HOW-TO

How-to Configure the Hill Climb in ADU

Document version: 1.2
Firmware: 94.0 or later
Published on: 03 September 2024

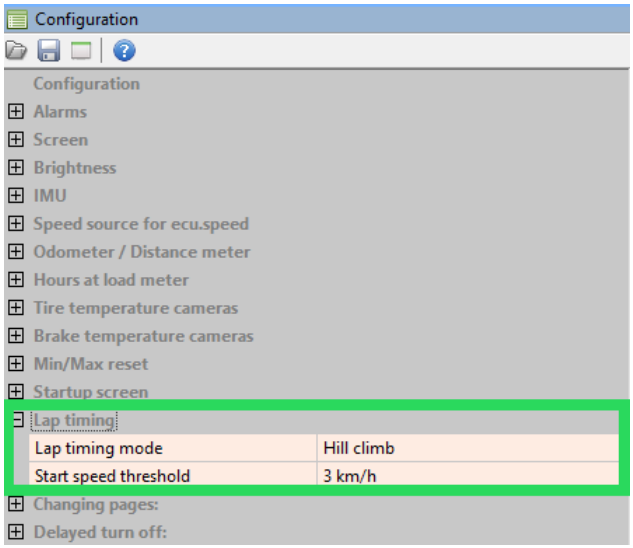
ECUMASTER

1. Description

Details about version 105.0 or later are provided at the end of the document.

Upgrade the firmware of your ADU to version 94.0 or later.

In the *Configuration* panel, change the *Lap timing mode* to the 'Hill climb'.



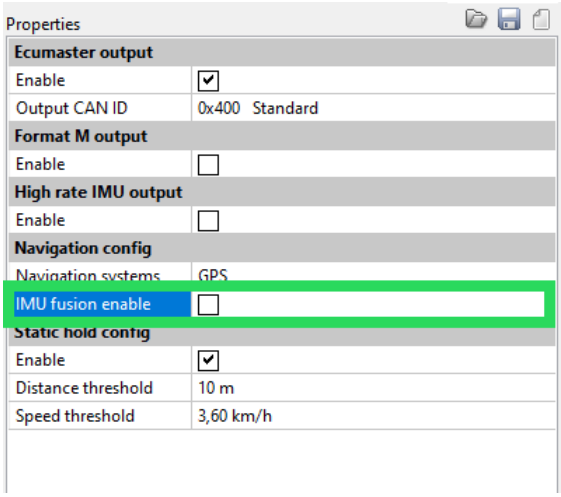
A start of an event is triggered when the vehicle speed ('ecu.speed') exceeds the *Start speed threshold*. The vehicle speed channel ('ecu.speed') is required.

Note:

We are recommending to use vehicle speed sensor (VSS) for this channel. You can still use a speed from the GPStoCAN module, but you may need to increase the *Start speed threshold* (*Lap timing* section of the *Configuration* panel).

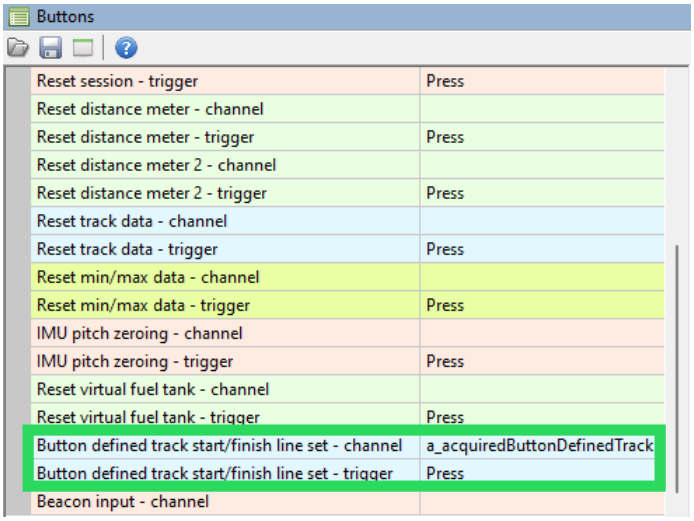
GPStoCAN V1 users:

If you are using GPStoCAN V1 as a speed source, you can consider to untick the *IMU fusion enable* option in the *Light Client* app with your GPS connected. In this way, the GPStoCAN module will use only the GPS signal (and NOT a GPS+IMU). It decrease an update frequency of your GPStoCAN V1 module to 10 Hz, but it will help to prevent jitter on the GPS speed when your car is standing at the start line.



