Operation Manual

GFlash
Application Software

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Introduction

The GFlash application software was developed to provide a powerful, user-friendly configuration and support tool for the Geo ® family of note validators. GFlash will provide tools to:

- Configure communication interface parameters
- Enable / Disable specific notes within a billset
- Update a Geo with a new billset
- Upload a billset update and configuration file to a CPM
- Enable a CPM to collect performance and audit data from a field-installed Geo

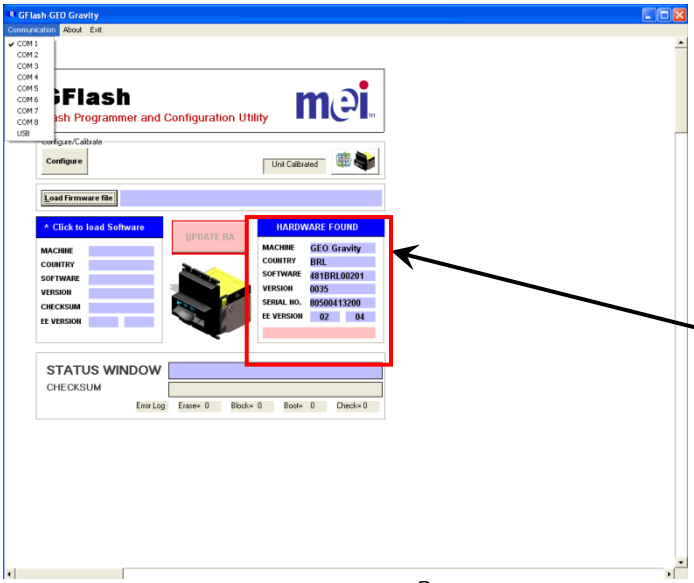
System Requirements

- PC running Windows98 or later with a serial port or USB port
- USB to Serial converter cable (used if PC is not equipped with serial port)
- VAA-WRA20 PC-Link cable
- 12VDC power supply

Setup

Run the GFlash installer and follow the on-screen instructions. NOTE: When installing GFlash on Windows Vista equipped PC's, the user must be logged in as Administrator, otherwise the dependency files will not be properly installed or GFlash may not work properly. Once the installation is completed, launch the GFlash application by double-clicking its desktop icon. Attach the PC-Link cable to the PC serial port. The other end of the PC-Link connects to the Geo. Attach the Geo to the 12VDC power supply.

When starting GFlash for the first time, it may be necessary to select a different COM port than the default from the **Communications** drop down menu. The default will be COM 1 and in most cases, this will be correct and require no adjustment. Note that even though **USB** is listed as an available option in the **Communications** drop down menu, **USB** will only work in conjunction with a CPM and is not available for communication via the PC-Link cable. With the correct COM port selected, the rightmost panel (**HARDWARE FOUND)** will be populated with information from the attached Geo.



The information in this panel will be populated when correct COM port is selected

In the event that the PC has multiple COM ports, simply select the correct COM port from the **Communications** drop down menu to match the serial port that the PC-Link cable is attached to.

Special Considerations for USB to Serial Converter Cable Use

If the use of a USB to serial converter cable is required to allow communication between the PC and the Geo Gravity, it will be necessary to select the correct COM port from the **Communications** drop down menu. Typically, when USB to serial converter cables are attached to a PC, the PC will assign any available COM port to the converter cable. To determine which COM port was assigned to the USB to serial converter cable:

Windows XP Users:

Click **Start**, then click **Run**. Enter **devmgmt.msc** in the box and click **Enter**. This will open straight to the **Device Manager**. Click the + sign next to **Ports (COM & LPT).** This will expand the list of COM ports assigned to devices. Locate the entry in the list corresponding to the USB to serial converter cable and note the COM port assigned. If the assigned COM port is between COM 1 and COM 8, simply go to the **Communications** drop down menu in GFlash and select the corresponding COM port and the rightmost panel will be populated. If the COM port assigned to the USB to serial converter cable is anything other between COM 1 and COM 8, it will be necessary to change the COM port assignment for the USB to serial converter cable so that it will be between COM 1 and COM 8. Right click on the entry for the USB to serial converter cable in the **Ports (COM & LPT)** list. Click on the **Port Settings** tab. Click on **Advanced**. Locate the **COM Port Number:** assignment drop down list at the bottom left. Select any available COM port between COM 1 and COM 8. Go to the **Communications** drop down menu in GFlash and select the corresponding COM port and the rightmost panel (**HARDWARE FOUND**) will be populated.

Windows VistaUsers:

Click **Start.** Enter **devmgmt.msc** in the search box and click **Enter** and follow the on-screen prompts. This will open straight to the **Device Manager**. Click the + sign next to **Ports (COM & LPT).** This will expand the list of COM ports assigned to devices. Locate the entry in the list corresponding to the USB to serial converter cable and note the COM port assigned. If the assigned COM port is between COM 1 and COM 8, simply go to the **Communications** drop down menu in GFlash and select the corresponding COM port and the rightmost panel will be populated. If the COM port assigned to the USB to serial converter cable is anything other between COM 1 and COM 8, it will be necessary to change the COM port assignment for the USB to serial converter cable so that it will be between COM 1 and COM 8. Right click on the entry for the USB to serial converter cable in the **Ports (COM & LPT)** list. Click on the **Port Settings** tab. Click on **Advanced**. Locate the **COM Port Number:** assignment drop down list at the bottom left. Select any available COM port between COM 1 and COM 8. Go to the **Communications** drop down menu in GFlash and select the corresponding COM port and the rightmost panel (**HARDWARE FOUND**) will be populated.

Note: If all COM ports between COM 1 and COM 8 are currently assigned, it will be necessary to re-assign one or more COM ports in order to assign the USB to serial converter cable to a COM port between COM 1 and COM 8.

The rightmost (**HARDWARE FOUND**) panel shows information about the Geo attached to the PC.

