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T DASH XL
USER MANUAL

// TECHNOLOGY FOR MOTORSPORT

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INTRODUCTION

Congratulations with the purchase of your T DASH XL product!

The T DASH XL is the ultimate additional external display to the MYLAPS X2 Racelink.
It is primary used for on board flagging and shows all flags that are supported by the MYLAPS X2 Race Control system.

It allows for displaying extra functions supplied by Race control like Virtual Safety Car gap, time till flag end, and official timing results. Depending on your timing & Race control service provider these extra functions may be available.

T DASH XL incorporates a Laptimer function using the positioning information from the MYLAPS X2 Racelink to display Laptime information for free practice purpose.
The Laptimer function works without any infrastructure needed on the track as GNSS positions are used to determine the position and laptime.

The high-resolution sunlight readable TFT display brightness can be dimmed with help of the top button of the T DASH XL. With the bottom button the user can switch between the pages available:

- Racelink
- Flagging[1]
- Result
- Track
- Laptimer
- Laptimes
- Speed
- Time

Together with the high brightness display an audio line out signal is given to make sure Race Control messages are noticed by drivers.

With the TDash app for your smartphone settings like Brightness, Audio volume, CAN bus settings, demo mode and firmware update can be easily done. The TDash app also allows for logging and reviewing Laptimer sessions.

Features

- 320x240 Sunlight readable full color dimmable TFT display
- Rugged aluminium housing with potted electronics (IP65)
- Audio signal via 3.5mm jack plug
- Plug & play M8 connection with X2 Racelink Pro or Club
- Right or left cable connection possible (auto rotate display and buttons)
- All flags available in the X2 Race Control Server API are supported
- Virtual Safety Car gap and time till flag end possible
- Official results possible
- Settings (via app)
    - Firmware version (update)
    - CAN Baudrate and termination
    - Metric or imperial units
    - Demo mode
    - Audio volume
    - Brightness

[1] Any flagging message from Race control will always force the T DASH to the flagging page until the flag is cleared.

Accessories (not included)

When using a Racelink Pro:

Racelink Pro, MYLAPS #10C010 (check for different antenna options)

- X2 pro Adapter Cabling Set Deutsch/M8, MYLAPS #40R080
  (Deutsch/M8 adapter, power cable with fuse, Y-Cable)

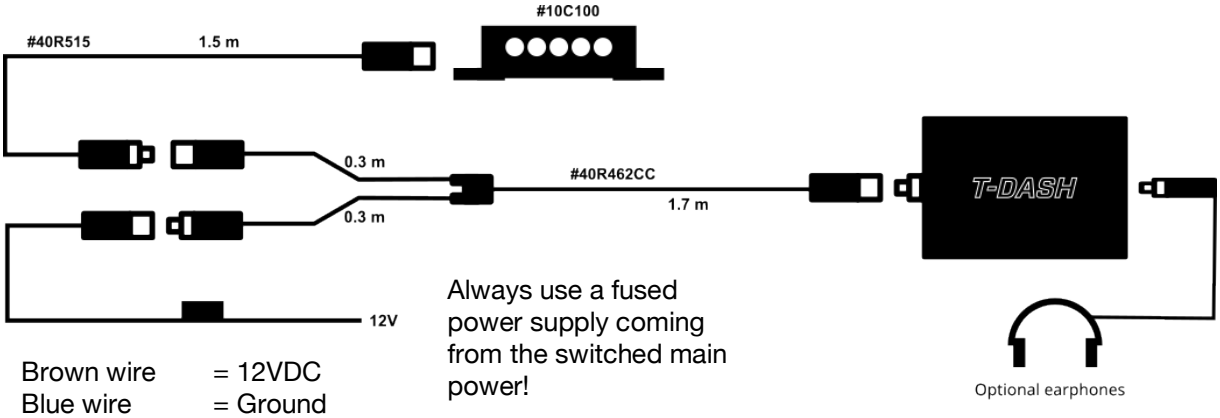
When using a Racelink Club:

Racelink Club, MYLAPS #10C100

- M8 Y-connection cable, MYLAPS #40R462CC
- TR2 Direct Power Cable, MYLAPS #40R515
  (extension cable to reach the display from the Y-cable)
- Power cable M8 female with fuse