How to configure the track in ADU memory:

1. The Button to define a track is wired to analog input A5 in the default project. In the Buttons panel, you need to define the *Button defined track start/finish line set* parameter (referred to as 'Button' in the remainder of this document).



2. Make sure your GPS is working correctly (has a fix).
3. You need to stop at the start line and press the Button
4. Drive to the finish line and press the Button again. And now your track will be defined.

How to start the lap timing:

1. Make sure your GPS is working correctly (has a fix).
2. You need to stop at the start line (the radius around the start point is 15 m).
3. The timer will start when the speed will be higher than *Start speed threshold* (default: 3 km/h).
4. Drive to the finish line and when you cross the finish line the timer will stop automatically.

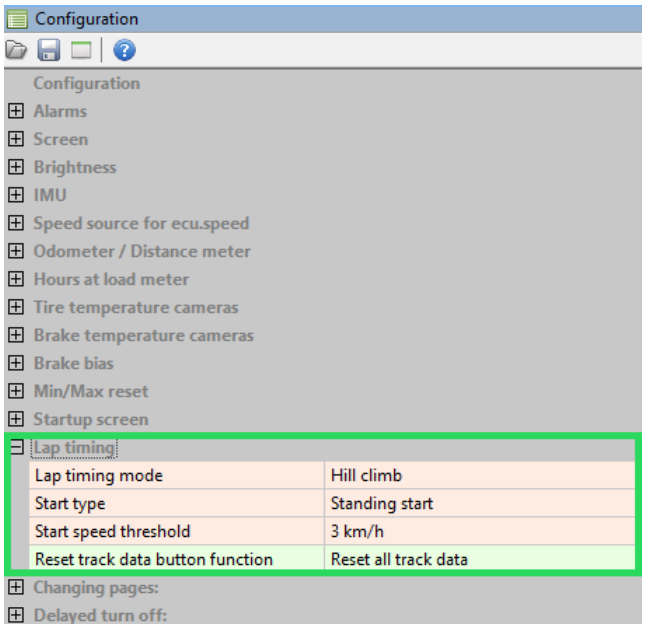
There are two diagnostics channel available: enumeration 'adu.track.lapTimingState' and 'adu.track.distanceToStart' in meters.

All racing features in the ADU are functional in Hill Climb - predicted time, gain/loss, gain/loss graph, record table, and session times.

In version 105.0 or later:

Upgrade the firmware of your ADU to version 105.0 or later.

In the *Configuration* panel, change the *Lap timing mode* to the 'Hill climb'.



Select the appropriate *Start type* mode: 'Standing start' or 'Flying start'

The vehicle speed channel (‘ecu.speed’) is required.

Start type: Standing start:
A start of an event is triggered when the vehicle speed (‘ecu.speed’) exceeds the *Start speed threshold*.

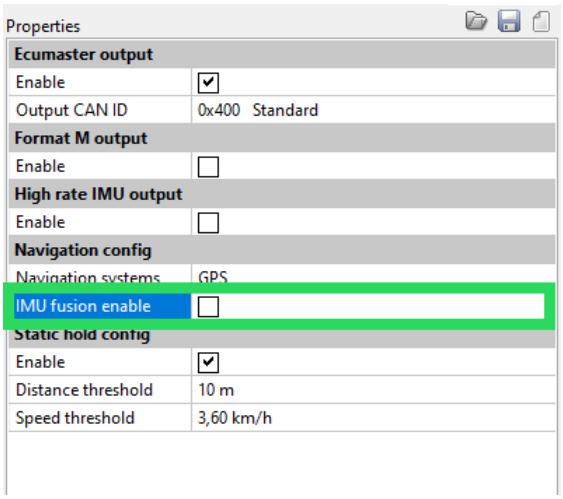
Start type: Flying start:
A start of an event is triggered when the vehicle crosses the start line.