MACHINE = Validator Model
COUNTRY = Country Code
SOFTWARE = Validation Software (Billset) Part Number
VERSION = Billset Version Level
SERIAL NO. = Serial Number of the Attached Validator
EE VERSION = Internal MEI use only

Technical Support

Support is available through our Help Desk and online at the MEI Website:

- www.meitechnical.com
- **Americas** 1 800 345 8172
- **Europe** +44 (0) 1189381100

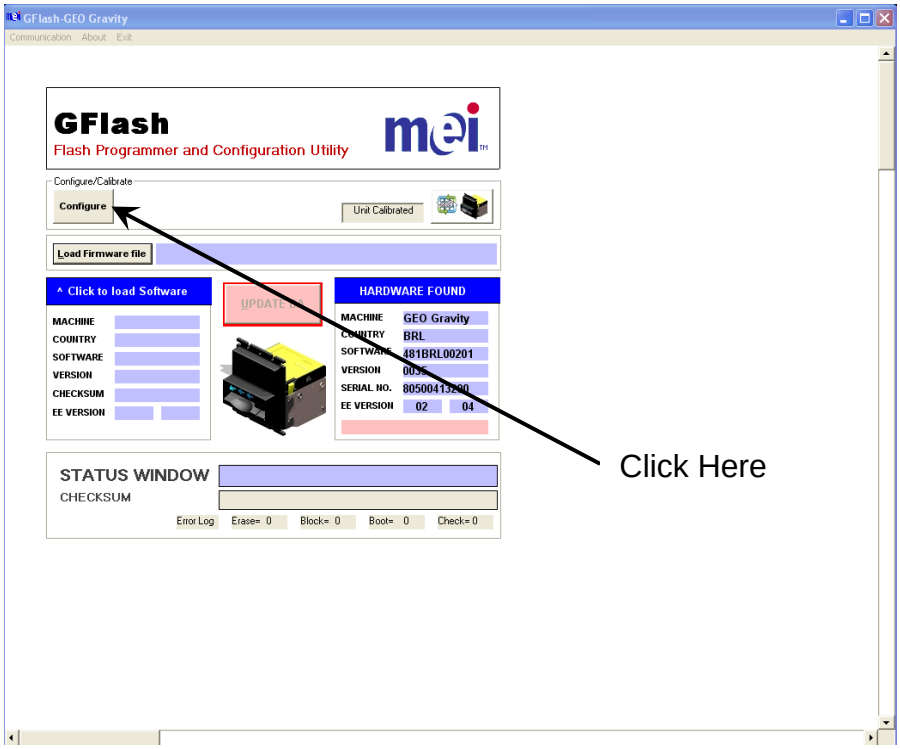
Communication Interface and Configuration

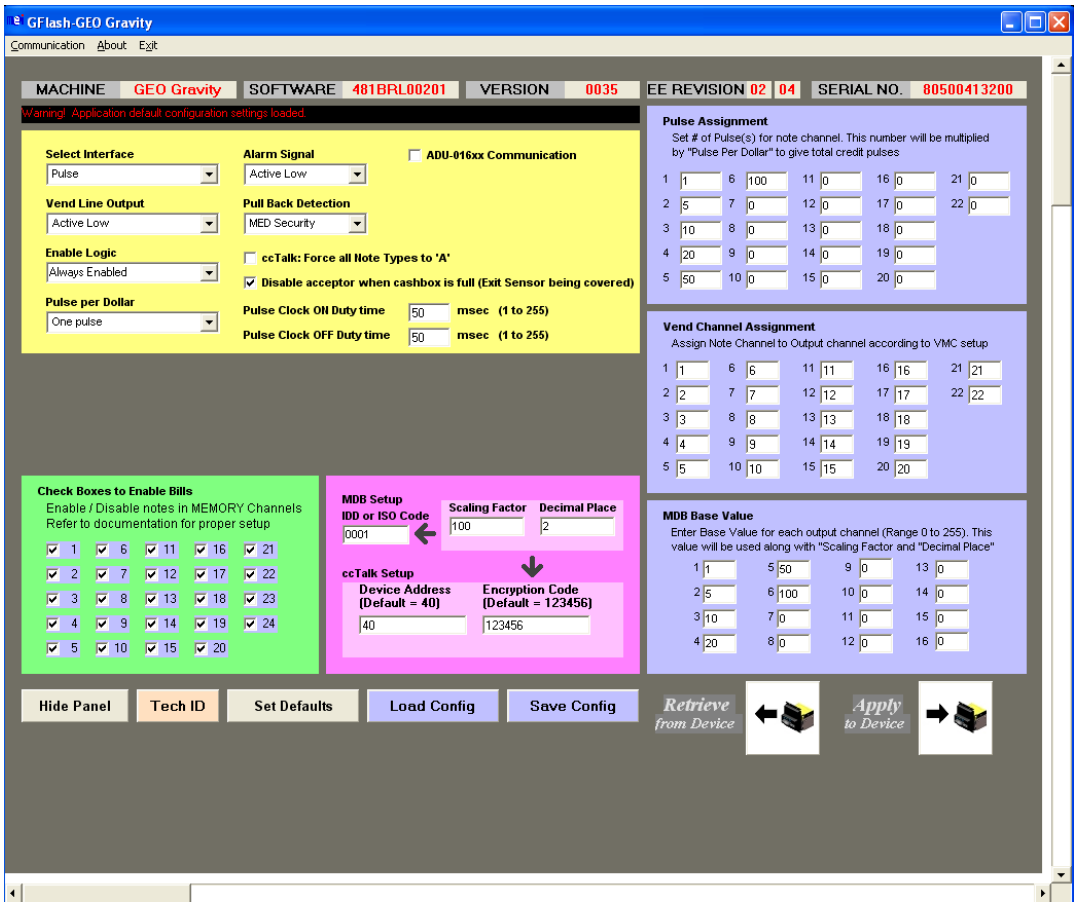
The Geo family of note validators can be configured for several different communication interfaces.

- Standard Interfaces
  - Pulse
  - Parallel
  - Parallel Binary
  - Serial 600 (NISR)
  - TTL RS232
- “True” RS232
  - Requires VA-PCBA09 interface module
  - Requires VA-WIRA09 interface harness/loom
- ccTalk
  - Requires VT-PCBA12 interface modules
  - Requires interface harness/loom
    - VT-WIRA12 for non-AWP market
    - VG-WIRA37 for AWP market

Re-configuring the communication interface for the Standard interfaces can be accomplished quite easily using GFlash. For all Standard interfaces (Pulse, Parallel, etc…), no interface module is required. For the “True” RS232 and ccTalk interfaces, installation of a unique interface module is required.

To re-configure any of the Standard interfaces using GFlash, start GFlash and click the **Configure** button at the top left of the screen. This will open the **Configuration Screen**.





The **Configuration Screen** is populated with several panels used to properly configure the Geo according to the specifications of the desired interface. There are also several buttons along the bottom of the screen that represent the **Configuration Screen Control Menu**.

