CyclingDF7 1 Data Field

User Manual

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RH-SPORTS

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CyclingDF7 1

The **Cycling data field 7 (Version 1)**, running on all Connect IQ™-compatible Garmin devices with CIQ 2 or higher, is designed as a data field focusing on improving your cycling performance. It can be added to the different native Garmin applications. The data field shows the current time and battery status in the header/footer as well as 7 freely configurable metrics of your ride.

The main idea behind data fields is to use the native Garmin apps which offers features which cannot be accessed through the Garmin API in 3rd-party apps (e.g. map support, workout support, etc.) and extend its functionality with new features.

Note

This data field only provides power information if your device supports the ANT+ power profile by default. If this is not the case, please use the `CyclingDF7 2 data field` where we implemented our own algorithms to support ANT+ power profile.
Due to memory constraints, data fields will only be available on newer Garmin devices!

Link to **Cycling data field 7 (Version 1)** on Garmin App Store

This website provides further information regarding requirements, installation, getting started, supported data fields and features as well as frequently asked questions.

You can also download the documentation as compressed HTML help file (.chm) or PDF by using the links below:

Download compressed HTML help file as ZIP
Download PDF

01_Disclaimer

1 Disclaimer

1.1 Software disclaimer

Our offered applications, widgets and data fields (further on simply called software), which can be downloaded from the Garmin App Store, are provided 'as is' without warranty of any kind, either express or implied, including, but not limited to, the implied warranties of fitness for a purpose, or the warranty of non-infringement. Without limiting the foregoing, Robert Hofer (RH-SPORTS) makes no warranty that:

- the software will meet your requirements.
- the software will be uninterrupted, timely, secure or error-free.
- the results that may be obtained from the use of the software will be effective, accurate or reliable.
- the quality of the software will meet your expectations.

Software and documentation on our web site:

- could include technical or other mistakes, inaccuracies or errors.
- may be out of date where we make no commitment to update the it right away.
- we assume no responsibility for errors or omissions in the software or documentation available from our web sites.
- Robert Hofer (RH-SPORTS) has the right to change the software or documentation anytime.

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The use of the software downloaded is done at your own discretion and risk and with agreement that you will be solely responsible for any damage to your computer system, watch of navigation device or loss of data that results from such activities. No advice or information, whether oral or written, obtained by you from us by mail or from our web sites shall create any warranty for the software.

1.2 User data protection according to DSGVO

RH-SPORTS clearly wants to state that we do not collect or save user information of any kind. If you are using our applications or data fields and save the recorded session afterwards then the data will be fully processed by Garmin Ltd. or its subsidiaries. This might include that the recorded data is sent to servers hosted or paid for by Garmin. Please read the user data protection rules from Garmin for further details.

Following applications offer map support:

- Cycling App Professional
- Hiking App Professional
- MTB App Professional
- SkiTour App Professional

These applications do not directly track personal information but makes use of a 3rd party API provided by dynamicWatch which does store personal information on every data request. You can read the detailed privacy policy of dynamicWatch here.

1.3 Activity tracking and fitness metric accuracy

Our applications and data fields use the Garmin API´s to retrieve most of the information and cannot be more precise than the data delivered from there. Garmin states following about activity tracking and accuracy:

- "Garmin devices are intended to be tools to provide you with information to encourage an active and healthy lifestyle. Garmin wearables rely on sensors that track your movement and other metrics. The data and information provided by these devices is intended to be a close estimation of your activity and metrics tracked, but may not be precisely accurate. Garmin wearables are not medical devices, and the data provided by them is not intended to be utilized for medical purposes and is not intended to diagnose, treat, cure, or prevent any disease. Garmin recommends you consult your doctor before engaging in any exercise routine."

1.4 Accuracy of wrist-based heart rate (Elevate)

Our applications and data fields use the Garmin API´s to retrieve heart rate related data cannot be more precise than the data delivered from there. Regarding wrist-based accuracy, Garmin states following:

- "The optical wrist heart rate (HR) monitor for Garmin wearables is a valuable tool that can provide an accurate estimation of the user's heart rate at any given point in time. The optical HR monitor is designed to attempt to monitor a user's heart rate 24 hours a day, 7 days a week. The frequency at which heart rate is measured varies, and may depend on the level of activity of the user. When you start an activity with your Garmin optical HR device, the optical HR monitor measures more frequently. The intent is to provide the user with a more frequent and accurate heart rate reading during a given activity." - "While our wrist HR monitor technology is state of the art, there are inherent limitations with the technology that may cause some of the heart rate readings to be inaccurate under certain circumstances. These circumstances include the user's physical characteristics, the fit of the device and the type and intensity of the activity as outlined above. The HR monitor data is not intended to be used for medical purposes, nor is it intended to diagnose, treat, cure or prevent any disease or condition." - "Wrist heart rate accuracy during swimming is very limited. Garmin does not recommend using wrist heart rate during swimming activities and on some products, wrist heart rate monitoring is disabled while swimming. Garmin recommends using HRM-Swim™ or HRM-Tri™ heart rate monitors with compatible devices to track heart rate while swimming."

1.5 White background on AMOLED displays

For devices with AMOLED display (e.g. Venu™ based devices) we strongly recommend to always select the black background to avoid damages due to burn-in effects and to save battery life time!

We take over no responsibility in case of damages due to burn-in effects.

10_Requirements

2 Requirements

2.1 Supported Garmin devices

The **Cycling data field 7 (Version 1)** data field runs on most Garmin devices but there is a difference in functionality between devices with less than 32 kB of memory and devices with more memory for 3rd party data fields.
List of devices with less than 32 kB of memory:

- Approach® S60
- Captain Marvel
- Darth Vader™
- D2™ Air
- Fēnix® Chronos
- Fēnix® 5 and 5s
- Fēnix® 6 and 6s
- First Avenger
- Forerunner® 55, 245, 645 and 935
- ForeAthlete® 735XTJ
- Rey™
- Venu™ and Venu™ Mercedes-Benz® Collection
- Venu™ SQ and Venu™ SQ Music
- Vivoactive™ HR
- Vivoactive® 3, Vivoactive® 3 Music, Vivoactive® 3m LTE, Vivoactive® 3 Mercedes-Benz® Collection
- Vivoactive® 4 and 4s

List of devices with more than 32 kB of memory:

- Approach® S62
- Approach® S70 42mm/47mm
- D2™ Air X10

- D2™ Charlie
- D2™ Delta, D2™ Delta PX, D2™ Delta S
- D2™ Mach 1
- Descent™ MK1, Descent™ MK2, Descent™ MK2s
- Descent™ Mk3 43mm and 51mm
- Enduro™ and Enduro™ 3
- Epix™ 2, Epix™ Pro (Gen 2) 42mm, 47mm and 51mm
- Fēnix® 5X
- Fēnix® 5 Plus, Fēnix® 5S Plus, Fēnix® 5X Plus
- Fēnix® 6 Pro and 6s Pro
- Fēnix® 6x Pro, 6x Sapphire, 6x Pro Solar and tactix® Delta Sapphire
- Fenix® 7, Fenix® 7s and Fenix® 7x
- Fenix® 7 Pro, Fenix® 7s Pro and Fenix® 7x Pro
- Fēnix® 7 Pro (no Wi-Fi) and Fēnix® 7x Pro (no Wi-Fi)
- Fenix® 8 43mm, 47mm, 51mm and Fenix® 8 Solar 47mm, 51mm
- Fenix® E
- Forerunner® 165, 165 Music, 245 Music, 255, 255 Music, 255s, 255s Music, 265 and 265s
- Forerunner® 645 Music, 735XT, 945, 945 LTE, 955 / Solar and 965
- MARQ™ Adventurer, Athlete, Aviator, Captain, Commander, Driver, Expedition and Golfer
- MARQ® (Gen 2) Athlete / Adventurer / Captain / Golfer / Aviator
- Venu™ 2, Venu™ 2 Plus, Venu™ 2s
- Venu™ SQ 2 and Venu™ SQ 2 Music
- Venu® 3 and Venu® 3s
- Vivoactive® 5

Following Edge® devices are supported with full feature set as they all have more than 32 kB of memory for 3rd party data fields:

- Edge® 520, 520 Plus and 820
- Edge® 530, 540 and 830
- Edge® 540 and 840 Solar
- Edge® 1000
- Edge® Explore
- Edge® Explore 2
- Edge® 1030, 1030 Bontrager and 1030 Plus
- Edge® 1040 and 1040 Solar
- Edge® 1050

Note

The Edge® 520 is supported as well but with limited features due to memory constraints!

2.2 Garmin device firmware requirements

Please install the latest firmware on your Garmin device. Here the information about the minimum required Connect IQ™ version depending on your device type:

- >= 2.4.1
  - Approach® S60
  - ForeAthlete® 735J
  - Forerunner® 735XT
  - Vivoactive® HR
- >= 3.0.0
  - Approach® S62
  - D2® Charlie
  - D2® Delta, D2® Delta PX, D2® Delta S
  - Descent™ MK1
  - Vivoactive® 3 Mercedes-Benz® Collection
- >= 3.1.0
  - Descent™ MK2
  - Fēnix® Chronos
  - Fēnix® 5, Fēnix® 5S, Fēnix® 5X and Fēnix® 5 Quatix
  - Fēnix® 5 Quatix
  - Fēnix® 5 Plus, Fēnix® 5S Plus, Fēnix® 5X Plus
  - Forerunner® 935
  - Forerunner® 645 and 645 Music
  - Vivoactive® 3
- >= 3.2.0
  - Captain Marvel
  - Darth Vader™
  - D2™ Air
  - Descent™ MK2s
  - Enduro™
  - Fēnix® 6/6 Pro
  - Fēnix® 6s/6s Pro
  - Fēnix® 6x Pro/6x Sapphire/6x Pro Solar/tactix® Delta Sapphire
  - First Avenger
  - Forerunner® 55, 245, 245 Music, 745 and 945
  - MARQ™ Adventurer, Athlete, Aviator, Captain, Commander, Driver, Expedition and Golfer
  - Rey™
  - Venu™ SQ and Venu™ SQ Music
  - Venu™ and Venu™ Mercedes-Benz® Collection
  - Vivoactive® 3 Music, Vivoactive® 3 Music LTE
  - Vivoactive® 4s/4