INSTALLATION

Connection diagram Racelink Club

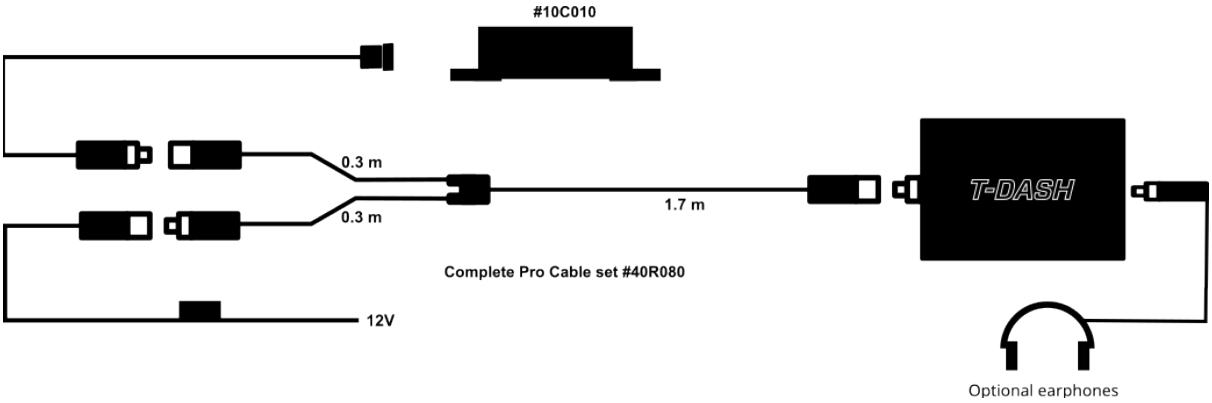


Always use a fused power supply coming from the switched main power!

Brown wire = 12VDC
Blue wire = Ground

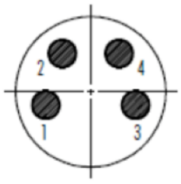
Do not use, and isolate the White and Black wire

Connection diagram Racelink Pro



M8 connector pin-out

M8 circular sensor connector i.e.; Binder 718 series

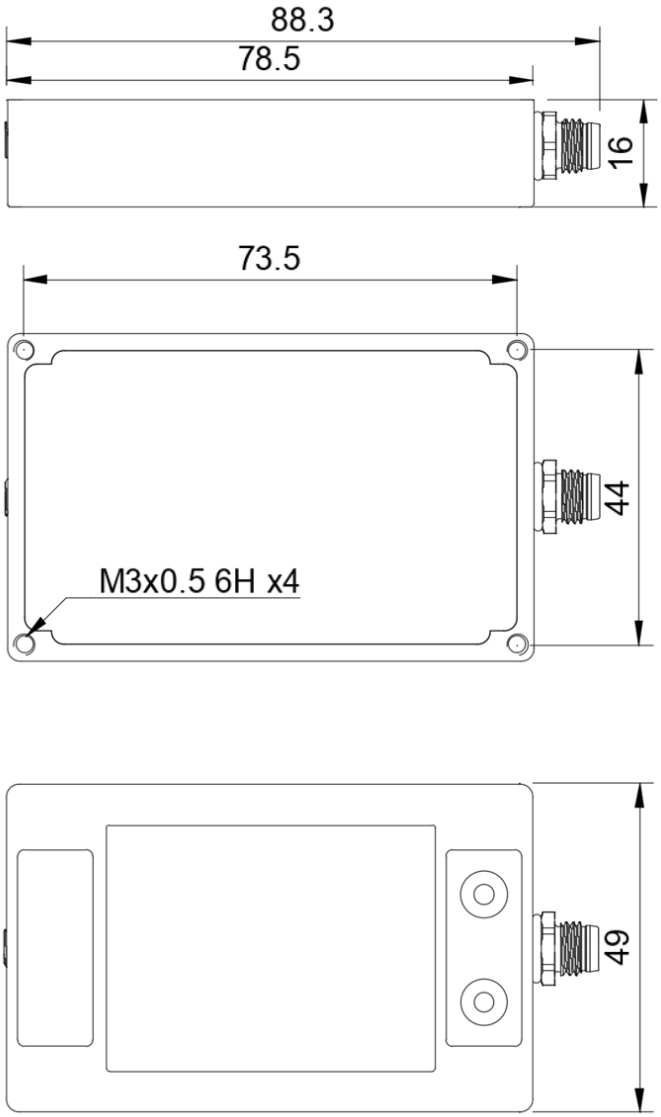


	X	Y
1	-1,70	-0,50
2	-1,08	1,45
3	1,70	-0,50
4	1,08	1,45

1 braun/*brown*
2 weiß/*white*
3 blau/*blue*
4 schwarz/*black*

Brown wire = 12VDC
Blue wire = Ground
Black wire = CAN high
White wire = CAN low

Measurements



Dimensions are in mm

Do's & Don'ts

- Install the T DASH XL with the connection on either the left or the right side, the T DASH XL will detect the orientation
- Install the T DASH XL in the cockpit at a position where the driver has a good view on it in all racing conditions
- Make sure the T DASH XL is securely mounted with help of the M3 mounting holes to avoid detachment during racing conditions
- Do not install the T DASH XL in a place where it is in direct sunlight
- Do not install the T DASH XL in a place where it is in a spray of water in wet racing conditions

