Over Voltage Protection Test

Run motor at full speed and apply full brake. The current controller time constant is set very low so that the current rises fast. Print faults in terminal and write down at which voltage they triggered. PSU normal is a 30V 30A PSU and PSU worst is a 30V 5A PSU that sinks almost no current, so we mostly rely on the capacitance in the VESC to prevent the voltage from rising too much.

Old is the 8-cycle implementation and new is the improved one. The new implementation is also tested on a VESC 6 with a fully charged 12S battery on a scooter to make sure that is doesn't trigger too easily.

Test Results

PSU Normal (Old)	PSU Worst (Old)	PSU Normal (New)	PSU Worst (New)
25.55 V	29.40 V	25.55 V	25.93 V
25.63 V	29.32 V	25.47 V	26.33 V
25.50 V	28.76 V	25.35 V	26.35 V
25.46 V	28.66 V	25.38 V	26.41 V
25.37 V	28.69 V	25.35 V	26.33 V
25.34 V	28.61 V	25.34 V	26.36 V

Test Conditions

Hardware	VESC 6 MK5
Motor	Trampa 160 KV Outrunner
PSU Voltage	20 V
Max voltage limit	25 V
Motor Current	60 A
FOC PI Time Constant	200 µS
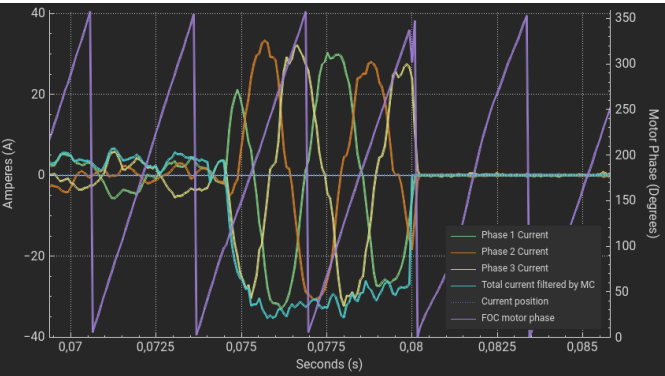
Old Current plot on normal PSU
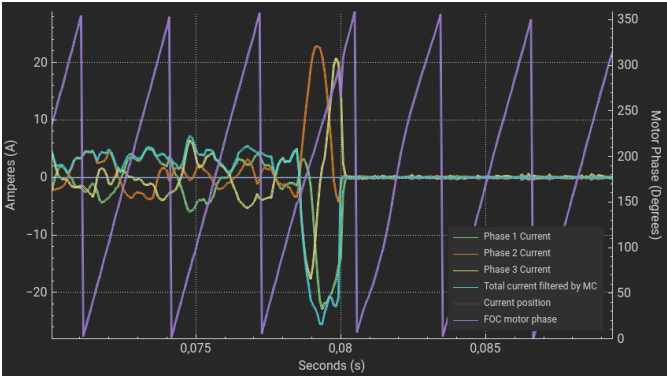
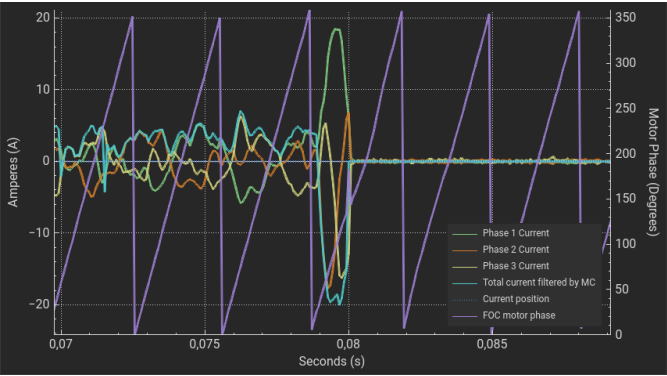**Old Current plot on worst PSU**
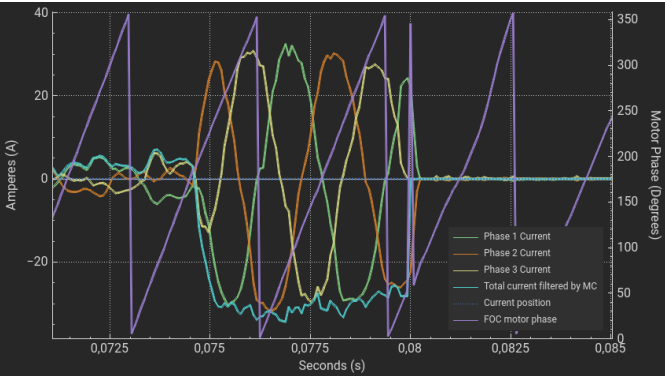
New Current plot on normal PSU

New Current plot on worst PSU