

ABB string inverters

UNO-DM-1.2/2.0/3.3/4.0/4.6/5.0-TL-PLUS

1.2 to 5.0 kW



The new UNO-DM-PLUS single-phase inverter family, with power ratings from 1.2 to 5.0 kW, is the optimal solution for residential installations.

01

— 01 UNO-DM-1.2/2.0/3.3/4.0/4.6/5.0-TL-PLUS outdoor string inverter

One size fits all

The new design wraps ABB's quality and engineering into a lightweight and compact package thanks to technological choices optimized for installations with different orientation.

All power ratings share the same overall volume, allowing higher performance in a minimum space, and have a dual Maximum Power Point Tracker (2 MPPT).

Easy to install, fast to commission

The presence of Plug and Play connectors, both on the DC and AC side, as well as the wireless communication, enable a simple, fast and safe installation without the need of opening the front cover of the inverter.

The featured easy commissioning routine removes the need for a long configuration process, resulting in lower installation time and costs.

Improved user experience thanks to a built-in User Interface (UI), which enables access to features such as advanced inverter configuration settings, dynamic feed-in control and load manager, from any WLAN-enabled devices (smartphone, tablet or PC).

Smart capabilities

The embedded logging capabilities and direct transferring of the data to Internet (via Ethernet or WLAN) allow customers to enjoy the whole Aurora

Vision® remote monitoring experience.

The advanced communication interfaces (WLAN, Ethernet, RS485) combined with an efficient Modbus (RTU/TCP) communication protocol, Sunspec compliant, allow the inverter to be easily integrated within any smart environment and with third party monitoring and control systems.

A complete set of control functions with the embedded efficient algorithm, enabling dynamic control of the feed-in (i.e. zero injection), make the inverter suitable for worldwide applications in compliance with regulatory norms and needs of the utilities.

The future-proof and flexible design enables integration with current and future devices for smart building automation.

Highlights

- Wireless access to the embedded Web User Interface
- Easy commissioning capability
- Future-proof with embedded connectivity for smart building and smart grid integration
- Dynamic feed-in control (for instance "zero injection")
- Remote Over The Air (OTA) firmware upgrade for inverter and components
- Modbus TCP/RTU Sunspec compliant
- Remote monitoring via Aurora Vision® cloud
- Dual input section with independent MPPT

