Solar inverters

ABB PV + Storage
REACT-3.6/4.6-TL
3.6 to 4.6 kW

PV energy, combined with energy storage systems, can help increase self-consumption and energy self-sufficiency*.

One of the biggest challenges with solar energy is that it is unpredictable and its usage is not completely discretionary. The solution is to combine energy storage and load management capability with a traditional PV inverter.

In this way self-consumption and energy self-sufficiency can be improved to a further level.

*Self-consumption is how much PV energy is used at home and not exported to the grid with respect to the total energy production.
Energy self-sufficiency is how much PV energy is used at home and not exported to the grid with respect to the total energy consumption.

The advantages of a single, fully integrated device

- Coordination of all the energy flows with the goal of aligning PV energy production and home consumption
- Battery management and battery life are optimized
- One user interface, with remote capability, to monitor renewable energy production and manage home loads

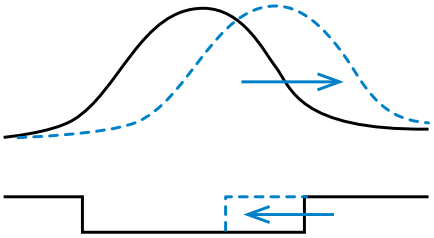
Highlights

- The REACT-4.6-TL (Renewable Energy Accumulator and Conversion Technology) is a PV single-phase grid connected inverter able to store energy in a 2.0kWh useful capacity Li-Ion battery integrated within the same product enclosure, expandable up to 3x
- All features found in our family of string inverters are maintained: double fast MPPT, broad input voltage range, top class efficiency with TL topology, compactness, installation flexibility
- Up to four onboard load management outputs are included as well as an auxiliary AC back-up output for off grid capability in case of a black out

REACT-3.6/4.6-TL

Additional highlights

- The product is designed for a long life cycle with a 10 year expected battery life thanks to the Li-Ion technology
- Storage capacity can be further expanded up to three times adding further battery units

