

# TRIPLE-C

NO CALIBRATION • NO CHARGING • NO COST



## USER MANUAL



MED 0575

**martek**<sup>TM</sup>  
MARINE  
Innovative Ship Solutions



















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## WARNING STATEMENTS

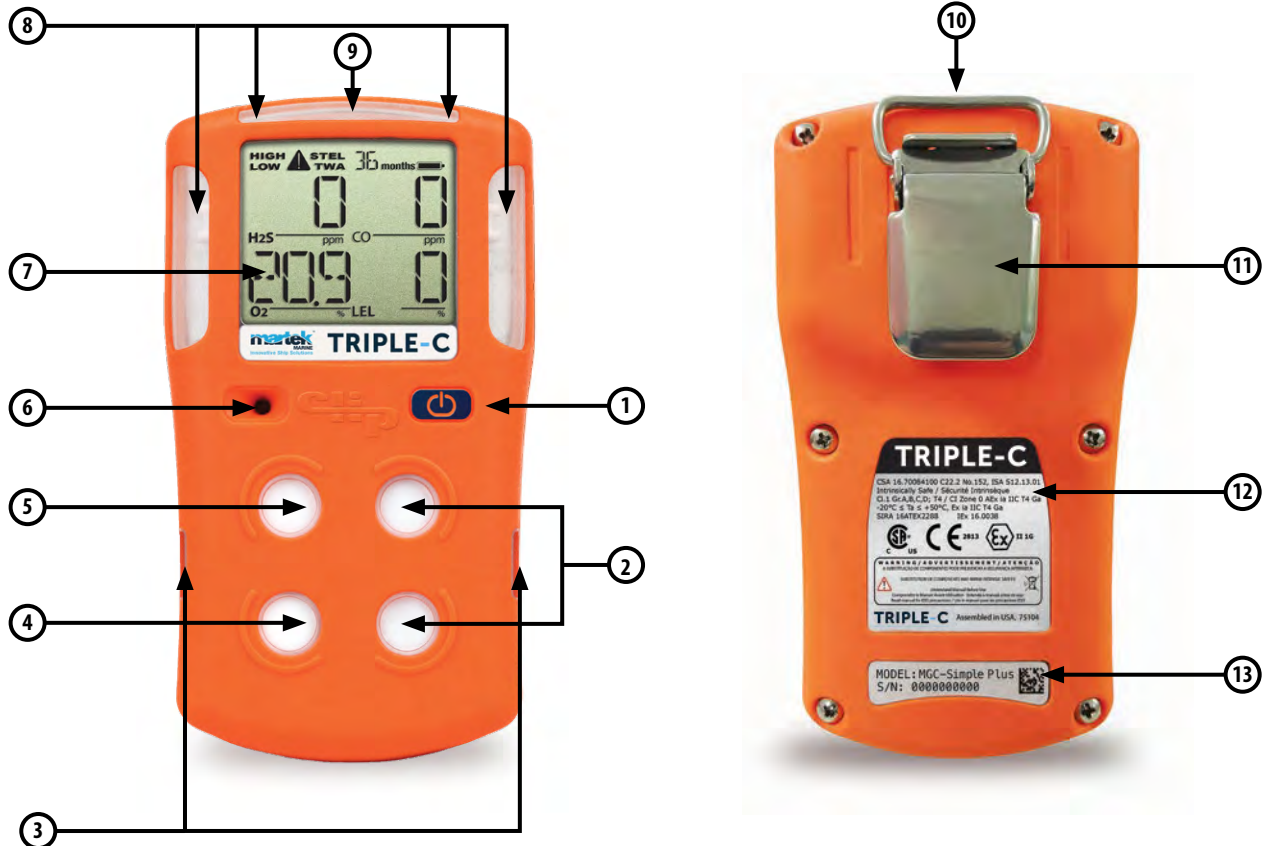
-  DO NOT substitute components as this may interfere with the intrinsic safety of the device.
-  DO NOT substitute any other battery type than specified and supplied by Martek Marine.
-  Only use Martek Marine parts in the detector. Non-approved parts will void the warranty and are considered unsafe.
-  Before each use, check that all sensor and alarm ports are clear of any obstructions, i.e. debris or blockage.
-  The detector contains a lithium battery that must be disposed of by a qualified recycler. Check local regulations for proper disposal.
-  DO NOT use IR communications when an explosive atmosphere may be present.
-  If you suspect any malfunction or have any technical problems, contact Martek at +44 (0)1709 599 222.
-  The battery may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F) or incinerate. Contact Martek Marine for replacement instructions. Use of another battery may present a risk of fire or explosion.
-  Keep new and used batteries away from children.
-  DO NOT expose the detector to sensor poisons such as, but not limited to: alcohol, citrus-based cleaners, silicones, lead compounds (e.g. tetraethyl lead), sulfur compounds, phosphorus, halogenated hydrocarbons and aerosols. Exposure to poisons may impair the accuracy and/or response time of the detector.
-  If suspected sensor poisoning has occurred, recheck the detector (both calibrate and bump test).
-  Caution: Before each day's usage, sensitivity must be tested on a known concentration of methane equivalent to 25-50% of full-scale concentration. Accuracy must be within 0-20% of actual. Accuracy may be corrected by calibrating the detector.
-  The detector should be bump tested before use with a known concentration of gas to confirm its ability to respond to gas. Calibrate the detector if the readings are not within the specified limits.
-  Any rapid up-scale reading, followed by a declining or erratic reading, may indicate a gas concentration beyond upper scale limit which may be hazardous.
-  Strong Electromagnetic Interference (EMI) may cause incorrect operations.
-  Only the combustible gas detection portion of this instrument has been assessed for performance by CSA International.



