



Portable Gas Detectors You Can Count On



**Multi Gas Clip  
Infrared**



**Multi Gas Clip  
Pellistor**

**User's Manual**

G A S C L I P T E C H . C O M

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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 Gas Clip Technologies.
- ⚠ Only use Gas Clip Technologies chargers and parts in the detector. Nonapproved 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 charge the instrument in a hazardous location.
- ⚠ DO NOT use IR communications when an explosive atmosphere may be present.
- ⚠ If you suspect any malfunction or have any technical problems, contact GCT at 1-877-525-0808.
- ⚠ The battery may present a fire or chemical burn hazard if mistreated. Do not disassemble, heat above 100°C (212°F), or incinerate. Contact Gas Clip Technologies for replacement instructions. Use of another battery may present a risk of fire or explosion.
- ⚠ DO NOT charge the instrument in temperatures above or below the specified range of 0°C to 40°C.
- ⚠ Keep new and used batteries away from children.
- ⚠ DO NOT expose the detector to known combustible sensor poisons such as, but not limited to, alcohol and 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. This applies to pellistor version only.
- ⚠ If suspected combustible sensor poisoning has occurred, recheck the instrument (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 methane concentration. Accuracy may be corrected by calibrating the equipment.
- ⚠ 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

Gas Clip Technologies (GCT) Multi Gas Clip (MGC) 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.

