

# Cleantron®

## System Module P2X

24V Scalable Battery Module



P2X based Battery System (8P)

### Module

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

### Typical System (8P)

Max Capacity	18,4 kWh
Power Output	24 kW
Messages	SOC, SOH, SOF (max. Power)

\* max. rated Cell Capacity

The Cleantron P2X is an advanced 24V modular Battery Pack. This Module is designed for applications that have more far-reaching requirements in the area of mechanical integrity, IP rating, C-rates and Parallel Modularity.

The Cleantron P2X is most suitable for electric mobility, marine & industrial applications. The P2X 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)

P2X Modules are available in 2 different capacities:

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

P2X Modules are designed with Passive Cooling system. This P2X passive cooling works through an optimised ThermalPath using advanced heat conductive technologies like thermo-conductive plastics and gap filling technology.

## General Electric Specification : 24V Basic Module P2X

	HD	UHD			
Cells Capacity @ 1 A Discharge	74	88	Ah	+ 1 / - 2	@ 0 cycles
Nominal Capacity @ 10 A Discharge	70	83	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	25,2	25,2	V		
Charge Voltage Limit	29,4	29,4	V	+ 0.0 / - 0.28	not for long life settings
Nominal Charge Current	37	37	A		recommended : "CC" and "CV" model
End of Charge Current Limit	0,5	0,5	A		advised
Discharge Voltage Limit	22	22	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)**				max 26 P
Serie Switching (High Voltage)	No				
Certification	UN 38.3; IEC62133				for at least one Cell type
Light Electric Vehicle Compliance*	EN50604-1				design suitable for Certification
Compatibility with North America	ANSI/CAN/UL/ULC 2271				design suitable for Certification
Ingress Protection level	IP65				
Dimensions	429 x 266 x 78		mm.		
Weigth	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

## 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