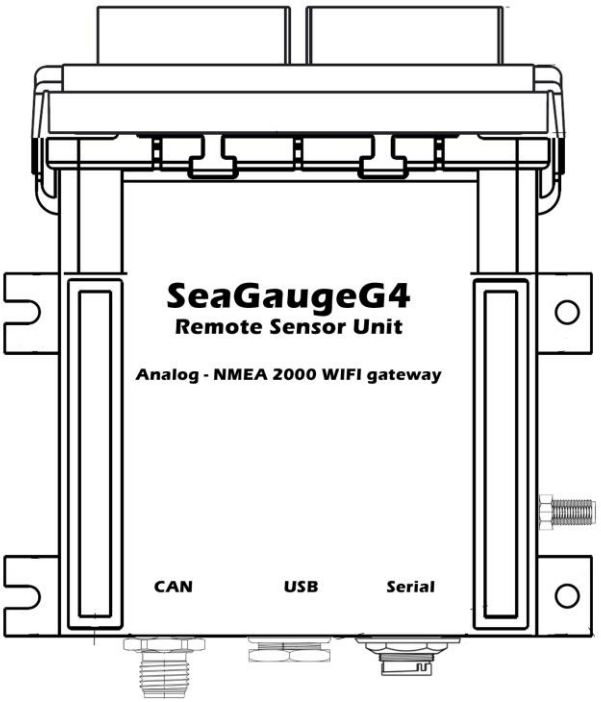
Application Note

ANSS25041201 – NMEAremote Apple Watch Configuration



Chetco Digital Instruments, Inc

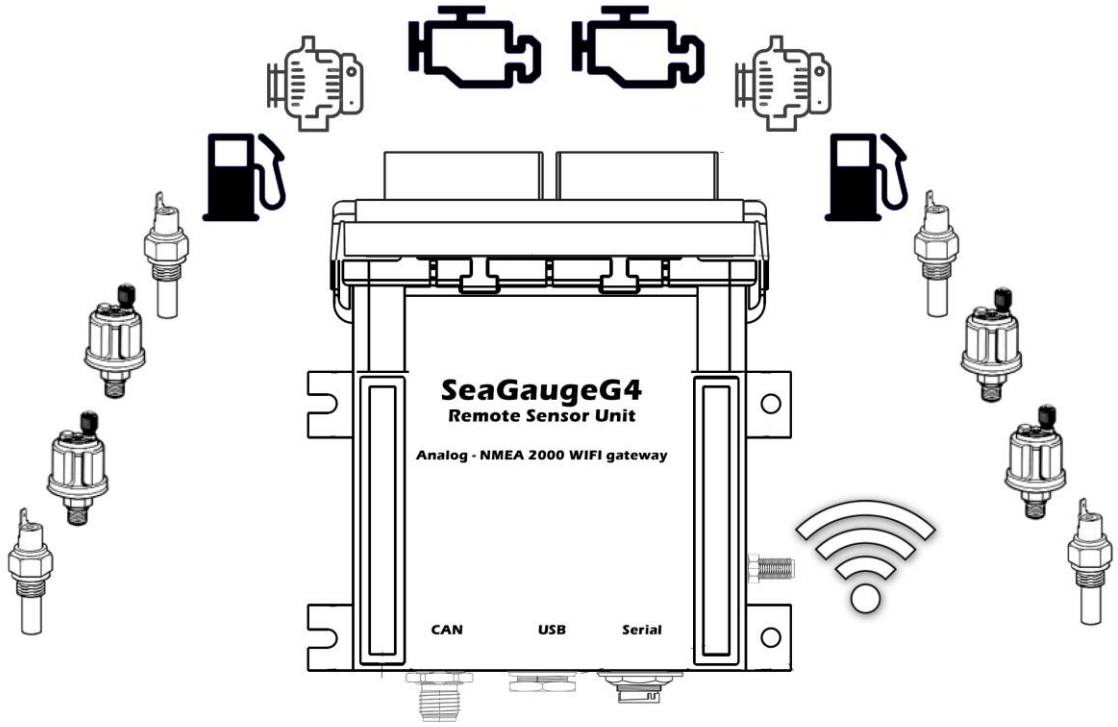
Revision 041225

SeaGaugeG4 supports up to 12 resistive or voltage style analog sensor inputs and 3 pulse style inputs.

SeaGaugeG4 also provides 4 additional indicator/status inputs (18VDC max) and 4 relay driver (12VDC) outputs

Sensors are connected to the dual 20 pin Molex style connectors and analog voltages converted to digital protocol compatible with CAN bus and WIFI interfaces.

SeaGaugeG4 can trigger multiple alarms based on sensor voltages from any of the 12 analog inputs and 3 pulse inputs



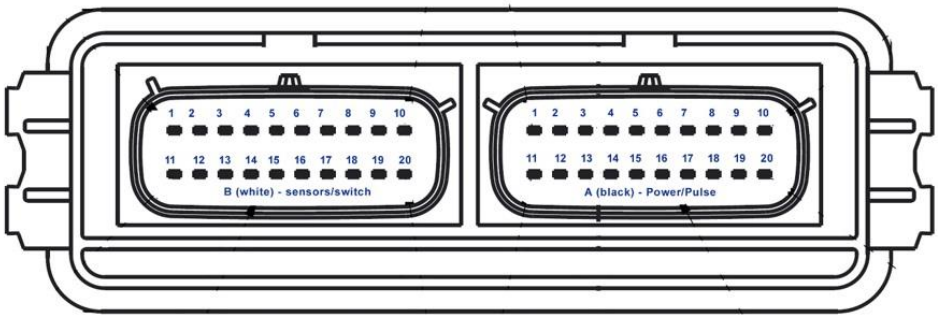
SeaGaugeG4 supports up to 3 pulse sensor inputs via a 20 pin Molex MX150 plug (white).

Molex style crimp pins are provided to attach 18 gauge tinned wire and insert into appropriate locations in supplied plugs.

The 3 pulse inputs (P0-P2) are used to provide Tachometer, Fluid Flow, and other rotational sensor inputs.

Each pulse channel has a runtime accumulator that counts the number of seconds the channel is active up to 16,777,216 seconds

SeaGaugeG4 Header



B1 - NC	B11 - NC	A1 - SW5	A11 – SW4
B2 - NC	B12 - NC	A2 - SW7	A12 – SW6
B3 – SEN10 (SBOOST)	B13 – SEN11 (STRAN)	A3 - NC	A13 - NC
B4 – SEN04 (STEMP)	B14 – SEN05 (SOIL)	A4 – P1 (SRPM)	A14 - GND
B5 – SEN06 (SFUEL)	B15 – SEN07 (SBAT)	A5 – P0 (PRPM)	A15 - GND
B6 – SEN00 (PBAT)	B16 – SEN01 (PFUEL)	A6 – P2	A16 - GND
B7 – SEN02 (PTEMP)	B17 – SEN03 (POIL)	A7 – 5VOUT	A17 – 5VOUT
B8 – SEN08 (PBOOST)	B18 – SEN09 (PTRAN)	A8 - GND	A18 - GND
B9 – INC03	B19 – INC02	A9 – 12VIN	A19 = 12VIN
B10 – INC01	B20 – INC00	A10 - NC	A20 - NC

SeaGaugeG4 and SeaSmartG3 gateways feature an internal HTTP and TCP data server for sending live sensor data to third party applications over local and remote network connections.

NMEAremote is an iOS application developed by zapfware (https://www.zapfware.de) and is available on the Apple AppStore.

NMEAremote will allow custom configuration of a variety of dashboads based on NMEA0183 and NMEA2000 messages served by the gateway TCP/UDP connections.

The NMEAremote iPhone app allows pairing and configuration with Apple Watch for display of live dashboards loaded by the iPhone via Bluetooth connection.

Once configured, various display pages can be viewed by swipe gestures.

The Apple watch can be configured to operate tethered to iPhone or as standalone using local WIFI or cellular connections.

When tethered to iPhone, Apple Watch will share current NMEAremote connections using Bluetooth

In standalone mode, the Apple watch will connect directly to SeaGaugeG4 over local WIFI network or to the HelmSmart Cloud service using available WIFI or cellular services.

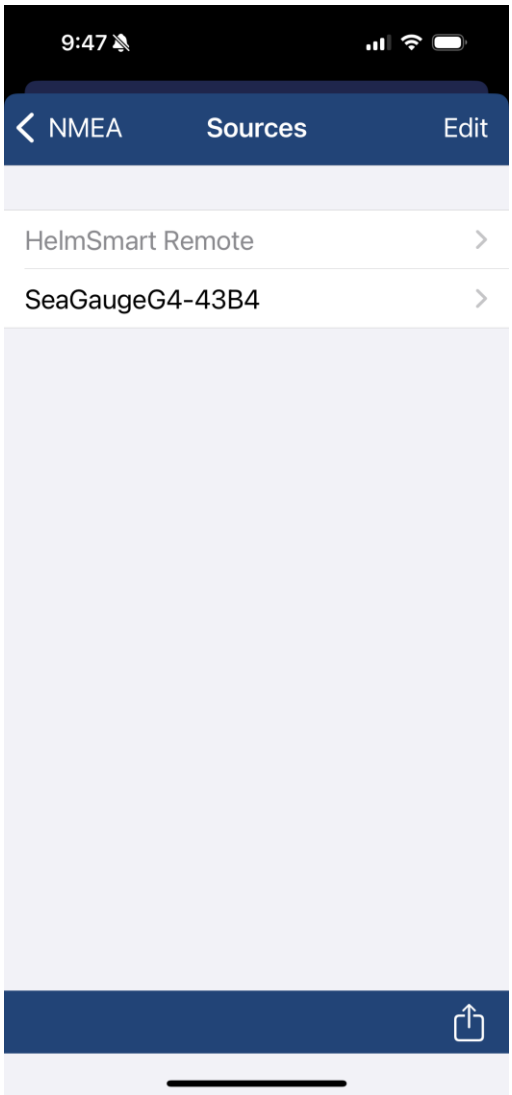
All Apple Watch configurations are performed from the NMEAremote app on the iPhone then transferred to the watch via Bluetooth.