### READ FIRST BEFORE OPERATION

Martek Marine's TRIPLE-C detectors are personal safety devices designed to detect the presence of specific toxic gases: carbon monoxide (CO), hydrogen sulfide (H<sub>2</sub>S), oxygen (O<sub>2</sub>) and combustible gases/Lower Explosive Limit (LEL). Before operation, ensure that you have been properly trained on the use of the equipment and the appropriate actions to take in the event of an alarm condition.

## DETECTOR COMPONENTS

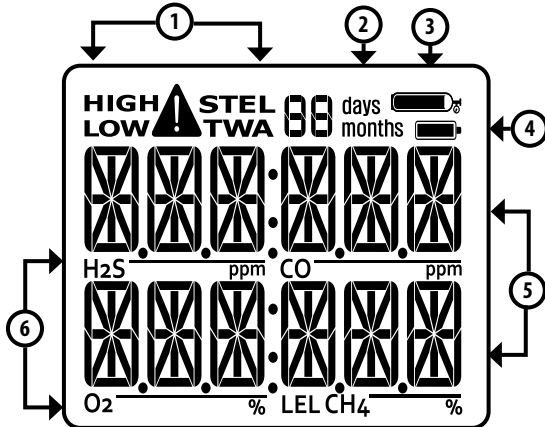


ENTRY	DESCRIPTION
1	Power/Menu Button
2	LEL Sensor
3	Calibration Cap Ports
4	O <sub>2</sub> Sensor
5	Dual Tox Sensor
6	Audible Alarm Port
7	Display
8	Alarm Bar LEDs
9	Maintenance LEDs
10	Infrared (IR) Communication Window
11	Alligator Clip with Safety Ring
12	Certification Label
13	Model and Serial Label

**Included in the box: TRIPLE-C Detector, Calibration Cap,  
Quick Start Guide & Calibration Certificate.**

## DISPLAY COMPONENTS

### Display Layout



Item	Description
1	Alarm Condition
2	Life Remaining
3	Calibration/Test Mode
4	Battery Indicator
5	Gas Readings
6	Gas Identifiers

### Display Details

When a detected gas has a Gas Reading (5) at or above its alarm thresholds, the Gas Identifier (6) for that particular gas will flash and a warning symbol will appear at the top of the display along with the associated Alarm Condition (1).

**Detector Life Countdown** - Once activated, the detector will display 36 months of Life Remaining (2). Detector will continue to countdown and display the number of months remaining until 30 days remain. Display will then begin showing the number of days remaining until end of life.

During a calibration or bump test, the Calibration/Test Mode icon (3) will appear and flash indicating it is time to apply gas.

The Battery Indicator (4) is displayed as a battery icon which is solid as long as the battery is not low. The battery won't need charging or replacing during the life of the detector. When the battery approaches end of life it will proceed through the following steps:

- 1/3 of Battery life remaining: Battery Indicator appears as outline only
- 20 Minutes remaining: Battery Indicator appears as outline only, single beep/flash
- 10 Minutes remaining: Battery Indicator outline flashes, single beep/flash
- 5 Minutes remaining: continuous beep/flash every 5 seconds
- Expired: 5 long beeps/flashes and then "LOW BAT" is displayed

- Warning:** Users must familiarize themselves with the display icons in both non-alarm and alarm states.
- Warning:** If the display is missing icons, or cannot be clearly read, discontinue use and contact Martek.
- Warning:** The IR LEL sensor will not detect hydrogen (H<sub>2</sub>) or acetylene (C<sub>2</sub>H<sub>2</sub>) gases; however, due to their cross sensitive nature, the CO sensor will go into alarm well below 10% LEL.




## BASIC OPERATION

### Button Usage

The following operations are driven by the Power/Menu Button located on the front of the detector:

- Turning on the detector
- Menu navigation
  - Main Menu
  - Status Menu
  - Option Menu
- Bump testing
- Calibration/Auto Zero
- Retest
- Latched Alarm acknowledgment
- Back-light activation
- Off Mode

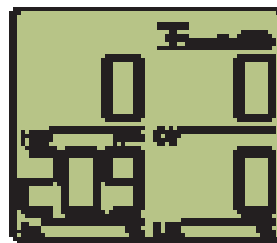
### Turning On the Detector

 Detector must be turned on in a known clean air environment.


Once activated, the detector will run continuously for 36 months. To activate, briefly hold down the Power/Menu Button. The alarm bars will flash, the detector will vibrate and a start up tone will sound while the detector self-tests the visual, vibrating and audible alarms. Each sensor will show a chasing "0" for the sensor reading while it is stabilizing and being self-tested. Once all sensors have completed the warm up and stabilization sequence (~ 65 seconds), the detector is fully operational and ready to detect all applicable gases.




