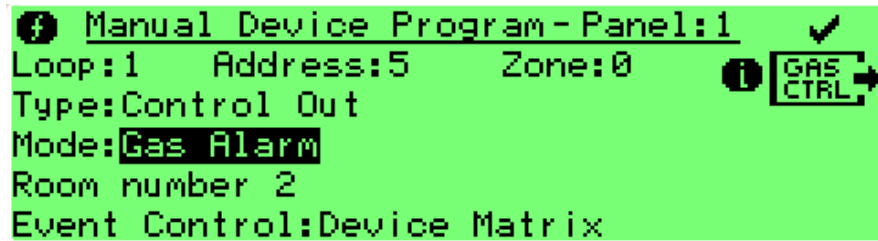


Figure 4 Device Programming – Control Out for Gas Alarm

- To program the output, it is necessary to define which CO detector will cause it to activate. To do so, define the Event Control for the output as Device Matrix and choose the address of the CO detector that will activate the output in the event of a CO alarm.

3.3 Post-Installation – Field Test

Perform a field test (also known as "Walk Test") to ensure that all detectors function properly. Please see the control panel's manual for a detailed explanation on how to perform a field test. Testing is automatic other than the activation of the detector that is done manually by putting a magnet next to the detector's test point. See section 4.1.1 for a detailed explanation on how to perform the test.

Ensure that the detector functions properly.

3.4 Documentation

Mark the device with its loop address using a durable label in a visible location.

4 Maintenance

The control panel monitors the CO detectors continuously. Any abnormal condition in the detector will cause a trouble signal to be displayed on the control panel.

The TFGC-750 CO detector has an expected lifetime of approximately 10 years. When the detector approaches the end of this lifetime, the panel will display a maintenance message and the detector must be replaced.

4.1 Periodic Testing

Fire alarm and CO detection systems should be checked periodically. Please refer to the relevant standards and local regulation to determine service frequency. Use the control panel's Walk Test mode to perform automatic reset.

Please refer to the control panel's manual for additional details on how to perform a Walk Test.

4.1.1 Test Procedure – Local

To perform an Operational test:

1. Apply a magnet to the side of the detector next to the LED for 3 to 5 seconds. This simulates a CO detection alarm from the detector.
2. The analog value representing the CO level will be transmitted to the control panel for evaluation. The control panel generates a CO alarm status event and transmits a signal to the detector to turn on its LED. Please refer to the Control Panel manual for additional information.

3. Once the detector is in alarm mode, it keeps the alarm condition until reset by the control panel. If the control panel is in "Walk Test" mode, it will reset the alarm after a few seconds. Please refer to the Control Panel manual for instructions on how to conduct a walk test.

Following the operational test, perform a Functional CO gas test using an approved canned CO testing agent. To do so, place a test cup over the detector to ensure a proper seal around the sensing vents, apply a short and controlled burst of CO test gas and observe the detector response. If the detector is in Level mode, an alarm should be generated within 10 seconds of sensing the defined ppm level. If the detector is in Accumulation mode, the alarm time depends on the sensitivity setting and the ppm level.

4.1.2 Test Procedure – From the Control Panel

It is also possible to test the detector using the Control Panel "Monitor" option menu. Please refer to the Control Panel manual for instructions on how to use and interpret the monitor screen.

5 Indications and Troubleshooting

The detector includes an indicating LED that flashes with every access from the control panel and is turned solid on during a CO alarm. A detailed message will also be displayed on the control panel and remote annunciators.

Please see the control panel's manual for a detailed explanation of status, fault, and maintenance indication.

6 Specification

Diameter	101mm including base
Height (including base and LED).....	52mm
Weight	approximately 100g
Operating Temperature Range	0°C – +50°C (32°F – 122°F)
Relative Humidity Range	10% – 93% non-condensing
Sensitivity Range (set at control panel).....	50 – 400ppm
Operating Modes	Level or Accumulation
Operating Voltage (supplied by control panel via SLC).....	19 – 22 Vdc, Modulated
Maximum Current Consumption:	
Quiescence mode	250µA
Alarm mode (without Auxiliary Indicators)	2.4mA max.
Alarm mode (3 Auxiliary Indicators)	35mA max.
Local Indication	Local red LED (light-emitting diode) and an auxiliary indicator output. Use only Telefire's TFL-1AN Auxiliary Indicator for Analog Addressable Conventional Detectors. Connect up to 5 auxiliary indicators to each detector.

Only devices approved by Telefire are allowed to be connected.

Telefire reserves the right to modify product specifications without prior notice

7 Certification

Telefire's TFGC-750 Addressable CO Detector has the following approvals:

- EN 54-26 listed