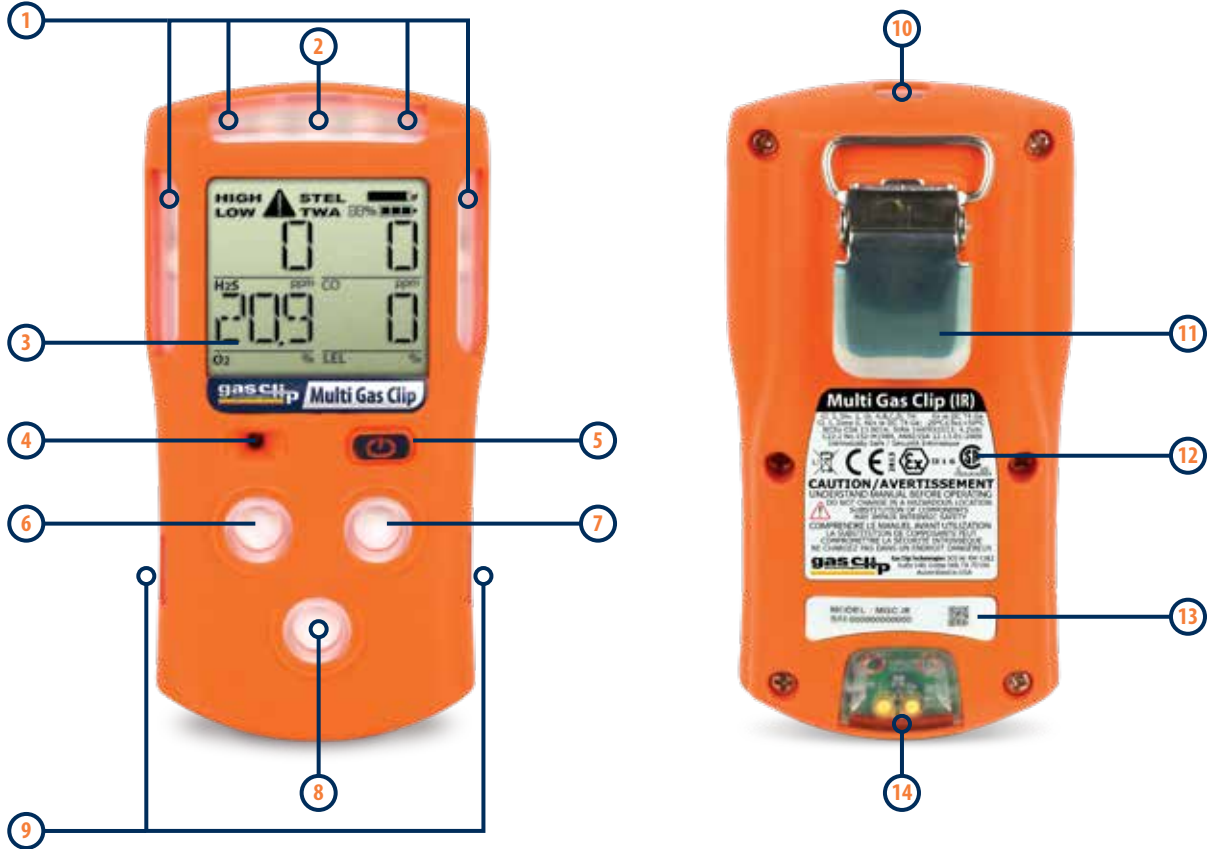
**AVERTISSEMENTS**

-  Ne remplacez pas les composants car cela pourrait interférer avec la sécurité intrinsèque de l'appareil.
-  NE PAS substituer un autre type de batterie que celui spécifié et fourni par Gas Clip Technologies.
-  Utilisez uniquement des chargeurs et des pièces Gas Clip Technologies dans le détecteur. Les pièces non approuvées annuleront la garantie et sont considérées comme dangereuses.
-  Avant chaque utilisation, vérifiez que tous les ports de capteur et d'alarme sont libres de toute obstruction, telle que des débris ou un blocage.
-  Le détecteur contient une pile au lithium qui doit être mise au rebut par un recycleur qualifié. Vérifiez les réglementations locales pour une élimination appropriée.
-  NE PAS charger l'instrument dans un endroit dangereux.
-  NE PAS utiliser les communications IR lorsqu'une atmosphère explosive peut être présente.
-  Si vous soupçonnez un dysfonctionnement ou avez des problèmes techniques, contactez GCT au 1-877-525-0808.
-  La batterie peut présenter un risque d'incendie ou de brûlure chimique si elle est maltraitée. Ne pas démonter, chauffer à plus de 100°C (212°F), ou incinérer. Contactez Gas Clip Technologies pour obtenir des instructions de remplacement. L'utilisation d'une autre batterie peut présenter un risque d'incendie ou d'explosion.
-  NE PAS charger l'instrument à des températures supérieures ou inférieures à la plage spécifiée de 0°C à 40°C.
-  Conservez les piles neuves et usagées hors de portée des enfants.
-  N'exposez PAS le détecteur à des poisons de capteur combustibles connus tels que, mais sans s'y limiter, des nettoyants à base d'alcool et d'agrumes, des silicones, des composés de plomb (par exemple, plomb tétraéthyle), composés soufrés, phosphore, hydrocarbures halogénés et aérosols. L'exposition à des poisons peut altérer la précision et/ou le temps de réponse du détecteur. Ceci s'applique uniquement à la version pellistor.
-  En cas de suspicion d'empoisonnement du capteur combustible, revérifier l'instrument (à la fois étalonné et test fonctionnel).
-  Attention: Avant chaque utilisation quotidienne, la sensibilité doit être testée sur une concentration connue de méthane équivalente à 25% à 50% de la concentration à pleine échelle. La précision doit être comprise entre 0% et 20% de la concentration réelle de méthane. La précision peut être corrigée en calibrant l'équipement.
-  Toute rapide haut de gamme lecture suivi d'une lecture décroissante ou erratique peut indiquer une concentration de gaz au-delà de la limite supérieure de l'échelle ce qui peut être dangereux
-  De fortes interférences électromagnétiques peuvent provoquer des opérations incorrectes.
-  Seule la partie détection des gaz combustibles de cet instrument a été évaluée pour la performance par CSA International.

**À LIRE AVANT L'UTILISATION**

Les détecteurs Gas Clip Technologies (GCT) Multi Gas Clip (MGC) sont des dispositifs de sécurité personnelle conçus pour détecter la présence de gaz toxiques spécifiques: monoxyde de carbone (CO), sulfure d'hydrogène (H<sub>2</sub>S), oxygène (O<sub>2</sub>) et gaz combustibles/limite inférieure d'explosivité (LIE). Avant utilisation, assurez-vous d'avoir été correctement formé à l'utilisation de l'équipement et à la conduite à tenir en cas d'alarme.

## DETECTOR COMPONENTS



| ENTRY | DESCRIPTION                        |
|-------|------------------------------------|
| 1     | Alarm Bar LEDs                     |
| 2     | Maintenance LEDs                   |
| 3     | Display                            |
| 4     | Audible Alarm Port                 |
| 5     | Power/Menu Button                  |
| 6     | Dual Tox Sensor Port               |
| 7     | LEL Sensor Port                    |
| 8     | O <sub>2</sub> Sensor Port         |
| 9     | Calibration Cap Ports              |
| 10    | Infrared (IR) Communication Window |
| 11    | Alligator Clip with Safety Ring    |
| 12    | Certification Label                |
| 13    | Model and Serial Label             |
| 14    | Charging Port                      |

## BASIC OPERATION

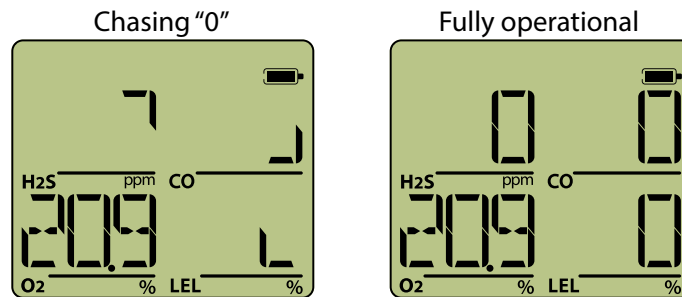
### Button Usage

The following operations are driven by a single power/menu button located on the front of the instrument:

- Turning detector ON/OFF
- Menu navigation (Status and Options)
- Bump testing
- Calibration
- Latched alarm acknowledgement
- Backlight activation