Chasing "0" - stabilizing



Fully operational

 **Caution:** The detector should always be bump tested prior to operational use (see Bump Testing section, pages 9-11).

 **Caution:** The detector should be worn on a location within the breathing zone.

### Off Mode

To power down the sensors for temporary storage or travel, hold down the Power/Menu Button throughout the AUTO ZERO, RETEST and OFF count downs. Release the button when the "OFF OK" message appears. Sensors are now deactivated. The screen will display "OFF" and the life remaining on the detector. To turn the detector back on, hold the power button down briefly. To disable the Off Mode feature, use the Off Lock option (see Adjustable Options section, page 7).

NOTE: The Off Mode only deactivates the sensors, the life remaining clock continues to count down.

## ALARMS

### Alarm Behavior

The following table describes the detector's behavior under various alarm conditions:

Alarm Condition	Audible Alarm	Vibration Alarm	Visual Alarm
Low	slow beep	slow vibration	slow LED flash
High	fast beep	fast vibration	fast LED flash
TWA	slow beep	slow vibration	slow LED flash
STEL	fast beep	fast vibration	fast LED flash
Multi	slow/fast beep	slow/fast vibration	slow/fast LED flash
Sensor Error	fast beep	fast vibration	fast LED flash
Low Battery	1/3 of Battery life remaining: battery outline only 20 Minutes remaining: single beep/flash, battery outline only 10 Minutes remaining: single beep/flash, battery outline flashes 5 Minutes remaining: continuous beep/flash every 5 seconds Expired: 5 long beeps/flushes then "LOW BAT" is displayed		

Examples of alarm condition screens:



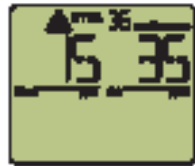
Low Alarm



High Alarm



Time Weighted Average



Short Term Exposure Limit



Multiple Alarms



Low Battery



LEL Sensor Error



H<sub>2</sub>S Sensor Error



CO Sensor Error



O<sub>2</sub> Sensor Error



Bump Due



Calibration Due

### Default Alarms

Sensor	H <sub>2</sub> S	CO	O <sub>2</sub>	LEL
Low	5 ppm	25 ppm	19%	10%
High	10 ppm	200 ppm	23%	20%
TWA	5 ppm	25 ppm		
STEL	10 ppm	50 ppm		

Alarms are non-latching by default. Alarm thresholds, STEL (Short Term Exposure Limit) intervals, TWA (Time Weighted Average) intervals and latching options may be configured (see **Adjustable Options** section, pages 7-8, for more details).



## DETECTOR MENUS

### Main Menu

Once activated, the Main Menu is accessed by pressing the Power/Menu Button two separate times in quick succession (double-tap). The detector will display in the following order:

1. **Life Remaining** – Number of months and days left before the 36 month life of the detector expires. Months remaining will display until there are less than 30 days remaining. From that time, until the end of life, only days remaining will display.
2. **Date/Time** – Current date & time automatically sets every time the detector is communicated with via GCT IR Link or TRIPLE-C Clip Dock.
3. **User ID/Message** – A unique programmed message, up to 46 alpha-numeric characters, can be assigned to individual detectors (refer to the **Adjustable Options** section, page 7). If the User ID/Message does not fit on one screen, it will scroll right-to-left twice. If no User ID/Message is set up, the detector will display the default User ID/Message, MARTEK MARINE TRIPLE – C, then skip ahead to the Sub-Menu Prompts, “SHOW STATUS” & “SHOW OPTION”.
4. **Sub-Menu Prompts** - Two prompts, "SHOW STATUS" and "SHOW OPTION", will display one after another. Pressing the Power/Menu Button briefly during either Sub-Menu prompt will display the detector's current information. "SHOW STATUS" accesses the Status Menu and "SHOW OPTION" accesses the Option Menu. If the Power/Menu Button is not pressed during "SHOW STATUS" or "SHOW OPTION", the detector will immediately return to normal operation.

### Status Menu

The Status Menu is accessed by pressing the Power/Menu Button once during the “SHOW STATUS” prompt. The detector will display in the following order:

1. **L. CAL** – the last calibration date
2. **CAL DUE or CAL IN XXXd.** – denotes if a calibration is due or how many days until it is due (will be displayed only if a calibration interval has been set up)
3. **L. BUMP** – the last bump test date
4. **BUMP DUE or BUMP XXXd.** – denotes if a bump test is due or how many days until it is due (will be displayed only if a bump test interval has been set up)
5. **TWA** – current Time Weighted Average readings.
6. **STEL** – current Short Term Exposure Limit readings.
7. **HIGH** – peak sensor readings.
8. **CLEAR ALL prompt** – press Power/Menu Button once during CLEAR ALL prompt to clear the TWA, STEL and Peak sensor readings.

**Calibration Information** - The date of the last calibration, along with the number of days remaining until the next calibration is due, will be displayed. If calibration is due, the detector must be calibrated (refer to the **Calibration** section, page 12).

**Bump Test Information** - The date of the last bump test, along with the number of days remaining until the bump test is due, will be displayed. If a bump test is due, the detector must be bump tested (refer to the **Bump Testing** section, pages 9-11).

**Peak Levels** - The detector will display the current TWA and STEL readings, followed by the peak concentrations recorded for each sensor since the last “CLEAR ALL”.