- >= 3.3.0
  - Forerunner® 945 LTE
- >= 4.0.0
  - D2™ Air X10
  - D2™ Mach 1
  - Venu™ 2, Venu™ 2 Plus, Venu™ 2s
- >= 4.1.0
  - Fenix® 7, Fenix® 7s and Fenix® 7x
  - Forerunner® 255, 255 Music, 255s and 255s Music
  - Forerunner® 955 / Solar
  - MARQ® (Gen 2) Athlete / Adventurer / Captain / Golfer / Aviator
  - Venu™ SQ 2 and Venu™ SQ 2 Music
- >= 4.2.0
  - Approach® S70 42mm and 47mm
  - Descent™ Mk3 43 and 51mm
  - Epix™ 2
  - Epix™ Pro (Gen 2) 42mm, 47mm and 51mm
  - Fenix® 7 Pro, Fenix® 7s Pro and Fenix® 7x Pro
  - Fēnix® 7 Pro (no Wi-Fi) and Fēnix® 7x Pro (no Wi-Fi)
  - Forerunner® 165 and 165m
  - Forerunner® 265 and 265s
  - Forerunner® 965
  - Venu® 3 and Venu® 3s
  - Vivoactive® 5
- >= 5.0.0
  - Fenix® 8 43mm
  - Fenix® 8 47 / 51mm
  - Fenix® 8 Solar 47mm
  - Fenix® 8 Solar 51mm
  - Fenix® E
  - Enduro™ 3

2.3 Garmin software requirements

- Please install the latest Garmin Connect App if you use the mobile phone for installation and configuration.
- Please install the latest Garmin Express Version if you use the PC/MAC for installation and configuration.

2.4 Sensor requirements

- Please enable GPS for speed, distance, location and altitude information.
- Please enable ANT+ sensors for heart rate, cadence, speed and power information.

20_GettingStarted

3 Getting started

This section describes everything you need to know to get **Cycling data field 7 (Version 1)** up and running on your Garmin device.

- Install data field
- Change user settings
- Start data field
- User setting overview

3.1 Install data field

Please install the **Cycling data field 7 (Version 1)** data field by downloading it from the Garmin App Store via the Garmin Express Software on PC/MAC or via the Garmin Mobile app on your mobile phone.

Install instructions:

This data field needs to be added to the (specific) Garmin native app within your watch settings. Please add it as a single data screen within the Garmin native app as the whole screen is needed for displaying all the information.

- Go to watch settings --> apps --> e.g. running --> settings -> data screen --> screen x
- Select add
- Select user-defined
- Set layout to 1 field
- Set field 1 to Connect-IQ fields --> **Cycling data field 7 (Version 1)**

Link to **Cycling data field 7 (Version 1)** on Garmin App Store

3.2 How to change the user settings

The **Cycling data field 7 (Version 1)** in the PREMIUM version offers a huge amount of configuration options which can be changed on your PC/MAC your or on your mobile phone:

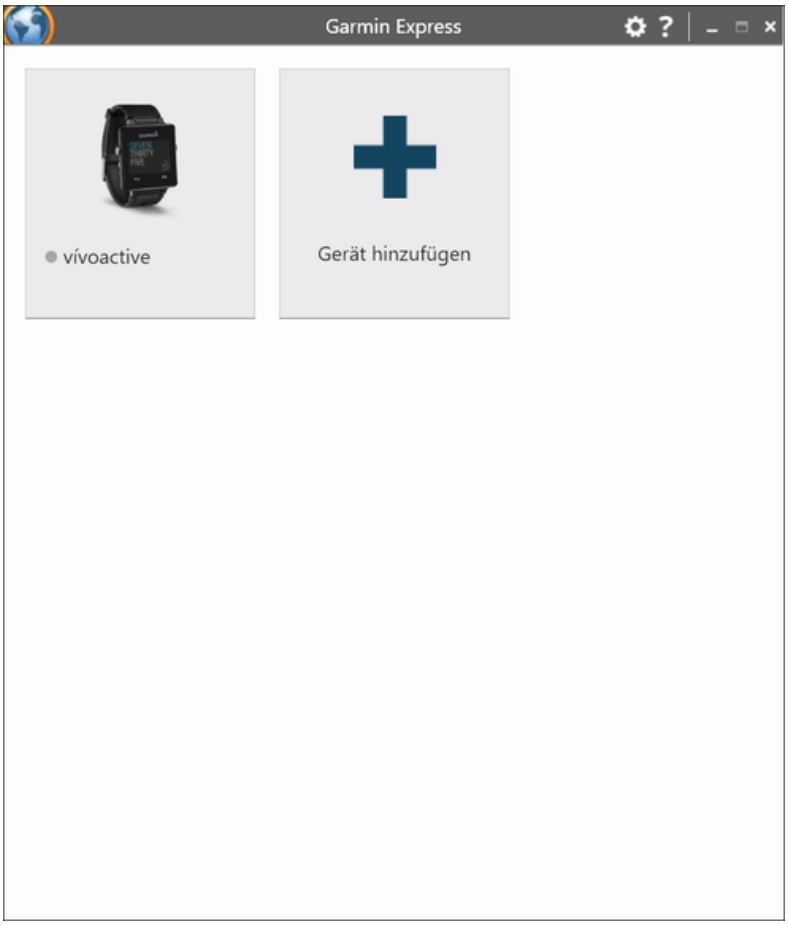
- Change User Settings on PC/MAC
- Change User Settings on Mobile Phone

3.2.1 Change user settings on PC or MAC

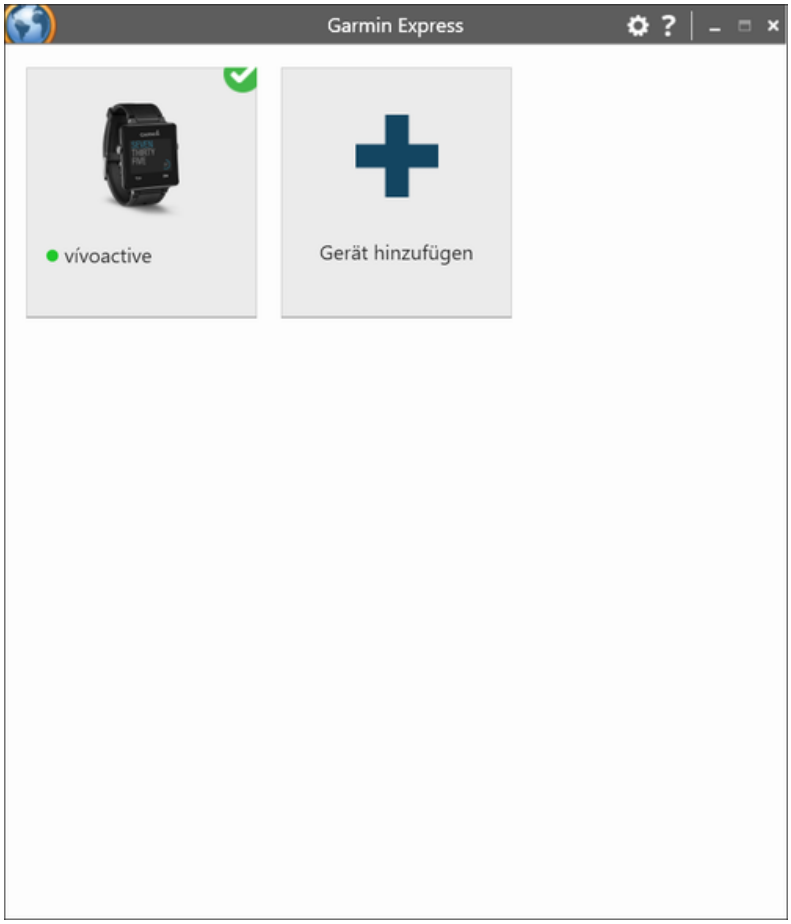
All configurations can be changed on your PC or MAC by using the Garmin Express Software. Before changing configurations, please make sure that you have installed the latest software version. The software can be downloaded from the official Garmin web site.

Step 1: Start Garmin Express Software Look for the symbol as shown below and double-click it to start the Garmin Express software.

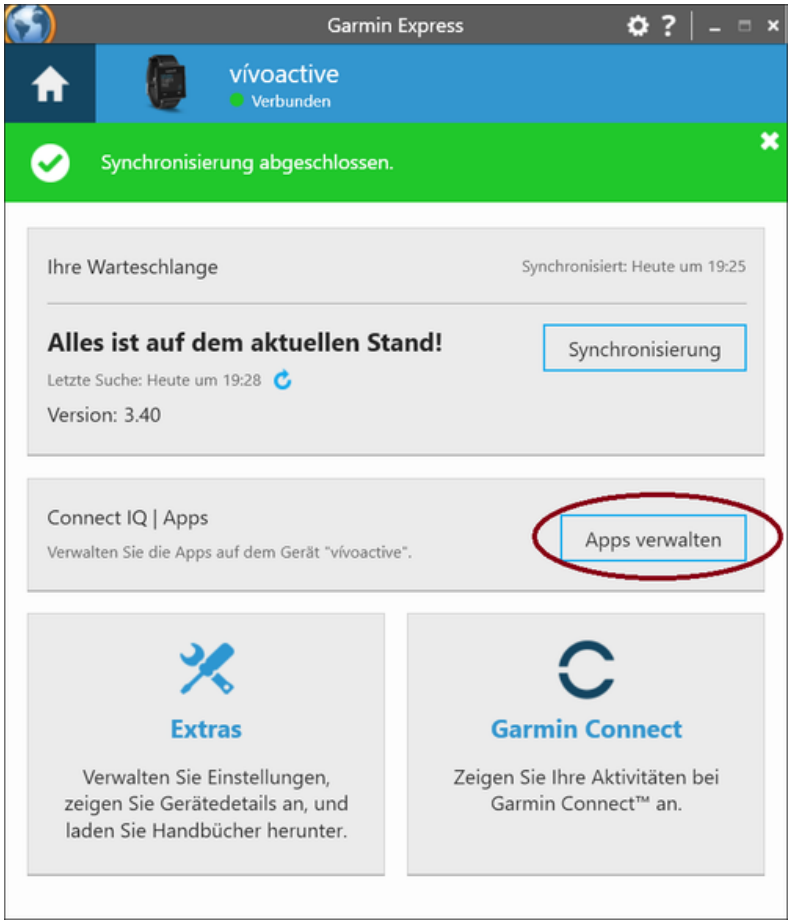
After that you should be able to see your Garmin device as shown in the picture below. If not, please add your device first. For details refer to the documentation provided by Garmin.



