



TS-I HV 80

The commercial and industrial all-rounder

TESVOLT
THE ENERGY STORAGE EXPERTS



FLEXIBILITY NOW AND IN THE FUTURE

Not only do our TS-I HV 80 storage systems offer easy modular configuration as they are purchased – you can also add further IPUs to increase output or another TS-I HV 80 battery cabinet at any time.



MAXIMUM SAFETY

Prismatic battery cells are incredibly durable, safe and powerful, particularly in comparison to round cells. TESVOLT uses Samsung SDI cells and offers a performance guarantee of 10 years on the battery modules.





LONG LIFESPAN

The lifespan of a battery has a huge impact on its economic efficiency. Our storage system features outstanding performance: all components are designed to last 8,000 cycles or offer a 30-year lifespan.



HIGH PERFORMANCE

WITHOUT COMPROMISE

The TS-I HV 80 storage systems can store energy very quickly, and release it again just as quickly. With a continuous power rating of 1C, the storage system is optimised for professional use in commercial and industrial applications, and for ancillary services.

A POWERHOUSE

FOR ALL PURPOSES

Our battery storage system can be optimally adapted to suit every application.

The TESVOLT TS-I HV 80 is the first battery storage system with an integrated inverter and TESVOLT energy management system. Whether to increase self consumption, to cut peak loads, or for on-/off-grid use, the TESVOLT TS-I HV 80 is not only the perfect energy storage solution for every application but also provides sustainable local grid quality due to active filter technology. It is extremely robust and well suited to the hardest tasks. Thanks to high-quality battery cells from the automobile industry and innovative technologies, such as the Active Battery Optimizer, our TESVOLT TS-I HV 80 storage system is one of the most efficient and durable products on the market.

TESVOLT PCS BATTERY INVERTER AND TESVOLT ENERGY MANAGEMENT “TESVOLT ENERGY MANAGER”

TESVOLT TS-I HV 80 storage systems are fitted with an integrated 3-phase battery inverter (TESVOLT PCS). The TESVOLT PCS is available with up to four inverter modules (IPUs), can be upgraded at a later date and can be operated in parallel with up to five other cascaded TESVOLT PCS systems. In combination with the innovative TESVOLT energy management system (TESVOLT Energy Manager), TESVOLT TS-I HV 80 systems adapt perfectly to

the requirements of trade and industry. TESVOLT Energy Manager offers not just the most diverse, combinable range of applications, it also enables comprehensive monitoring through the myTESWORLD portal, intelligent consumer control and improved quality of power supply. This flexibility increases the sustainability of your TESVOLT battery storage system and, thanks to multi-use application, its profitability as well.

BASIC FUNCTIONS – USE THE PORTAL FOR FREE*

	Applications	Availability	Project-based only (incurs additional project costs)
Self-consumption optimisation	Use more energy from renewable sources and minimise feed-in	Q1/2021	
Off-grid	Create your own power grid independently of energy suppliers, for example by combining a photovoltaic installation and TESVOLT storage solution	Q1/2021	X
Physical peak shaving	Shave consumption peaks and cut demand rate costs	Q1/2021	
Back-up power	The storage system immediately takes over the power supply in the event of a power outage	Q1/2021	
Grid system services	Remote control of active and reactive power	Q1/2021	
Zero feed-in	Fulfills the normative guidelines (Germany) stipulating that no power can be fed into the utility grid	Q1/2021	
Generation control	Generators such as CHPs can be actively switched on or off and regulated for greater independence from energy suppliers	Q3/2021	
Load control	Actively switch consumers on or off depending on generation and consumption	Q3/2021	
PV-diesel hybrid optimisation	TESVOLT solutions offer the option of making the utility grid available while counterbalancing production and consumption peaks. This keeps diesel generators operating as efficiently as possible to minimise diesel costs	Q3/2021	

* Our current terms of use apply.