**Clear Peak Levels** - Pressing the Power/Menu Button during the “CLEAR ALL” prompt will cause the TWA, STEL and peak concentrations to be cleared. Note: this does not remove the information from the internal memory logs of the detector.





## DETECTOR MENUS continued

### **Option Menu**

The Option Menu is accessed by pressing the Power/Menu Button once during the "SHOW OPTION" prompt. The detector will display in the following order:

1. **FW VER** – the current firmware version
2. **TWA** - the set alarm limits for Time Weighted Average
3. **STEL** - the set alarm limits for Short Term Exposure Limit
4. **LOW** - the set alarm limits
5. **HIGH** - the set alarm limits

**Firmware Version** - It is recommended to use the most current firmware version available. The most current firmware version can be easily downloaded from the Resources page of the GCT website at [www.gascliptech.com](http://www.gascliptech.com). Firmware can be installed using the GCT IR Link or TRIPLE-C Clip Dock.

**Alarm Set Points** - The current alarm limits for TWA, STEL, LOW and HIGH will be displayed in sequence. Set points can be adjusted using the GCT IR Link or TRIPLE-C Clip Dock (see **Adjustable Options** section, page 7).

## ADJUSTABLE OPTIONS

The following options can be configured using the GCT IR Link or TRIPLE-C Clip Dock:

**User ID/Message** - An optional, user-programmable, text message containing up to 46 alpha-numeric characters can be used to show company branding, a detector identifier or any other pertinent information. The User ID/Message will be displayed right after the date and time each time the Main Menu is accessed. Default User ID/Message is "MARTEK MARINE TRIPLE – C".

**Alarm Limits** - This option allows you to set sensor low and high alarm limits. Each sensor contains separate alarm threshold values that tell the detector when to go into alarm.

 **Caution: Confirm alarm levels with local laws/regulations before operation.**

**SAFE Display** - If Safe Display is enabled, screen will display "SAFE" as long as there are no gas or detector alerts.

**Self-Test Lock** - If a sensor fails a self-test, the detector shows "Err" on the display and goes into high alarm. By default, the alarm can be silenced by pressing the Power/Menu Button. The Self-Test Lock option prevents the alarm from being silenced.

**Maintenance Notification** - If Maintenance Notification is enabled, the detector will periodically flash the maintenance LED when a bump test or calibration is due. Otherwise, if the option is disabled, the detector will only show the maintenance text on the display.

**Dock Lock** - This option restricts bump tests and calibrations to only being able to be performed with TRIPLE-C Clip Docks. Manual tests will not be able to be performed.

**Latching Alarms** - Alarms are non-latching by default, therefore, once the gas readings fall back within the set limits after an alarm condition, the detector will cease to alarm and return to normal operation. Latching alarms will hold the detector and its display in its peak alarm condition until the Power/Menu Button is pressed.

**Life Display** - If this option is enabled, screen will display "Life Remaining" as long as there are no gas alarms or detector alerts.

**Off Lock** - This option prevents the user from deactivating the detector's sensors with the Power/Menu Button.



## ADJUSTABLE OPTIONS continued

**TWA Method** - The algorithm used to calculate the TWA (Time Weighted Average) can be set to either an average over a moving window (OSHA) or as a cumulative average (ACGIH).

**TWA Interval** - The TWA Interval defines the time frame over which the long-term average is calculated. Default is 8 hours.

**STEL Interval** - The STEL Interval defines the time frame over which the short-term average is calculated. Default is 15 minutes.

**Sensor Enable/Disable** - Individual sensors can be disabled. A disabled sensor is completely removed from the detector's display for sensor readings, alarm limits and calibrations. This option can be enabled/disabled only with the GCT IR Link.

**⚠ Caution: A disabled sensor will not measure gas or detect alarm conditions.**

**Bump Interval** - The Bump Interval controls how often the detector notifies the user to bump test the sensors. The interval can be individually adjusted for each sensor.

**Calibration Interval** - The Calibration Interval controls how often the detector notifies the user to calibrate the sensors. The interval can be individually adjusted for each sensor.

**Span Gas** - When the detector is calibrated, it scales the sensor readings to match the concentrations of the applied gases. The span gas concentrations can be adjusted to match the respective levels contained within the gas bottle.

Default is 25ppm H<sub>2</sub>S, 100ppm CO, 18% O<sub>2</sub> and 50% LEL (2.5% vol CH<sub>4</sub>). This option can be adjusted only with the GCT IR Link.

**%-by-Volume CH<sub>4</sub>** - Allows the detector to display gas readings as %-by-volume CH<sub>4</sub> rather than % LEL. The conversion rate can be configured by specifying what the methane concentration is for 50% LEL (typically 2.5% in N. America and 2.2% in EU).

**Language** - The detector is able to display all its text prompts in any of six languages: English, German, French, Spanish, Italian or Portuguese. **Note: "OL", "ERROR" and sensor icons (H<sub>2</sub>S, CO, O<sub>2</sub> & LEL) remain the same for all languages.**

**Activity LED Period** - This option allows the detector to flash a single LED at a specified interval to indicate that the detector is on. The interval between flashes can be set anywhere from 5 seconds to 120 seconds.