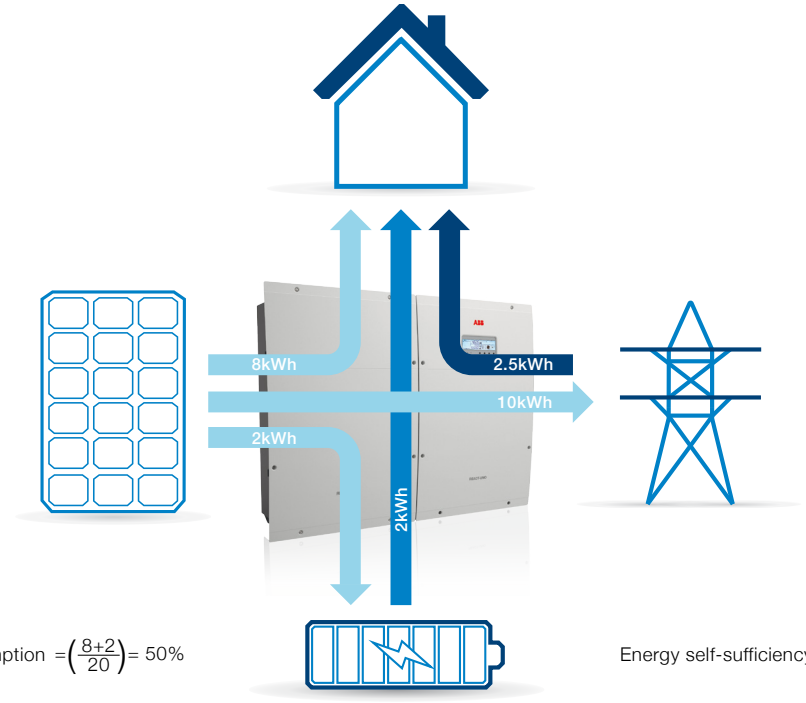


Align production to consumption

Technical data and types

Solar and storage inverter system	REACT-3.6-TL	REACT-4.6-TL
System components	REACT-UNO-3.6-TL	REACT-UNO-4.6-TL
	REACT-BAT-AP1	
	REACT-MTR-1PH (or -3PH)	
Solar and storage inverter	**REACT-UNO-3.6-TL**	**REACT-UNO-4.6-TL**
Input side		
Absolute maximum DC input voltage ($V_{max,abs}$)	600 V	
Start-up DC input voltage (V_{start})	200 V (adj. 120…350 V)	
Operating DC input voltage range (V_{dcmin}…V_{dcmax})	0.7 x V_{start}…580 V (min 90 V)	
Rated DC input voltage (V_{dcr})	360 V	
Rated DC input power (P_{dcr})	5000 W	6000 W
Number of independent MPPT	2	
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	2500 W Linear derating [520V≤V_{MPPT}≤580V]	3000 W Linear derating [520V≤V_{MPPT}≤580V]
MPPT input DC voltage range ($V_{MPPTmin}$ … $V_{MPPTmax}$) at P_{acr}, not operative battery	160…520 V	180…520 V
Maximum DC input current (I_{dcmax}) / for each MPPT ($I_{MPPTmax}$)	12 A / 24 A	13.5 A / 27 A
Maximum input short circuit current for each MPPT	15.0 A	
Number of DC inputs pairs for each MPPT	2	
DC connection type	Tool Free PV connector WM / MC4	
Input protection		
Reverse polarity protection	Yes, from limited current source	
Input over voltage protection for each MPPT - varistor	Yes	
Photovoltaic array isolation control	According to local standard	
DC switch rating for each MPPT (version with DC switch)	25 A / 660 V	
Battery charger		
Maximum charging power	3000 W	
Maximum discharging power	3000 W	
Output side		
AC Grid connection type	Single-phase	
Rated AC power (P_{acr} @cosϕ=1)	3600 W	4600 W
Maximum AC output power (P_{acmax} @cosϕ=1)	3600 W	4600 W
Maximum apparent power (S_{max})	4000 VA	5100 VA
Rated AC grid voltage ($V_{ac,r}$)	230 V	
AC voltage range	180…264 V [1]	
Maximum AC output current ($I_{ac,max}$)	19 A	24 A
Rated output frequency (f_r)	50 Hz / 60 Hz	
Output frequency range (f_{min}…f_{max})	47…53 Hz / 57…63 Hz [2]	
Nominal power factor and adjustable range	> 0.995, adj. ± 0.9 @ P_{acr}, ± 0.8 with max S_{max}	
Total current harmonic distortion	< 2%	
AC connection type	Screw terminal block, cable gland M25	
Output protection		
Anti-islanding protection	According to local standard	
Maximum external AC overcurrent protection	25 A	32 A
Output overvoltage protection - varistor	2 (L - N / L - PE)	