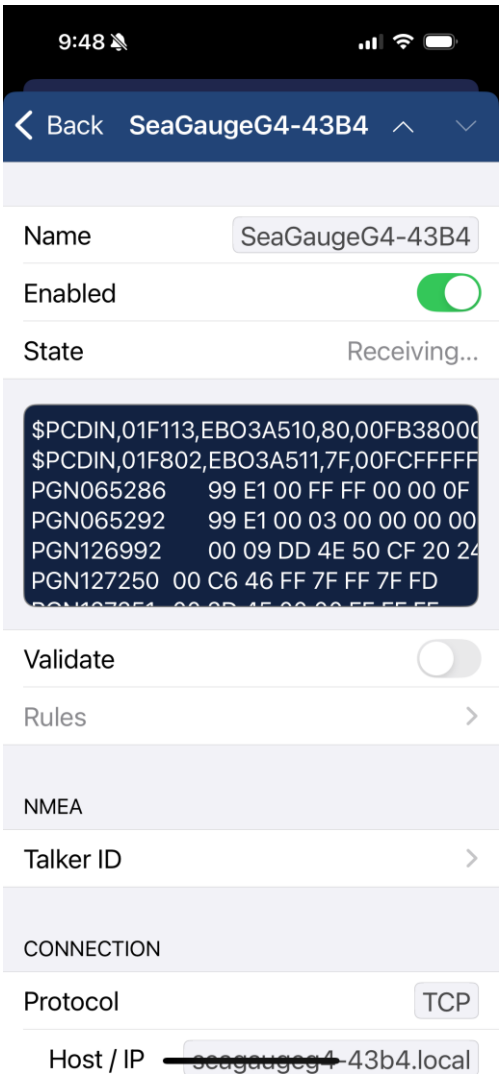
Refer to App Note AN_SS25030301_NMEARemote_iOS_Configuration.pdf for details on how to configure NMEAremote

When using a tethered connection to iPhone, the Apple Watch will share the current NMEAremote connection.

Verify that the iPhone NMEAremote has an active connection and is receiving live data.

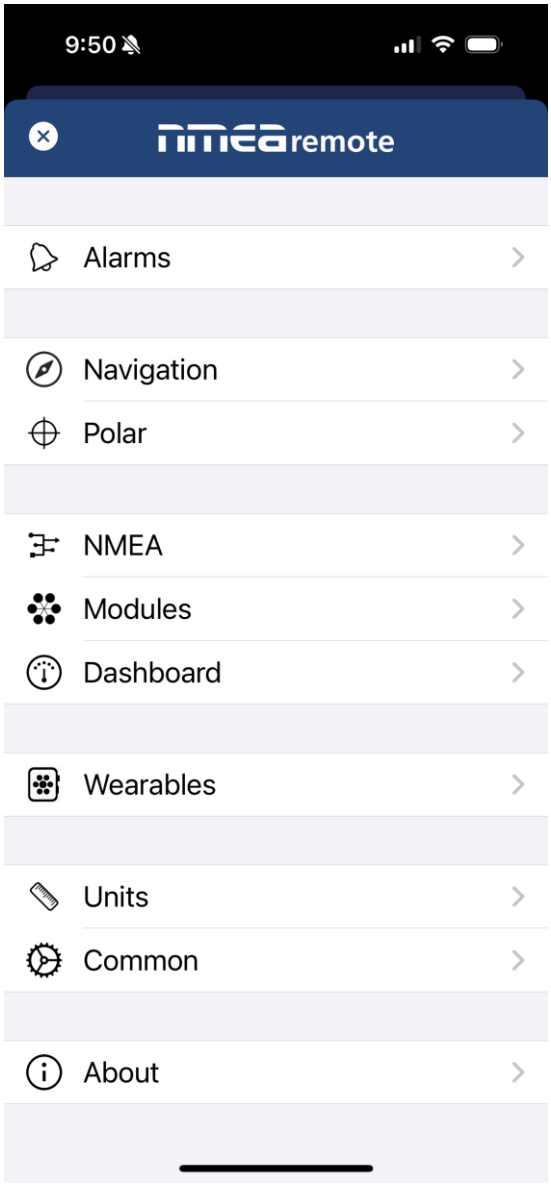
In this example NMEAremote is connected directly to SeaGaugeG4 via a local network using the TCP protocol. SeaGaugeG4 is configured to output live data using the PushSmart protocol via TCP port 10010.

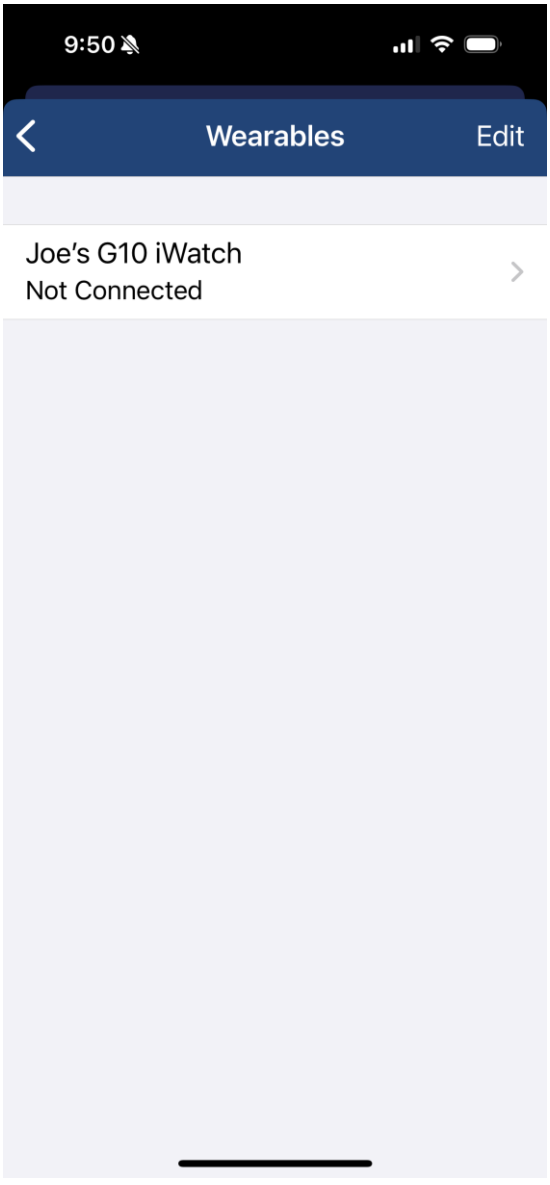




Go to the NMEAremote settings on the iPhone and select the **Wearables** link. The iPhone Bluetooth must be enable and the Apple Watch previously paired using the Apple Watch app

Select the target Apple Watch in the **Wearables** screen



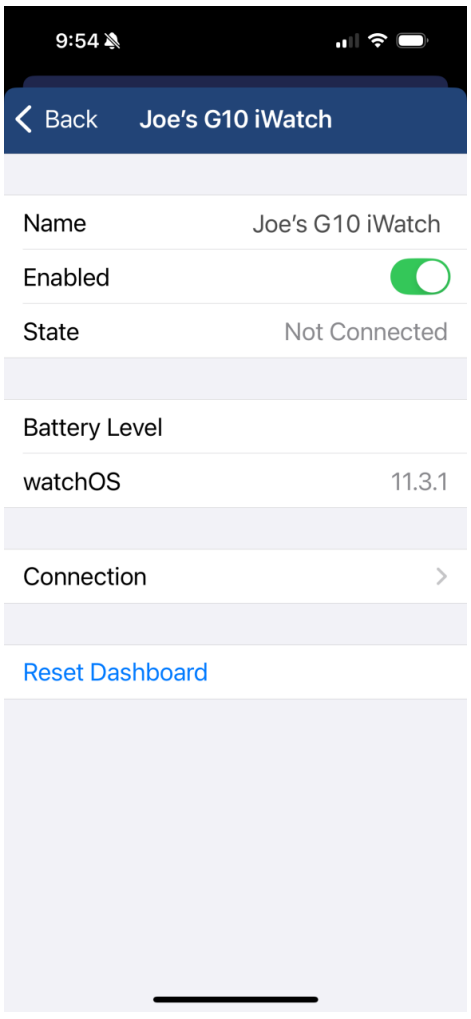


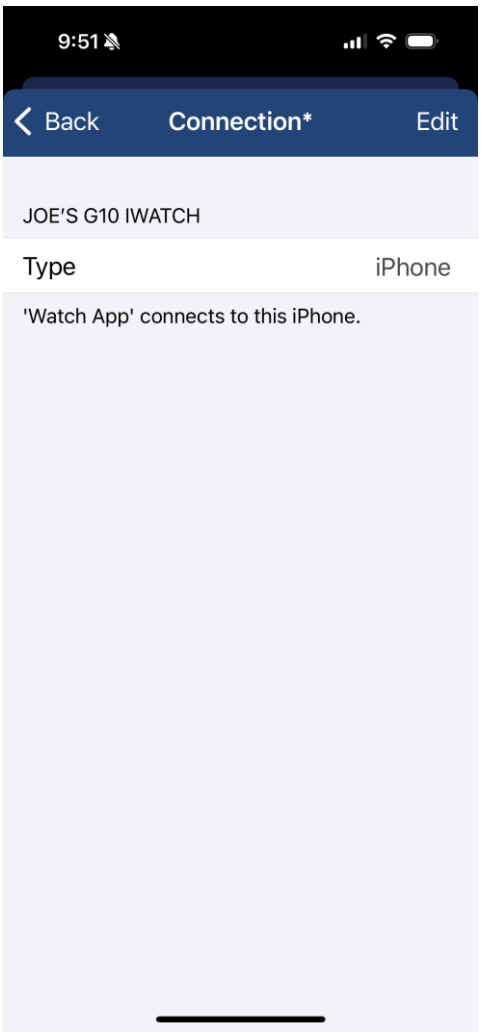
Select the **Connection** link and be sure the connection **Type** is set to **iPhone**.