SETTINGS

Connect the TDASH app

Download the TDash app from the app store. Search for 'TDash TMS' or scan below QR code.

IOS **ANDROID**

With the TDash app on the Smartphone it is possible to connect to the T DASH XL.
Stay in close range (less than 1m) from the T DASH XL.

Click the T DASH XL icon to see a list of available (in range) T DASH XL displays.

Click the T DASH XL serial number.
The serial number can be found on the T DASH XL.

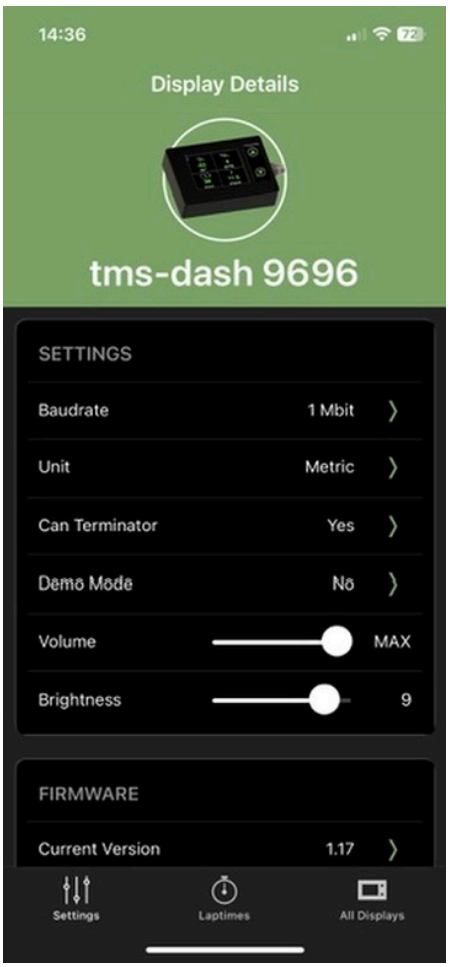
A pin code will appear on the
T DASH XL.

Note: this will not show when driving.

In the TDASH app, type the in the pin code for the T DASH XL to make a connection.
T DASH XL will show an icon on the right sight of the screen after the pin code was validated.

Change T DASH XL settings

After a connection is made, click the settings icon to see the current settings.



Baudrate
Set Baudrate of the CAN bus. By default, 1Mbit is used by Racelinks
Only change this setting when you are an expert on CAN busses and also have set the Racelink CAN bus settings to the right value.

Unit
Set display units to Metric (kilometers) or Imperial (miles).

CAN Terminator
Depending on the cable layout a 120Ω terminator resistor inside the T DASH XL can be switched on or off.

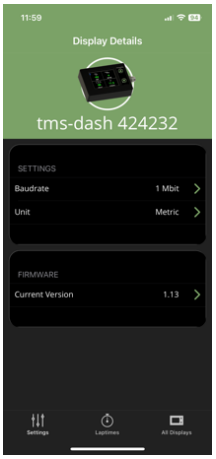
Demo Mode
When the demo mode is switched on the T DASH XL will show all available flags. The demo mode is useful to train drivers on the on-board flagging. To avoid problems the demo mode is overruled by each message coming into the T DASH XL, therefore the Racelink must be disconnected before switching on the demo mode.

Volume
The volume of audio signals from the T DASH XL can be adjusted.

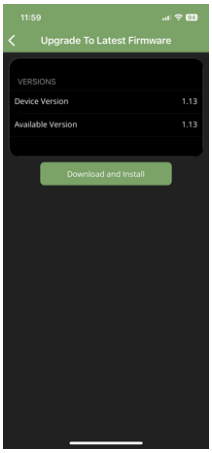
Brightness
The screen brightness of the T DASH XL can be adjusted. The screen brightness can also always be adjusted with the upper button of the T DASH XL

Firmware
The current T DASH XL firmware version is shown here.