PRO FUNCTIONS – USE FUNCTIONS FOR A FEE*

	Applications	Availability	Project-based only (incurs additional project costs)
RLM peak shaving	A smart way of reducing consumption peaks at 15-minute intervals and making full use of storage systems	Q1/2021	
Time of Use	Time-dependent use of functions	Q3/2021	
Power quality	Keep the utility grid in a constant, correct frequency range. Harmonics are counterbalanced dynamically, improving the power quality in the system	Q1/2021	X
Multi-use (SCO & ToU)	Self-consumption optimisation with concurrent Time of Use function	Q3/2021	
Multi-use (PLS & ToU)	Peak shaving (RLM or physical) with concurrent Time of Use function	Q3/2021	
Multi-use (SCO & PLS)	Self-consumption optimisation with concurrent peak shaving (RLM or physical)	Q1/2021	
Micro-grid	Supply a small power grid with or without connection to a public utility grid; here, the battery makes part of the grid available when only a limited grid connection is available	Q3/2021	X
Charging station control	Smart interconnection of the charging station and central controls via the TESVOLT Energy Manager. This means charging processes can be digitally recorded and controlled	Q3/2021	for more than
Forecast-based charging	Depending on the weather forecast, curtailment losses from photovoltaic installations are avoided and self-consumption is optimised	Q1/2021	
Ancillary services	Contribute to short-term utility grid stabilisation (primary operating reserve POR, secondary operating reserve SOR, tertiary control TC)	Q1/2021	X
Direct marketer interface	Gives access to direct marketers for the purposes of marketing electricity from renewable energy sources.	Q3/2021	
Semi-off-grid operation	Consumers are fed either from the grid alone, or else up to 100% from a storage system and renewable sources. In-house energy sources are never connected to the public utility grid.	Q3/2021	X

** Requires annual, fee-based subscription at EUR 3/kWh. Our current terms of use apply.



BATTERY MODULE

Every battery module has its own Active Battery Optimizer (ABO) that can be separated from the module in a few easy steps, for example, for servicing.



SAMSUNG SDI CELLS

Prismatic cells from Samsung SDI are extremely safe. For example, the NSD (Nail Safety Device) ensures that the cell will not catch fire even when penetrated with a metal nail.

- 1 Active Power Unit
- 2 Battery module
- 3 Overcharge safety device

- 4 Vent
- 5 Fuse
- 6 Active Battery Optimizer



TESVOLT PCS BENEFITS

- **Black-start capable:** The battery inverter can be operated off-grid or supply back-up power in the event of power outage.
- **Active filter:** Stabilise your voltage and frequency while reducing load imbalance, reactive power and harmonics in your local utility grid.
- **Modular principle:** The TESVOLT PCS consists of up to four IPU inverter modules (of 85 kW each, can be upgraded at any time).
- **Control speed:** Response time to power requirements in the network in milliseconds.
- **Maximum power density:** Potential for up to 340 kW with a footprint of just 0.54 m².