There are two connection types – **iPhone** and **HTTPClient**

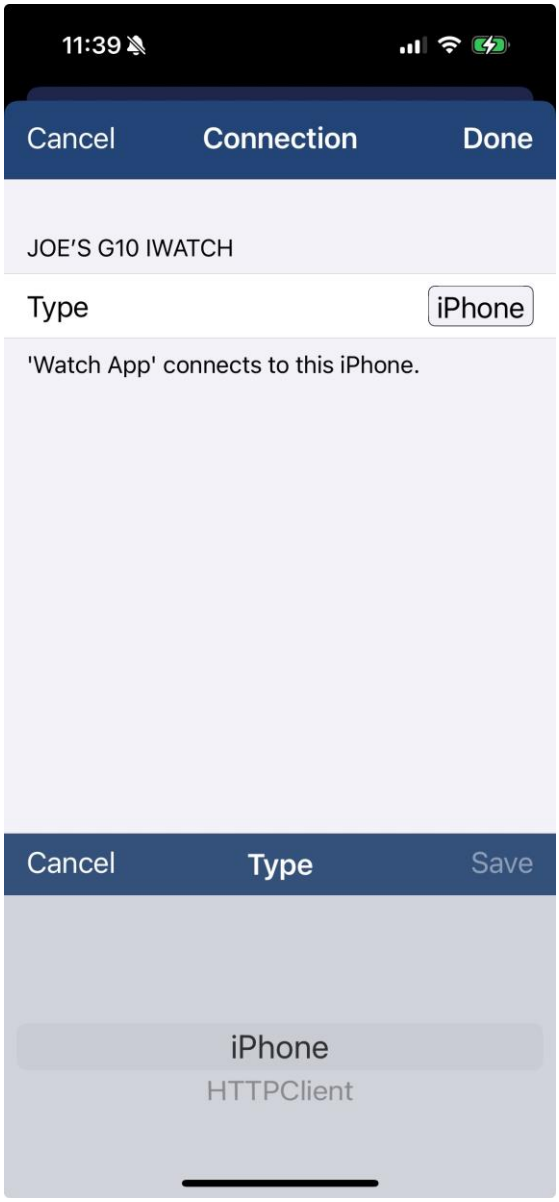
iPhone is a shared connection between both devices and **HTTPClient** allows the Apple watch to connect directly to a target server without the iPhone once the configuration is transferred and stored on the watch

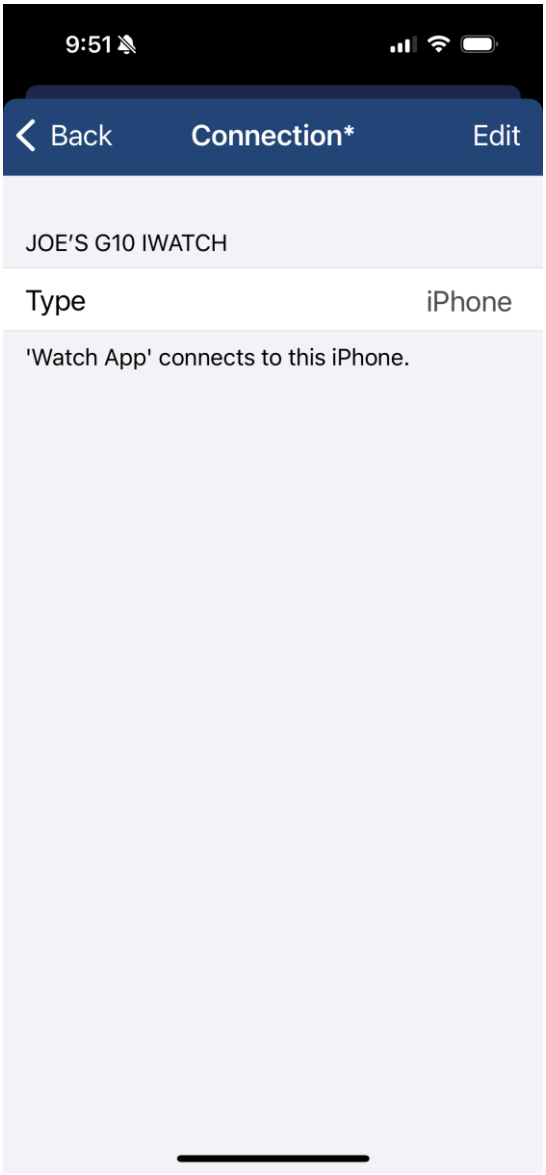
A shared connection will mirror data on both devices and provides a more reliable service as the iPhone will have stronger WIFI and Cellular access





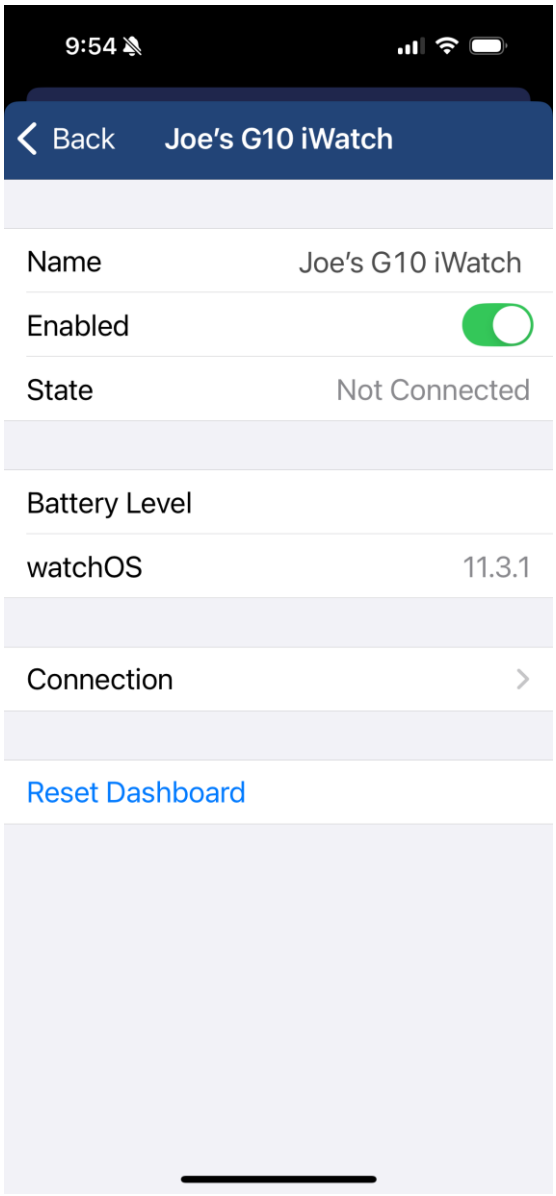
If iPhone is not he current **TYPE**, select **EDIT** and tap **TYPE** and then at bottom, scroll to iPhone and **SAVE**





Be sure the watch connection is **ENABLED**.

The **STATE** will show **NOT CONNECTED** until you start the NMEAremote app on the watch. When the watch app is started you should see state change to **CONNECTED** and the **BATTERY LEVEL** will show current charge.



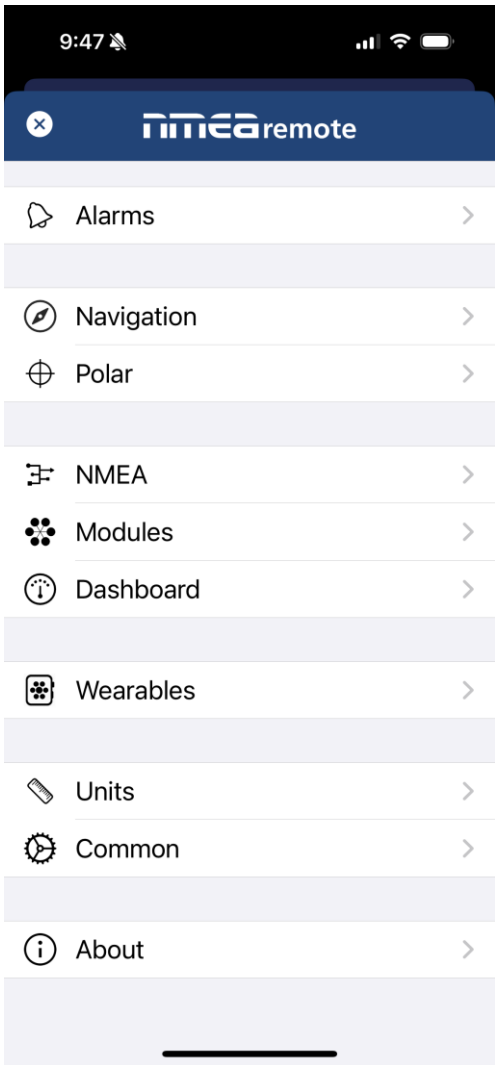
Once you start the watch app, you should see live data on both the watch and the iPhone

