

MARVEL

Power Electronics Test Bench

A unique scalable and modular test bench for validation of power electronics components.

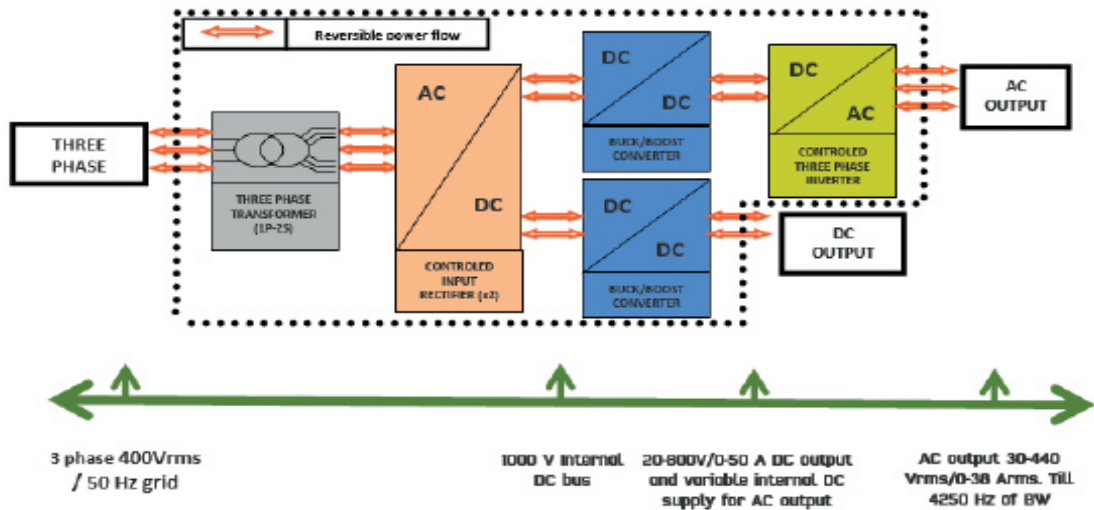
Functionalities and Advantages

- Testing all electrical powertrain components: motor, battery, inverter, charger, DC/DC converter
- Design for functional and environmental validations, end-of-line test
- Scalability to adapt various needs
- Continuous availability of test bench through fast replacement of modules
- Avoid intermodulation with control loops of device under test
- Minimize floor print of the system
- Minimize power consumption
- Very high effective availability ratio
- Avoid intermodulation with control loops of device under test

Specific Capabilities

- 1x4-quadrants AC output
- 1x2-quadrants DC output
- Master-slave operation, up to 22 modules in parallel
- High switching frequency of 70 kHz
- 5 MARVEL modules fit in a conventional 19" rack cabinet

Principle: Internal module architecture



Technical Specifications

MARVEL AC Output	Voltage range (Vac_rms between phase)	30-440 V
	Current range (Iac_rms)	0-38 A
	Icc	50 A
	Bandwidth	4250 Hz
	Maximum power per module	10 kW
	Power in a single Marvel bay (22 modules)	up to 220 kW
	Maximum rms current in power bay (22 modules)	up to 800 A
MARVEL DC Output	Voltage range	20-900 V
	Current range	0-50 A
	Icc	50 A
	Bandwidth	300 Hz
	Maximum power	10 kW
	Power in a single Marvel bay (22 modules)	up to 220 kW
	Maximum rms current in power bay (22 modules)	up to 1100 A
Usage conditions	Cooling water pressure max	4 bars
	Cooling liquid temperature	7-25 °C
	Max input grid voltage variation	±10 %
	Altitude	2000 m
	Temperature	5-40 °C
Bay and module mechanical characteristics	Bay dimensions per cabinet	240 x 100 x 220 cm
	Bay capacity	0-22 modules
	One MARVEL module dimensions (19" x 7U)	30.5 x 48 x 51.5 cm
	One MARVEL module weight	95 Kg