### Turning On the Detector

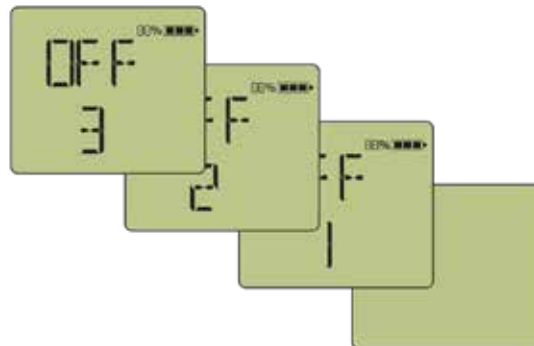
To activate the detector, press and briefly hold down the power/menu button. If the battery is too low for activation, the detector will display "LOW BAT" and then turn off again. Once activated, the detector will begin to display gas readings immediately. Each sensor will show a chasing "0" for the sensor reading while it is stabilizing and being self-tested. Display will show:



Once all sensors have completed the warm up and stabilization sequence (< 65 seconds), the detector is ready to detect all applicable gases.

### Turning Off the Detector

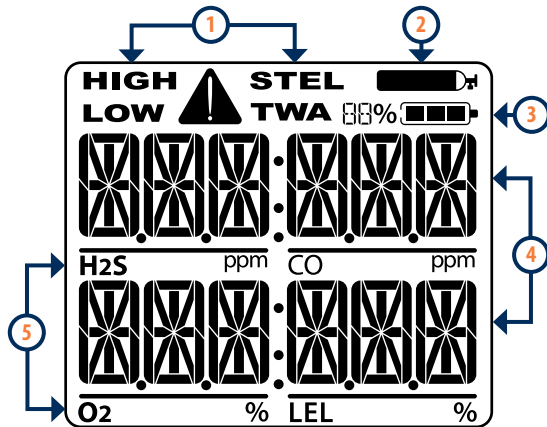
Press and hold down the power/menu button through the shutdown sequence. The LCD will display "OFF" along with a countdown as shown here:



During the countdown, the detector will beep and flash 4 times. Release the button after the countdown and the detector will turn off.

## DISPLAY COMPONENTS

### Display Layout



| Item | Description           |
|------|-----------------------|
| 1    | Alarm Condition       |
| 2    | Calibration/Test Mode |
| 3    | Battery Charge Level  |
| 4    | Gas Readings          |
| 5    | Gas Identifiers       |

### Display Details

When a particular gas has a Gas Reading (4) at, or above, its alarm thresholds, the Gas Identifier (5) icon will flash and the associated Alarm Condition (1) icon will display.

During a calibration or bump test, the Calibration/Test Mode (2) icon will display when it is time to apply gas.

The Battery Charge Level (3) is displayed in a 3 bar battery icon as well as a percentage. The percentage calculation is approximate and can be used to provide a rough estimation of the time remaining before recharging.

- ⚠ Warning:** Users must familiarize themselves with the icons in both non-alarm and alarm states.
- ⚠ Warning:** If the display is missing icons, or cannot be clearly read, discontinue use and contact GCT.
- ⚠ Warning:** The IR LEL sensor will not detect hydrogen ( $H_2$ ) or acetylene ( $C_2H_2$ ) gases; however, due to their cross-sensitive nature, the CO sensor will go into alarm well below 10% LEL.

## ALARMS

### Default Alarms

Each detector comes preprogrammed with the following factory default alarms for LOW, HIGH, Time Weighted Average (TWA) and Short Term Exposure Limit (STEL):

| Sensor           | Low    | HIGH    | TWA    | STEL   |
|------------------|--------|---------|--------|--------|
| H <sub>2</sub> S | 10 ppm | 15 ppm  | 10 ppm | 15 ppm |
| CO               | 35 ppm | 200 ppm | 35 ppm | 50 ppm |
| O <sub>2</sub>   | 19.5%  | 23.5%   |        |        |
| LEL              | 10%    | 20%     |        |        |

Alarms are non-latching by default. Alarm thresholds, STEL intervals, TWA intervals, and latching options may be configured (see Adjustable Options section for more details).

### 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     | 20 minutes remaining: single beep/flash, battery icon on<br>10 minutes remaining: single beep/flash, battery icon flashing<br>5 minutes remaining: continuous beep/flash every 5 seconds<br>expired: 5 long beeps/flushes then OFF is displayed |                     |                     |



## DETECTOR MENUS/OPTIONS

### Main Menu

The **Main Menu** is accessed while the detector is turned on by pressing the power/menu button two separate times in quick succession (double-tap). The detector will display in the following order:

1. Date/Time – Current date & time automatically sets every time the instrument is communicated via GCT IR Link, MGC Dock or MGC Wall Mount Dock.
2. User Message – A unique programmed message, up to 36 alpha-numeric characters, can be assigned to individual detectors (refer to the **Adjustable Options** section). If the User Message does not fit on one screen, it will scroll right-to-left twice. If no User Message is set up, the detector will skip ahead to the Sub-Menu Prompts: **"SHOW STATUS"** & **"SHOW OPTION"**. Default user message is **"GAS CLIP TECHNOLOGIES"**.
3. Sub-Menu Prompts - Pressing the power/menu button briefly during a Sub-Menu prompt, **"SHOW STATUS"** (to access the Status Menu) or **"SHOW OPTION"** (to access the Option Menu), will cause the detector to show more information for that Sub Menu. If the power/menu button is not pressed, 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 \_\_\_ d."** – denotes if a calibration is due or how many days until it is due
3. **"L. BUMP"** – the last bump test date
4. **"BUMP DUE"** or **"BUMP \_\_\_ d."** – 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).