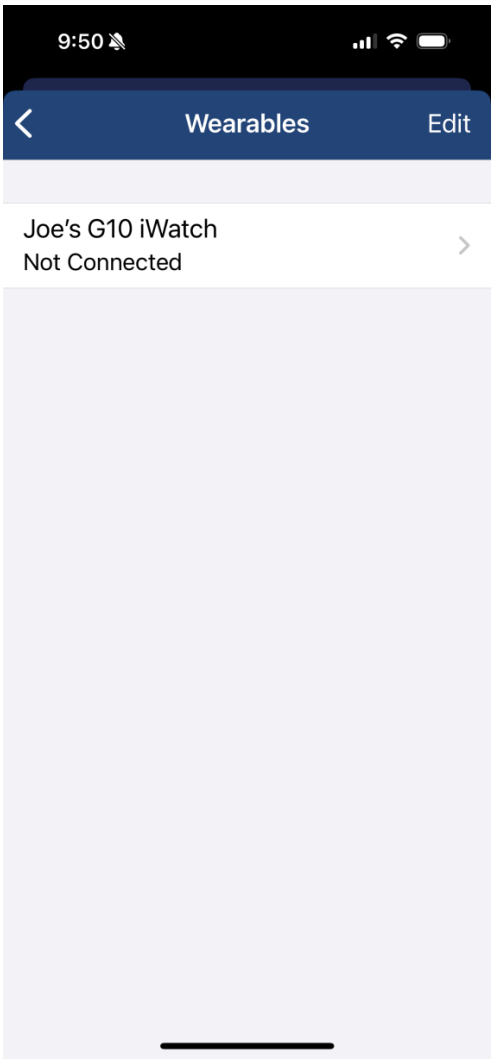
The Apple Watch can directly connect via WIFI or Cellular to a target device's HTTPS or HTTP server after first being configured from the iPhone app.

HTTPS/HTTP servers provide live data in response to Apple Watch GET request

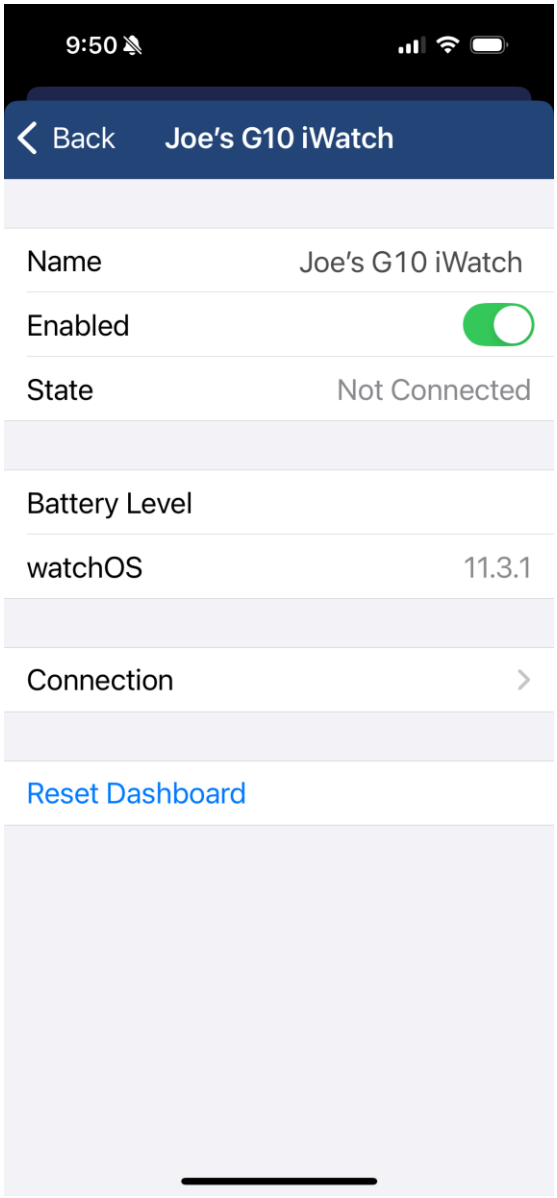
Example: http://SeaGaugeG4-1234.local/
watch?id=Battery.0.Voltage,Engine.0.RPM,Engine.0.EngineTemperature,
Environment.airTemperature

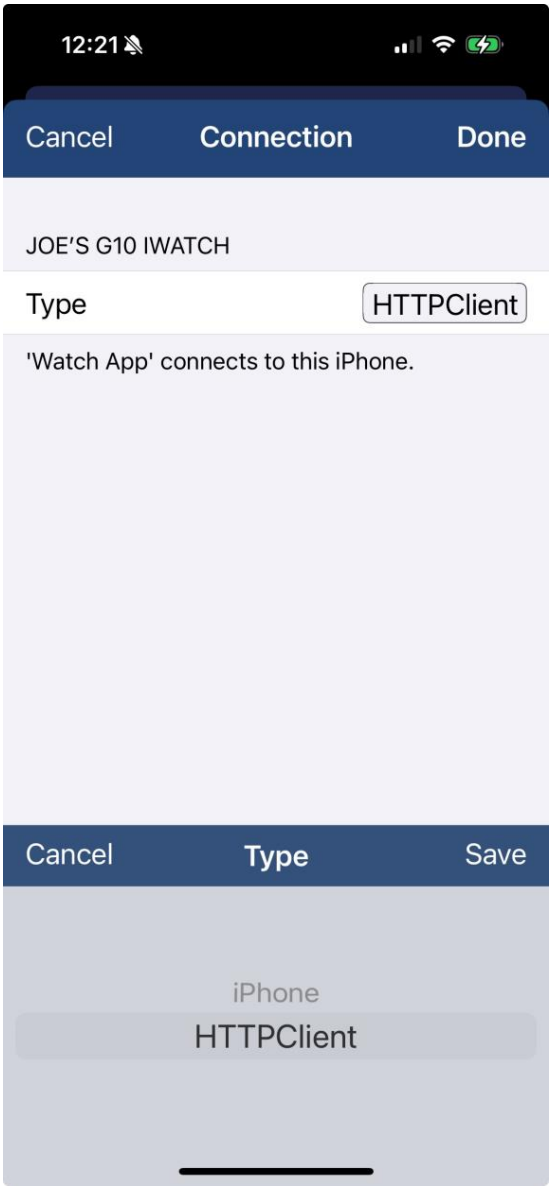
Start from the NMEAremote settings tab and select **Wearables** then **EDIT**





Select the **Connection** link then **Edit** under **Type** and then choose the **HTTPClient** option

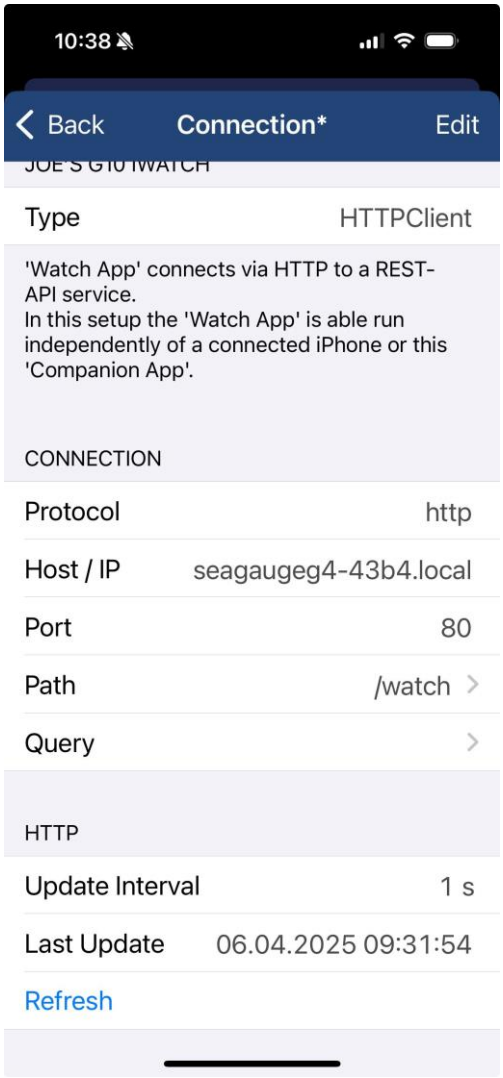




For a direct connection to SeaGaugeG4 analog gateway, use the **HTTP** protocol.

Enter the SeaGaggeG4 host name on the local network and set port to 80. Be sure the Path is set to /watch. In some cases entering the direct IP address of the SeaGaugeG4 will result in quicker updates as the Watch does not need to perform DNS lookup.

Finally, set the desired update interval and select **DONE** at the top



Go back to the **Wearables** page and toggle the **Enabled** button

Then start the NMEAremote app on the watch and the two devices will sync and the iPhone will automatically send the new configuration to the Apple Watch.

Once completed, the watch should start showing live data directly from SeaGaugeG4 over the local network. To be sure the watch is independent of the iPhone – disable the iPhone's Bluetooth to verify the watch still updates.

When the watch is actively updating, you will see a blinking dot in the lower right corner.

The NMEAremote display will automatically stop updating when the watch WAKE interval is exceeded (default is 15 seconds) at which point the display will dim and no updates will occur.

Use the iPhone Apple Watch configuration app to extend the wake timeout to 70 seconds and to also change the default Return to Clock to 1 hour to avoid the watch from automatically quitting the app while in use.

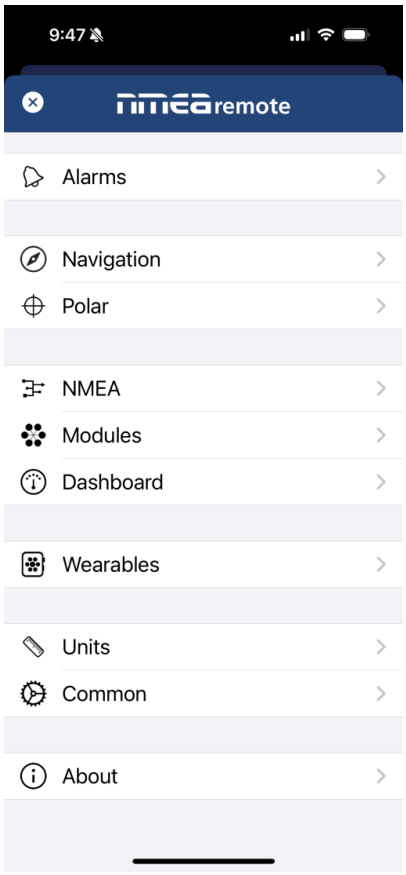
The Apple Watch NMEAremote app can communicate directly with the https://www.helmsmart-remote.com cloud service to display live data over any internet connection without needing a tether to the iPhone. For Apple Watch with built-in cellular capabilities, direct to cloud updates are supported.

