

ABB central inverters

ULTRA-700.0/1050.0/1400.0-TL OUTD

700 to 1400 kW



ABB's ULTRA utility-scale inverters optimize energy harvesting across a wide array of operating conditions with their industry-leading power conversion efficiencies of up to 98.7% combined with their high-speed Maximum Power Point Tracking (MPPT) channels.

The largest solar power inverter in the ABB product range, the new ULTRA-1400.0 unit is designed with large utility-grade installations in mind.

This large inverter system significantly reduces the wiring requirements and on-site testing thanks to the presence of separated and dedicated compartments for DC and AC.

Up to four independent MPPT input channels for maximum flexibility and energy harvesting

Up to four, independent Maximum Power Point Tracking (MPPT) input channels offer maximum flexibility and energy harvesting.

This liquid-cooled, high-powered inverter is the largest photovoltaic inverter available on the market.

The compact chassis gives maximum power for the minimum footprint and the outdoor enclosure enables unrestricted use under any environmental conditions.

String inverters

PV + Storage

Central inverters

Turnkey stations

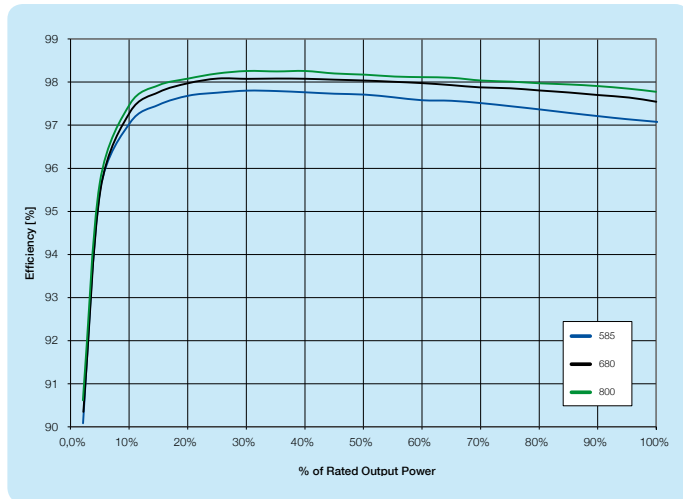
Monitoring and communications



Highlights

- Maximum DC input voltage up to 1000 V (optional 1100V), high design flexibility and reduced DC distribution losses for large-scale PV plants
- Reduced susceptibility to a single fault; in case of a component failure, a maximum of 350kW will be lost
- Integrated DC and AC distribution and protection; fully equipped for connection, additional accessories not required
- Direct transformerless conversion to the 690 Vac output reduces AC distribution cost
- Extended MPPT input voltage range
- Passive liquid cooling with total segregation of internal compartments assuring a 5-year maintenance cycle
- Easy installation and maintenance procedure; front extractible DC/AC converters and accessibility to all critical parts
- Two independent RS-485 communication interfaces for inverter and intelligent string combiner monitoring
- Compliance to BDEW, FERC 661 and other relevant grid standards allows installation in most of the countries worldwide

