CG3 Setup Instructions

Figure 1

The CG3 consists of the following components:

1. CG3 taximeter display unit.

2. Cable-and-bracket assembly, with attached RS-232 Serial communication cable.

3. Seal-screw and hex-nut.

4. (Optional) USB mini-B adaptor.

Figure 2: D9 Serial Connector. Used for RS-232 communication. You will need a male 9-pin Connector if you are using a Black Cat adapter for sensing motion, or a female connector if you are communicating with most Dispatch Terminals (MDT). **IMPORTANT: See section 2.2**

2.0　Wiring: Main Cable Harness

RED　Battery +12V

BLACK　Ground

GREEN Ignition (roof-light power input)

BROWN Roof-light (roof-light power output)

WHITE　Vehicle Motion (VSS)

2.1 Fusing

IMPORTANT: While the CG3 Taximeter does contain internal protection against most catastrophic high-current instances, some precautions still need to be taken by the operator to protect the CG3 Taximeter roof light circuit against unforeseen extreme current surges that can occur in the often hostile automotive environment (with regards to sensitive electronics).

Add an in-line fuse, connected between the ignition/accessory power and the **CG3** Green wire.

<u>Fuse size</u>:

1) <u>For roof-lights that use incandescent bulbs</u>: use a 3 Amp in-line fuse

2) <u>For roof-lights that use LED strips</u>: use a 1 Amp in-line fuse.

FOR THE BEST PROTECTION WHEN USING BULB ROOF-LIGHTS: due to the higher current requirements, we also recommend using an external mechanical relay, with the input of the relay connected to the Brown wire, and the output connected to the roof-light.

NOTE: It is your responsibility to ensure adequate protection is provided on this circuit, as too large of a fuse -- or no fuse at all -- can result in damage to the internal circuitry of the taximeter, which unfortunately cannot be covered by warranty.

3.0 How to Enter Programming Mode

The **Config Switch** refers to **two** copper-plated holes located on the circuit-board, which are accessible through the two small, parallel holes in the hexagonal indent (see Figure 4 below).

Figure 3: Config Switch. Note the two copper plated holes on the underlying circuit board.

To activate the Config Switch, you have to short the two plated holes together. This can be done, either with a **programming pin** (these are usually provided with CG3 upon purchase), or simply with a piece of wire (we find that a paper-clip works the best).

Figure 4: Activating the Config Switch, using the rate-set pin. Contact must be made with the two copper-plated holes on the circuit-board inside the taximeter case, in order to short the holes together..

The CG3 will display "SEC 0", the **Security Code Prompt** when you have successfully done so (see next page). You can remove the programming pin and proceed to the next page.

If a security code has been set, the user will be prevented from proceeding through the following steps. By default, the security code is 0:

Figure 5: The Security Code Prompt, which locks against proceeding to programming mode when an optional security code has been previously set.

1) **If no passcode has been set**, simply press ✳ to proceed to Section 4.0: Programming Menu.

2) **Otherwise,** use the ◀ , ▼ , and ▲ buttons to enter the security code, and then press ✳ in order to proceed.

4.0 PROGRAMMING MENU

Button Functions:

Scroll Up
Scroll Down
Select Item

Explanation: The values displayed below are represented as how they are ordered in the Programming menu. By using the buttons, you can sequentially scroll through the menu, and select a setting in order to access the values.

1) Press [icon] to select / access a menu item

2) Press [icon] to sequentially "scroll" through the menu

Menu Items in order:

 - Set **Rates (as described in Section 5.0)**

 - Set **Cal**ibration (mileage).

 - **OBD2** Settings

 - **Load Rates from USB** flash drive.

 - **Configure CG3** for **dispatch communication**

 - **Clean taximeter.** Clears all rates and calibration.

 - **Set Security Code** (Optional)*

* For locking Programming Mode against unauthorized tampering.

5.0   Programming Rates

Enter Value   Shift Cursor Left   Decrease Digit   Increase Digit

Button functions are shown to the left. A flashing cursor on the $Fare display indicates which digit can be adjusted. Use the buttons to set and navigate the rate values sequentially.

- The left-hand ($EXTRA) display **indicates** the current value being adjusted

- The right-hand ($FARE) display **holds the actual value being adjusted**.

- Pressing the button enters each value into memory, and will automatically advance the menu forward to the next item in sequence.

The rate programming is divided into 2 parts: the **Common Rate**, and the **Individual Rates** Section (Note: the values shown here are only for example).

<u>Common Rate Section:</u>

1. - <u>N</u>umber of <u>R</u>ates (Max. 6)

2. - <u>Ex</u>tra Charges

3. - <u>T</u>otal Allowed <u>Ex</u>tras

4. - <u>C</u>ab <u>N</u>umber

5. - <u>T</u>ax %

6. - <u>T</u>ax <u>T</u>ype:

        0 – Entry will split out tax at end of fare

        1 – Entry will add tax at end of fare.

7. <u>D</u>istance <u>C</u>ontrolled Rate Change*

8. <u>T</u>ime <u>C</u>ontrolled Rate Change*

* Not used with regular rates. Unless directed, leave these values as zero. Improperly setting these will cause problems with your rate(s).

5.1 Individual Rates Section:

The Rate Number that you are currently setting will be indicated by the far-left digit (see below).

The current Rate number (in this case, Rate 1).

9. - Flag (Initial) Charge

10. - Charge-per-hour (Wait-Time charge)

11. - First <u>d</u>rop distance (5.2)

12. - Subsequent or Second <u>d</u>rop distance (5.2)

13. - Fare increments

5.2 Subsequent Rates – For when you require more than one rate

Depending on what **Number of Rates** has been set to, you will be able to set rates 2 and above, **if** the **Number of Rates** value was set to greater than 1.