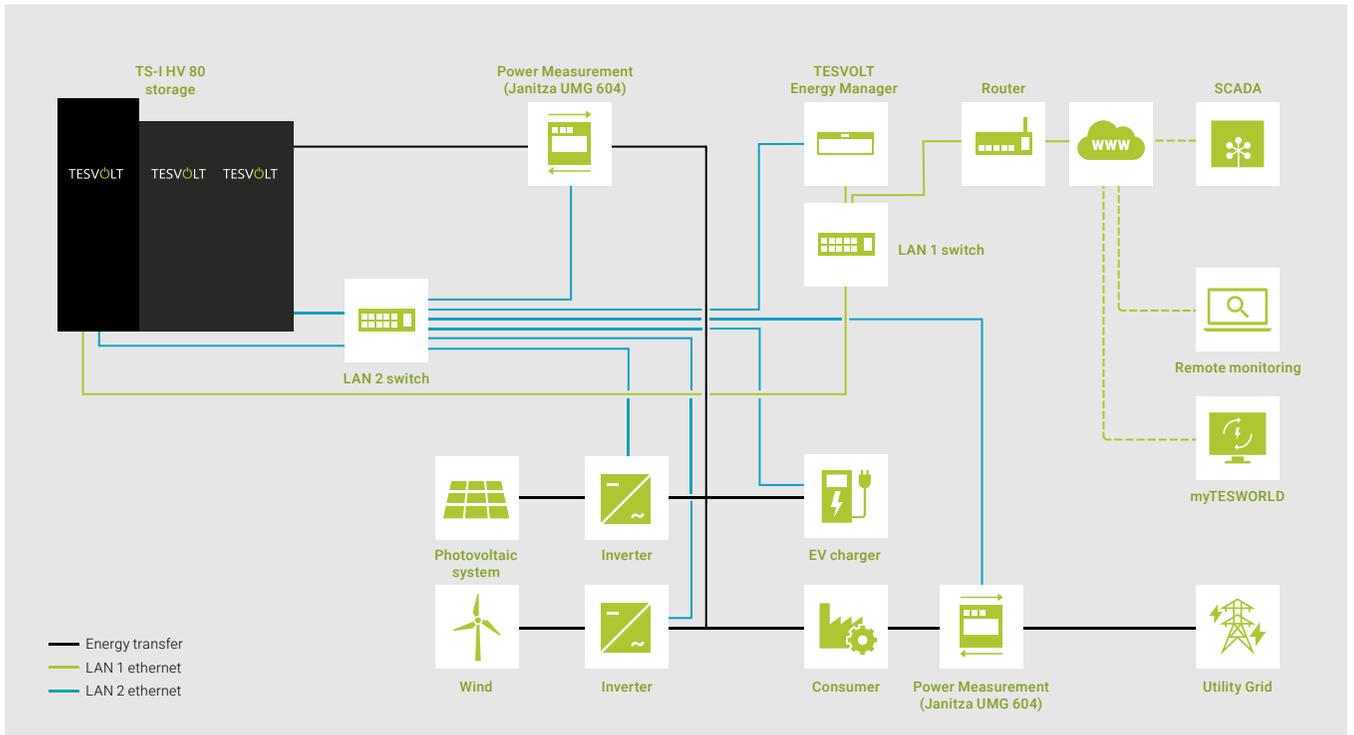
TESVOLT ENERGY MANAGER BENEFITS

- **Universal applications:** Off-grid, back-up power, peak shaving, self-consumption optimisation, multi-use, power quality, time of use, forecast-based battery charging, load control, generation control, ancillary services (e.g. PBP)
- **Multi-use applications:** Combine various applications such as self-consumption optimisation, peak shaving, time of use, back-up power, etc.
- **myTESWORLD:** Manage and control the function and savings of your battery storage system/inverter at any time.
- **Permanently flexible:** Add new functions whenever you want.

