

G Force Tracker User's Guide

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Welcome

Thank you for choosing the GForceTracker (GFT) sensor for your g-force tracking needs. The GFT records forces encountered in physical activity. It can be used for training, monitoring and safety reasons. Plug your device into your computer's USB port to upload data into a cloud database (gCloud). The GFT together with gcloud records, reports and recreates a lifetime of data. The data can be used to improve an athlete's performance, monitor impacts and alert the user of potential problems. The user profile can be customized with adjustable thresholds and alarms.

System Requirements

TO USE YOUR GFT, YOU MUST HAVE:

- One of the following two operating systems:
 - Mac (OS v10.5.8+) with a Microsoft desktop emulation software
 - PC (Windows 7 SP1+, Windows Vista SP2+, or Windows XP SP3+, Windows 8
- A single USB port
- Internet access (broadband recommended, fees may apply)
- Approximately 25 MB free space for GFT installation

What is in the Box



- 1. GFT Sensor
- 2. USB Cable
- 3. Wall Charger
- 4. Dual Lock Fasteners
- 5. Double Sided Adhesive Tape



Getting Started

Set-Up

Before using the GFT, you must register and set up your account profile in the gcloud database. The database keeps track of all your historical data. In order to get started, simply open an internet connection on your computer and go to <u>gft.gforcetracker.com</u> to register an account. Once you have registered, you will receive a verification email. Follow the link that is sent to you and sign into gCloud in order to download gLink software and to set up your device.

1. DOWNLOAD AND INSTALL gLINK

The software allows you to upload data to a cloud where you can keep a history of all your activity. All of your activity will be stored securely on computer servers. You can access your data from any computer connected to the internet. You can customize your settings such as measurement thresholds, add additional devices and set up individual or team environments. Click "Download Software" in the menu tab to install software.



2. SET UP YOUR PROFILE

Click "*Settings*" to open drop down menu. There are 4 different options.



Select "*Edit Profile*" if you wish to change or update your personal profile information as well as username and sign on password

3. MANAGE USERS

gLink can be used to set up the GFT device for a single user environment or multiple user team environment where individual team members can log on to see their data and no one else's so long as the administrator allows them to. If the account is for an individual user, this section does not apply. Typically this is an administrator setup and is for athletic trainers and coaches who wish to see team member data. However, you can add additional GFT devices under a single profile if you wish to monitor different activities. You may be active in more than one sport or activity. Since the GFT has a unique serial number it will be always linked to a user profile that has been set up. The member can be an individual on a team or a single user who wishes to manage multiple devices.

Select **"Manage Users"** in order to create new users for your account. Fill in all team member user information. Entering the individual user's email address is optional at this time. You may allow an individual user the option of creating their own GFT account in order to view their own impact data, should you wish. In order to do so, enter the team member's email address. An email notification will be sent redirecting them to the login page to complete their registration. When complete, click on create account and the account is now created for that team member. You may go back to through **"Manage Users"** at anytime to change any information that needs adjusting.

4. MANAGE TEAMS

This section is for administrators, typically an athletic trainer or coach who wishes to create teams and manage all active and inactive players. For a single user, this section does not apply. To add your team, create your team by selecting the *"Create New Team"* button. Fill in all pertinent information and click on the *"Create Team"* button.

Click on the "Add Teammates" button to add players to your team. Note, that the user must already be created prior from the "Manage User" section before you are able to add them to your team.

Select the user from the drop down menu, indicate whether they are a team member or another administrator as you may assign additional administrators to view your team data. Click on "*Add Player*".

Continue this for all remaining team members.

5. CHARGE

Plug the GFT into a computer USB with the supplied cable to charge the internal battery of the GFT. The status LED will blink green when the GFT is charging. When the GFT unit is fully charged the status LED will be constant green colour.

