

ABB string inverters PRO-33.0-TL-OUTD 33 kW



ABB string inverters cost-efficiently convert the direct current (DC) generated by solar modules into high quality three-phase alternating current (AC) that can be fed into the power distribution network (ie grid). Designed to meet the needs of the entire supply chain – from system integrators and installers to end users – these transformerless, three-phase inverters are designed for decentralized photovoltaic (PV) systems installed in commercial and industrial systems up to megawatt (MW) sizes.

A new inverter from the world's leading power technology company

ABB, a global leader in power and automation technologies, brings decades of experience, technology leadership and application know-how from renewable energies to this new string inverter. Such experience and technology ensures high quality, safe and reliable solar inverters are delivered every time.

High power package for decentralized PV systems

ABB's three-phase PRO-33 string inverter is designed for medium and large decentralized PV systems either on large-scale commercial and industrial rooftops or ground-mounted PV plants. The inverter offers cost-efficiency in a high power, wall-mountable package with very high conversion efficiency. The all-in-one design with built-in and monitored PV plant protection devices reduces the need of costly external devices.

The single maximum power point (MPP) tracker and optimized MPPT window are suitable for the majority of PV plant designs. The high maximum DC input voltage of up to 1100 V increases PV system design flexibility giving extra margin in cold temperatures and allows more PV modules to be connected in series to reduce cabling costs.

Highlights

- Compact, high power wall-mountable package
- High maximum DC input voltage of up to 1100 V
- Configurable all-in-one design
- Advanced grid support functions
- Safe and intuitive user interface
- Robust enclosure, with IP65 rating suitable for outdoor installation

Configurable all-in-one design

The ABB PRO-33.0 string inverter comes in three product variants. The standard model with or without DC switch is designed for use with an external string combiner box. The all-in-one model with built-in string combiner box includes a DC switch, string current monitoring with alarm, PV fuses, monitored surge protection devices and tool-less solar quick connectors. The inverter's all-in-one design, with built-in and monitored PV plant protection devices, reduces the need of costly external devices.

High total efficiency maximizes return on investment

The PRO-33.0 inverter offers a high conversion and MPP tracking efficiency in all conditions. A flat efficiency curve provides high revenues in low and high radiation conditions.

Fast and easy commissioning

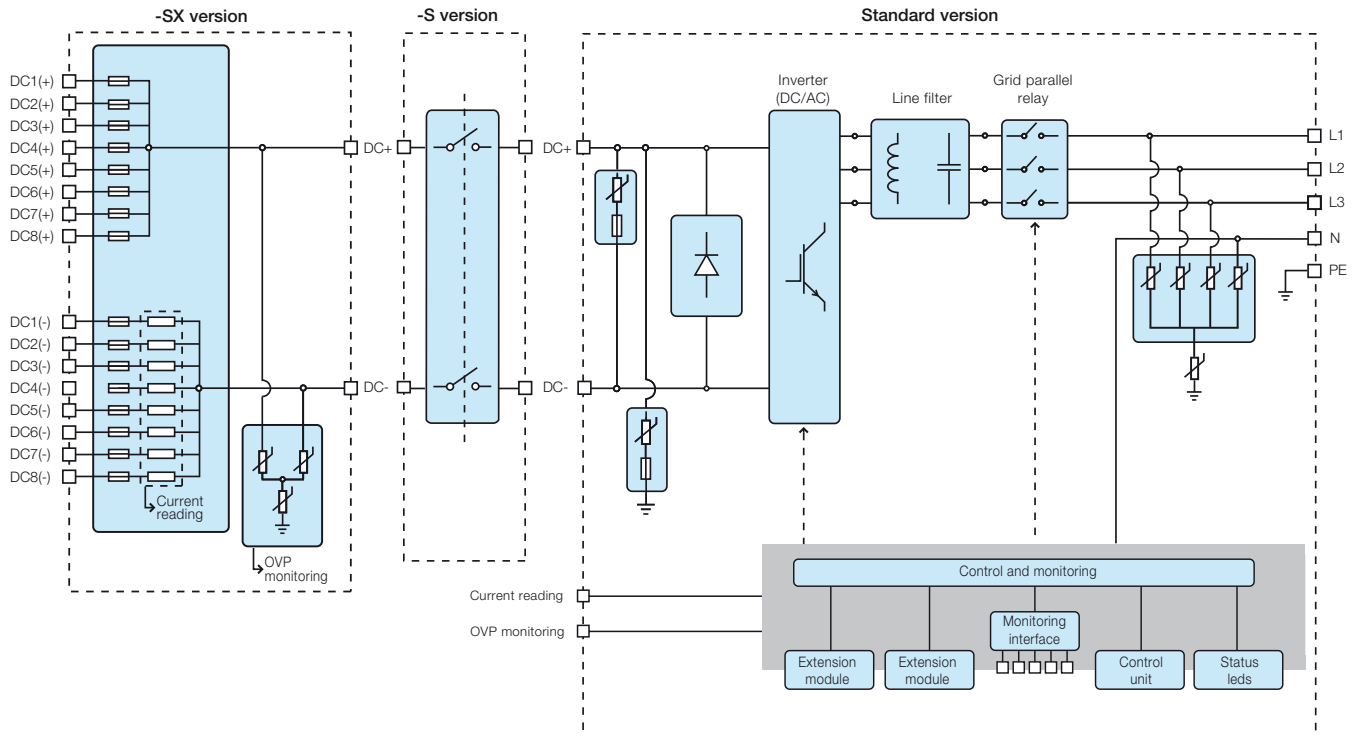
Fast PV plant commissioning is enabled via pre-programmed country grid code settings that are easily selectable. Extensive certification ensures wide grid code compatibility. Plug and Play DC and AC connectors enable fast and safe cabling. A touch protected installation area provides additional safety and comfort for inverter installation and maintenance.



