



HOW-TO

How-to Configure the Hill Climb in ADU

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





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.

Properties					D		1
Ecumaster output							
Enable	✓						
Output CAN ID	0x400	Standard					
Format M output							
Enable							
High rate IMU output							
Enable							
Navigation config							
Navigation systems	GPS						
IMU fusion enable							٦
Static hold config							
Enable	✓						
Distance threshold	10 m						
Speed threshold	3,60 ki	m/h					

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).

	Duttere	
	Buttons	
D		
	Reset session - trigger	Press
	Reset distance meter - channel	
	Reset distance meter - trigger	Press
	Reset distance meter 2 - channel	
	Reset distance meter 2 - trigger	Press
	Reset track data - channel	
	Reset track data - trigger	Press
	Reset min/max data - channel	
	Reset min/max data - trigger	Press
	IMU pitch zeroing - channel	
	IMU pitch zeroing - trigger	Press
	Reset virtual fuel tank - channel	
	Reset virtual fuel tank - trigger	Press
	Button defined track start/finish line set - channel	a_acquiredButtonDefinedTrack
	Button defined track start/finish line set - trigger	Press
	Beacon input - channel	

- 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.

ECÚ MASTER

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'.

	Configuration				
D					
	Configuration				
\pm	Alarms				
Ŧ	Screen				
\pm	Brightness				
\pm	IMU				
\pm	Speed source for ecu.speed				
\pm	Odometer / Distance meter				
Ŧ	Hours at load meter				
\pm	Tire temperature cameras				
\pm	Brake temperature cameras				
Ŧ	Brake bias				
\pm	Min/Max reset				
\pm	Startup screen				
Ξ	Lap timing				
	Lap timing mode	Hill climb			
	Start type	Standing start			
	Start speed threshold	3 km/h			
	Reset track data button function	Reset all track data			
Ŧ	Changing pages:				
(H)	Delayed turn off:				

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:

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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.

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Ecumaster output						
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Output CAN ID	0x400	Standard				
Format M output						
Enable						
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IMU fusion enable						٦
Static hold config						
Enable	•					
Distance threshold	10 m					
Speed threshold	3,60 ki	m/h				

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).

Buttons	
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Reset session - trigger	Press
Reset distance meter - channel	
Reset distance meter - trigger	Press
Reset distance meter 2 - channel	
Reset distance meter 2 - trigger	Press
Reset track data - channel	
Reset track data - trigger	Press
Reset min/max data - channel	
Reset min/max data - trigger	Press
IMU pitch zeroing - channel	
IMU pitch zeroing - trigger	Press
Reset virtual fuel tank - channel	
Reset virtual fuel tank - trigger	Press
Button defined track start/finish line set - channel	a_acquiredButtonDefinedTrack
Button defined track start/finish line set - trigger	Press
Beacon input - channel	

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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