- If using **GCT IR Link Software** - under the Advanced Options section, locate the Activity LED Period box and set the desired interval by either clicking on the UP arrow or typing the desired interval directly into the box. To finalize, click on the WRITE button at the bottom of the screen. To disable this function, type "0" in the Activity LED Period box and press ENTER. The box will display "OFF". Click on the WRITE button to finalize.
- If using **GCT Manager Software** - place a check on the Activity LED box, then go to the LED Period(s) box and set the desired interval by either clicking on the UP arrow or typing the desired interval directly into the box. To finalize, click on the WRITE button at the bottom of the screen. To disable this function, type "0" in the LED Period(s) box and press ENTER. The box will display "OFF". Click on the WRITE button to finalize.

**NOTE: Simply setting the interval in the Activity LED Period box or the LED Period(s) box without clicking on the WRITE button will not enable/disable this function on the detector.**



## DETECTOR MAINTENANCE

### Battery

This detector is designed so that the battery will not need to be charged during the life of the detector. If the battery is too low, the detector will display "LOW BAT". **If this occurs prior to detector's end of life, contact Martek for technical support.**

**⚠ DO NOT substitute any other battery type than specified and supplied by Martek.**

### Bump Testing

The detector can be configured to keep track of regular bump testing intervals in a Bump Log. The interval can be individually adjusted for each sensor using the GCT IR Link software. When a programmed bump test comes due, or if the last bump test has failed, then the detector's display will continually flash "BUMP DUE" until the detector has been successfully bump tested. Performing a bump test that will be recorded in the Bump Log can be done either automatically (insert the detector into the TRIPLE-C Clip Dock), or manually (apply gas according to the **Manual Bump Test Instructions** described below).

### Manual Bump Test Instructions

Press the Power/Menu Button two separate times in quick succession (double-tap) to access the Main Menu. The display will then show, in the following order:



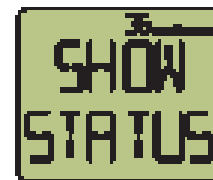
Detector Life Remaining



Current Date and Time



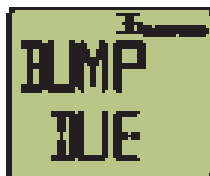
User-Programmed Text Message



"SHOW STATUS" Prompt

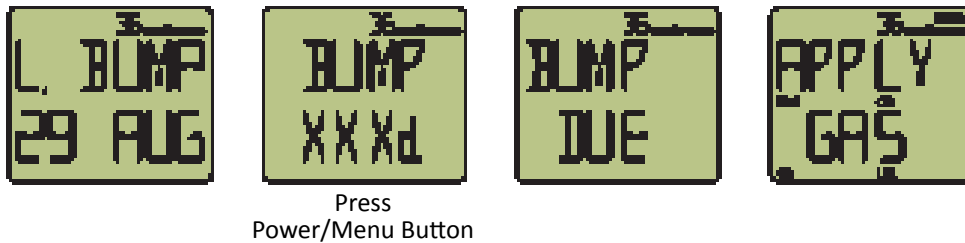
When the screen displays "SHOW STATUS", quickly press and release the Power/Menu Button to display the current calibration status followed by the current bump test status. The next step depends on the following situations:

- **When a bump interval has been programmed into the detector and a bump test is due**, the current bump test status will show: "L. BUMP \_\_\_" (the date of the last bump test) followed by "BUMP DUE". Audible, visual & vibrating prompting to apply gas will automatically start. The display will alternate between "BUMP DUE" and "APPLY GAS". Clip the TRIPLE-C Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.5 LPM and do not disturb while test is being performed. Once all of the sensors have been tested, the detector will go into alarm. Remove the TRIPLE-C Calibration Cap and the detector will return to normal operation after a short period of time. The bump due date will be automatically reset. The bump test will be recorded in the Bump Log.

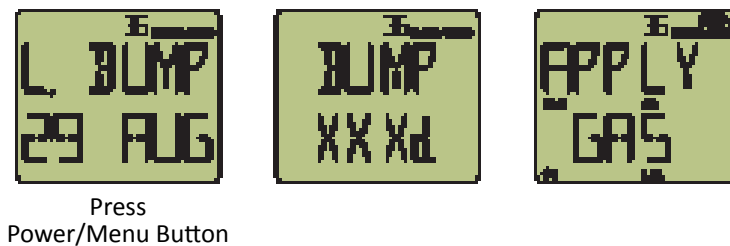




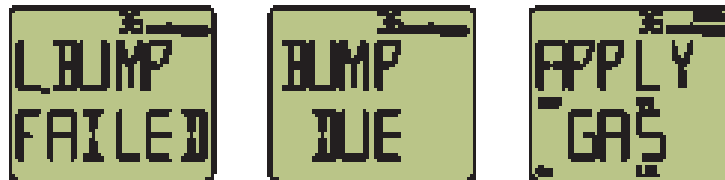
- **When a bump interval has been programmed into the detector, but a bump test is not yet due**, the current bump test status will show: "L. BUMP\_\_\_" (the date of the last bump test) followed by "BUMP XXXd." (the number of days until the next scheduled bump test is due). Quickly press the Power/Menu Button while the display shows "BUMP XXXd." to force a manual bump test. Audible, visual & vibrating prompting to apply gas will start. The display will alternate between "BUMP DUE" and "APPLY GAS". Clip the TRIPLE-C Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.5 LPM and do not disturb while test is being performed. Once all of the sensors have been tested, the detector will go into alarm. Remove the TRIPLE-C Calibration Cap and the detector will return to normal operation after a short period of time. The bump due date will be automatically reset based on the new bump date. The bump test will be recorded in the Bump Log.