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).

Peak Levels - The detector will display the current TWA and STEL readings, followed by the peak concentrations recorded for each sensor. Each time the unit is turned off these values will be reset.

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.**

### *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**” – denotes the detector’s current firmware version
2. TWA alarm limits
3. STEL alarm limits
4. LOW alarm limits
5. HIGH alarm limits

Firmware Version - The current firmware version that is on the detector will be displayed. Notifications of the most recent firmware versions can be found on the **Resources** page of the **GCT website** at [www.gascliptech.com](http://www.gascliptech.com).


Alarm Set Points - The current alarm limits for TWA, STEL, LOW and HIGH will be displayed in sequence.

### *Adjustable Options*

The detector’s options can be configured using the GCT IR Link, MGC Dock or MGC Wall Mount Dock.

User Message - An optional, user-programmable, text message can be used to show company branding, a unit identifier or any other pertinent information. The User Message will be displayed right after the date and time each time the **Main Menu** is accessed.

Alarm Limits - Each sensor contains separate alarm threshold values that tell the detector when to go into alarm. Alarm limits may be disabled by setting them to zero.

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

SAFE Display - “**SAFE**” will be displayed if there are no gas or instrument alerts.

Self-test Lock - When a sensor self-test fails, the detector shows “**Err**” on the display and goes into high alarm. The self-test lock option specifies whether a power/menu button press can silence the alarm.

Off Lock - Prevents the detector from being deactivated by a power/menu button press. If Off Lock is enabled, only a low battery, MGC Dock or MGC Wall Mount Dock can deactivate the detector. Holding the power/menu button down will initiate **Manual Calibration** mode.

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 - Dock Lock prevents bump tests and calibrations without the use of the GCT IR Link, MGC Dock or MGC Wall Mount Dock.

Latching Alarms - Latched alarms will hold the detector and its display in its peak alarm condition until the power/menu button is pressed.

Auto-Zero - The detector can optionally zero the sensors with every power-up.

TWA Method - The algorithm used to calculate the TWA 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 timeframe over which the long-term average is calculated. Default is 8 hours.

STEL Interval - The STEL interval defines the timeframe 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.

**⚠ 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 from 1 to 365 days. Default is 0 days (disabled).

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 from 1 to 365 days (default is 365 days) except for the pellistor sensor which can be adjusted from 1-180 days (default is 180 days).

Calibration Gas - When the detector is calibrated, it scales the sensor readings to match the concentrations of the applied gases. The calibration 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>).

%-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 North America and 2.2% in Europe).

Language - The detector will display all its text prompts in any of six languages: English, German, French, Spanish, Italian or Portuguese.

Note: OL, Err and sensor icons remain the same for all languages.

Activity LED Period - This option periodically flashes a single LED on the detector at a rate specified by the user to indicate that the detector is on. The time between flashes can be set and adjusted through the GCT IR Link software or GCT Manager software. The minimum time between flashes is 5 seconds, maximum is 120 seconds. To enable this function using the GCT Manager software, click the checkbox next to Activity LED Period then set the period to the number of seconds desired between flashes. To disable this function, uncheck the checkbox next to Activity LED Period and set the period value to "Off". **NOTE: Simply unchecking the checkbox next to Activity LED Period without setting the period to "Off" is not sufficient to disable this function on the detector.** To enable/disable this function using the GCT IR Link software, the procedure is the same without the checkbox. Last, click the "Write" button at the bottom on the GCT IR Link software or GCT Manager software for any changes to take effect on the detector.

MSHA Mode - This option is only available with Multi Gas Clip IR detectors that have the MSHA logo on the back of the detector. Once enabled, MSHA Mode will force the detector to display the LEL in % volume CH<sub>4</sub>. MSHA Mode can be turned on and off using the GCT IR Link software or GCT Manager software. After turning MSHA Mode on the detector will request a calibration. This notification will persist until a calibration is successfully completed. Simply turning MSHA Mode off will not remove the request for calibration. **NOTE: MSHA Mode calibration takes twice the time as a normal calibration.** MSHA Mode is not available on pellistor detectors.

DETECTOR MAINTENANCE

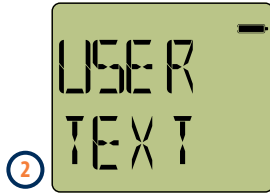
*Bump Testing*

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 from 1 to 365 days, default is 0 (disabled). 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. If the detector is turned off, the "**BUMP DUE**" prompt will reappear again once the detector is reactivated and continue until a bump test is successfully completed. Performing a bump test that will be recorded in the Bump Log can be done either automatically: insert the detector into the MGC Dock or MGC Wall Mount 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:

- 1) Current Date/Time – "DD", "MON" & "TT:TT" below stand for Day, Month & Time
- 2) User-Programmed Text Message
- 3) "**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.