- **Hide Panel** closes the **Configuration Screen** and returns to the main GFlash screen.
- **Tech ID** is for use of authorized MEI personnel only.
- **Set Defaults** loads default values and settings into drop down menus and check boxes. This does not affect the connected validator unless **Apply to Device** is clicked.
- **Load Config** allows user to retrieve previously saved settings or configuration files sent from Service Center and load them into the **Configuration Screen**.
- **Save Config** allows user to save configuration settings for later use.
- **Retrieve from Device** is used to retrieve current configuration settings from the connected validator and load into **Configuration Screen** drop down menus and check boxes.
- **Apply to Device** is used to load settings shown on **Configuration Screen** to the connected validator.

Note: It is recommended that the **Retrieve from** Device button be clicked before making any configuration changes. This will ensure that the configuration currently residing on the Geo is loaded into.

Note: If changes are made while the **Configuration Screen** is open, the **Apply to Device** button must be clicked to apply the settings to the connected validator before closing the **Configuration Screen** or exiting GFlash. Failure to do so will result in the settings being lost.

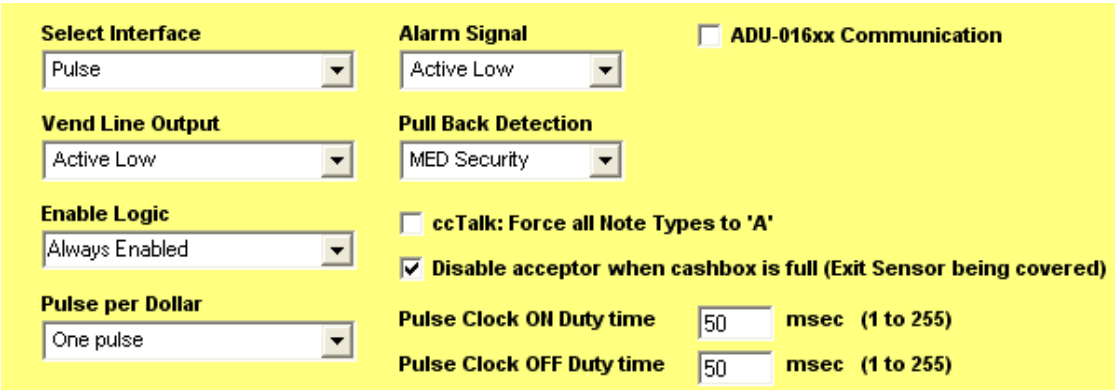
Each available interface has specific options available on the **Configuration Screen**. Using the Sales Configuration Document, the requested interface can be tailored to meet customer requirements.

- Interface Type
  - Pulse (**default**)
  - Parallel
  - Parallel Binary
  - Serial 600 (NISR)
  - TTL RS232
  - "True" RS232
  - ccTalk
- Vend Line Output Characteristics
  - Active High
  - Active Low (**default**)
- Validator Enable Logic Characteristics
  - Always Enabled (**default**)
  - Active Low Enabled
  - Active High Enabled
- Number of Pulses Output per Dollar (only applicable for Pulse Interface)
  - 1 Pulse per Dollar (**default**)
  - 2 Pulses per Dollar
  - 4 Pulses per Dollar
  - 10 Pulses per Dollar
- Alarm Signal Characteristics
  - Active High
  - Active Low (**default**)
- Note Pull-Back Detection
  - Off
  - High Security
  - Medium Security (**default**)
  - Low Security
- Pulse Clock Duty Cycle
  - 1 to 255msec on (**default is 50msec**)
  - 1 to 255msec off (**default is 50msec**)

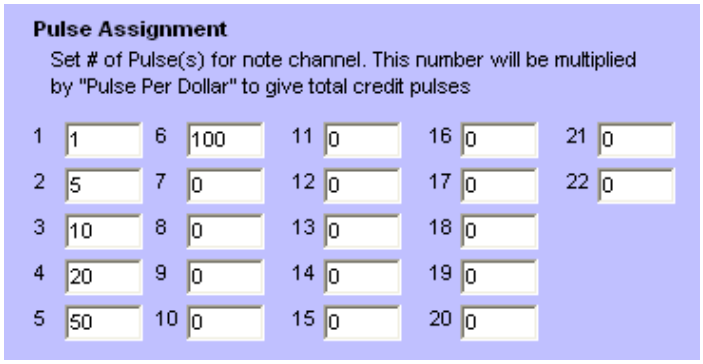
Note: There are other interface types shown in the **Select Interface** drop down list (USB, MDB/NAMA, Single Price, ICT002 & IMC01). These interface types are not available or supported for the Geo product family. **Magnetic Security Detection** and **UV Security Detection** are also not available or supported for the Geo product family.

Pulse Interface Options

The Pulse interface provides a simple chain of pulses on the output line that correspond to the particular note validated. All options within the yellow box are available for the pulse interface with the exception of the **ccTalk: Force all Note Types to "A"** and the **ADU-016xx Communication** checkboxes.



1. **Vend Line Output** setting allows user to change the output logic for the credit signal (active high or active low). **Default is Active Low.**
2. **Enable Logic** setting allows user to specify how the host enables the Geo
   a. Always Enabled (**Default**)
   b. Active high enabled
   c. Active low enabled
3. **Pulse per Dollar** assignment allows user to assign custom pulse values to the Geo Gravity. In general, this would be set to the highest value that all denominations are divisible by. i.e. For the Euro this is 5, so the values would be €5=1 Pulse, €10=2 Pulses, €20=4 Pulses, etc… For the USA, this would be 1 so defaults are as shown below. (**Default setting is 1 Pulse per Dollar**)



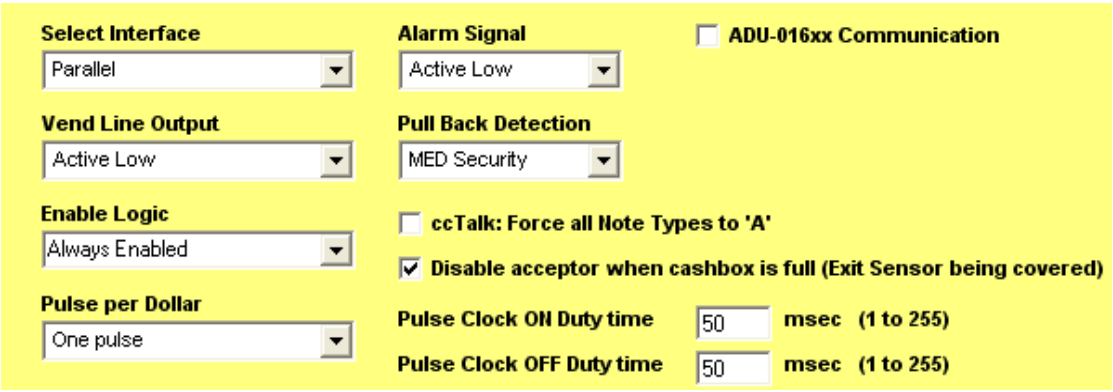
4. **Alarm Signal** setting allows user to change the output logic for the alarm signal (active high or active low). **Default is Active Low.**
5. **Pull Back Detection** allows user to change the security level (sensitivity) of the optical anti-stringing sensor (OAS) (aka cross channel sensor).
   a. HIGH Security
   b. MEDium Security (**Default**)
   c. LOW Security (**recommended setting**)
   d. OFF
6. **Pulse Clock Duty Time** settings allow user to specify the timing of the output pulse settings
   a. 1 to 255msec ON (**default is 50msec**)
   b. 1 to 255msec OFF (**default is 50msec**)