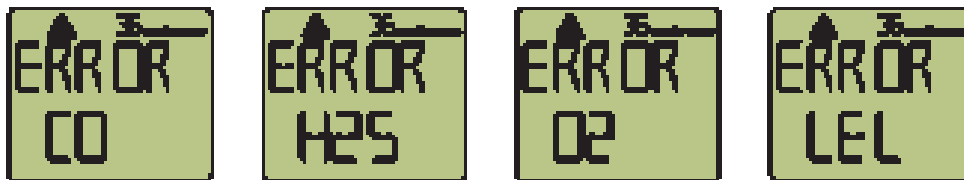
- **When a bump test interval has not been programmed into the detector**, the current bump test status will show: "L. BUMP\_\_\_" (the date of the last bump test). Quickly press the Power/Menu Button while the display shows "L. BUMP\_\_\_" to force a manual bump test. Audible, visual & vibrating prompting to apply gas will start. The display will alternate between "BUMP XXXd." and "APPLY GAS". Clip the TRIPLE-C Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.5 LPM and do not disturb while test is being performed. Once all of the sensors have been tested, the detector will go into alarm. Remove the TRIPLE-C Calibration Cap and the detector will return to normal operation after a short period of time. The bump test will be recorded in the Bump Log.



- **When a bump test has failed**, the current bump test status will show: “L. BUMP FAILED” (indicating that the last bump test had failed). Audible, visual & vibrating prompting to apply gas will automatically start. The display will alternate between “BUMP DUE” and “APPLY GAS”. Clip the TRIPLE-C Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.5 LPM and do not disturb while test is being performed. Once all of the sensors have been tested, the detector will go into alarm. Remove the TRIPLE-C Calibration Cap and the detector will return to normal operation after a short period of time. The bump test will be recorded in the Bump Log.



If a sensor fails the bump test, display will show “ERROR” and designate which sensor (CO, H2S, O2 or LEL) did not pass (see "ERROR" display screens below). **If this occurs, contact Martek for technical support.**



**⚠ Under no circumstances should a detector that has failed a bump test be used.**

During a manual bump test, the audible, visual & vibrating prompting to apply gas will continue for approximately two minutes. If gas is not applied within the two minutes, then the bump test will automatically fail. The prompts will cease, the detector will return to normal operation, but the display will continually flash “BUMP DUE” until the detector has been successfully bump tested. Please note, to abort a bump test at any time, press the Power/Menu Button once and the detector will return to normal operation.

**Note - Users may simply apply gas to the detector at any time during normal operation to run a bump test without going through the steps above. Be aware, this will not be recognized by the detector as a Manual Bump Test therefore it will be recorded into the Event Log as an Event, not into the Bump Log as a Bump Test.**



## Calibration

The detector can be configured to keep track of regular calibration intervals in a Calibration Log. The interval can be set using the GCT IR-Link software. When a calibration comes due, or if the last calibration has failed, then the detector's display will continually flash "CAL DUE" until the detector has been successfully calibrated. Performing a calibration that will be recorded in the Calibration Log can be done either automatically (insert the detector into the TRIPLE-C Clip Dock), or manually (apply gas according to the Manual Calibration Instructions described below).

### Manual Calibration Instructions

To enter the Manual Calibration mode, continuously hold down the Power/Menu Button. Release the button when the "ZERO OK" message appears. The detector will first automatically zero the sensors at the current baseline reading, then the "APPLY GAS" prompt will appear. Display will show:



Release  
Power/Menu Button

Once the screen displays "APPLY GAS", clip the TRIPLE-C Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.5 LPM and do not disturb while calibration is being performed. Sensor readings will be displayed as the gas is detected and as the detector adjusts the calibration parameters. Once calibration is complete, the detector will display the next calibration date before returning to normal (alarming) operation. If a sensor fails to calibrate, the detector will display "ERROR" (an error message for the failed sensor). Check your gas connections and concentration before attempting a second calibration. **If a sensor fails to calibrate after a second attempt, contact Martek for assistance.**

## Auto Zeroing

To Auto Zero the detector, enter Manual Calibration mode as described above. Once the screen displays "APPLY GAS", briefly press the Power/Menu Button. The screen will then display "CAL ABORT" followed by the number of days remaining before the next set calibration date. The detector has been successfully auto zeroed and returns to normal operation.

- Auto Zero the detector only in a known clean air environment.**
- DO NOT Auto Zero in temperatures above or below the specified range of 0°C to 40°C.**

## Retest

To attempt recovery from sensor "Err", continuously hold down the Power/Menu Button during count downs. Release the button when the "RETEST OK" message appears. The detector will retest sensors and auto zero the detector. Auto Zeroing precautions apply.

- Under no circumstances should a detector displaying "Err" be used.**

## Storage

Store the detector in a safe, dry place between 32°F and 77°F (0°C and 25°C).