Step 2: Establish Connection between PC/MAC and the Garmin Device Connect your device via USB to your PC/MAC. Your device should be automatically detected and the Garmin Express software starts a synchronization process. When everything is ok, it is signalized via green lights as shown in the figure below. In case problems occur, please refer to the documentation provided by Garmin.



Step 3: Select Device Please click on the icon which shows your device. Following picture should appear:



Step 4: Find our Apps Please click the marked button in the picture above. A list of all installed applications on your device should appear. Please scroll up/down until you find the application you would like to configure as shown in the figure below:

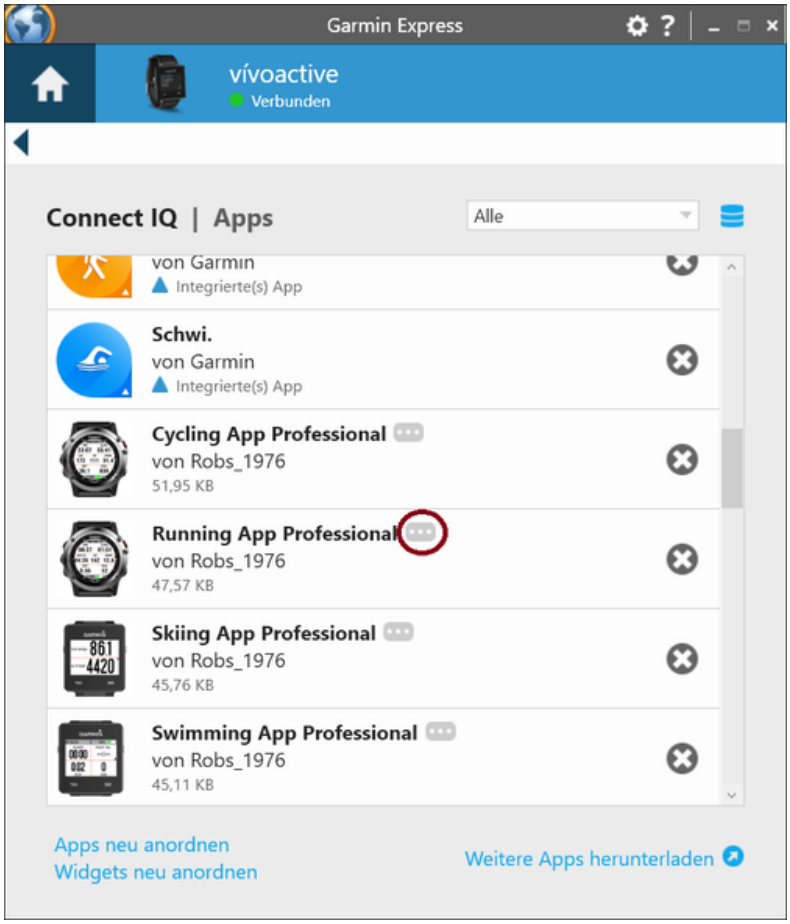


Figure 1 Default Garmin Express Software Version

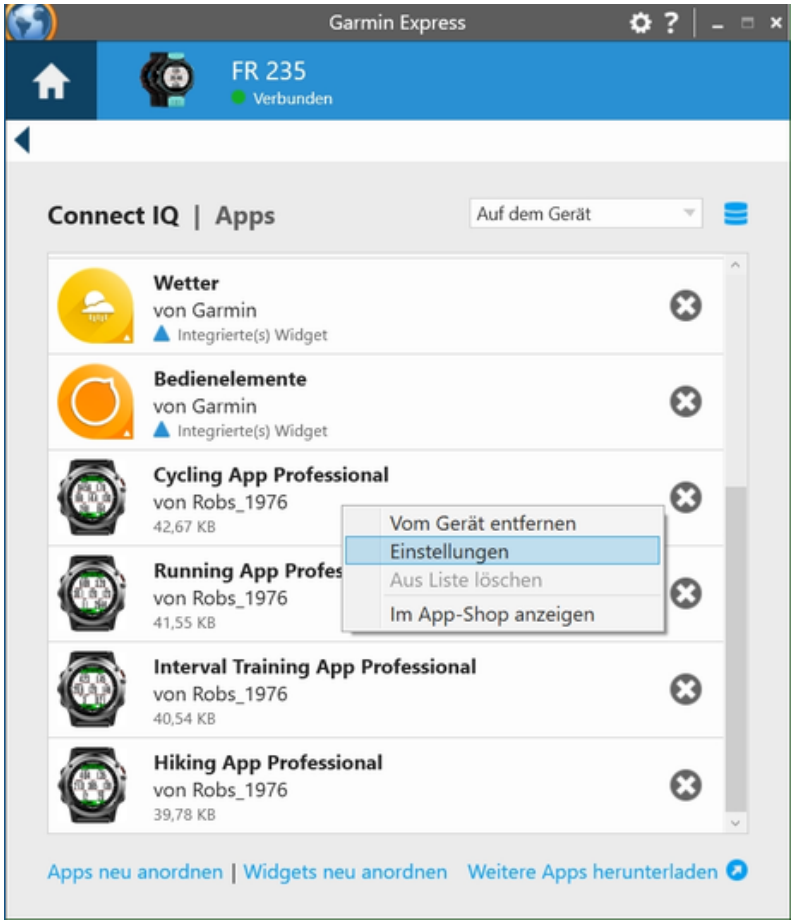
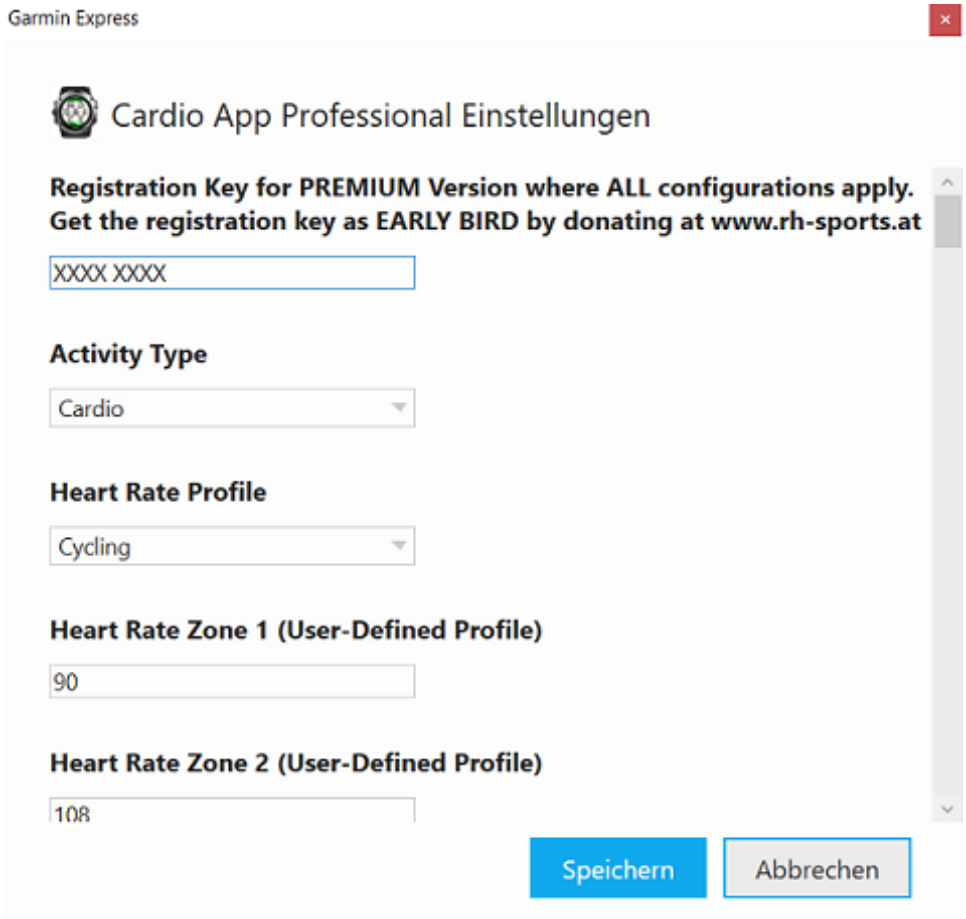


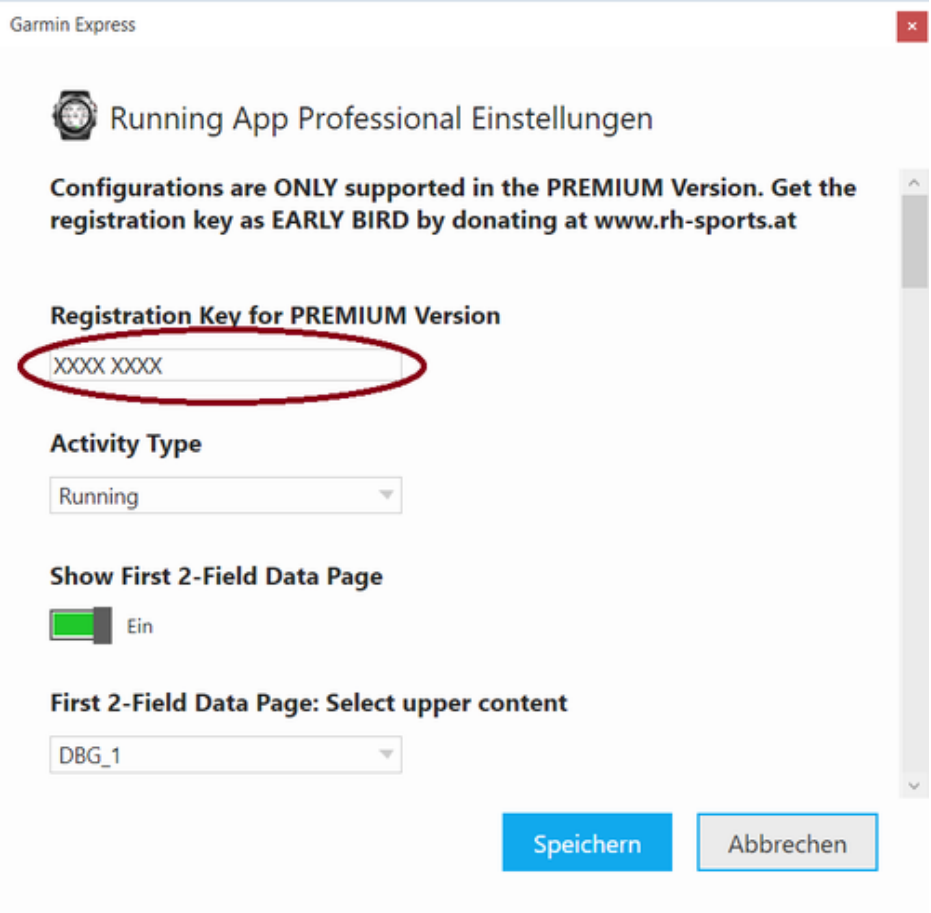
Figure 2 Some Garmin Express Software Versions