Parallel & Parallel Binary Interface Options

The Parallel interface provides specific output lines for designating which note has been validated. A maximum of 6 output lines are available.

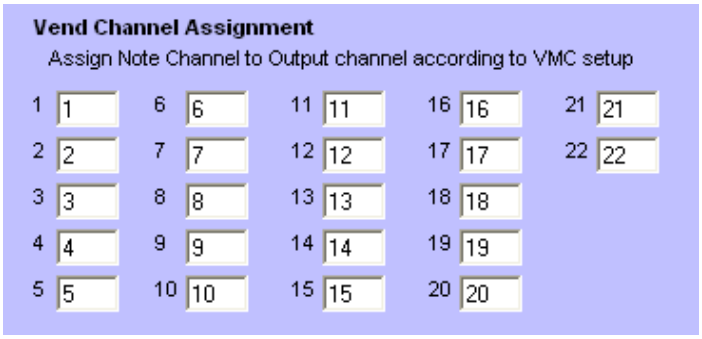
The Parallel Binary interface uses 4 output lines to designate in binary code which note has been validated. A maximum of 15 different outputs can be set

All options within the yellow box are available for the parallel and parallel binary interfaces, with the exception of **Pulse per Dollar, Pulse Clock ON Duty time**, **Pulse Clock OFF Duty time**, and **ccTalk: Force all Note Types to "A"** and **ADU-016xx Communication** checkboxes.



1. **Vend Line Output** setting allows user to change the output logic for the credit signal (active high or active low). **Default is Active Low.**
2. **Enable Logic** setting allows user to specify how the host enables the Geo Gravity. (Note that Always Enabled is not available for Parallel or Parallel Binary)
    a. Active high enabled (**Default**)
    b. Active low enabled
3. **Alarm Signal** setting allows user to change the output logic for the alarm signal (active high or active low). **Default is Active Low.**
4. **Pull Back Detection** allows user to change the security level (sensitivity) of the optical anti-stringing sensor (OAS) (aka cross channel sensor).
    a. HIGH Security
    b. MEDium Security (**Default**)
    c. LOW Security (**recommended setting**)
    d. OFF

Parallel and Parallel Binary utilizes specific output channels for each denomination. Using the **Vend Channel Assignment** box (see below), user can specify the output channel for each denomination.



- **Parallel** only supports 6 vend channels.
- **Parallel Binary** has a maximum of 15 different outputs, using only the first 4 vend channels.

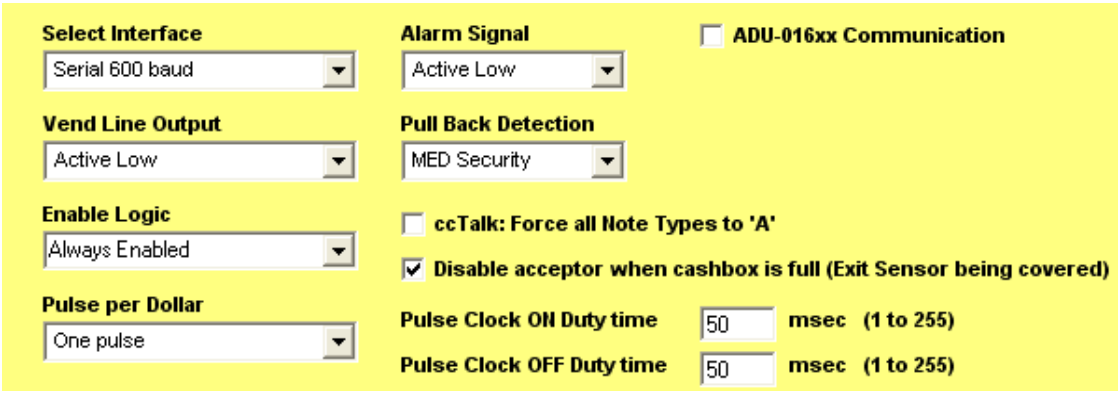
Table 1

Denomination	*Output 1 pin 7*	*Output 2 pin 8*	*Output 3 pin 9*	*Output 4 pin 10*
1 i.e EUR 5	1	0	0	0
2 i.e. EUR 10	0	1	0	0
3 i.e. EUR 20	1	1	0	0
4 i.e. EUR 50	0	0	1	0
5 i.e. EUR 100	1	0	1	0
6	0	1	1	0
7	1	1	1	0
8	0	0	0	1
9	1	0	0	1
10	0	1	0	1
11	1	1	0	1
12	0	0	1	1
13	1	0	1	1
14	0	1	1	1
15	1	1	1	1

Note: It is important to reference the billset release document in order to correctly specify denomination output channel assignments.

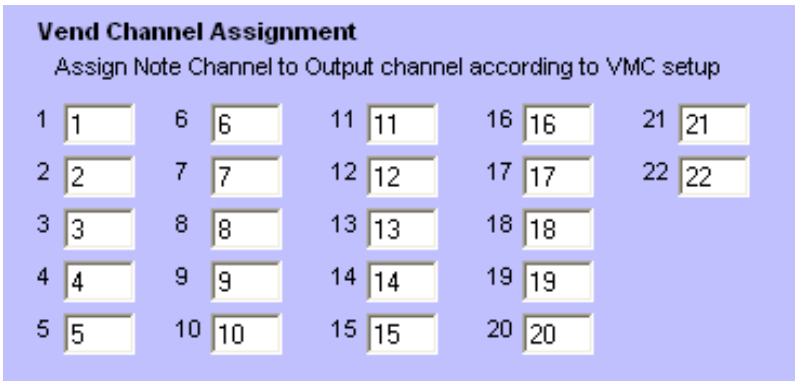
Serial 600 (NISR) Interface Options

Pull Back Detection is the only option within the yellow box available for the Serial 600 (NISR) interface.