Technical data and types

Type code	PRO-33.0-TL-OUTD
Input side	
Absolute maximum DC input voltage ($V_{max,abs}$)	1100 V ⁽³⁾
Start-up DC input voltage (V_{start})	610 V
Operating DC input voltage range ($V_{dmin}...V_{dmax}$)	580...950 V
Rated DC input voltage (V_{dcr})	580 V
Rated DC input power (P_{dcr})	33 700 W
Number of independent MPPT	1
MPPT input DC voltage range ($V_{MPPTmin} ... V_{MPPTmax}$) at P_{acr}	580...850 V
Maximum DC input current ($I_{dcr,max}$) / for each MPPT ($I_{MPPTmax}$)	58 A
Maximum input short circuit current for each MPPT	64 A
Number of DC inputs pairs for each MPPT	1 in Standard and -S version (8 in -SX version)
DC connection type	Tool-less PV connector Phoenix Sunclix on -SX version (screw terminal block on standard & -S version)
Input protection	
Reverse polarity protection	Inverter protection only, from limited current source, for standard and -S versions, and for fused -SX versions when max 2 strings are connected
Input over voltage protection for each MPPT - varistor	2
Input over voltage protection for each MPPT - plug in modular surge arrester (-S2X version)	3 (Class II)
Photovoltaic array isolation control	According to local standard
DC switch rating for each MPPT (version with DC switch)	58 A / 1000 V, 50 A / 1200 V
Fuse rating (versions with fuses)	15 A / 1100 V
Output side	
AC grid connection type	Three phase 3W or 4W+PE
Rated AC power ($P_{acr} @ \cos\phi > 0.99$)	33 000 W
Maximum apparent power (S_{max})	33 000 VA
Rated AC grid voltage ($V_{acr,r}$)	400 V
AC voltage range	320...480 V ⁽¹⁾
Maximum AC output current ($I_{acr,max}$)	50.3 A
Contributory fault current	50.3 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, with $P_{acr} = 33.0$ kW, adj. ± 0.9 with $P_{acr} = 29.7$ kW, adj. ± 0.1 with $S = 33.0$ kVA

Block diagram of PRO-33.0-TL



Technical data and types

Type code	PRO-33.0-TL-OUTD
Total current harmonic distortion	< 3%
AC connection type	Fixed plug type connector
Output protection	
Anti-islanding protection	According to local standard
Maximum AC overcurrent protection	50.3 A
Output overvoltage protection - varistor	4
Operating performance	
Maximum efficiency (η_{max})	98.3% (*preliminary)
Weighted efficiency (EURO/CEC)	98.0%/98.1% (*preliminary)
Feed in power threshold	20 W
Stand-by consumption	< 1W
Communication	
Remote monitoring	VSN700 Data Logger (opt.)
User interface	Detachable graphical display
Environmental	
Ambient temperature range	-25...+60°C / -13...140°F with derating above 45°C/113°F
Relative humidity	0...100% condensing
Noise emission	<65dB(A) @ 1m
Maximum operating altitude without derating	2000 m / 6560 ft
Physical	
Environmental protection rating	IP 65 (IP54 fans)
Cooling	Forced
Dimension (H x W x D)	740 mm x 520 mm x 300mm/ 29.1" x 20.5" x 11.8"
Weight	< 65.0 kg / 143.3 lb
Mounting system	Wall bracket
Safety	
Isolation level	Transformerless
Marking	CE
Safety and EMC standard	EN62109-1, EN62109-2, EN61000-6-2, EN61000-6-3, EN61000-3-11, EN61000-3-12
Grid standard	CEI 0-21, VDE 0126-1-1, VDE-AR-N 4105, G59/3 (check flyer for additional grid standards)
Available products variants	
Standard	PRO-33.0-TL-OUTD-400
With DC switch	PRO-33.0-TL-OUTD-S-400
With DC switch and diode	PRO-33.0-TL-OUTD-SX-400

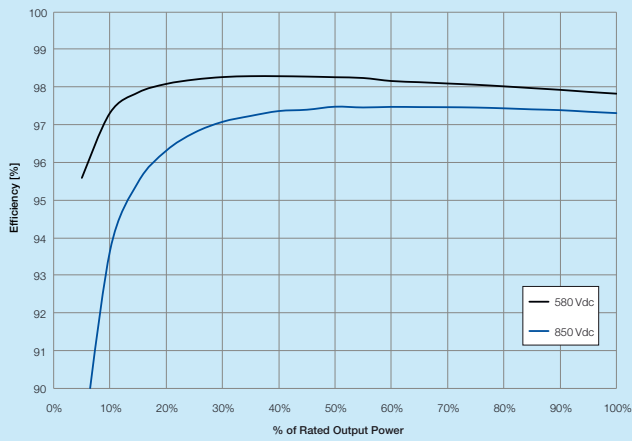
1. The AC voltage range may vary depending on specific country grid standard

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

3. Inverter does not start >1000V

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

Efficiency curves of PRO-33.0-TL-OUT (Preliminary)



Accessories

- User friendly data logger with web interface for commissioning and monitoring portal for viewing the assets performance
- IO module for typical PV plant sensor support
- IO module for programmable relay output
- Warranty extensions

Support and service

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

For more information please contact your local ABB representative or visit:

www.abb.com/solarinverters
www.abb.com

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VSN700 Data Logger and web user interface