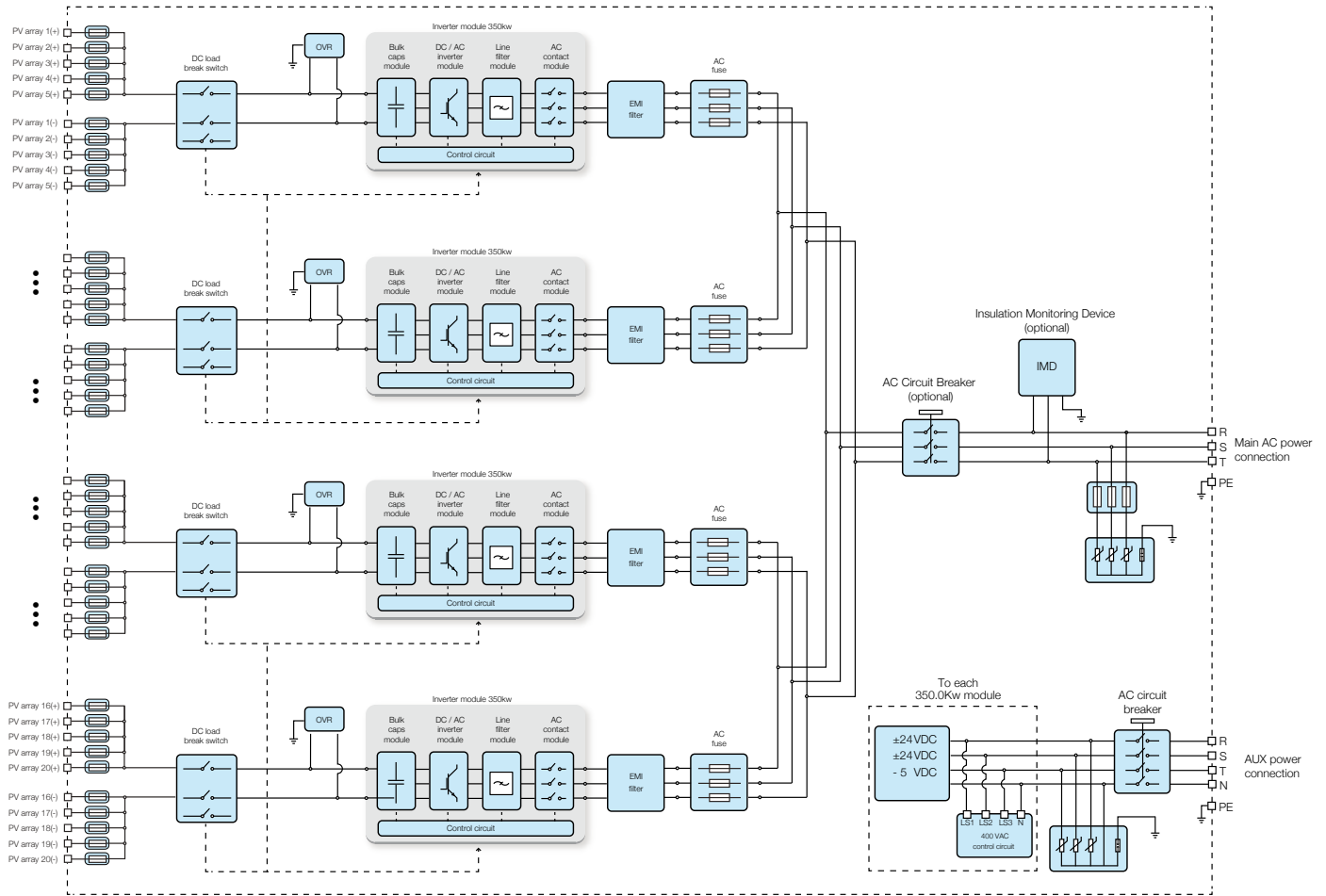
Efficiency curves of ULTRA-TL



Technical data and types

Type code	ULTRA-700.0-TL	ULTRA-1050.0-TL	ULTRA-1400.0-TL
Input side			
Absolute maximum DC input voltage ($V_{max,abs}$)	470...900 V	1000 V (1100 V opt.)	470...900 V
MPPT input DC voltage range ($V_{MPPTmin}$... $V_{MPPTmax}$) at V_{acr}	Linear derating from max to 15 kW [850 V < V_{MPPT} < 900 V] 560 kW @ 470 V	Linear derating from max to 22.5 kW [850 V < V_{MPPT} < 900 V] 840 kW @ 470 V	Linear derating from max to 30 kW [850 V < V_{MPPT} < 900 V] 1120 kW @ 470 V
MPPT input DC range ($V_{MPPTmin}$... $V_{MPPTmax}$) at P_{acr} and V_{acr}	585...850 V @ 700 kW 645...850 V @ 780 kW	585...850 V @ 1050 kW 645...850 V @ 1170 kW	585...850 V @ 1400 kW 645...850 V @ 1560 kW
Number of independent MPPT multi-master	2	3	4
Maximum combined DC input current ($I_{dc,max,c}$)	1388 A (2 x 694 A)	2082 A (3 x 694 A)	2776 A (4 x 694 A)
Maximum DC input current for each module ($I_{dc,max,m}$)		694 A	
Number of DC inputs pairs	10	15	20
DC connection type	20 x 50 mm ² ... 240 mm ² (M12)	30 x 50 mm ² ... 240 mm ² (M12)	40 x 50 mm ² ... 240 mm ² (M12)
Input protection			
Reverse polarity protection	Yes, via input breaker		
Input overvoltage protection	Type I voltage surge protection, 1 for each module		
Photovoltaic array leakage control, floating neutral, floating panels	Optional		
Residual current protection, grounded neutral, floating panels	Not included; recommended 10A ground fault protection with time and current adjustable		
Fuse size for each input pair	200/250/315/400 A		
Output side			
AC grid connection type	Three-phases 3W+PE		
Rated AC power (P_{acr} @ $\cos\phi=1$)	780 kW	1170 kW	1560 kW
Maximum apparent power (S_{max})	780 kVA	1170 kVA	1560 kVA
Rated grid voltage (V_{acr})	690 V		
AC voltage range ($V_{ac,min}$... $V_{ac,max}$)	621...759 V ¹⁾		
Maximum output current ($I_{ac,max}$)	650 A	975 A	1300 A
Contributory fault current	1036 A	1554 A	2072 A
Rated frequency (f)	50/60 Hz		
Frequency range (f_{min} ... f_{max})	47...53 / 57...63 Hz ²⁾		
Nominal power factor and adjustable range	> 0.995 (adj. \pm 0.90) (adj. \pm 0.10)		
Total harmonic distortion	< 3% (@ P_{acr})		
AC connection type (for each phase)	6 x 240 mm ² (M12)		
Output protection			
Anti-islanding protection	According to local standard		
Output overvoltage protection	Type II voltage surge protection		
Night time disconnect	Yes		
AC switch	Yes		
AC fuse for each module	3x450 A / 200 kA		