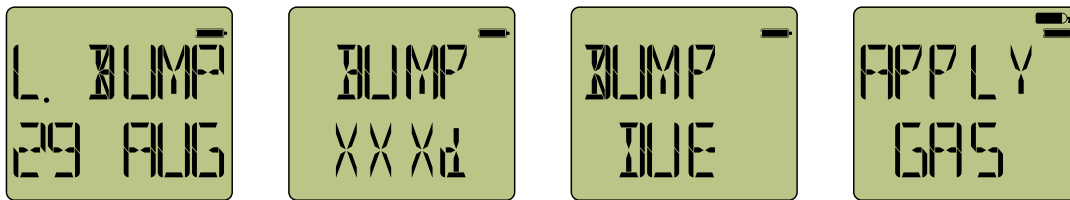
Press power/menu button

**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**". Snap the MGC Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.25 to 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 MGC 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 \_\_\_d." (the number of days until the next scheduled bump test is due). Quickly press the power/menu button while the display shows "BUMP \_\_\_d." 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". Snap the MGC Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.25 to 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 MGC 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.



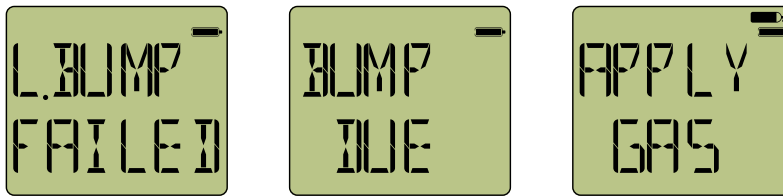
Press power/menu  
button

- 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". Snap the MGC Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.25 to 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 MGC 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.

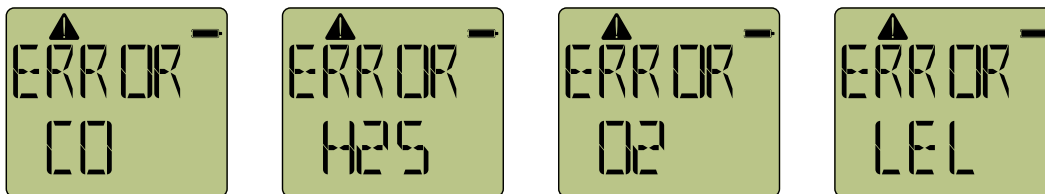


Press power/menu  
button

- **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**". Snap the MGC Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.25 to 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 MGC 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 "**Err**" and designate which sensor did not pass. The failed sensor will be disabled and will need to be replaced (see "**Err**" in **Failures/FAQ's** section).



- 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.

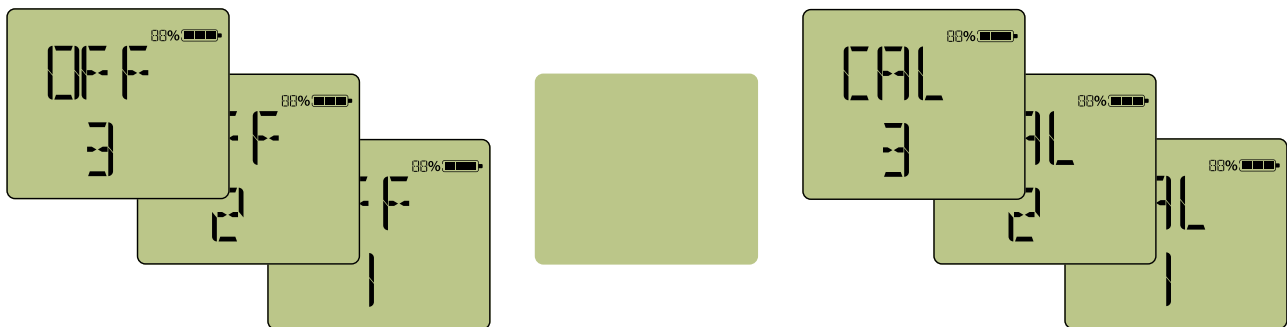
**Note - Users may simply apply gas to the detector at any time during normal operation to run a bump test without going through the steps above. Be aware, this will not be recognized by the detector as a Manual Bump Test therefore it will be recorded into the Event Log as an Event, not into the Bump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

## Calibration

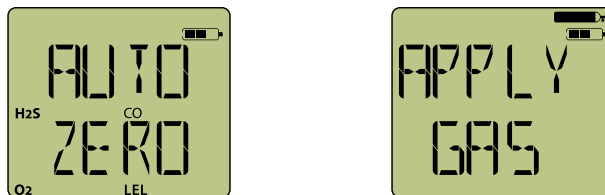
The detector can be configured to keep track of regular calibration intervals in a Calibration Log. The interval can be individually adjusted for each sensor from 1 to 365 days (default is 365 days) except for the pellistor sensor which can be adjusted from 1-180 days (default is 180 days). When a calibration 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. If the detector is turned off, the "**CAL DUE**" prompt will reappear again once the detector is reactivated and continue until a calibration is performed. Performing a calibration that will be recorded in the Calibration Log can be done either automatically: insert the detector into the MGC Dock or MGC Wall Mount 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 through the shutdown sequence (see **Turning Off the Detector** section) and the calibration countdown sequence that follows it. Display will show:



During these two countdowns, the detector will beep and flash 8 times with a pause between countdowns. Release the button after both countdowns are complete. The detector will first automatically zero the sensors at the current baseline reading, then the "**APPLY GAS**" prompt will appear. Display will show:



Once the screen displays "**APPLY GAS**", snap the MGC Calibration Cap (provided with the detector) into place over the sensor ports. Apply gas to the detector at a flow rate of 0.25 to 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 "**Err**" - 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 GCT for assistance.

### *Battery*

The battery is displayed as both a percentage and a 3-bar Battery Charge Level icon. The percentage calculation is approximate and can be used to provide a rough estimation of the time remaining.

When the detector determines that only 20 minutes of run time remains, it will beep, flash, and display "**LOW BAT**" on the screen. This will repeat with 10 minutes remaining, and then continuously for the last 5 minutes of run time. When the battery has expired, the detector will give 5 long beeps and flashes, display "**OFF**" and then shut down.

To charge the detector, either plug it into an AC outlet using the provided charging adapter or charge using an MGC Vehicle Charger, MGC Charging Station or MGC Multi Charger (all authorized GCT Multi Gas Clip Optional Accessories). The detector will cycle the battery icons in a charging fashion until the battery is fully charged. It is advisable to turn the detector off before charging.

- ⚠ DO NOT charge the instrument in a combustible atmosphere.
- ⚠ DO NOT charge the instrument in temperatures above or below the specified range of 0°C to 40°C.
- ⚠ DO NOT substitute any other battery type than specified and supplied by GCT.
- ⚠ DO NOT use any charger other than that supplied or offered by GCT.

### *Storage*

Store the detector in a safe, dry place between 32°F and 77°F (0°C - 25°C). For longer storage, the detector battery should be discharged to about 40%. After storage, charge the battery and verify the detector calibration before use.

- ⚠ 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, MGC Dock or MGC Wall Mount 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 25 alarm events. These are organized by first in, first out (FIFO) so the 26th 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 25 bump tests. These are organized by first in, first out (FIFO) so the 26th 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 MGC Dock or MGC Wall Mount 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 MGC Dock/Wall Mount Dock
- Each sensor's peak alarm status and reading
- The result of each sensor's bump test

### *Calibration Log*

The detector records the last 25 calibration attempts. These are organized by first in, first out (FIFO) so the 26th 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 MGC Dock/Wall Mount Dock
- Each sensor's gas concentration calibrated to
- Each sensor's calibration success status

### *Data Logs*

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. turn on or off)

**ACCESSORIES AND REPLACEMENT PARTS**

- **MGC Dock** (P/N: MGC-DOCK) - Portable docking station in durable Pelican case for automated 4-detector simultaneous bump testing, calibration, record keeping and programming
- **MGC Wall Mount Dock** (P/N: MGC-WMDOCK) - Docking station for automated 4-detector simultaneous bump testing, calibration, record keeping and programming
- **GCT IR Link** (P/N: 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
  - \* Replacement GCT IR Link USB Cable (P/N: IR-C)
- **Chargers:**
  - \* MGC Multi Charger (P/N: MGC-CHRG-MULTI) - 5 Cord A/C charger
  - \* MGC Vehicle Charger (P/N: MGC-V-CHARGER1) - 12 VDC charger
  - \* Replacement Charger (P/N: MGC-CHARGER1) - Standard 110 VAC Charger
- **MGC Confined Space Kit** (P/N: MGC-CSK) - Draw a sample or bump test with this all-inclusive kit housed in a hard-sided carrying case w/foam insert: 1 ft. Sampling Probe, Air Stone Particulate Filter, MGC Calibration Cap, 10 ft. Sampling Hose and Hand Aspirator Pump Assembly with Quick Connect hose, 3 ft. Calibration/Test Hose with Quick Connect, 0.5Lpm Regulator with Quick Connect hose and GCT IR Link
  - \* MGC Confined Space Kit with Gas (P/N: MGC-CSK-GAS) - MGC Confined Space Kit with Quad Gas Cylinder: 25 ppm H<sub>2</sub>S, 100ppm CO, 18% O<sub>2</sub> and 50% LEL (2.5% vol. Methane) 58 Liter bottle
- **MGC Hand Aspirator Kit** (P/N: MGC-HAK) - 1 ft. Sampling Probe, Air Stone Particulate Filter, MGC Calibration Cap, 10 ft. Sampling Hose and 3 ft. Calibration/Test Hose connected to Hand Aspirator Pump Assembly
- **Sampling Probe** (P/N: MGC-PROBE-1) - 1 ft. Remote Sampling Probe
- **Calibration Gas** - 25 ppm H<sub>2</sub>S, 100 ppm CO, 18% O<sub>2</sub> and 50% LEL (2.5% vol. Methane)
  - \* 58L Quad Gas Cylinder (P/N: MGC-Q-58)
  - \* 116L Quad Gas Cylinder (P/N: MGC-Q-116)
- **Calibration Accessories:**
  - \* Calibration/Test Hose (MGC-CALHOSE3) – 3 ft. Long 1/8" diameter hose
  - \* Manual Regulator (P/N: SGC-REG) –Regulator for manually bump testing or calibrating
  - \* MGC Calibration Cap (P/N: MGC-CALCAP) – Replacement Calibration Cap
  - \* Sampling Hose (P/N: MGC-SAMPHOSE) – 1/8" Diameter hose sold by the foot
- **Replacement Sensors:**
  - \* H<sub>2</sub>S & CO Dual-Tox Sensor (P/N: MGC-SE-4DT)
  - \* LEL Sensor - Infrared (P/N: MGC-SE-LEL-IR)
  - \* LEL Sensor - Pellistor (P/N: MGC-SE-LEL-P)
  - \* O<sub>2</sub> Sensor (P/N: MGC-SE-O<sub>2</sub>)