ABB string inverters

UNO-DM-1.2/2.0/3.3/4.0/4.6/5.0-TL-PLUS

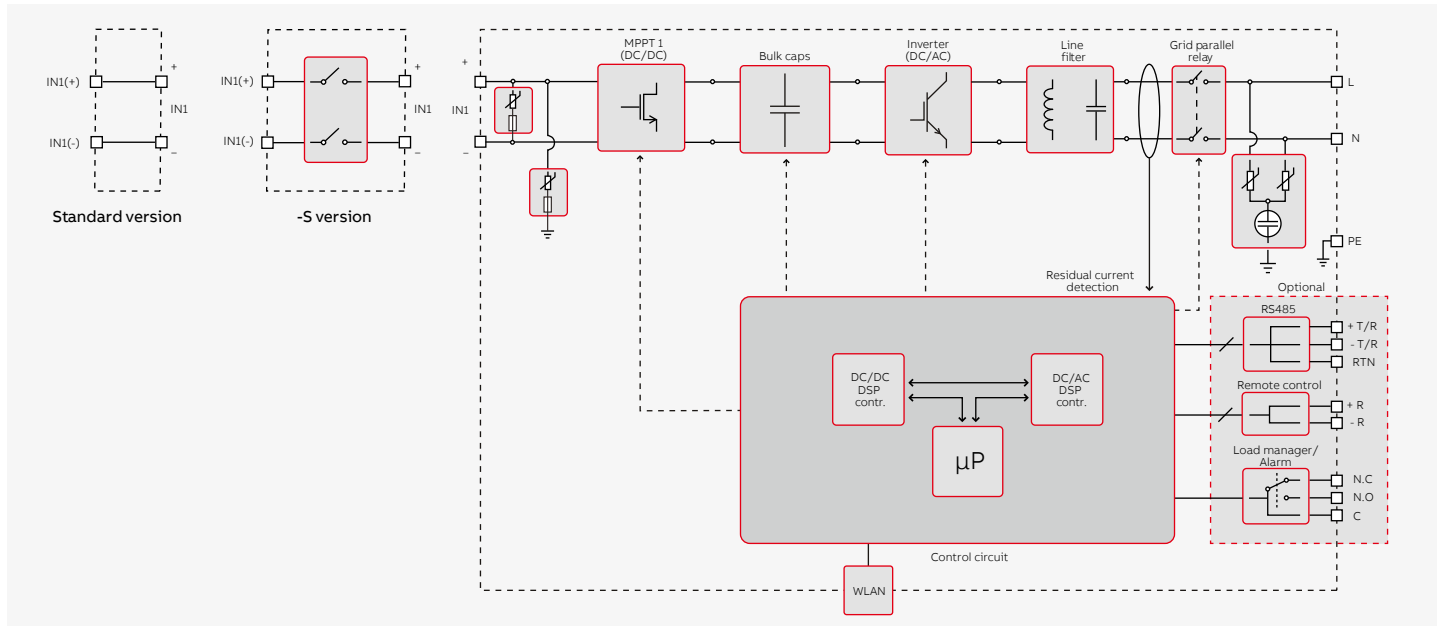
1.2 to 5.0 kW



Technical data and types

Type code	UNO-DM-1.2-TL-PLUS	UNO-DM-2.0-TL-PLUS	UNO-DM-3.3-TL-PLUS
Input side			
Absolute maximum DC input voltage ($V_{max,abs}$)	600 V		
Start-up DC input voltage (V_{start})	120 V (adj. 100...150 V)	150 V (adj. 100...250 V)	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})	185 V	300 V	360 V
Rated DC input power (P_{dcr})	1500 W	2500 W	3500 W
Number of independent MPPT	1	1	2
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	1500 W	2500 W	2000 W
DC input voltage range with parallel configuration of MPPT at P_{acr}	100...530 V	210...530 V	170...530 V
DC power limitation with parallel configuration of MPPT	N/A	N/A	Linear derating from Max to Null [530 V ≤ V_{MPPT} ≤ 580 V] 2000 W [200 V ≤ V_{MPPT} ≤ 530 V] the other channel: P_{dcr} -2000 W [112 V ≤ V_{MPPT} ≤ 530 V]
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr} , max unbalance example	N/A	N/A	
Maximum DC input current (I_{dcmax}) / for each MPPT ($I_{MPPTmax}$)	10.0 A	10.0 A	20.0 / 10.0 A
Maximum input short circuit current for each MPPT	12.5 A	12.5 A	12.5 / 25.0 A
Number of DC input pairs for each MPPT	1		
DC connection type ¹⁾	Quick Fit PV Connector		
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 / 600 V		
Output side			
AC grid connection type	Single-phase		
Rated AC power ($P_{acr} @ \cos\phi=1$)	1200 W	2000 W	3300 W
Maximum AC output power ($P_{acmax} @ \cos\phi=1$)	1200 W	2000 W	3300 W
Maximum apparent power (S_{max})	1200 VA	2000 VA	3300 VA
Rated AC grid voltage (V_{acr})	230 V		
AC voltage range ³⁾	180...264 V		
Maximum AC output current ($I_{ac,max}$)	5.5 A	10.0 A	14.5 A
Contributory fault current	10.0 A	12.0 A	16.0 A
Rated output frequency (f) ⁴⁾	50 Hz		
Output frequency range ($f_{min}...f_{max}$) ⁴⁾	47...53 Hz		
Nominal power factor and adjustable range	> 0.995, adj. ± 0.1 - 1 (over/under excited)		
Total current harmonic distortion	< 3.5%		
AC connection type	Female connector from panel		
Output protection			
Anti-islanding protection	According to local standard		
Maximum external AC overcurrent protection	10.0 A	16.0 A	20.0 A
Output overvoltage protection - varistor	2 (L - N / L - PE)		