Daily energy flows example of REACT-4.6



Self-consumption $= \left(\frac{8+2}{20}\right) = 50\%$

Energy self-sufficiency $= \left(\frac{8+2}{12.5}\right) = 80\%$

Technical data and types

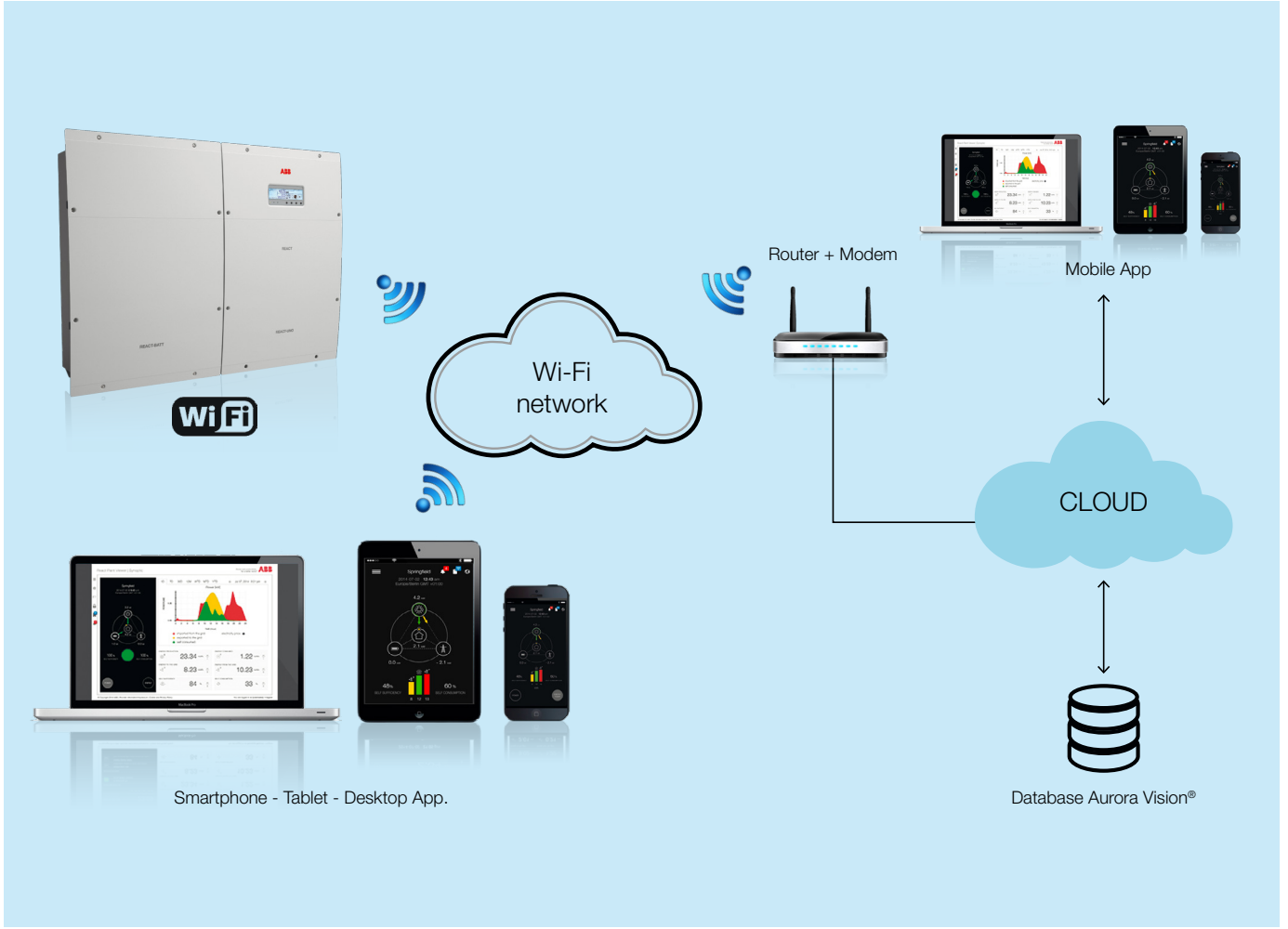
Solar and storage inverter	REACT-UNO-3.6-TL	REACT-UNO-4.6-TL
Operating performance		
Maximum efficiency (η_{max})	97.1%	
Weighted efficiency (EURO/CEC)	96.6% / -	
Typical battery full cycle efficiency	94.0%	
Communication		
Remote monitoring	Integrated	
Wireless local monitoring	Integrated, WiFi certified	
User interface	Mobile APP, Webserver UI, Graphic display	
Wired local monitoring	PVI-USB-RS232_485 (opt.)	
Environmental		
Ambient temperature range	-20...+55°C	
Optimal battery operational temperature range	+5...+35°C	
Full battery function operational temperature range charge	0...+40°C	
Full battery function operational temperature range discharge	-10...+45°C	
Relative humidity	0...95% non condensing	
Maximum operating altitude without derating	2000 m / 6560 ft	
Recommended location	Indoor with ventilation openings	
Physical		
Environmental protection rating	IP54 (inverter), IP21 (battery pack)	
Cooling	Natural	
Dimension (H x W x D), equipped with 1 battery unit	740 mm x 983 mm x 229 mm	
Battery unit dimension (H x W x D)	740 mm x 490 mm x 229 mm	
Weight, equipped with 1 battery unit	< 60 kg	
Battery unit weight	< 30 kg	
Mounting system	Wall bracket	
Safety		
Isolation level	Transformerless	
Marking	CE	
Safety and EMC standard	EN 50178, IEC/EN 62109-1, IEC/EN 62109-2, EN 61000-6-2, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3, EN61000-3-11, EN61000-3-12, EN60529	
Grid standard (check your sales channel for availability)	CEI 0-21, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G83/2, VFR2014	
Other features		
Load management function	Output for GOGO-box (opt.)	
AC back up output, off grid	Optional, automatic or manual restart, even with battery discharged	
Battery charge from AC	Services to grid enabled by factory, can be disabled	
No PV input version	Optional special version, AC bus storage	

[1] The AC voltage range may vary depending on specific country grid standard

[2] The Frequency range may vary depending on specific country grid standard

Remark. Features not specifically listed in the present data sheet are not included in the product