- **Replacement Filters:**
  - \* Filter - Pack of 10 (P/N: MGC-FILTER-10)
  - \* Filter - Pack of 50 (P/N: MGC-FILTER-50)
- **Replacement Detector Components** – Various authorized replacement/spare parts for Multi Gas Clip detectors are available

See the GCT website ([www.gascliptech.com](http://www.gascliptech.com)) for further details or contact GCT for pricing and availability.

## FAILURES/FAQ'S

- **"Err"** - If a sensor is displaying **"Err"**, this sensor has failed and is therefore disabled. Contact GCT for either warranty replacement or replacement sensor(s).
- **"BUMP DUE"** - If the detector is displaying **"BUMP DUE"**, the detector is either due for a bump test because of a scheduled test or has failed its last bump test. Refer to the **Bump Testing** section for more details.
- **"CAL DUE"** - If the detector is displaying **"CAL DUE"**, the detector is due for a calibration because of a scheduled interval. Refer to the **Calibration** section for more details.

## DETECTOR SPECIFICATIONS

|                           |  |                    |                                |                     |             |
|---------------------------|--|--------------------|--------------------------------|---------------------|-------------|
| <b>Size</b>               | 4.7 x 2.4 x 1.2 in. (118.6 x 61.6 x 31.7 mm.)  |                    |                                |                     |             |
| <b>Weight</b>             | 7.7 oz. (240 g)  |                    |                                |                     |             |
| <b>Temperature</b>        | -4°F to +122°F (-20°C to +50°C)  |                    |                                |                     |             |
| <b>Humidity</b>           | 5% to 95% RH (non-condensing)  |                    |                                |                     |             |
| <b>Battery Life</b>       | IR (infrared)  | 60 days continuous | based on an average of 2       |                     |             |
|                           | Pellistor  | 25 hours (typical) | minutes/day of alarm condition |                     |             |
| <b>Charge Time</b>        | 4-6 hours  |                    |                                |                     |             |
| <b>Alarms</b>             | Visual, Vibrating, Audible (minimum 95dB)<br>Low, High, STEL, TWA and OL (Over Limit)  |                    |                                |                     |             |
| <b>LEDs</b>               | 4 Red alarm bar LEDs<br>Yellow backlight (activated on button press)<br>Red backlight (activated on alarm condition)<br>Yellow Maintenance Notification LED  |                    |                                |                     |             |
| <b>Display</b>            | Alphanumeric Liquid Crystal Display (LCD)  |                    |                                |                     |             |
| <b>Logs</b>               | 25 Bump Tests<br>25 Events<br>25 Calibrations<br>Continuous 1-second data logging (typical capacity > 2 months)  |                    |                                |                     |             |
| <b>Tests</b>              | Full function self-test upon activation<br>Sensors, battery and circuitry tests run continuously   |                    |                                |                     |             |
| <b>Ingress Protection</b> | IP 67  |                    |                                |                     |             |
| <b>Warranty</b>           | Full 2 years   |                    |                                |                     |             |
| <b>Gases</b>              | <b>Gas</b>   | <b>Range</b>       | <b>Resolution</b>              | <b>Accuracy*</b>    | <b>T90*</b> |
|                           | 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 (p. 20) | <30s        |
|                           | O <sub>2</sub>   | 0 – 30% vol.       | 0.1                            | <0.7% vol.          | <15s        |
| <b>Sensor Type</b>        | H <sub>2</sub> S, CO, O <sub>2</sub> : Single plug-in electrochemical cell<br>Combustible: Plug-in infrared (IR) or pellistor  |                    |                                |                     |             |
| <b>User Options</b>       | User Message, Language, Low Alarm, High Alarm, STEL Alarm, TWA Alarm, TWA Method, TWA Interval, STEL Interval, SAFE, Maintenance Notification, Self-test Lock, Off Lock, Dock Lock, Sensor Enable/Disable, Calibration Interval, Bump Interval, Calibration Gas, %-by-volume, Latching Alarms, Auto-Zero |                    |                                |                     |             |