Firmware update



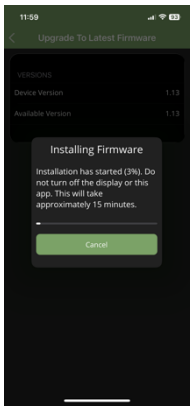
Under menu item Firmware Click ‘Current Version’.



Check if there is a newer version available.

If there is a newer version available, click ‘Download and install’

Make sure you keep the smartphone in close proximity (<20cm) of the T DASH XL and do not use other apps until the firmware installation is finished. Do not switch off the T DASH XL during this operation which may take up to 15 minutes.



After the update is finished, the T DASH XL will restart. The screen will turn blank for a few seconds.

After the update the Device version of the Firmware should be the same as the Available version. Go to settings > Current version > Firmware to check if the firmware update was successful.

STATUS BAR

In all pages but the flagging page a status bar will be active in the lower right corner of the screen. There are 3 icons:

Smartphone connection
When the TDash app is connected the smartphone icon will highlight (default light grey)

No Data connection
When a Racelink is disconnected the icon will turn red (default light grey)

No Flagging connection
When no flag status is received since start up the Flagging icon will light up with a red cross (default light grey)

BUTTONS

The upper button can be used at any time to adjust the screen brightness by clicking and holding it until the right brightness level is reached.

The lower button is used to scroll between pages by clicking it shortly. By clicking and holding the lower button possible options for the current page may appear.

PAGES

The T DASH XL has multiple pages to enable different views. By pressing the lower button, it is possible to scroll through the pages. The selected page will be memorized and will be the default page at next power up.

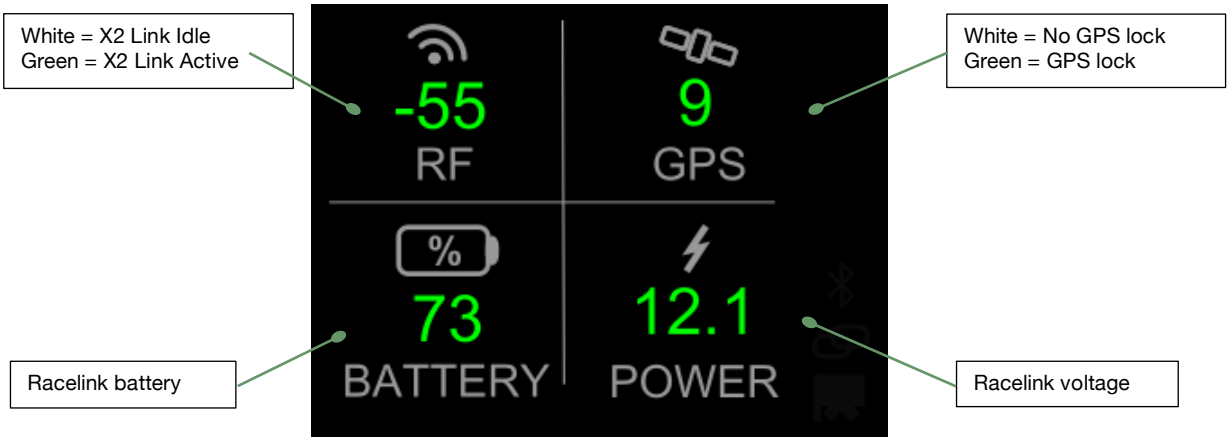
Regardless of which pages is selected, the T DASH XL will switch to the Flagging Page when a flag is received. When the flag is cleared the T DASH XL will switch back to the previous page.

When no other information is wished to be shown but flags, select the flagging page. The flagging page is designed to have no distracting information at all but flags.

RACELINK PAGE

The Racelink page shows the diagnostics on the connected Racelink. All figures should be green for a full functioning T DASH XL.
Click and hold the upper button to set the screen brightness, click and hold the lower button to set the audio volume (when the line out audio is used).

When there is no data received from the Racelink, a 'No Data' icon will show on the lower right side of the screen. Check the connections when this icon shows.



GPS
Make sure the connected Racelink has good GPS reception by placing its GPS antenna with a clear view to the sky.
A green number of GPS satellites (GPS Lock) is necessary before you go on track.

RF
Make sure the connected Racelink has good RF reception by placing its antenna with a clear view around, i.e. to the sides of the track. A white received signal RF number means that there is a MYLAPS X2 Link available. **From Racelink version 2.6:**
When this number turns green, Race control has made a connection to your Racelink.

BATTERY
The Racelink battery status is shown here. Above 30% this number will turn green.

POWER
The connected power voltage of the Racelink is shown here. Above 10V this number will turn green.