1. **Pull Back Detection** allows user to change the security level (sensitivity) of the optical anti-stringing sensor (OAS) (aka cross channel sensor).
    a. HIGH Security
    b. MEDium Security (**Default**)
    c. LOW Security (**recommended setting**)
    d. OFF

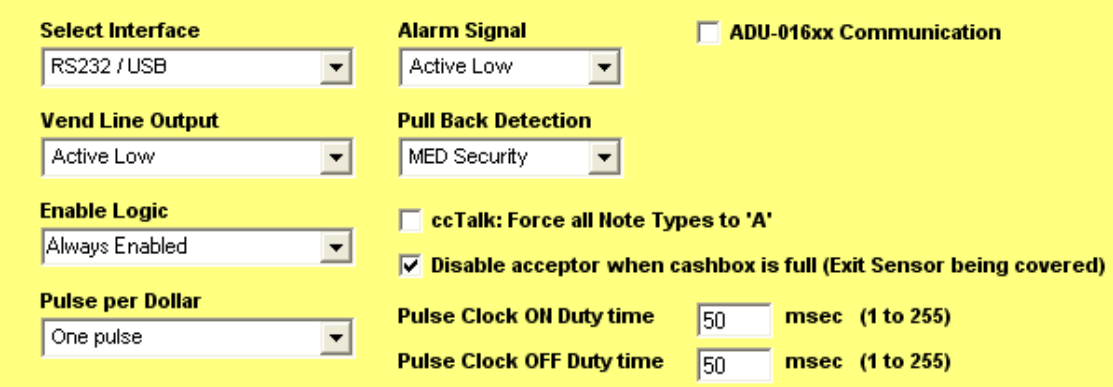
Serial 600 (NISR) utilizes specific output channels for each denomination. Using the **Vend Channel Assignment** box (see below), user can specify the output channel for each denomination. A maximum of 13 different output channels are available for use.



Note: It is important to reference the billset release document in order to correctly specify denomination output channel assignments.

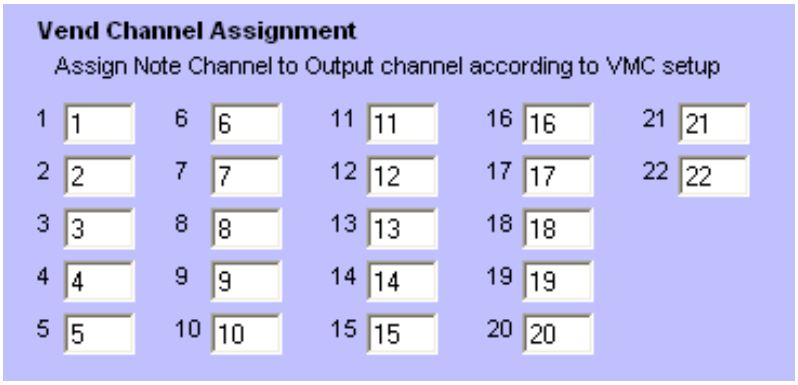
TTL RS232 Interface Options

Pull Back Detection is the only option within the yellow box available for the TTL RS232 interface.



1. **Pull Back Detection** allows user to change the security level (sensitivity) of the optical anti-stringing sensor (OAS) (aka cross channel sensor).
    a. HIGH Security
    b. MEDium Security (**Default**)
    c. LOW Security (**recommended setting**)
    d. OFF

TTL RS232 utilizes specific output channels for each denomination. Using the **Vend Channel Assignment** box (see below), user can specify the output channel for each denomination. A maximum of 13 different output channels are available for use.



Note: It is important to reference the billset release document in order to correctly specify denomination output channel assignments.

“True” RS232 Interface Options

The “True” RS232 interface requires a unique interface module and harness/loom be added to the Geo Gravity for proper communication and functionality.

- Requires VA-PCBA09 interface module
- Requires VA-WIRA09 interface harness/loom

Please see instructions in the next section for proper installation of interface modules.

All settings available to the “True” RS232 interface are identical to TTL RS232 as noted previously. The only difference between the “True” RS232 and TTL RS232 is the voltage levels that the interface operates at.

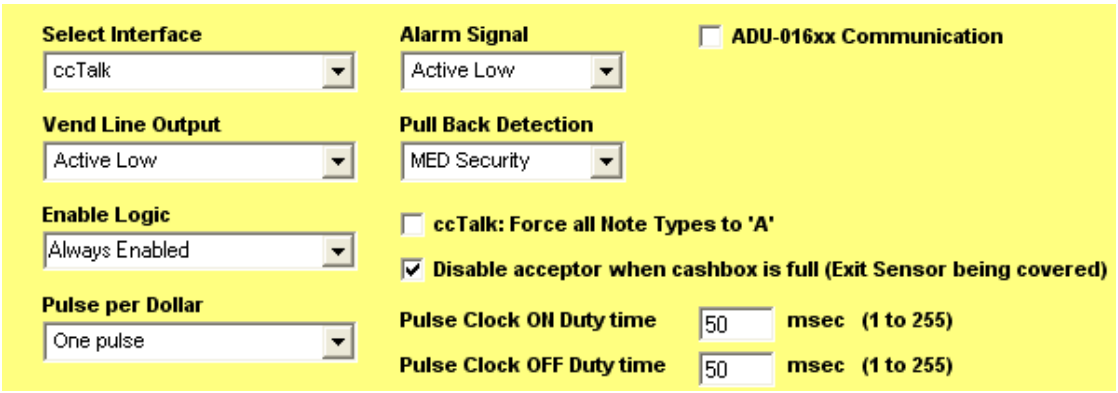
ccTalk Interface Options

The ccTalk interface requires a unique interface module and harness/loom be added to the Geo Gravity for proper communication and functionality.

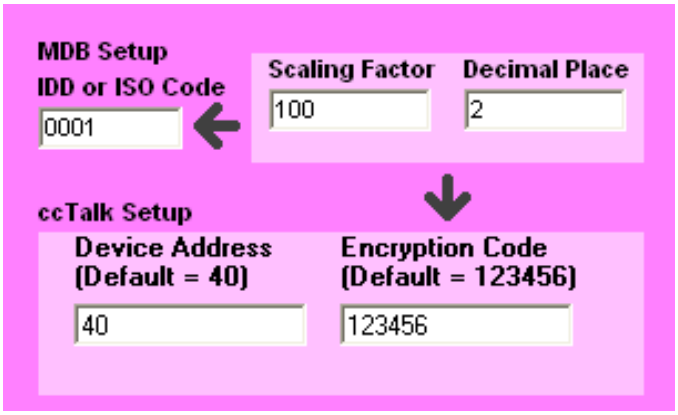
- Requires VT-PCBA12 interface module
- Requires interface harness/loom
  - VT-WIRA12 for non-AWP market
  - 252070058C for AWP market

Please see instructions in the next section for proper installation of interface modules.