Note:

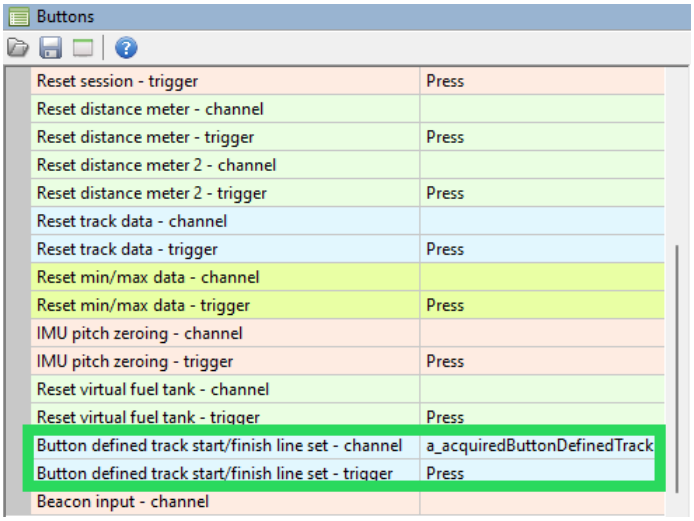
We are recommending to use vehicle speed sensor (VSS) for this channel. You can still use a speed from the GPStoCAN module, but you may need to increase the *Start speed threshold* (*Lap timing* section of the *Configuration* panel).

GPStoCAN V1 users:

If you are using GPStoCAN V1 as a speed source, you can consider to untick the *IMU fusion enable* option in the *Light Client* app with your GPS connected. In this way, the GPStoCAN module will use only the GPS signal (and NOT a GPS+IMU). It decrease an update frequency of your GPStoCAN V1 module to 10 Hz, but it will help to prevent jitter on the GPS speed when your car is standing at the start line.



The Button to define a track is wired to analog input A5 in the default project. In the Buttons panel, you need to define the *Button defined track start/finish line set* parameter (referred to as 'Button' in the remainder of this document).



Standing start

How to configure the track in ADU memory:

1. Make sure your GPS is working correctly (has a fix).
2. You need to stop at the start line and press the Button.
3. Drive to the finish line and press the Button again. And now your track will be defined.

How to start the lap timing:

1. Make sure your GPS is working correctly (has a fix).
2. You need to stop at the start line (the radius around the start point is 15 m).
3. The timer will start when the speed will be higher than *Start speed threshold* (default: 3 km/h).
4. Drive to the finish line and when you cross the finish line the timer will stop automatically.

Flying start

How to configure the track in ADU memory:

1. Make sure your GPS is working correctly (has a fix).
2. You need to press the button as you cross the start line.
3. Drive to the finish line and press the Button again. And now your track will be defined.

How to start the lap timing:

1. Make sure your GPS is working correctly (has a fix).
2. The timer will start when you cross the start line.
3. Drive to the finish line and when you cross the finish line the timer will stop automatically.

There are two diagnostics channel available: enumeration 'adu.track.lapTimingState' and 'adu.track.distanceToStart' in meters.

All racing features in the ADU are functional in Hill Climb - predicted time, gain/loss, gain/loss graph, record table, and session times.

2. Document history

Version	Date	Changes
1.0	2023.10.10	Initial release
1.1	2024.01.19	Screenshots changed
1.2	2024.09.03	Additions in version 105.0 - 'Standing' or 'Flying' Start option