FLAGGING PAGE

When the connected Racelink receives a flag from race control, the T DASH XL will always switch to the flagging page as long as the flag is not cleared yet. For each new flag the T DASH XL will beep at the audio line out which makes it possible for drivers to have an extra awareness signal for flags.

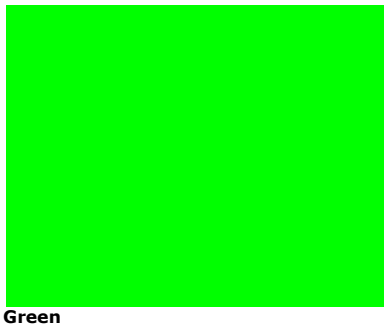
When the flag is cleared the T DASH XL shows the clear flag screen for a few seconds and after that switches back to the previous page.

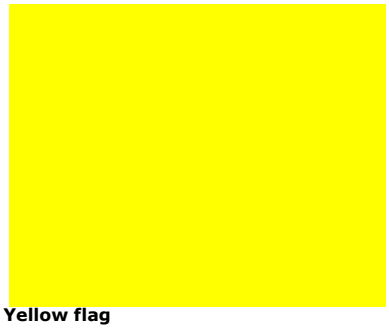
When already in the flagging page a ‘clear flag’ is shown by displaying a white dot in the lower right corner of the display. **When no other information but flagging is needed always choose the flagging page as default page.** The flagging page is designed to have no information at all but flags.

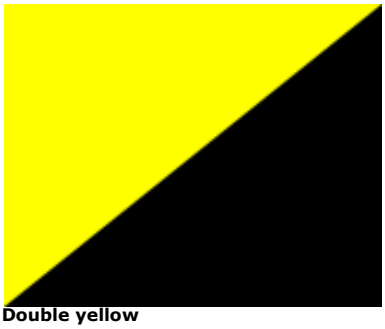
Normal racing situation when no flag is out, i.e. clear flag:

When another page than the flagging page is selected, the T DASH XL will show that page during a clear flag situation.

