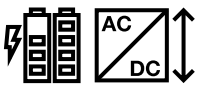
Modular, compact, flexible solution for battery-grid integration

Power Quality Products

Energy storage inverter PQstorI

Exploring new possibilities with PQstorI

Application in all areas of the power value chain



PQstorI is designed to efficiently address the needs of the fast growing battery energy storage market for applications such as peak shaving, optimization of self-consumption for solar PV installation, load leveling, frequency response, capacity firming and integration of renewables.

01 Rooftop PV solar installations

02 E-charging infrastructure

03 Commercial and industrial loads


02


03

The key features of PQstorI

The right choice for your energy storage inverter requirements

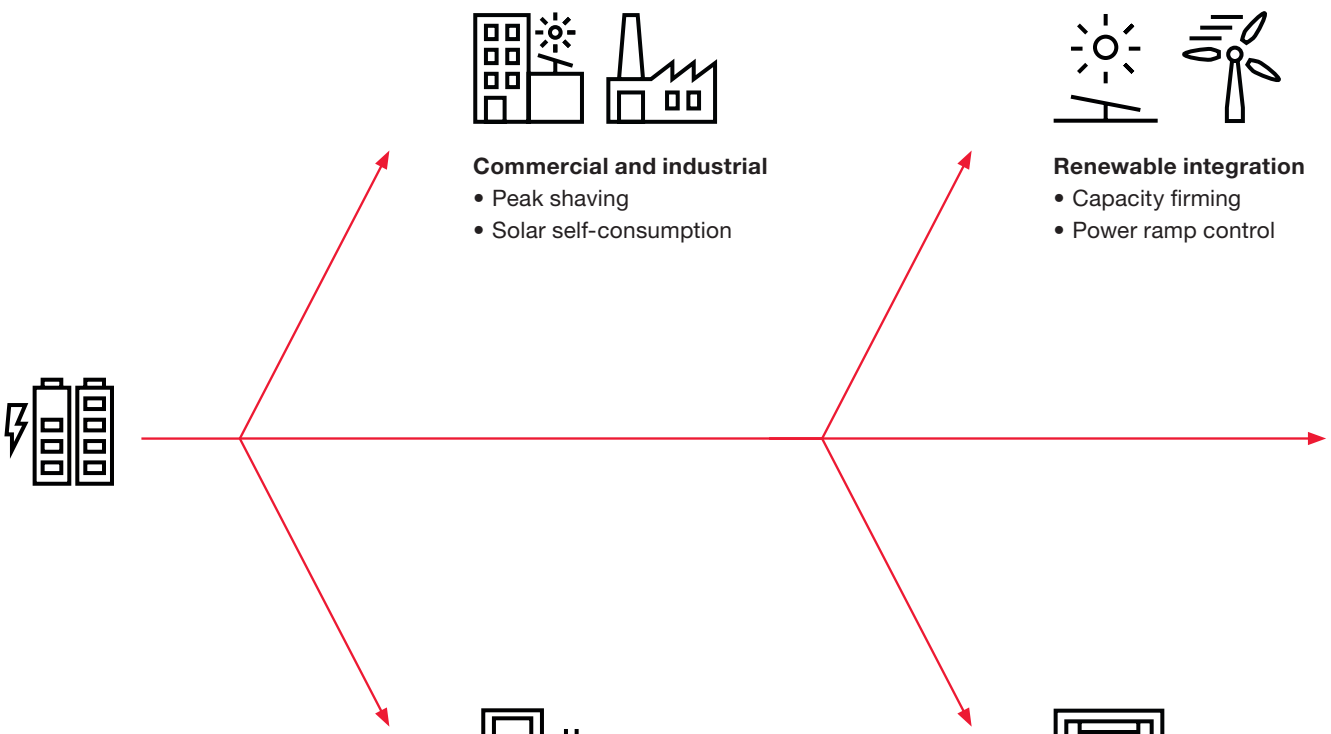
Modular and compact
PQstorI is available with a modular concept, allowing to add units in parallel for more output power. Its three level inverter offers a compact design that fits all your needs while optimizing space requirements.

Flexible and easy to install
PQstorI can operate with most of the third party controllers that communicate over MODBUS TCP/IP protocol. It provides flexibility to the system integrators because of its easy mounting and connection features.

Enhanced communication features
Wi-Fi enabled modules allow users to monitor and set parameters via smartphone or computer.

PQconnecT, a DIN rail mounted Modbus TCP/IP to CAN converter facilitates communication with external Modbus TCP based controllers.

PQstorI - Applications



Commercial and industrial
- Peak shaving
- Solar self-consumption

Renewable integration
- Capacity firming
- Power ramp control

E-mobility infrastructures
- Grid integration
- Peak shaving

Grid services
- Frequency regulation
- T & D deferral investment

Less is more

Ultra-compact and flexible design with state-of-art features

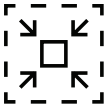
PQstorI is offered as a compact module rated 30 kW. One or more of these modules can be mounted in a cabinet. Optionally, PQstorI is available as a wall-mounted version as well.