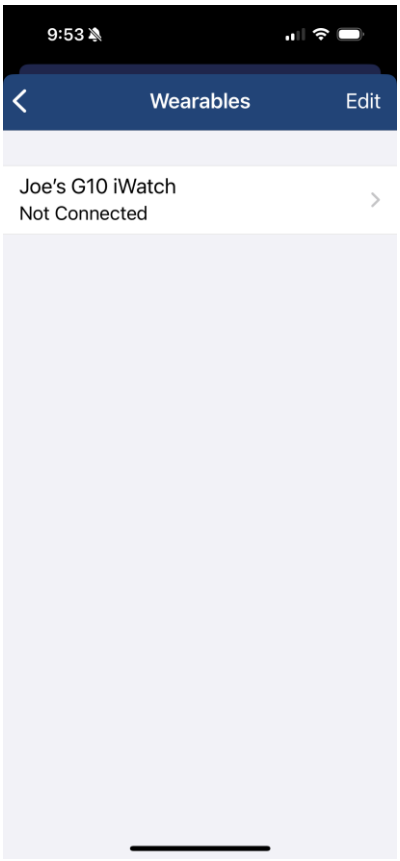
Configured SeaGaugeG4 and SeaSmartG3 gateways can forward data to the HelmSmart Cloud service and the NNMEAremote app can then connect via the https url to retrieve device data using a registered device api key.

It is also possible to link multiple devices at different locations using a registered master device api key and pre-registered device ids.

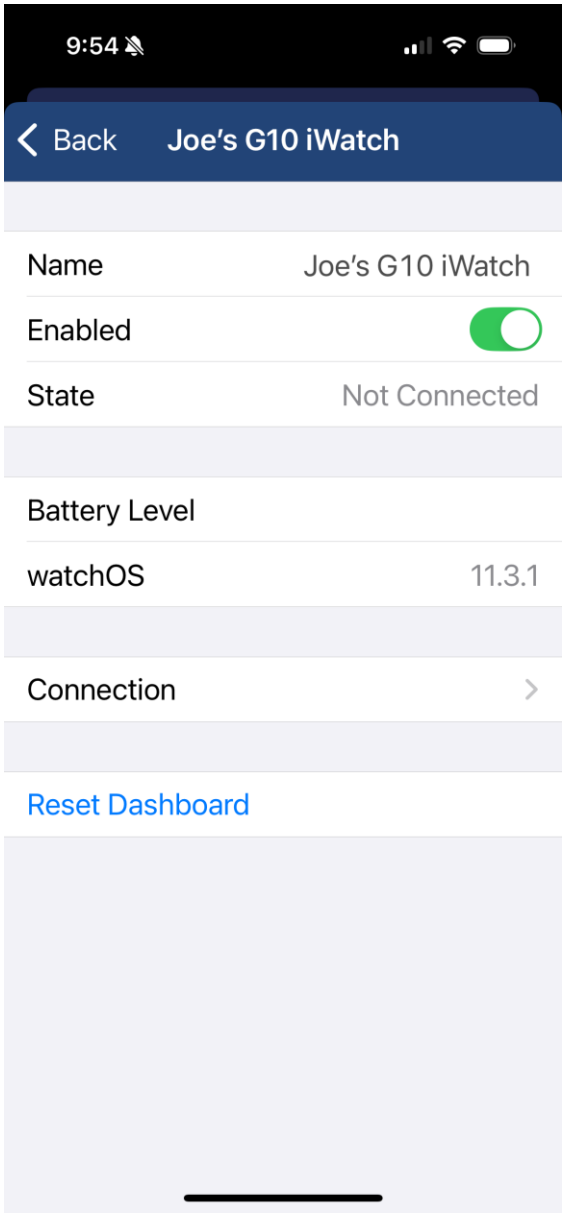
To set up the Apple Watch for direct to cloud communication you must first use the NMEAremote iPhone app to configure the connections

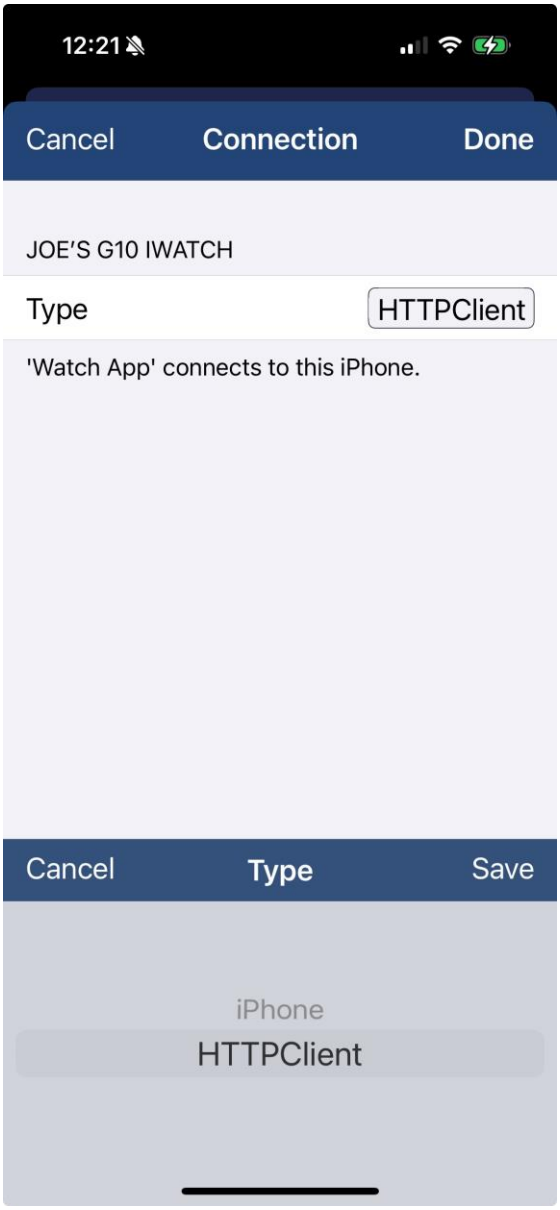
Go to the NMEAremote Settings and select **Wearables** and then **Edit** under Apple Watch



