

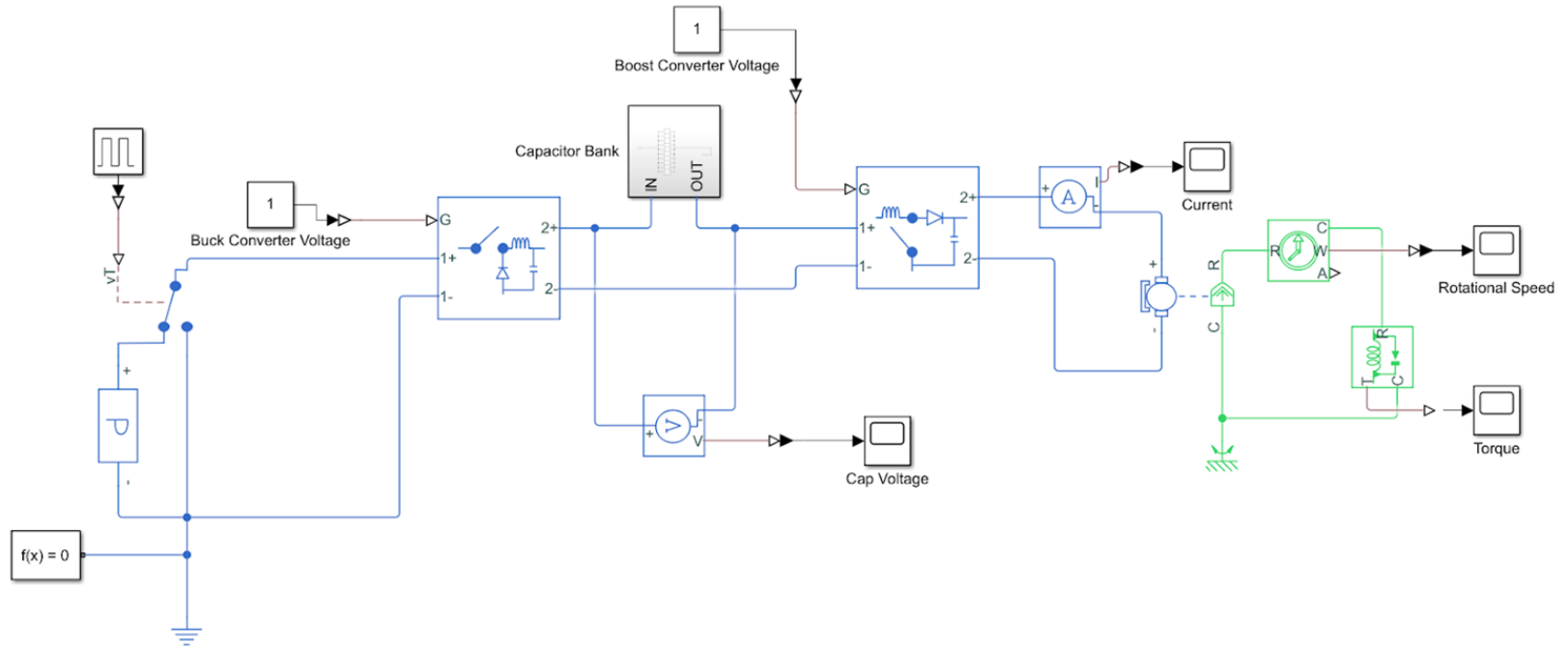


SuperCap 1/24



Simulink Group

Simulink SuperCap Block Diagram



Simulink SuperCap Block Notes

Goals 1 for model:

Validate boost converter

- Simulate multi and single motor load from discharging full supercap through boost, and without boost

Values needed to validate boost converter model:

Boost Converter

The block represents a controlled boost DC-DC converter. Select between these switching devices: GTO, Ideal Semiconductor Switch, IGBT, MOSFET, Thyristor, or Averaged Switch.

To access variant implementations of this block, right-click the block and select Simscape > Block choices.

Settings

Switching Device	Diode	LC parameters	Snubbers	Variables
Switching device: Ideal Semiconductor Switch				
On-state resistance:	0.001	Ohm		
Off-state conductance:	1e-5	1/Ohm		
Threshold voltage:	6	V		

- Converter Specs - Discord
- Hong Kong Tech MOSFET

<https://bbs.robomaster.com/forum.php?mod=viewthread&tid=7007>

<https://bbs.robomaster.com/forum.php?mod=viewthread&tid=8829>

Simulink SuperCap Block Notes

Goals 2 for model:

Balance Circuit Simulations

Simulate balancing

- Look for balancing time/delay, ripple

Values needed to validate Possible Balance Circuit:

- PSU Balance circuit



Power Control Group

Power Control SuperCap Block Diagram

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Background Layout Theme Transition

The SMM (SuperCap Management Module)

Reference diagram from User Manual

Chassis

	Charg	Off	Par
1	✓		✓
2	✗	✗	✓
3	✓	✗	

Handles:

- Chassis Power Input/Output
- SuperCap Power Input/Output
- Power regulation between the two

Handles:

- Voltage, current, and capacitance detection of SuperCap Bank
- Extra port used only before match for referee checks

Specs: 15A limit, Voltage limit

PMM (Duh):

- Limits power per spec.
- Connects to telemetry on SMM and passes it to MCM

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Power Control SuperCap Block Notes

