

# ThinkGear iOS API Reference

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# TGAccessoryManager Class Reference

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## Overview

The `TGAccessoryManager` class handles connections and data transfer between a ThinkGear-enabled accessory and an iOS device.

## Tasks

### Getting the Shared Accessory Manager

- `+ sharedTGAccessoryManager`

### Setting Up and Tearing Down the Accessory Manager

- `- setupManagerWithInterval:`
- `- setupManagerWithInterval:forAccessoryType:`
- `- teardownManager`

### Starting and Stopping the Data Stream

- `- startStream`
- `- stopStream`

### Getting Information about the Accessory Manager

- `dispatchInterval` *property*
- `- getVersion`

### Getting Information about the Accessory

- `accessory` *property*
- `connected` *property*

### Accessing the Delegate

- `delegate` *property*

## Properties

### accessory

An `EAAccessory` object indicating the accessory that the `TGAcessoryManager` has found. (read-only)

```
@property (nonatomic, readonly) EAAccessory * accessory
```

#### Discussion

If no accessory can be seen by the `TGAcessoryManager`, the value of this property will be `nil`. You can query this property on application startup, for example, to display a static `UIView` indicating that a ThinkGear-enabled accessory should be attached.

### connected

A Boolean value indicating whether a data stream is active between the accessory and the iOS-based device. (read-only)

```
@property (nonatomic, readonly) BOOL connected
```

#### Discussion

A `startStream` call will set this property to `YES`, and a `stopStream` call will set this property to `NO`.

**Important:** This property is **not** an indication of whether an accessory is attached or not for that, you should check whether or not the `accessory` property is `nil`.

### delegate

The object that acts as the delegate of the accessory.

```
@property (nonatomic, assign) id<TGAcessoryDelegate> delegate
```

#### Discussion

The delegate receives notifications about changes to the status of the ThinkGear-enabled accessory, as well as data receipt notifications. The delegate must adopt the `TGAcessoryDelegate` protocol.

### dispatchInterval

The interval, in seconds, between each `dataReceived:` notification sent to the delegate.

```
@property (nonatomic, assign) NSTimeInterval dispatchInterval
```

#### Discussion

This property indicates the guaranteed **minimum** interval between each `dataReceived:` notification. Though unlikely, the actual interval between each `dataReceived:` notification may be much higher than the value specified here, so your application should handle those situations gracefully.

**Important:** The recommended interval period is dependent on the hardware connected. See the iOS Development Guide for recommended intervals.

## Class Methods

### sharedTGAcessoryManager

Returns the shared `TGAcessoryManager` object for the iOS-based device.

```
+ (TGAcessoryManager *)sharedTGAcessoryManager
```

#### Return Value

The shared ThinkGear accessory manager object.

#### Discussion

You should always use this method to obtain the ThinkGear accessory manager object, rather than creating an instance directly.

## Instance Methods

### setUpManagerWithInterval:

Sets up the `TGAcessoryManager` instance to receive data from a ThinkGear accessory that connects via Bluetooth or 30-pin connector. This lets the `TGAcessoryManager` know that you are ready to receive notifications related to ThinkGear-enabled accessories.

```
- (void)setUpManagerWithInterval: (NSTimeInterval)dispatchInterval
```

#### Parameters

- *dispatchInterval* — The interval between each `dataReceived:` notification.

#### Discussion

Until `startStream` is called, the delegate will **not** receive any `dataReceived:` notifications; this method **only** performs setup of the accessory manager and starts the accessory connection and disconnection notifications.

A `TGAcessoryManager` instance should **not** be used prior to calling this method.

### setUpManagerWithInterval:forAccessoryType:

Sets up the `TGAcessoryManager` instance to receive data from a ThinkGear accessory of type `accessoryType`. This lets the `TGAcessoryManager` know that you are ready to receive notifications related to ThinkGear-enabled accessories.

```
- (void)setUpManagerWithInterval: (NSTimeInterval)dispatchInterval
forAccessoryType: (TGAcessoryType)accessoryType
```

### Parameters

- *dispatchInterval* — The interval between each `dataReceived:` notification.
- *accessoryType* — The type of ThinkGear dongle accessory to connect to.

### Discussion

Until `startStream` is called, the delegate will **not** receive any `dataReceived:` notifications; this method **only** performs setup of the accessory manager and starts the accessory connection and disconnection notifications.

A `TGAcessoryManager` instance should **not** be used prior to calling this method.

## startStream

Open up a data stream to the accessory. This starts the dispatch of notifications, at a rate specified by `dispatchInterval`.

```
- (void)startStream
```

### Discussion

When you no longer want to receive `dataReceived:` notifications on your delegate object, you should call the matching `stopStream` method.