Fastening Methods

There are two methods of attaching the GFT to the helmet. You can use double sided foam tape or the "dual lock" fastener method. Both methods require the mounting surfaces to be cleaned with cleaning solvent such as 50/50 isopropyl alcohol (rubbing alcohol) water mixture. After cleaning the mounting surfaces and then wipe area with clean cloth to remove solvent and contaminants. The fastening method is a semi-permanent installation. The GFT is not recommended to be removed on a daily basis.

1. APPLICATION PRESSURE

Bond strength is dependent upon the amount of adhesive-to-surface contact developed. Firm application pressure develops better adhesive contact and thus improves bond strength. Apply tape to first surface and apply very firm pressure. Then apply the tape to second surface and apply very firm pressure.

2. APPLICATION TEMPERATURE

Ideal tape application temperature is 21° C (70°F to 100°F). Initial tape application temperature to surfaces at temperatures below 10°C (50°F) is not recommended because the adhesive becomes too firm to adhere readily. However, once properly applies, low temperature holding is generally satisfactory.

3. DWELL TIME

After application, the bond strength increases and approaches ultimate bond strength after 72 hours at 21°C (70°F). Typical bond strength build-up: 20 min equals 50% bond strength, 1 hour 75% bond strength, 1 day equals 90% bond strength and 3 days equals 100% bond strength. In some cases, bond strength can be achieved more quickly by exposure of the bond to elevated temperatures ie 66°C (150°F) for one hour. This provides quicker and more thorough adhesive wet-out onto then substrates.

IMPORTANT: Although the electronics of the GFT are encased in a ruggedized package and can measure extreme impacts, the fastening method may not withstand severe direct impacts especially in cold weather. The device can separate from the helmet. Adapter pieces are available to mount the GFT to the exterior of helmets to provide a more secure method of mounting. It is recommended to mount the GFT on the inside of helmets at all times unless an adapter piece is used.

Helmet Mounting Locations

The following diagrams show where the GFT can be mounted. A football helmet is shown as an example. Use this as a guideline for other types of sport helmets. Mount the GFT in a location where the USB cable can easily be plugged into the unit. If the GFT is mounted in the inside of the helmet, ensure it does not interfere with the helmet padding and the USB cable can be easily plugged into the unit. The following are examples of multiple mounting locations for the device.





USB Connector Facing Rear Edge of Helmet

Example 2: Mounted Inside Helmet With USB Connector Facing Front Edge of Helmet



USB Connector Facing Towards Front Edge of Helmet

Example 3: Mounted Outside Helmet With USB Connector Facing Rear Edge of Helmet



Example 4: Mounted Outside Helmet With USB Connector Facing Front Edge of Helmet



Calibrating Your Device

Only applicable if mounting to inside or outside of any headgear apparatus. Before you can use the device, you will need to calibrate your GFT sensor after mounting it in the recommended locations of your headgear. Plug the mounted GFT into the computer with the USB cable. The GFT will automatically awake. Position the helmet flat on the table with the front of the mask facing towards you. With the GFT client running, right click the GFT icon in the task bar menu at the bottom of computer screen. When ready, select *"Calibrate Device."* Wait until the confirmation notice appears before unplugging your device.

IMPORTANT: After calibrating and setting up your device you need to disconnect and reconnect your GFT in order to have the changes take effect.



Setting Up Device For Individual Use

User profile names must be setup before any device can be assigned to a particular user. See page 7.

When an unassigned device is connected to the computer, the software will check whether you wish to create new account or assign the device to an existing account. Select **"Add to Existing Account".** On the **"Add Device to Account"** page, select the user you wish to assign the device to. Assign to a user name that you have setup when account was registered. See page 7. Select the sport and level of expertise. Set up the minimum recording threshold and the alarm threshold. The alarm threshold is the g-force that will trigger the alarm LED and buzzer. You can select the option of turning off the alarm audio and/or visual.

Setting Up Device For Team Use

User profile names must be setup before any device can be assigned to a particular user. For team use, a list of teammates and a team name must also be created. See page 7.