Example flagging screens

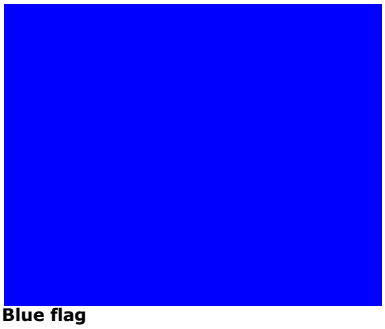

Green


Yellow flag

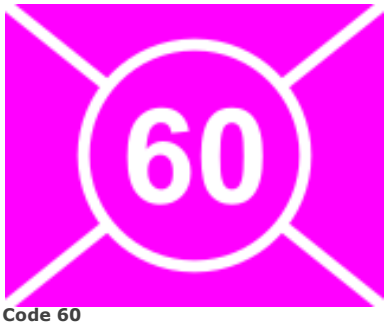

Double yellow

Full Course Yellow

Red flag

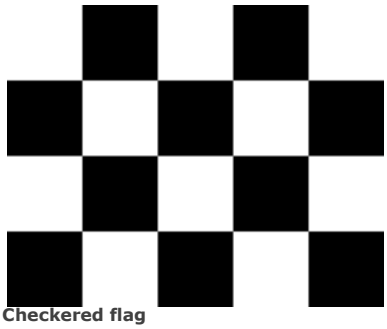

Blue flag

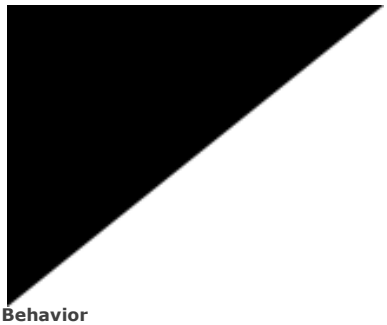
Black flag

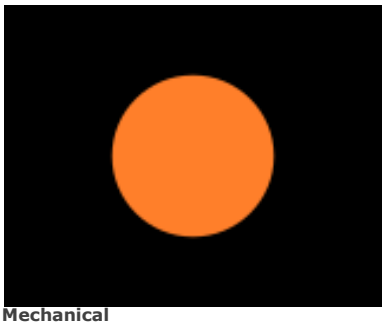


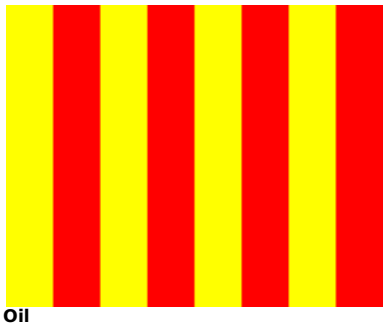
Code 60

Safety car

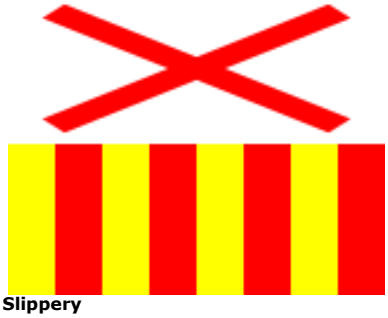

Checkered flag


Behavior


Mechanical



Oil



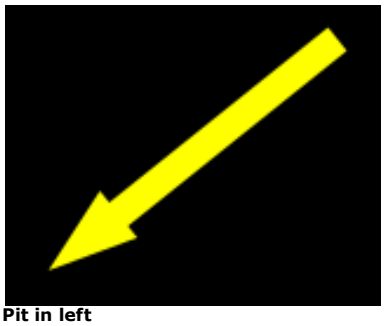
Slippery

Rain

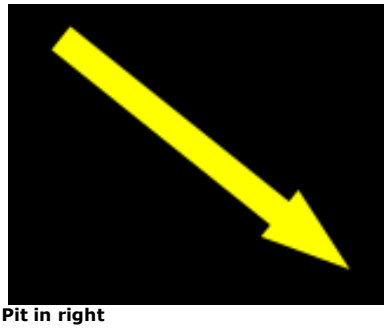
White flag

Standing start

Rolling start



Pit in left



Pit in right

Pit in closed

Next slow

Slow zone

Virtual Safety Car

Flagging interrupted

In the situation that a flag is out but the link with Race Control is lost, the flag situation is unknown and therefor the T DASH XL will show a ‘Link lost’ warning

Please be aware that as long as the link is lost the flag situation on your T DASH XL cannot be guaranteed!

Always observe the marshal posts and personnel around the track.
Pay extra attention to the marshal posts in above situations or when the T DASH XL doesn’t show any information!

Flagging not active

As long as the T DASH XL did not receive any flag from Race Control, a ‘no flagging’ icon will be shown in the lower right corner of every page.

RESULT PAGE

Depending on the Timing Service provider, official results may be distributed via the MYLAPS X2 Link system. When this service is provided the below information may be available.

For the official results, color coding like in high end race series is used:

- Yellow font = worse than previous
- White font = better than previous
- Green font = personal best
- Purple font = overall best

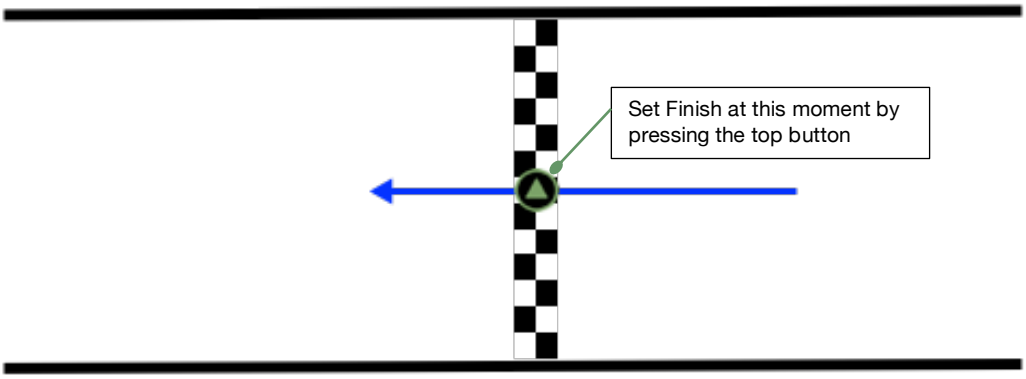
TRACK PAGE

On the track page it is possible to configure the current track in order to make the Laptimer function available based on the GNSS information coming from the Racelink.