All settings available to the ccTalk interface are identical to TTL RS232 as noted previously. With ccTalk, the **ccTalk: Force all Note Types to "A"** checkbox is available.



The ccTalk interface does require that the proper **Device Address** and **Encryption Code** be entered in the boxes shown. Use the defaults unless different values are specified on the billset release document or Sales Configuration Document.



Using Vend Channel Assignments to correctly map note IDs

Some Host machines do not follow the standard method of enumerating the bill set on a particular Bill Acceptor. The procedure should be to sequentially request bill ids, starting from bill id #1, until an

undefined bill id is returned. The Host should store this table of bill ids so that when the Bill Acceptor reports an event with a particular bill id, then the Host can look up the details of that bill in the table. However, certain Hosts do not enumerate the bill ids and simply assume a fixed bill set that is known to the host. For example the Host software may be hard coded to assume that there are only three bill ids: 1, 2 and 3 with bill id #1 being a GBP0005A note, id #2 being a GBP0010A note and id #3 being a GBP0020A note. Bill Acceptors that do not have a matching bill set will not work correctly with this Host.

Geo Gravity Bill Set

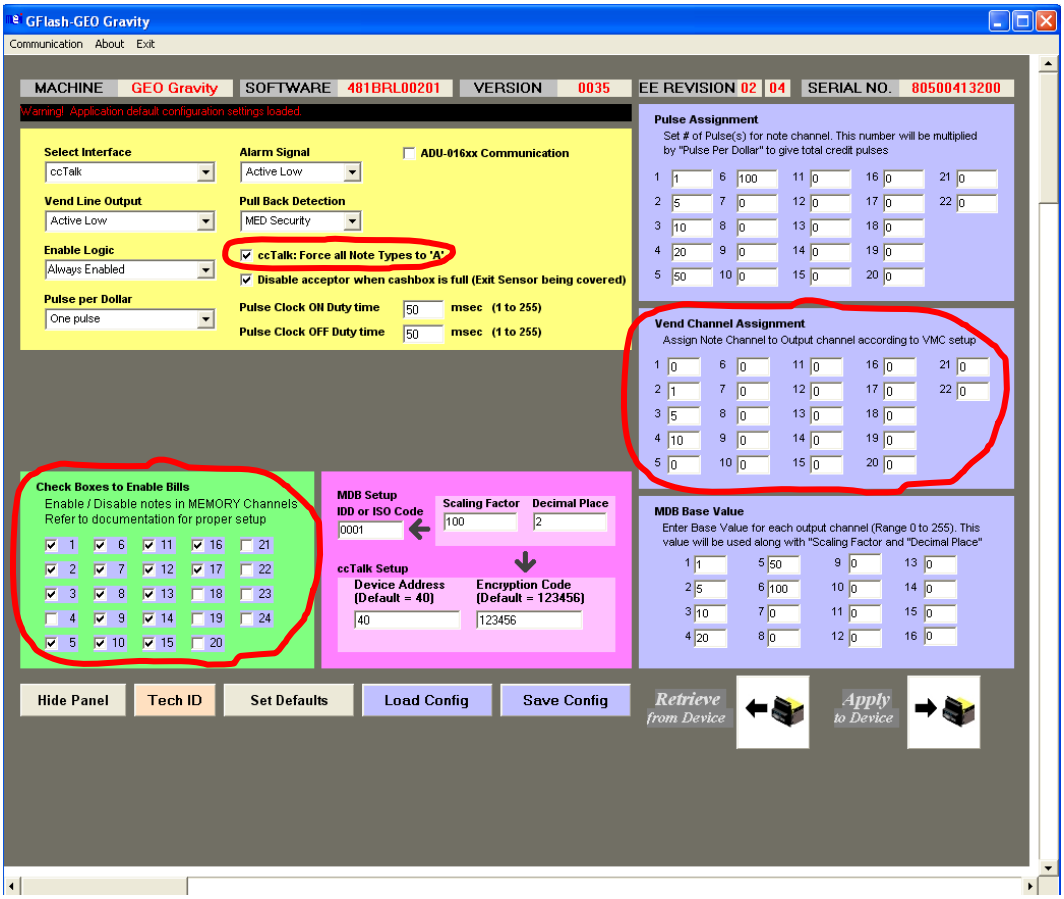
Geo Gravity Bill Acceptors have different bill sets for different variants. In addition, the notes are not identified by bill id but by note value. The following is an example bill set for the ECO variant:

```
ECO_000000005_A_A_A_A, VALUE_INDEX_2, NOTE_INDEX_1,
ECO_000000005_C_A_A_A, VALUE_INDEX_2, NOTE_INDEX_2,
ECO_000000005_D_A_A_A, VALUE_INDEX_2, NOTE_INDEX_3,
ECO_000000005_G_A_A_A, VALUE_INDEX_2, NOTE_INDEX_4,
ECO_000000010_C_A_A_A, VALUE_INDEX_3, NOTE_INDEX_5,
ECO_000000010_D_A_A_A, VALUE_INDEX_3, NOTE_INDEX_6,
ECO_000000010_E_A_A_A, VALUE_INDEX_3, NOTE_INDEX_7,
ECO_000000010_F_A_A_A, VALUE_INDEX_3, NOTE_INDEX_8,
ECO_000000010_G_A_A_A, VALUE_INDEX_3, NOTE_INDEX_9,
ECO_000000020_C_A_A_A, VALUE_INDEX_4, NOTE_INDEX_10,
ECO_000000020_D_A_A_A, VALUE_INDEX_4, NOTE_INDEX_11,
ECO_000000020_M_A_A_A, VALUE_INDEX_4, NOTE_INDEX_12,
ECO_000000020_N_A_A_A, VALUE_INDEX_4, NOTE_INDEX_13,
ECO_000000020_O_A_A_A, VALUE_INDEX_4, NOTE_INDEX_14,
GBP_000000005_P_A_A_A, VALUE_INDEX_2, NOTE_INDEX_15,
GBP_000000010_P_A_A_A, VALUE_INDEX_3, NOTE_INDEX_16,
GBP_000000020_P_A_A_A, VALUE_INDEX_4, NOTE_INDEX_17,
GBP_000000020_Q_A_A_A, VALUE_INDEX_4, NOTE_INDEX_18,
NULL, VALUE_INDEX_UNDEFINED, NOTE_INDEX_19
```

The bill set above will recognize 18 different note types and report three different note values, i.e. 5, 10 and 20. A ccTalk Host could enumerate 18 bill ids, one for each note index. The Geo Gravity software reports the VALUE_INDEX as the bill id. For example, if a note of type EC0010C was detected then the software will report an id value of 3, corresponding to VALUE_INDEX_3. This would be incorrectly identified by the Host as the EC0005D note corresponding to NOTE_INDEX_3. This problem occurs when we have multiple notes types for the same note value.