When an unassigned device is plugged into the computer, the software will check whether you wish to create new account or assign the device to an existing account. Select **"Add to Existing Account".** On the **"Add Device to Account"** page, select the user you wish to assign the device to. Assign to a user name that you have set up when account was registered. See page 7. Select the sport and level of expertise. Set up the minimum recording threshold and the alarm threshold. The alarm threshold is the g-force that will trigger the alarm LED and buzzer. You can select the option of turning off the alarm audio and/or visual. The device can now be added to a team located under **"Manage Teams"** located under the **"Settings"** dropdown menu.

Starting a Session

Depress the button on the GFT for 3 seconds to wake up the GFT. You will hear a beep and you will see a flashing green status "heart beat" LED. Note that the device will go into deep sleep mode if there is no movement after 5 seconds. The LED will go off to conserve battery life. If the device is moved slightly, the device will awaken instantaneously and continue to flash the green "heart beat" LED to show it is operational.

If a GFT device receives a hit over a preset threshold level, the red LED on the ON/OFF button will flash and the alarm buzzer will beep to alert the user that a hit over the threshold has been reached. The LED will continue to flash until the data in the memory is uploaded to the cloud. To conserve battery life, depress the on/off button for 3 seconds to turn the device completely off when not in use. Note that the unit will continue to record data until the memory is full. Note that the end of session can defined at the point when the device is turned off or when it is plugged into the computer to upload data.

Uploading Your Data

To upload session data, connect the GFT to the computer using the USB cable. The session data automatically uploads to the cloud. **DO NOT DISCONNECT** while data is being uploaded. If you have multiple devices, you can plug them at any time. The GLink software will manage all the devices and session data for you. Note that a session is defined as any activity on the GFT after the device has been turned on to the point when the device is turned off or when it is connected to the computer by USB. The cloud is a secure place to keep all your session data synchronized.

Viewing Your Data

You can view the data in the GFT cloud from any computer connected to the internet by logging on with your account.

To view data, select "*Impact Monitor Impacts*" drop down menu and select "*All Users*" to view all users. If you want to view data of group of users or a team, select "*Team*". Note that you have to create a team before using this feature. See page 7.

Select the profile, you wish to view. From here you are able to select the session you are interested in by entering the date. You can select the appropriate button in the time range to quickly filter and view the data. For example, by highlighting *"this month"* in the time range, you can view data for current month.

Team Imp	oacts						FT Powere	d by GForce Tracke				
Select Filter (Criteria						Log Ger	ry Iuliano				
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Team:	University of New Hamp	shire	-	Time	Actual	Average	Average	Average				
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Time Range:				This Week	66	56.86	7.64	38.86				
Time Range: 💿 Last Session 🔘 Today 💿 Last 7 Days		This Month	237	56.09	17.91	61.07						
	This Month D This	17.91	61.07									
				Lifetime	237	56.09	Logged in as Cerry Julian Logou Loguet Logou Average geore Average HIC Average (SSI (SSI) Average (SSI) Average geore Average HIC Average (SSI) Average (SSI)					
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2	Gerry Iuliano	1	1	4	1		o					
2	Gforce Tracker	1	35	23	1		0					
2	Harry Yan	0	0	0	0		0					
2	Hello GFT	0	0	o	0		0)				
2	Paul Walker	0	0	o	0		o					
Showing 1 to 6 o	of 6 entries							00				

You will see hit count summary for your team for the session/s selected in addition to your team list summary of these dates.

Clicking on the name of the player of interest will bring you to the details for the individual that you selected.



In this section, you can change the session/s that you are interested in.

You will see summary data for the individual impacts in addition to the session dates, total number of impacts and alarms etc. for the session. You may also see a summary of the distribution of these impacts in the worksheets by selecting the appropriate tab at the top of the data fields.