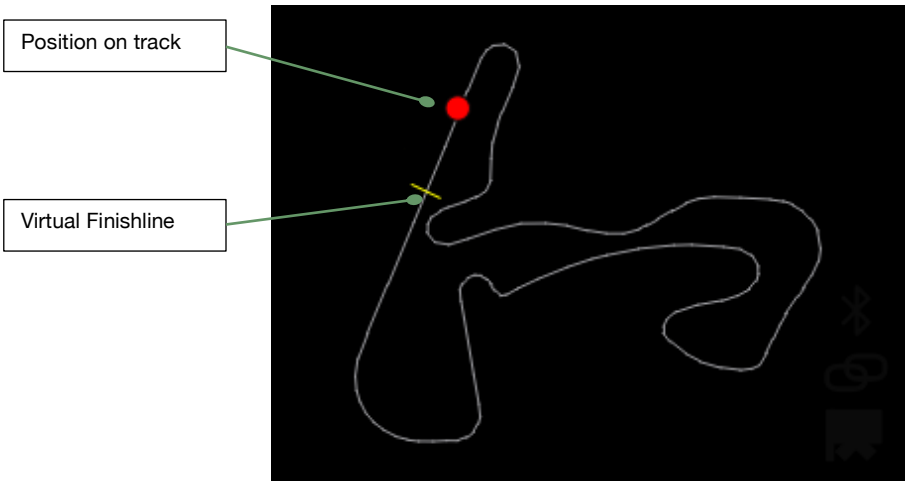
When no track is available, hold the lower button to start the track configuration by setting the finish line position first. A first 'installation lap' is needed to configure the track.

When the **'SET FINISH'** text shows in red font, GNSS accuracy is too low to set a lap trigger. Make sure your Racelink (GPS antenna) has a clear view to the sky. When **'SET FINISH'** shows in green the finish line is ready to be set.

Best performance is achieved when driving passing the finish line in a straight line in the middle of the track at relative low speed. Do not stand still when setting the laptrigger!



Once the finish line location is set, drive a full lap. The T DASH XL will 'draw' the track live including the finish line position. After 1 full lap the current track position will be shown by a red dot.

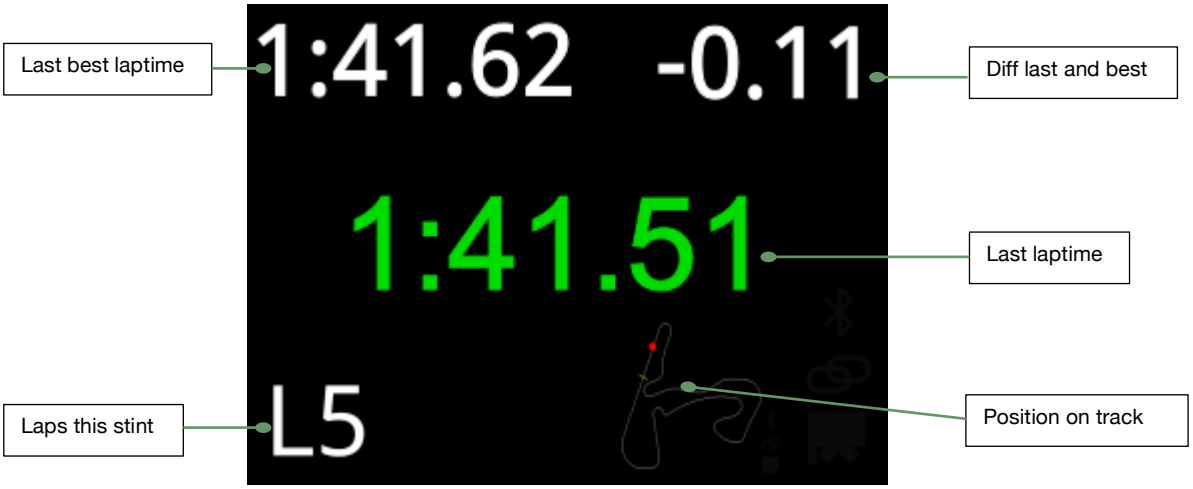


LAPTIMER PAGE

Once the track is configured the laptimer page will show laptimer information.

As laptimes will be based on enhanced GNSS positioning information, laptimes will be shown at a resolution of 1 digit i.e. 0.1 seconds in case of a connected Racelink Club and 2 digits i.e. 0.01 seconds in case of a connected Racelink Pro.

Please be aware that these laptimes are free practice laptimer results based on GNSS position and therefore might differ from the official timing results generated by the official timing system.



For the practice results, only personal color coding is used on the last laptime set:

- Yellow font = worse than previous
- White font = better than previous
- Green font = personal best

LAPTIMES PAGE

Laptimes set by the laptimer are stored in memory. The last 16 laptimes can be displayed on the Laptimes page. When more laptimes need to be reviewed, please use the TDash app.

While in the laptimes page, click and hold the lower button to start a new session.
This starts a new stint and inserts a 'STOP' in the lap times list indicating the stop between stints.

