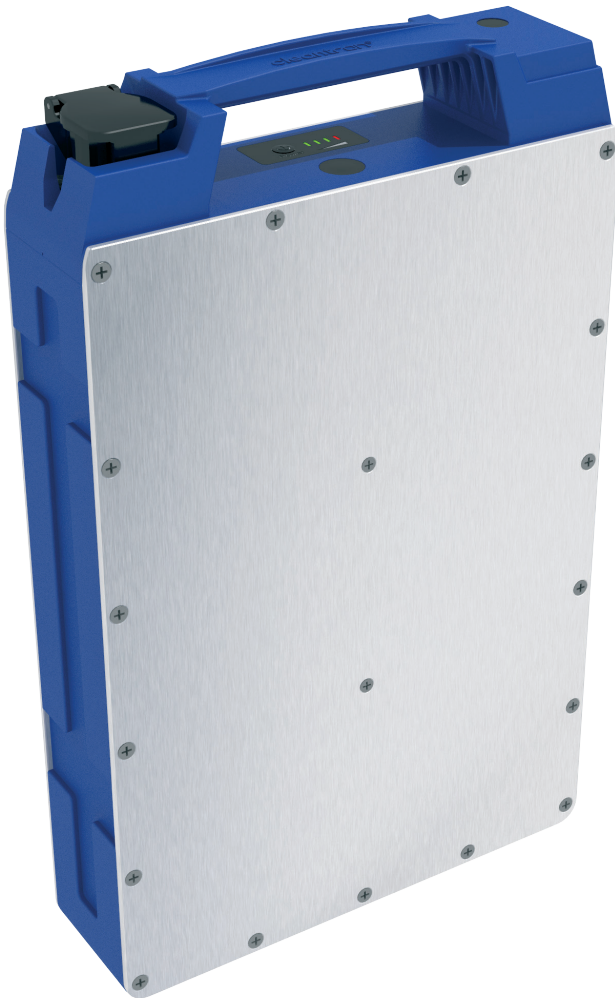


Cleantron®

Basic Module P4P

48V Portable Battery Module



Module

Capacity *	1,9 – 2,3 kWh
Weight	12 kg
Power Output	4 kW Peak Power 2,5 kW Continuous Power

Typical System (8P)

Max Capacity	18,4 kWh
Power Output	48 kW
Messages	SOC, SOH, SOF (max. Power)

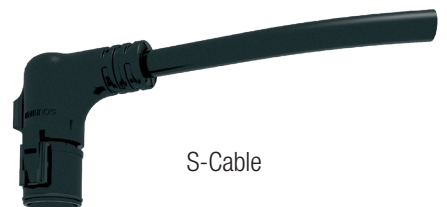
* max. rated Cell Capacity

The Cleantron P4P is a compact 48V Battery Module for electric mobility & industrial applications. The P4P can be used as a portable Battery Pack (suitable for quick battery exchange or “battery swapping”) and is suitable as a building block in a larger Modular Battery System by using up to 26 modules in parallel (for higher Current and Capacity).

P4P modules are available in 2 different capacities:

- HD (High Energy Density)
- UHD (Ultra-High Density)

P4P Modules are designed with Passive Cooling system. This P4P passive cooling works through an optimised Thermal Path using advanced heat conductive technologies like thermo-conductive plastics and gap filling technology.



S-Cable



S-Connector

General Electric Specification : 48V Portable Pack P4P

	HD	UHD			
Cells Capacity @ 1 A Discharge	37	45	Ah	+ 1 / - 2	@ 0 cycles
Nominal Capacity @ 10 A Discharge	34,5	42	Ah	+ 1 / - 2	@ 0 cycles
Minimal Cycle Life (standard setting)	1000	1000	#	full cycles	min. 70% rated capacity
Minimal Cycle Life (long life setting)	2000	1500	#	full cycles	min. 70% rated capacity
Nominal Voltage	51,1	50,9	V		
Charge Voltage Limit	58,8	58,8	V	+ 0.0 / - 0.28	not for long life settings
Nominal Charge Current	10	10	A		recommended : "CC" and "CV" model
End of Charge Current Limit	0,5	0,5	A		advised
Discharge Voltage Limit	44	44	V	+/- 1	drive system should shutdown at this Voltage
Nominal Discharge Current	50	50	A		
Peak Discharge Current	120	120	A		@ T =25°C / 10 sec
Fast Charging	No				
Parallel Switching	Yes (MPC)**				typical up to 26 P
Serie Switching (High Voltage)	No				
Certification	UN 38.3; IEC62133				for at least one Cell type
Functional Safety Compliance	IEC61508 - SIL 2				Certified for at least one cell type
Light Electric Vehicle Compliance*	EN50604-1				design suitable for Certification
Electric Vehicle compliance*	R100*				design suitable for Certification
Industrial compliance	IEC62619				design suitable for Certification
Compatibility with North America	ANSI/CAN/UL/ULC 2271				design suitable for Certification
Ingress Protection level	IP44/IP66				IP44 closed Cap; IP67 mated Connector
Dimensions	429 x 266 x 78		mm.		
Weighth	12,4		Kg.		
*) Outer Protective Casing required					
**) Multi Pack Configuration					

Safety

- Short Circuit Protection
- Over & Under Voltage Protection & Recovery
- Over-Current Protection & Recovery (Charging & Discharge Currents)
- Over-Temperature Protection & Recovery
- Warning messages (for PLC/SIL 2 compliance)
- Active blowable Fuse (for PLC/SIL 2)

Electronic

- Cell Balancing
- CAN-BUS Communication
- Data Storage
- Key Switch Function
- Firmware Customization:
 - » Long Life Settings
 - » Tailored Communication Protocols
 - » Sleep Function Settings

Modularity

- Parallel Switching up to 26 Modules
- Options:

Parallel Dis-/Charging



Hot Swap
Cycle Intelligent
Charging

Safety

By Redundancy

Benefit

Higher Currents *or*
Longer Cycle Life

Application

Fixed

Sequential Dis-/Charging



Hot Swap
Cycle Intelligent
Charging

Safety

By Redundancy

Benefit

Less Packs Needed
Less Chargers Needed

Application

Portable

Dimensions

Height	Width	Thickness	Weight
429 mm.	266 mm.	78 mm.	12 kg