Step 5: Select App for Configuration Please select the application you would like to configure by clicking with the left mouse button to the three dots as marked in the left picture above to the app of your choice as shown in the right picture above. A context menu will be shown where you have to select "Settings"

Following screen should appear:



Step 6: Change Configuration Please note that configuration changes ONLY apply on your Garmin device if you have entered the proper PREMIUM key in the field marked in the picture below. The key consists of two times four characters separated by a space in between. If the proper key is entered, please make the configurations according to your needs and press the "Save" button at the end. The Garmin Express Software will update the configurations on your device. In case of errors, please refer to the documentation provided by Garmin.



Step 7: Disconnect Device After the configuration changes were saved, disconnect your device from the PC/MAC.

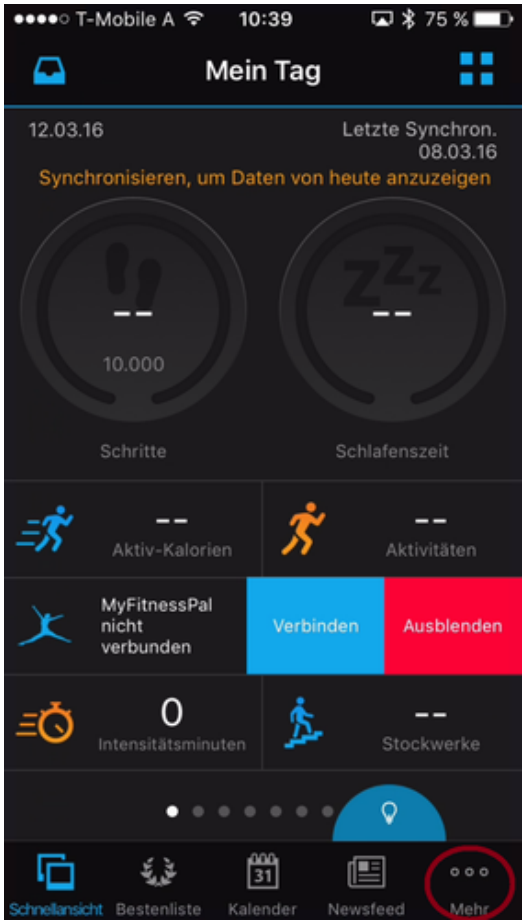
Step 8: Start Application on Device Please start your application on your Garmin device. If you have the PREMIUM Version (key was correct), then your configuration changes should have been applied. If not, please refer to our Frequently Asked Questions.

3.2.2 Change user settings on mobile phone

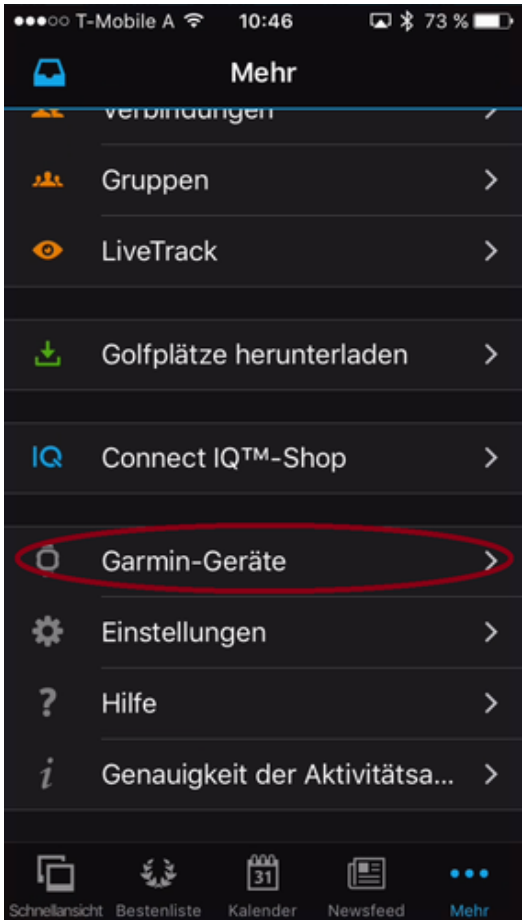
All configurations can be changed on your mobile phone by using the Garmin Connect(TM) Mobile app which is available for Android-, iOS- and Windows-compatible devices. Before changing configurations, please make sure that you have installed the latest app version. The app can be downloaded from the appropriate App Store (e.g. Google Play, Apple Store, etc.)

Step 1: Start Garmin Connect Mobile App Look on your mobile phone for the app with the symbol shown on the left side and click it to start the Garmin Connect™ Mobile app.

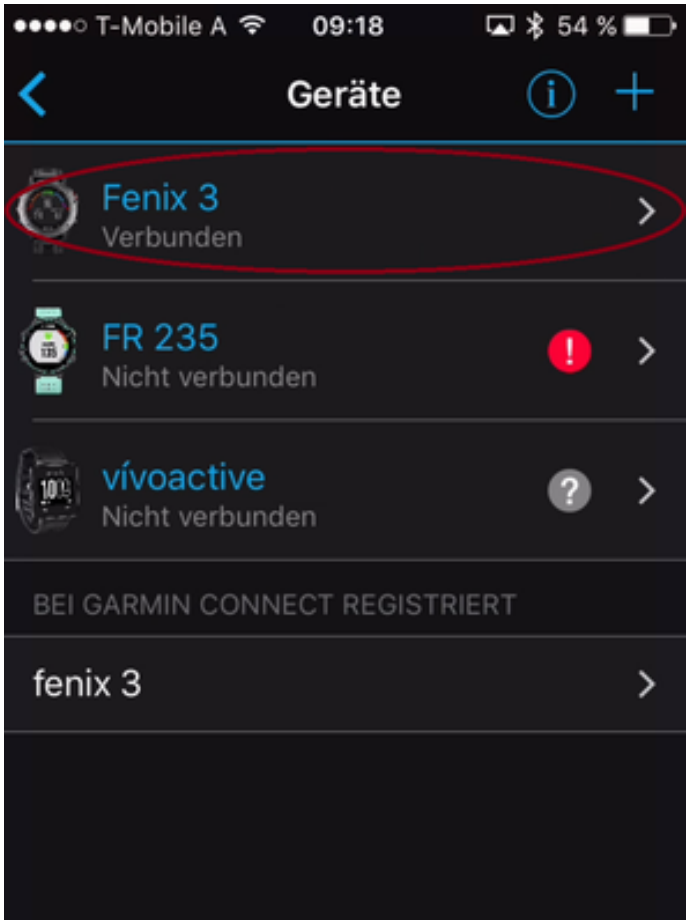
A similar window as shown below should appear.



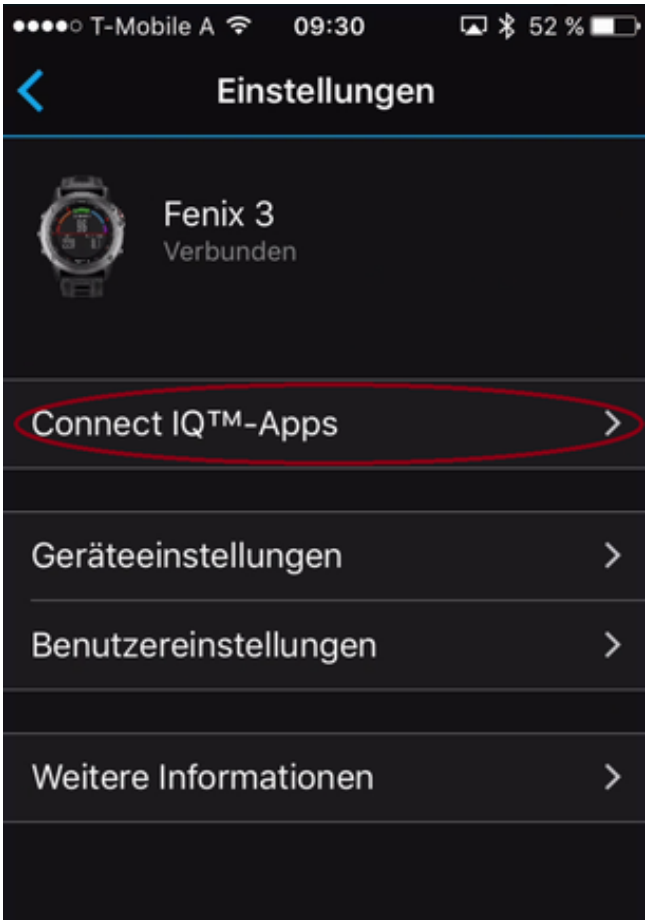
Step 2: Look for Garmin Devices List After pressing the button with the dots on the lower right side (as marked above) a new windows appears. Please scroll down until you find the entry "Garmin Devices".