SPEED PAGE

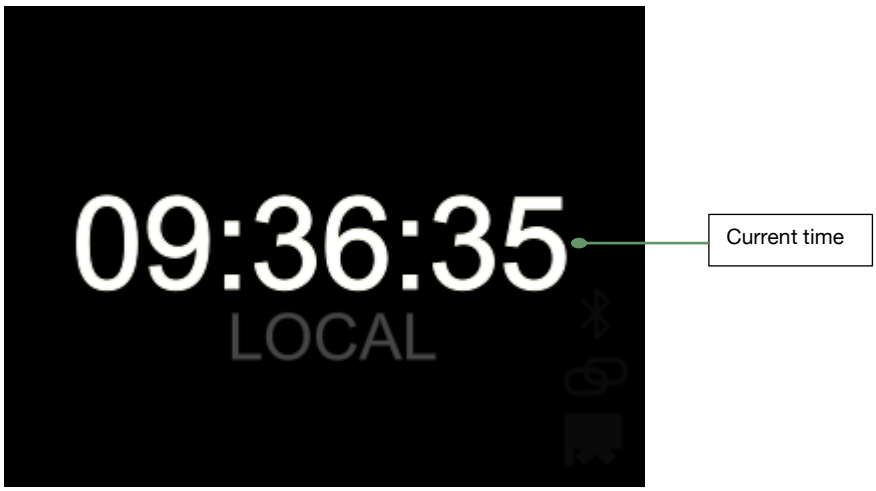
When the speed page is selected the T DASH XL will show the current speed and the maximum speed for the stint. With help of the TDash app setting ‘unit’ the speed can set to be measured in kph or Mph.

For the speed, only best color coding is used:

- Green font = personal best

TIME PAGE

When the time page is selected the T DASH XL will show the exact UTC (Universal Time Coordinated) time.
To get the correct local time of day, connect the TDash app.
The time zone of the smartphone will be used to change the UTC time to the local time of day.



SCREENSAVER

The T DASH XL will show a screen saver (moving logo) after the connected Racelink shows no movement for 30 minutes and there is no other inputs received.

SPECIFICATIONS

Dimensions	78.5 x 49 x 16mm
Weight	appr. 110 gram
Operating voltage range	7 to 16VDC typical 12VDC
Power consumption	appr. 1W, 0.08A@12V Max
Radio frequency range	2402 – 2480 MHz
Radio output power	0 dBm
Operating temperature range	-20 to 85□C
Ingress Protection	IP65, with cable connected
Humidity range	10% to 90% relative
Display	Full Color 320 x 240 IPS TFT 49 x 36.7mm view with 170 degree viewing angle 850 nits maximum brightness
CAN termination	On/Off setting via app
CAN baud rate	1Mb, 500kb, 250kb setting via app

HANDLING PRECAUTIONS

1. Since the display window is made of glass, avoid mechanical impacts such as dropping from a high position
2. If pressure is applied to the display window surface it may be damaged
3. When the surface of the display window is dirty use a dry cloth, never use a solvent as the display window will get damaged
4. When dirt like soil is in the display window it is recommended to use tape (e.g. Scotch mending tape 810) to remove the dirt before cleaning the display window with a dry cloth. This is important to avoid scratches on the surface of the display window.

Failure to observe the above precautions may void the warranty.

DISCLAIMER

This product has been designed with the utmost care. However, TMS Products B.V. accepts under no circumstances liability in any form whatsoever for damage or injury resulting from or arising out of the use of this product.

We make every effort to provide correct and up-to-date information about our products however, no liability is accepted for incomplete or incorrect information in this manual.

This product is designed, among other things, to improve safety in motorsport. However, it is only an aid to the user which, when everything is fully functional, may make the situation on a track safer. However, the user remains responsible for his own safety at all times and cannot claim any liability in case of malfunction of the product or the products linked to it.

The sale of products governed under this publication are covered by TMS Products B.V. Products Sales Terms and Conditions and can be found here:

Always keep observing the marshal posts and personnel around the track!

FCC Statement

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.

To comply with FCC RF radiation exposure limits for general population, the antenna(s) used for this transmitter must be installed such that a minimum separation distance of 20 cm is maintained between the radiator (antenna) and all persons at all times and must not be co-located or operating in conjunction with any other antenna or transmitter.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

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 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.

T DASH XL
FCC ID: 2BLBWTDSH

The FCC ID is shown for a few seconds at power up of the T DASH XL.
To view the FCC ID code again, power cycle the T DASH XL.

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