ABB UNO-DM-1.2/2.0-TL-PLUS string inverter block diagram



Technical data and types

Type code	UNO-DM-1.2-TL-PLUS	UNO-DM-2.0-TL-PLUS	UNO-DM-3.3-TL-PLUS
Operating performance			
Maximum efficiency (η_{max})	94.8%	96.7%	97.0%
Weighted efficiency (EURO/CEC)	92.0%	95.0%	96.5% / -
Feed in power threshold		8 W	
Night consumption		<0.4 W	
Embedded communication			
Embedded communication interface ⁵⁾	Wireless		
Embedded communication protocol	ModBus TCP (SunSpec)		
Commissioning tool	Web User Interface, Display, Aurora Manager Lite		
Monitoring	Plant Portfolio Manager, Plant Viewer, Plant Viewer for Mobile		
Optional board UNO-DM-COM kit	RS485 (use with meter for dynamic feed-in control), Alarm/Load manager relay, Remote ON/OFF		
Optional communication interface	ModBus RTU (SunSpec), Aurora Protocol		
Optional board UNO-DM-PLUS Ethernet COM kit	Ethernet, RS485 (use with meter for dynamic feed-in control), Alarm/Load manager relay, Remote ON/OFF		
Optional communication interface	ModBus TCP (SunSpec), ModBus RTU (SunSpec), Aurora Protocol		
Optional communication protocol			
Environmental			
Ambient temperature range	-25...+60°C /-13...140°F with derating above 50°C/122°F	-25...+60°C /-13...140°F with derating above 50°C/122°F	-25...+60°C /-13...140°F with derating above 50°C/122°F
Relative humidity	0...100 % condensing		
Acoustic noise emission level	< 50 dB (A) @ 1 m		
Maximum operating altitude without derating	2000 m / 6560 ft		
Physical			
Environmental protection rating	IP 65		
Cooling	Natural		
Dimension (H x W x D)	553 x 418 x 175 mm / 21.8" x 16.5" x 6.9"		
Weight	15 kg / 33 lbs		
Mounting system	Wall bracket		
Safety			
Isolation level	Transformerless		
Marking	CE , RCM		
Safety and EMC standard	EN 50178, IEC/EN 62109-1, IEC/EN 62109-2, AS/NZS 3100, EN 61000-6-1, EN 61000-6-3, EN 61000-3-2, EN 61000-3-3		
Grid standard (check your sales channel for availability) ⁷⁾	CEI 0-21, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G83/2, G59/3, RD 413, ITC-BT-40, AS/NZS 4777.2, C10/11, IEC 61727, IEC 62116		
Available products variants			
Standard	UNO-DM-1.2-TL-PLUS-B	UNO-DM-2.0-TL-PLUS-B	UNO-DM-3.3-TL-PLUS-B
With DC switch	UNO-DM-1.2-TL-PLUS-SB	UNO-DM-2.0-TL-PLUS-SB	UNO-DM-3.3-TL-PLUS-SB

¹⁾Refer to the document "String inverter – Product Manual appendix" available at www.abb.com/solarinverters to know the brand and the model of the quick fit connector"

²⁾For UK G83/2 setting, maximum output current limited to 16 A up to a maximum output Pacr of 3600 W and a maximum apparent power of 3600 VA

³⁾The AC voltage range may vary depending on specific country grid standard

⁴⁾The Frequency range may vary depending on specific country grid standard

⁵⁾As per IEEE 802.11 b/g/n standard

⁶⁾Pacr = 4200 W @ 45°C/113°F

⁷⁾Further grid standard will be added, please refer to ABB Solar page for further details
Remark. Features not specifically listed in the present data sheet are not included in the product

UNO-DM-PLUS:

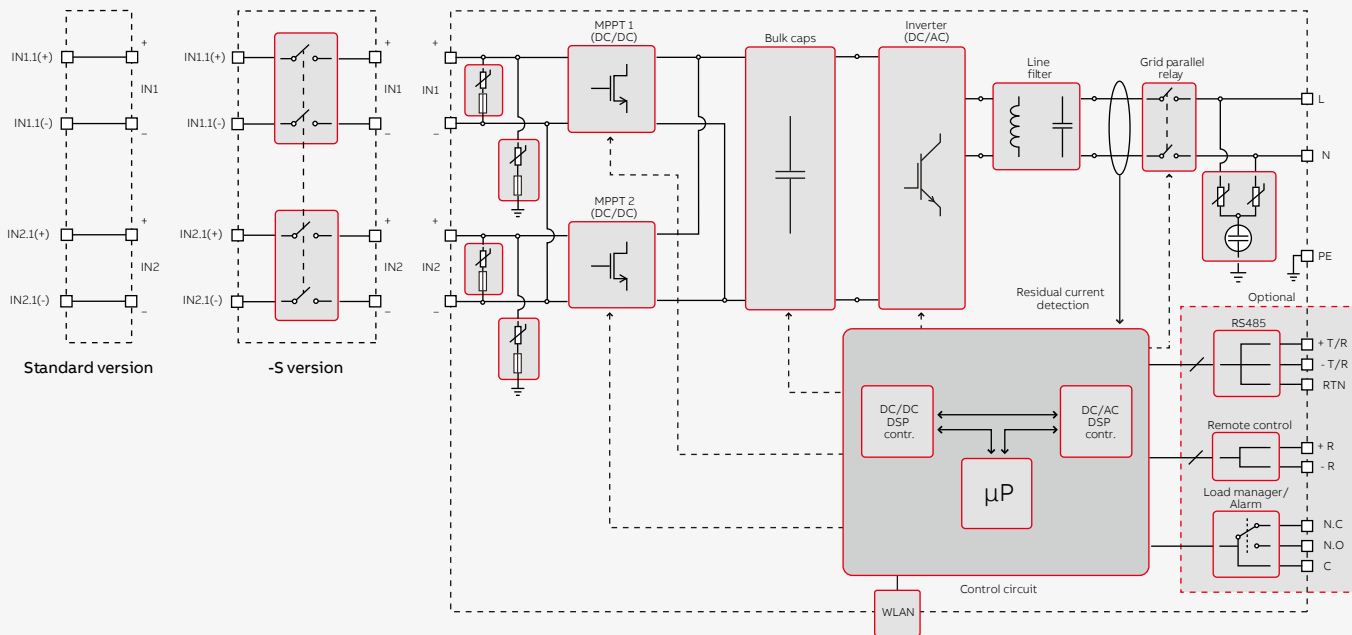
Efficient, connected, smart.



Technical data and types

Type code	UNO-DM-4.0-TL-PLUS	UNO-DM-4.6-TL-PLUS	UNO-DM-5.0-TL-PLUS
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})	4250 W	4750 W	5150 W
Number of independent MPPT	2		
Maximum DC input power for each MPPT ($P_{MPPTmax}$)	3000 W	3000 W	3500 W
DC input voltage range with parallel configuration of MPPT at P_{acr}	130...530 V	150...530 V	145...530 V
DC power limitation with parallel configuration of MPPT	Linear derating from Max to Null [$530V \leq V_{MPPT} \leq 580V$]		
DC power limitation for each MPPT with independent configuration of MPPT at P_{acr} , max unbalance example	3000 W [$190 V \leq V_{MPPT} \leq 530 V$] the other channel: $P_{dcr}=3000$ W [$90 V \leq V_{MPPT} \leq 530 V$]	3000 W [$190 V \leq V_{MPPT} \leq 530 V$] the other channel: $P_{dcr}=3000$ W [$90 V \leq V_{MPPT} \leq 530 V$]	3500 W [$200 V \leq V_{MPPT} \leq 530 V$] the other channel: $P_{dcr}=3500$ W [$90 V \leq V_{MPPT} \leq 530 V$]
Maximum DC input current ($I_{dcr,max}$) / for each MPPT ($I_{MPPTmax}$)	32.0 / 16.0 A	32.0 / 16.0 A	38.0 / 19.0 A
Maximum input short circuit current for each MPPT	20.0 / 40.0 A	20.0 / 40.0 A	22.0 / 44.0 A
Number of DC input pairs for each MPPT	1		
DC connection type ³⁾	Quick Fit PV Connector		
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 / 600 V		
Output side			
AC grid connection type	Single-phase		
Rated AC power ($P_{acr}@cos\phi=1$)	4000 W	4600 W	5000 W
Maximum AC output power ($P_{acmax}@cos\phi=1$)	4000 W ²⁾	4600 W	5000 W
Maximum apparent power (S_{max})	4000 VA ²⁾	4600 VA	5000 VA
Rated AC grid voltage (V_{acr})	230 V		
AC voltage range ³⁾	180...264 V		
Maximum AC output current ($I_{ac,max}$)	17.2 A	20.0 A	22.0 A
Contributory fault current	19.0 A	22.0 A	24.0 A
Rated output frequency (f) ⁴⁾	50 Hz		
Output frequency range ($f_{min}...f_{max}$) ⁴⁾	47...53 Hz		
Nominal power factor and adjustable range	> 0.995, adj. $\pm 0.1 - 1$ (over/under excited)		
Total current harmonic distortion	< 3.5		
AC connection type	Female connector from panel		
Output protection			
Anti-islanding protection	According to local standard		
Maximum external AC overcurrent protection	25.0 A	25.0 A	32.0 A
Output overvoltage protection - varistor	2 (L - N / L - PE)		