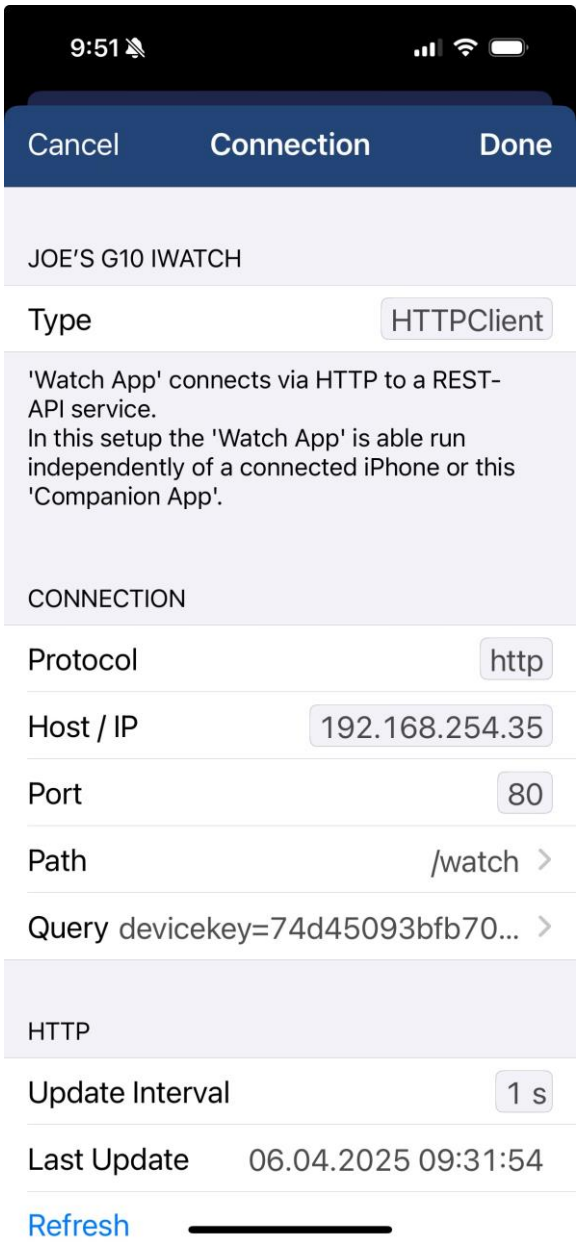


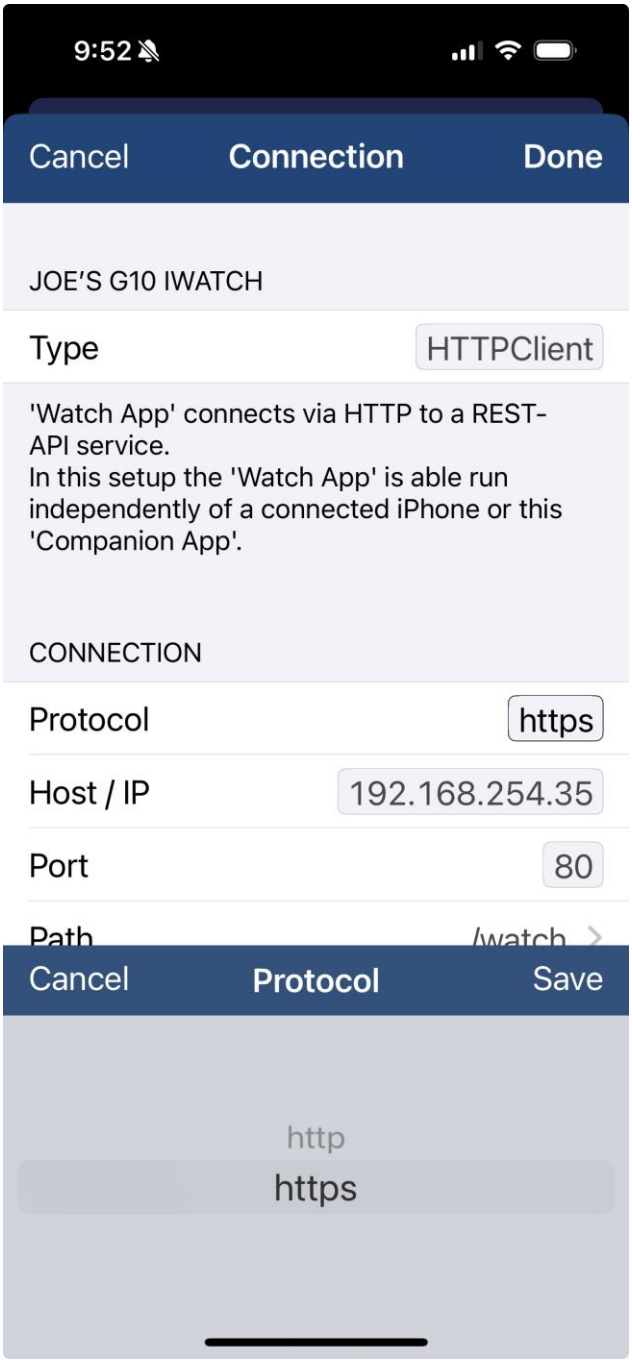
Select the **Connection** link then change the Type to **HTTPClient**





Select **Edit** in the upper right corner and then change the protocol to **https**.

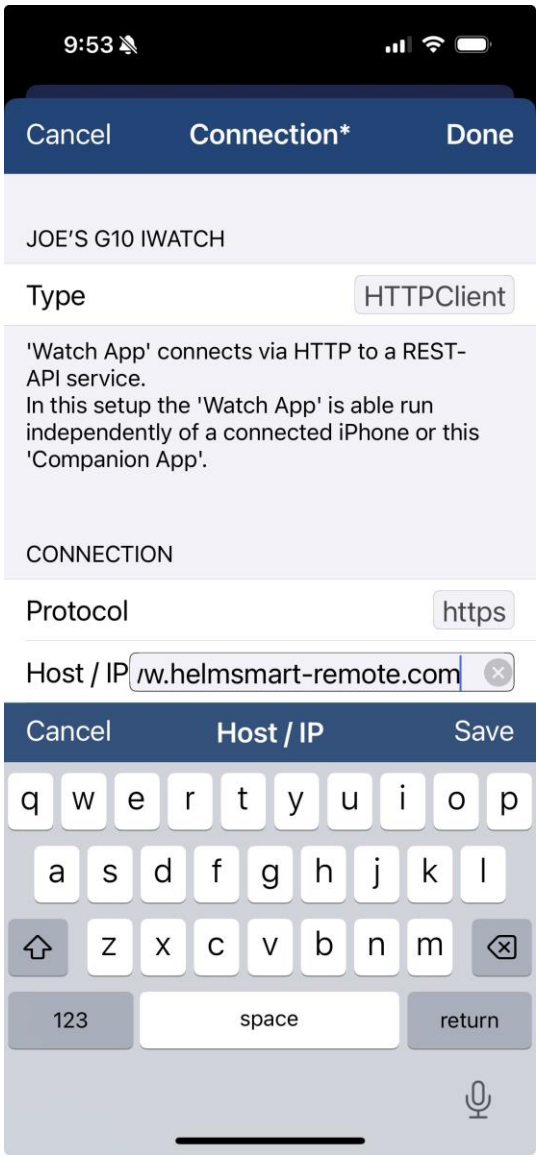


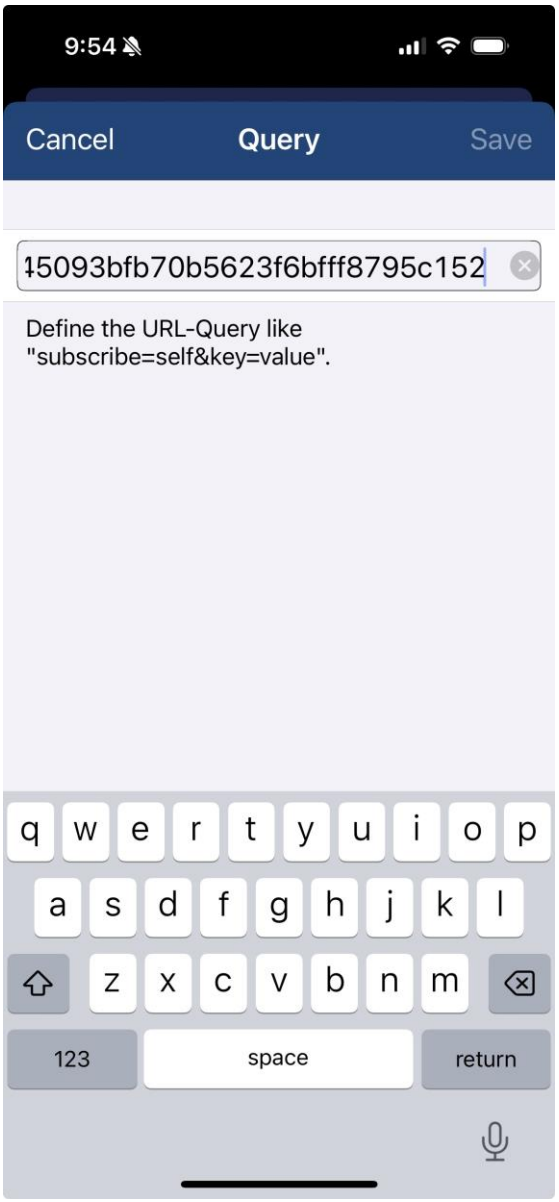


Change the **Host/IP** to **www.helmsmart-remote.com**.

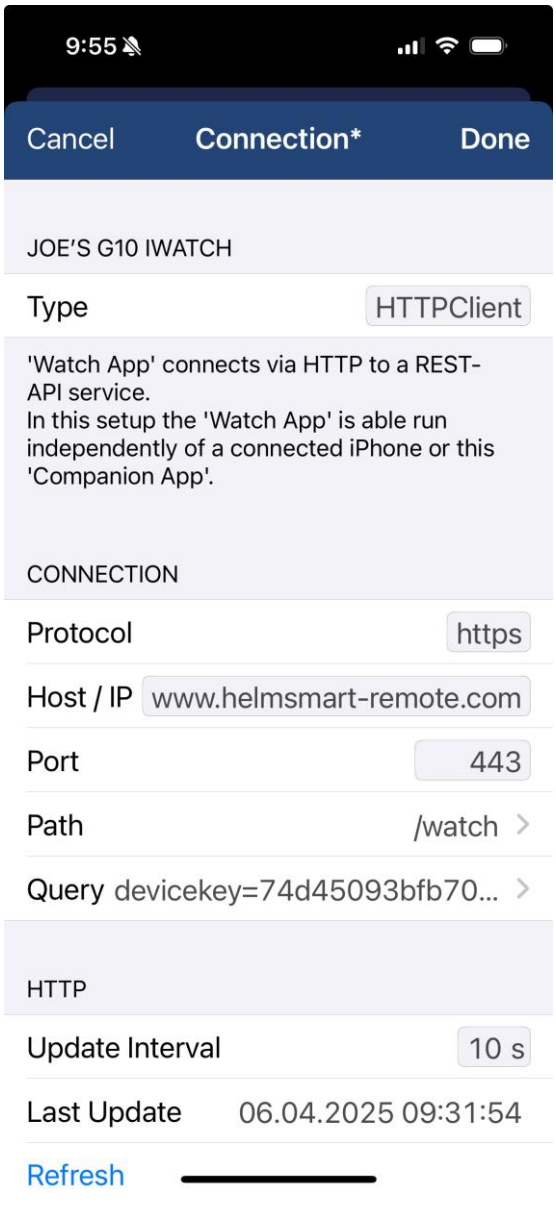
Port to **443** and **Path** to **/watch**