- Review the warranty period and the "Activate before..." date that is printed on the product box label.**



## DETECTOR RECORDS (LOGS)

During operation, the detector automatically records all usage activity. These records can be downloaded from the detector using the GCT IR Link or TRIPLE-C Clip Dock.

The Event, Bump and Calibration Logs are always downloaded. Partial data logs may be downloaded in order to reduce the transfer time. Partial data logs contain approximately 1 week of data. New data log downloads will only contain the data since the last download. Full log downloads contain the entire data log, typically at least 2 months' worth of data.

### Event Log

The detector stores the last 50 alarm events. These are organized by first in, first out (FIFO) so the 51st event will replace the first event and so on. The detector records the specific alarm conditions for each event as follows:

- Date and time at the start of the event
- Duration of the alarm condition
- Each sensor's peak alarm status and reading

### Bump Log

The detector stores the last 50 bump tests. These are organized by first in, first out (FIFO) so the 51st bump test will replace the first bump test and so on. Bump tests are differentiated from normal events when the alarm condition occurs inside of an TRIPLE-C Clip Dock, or when the detector is manually bump tested according to the Bump Testing section. The detector records the bump status for each test as follows:

- Date and time of bump test
- If the bump test was performed manually or with the TRIPLE-C Clip Dock
- Each sensor's peak alarm status and reading
- The result of each sensor's bump test

### Calibration Log

The detector records the last 50 calibration attempts. These are organized by first in, first out (FIFO) so the 51st calibration will replace the first calibration and so on. Each calibration attempt will be recorded as follows:

- Date and time of calibration
- If the calibration was performed manually or with the TRIPLE-C Clip Dock
- Each sensor's gas concentration calibrated to
- Each sensor's calibration success status

### Data Log

The detector records its current operational status every second. The logging interval cannot be adjusted, but the detector compresses the data to reduce the storage and transfer times of redundant records. The typical logging capacity is at least 2 months of data. The following items are recorded into the log:

- Date and time
- Sensor readings and status conditions
- All user and sensor options
- Events (i.e. low alarm, high alarm)




## How to retrieve data logs using GCT IR Link

- \*You must have Microsoft Excel to open Data and/or Event Logs
- \*Computer System Requirements: Available for Windows© based PCs (Vista, 7, 8.x, 10)
- \*Browser requirements: Google Chrome, Firefox, Opera or Edge

Set detector in front of GCT IR Link with GCT IR Link Communication Window and TRIPLE-C Plus IR Communication Window lined up approximately 2-3 inches apart.



1. Open GCT IR Link Software (downloaded for free from [www.gascliptech.com](http://www.gascliptech.com) under Resources tab).
2. Click on Download Logs icon  at the top left corner.
3. Select Destination Folder (wherever you want to store the logs on your computer).
4. Select what kind of logs you want to download:
  - a. Event Logs Only
  - b. Events & Partial Data Log (last week of data)
  - c. Events & New Data Logs Only (All data logs from last time you pulled the logs to current)
  - d. Full Logs (approximately 2 months)
5. If a check mark is in the box above where you select what logs you want to download, the logs will automatically open in Microsoft Excel once it's downloaded.





## ACCESSORIES AND REPLACEMENT PARTS

Part Number	Description	Information
106197	Docking Station	Portable, chargeable all-in-one docking station in durable carry case for automated 4-detector simultaneous bump testing, calibrating, record keeping and programming
106174	GCT IR Link	Infrared communications device and USB cable used for communications between detector and computer to easily make firmware updates, adjust detector settings and record data
106591	External Dust Filter Kit	External dust filter cap plus 5 filters
106592	External Dust Filter Replacements	10 pack of replacement external filters
106210	Hand Aspirator Kit	1 ft. Sampling Probe, Air Stone Particulate Filter, TRIPLE-C Calibration Cap, 10ft. Sampling Hose and 3 ft. Calibration/Test Hose connected to Hand Aspirator Pump Assembly
106212	Sampling Hose	1/8" ID tubing sold by the foot
100996	Span Gas (58L)	FCG21050 Gas 25ppm H <sub>2</sub> S, 100ppm CO, 2.5% CH <sub>4</sub> , 18%O <sub>2</sub> /N <sub>2</sub> (58L)
101203	Regulator	FCG00715 Regulator C10 Valve 0.5LPM fixed flow regulator for manually bump testing or calibrating

Additional authorised replacement/spare parts for TRIPLE-C detectors are available.

See the Martek website, [www.martek-marine.com](http://www.martek-marine.com), for further details or contact Martek for pricing and availability.