ABB UNO-DM-3.3/4.0/4.6/5.0-TL-PLUS string inverter block diagram



Technical data and types

Type code	UNO-DM-4.0-TL-PLUS	UNO-DM-4.6-TL-PLUS	UNO-DM-5.0-TL-PLUS
Operating performance			
Maximum efficiency (η_{max})	97.0%	97.0%	97.4%
Weighted efficiency (EURO/CEC)	96.5% / -	96.5% / -	97.0% / -
Feed in power threshold		8 W	
Night consumption		<0.4 W	
Embedded communication			
Embedded communication interface ⁵⁾	Wireless		
Embedded communication protocol	ModBus TCP (SunSpec)		
Commissioning tool	Web User Interface, Display, Aurora Manager Lite		
Monitoring	Plant Portfolio Manager, Plant Viewer, Plant Viewer for Mobile		
Optional board UNO-DM-COM kit			
Optional communication interface	RS485 (use with meter for dynamic feed-in control), Alarm/Load manager relay, Remote ON/OFF		
Optional communication protocol	ModBus RTU (SunSpec), Aurora Protocol		
Optional board UNO-DM-PLUS Ethernet COM kit			
Optional communication interface	Ethernet, RS485 (use with meter for dynamic feed-in control), Alarm/Load manager relay, Remote ON/OFF		
Optional communication protocol	ModBus TCP (SunSpec), ModBus RTU (SunSpec), Aurora Protocol		
Environmental			
Ambient temperature range	-25...+60°C /-13...140°F with derating above 50°C/122°F	-25...+60°C /-13...140°F with derating above 45°C/113°F ⁶⁾	-25...+60°C /-13...140°F with derating above 45°C/113°F
Relative humidity	0...100 % condensing		
Acoustic noise emission level	< 50 dB (A) @ 1 m		
Maximum operating altitude without derating	2000 m / 6560 ft		
Physical			
Environmental protection rating	IP 65		
Cooling	Natural		
Dimension (H x W x D)	553 x 418 x 175 mm / 21.8" x 16.5" x 6.9"		
Weight	15 kg / 33 lbs		
Mounting system	Wall bracket		
Safety			
Isolation level	Transformerless		
Marking	CE, RCM		
Safety and EMC standard	IEC/EN 62109-1, IEC/EN 62109-2, AS/NZS 4777.2, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 61000-6-4, EN 61000-3-11, EN 61000-3-12		
Grid standard (check your sales channel for availability) ⁷⁾	CEI 0-21, DIN V VDE V 0126-1-1, VDE-AR-N 4105, G83/2, G59/3, RD 413, ITC-BT-40, AS/NZS 4777.2, C10/11, IEC 61727, IEC 62116		
Available products variants			
Standard	UNO-DM-4.0-TL-PLUS-B	UNO-DM-4.6-TL-PLUS-B	UNO-DM-5.0-TL-PLUS-B
With DC switch	UNO-DM-4.0-TL-PLUS-SB	UNO-DM-4.6-TL-PLUS-SB	UNO-DM-5.0-TL-PLUS-SB

¹⁾Refer to the document "String inverter – Product Manual appendix" available at www.abb.com/solarinverters to know the brand and the model of the quick fit connector"

²⁾For UK G83/2 setting, maximum output current limited to 16 A up to a maximum output power of 3600 W and a maximum apparent power of 3600 VA

³⁾The AC voltage range may vary depending on specific country grid standard

⁴⁾The Frequency range may vary depending on specific country grid standard

⁵⁾As per IEEE 802.11 b/g/n standard

⁶⁾Pacr = 4200 W @ 45°C/113°F

⁷⁾Further grid standard will be added, please refer to ABB Solar page for further details
Remark. Features not specifically listed in the present data sheet are not included in the product

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

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

We reserve the right to make technical
changes or modify the contents of this
document without prior notice. With
regard to purchase orders, the agreed
particulars shall prevail. ABB AG does not
accept any responsibility whatsoever for
potential errors or possible lack of
information in this document.

We reserve all rights in this document and
in the subject matter and illustrations
contained therein. Any reproduction,
disclosure to third parties or utilization of
its contents – in whole or in parts – is
forbidden without prior written consent of
ABB AG. Copyright© 2017 ABB
All rights reserved