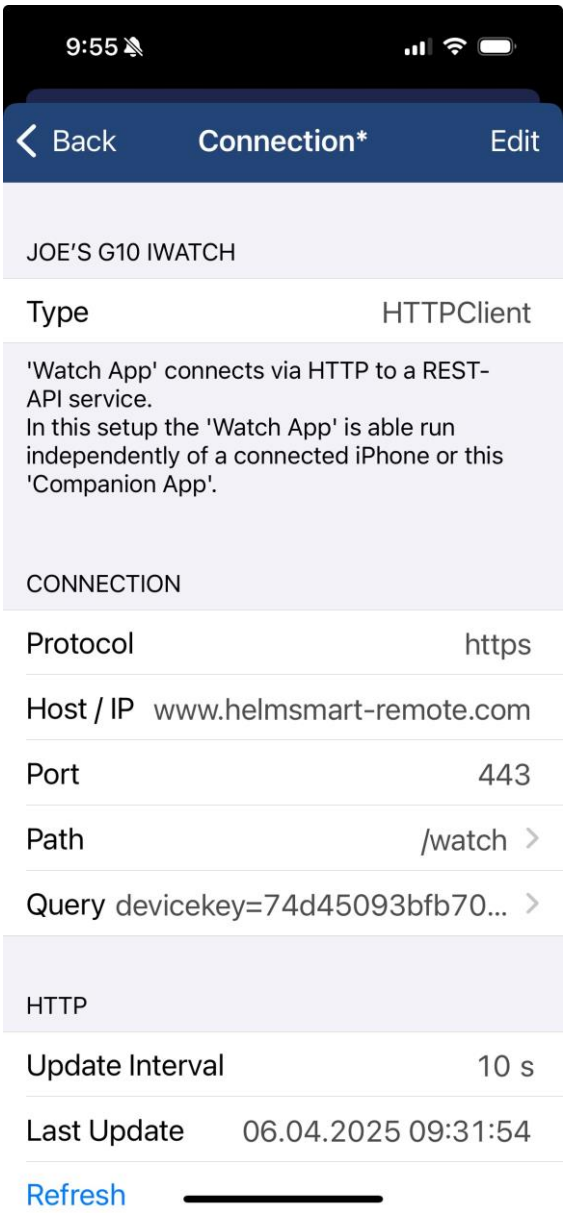
Next enter the registered **devicekey** obtained from the HelmSmart Cloud Service in the Query section – example: devicekey=35d45096bfb7075623f6bccf8795c156





Enter the desired **Update Interval** and then **Done** at the top when completed..

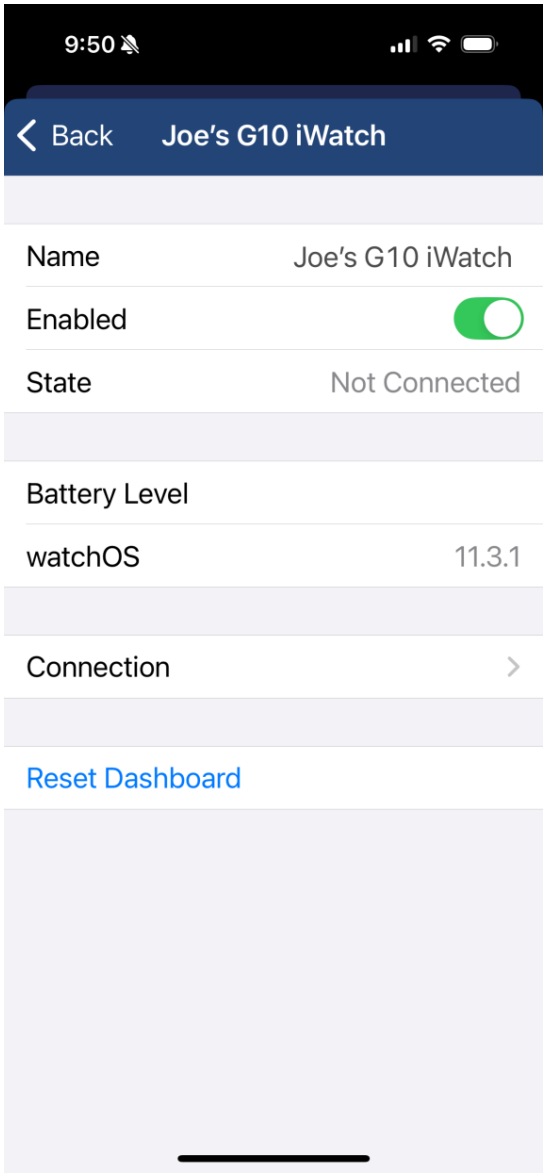




Return to the Watch Settings – it will show State as **Not Connected**

Go to the Apple Watch and start the NMEAremote App

The **State** should change to **Connected** and also show the current **Battery Level**



After 10-15 seconds the watch should start updating from the HelmSmart Cloud Service

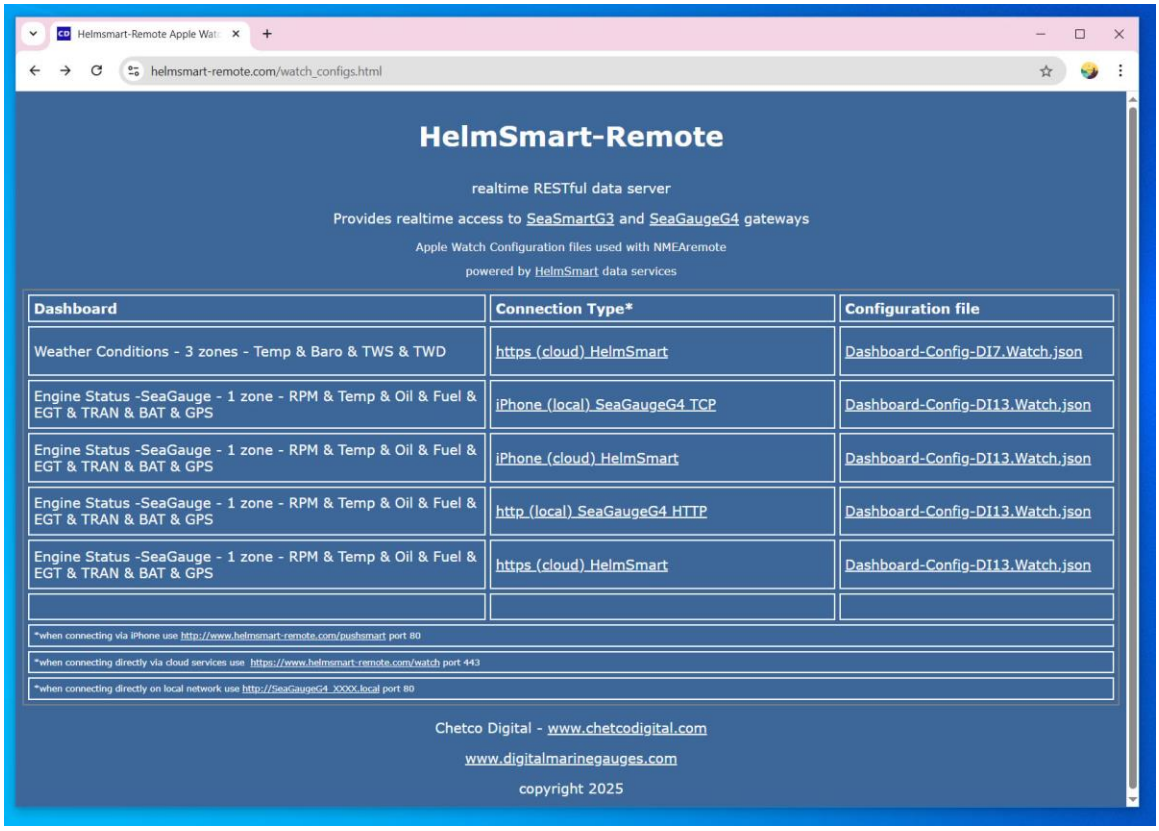
If the app doesn't start updating - you may need to close the app on the watch and restart so it can sync with the iPhone.

Once updates start to arrive, the iPhone tether is no longer needed.

The Dashboard layouts on the Apple Watch can be customized to fit the desired use case.

Dashboard layouts are contained in custom .json files which can downloaded to the iPhone from the www.helsmart-remorte.com web site.

These files are then synced to the Apple Watch upon the next app relaunch



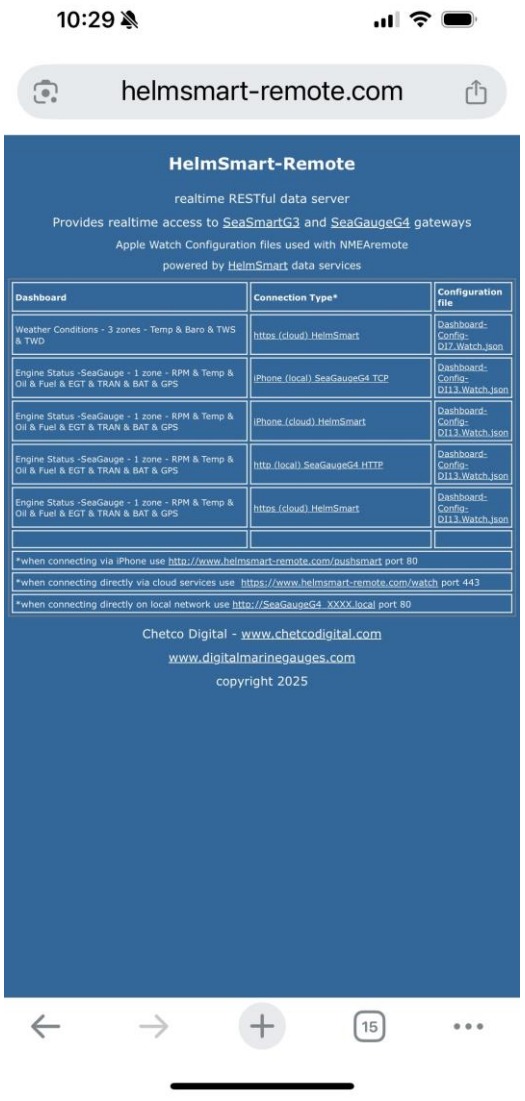
The above links provide some typical use case dashboards for view of vessel/engine/weather data.

Please contact Chetco Digital if you require any other customized dashboards

Start dashboard updates by launching a web browser in iPhone and go to https://www.helmsmart-remote.com/watch_configs.html.