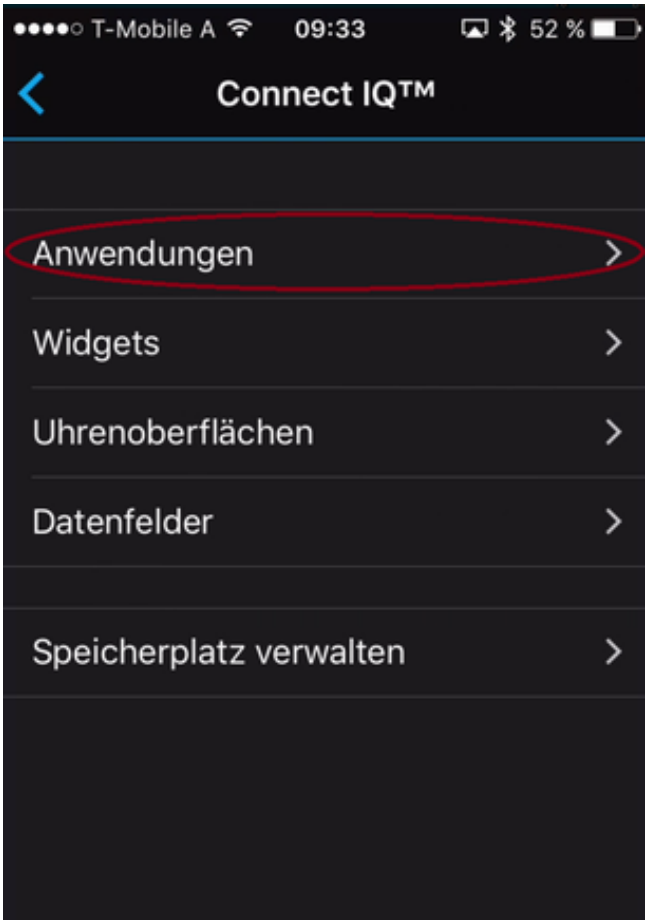


Step 3: Select your Garmin Devices After pressing the button marked above, a window with all your registered Garmin devices appears (see picture below). If you cannot find your device, please add it before by clicking on the upper right "+" sign. For further details, please refer to the documentation offered by Garmin. Then select one of your connected device.

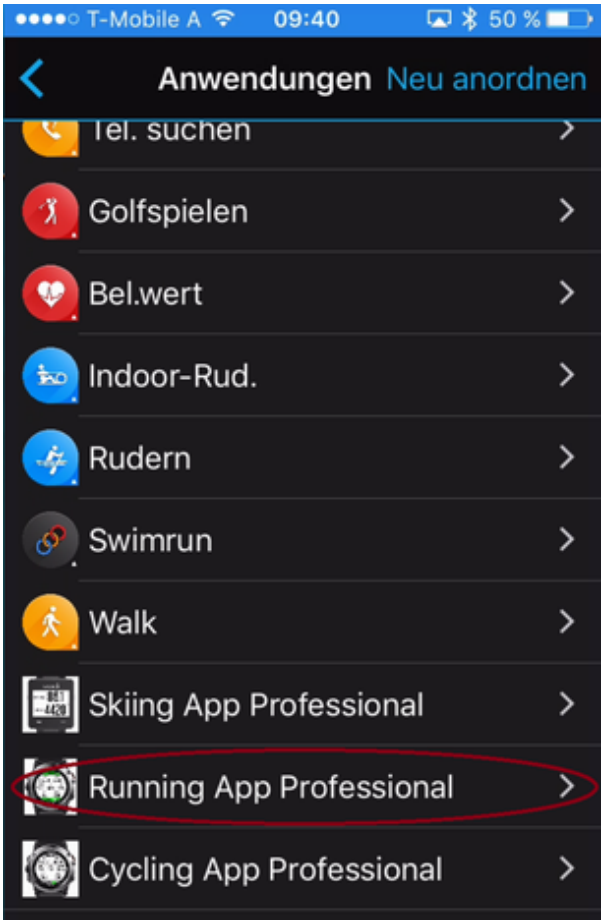


Step 4: Select Activities and Apps Please click the marked button in the picture below following by clicking to applications.

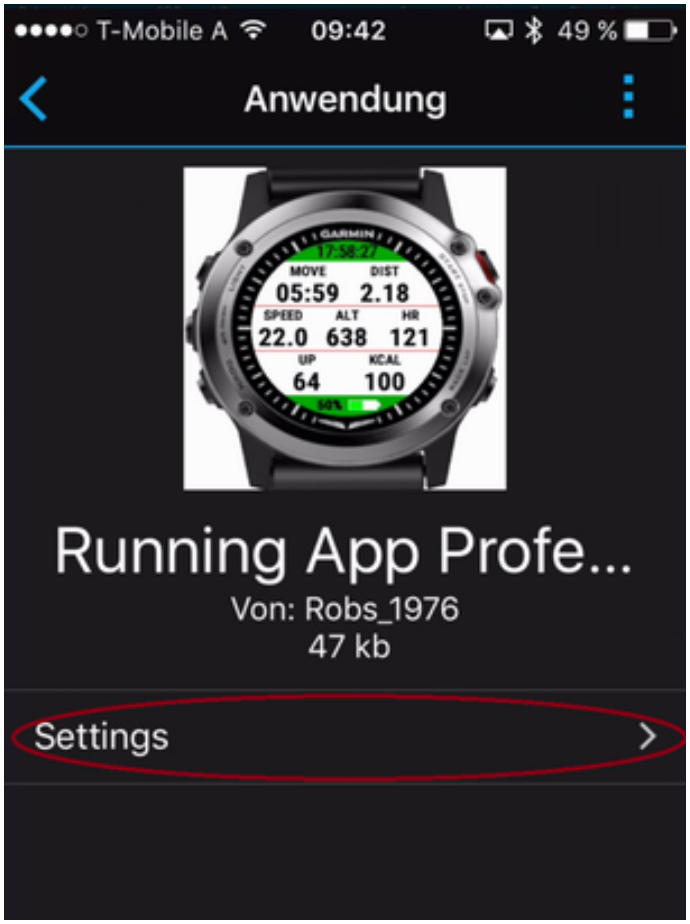

T-Mobile A
09:30
52 %
Einstellungen
Fenix 3
Verbunden
Connect IQ™-Apps
Geräteeinstellungen
Benutzereinstellungen
Weitere Informationen



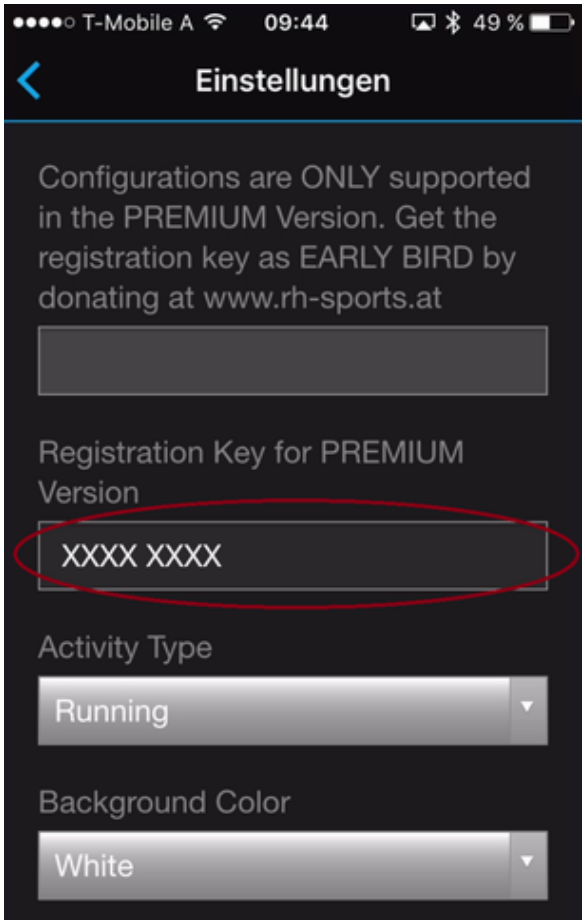
Step 5: Select an Application for Configuration A list of all applications appear. Please scroll up/down until you find the application you would like to configure as shown in the figure below:



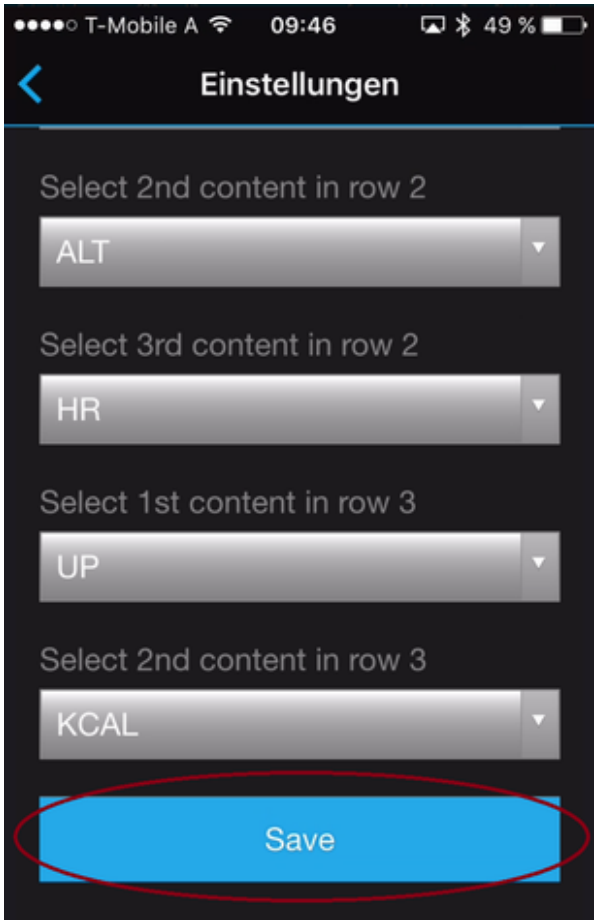
Step 6: Select Settings Please click on Settings as marked below.



Step 7: Change Configuration Please note that configuration changes ONLY apply on your device if you have entered the proper PREMIUM key in the field marked in the picture below. The key consists of two times four characters separated by a space in between. If the proper key is entered, please make the configurations according to your needs.



Step 8: Save Configurations Finally scroll down and press the "Save" button. The Garmin Mobile App will update your configurations on your device. In case of communication errors, please refer to the documentation provided by Garmin.



Step 9: Start Application on Device Please start your application on your device. If you have the PREMIUM Version (key was correct), then your configuration changes should have been applied. If not, please refer to our *Frequently Asked Questions*.