**Approvals**

**CSA**



MGC (IR), MGC-2  
Class I, Division 1, Groups A, B, C and D; Ex ia IIC T4 Ga  
Class I, Zone 0, AEx ia IIC T4 Ga

MGC-P (MEMS)  
Class I, Division 1, Groups A, B, C and D; Ex da ia IIC T4 Ga  
Class I, Zone 0, AEx da ia IIC T4 Ga

MGC-P (KNC), MGC-2-P  
Class I, Division 1, Groups A, B, C and D; Ex db ia IIC T4 Gb  
Class I, Zone 1, AEx db ia IIC T4 Gb

*Please note: the MGC-2 and MGC-2-P have been discontinued.*

All Multi Gas Clip Detectors  
CSA13CA0014  
-20°C ≤ Ta ≤ +50°C; 4.2Vdc  
ANSI/ISA 12.13.01-2000  
C22.2 No. 152-M1984  
C22.2 No. 60079-0:11  
C22.2 No. 60079-11:11  
C22.2 No. 0-10  
C22.2 No. 142-M1987  
UL-916 4th Edition  
C22.2 No. 157-M1992  
C22.2 No. 60079-1:16  
UL 913, Ed. 7  
UL 60079-0 Ed. 6  
UL 60079-11 Ed. 6  
UL 60079-1:2015 Ed. 7

**IECEX**

MGC (IR), MGC-2  
Ex ia IIX Ga

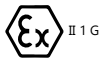
MGC-P (MEMS)  
Ex da ia IIC T4 Ga  
IEC 60079-1:2014-06 Edition: 7.0

MGC-P (KNC), MGC-2-P  
Ex db ia IIC T4 Gb  
IEC 60079-1:2014-06 Edition: 7.0

*Please note: the MGC-2 and MGC-2-P have been discontinued.*

All Multi Gas Clip Detectors  
IECEX CSA 13.0014  
-20°C ≤ Ta ≤ +50°C  
IEC 60079-0:2011 Edition: 6.0  
IEC 60079-11:2011 Edition: 6.0

**ATEX**



MGC (IR), MGC-2  
Ex II 1 G  
Ex ia IIC T4 Ga

MGC-P (MEMS)  
Ex II 1 G  
Ex da ia IIC T4 Ga

MGC-P (KNC), MGC-2-P  
Ex II 2 G  
Ex db ia IIC T4 Gb

*Please note: the MGC-2 and MGC-2-P have been discontinued.*

All Multi Gas Clip Detectors  
Sira 14ATEX2013  
-20°C ≤ Ta ≤ +50°C  
EN 60079-0:2012/A11  
EN 60079-11:2012  
EN 60079-26:2007  
EN 60079-1:2014

\*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.

**Note:** This equipment has been tested and found to comply with the limits for a Class B 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 a commercial 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.

Table 1: Accuracy at different gas concentrations

**Note:** When used with the GCT External Pump at ambient temperatures below 0°C, the accuracy of measurement is within 5% of full-scale concentration.

| Gas Concentration (% LEL) | Gas Concentration (%CH4) | Accuracy (% of full scale concentration) | Accuracy with GCT External Pump when at 0°C to 40°C (% of full scale concentration) | Accuracy with GCT External Pump when below 0°C (% of full scale concentration) |
|---------------------------|--------------------------|--|---|--|
| 10                        | 0.50                     | ±3%                                      | ±3%   | ±5%  |
| 25                        | 1.25                     | ±3%                                      | ±3%   | ±5%  |
| 50                        | 2.50                     | ±3%                                      | ±3%   | ±5%  |
| 75                        | 3.75                     | ±5%                                      | ±5%   | ±5%  |
| 100                       | 5.00                     | ±5%                                      | ±5%   | ±5%  |

### LIMITED WARRANTY

Gas Clip Technologies ("GCT") warrants this product to be free from defects in material and workmanship under normal use and service for a period of two years beginning upon the date of activation for all Multi Gas Clip 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. GCT's warranty obligation is limited, at GCT's option, to refund of the purchase price, repair, or replacement of a defective product that is returned to a GCT authorized service center within the warranty period. In no event shall GCT's liability hereunder exceed the purchase price actually paid by the buyer for the product. This warranty does not include: (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 GCT'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: (1) Proper storage, installation, calibration, use, maintenance, and compliance with the user's manual instructions and any other applicable recommendations of GCT. (2) The buyer promptly notifying GCT of any defect and, if required, promptly making the product available for correction. No goods shall be returned to GCT until receipt by the buyer of instructions from GCT. (3) The right of GCT 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. GCT 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.

#### Gas Clip Technologies, Inc.

305 W. FM 1382, Ste. 540, Cedar Hill, TX 75104

Phone: +1 (972) 775-7577 • Toll Free: 1 (877) 525-0808 • Fax: +1 (972) 775-2483

info@gascliptech.com • www.gascliptech.com