Using Vend Channel Assignment

In order to avoid the above issues, the VALUE_INDEX that is reported by our detection software can be mapped to a NOTE_INDEX that will be reported to a ccTalk Host. This mapping is performed using the **Vend Channel Assignment** box. Assuming the same ECO variant as above:

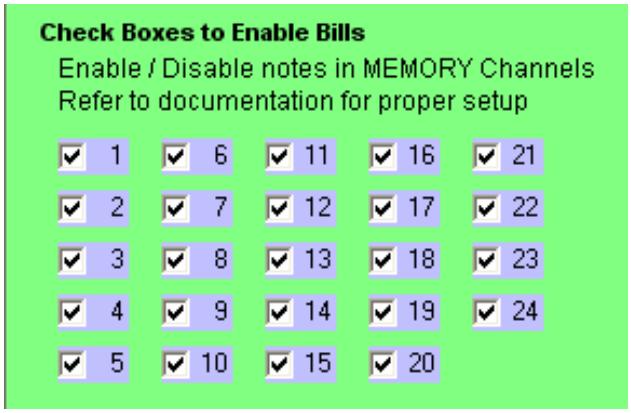


In the above example, we map value index 2 (**Vend Channel 2**) to note index 1 (**Memory Channel 1)**, value index 3 (**Vend Channel 3**) to note index 5 (**Memory Channel 5)** and value index 4 (**Vend Channel 4**) to note index 10 (**Memory Channel 10)**. All other value indexes are set to 0 meaning undefined. Also all note types will be reported as 'A'. This means the Host will only be aware of the following three bill ids: #1 = EC0005A, #2 = EC0010A and #3 = EC0020A. If the Bill Acceptor firmware detects a note with a value index of 2, it will report a bill id = 1 to the Host. Similarly, a value index of 3 will be reported as bill id = 2 and value index of 4 will show as bill id = 3.

The example above has also disabled note index 4 and indexes 18 - 24. For the ECO variant, this means that the Bill Acceptor will not accept note EC0005G and note GB0020Q.

Enable / Disable Notes

On the Configuration Panel, use of the **Enable Bills** box is available for all interface options.



Check boxes allow user to enable or disable specific notes. The billset release document contains a listing of memory channel assignments for each denomination within a billset. It is strongly recommended that unused memory channels within a billset be disabled (empty check box).

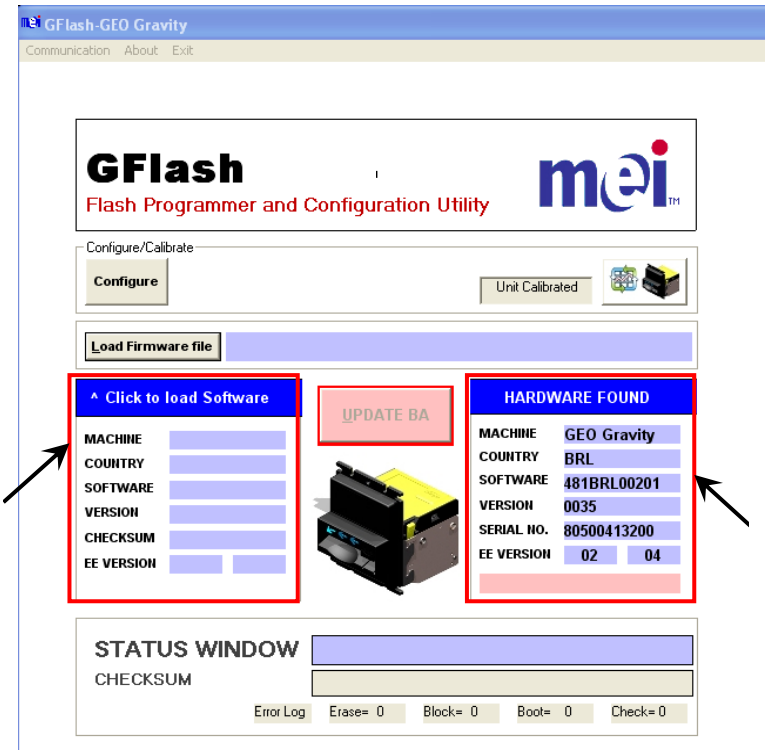
Please refer to the variant release document to determine which memory channels are used / unused within a specific variant.

Note: Several countries have more than a single type of note for some denominations (i.e. $50USD (Issue 1995) & $50USD (Issue 2004). Each of these notes is assigned to a different memory channel. If the user desires to disable acceptance of the $50USD, then BOTH memory channels must be disabled.

Updating Notedata Billset

A notedata billset installation is accomplished using the Gflash application software. The opening screen of Gflash is where a notedata billset is installed to the Geo. On the opening screen, there are 2 panels of information. The rightmost panel represents what is currently installed on the Geo connected to the PC. The leftmost panel represents the billset to be installed.