3.3 Start the data field

Pre-Condition:

- Please add the data field to your Garmin native application as described here

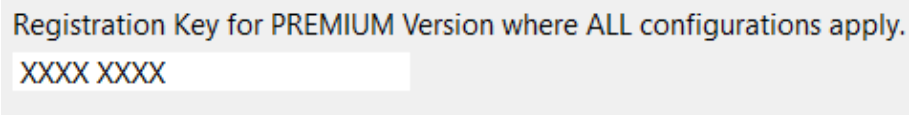
Perform following steps to use the data field:

- Go into the activity where you want to change the data fields (Run, Run Indoor, etc...)
- Go into Menu->Activity Settings->Data Screens
- Go to screen 1 or 2, etc.
- Select layout (it will take you to the data screen and you use <> to add/remove number of data fields); then back once
- Select data field 1 (as an example - could be 1,2,3,4)
- Select Connect IQ
- Select the custom data field you wish to use.
- Repeat for any other fields you wish to replace.

3.4 User setting overview

3.4.1 Registration key for PREMIUM version

After successful donation you receive a mail with the PREMIUM activation key(s). Please copy the registration key exactly in the given format (XXXX XXXX) into this text field. The registration key evaluation is case sensitive and no spaces are allowed at the beginning or end. One space is mandatory after the fourth character.



Here some important registration hints:

Hint 1: Please copy the registration key with 9 characters length exactly in the given format (XXXX XXXX) into this text field. The registration key is a hexadecimal number (numbers from 0 to 9 and big letters from A to F) and the evaluation is case sensitive. No spaces are allowed at the beginning or end. One space is mandatory after the fourth character.

Hint 2: Users reported that on some devices (e.g. Android-based mobile phones) more than one space is added when copying the key to the app settings field. Please make sure that there is exactly one space after the fourth character.

Hint 3: Please synchronize the settings with your watch afterwards. If you use Garmin Express software on PC or M↩AC, please disable the bluetooth connection between your mobile phone and watch during configuration as otherwise the settings might be overwritten again.

Hint 4: Sometimes it is necessary to reboot the watch once (for whatever reason).

Hint 5: Please use the right key for the selected application or data field.

Hint 6: Please make sure that there are no floating point values in the app settings anymore (except for Swimming App where they are allowed).

3.4.2 ANT+ power sensor pairing

This application or data field is supporting the ANT+ power sensor profile even on devices where Garmin does not support this natively itself.

In all cases, the ANT+ power sensor needs to be paired with the device before it can be used. Where Garmin supports the power profile natively, the pairing must be done via the watch settings. This is fully controlled by Garmin.

Where Garmin does NOT support the power profile natively, the pairing is done automatically by the application or data field upon start. Even an automatic re-pairing is implemented during the session, if the connection to the power sensor gets lost. In order to avoid that a pairing is done to a wrong ANT+ power sensor (e.g. to one of the colleagues you ride with), the user can set the application or data field specific setting for "Paired ANT+ power sensor ID" to one of the following values:

- -1 means that a pairing to any ANT+ power sensor is possible and that this ID is NEVER locked. Upon re-connection a different power sensor might be found and used. This setting e.g. makes sense when you have more bikes with power sensors and change them regular and you ride alone. Because then you do not have to update the pairing information in the settings.
- 0 means that a pairing to any ANT+ power sensor is possible and that this ID is locked when found first. The sensor specific ID is then automatically entered into this field and a re-pairing is only possible to the same power sensor with this ID.
- other values mean that a pairing is only possible to that specific ID anymore. It can be set to -1 or 0 at any time by the user to allow a pairing to other sensors again.

Note

By default the value -1 is set for legacy reasons to allow pairing to all ANT+ power sensors!

3.4.3 Color scheme

This option allows you to select the background and text color.

Following options are available:

- White background with black text color and grey header/footer
- Black background with white text and grey header/footer
- White background with black text and inverted colors in header/footer
- Black background with white text and inverted colors in header/footer

Please refer to following picture for better illustration:

Note

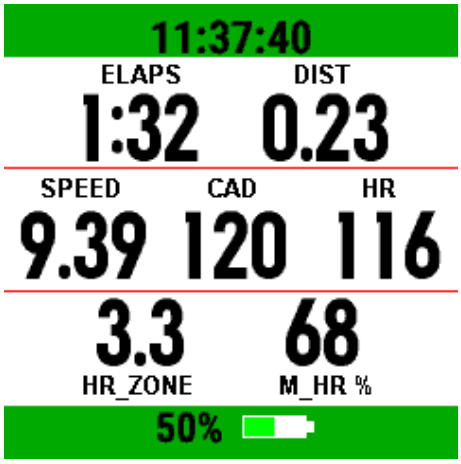
By default the option with "Black background with white header/footer" is used for best readability on all devices!
For devices with AMOLED display (e.g. Venu™ based devices) we strongly recommend to always select the black background to avoid damages due to burn-in effects and to save battery life time!

3.4.4 Data field coloring

This option allows you to enable the data field coloring feature. For further details, please click here.

3.4.5 7-field data page

This option allows you to freely select the content of the 7-field data page out of a huge list of all available data fields (even during the ongoing training session). This enables you to adjust all fields completely according to your personal preferences. For an overview of available data fields PRESS HERE.



30_DataFields

4 Data fields

The following table gives you an overview about all data fields of the **Cycling data field 7 (Version 1)** data field. Please note that some of them require the PREMIUM version.

Data field header	Data field description
ALT	Current altitude in meters or feet depending on your watch unit settings for distance. Please click here and find further information in note 1.
A CAD	Average cadence information of the whole session.
A HR	Average heart rate information in bpm for the whole session.
A PACE	Average pace information of the whole session for 1 km/mi depending on your watch unit settings for distance.
A PWR	Average power in watt.
A SPEED	Average speed information of the whole session in km/h or mi/h based on your watch unit settings for distance.
CAD	Current cadence information.
CL DIST	Current LAP distance in km/mi depending on your watch unit settings for distance.
CL PWR	Current LAP power in watt.
CL SPEED	Current LAP speed (average) in km/h or mi/h depending on your watch unit settings for distance.
CL TIME	Current LAP time in the format hh:mm, h:mm:ss or mm:ss.
DIST	Distance information in km or mi based on your watch unit settings for distance.
DOWN	Negative altitude difference in meters or feet for the whole session depending on your watch unit settings for distance. Please click here and find further information in note 1.
ELAPS	Elapsed total session time (including IDLE time) in the format hh:mm, h:mm:ss or mm:ss.
GRADE %	Grade in percent. This information is derived from the distance and altitude information and averaged over the last 10 seconds. Please click here and find further information in note 2.
HR	Current heart rate information in bpm.

Data field header	Data field description
HR ZONE	Current heart rate zone in the range of 0.0 to 6.0 with following meaning: • 0.0 ... current heart rate below Zone 1 (minimum heart rate) • 1.0 - 1.9 ... current heart rate in Zone 1 • 2.0 - 2.9 ... current heart rate in Zone 2 • 3.0 - 3.9 ... current heart rate in Zone 3 • 4.0 - 4.9 ... current heart rate in Zone 4 • 5.0 - 5.9 ... current heart rate in Zone 5 • 6.0 ... current heart rate above Zone 5 (maximum heart rate). The value is derived from your cycling heart rate profile settings configured at Garmin. Please click here and find further information in note 3.
IDLE	Idle session time where speed was below the following user-defined limit (default is 0.5 km/h or mi/h).
KCAL	Kilo-calories consumption for the whole session.
LAP	Current LAP number.
LL DIST	Last LAP distance in km/mi depending on your watch unit settings for distance.
LL PWR	Last LAP power in watt.
LL SPEED	Last LAP speed (average) in km/h or mi/h depending on your watch unit settings for distance.
LL TIME	Last LAP time in the format hh:mm, h:mm:ss or mm:ss.
MOVE	Moving session time (without IDLE time) in the format hh:mm, h:mm:ss or mm:ss.
M CAD	Maximum cadence information of the whole session.
M HR	Maximum heart rate information in bpm for the whole session.
M HR %	Current heart rate in percentage of maximum heart taken from the user settings depending on the application you are using. Please refer to HR ZONE for further details. Please click here and find further information in note 3.
M PACE	Maximum pace information of the whole session for 1 km/mi depending on your watch unit settings for distance.
M PWR	Maximum power in watt.
M SPEED	Maximum speed information of the whole session in km/h or mi/h based on your watch unit settings for distance.
PACE 5s	Current pace of the last 10 seconds (continuously calculated) for 1 km/mi depending on your watch unit settings for distance.
PWR	Current power in watt.
SPEED	Current speed information in km/h or mi/h based on your watch unit settings for distance.
TEMP	Current temperature in celsius or fahrenheit depending on your watch unit settings for temperature. Please click here and find further information in note 4.
TIME	Current time in 12/24h format based on your watch system settings.
UP	Positive altitude difference in meters or feet for the whole session depending on your watch unit settings for distance. Please click here and find further information in note 1.

Data field header	Data field description
VSPD 5s	Vertical speed in m/h or feet/h of the last 5 seconds when session is running depending on your watch unit settings for distance. Please click here and find further information in note 2.

Following table shows additional data fields available on watch and Edge® devices with more than 32 kb of memory for data fields:

Data field header	Data field description
DIST NP	Distance until next (if navigation is turned on) in km or mi based on your watch unit settings for distance.
PWR 3s	Power information in watt averaged over the last 3 seconds.
PWR 5s	Power information in watt averaged over the last 5 seconds.
PWR 10s	Power information in watt averaged over the last 10 seconds.
PWR 30s	Power information in watt averaged over the last 30 seconds.

Following table shows additional data fields available on Edge® devices only:

Data field header	Data field description
Group cadence (avg/cur/max)	Combined group data field showing average, current and maximum cadence.
Group heart rate (avg/cur/max)	Combined group data field showing average, current and maximum heart rate.
Group power (avg/cur/max)	Combined group data field showing average, current and maximum power.
Group speed (avg/cur/max)	Combined group data field showing average, current and maximum speed.

4.1 Notes

Note 1
This information is only precise enough on watches with barometric altimeter as altitude information cannot be derived precisely from GPS. For further details, please click here.

Note 2
Information is only precise if you have an ANT+ speed sensor and a barometric altimeter on your watch. Especially if relative altitude information is derived from GPS, then it will not be very precise due to the physical limitations of GPS as described here. For further details, please click here.