## DETECTOR SPECIFICATIONS

Size	4.75 H x 2.75 W x 1.25 D in. (120.65 x 69.85 x 31.75 mm.)				
Weight	7.675 oz. (220.2 g)				
Temperature	-4°F to +122°F (-20°C to +50°C)				
Humidity	5% to 95% RH (non-condensing)				
Battery Life	1095 days continuous		based on an average of 1 minute/day of alarm condition		
Alarms	Visual, Vibrating, Audible (minimum 95dB) Low, High, STEL, TWA and OL (Over Limit)				
LEDs	4 Red alarm bar LEDs Yellow backlight (activated on button press) Red backlight (activated on alarm condition) Yellow Maintenance Notification LED				
Display	Alphanumeric Liquid Crystal Display (LCD)				
Logs	50 Bump Tests 50 Events 50 Calibrations Continuous 1-second data logging (typical capacity > 2 months)				
Tests	Full function self-test upon activation Sensors, battery and circuitry tests run continuously				
Ingress Protection	IP 68				
Warranty	Full 3 years				
Gases	Gas	Range	Resolution	Accuracy*	T <sub>90</sub> *
	H <sub>2</sub> S	0 – 100 ppm	0.1	<2 ppm	<30s
	CO	0 – 500 ppm	1	<5 ppm	<30s
	Combustible	0 – 100% LEL	0.1	See Table 1, page 18	<30s
	O <sub>2</sub>	0 – 30% vol.	0.1	<0.7% vol.	<15s
Sensor Type	H <sub>2</sub> S, CO, O <sub>2</sub> : Single plug-in electrochemical cell Combustible (LEL): Soldered infrared (IR)				
User Options	User Message, Language, Low Alarm, High Alarm, STEL Alarm, TWA Alarm, TWA Method, TWA Interval, STEL Interval, SAFE, Maintenance Notification, Self-test Lock, Dock Lock, Sensor Enable/Disable, Calibration Interval, Bump Interval, Span Gas, %-by-volume, Latching Alarms, Life Display and Off Lock				

\*Sensor performance is dependent on many factors, including temperature, humidity, sensor age, filter cleanliness, gas delivery, and calibration accuracy. Typical performance will be better than the given limits under most circumstances.



## DETECTOR SPECIFICATIONS

### Approvals



MED 0575

**CSA**



CSA16.70084100  
Intrinsically Safe/Sécurité Intrinsèque  
Class I, Division 1, Group A, B, C, and D T4  
Ex ia IIC T4 Ga  
Class I, Zone 0, AEx ia IIC T4 Ga  
-20°C < Ta < +50°C  
C22.2 No.152-M1984  
ANSI/ISA 12.13.01-2000  
CAN/CSA-C22.2 No. 60079-0:15  
CAN/CSA-C22.2 No. 60079-11:14  
ANSI/UL 60079-0:13  
ANSI/UL 60079-11:13  
CSA C22.2 No. 61010-1-12, UPD1, UPD2, AMD 1:2018  
UL 61010-1-2019

**IECEX:**

IECEX CSA 16.0038  
Ex ia IIC T4 Ga  
-20°C < Ta < +50°C  
IEC 60079-0:2011  
Edition: 6.0  
IEC 60079-11:2011  
Edition: 6.0

**ATEX:**



SIRA 16ATEX2288  
Ex II 1G  
Ex ia IIC T4 Ga  
EN 60079-0:2012/A11:2013  
EN 60079-11:2012

**UKCA:**



CSAE 21UKEX2477  
EX II1G  
Ex ia IIC T4 Ga  
-20°C < Ta < +50°C  
EN IEC 60079-0:2018  
EN 60079-11:2012



Gas concentration	Accuracy
0.00% CH4	±0.10%
0.25% CH4	±0.15%
0.50% CH4	±0.15%
1.00% CH4	±0.20%
2.00% CH4	±0.20%
3.00% CH4	±0.40%
4.00% CH4	±0.40%
5.00% CH4	±0.50%

Table 1: Accuracy at different gas concentrations

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in an industrial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

### LIMITED WARRANTY

Martek Marine warrants this product to be free from defects in material and workmanship under normal use and service for a period of three years beginning upon the date of activation for all Martek Marine products. Date of activation allowance is limited to the "Activate before..." date provided on the shipment box label. This warranty extends only to the sale of new and unused products to the original buyer. MM's warranty obligation is limited, at MM's option, to a refund of the purchase price, repair, or replacement of a defective product that is returned to a MM authorized service center within the warranty period. In no event shall MM's liability hereunder exceed the purchase price actually paid by the buyer for the product. This warranty does not include the following: (1) Fuses, disposable batteries, or routine replacement of parts due to the normal wear and tear of the product arising from use. (2) Any product which, in MM's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation, handling, or use. (3) Any damage or defects attributable to repair of the product by any person other than the authorized dealer, or installation of unapproved parts on the product. The obligations set forth in this warranty are conditional on the following: (1) Proper storage, installation, calibration, use, maintenance, and compliance with the User's Manual instructions and any other applicable recommendations of MM. (2) The buyer promptly notifying MM of any defect and, if required, promptly making the product available for correction. No goods shall be returned to MM until receipt by the buyer of instructions from MM. (3) The right of MM to require that the buyer provide proof of sale or packing slip to establish that the product is within the warranty period. The buyer agrees that this warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, expressed or implied, including, but not limited to, any implied warranty or merchantability or fitness for a particular purpose. MM shall not be liable for any special, indirect, incidental, or consequential damages or losses, including loss of data, whether arising from breach of warranty or based on contract, tort, or reliance on any other theory. Some countries or states do not allow limitation of the term of an applied warranty, or exclusion or limitation of incidental or consequential damages. The limitations and exclusions of this warranty may not apply to every buyer. If any provision of this warranty is held invalid or unenforceable by a court of competent jurisdiction, such holding will not affect the validity or enforceability of any other provision.

### CONTACT INFORMATION



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S63 5AB, UK

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