Detailed information for the session can be seen by clicking on any one of the green, yellow or red bars indicating an individual impact. You will now see the details from the session





Under the *"Total Impacts"* tab, you can view the graph distribution of linear g-forces of all the sessions. In addition, you can see the graph distribution of Head Impact Criteria (HIC) and the Gaad Severity Impact (GSI)



Exporting Your Data

You may export this session to excel for further analysis by pressing the Export Session Data just underneath the head form. This will create a file with 3 different sheets. The first sheet is a summary of the session similar to what is seen on the screen. The second is the linear acceleration data and the third is the rotational velocity data.



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7/26/2013	16:50:24.870	21.48082357	BACK	1.5		4.4	-6.25	-20.31	3.12	17	17	10		26	170.97	
7/26/2013	16:50:33.923	34.0180329	RIGHT	6.9		18.8	-26.56	17.19	-12.5	8	17	12		22	295.5	
7/26/2013	16:50:41.648	46.90103444	BOTTOM	3.5		13.3	14.06	-18.75	-40.62	8	17	17		25	129.37	
7/26/2013	16:58:36.676	71.39787287	FRONT	59.6	1	140.1	-25	40.62	-53.12	8	9	13		17	330.61	
7/26/2013	16:58:38.925	39.95847454	LEFT	14.5		28.4	-20.31	-1.56	-34.38	15	8	17		24	112.66	
7/26/2013	16:58:41.141	38.59090324	BOTTOM	11.5		28	-4.69	-7.81	-37.5	14	17	7		23	241.29	
7/26/2013	16:58:48.434	77.33980419	FRONT	3.5		11.6	23.44	73.44	-6.25	17	17	17		29	15.92	
7/26/2013	16:58:48.736	103.9385523	FRONT	10.6		39.4	21.88	101.56	3.12	16	15	1		21	14.91	
7/26/2013	16:58:52.405	69.61459191	BACK	1.5		6.8	-21.88	-65.62	-7.81	17	17	17		29	193.19	
07/26/2013	16:58:52.757	81.63969049	BACK	2.4		10.2	-1.56	-81.25	-7.81	17	17	11		26	187.36	
07/26/2013	17:06:40.477	39.34274473	TOP	6.9		19.8	18.75	-10.94	32.81	17	16	17		28	126.13	
07/26/2013	17:07:11.41	11,48198317	TOP	2.5		4.6	-1.56	-3.12	10.94	11	17	7		21	286.4	
07/26/2013	17:11:14.155	60.39421278	FRONT	3.1		38.2	26.56	35.94	-40.62	15	8	15		22	35.49	
07/26/2013	17:13:28.236	31.9071529	BOTTOM	0.5		6.5	-6.25	1.56	-31.25	17	16	17		28	332.66	
07/26/2013	17:19:03.577	34.9036061	FRONT	5.1		19.6	10.94	32.81	4.69	17	15	8		24	15.91	
07/27/2013	9:57:13.770	52.54741163	BACK	6.7		17.5	-17.19	-48.44	10.94	11	17	9		22	195.25	
07/27/2013	9:57:14.61	22,4260939	TOP	0.4		2.5	4,69	-1.56	21.88	8	16	17		24	155.05	
07/27/2013	9:57:25.239	138.7021314	RIGHT	47.9		281	-128.12	-53.12	0	17	12	17		26	292.78	
07/27/2013	9:57:25.439	152.2375431	RIGHT	33.6	1	802.6	-150	-21.88	-14.06	16	6	8		18	288.43	
07/27/2013	9:57:25.656	160,5958145	RIGHT	37.6	- 2	44.6	-159.38	6.25	-18.75	13	16	15		25	285.95	
07/27/2013	9:57:27.260	90.86713343	FRONT	13.3	1	118.5	46.88	76.56	-14.06	17	17	16		28	26.46	
07/27/2013	11:15:31.618	30.21731188	FRONT	1.2		5.9	-1.56	28.12	10.94	2	9	17		19	9.24	
07/27/2013	11:16:11.756	52.617057	FRONT	2.8		18.6	3.12	45.31	-26.56	16	15	17		27	6.94	
07/27/2013	11:16:11.824	105.3036903	BOTTOM	6.2		55.5	-92.19	-15.62	-48.44	15	8	12		20	227.01	
07/27/2013	13:18:51.89	130.3728128	RIGHT	25.9	1	117.7	-125	17.19	-32.81	17	8	17		25	285.65	
07/27/2013	13:18:57.385	27.99448885	FRONT	1		7.5	-6.25	25	-10.94	17	8	7		20	353.48	
07/27/2013	13:18:57.464	73.96750237	BACK	12.6		64.9	17.19	-71.88	3.12	15	8	12		20	180,42	
07/29/2013	8:25:03.57	20.61079056	RIGHT	0.7		2.5	-20.31	-1.56	-3.12	17	6	17		24	270	
07/29/2013	8:27:23.227	44.74319082	BOTTOM	0.9		16.9	-15.62	-18.75	-37.5	13	16	3		20	221.92	
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Technical Specifications