Note 3
The EPIX watch does not support the Garmin SDK >= 1.2.6. Thus it is not possible for an app to access the heart rate profiles. Therefore the heart rate zones are derived from the maximum heart rate configured by the user.

Note 4
Temperature sensor support is only possible if your Garmin device has an internal temperature sensor. Please note that the update frequency depends on the device and can take 30 seconds up to 5 minutes. 40_Features

5 Features

This section describes the most important features of the **Cycling data field 7 (Version 1)** in more detail. Here a short summary:

- Session features
- ANT+ power profile support
- Data field coloring

5.1 Session features

This section describes the workout session features which are very similar among all of our Garmin Connect IQ™ applications. The current workout session status is indicated by a specific sign. Following table provides an overview about all possible states of a workout session.

Session status	Visualization	Description
NOT STARTED	Blinking red border	Workout session (recording) was not started so far. This is the state after starting the app. Press the "START" button to start workout.
RUNNING	Constant grey header/footer	Workout session (recording) is running. This is the case after you manually pressed the "START" button. If the Auto-Stop feature is enabled, the speed must be above the specified limit, otherwise the app automatically enters AUTO-STOP mode.
AUTO-STOP	Blinking yellow pause sign	Workout session is in Auto-Stop mode which means that the speed is below the user-defined limit. Please be aware that no session recording takes place in this state.
PAUSED	Blinking red stop sign	Workout session (recording) was manually paused in the menu by selection of "Pause Session". It can be resumed at any point in time by entering the menu again and selecting "Resume Session". Please be aware that no session recording takes place in this state.

Start a workout session (NOT STARTED)

After starting the app the workout session status is "NOT STARTED" as the session has to be manually started by the user. This can be done by pressing the "START" button. This state is visualized by showing a blinking red boarder every two seconds as illustrates in following picture:

Workout session running (RUNNING)

After pressing the "START" button the first time after app start, the session status changes from "NOT STARTED" to "RUNNING". This is illustrated by a constant grey header/footer as shown in the following picture:

Auto-stop mode (AUTO-STOP)

Whenever the speed goes below the user-specific limit the app automatically enters the "AUTO-STOP" mode. When the speed goes above this limit, the app enters "RUNNING" mode again. This state is visualized by showing a blinking yellow boarder with a pause sign in the middle every two seconds as shown in following picture:

Manually paused session (PAUSED)

The user can manually pause the workout session at any time if the session status is in "RUNNING" or "AUTO-STOP" mode. This can be done by pressing the "START" button. A menu is shown where the user can select among following choices by either pressing the touch screen or by up/down or left/right buttons:

User selection	Description
Resume	Start or resume workout session
Pause	Pause workout session. This allows the user to navigate through the data pages. The workout session can be resumed again at any time by pressing "START" button and select "Resume".
Save and exit	Save workout data and close the application. After synchronization with your watch or via Garmin Express Software the workout data will be uploaded to the Garmin cloud and will be visible via Garmin Connect.
Discard and exit	Discard session data and close the application. Please note that all the collected workout data is lost!

A stopped session is indicated by a blinking red boarder and pause sign in the middle of the screen as shown in following figure:

5.2 ANT+ power sensor support

This data field supports the ANT+ power sensor profile even on Garmin devices (with more than 32 kB of memory for data fields) where this is not offered by Garmin itself. This includes following devices:

- Approach® S62
- Approach® S70 42mm and 47mm
- D2™ Air X10

- Edge® Explore
- Forerunner® 165, 165 Music, 245 Music and 645 Music
- Venu™ 2, Venu™ 2 Plus and Venu™ 2s
- Venu™ SQ 2, Venu™ SQ 2 Music
- Vivoactive® 5

The pairing with the ANT+ power sensor is done automatically by the data field, based on the user settings.
During the workout following information can be shown on the data pages:

- PWR (current power value in watt)
- A PWR (average power value in watt)
- M PWR (maximum power value in watt)

In case the ANT+ power sensor supports cadence this information is derived from there as well. Following information is available during the workout:

- CAD (current cadence value in revolutions per minute)
- A CAD (average cadence value revolutions per minute)
- M CAD (maximum cadence value revolutions per minute)

If a workout is executed with a present ANT+ power sensor then following information is captured and later stored on Garmin Connect:

- Chart about current power values for the whole workout.
- Average power value for whole workout.
- Average cadence value for whole workout.

5.3 Data field coloring

Data field coloring is currently only supported for the heart rate related data fields and has to be enabled via the user settings.

Following table describes the color coding:

HR zone	Color	Percentage of maximum heart rate
Zone 0	BLACK	M_HR % < 50
Zone 1	GREY	50 <= M_HR % < 59
Zone 2	BLUE	60 <= M_HR % < 69
Zone 3	GREEN	70 <= M_HR % < 79
Zone 4	ORANGE	80 <= M_HR % < 89
Zone 5	RED	90 <= M_HR % < 99
Zone 6	DARK RED	M_HR % >= 100

60_FAQ

6 Frequently asked questions

6.1 What is the difference between CyclingDF7 1 and 2?

Even though both data fields are currently more or less identical, it still makes sense to have two, because Garmin allows to add two different Connect IQ data fields where you can choose different metrics in the data field settings for each of them.
The actual differences between CyclingDF7 1 and 2 on devices with less or equal than 32 kB of memory for data fields are:

- CyclingDF7 1 additionally offers heart rate data field coloring
- CyclingDF7 1 additionally offers data fields for PACE and temperature
- CyclingDF7 2 additionally offers power support even on devices where Garmin does not natively supports this

The actual differences between CyclingDF7 1 and 2 on devices with more than 32 kB of memory for data fields are:

- None

6.2 What is the difference between data fields 1 and 2

For cycling, hiking and running we offer two data fields which are currently either the same or very similar. E.g. for cycling these are:

- CyclingDF4 1 and 2
- CyclingDF7 1 and 2

There are following main reasons for that:

- The resources for data fields on some devices are (with 32kB) very limited. Therefore features will be balanced upon the two data fields.
- The user can already now add both data fields and select different metrics for each.

For further details about the differences, please click here.

6.3 What is the purpose of the FREE version?

The FREE Version is fully functional and offers you a basic feature set which allows you to test the application or data field intensively without any risk on your Garmin device. If you like it and would like to have a more advanced feature set, please donate to upgrade to the PREMIUM Version.

6.4 How to upgrade to the PREMIUM version?

If you like this application or data field and would like to have more advanced features as well, please donate to upgrade to the PREMIUM version. After donation we will sent you the unlock key immediately.

6.5 I did not received the unlock keys for the PREMIUM Version after donation?

After successful donation you immediately will get a mail to the mail address used in PAYPAL. It contains the unlock keys and the activation information for the selected PREMIUM version(s). The information is provided as attached PDF. If this is not the case, please do following:

- Check whether you used the right mail address. It is the one you are using in PAYPAL.
- Check whether the mail went to your JUNK or SPAM folder.
- Write a mail to `rh-sports@gmx.at` to request the keys.

6.6 What to do if after entering the key, still the FREE version is active?

The FREE version is active if you see the "Please donate as EARLY BIRD" message upon application start. Some users reported that the FREE version is still active after entering the registration key and synchronization. In all known cases the key was entered properly.

Here some important registration hints:

Hint 1: Please copy the registration key with 9 characters length exactly in the given format (XXXX XXXX) into this text field. The registration key is a hexadecimal number (numbers from 0 to 9 and big letters from A to F) and the evaluation is case sensitive. No spaces are allowed at the beginning or end. One space is mandatory after the fourth character.

Hint 2: Users reported that on some devices (e.g. Android-based mobile phones) more than one space is added when copying the key to the app settings field. Please make sure that there is exactly one space after the fourth character.

Hint 3: Please synchronize the settings with your watch afterwards. If you use Garmin Express software on PC or M↩ AC, please disable the bluetooth connection between your mobile phone and watch during configuration as otherwise the settings might be overwritten again.

Hint 4: Sometimes it is necessary to reboot the watch once (for whatever reason).

Hint 5: Please use the right key for the selected application or data field.

Hint 6: Please make sure that there are no floating point values in the app settings anymore (except for Swimming App where they are allowed).

6.7 What to do if GPS is not found upon start?

Sometimes it happens that GPS is not found during app startup and the app polls infinitely for a proper GPS signal. According to customer feedback this happens when the Garmin (sensor) firmware was updated. This is out of our control. Following workaround seems to do the trick:

- Once start a Garmin native app like running, cycling, etc.
- Wait until GPS is found.
- Stop the Garmin native app and start one of our apps.
- GPS should be found soon.

Note

Indoor it is sometimes very difficult for a device to find a proper GPS signal. So please make sure you do it outdoor.

6.8 How to enable GPS, GLONASS or GALILEO?

Garmin does not allow Connect IQ applications to controll that. Following steps seems to do the trick:

- Once start a Garmin native app like running, cycling, etc.
- Select the required positioning sources in the settings of the native app.
- Stop the Garmin native app and start one of our apps.
- According to our information the selected sources of the native app are then used for our apps as well.

6.9 What to do in case of a app or data field crash upon start?

If you see following icon on your Garmin device upon application start or when you add a data field:

please completely uninstall and reinstall the application or data field. The setting file changed and the automated Garmin install is not replacing the setting file.

6.10 What to do if settings cannot be changed?

Currently there is a show stopper problem in the Garmin mobile app for iOS that user settings cannot be changed. Garmin is aware of the problem and made an official statement with a possible work-around. For further details, please click here.

We have tested the workaround with following sequence on an iPhone 7 and it worked properly:

- Delete app with Garmin Connect app.
- Synchronize.
- Once reboot the watch.
- Install the app again with the new Connect IQ app.
- Configure it with the new Connect IQ app.

Note

Unfortunately this is out of our control and we have to wait until Garmin fixed that problem.

6.11 User settings lost after update?

Unfortunately Garmin might reset the user settings when updating the Garmin firmware version of the application or data field. This leads to the problem that all configurations are lost and the FREE Version is active again. I´m testing some work-arounds but so far I was not successful. As soon as I have updates, I will publish them here.