Block diagram of ULTRA-1400.0-TL



Technical data and types

Type code	ULTRA-700.0-TL	ULTRA-1050.0-TL	ULTRA-1400.0-TL
Operating performance			
Maximum efficiency (η_{max})		98.7% ³⁾	
Weighted efficiency (η_{EURO} / η_{CEC})		98.2% / 98.0% ³⁾	
Stand-by consumption/night-time power loss	< 90 W	< 110 W	< 180 W
AC auxiliary supply		3 x 400 Vac +N, 50/60 Hz	
Auxiliary supply consumption	< 0.50% of $P_{ac,r}$	< 0.60% of $P_{ac,r}$	< 0.50% of $P_{ac,r}$
Auxiliary supply consumption without cooling	< 0.05% of $P_{ac,r}$	< 0.06% of $P_{ac,r}$	< 0.05% of $P_{ac,r}$
Inverter switching frequency		9 kHz	
Communication			
Wired local monitoring		PVI-USB-RS232_485 (opt.)	
Remote monitoring		PVI-AEC-EVO (opt.), VSN700 Data Logger (opt.)	
String Combiner		PVI-STRINGCOMB (opt.)	
User interface		TFT LCD 5.7"	
Environmental			
Ambient temperature range		-20...+ 60°C/-4...140°F with derating above 50°C/122°F -40...+ 60°C/-40...140°F with derating above 50°C/122°F (opt.)	
Relative humidity		0...100% condensing	
Noise emission		< 78 dB(A) @ 1 m	
Maximum operating altitude without derating	2000 m / 6560 ft	2000 m / 6560 ft	2000 m / 6560 ft
Physical			
Environmental protection rating		IP 65	
Cooling		Passive liquid	
Required air cooling flow		Not applicable	
Dimension (H x W x D)	2920 mm x 3020 mm x 1520 mm / 114.9" x 118.9" x 59.9"	2920 mm x 3720 mm x 1520 mm / 114.9" x 146.5" x 59.9"	2920 mm x 4420 mm x 1520 mm / 114.9" x 174.0" x 59.9"
Weight	< 3000 kg / 6613 lbs	< 3800 kg / 8377 lbs	< 4600 kg / 10141 lbs
Weight of the module		< 55 kg / 121 lbs	
Safety			
Transformer		No	
Marking		CE (50 Hz only)	
Safety and EMC standard		EN 50178, IEC/EN 62109-1, IEC/EN 62109-2, EN61000-6-2, EN61000-6-4	
Grid standard (check your sales channel for availability)		CEI-0-16, BDEW, P.O.12.3, Ordinul 30/2013	

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

³⁾ Power consumption of the auxiliary services not included

Remark. Features not specifically listed in the present data sheet are not included in the product. For the available options refer to the configuration module and verify with ABB technical support