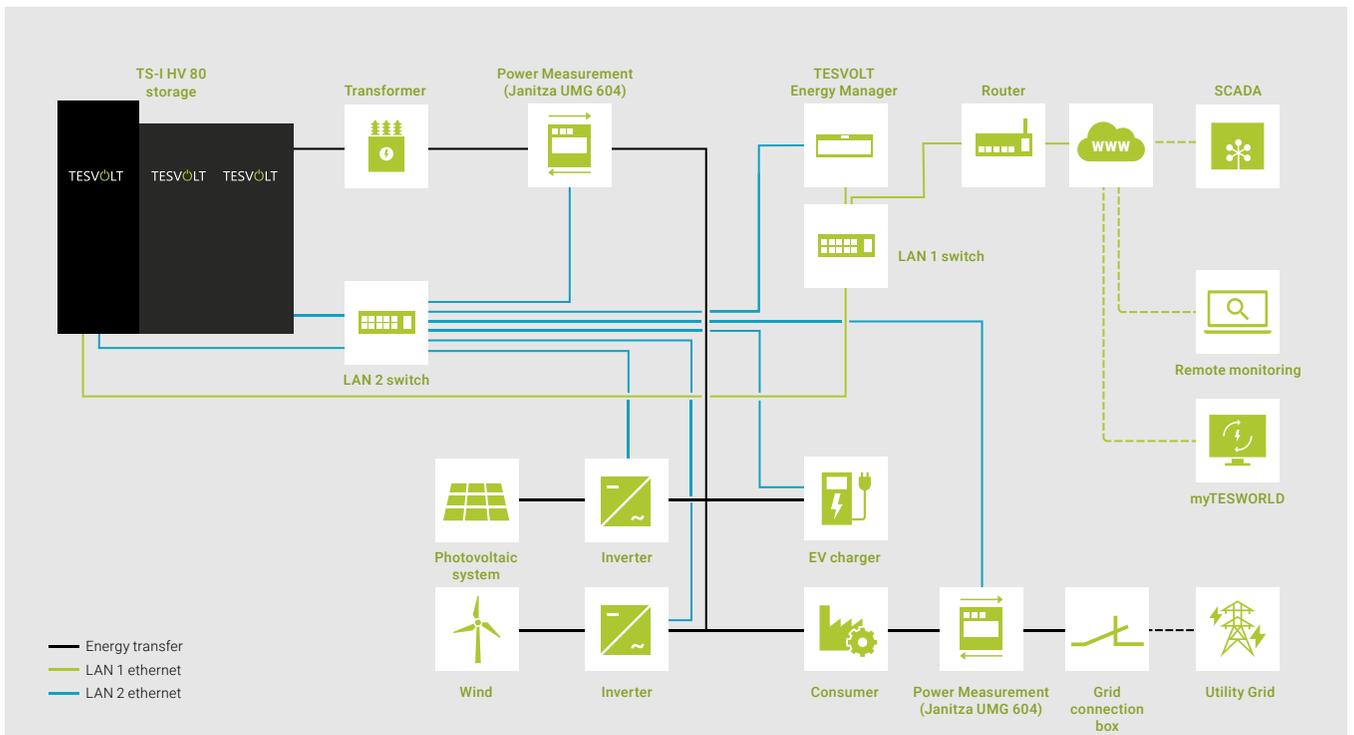


TESVOLT PCS with four inverter modules (IPUs)

SYSTEM STRUCTURE ON-GRID



SYSTEM STRUCTURE BACK-UP/ OFF-GRID



TECHNICAL SPECIFICATIONS TESVOLT TS-I HV 80

Energy for each TS-I HV 80 battery system (16 battery modules)	76 kWh	
C-rate	1C	
Cells	Lithium NMC prismatic (Samsung SDI)	
Max. charging, discharging current	94 A	
Cell balancing	Active Battery Optimizer	
Cycles @ 100% DoD 70% EoL 23°C +/- 5°C 1C/1C	6000	
Cycles @ 100% DoD 70% EoL 23°C +/- 5°C 0.5C/0.5C	8000	
Efficiency (battery)	up to 98 %	
Self consumption (standby)	5 W (without battery inverter)	
Operating voltage	761 to 930 V DC	
Operating temperature	-10 to 50 °C	
Humidity	0 to 85 % (non-condensing)	
Altitude of installation site	< 2000 m above sea level	
Dimensions (H x W x D)		
Certificates/standards	Cells	IEC 62619, UL 1642, UN 38.3
	Product	CE, UN 38.3, IEC 62619, IEC 61000-6-2/4/7, BattG 2006/66/EC
Warranty	10-year performance guarantee, 5-year system guarantee	
Recycling	TESVOLT offers free return of batteries from Germany	
Total weight	(16 battery modules, 2 racks)	823 kg
	Weight per battery module rack	36 kg 120 kg
Protection class	IP 20	
Battery specification as per DIN EN 62620:2015	IMP47/175/127/[14S]E/-20+60/90	

TECHNICAL SPECIFICATIONS TESVOLT PCS

	1 independent power unit (IPU)	2 IPUs	3 IPUs	4 IPUs
Rated effective power	75 kW / 85 kW*	150 kW / 170 kW*	225 kW / 255 kW*	300 kW / 340 kW*
Rated apparent power	75 kVA / 87 kVA*	150 kVA / 173 kVA*	225 kVA / 260 kVA*	300 kVA / 346 kVA*
Rated AC current	125 A	250 A	375 A	500 A
Rated DC current	140 A	280 A	420 A	560 A
DC short-circuit current (< 1 s)	238 A	476 A	714 A	952 A
Operating voltage AC	400/480 V +/-10 %			
Grid frequency	50/60 Hz			
DC voltage range	680 to 1200 V DC			
Dimensions (H x W x D)	2200 x 820 x 660 mm			
Max. efficiency	97.8 %			
Operating temperature	0 to 40 °C			
Weight	approx. 390 kg	approx. 530 kg	approx. 670 kg	approx. 820 kg
Protection class	IP 20			
Communication	Modbus TCP/IP			
Topology	transformerless			
Certificates/standards	CE, EN 50178, EN 61439-1/2, EN 61000-6-2/4, EN 55011			
Noise level	Max. 83 dB(A)			

* Maximum power limit of inverter. The power depends on the connected battery configuration. Please refer to the system configuration table for the output variants by number of connected batteries.