Block diagram of REACT-4.6

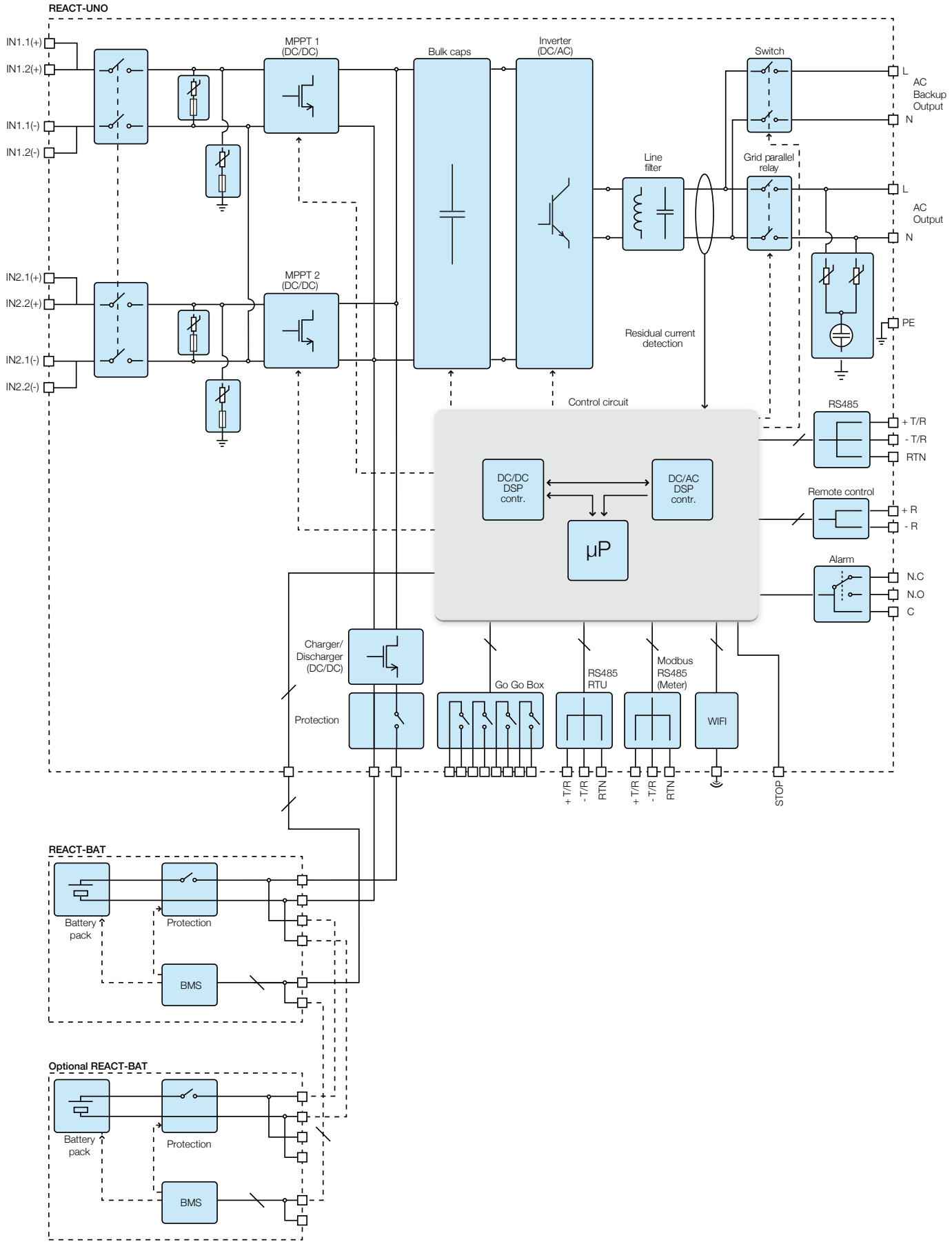


Technical data and types

Battery pack	REACT-BAT-AP1
Manufacturer	Panasonic
Battery type	Li-Ion
Typical/Max power discharge	1.5 kW / 1.8 kW
Max power charge	1.1 kW
Usable life average battery capacity	2 kWh (6 kWh, with 3x battery pack)
Battery lifetime	> 4500 cycles
Battery calendar lifetime, typical	10 years (Max 9 MWh discharged)
Safety and EMC	EN62109-1, EN62109-2, EN50178, compliance to applicable requirements of EN60950-1, EN61000-6-2, EN61000-6-3, UN38.3, UN34.80

Meter	REACT-MTR-1PH (or -3PH)
AC line meter	Necessary for optimum battery energy management Order separately REACT-MTR-1PH or REACT-MTR-3PH
Measures	P/ Q/ A/ V/ I
Measures accuracy and resolution	<1%, 1%
Current capability	30 A, up to 5 Adc tolerant
AC phases	1 or 3
Rated grid voltage / voltage range	110-230 V / 85...265 V
Rated grid frequency / frequency range	50-60 Hz / 45...65 Hz
Power supply and consumption	Integrated, <1 W
Isolation and dielectric strength	4kVrms (for 1 minute) between AC measuring ports and communication port
Installation category	CAT III,
Protection class	Front IP40, screw terminals IP20
Installation	DIN 43880 Rail, 3 or 4 modules wide
Operational temperature range	-20...+55°C
Safety and EMC	IEC 61010-1, IEC 61326-1

Block diagram of REACT-4.6



Support and service

ABB supports its customers with dedicated, global service organization in more than 60 countries and strong regional and national technical partner networks providing complete range of life cycle services.

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