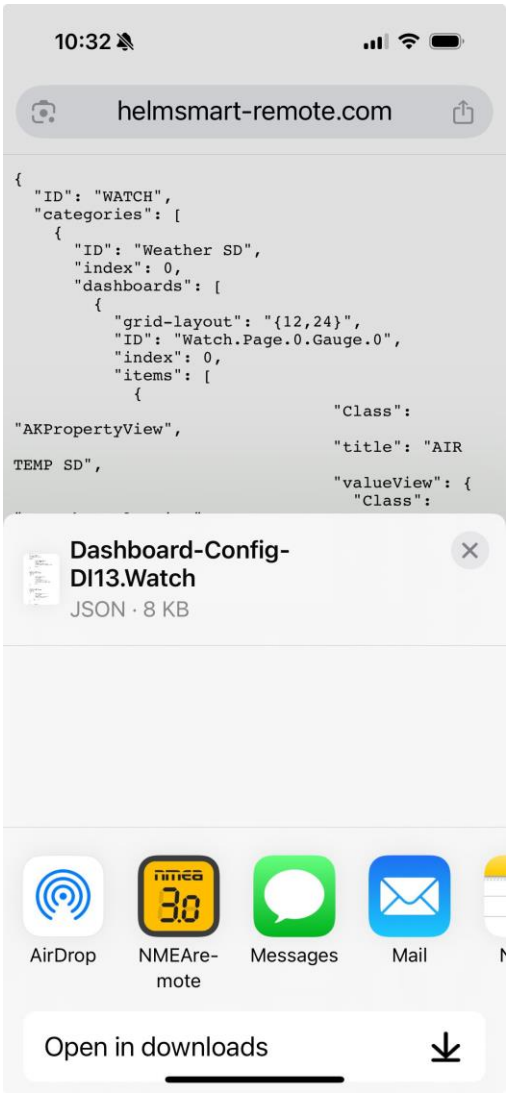
Google Chrome works best as it allows download of the target .json config file into the iPhone's Files app

Select the desired dashboard link to download the file to the iPhone



Once the down load is complete, select the **OPEN IN…** link and then select the iPhone's **NMEAremote** app

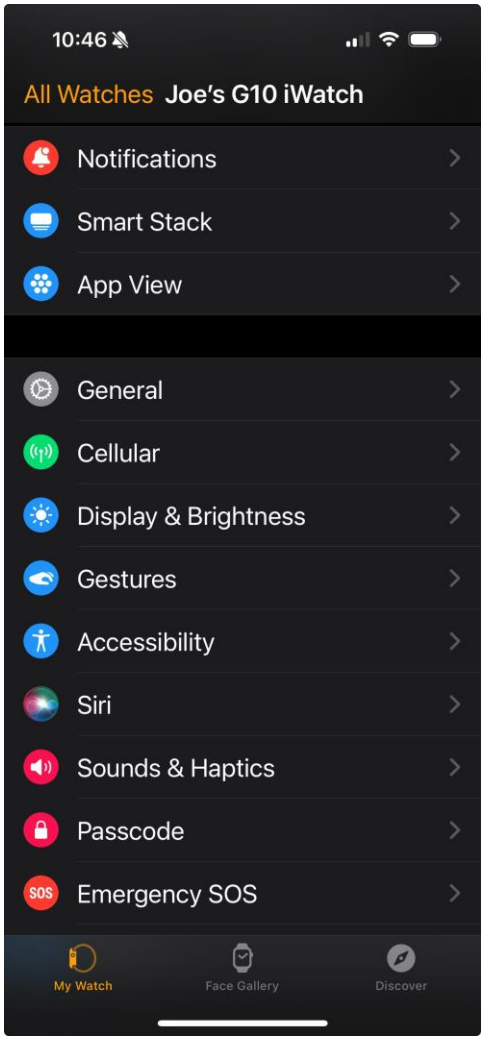
NMEAremote will then transfer the new dashboard config.json file to the attached Apple Watch the next time it is launched.

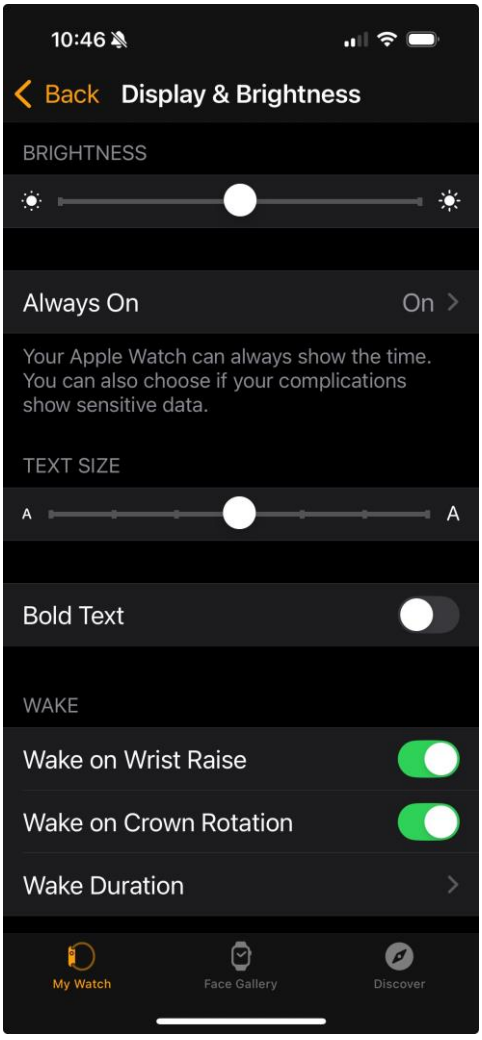


Once the new dashboard layout is copied to the Apple Watch, the iPhone will no longer need to be connected.

There are some Apple Watch Settings that can be altered to optimize performance with NMEAremote – **Display Wake** and **Return to Clock**

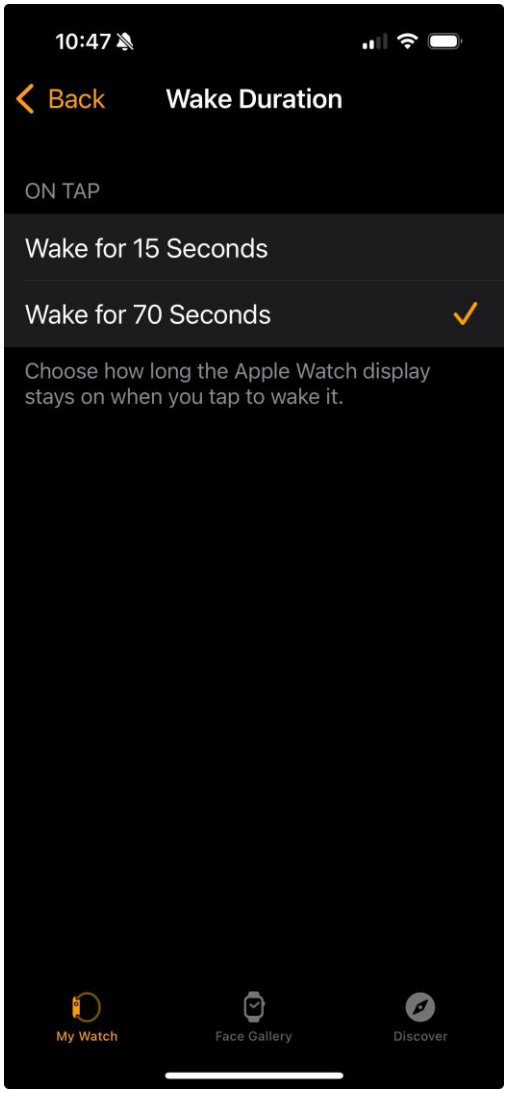
In the Apple Watch app on the iPhone - select the **Display & Brightness** link and then go to **Wake Duration**

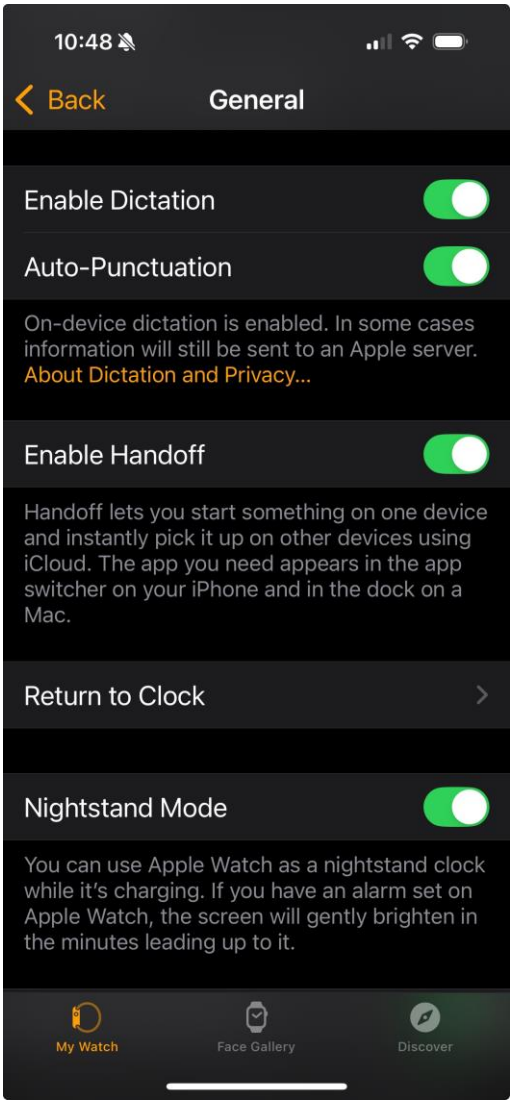




Change the Duration to 70 seconds to prevent the watch from stopping live updates unless you retap the face every 15 seconds.

Then return to the **General** tab to alter the **Return to Clock** setting for NMEA remote





You can now set a custom value to use with NMEAremote to allow the app to remain active for up to 1 hour unless you press the watch crown button