PROTECT PV.UL

UTILITY-SCALE INVERTER

Solar Inverter for Grid Connection
Utility Scale
510 kVA, 630 kVA

Container applications
500 kVA to 1.25 MVA

Certified to UL-1741, the Protect PV.500-UL and Protect PV.630-UL inverters from AEG Power Solutions offer professional solutions for utility-scale applications. A key feature of the PV product line is its power stack with advance-design measuring and control technology enabling DC input voltages of up to 1000 VDC. In addition to savings on DC wiring and combiner boxes as a result of the higher DC input voltage, the UL-1741 Certified Protect PV.UL meets utility code requirements and facilitates AHJ approval.

With an efficiency factor over 98%, the Protect PV.UL well exceeds expectations for its power class. With an appropriate transformer, it can also be adapted to the low voltage grid (LV 480 VAC) or medium voltage grid (e.g. 12.47, 34.5 kV)

Maximum Power Point Tracking is designed to meet the latest requirements for quick responses to dynamic weather conditions, such as spontaneous cloud cover on a clear day, and reliable day/night detection (active/passive). The MPPT algorithm has been independently tested by the Fraunhofer Institute for Solar Energy Systems at eight different power levels, nine different DC voltages, and for both thin-film and crystalline solar panels.

The Protect PV utility scale inverters from AEG Power Solutions have grid management features that can be adapted to the unique requirements of the utility. With four different ways to provide reactive power control, adjustable settings for Low Voltage Ride Through, provisionable ramp parameters for start and stop operations, options to adjust the effective power to stabilize grid frequency, and remote power control, the flexibility of the Protect PV.UL inverter is unmatched.

Monitoring and power plant integration are based on Modbus Protocol and advanced CAN BUS communication and optionally via Ethernet over fiber optic cable between the containers. This allows for cost-effective, safe and reliable remote monitoring and control of the PV plant. The monitoring and control system can be integrated into an overriding power station control technology. Because of the open structure, future requirements of the grid operators can also be taken into account.

This communication structure enables the operator to carry out continuous monitoring, failure analysis, reporting and performance statistics. Remote monitoring and remote access are available via wireless, DSL and WebPortal, for example, and programmable alarm functions via email/SMS settings. Turnkey container solutions (TKS-C) integrate all necessary components (MV Transformer, disconnects, switchgear) and can be supplied ready for connection to the power plant on site.

With more than 60 years of experience in power supply systems and solutions for power plants, AEG Power Solutions offers a comprehensive range of services aimed at securing maximum yields for your PV power installation. These services include contractual solutions with service guarantees and high inverter availability.

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PROTECT PV.UL
TECHNICAL DATA

	Protect PV.500-ID-UL	Protect PV.630-ID-UL
DC INPUT		
Recommended PV power	500 - 580 kWp	630 - 945 kWp
DC voltage window (@ nom AC voltage)	385 - 1000 V	465 - 1000 V
Max. DC voltage	1000 V	1000 V
U_{MPPT} voltage range *(w/ zone circuit breaker)*	500 -820 V	550 - 820 V
Max. DC current *(w/ integrated load breaker)*	1000 A	1000 A
Max. DC current *(w/ optional zone circuit breaker)*	1060 A	1170 A
Number of DC inputs	8	8
Over voltage protection	Grade 2	
AC OUTPUT		
Nom. AC power at cos φ = 1 (@ 50 °C)	510 kVA	630 kVA
Nom. AC power at cos φ = 1 (@ 25 °C)	560 kVA	690 kVA
Power factor, adjustable	lag 0.9 – 1 – lead 0.9	
Output voltage without transformer	283 VAC	345 VAC
Max. AC current	1144 A	1159 A
Mains voltage:		
- LV-connection[*1]	480 V	
- MV-connection[*1]	Up to 34.5 kV as required	
Mains frequency	50 / 60 Hz	
Current distortion	< 3 %	
Over voltage protection	Grade 2	
GENERAL DATA		
Efficiency[*2] **(Max. / Euro / CEC)**	98.3 % / 98.1 % / 98 %	98.7 % / >98 % / 98%
Operating temperature at full power	-20 °C to +50 °C (-4°F to 122°F)	
Rel. humidity	15 … 95 % max, non condensing	
Protection grade, EN 60529	IP 20	
Altitude above sea level	1,500 m (4,920 ft) (3000 m max 40°C)	
Dimensions (W x H x D)	2700 x 2000 x 600 mm (107 x 79 x 24 in)	
Weight	approx. 1650 kg (3,638 lbs)	approx. 1800 kg (3,968 lbs)
Equipment color	RAL 7035	
Standards	Certified to UL 1741, NEC Article 690	
Grid codes	IEEE 1547, FERC, NERC, and others can be configured	
ALARM & CONTROLS		
GFDI per NEC/UL	Yes	
Over voltage protection	Yes	
Contactor and breaker position	Yes	
Failure indicators (acoustic/optical)	3 status LED, detailed history	
COMMUNICATION		
Display	240 x 64 graphical LC Display	
Hardware	RS 485, RS 232, CAN BUS, Ethernet Freely programmable opto coupler inputs and dry contacts	
Telecom line	ISDN, GSM, GPRS, DSL	
Software/Protocol	Modbus, Profibus DP, Web portal, CANopen CiA 437	
OPTIONS		
Container solution	TKS-MC 500 or 1000	TKS-MC 630 or 1250
MV transformer with switchgear	Yes	
Monitoring	Yes	
PV plant operation	Yes	
DC disconnect unit with circuit breakers	Separate cabinet with options on number and sizes of breakers	
LV disconnection switch	Separate cabinet with AC circuit breaker	

*1: External transformer necessary - *2: Without transformer (LV/MV) - Technical data is preliminary and can be changed without prior notice.

For further information
please refer to our website:

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