

SOLAR INVERTERS

# 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.

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— 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

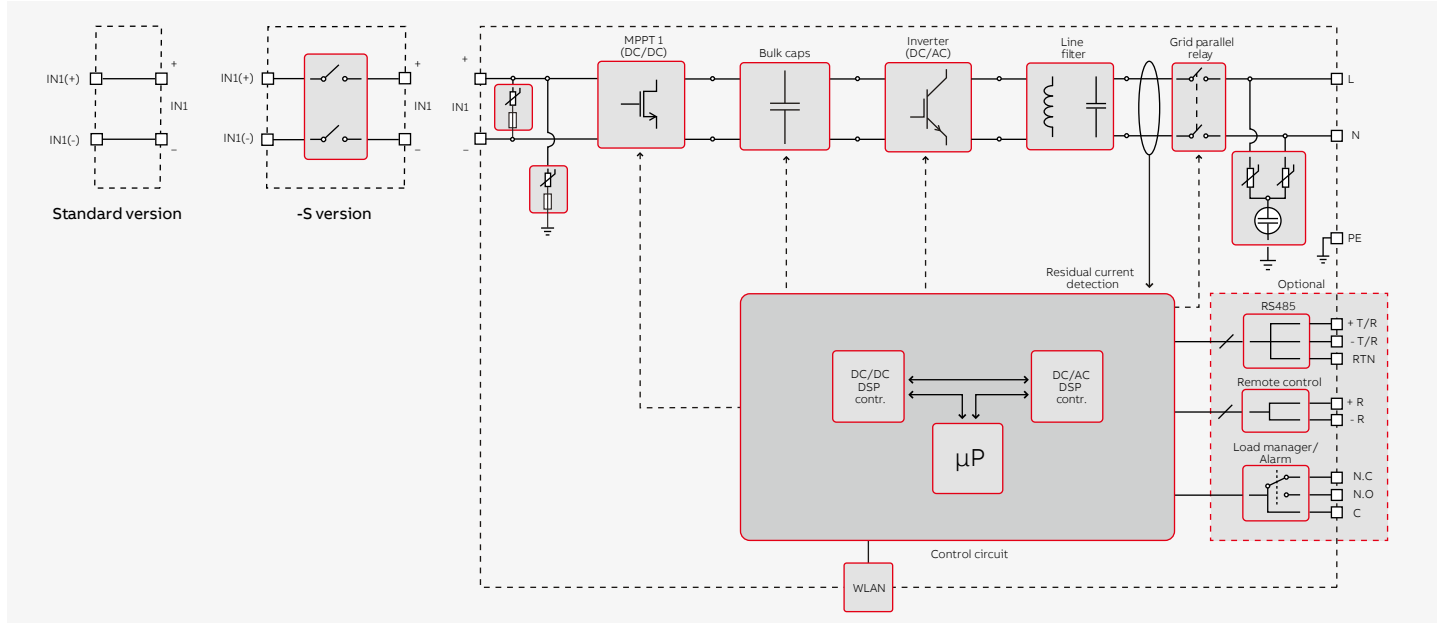
1.2 to 5.0 kW



### Technical data and types

Type code	UNO-DM-1.2-TL-PLUS	UNO-DM-2.0-TL-PLUS	UNO-DM-3.3-TL-PLUS
<b>Input side</b>			
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 <sup>1)</sup>	Quick Fit PV Connector		
<b>Input protection</b>			
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		
<b>Output side</b>			
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 <sup>3)</sup>	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 ( $f$ ) <sup>4)</sup>	50/60 Hz		
Output frequency range ( $f_{min}...f_{max}$ ) <sup>4)</sup>	47...53/57...63 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		
<b>Output protection</b>			
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
<b>Operating performance</b>			
Maximum efficiency ( $\eta_{max}$ )	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	
<b>Embedded communication</b>			
Embedded communication interface <sup>5)</sup>		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	
<b>Environmental</b>			
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	
Maximum operating altitude without derating		2000 m / 6560 ft	
<b>Physical</b>			
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	
<b>Safety</b>			
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) <sup>7)</sup>		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	
<b>Available products variants</b>			
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

<sup>1)</sup> "Refer to the document "String inverter – Product Manual appendix" available at [www.abb.com/solarinverters](http://www.abb.com/solarinverters) to know the brand and the model of the quick fit connector"

<sup>2)</sup> 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

<sup>3)</sup> The AC voltage range may vary depending on specific country grid standard

<sup>4)</sup> The Frequency range may vary depending on specific country grid standard; CE is valid for 50Hz only

<sup>5)</sup> As per IEEE 802.11 b/g/n standard

<sup>6)</sup> Pacr = 4200 W @ 45°C/113°F

<sup>7)</sup> 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:

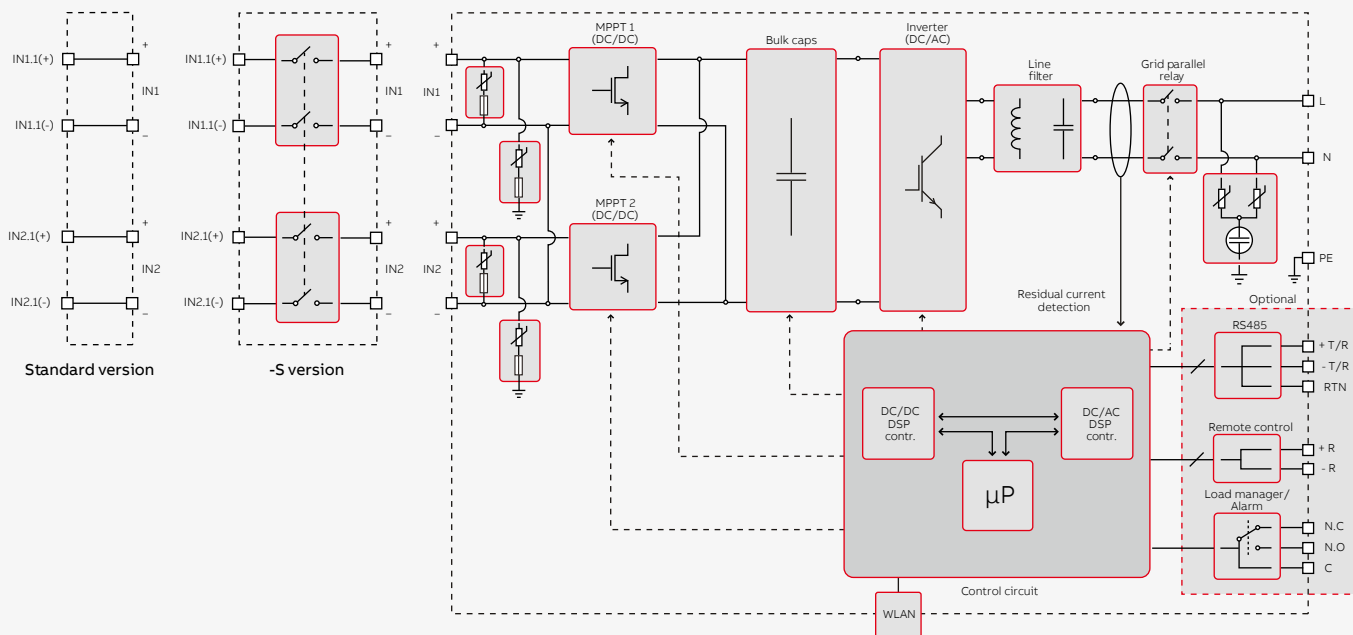
## Efficient, connected, smart.



### Technical data and types

Type code	UNO-DM-4.0-TL-PLUS	UNO-DM-4.6-TL-PLUS	UNO-DM-5.0-TL-PLUS
<b>Input side</b>			
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 <sup>3)</sup>	Quick Fit PV Connector		
<b>Input protection</b>			
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		
<b>Output side</b>			
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 <sup>2)</sup>	4600 W	5000 W
Maximum apparent power ( $S_{max}$ )	4000 VA <sup>2)</sup>	4600 VA	5000 VA
Rated AC grid voltage ( $V_{acr}$ )	230 V		
AC voltage range <sup>3)</sup>	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 ( $f$ ) <sup>4)</sup>	50/60 Hz		
Output frequency range ( $f_{min}...f_{max}$ ) <sup>4)</sup>	47...53/57...63 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		
<b>Output protection</b>			
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
<b>Operating performance</b>			
Maximum efficiency ( $\eta_{max}$ )	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	
<b>Embedded communication</b>			
Embedded communication interface <sup>5)</sup>	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		
<b>Environmental</b>			
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 <sup>6)</sup>	-25...+60°C /-13...140°F with derating above 45°C/113°F
Relative humidity	0...100 % condensing		
Maximum operating altitude without derating	2000 m / 6560 ft		
<b>Physical</b>			
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		
<b>Safety</b>			
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) <sup>7)</sup>	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		
<b>Available products variants</b>			
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

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<sup>2)</sup>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  
<sup>3)</sup>The AC voltage range may vary depending on specific country grid standard  
<sup>4)</sup>The Frequency range may vary depending on specific country grid standard;

CE is valid for 50Hz only  
<sup>5)</sup>As per IEEE 802.11 b/g/n standard  
<sup>6)</sup>Pacr = 4200 W @ 45°C/113°F  
<sup>7)</sup>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**



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