## stopStream

Close the data stream that is opened to the accessory. This stops the dispatch of `dataReceived:` notifications.

```
- (void)stopStream
```

### Discussion

Calls to this method must be balanced with a preceding call to the `startStream` method.

## teardownManager

Perform teardown of the `TGAcessoryManager` instance.

```
- (void)teardownManager
```

### Discussion

This method call should be balanced with a preceding call. Typically, this method is called when you have no further use for the `TGAcessoryManager` (e.g. when the application quits).

## getVersion

Returns the version number of `TGAcessory`.

```
- (int)getVersion
```

## Constants

### Accessory Type

These values represent the different types of ThinkGear iPhone accessories that the `TGAcessoryManager` instance can receive data from.

```
enum {
    TGAcessoryTypeDongle = 0,
    TGAcessoryTypeAudioWired = 1,
    TGAcessoryTypeSimulated = 2
};
typedef NSUInteger TGAcessoryType;
```

#### Constants

**TGAcessoryTypeDongle** A ThinkGear accessory that connects via Bluetooth or 30-pin connector.

Declared in `TGAcessoryManager.h`

**TGAcessoryTypeAudioWired** A ThinkGear accessory that connects to the audio jack of an iOS device.

Declared in `TGAcessoryManager.h`

**TGAcessoryTypeSimulated** A simulated ThinkGear dongle accessory that connects via a `local-host` socket connection. This should only be used in the iPhone simulator, and should not be used on actual iOS devices.

Declared in `TGAcessoryManager.h`



# TGAccessoryDelegate Protocol Reference

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## Overview

The `TGAccessoryDelegate` protocol defines methods for handling accessory event notifications dispatched from a `TGAccessoryManager` object.

## Tasks

### Responding to Connection and Disconnection Events

- - `accessoryDidConnect:`
- - `accessoryDidDisconnect`

### Responding to Data Receipt Events

- - `dataReceived:` *required method*

## Instance Methods

### `accessoryDidConnect:`

Tells the delegate that the specified accessory was connected to the iOS-based device.

- (void) accessoryDidConnect: (EAAccessory \*) accessory

#### Parameters

- `accessory` — The accessory that was connected to the device.

### `accessoryDidDisconnect`

Tells the delegate that the previously-connected accessory was disconnected.

- (void) accessoryDidDisconnect

### `dataReceived:`

Tells the delegate that data was received from the accessory. (required)

- (void) dataReceived: (NSDictionary \*) data

### Parameters

- `data` — The data that was received from the accessory, stored in a `NSDictionary` data structure. See below for a discussion of the contents of this data structure.

### Discussion

The `NSDictionary` that is passed as a parameter into this method uses the following `NSString`s as keys. All values are stored as integers unless otherwise specified:

- `poorSignal` — The level of "poorness" of the raw headset signal. A value of 0 means that the signal is clean, and a value of 200 means that the headset is effectively off the head.
- `eSenseAttention` — The eSense™ Attention level
- `eSenseMeditation` — The eSense Meditation level
- `blinkStrength` — The value reporting the strength of the user's most recent blink
- `raw` — The raw, unprocessed signal coming from the headset
- `bufferedRaw` — The raw data buffered in an `NSArray` since the last `dataReceived:` call
- `eegDelta` — The delta EEG power band
- `eegTheta` — The theta EEG power band
- `eegLowAlpha` — The low-alpha EEG power band
- `eegHighAlpha` — The high-alpha EEG power band
- `eegLowBeta` — The low-beta EEG power band
- `eegHighBeta` — The high-beta EEG power band
- `eegLowGamma` — The low-gamma EEG power band
- `eegHighGamma` — The high-gamma EEG power band

### CardioChip Specific data types

- `poorSignal` — Known as **Sensor Status** for CardioChip. A value of 200 means the sensor has contact with skin while a value of 0 means the sensors have lost contact.
- `raw` — The raw, unprocessed signal coming from the CardioChip
- `heartRate` — Heart rate in beats per minute
- `rrInt` — R-R interval in samples

There is no guarantee that any specific key-value pair will exist in the `NSDictionary` passed by the notification. Strictly speaking, you should check for `nil` values returned by every `valueForKey:` call. In practice, you can make the assumption that `raw` will be returned on every notification, and that if any one of the other keys exist in the data returned, then the complete set of key-value pairs will exist.

**Important:** The data returned only captures the **most current state** of the headset data, rather than returning all of the data received from the headset. If you desire higher-resolution data (e.g. for the raw signal data), simply set a lower interval period in the `TGAcessoryManager` to receive notifications more quickly.

**Note:** The notification will be received by a thread other than the main thread, so if your implementation of this method explicitly triggers any GUI updates (e.g. `reloadData` on a `UITableView`), be sure to wrap the method call in a `performSelectorOnMainThread: withObject: waitUntilDone:` call.