Size GFT3: 52mm x 28mm x 10mm

Weight GFT3: 20g

Battery 300mAh Lithium Polymer batter, charge time 90 min

Connector

Micro USB female, sealed and protected to IP67 ingress protection rating for 1m water 30 minutes. Test pending for IP68.

Operating Temperature

-20C to 85C

Wireless Range and Frequency

200m Line of sight (LOS) operating in the Industrial, Scientific and Medical (ISM) band at 2.4GHz

LED Status Indicators

The GFT has a flashing red LED located in the center of the push button. There is also a status indicator that shows battery charging status. In addition, the status LED indicates when the firmware is being updated via internet connection.

This is list of LED modes and the meaning:

Flashing red – Indicates alarm condition. The threshold set by the user has been exceeded.

Flashing green – Battery is being charged

Constant green – Battery is fully charged

Flashing yellow – Battery needs to be charged

Flashing blue – Unit is in update firmware mode

Service and Support

For service and support, go to http://www.gforcetracker.com/contact.php

Warranty

One-Year Limited Warranty

Your product is warranted by Gforcetracker to be free of defects in materials or workmanship, under normal use, for a period of one year from the date of purchase. This limited warranty excludes damage resulting from improper care of handling, accidents, modification, unauthorized repairs, normal wear or other causes which are not defects in materials or workmanship. If your product is defective, return it and the receipt to the place of purchase.

If there is a covered defect, we will repair or replace the product free of charge or issue a refund at our discretion. The product is provided "AS IS AND WITH ALL FAULTS", and Gforcetracker hereby disclaims all other warranties, conditions and the provision of or failure to provide support or other services, information, software, and related content through the product or otherwise arising out of the use of the product.

This limited warranty is in place of all other express and implied warranties of any kind, which are hereby excluded. In no event shall Gforcetracker be liable for direct, indirect, incidental or consequential damages arising out of the use of the product, and any recovery is limited to the purchase price. No other person or company is authorized to change this limited warranty. Some states and countries within the do not allow limitation on how long an implied warranty lasts, or exclusion of all or certain types of damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, and you may also have other additional rights, which vary from state to state or Country to Country. The foregoing is without prejudice to other legal rights that may arise under applicable national legislation. The warranty extends only to products purchased from an authorized Gforcetracker retailer.

This warranty does not apply to consumable parts, such as batteries, unless damage has occurred due to a defect in materials or workmanship.

Compliance Information FEDERAL COMMUNICATIONS COMMISSION (FCC)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: THE GRANTEE IS NOT RESPONSIBLE FOR ANY CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE. SUCH MODIFICATIONS COULD VOID THE USERS AUTHORITY TO OPERATE THE EQUIPMENT.

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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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

—Increase the separation between the equipment and receiver.

—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

—Consult the dealer or an experienced radio/TV technician for help.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

INDUSTRY CANADA (IC)

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3 (B)/NMB-3(B)

RF Exposure Statement:

This equipment complies with ISED RSS-102 radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme avec ISED RSS-102 des limites d'exposition aux rayonnements définies pour un environnement non contrôlé.