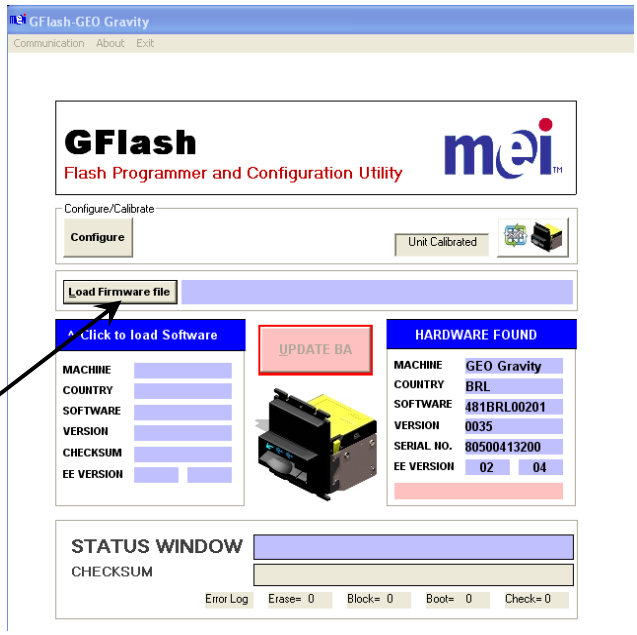
New Billset Information



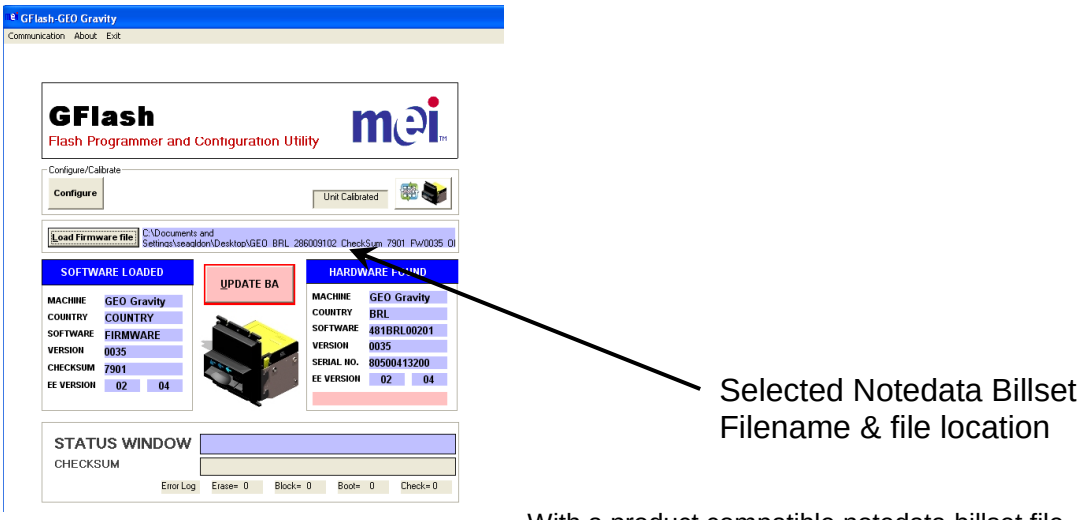
Currently Installed Billset

To install the new notedata billset, click the **Load Firmware file** button located right above the new billset information panel.

Click Here to Load Billset



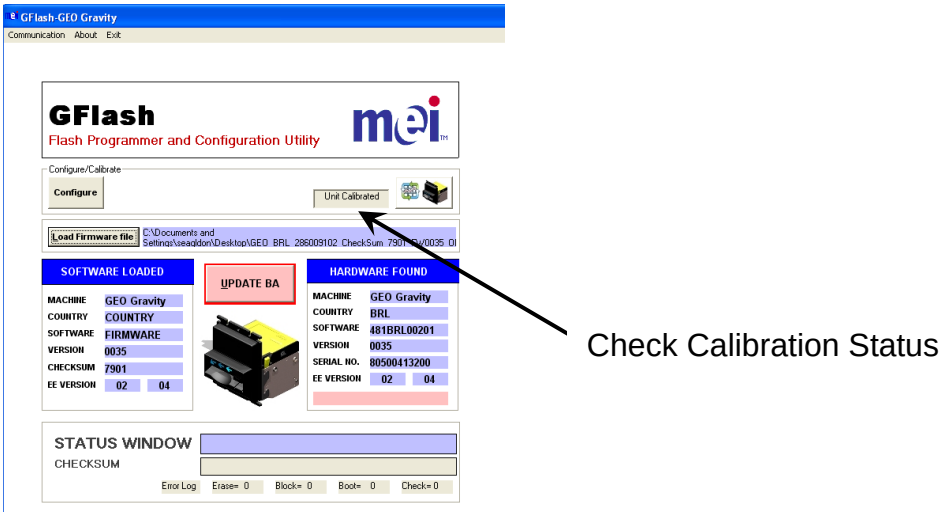
Navigate to the location (folder,desktop, etc...) where the new notedata billset file was saved. The notedata billset file will be a **HEX** file. Select the desired **HEX** file and click the **Open** button. The **STATUS** WINDOW will begin displaying messages indicating the status of the HEX file load process. The name of the selected file will then be displayed and the New Billset Information panel will be populated.



With a product compatible notedata billset file selected, the **UPDATE BA** button will become active and selectable. Click the **UPDATE BA** button to begin the billset installation. The **STATUS WINDOW** will begin displaying messages indicating the progress of the billset update. A message will be displayed indicating that the update has been successful and the area next to **CHECKSUM** will be populated with a 4-digit alphanumeric code. Verify that this 4-digit code exactly matches the **CHECKSUM** displayed in the New Billset Information panel. If they match, the update was successful. If they do not match, perform the update procedure again.

If any errors occur during the billset update, re-try by clicking the **UPDATE BA** button again.

When the notedata billset update is complete, verify that the Geo Gravity is calibrated.



If calibration is required, follow calibration instructions in the next section.

Calibration

Step (1) Power up the device and allow to warm up for at least 4 minutes.

Step (2) ***a)*** Connect PC-Link Cable (VAA-WRA20) to computer serial port and Data port on device.

b) Start *GFlash* and press "**Calibration**" button.

Step (3) ***Geo Force*** Front bezel LED's will turn off while device is undergoing Internal sensor adjustment.

Geo Gravity Front bezel Arrows will turn off while device is undergoing Internal sensor adjustment.

DO NOT insert anything into device yet!

Step (4) When front bezel LED's (Force) light up or arrows (Gravity) light successively from right to left, insert clean, white Calibration paper (CAL-100) straight into notepath.

Step (5) Calibration paper will be pulled into the device and cycle in and out of the note entry several times.

Step (6) Upon completion of calibration paper cycling, the calibration paper will be returned completely.

Immediately remove calibration paper!

Step (7) Device will perform several internal sensor adjustments for 3 seconds.

Step (8) Upon completion of internal sensor adjustments, device will run drive motor momentarily as an audio confirmation of successful calibration and storage of necessary calibration data in non-volatile memory of device.

Step (9) Device can now be returned to service.

Note: When not in use, store calibration paper (CAL-100) flat in a clean, dry envelope away from exposure to direct light or UV radiation. If the calibration paper becomes excessively dirty, replace.