Rate 2, Flag rate

(The '2' on the far left now indicates that you are setting Rate 2 values.)

If this is the case, continue as you did in **steps 9 – 13** above, setting the individual rates in sequence.

Once all rate values have been set, the taximeter will automatically enter the values into memory and return to **Vacant Mode**.

5.2   Calculating Drop Distances

The CG3 accepts drop-distances as expressed in decimal equivalents of fractions.   For example, to find the decimal equivalent of 1/9 of a mile or kilometer: divide 1 by 9:

1/9 = 0.111111111.

Round off answers to 4 decimal places = 0.1111. This is the value to enter.

Example: If the distance charge is $3.50/mile, and the fare increment is 25 cents:

Calculate**:** 3.50 ÷ 0.25 = 14, which means that the taximeter will increment 25 cents **14 times** in a mile or km.

The decimal equivalent of **1/14 = 0.0714**, which is the number that you would set for the drop distance(s) in the taximeter.

6.0   Calibrating Mileage

This section is required if you are using Vehicle Speed Sensor (VSS) pulses to provide distance to the CG3 (as opposed to an OBDII interpreter device).Enter **Configuration Mode** (see section 4.4.1), and press ▼ once to navigate to the **Calibration** option in the Configuration Menu (see Figure 14):

Figure 5: The Calibration option.

- Press ✹ to activate the Calibration mode.

While in **Calibration Mode,** you have the option to:

1. Set the **filter and signal-conditioner values**.

2. **Manually program** a previously known **calibration value**, or fine-tune the existing one.

3. Run a **Calibration Procedure**, i.e. count mileage pulses per km/mile.

6.1   Set the Filter Value

Upon entering Calibration Mode, you will first have the option to set the **filter value**, F1 (figure 15).

The filter value is a feature that allows for re-sampling of individual mileage pulses to ensure that they are not noise "spikes" that could be interpreted as valid VSS pulses. **When filtering isON**, each pulse is re-sampled 5 times to ensure that it is valid.

Figure 6

There are only two possible settings:

- 0 – Filtering OFF

- 1 – Filtering ON

- Press ▼ or ▲ to adjust.

- Press ✳ to enter the filter value into memory, and to proceed to the next step.

6.1   Set the Signal-Conditioner Value (VSS Sensitivity)

CG3 models with serial number 31,000 and up have a built-in signal conditioner that allow for adjusting the **sensitivity** of the VSS detector circuit. This is helpful in either eliminating noise which can lead to improper readings (i.e. the taximeter counts motion pulses when the automobile is stationary), or can be used to detect weak signals (for example, when a wheel sensor is the only available motion sensor provided in the vehicle).

- There are **73 levels (0-72)** of sensitivity available.

- **0** is the **least sensitive** setting.

- **72** is **the most sensitive** setting.

You should only adjust this value where necessary, based upon trial and error:

1) If your taximeter counts pulses while the automobile is stationary, you need to **decrease the sensitivity (i.e. decrease F2 value)**.

2) If your taximeter is not able to detect the VSS signal because it is too weak, you need to **increase the sensitivity (i.e. increase F2 value)**.

- Press or to adjust the sensitivity value. **Hold** either button in depressed state for rapid increment / decrement of value.

- Press to enter the value that you want into memory, and to proceed to next step.

Later, you will have the option to fine-tune the sensitivity based on your results **during** calibration of the CG3 (sections **4.4.9** and **4.4.9.1**).

6.2   View / Manually Set Calibration Value

Next, the current **calibration setting** will be displayed (figure 16). You have the option to: a) manually change the current calibration setting, or b) skip changing the calibration value (in order to proceed to the **calibration procedure**).

Figure 7: Current calibration setting

a) To adjust the current calibration setting:

- Press ▼.

- Use the ◀, ▼, and ▲ buttons to adjust the setting.

- Press ✳ to enter the value into memory. This will then return the taximeter to **Vacant Mode**

b) To skip adjusting the existing calibration, simply press ▲. This will automatically advance the taximeter into the **Calibration Procedure (see the next step)**.

6.3   Calibration Procedure

The purpose of this procedure is to determine the number of vehicle speed pulses per km or mile.   Before starting this step, drive the vehicle to a **measured** km or mile start point. Bring the vehicle to a complete stop at the start point.

The next step puts the taximeter into a mode that counts pulses while the automobile is in motion. At the start of the mode, the display will show a zero, indicating that it is ready to start counting mileage pulses (see Figure 17). Begin driving, and the taximeter will count pulses.

Figure 17: The Calibration Test initial value of 0 pulses counted.

Press ▲ to stop the test.

Press ▲ a subsequent time to restart the test.

Press ✱ to enter count into memory, and exit back to **Vacant Mode**.

NOTE: We recommend repeating the calibration procedure 2 – 3 times to ensure that the counts are fairly consistent. If you see a large variation between subsequent calibration procedures, you may have a problem with your installation. In that case, ensure that you are connected to the correct vehicle speed sensor wire, and that you have grounded the taximeter to the car battery.

6.4 Adjusting the Sensitivity <u>during</u> Calibration Procedure

figure 18: Signal Conditioner setting value displayed

If your CG3 has the built-in **Signal-Conditioner** i.e., the Serial Number is 31000 or greater (**section 4.7**), you can fine-tune adjust the **sensitivity** of the VSS detector circuit repeatedly while in calibration mode. This is described next:

While in Calibration Test Mode:

- Press ▲ to stop the test.
- Press ◀ **or** ▼ to display the current sensitivity value.
- Press ▲ or ▼ to adjust the value.
- Press ✱ to enter new sensitivity value, and **return to Calibration Procedure.**
- You can repeat this procedure multiple times until you are satisfied with the results.