PQstorI - M - Module
- Modular design: Suitable for OEMs and system integrators
- Compact: Can be integrated into a small cubicle, either vertically or horizontally
- Low losses: Reduced losses and in-built forced air cooling

PQstorI - WM - Wall-mounted
- Fits well where indoor storage of small power is needed
- Easy to install thanks to wall-mounting kit
- Silent solution: <65 dB, perfect solution for installing in commercial buildings

PQstorI - Higher flexibility. More reliability.

Adaptable



Compact
Small footprint

Modular
Mix & match
30 – 480 kW

Compatible
Works with majority third party controllers

Configurable
Module, wall-mounted or standalone cabinet

Efficient

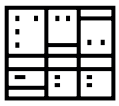
3-level inverter
Energy efficient and compact

Very low losses
Best-in-class energy efficient design

Segregated cooling
Dedicated cooling fans for reactors and control parts

Easy to operate

Wi-Fi enabled
Control through PC or smartphone



Connectivity
Modbus TCP interface for monitoring and control

01 PQstorI - M Module

02 PQstorI cabinet with HMI

PQstorI

Technical specifications

Specifications	PQstorI - M Module	PQstorI - WM Wall-mounted
Electrical characteristics		
Connection method	3P3W+PE (AC grid tied connection side)	
Network voltage (+/ - 10%)	208 - 415 V	
Network frequency (+/ - 5%)	50 Hz	
Rated power (at 400 V)	30 kW	
Line current rating per base unit (A)	43 A	
DC Energy source connection side		
DC voltage (min)	620 V (at 400 V AC) [1]	
DC voltage (max)	830 V (890 V with derating on power)	
DC current	52 A	
Installation aspects [2]		
Ambient temperature	-10°C to 50°C with auto-derating depending on DC voltage and temperature	
Storage temperature	-25°C to 70°C during storage	
Cooling	Forced air ventilation (replaceable fans)	
Humidity	Max. 95% non-condensing during operation Max. 85% non-condensing during storage	
Pollution Degree	PD2	
Over-voltage Category	OVC III (AC) OVC II (DC)	
Altitude	Indoor installation in clean environment at 1000 m (up to 2000 m with 1% derating for each 100 m above 1000 m)	
IP protection	IP20 from front access	IP30
Noise	< 65dB @ 1 m	
Performance specifications		
Efficiency	Typically 98%	
Equipment losses	<2% of the equipment power typically	
Voltage accuracy	< ± 1%	
Output THDi	≤ 3%	
Power factor	1 to -1, capacitive to inductive, continuously adjustable	
Frequency accuracy	< ± 0.01Hz	
Power accuracy	< ± 2% kW/kVar	
Overload capability	None	
Inverter technology	Three level inverter	
Switching frequency of semiconductors	18 kHz	
Parallel operation	Up to 16 modules can be combined in parallel, having a common DC bus with one unit functioning as master	
Redundancy	Any unit can become a master (defined as the lowest ID that is operational) In case of failure, other unit takes the lead as master	

1. For more information on DC voltage corresponding to different AC voltages, please refer to the O&M Manual 9AKK108467A8598, or connect with your Hitachi Energy representative
2. Environment conditions 3K20, 3K21, 3K22, 3B1, 3S5 and 3M11 as per IEC 60721 3-3 (2019)

Specifications	**PQstorI - M Module**	**PQstorI - WM Wall-mounted**
Interface/ communication		
Wi-Fi communication	Web server on smartphone or computer for simple diagnostics and parameters setup	
USB	With dedicated optional software (servicing/ programming)	
RJ12	For CAN bus communication between PQconnecT and other modules	
2x 24Vdc inputs	1 for Emergency stop 1 for external supply	
230 Vac Dry contact relay output	4 x NO, for control of external grid contactor/ breaker (max. 250 Vac)	
PQconnecT	Dimensions (mm): 78 x 25 x 94 Protection: IP20 Communications: CAN: RJ12 - 500 kBit/s or 1MBit/s and Ethernet: 10/100 Mbit, full or half-duplex, HP Auto-MDIX support I/O: 1 relay output, normally open (NO), 5 A, 30 V DC	
Mechanical aspects		
Mounting	Modules, suitable to integrate into a cabinet on draws or as part of a rack system with push connectors	Wall-mounted
Approximate dimensions (W x D x H)	435 x 459 x 130 mm	438 x 199 x 517 mm
Weight	22 kg	25 kg
Color	Surface treated metal frames Front side painted RAL 7035	Surface treated metal frames
Fixation	Special kit allows module to be integrated into cabinet	Via wall-mounting kit
Cable entry	Rear for power cables Front for control cables	Top for power cables Bottom for control cables
Certification		
Declaration of confirmity	CE and UKCA	
Compliance with standards		
General construction and safety aspects for PQstorI - M	EN 62477-1 (2016) "Safety requirements for power electronic converter systems and equipment"	
EMC immunity	EN/IEC 61000-6-2, Industrial level	
EMC emissions	EN/ IEC 61000-6-4, Class A	
Grid code standards		
	EN 50549-1 (2019); EN 50549-2 (2019)	
	VDE-AR-N 4105:2018-11; VDE-AR-N 4110:2018-11 + A1:2022-03	
	Priloha 4: Types A and B1	
	TR 3.3.1 (2019): Types A and B	
	ENA EREC G99 Issue 1 - Amendment 9 (2022): Types A and B	