6.12 Activity not visible on Garmin Connect?

There could be several reasons why an activity is not visible on Garmin Connect:

- Activity recording was never started.
- Activity recording was not saved upon leaving the Garmin native app.
- No synchronization between device and Garmin Connect happened.
- Especially in indoor sessions it can happen that the device stays in Auto-Stop Mode. Please deactivate this feature in the user settings.
- Especially in indoor sessions no movements might be detected by the device. Thus distance stays 0. In such a case no activity results are stored on Garmin Connect.

6.13 Activity tracking and fitness metric accuracy

The app uses the Garmin API´s to retrieve most of the information and cannot be more precise than the data delivered from there. Garmin states following about activity tracking and accuracy:

- "Garmin devices are intended to be tools to provide you with information to encourage an active and healthy lifestyle. Garmin wearables rely on sensors that track your movement and other metrics. The data and information provided by these devices is intended to be a close estimation of your activity and metrics tracked, but may not be precisely accurate. Garmin wearables are not medical devices, and the data provided by them is not intended to be utilized for medical purposes and is not intended to diagnose, treat, cure, or prevent any disease. Garmin recommends you consult your doctor before engaging in any exercise routine."

6.14 Accuracy of wrist-based heart rate (Elevate)

The app uses the Garmin API to retrieve heart rate related data cannot be more precise than the data delivered from there. Regarding wrist-based accuracy, Garmin states following:

- "The optical wrist heart rate (HR) monitor for Garmin wearables is a valuable tool that can provide an accurate estimation of the user's heart rate at any given point in time. The optical HR monitor is designed to attempt to monitor a user's heart rate 24 hours a day, 7 days a week. The frequency at which heart rate is measured varies, and may depend on the level of activity of the user. When you start an activity with your Garmin optical HR device, the optical HR monitor measures more frequently. The intent is to provide the user with a more frequent and accurate heart rate reading during a given activity."
- "While our wrist HR monitor technology is state of the art, there are inherent limitations with the technology that may cause some of the heart rate readings to be inaccurate under certain circumstances. These circumstances include the user's physical characteristics, the fit of the device and the type and intensity of the activity as outlined above. The HR monitor data is not intended to be used for medical purposes, nor is it intended to diagnose, treat, cure or prevent any disease or condition."
- "Wrist heart rate accuracy during swimming is very limited. Garmin does not recommend using wrist heart rate during swimming activities and on some products, wrist heart rate monitoring is disabled while swimming. Garmin recommends using HRM-Swim™ or HRM-Tri™ heart rate monitors with compatible devices to track heart rate while swimming."

6.15 Is there a way to enable/disable GLONASS?

The GPS/GLONASS setting is based on what was last used in the Garmin native apps (like cycling, running). Garmin does not allow Connect-IQ apps or data fields to change this setting.

6.16 Why is an update of the firmware required?

Some users reported that an update of the firmware is requested even though the latest firmware is already installed. In such a case, please try out following options:

- Update your Garmin Express or Garmin Mobile software (if you don´t have the latest versions installed).
- Reboot your device once.

6.17 Why is info derived from altitude (e.g, UP, DOWN, PWR, GRADE in %) not accurate?

People with Garmin watches are frequently concerned about the accuracy (or lack of it) of the altitude data (or from altitude derive data) if the info is derived from GPS and not from a barometric altimeter. Many suspect their equipment or the app may even be defective or buggy when they see the altitude data. Unfortunately this is NORMAL as GPS is not accurate enough regarding altitude information. Following Garmin watches have no barometric altimeter and are thus affected:

- Forerunner® 735XTJ, Forerunner® 735XT

With the integrated GPS receivers, the horizontal error is specified to be within about +/- 15 meters (50 feet) 95% of the time. Most users find this is a conservative specification and that their modern GPS receivers routinely perform better than this worst case specification. But users should expect that SOMETIMES they may see the error approach the specification limits. AND 5% of the time, the error may be "any value" from zero to whatever. Note: Unless you have a CLEAR AND UNOBSTRUCTED view of the sky you can count on your error excursions to be much greater than the above numbers. Your GPS depends on this clear and unobstructed view or it cannot make accurate range measurements to the satellites. Generally, altitude error is specified to be 1.5 times horizontal error specification. This means that the user of standard consumer GPS receivers should consider +/-23meters (75ft) with a DOP of 1 for 95% confidence. Altitude error is always considerably worse than the horizontal (position error). Much of this is a matter of geometry. If we (simplistically) consider just four satellites, the "optimum" configuration for best overall accuracy is having the four SVs at 40 to 55 degrees above the horizon and one (for instance) in each general direction N, E, W, and S. (Note: You will get a very BAD DOP if the SVs are at the exact same elevation. Luckily, this is a rare occurrence.) The similar "best" arrangement for vertical position is with one SV overhead and the others at the horizon and 120 degrees in azimuth apart. Obviously, this arrangement is very poor from a signal standpoint. As a result, of this geometry the calculated solution for altitude is not as accurate as it is for horizontal position. Almost any calibrated altimeter will be more stable at reading altitude than a GPS. GPS altitude measures the user´s distance from the center of the SVs orbits. These measurements are referenced to geodetic altitude or ellipsoidal altitude in some GPS equipment. Garmin and most equipment manufacturers utilize a mathematical model in the GPS software which roughly approximates the geodetic model of the earth and reference altitude to this model. As with any model, there will be errors as the earth is not a simple mathematical shape to represent. What this means is that if you are walking on the seashore, and see your altitude as -15 meters, you should not be concerned. First, the geodetic model of the earth can have much more than this amount of error at any specific point and Second, you have the GPS error itself to add in. As a result of this combined error, I am not surprised to be at the seashore and see -40 meter errors in some spots.

In our data fields following data fields are affected if you have device without barometric altimeter:

- UP
- DOWN
- GRADE in %
- VSPD xs, A VSPD, M VSPD

6.18 What to do if the application does not work?

We do our best to test the data field as good as possible. As we do not have all physical available devices and all ANT+ sensors with all combinations of Garmin firmware versions, we have to do most of the tests on the simulator provided by Garmin. If you detect problems with our application on your Garmin device, please provide us detailed feedback via the official bug report form in order we are able to understand and reproduce your problem. This gives us a fair chance to provide a fix as soon as possible.

Here the link to the data field specific bug report form:

- CyclingDF7

THANK YOU VERY MUCH for YOUR SUPPORT!!!! 98_Backlog

7 Backlog

This section shows the backlog with potential features planned for upcoming releases:

- Add LAP HR data field
- Pairing for power sensor
- Add training effect data field
- Show BIG ARROW for direction when navigating
- Is it possible when I interrupt the activity for a long time choose "resume later", not only pause or stop?

Note

Please note that there is no guarantee if and when the feature will be implemented!

99_ChangeHistory

8 Version history

This section lists the version history of the latest already released versions.

Table 7 Version history

Version	Date	Change description
3.9.5	04.12.2024	Several GUI improvements Add feature that pairing to a ANT+ power sensor can be controlled by the user via setting
3.9.0	26.09.2024	Support for Fenix® 8 43mm added Support for Fenix® 8 47 / 51mm added Support for Fenix® 8 Solar 47mm added Support for Fenix® 8 Solar 51mm added Support for Fenix® E added
		Support for Enduro™ 3 added

Version	Date	Change description
3.8.1	10.09.2024	GUI improvements
3.8.0	30.08.2024	Add support for Edge® 1050 Several bug fixes and stability Several power improvements on devices with more than 32kB memory PACE data fields added on devices with more than 32kB memory Temperature data field added on devices with more than 32kB memory
3.7.8	10.05.2024	Bugfix for showing sensor info upon start
3.7.7	09.05.2024	Bugfix for showing sensor info upon start Allow sensor info to be shown later when pressing on header
3.7.5	17.04.2024	Add sensor information for most Edge devices upon start Hotfix for app setting problems on newer devices Memory optimizations
3.7.0	16.04.2024	Add sensor information upon start on Edge 1030 (experimental)
3.6.5	09.03.2024	Support for Forerunner® 165 and 165 Music added Bugfix to only alert for FREE version if session is running
3.6.0	16.12.2023	Support for Descent™ Mk3 43mm added Add support for configuration options in german language Improve configuration description in english language
3.5.5	24.11.2023	Support for Descent™ Mk3 51mm added Support for Fēnix® 7 Pro (no Wi-Fi) added Support for Fēnix® 7x Pro (no Wi-Fi) added GUI improvements
3.5.0	20.10.2023	Support for Venu® 3 added Support for Venu® 3s added Support for Vivoactive® 5 added
3.4.5	06.09.2023	Support for Edge® 540 / 540 Solar Support for Edge® 840 / 840 Solar Support for Edge® Explore 2 added Version info added on Edge devices as long as session is not started
3.4.0	08.08.2023	Color scheme configuration option added to select background and font colors
3.3.5	21.07.2023	Support for Approach® S70 47mm added Support for Epix™ Pro (Gen 2) 51mm added
3.3.0	10.07.2023	Support for Approach® S70 42mm added Support for Epix™ Pro (Gen 2) 42mm and 47mm added Support for Fenix® 7 Pro, Fenix® 7s Pro and Fenix® 7x Pro added
3.2.5	06.07.2023	Support for Forerunner® 265 and 265s added Support for Forerunner® 965 added
3.2.0	06.03.2023	Support for MARQ® (Gen 2) Athlete / Adventurer / Captain / Golfer / Aviator added
3.1.0	09.09.2022	Support for Venu™ SQ 2 and Venu™ SQ 2 Music added GUI and stability improvements
3.0.5	06.08.2022	Add data field for distance to next point for devices with more than 32kB of memory for data fields Prepare data field for further features on devices with more than 32kB of memory GUI improvements
3.0.0	19.06.2022	Support for Forerunner® 255, 255 Music, 255s and 255s Music added Support for Forerunner® 955 / Solar added Support for Edge® 1040 / Solar added

Version	Date	Change description
2.9.5	23.04.2022	Bugfix to support power on Epix™ 2 and FR® 745 Support for D2™ Mach 1 added Several GUI and stability improvements
2.9.1	22.02.2022	Support for D2™ Air X10 added
2.9.0	01.02.2022	Support for Epix™ 2 added Support for Fenix® 7, Fenix® 7s and Fenix® 7x added
2.8.7	20.01.2022	Support for Venu™ 2 Plus added

Note

The version history for older releases is available on request only!