/ Perfect Welding / Solar Energy / Perfect Charging

FRONIUS SYMO ADVANCED

Powering three-phase projects that last - now with integrated SunSpec PLC

PC board replacement concept

SnapINverter Technology

Smart Grid Ready

SuperFlex Design

Power Line Communication

The Symo Advanced is the three-phase inverter for maximum safety, reliability & ROI. Featuring six models ranging from 10 kW to 24 kW, it is ideal for any commercial and industrial application. The Symo Advanced is lightweight and combines high-power density with flexibility to ensure the fastest possible installation for your PV project. The small number of total power conversion electronics adds to the high serviceability from any mounting spot. You get optimized system granularity with a low number of system components.

TECHNICAL DATA FRONIUS SYMO ADVANCED (208-240 V VERSIONS)

INPUT DATA	SYMO ADVANCED 10.0-3 208-240		SYMO ADVANCED 12.0-3 208-240	
	208 V	240 V	208 V	240 V
Max. PV generator output ($P_{dc\ max}$)	15 kW_{peak}		18 kW_{peak}	
Max. input current ($I_{dc\ max1}$ / $I_{dc\ max2}$)	25 A / 16.5 A			
Max. array short circuit current (MPP_1 / MPP_2)	37.5 A / 24.8 A			
Nominal input voltage	350 V	370 V	350 V	370 V
DC input voltage range ($U_{dc\ min}$ + $U_{dc\ max}$)	200 - 600 V			
Feed-in start voltage ($U_{dc\ start}$)	200 V			
Usable MPP voltage range ($U_{mpp\ min}$ + $U_{mpp\ max}$)	300 - 500 V			
Max. input voltage	600 V			
Admissable conductor size DC	AWG 14-AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-AWG 2 copper or aluminum with input combiner			
Number of MPP trackers	2			

OUTPUT DATA	SYMO ADVANCED 10.0-3 208-240		SYMO ADVANCED 12.0-3 208-240	
	208 V	240 V	208 V	240 V
AC nominal output ($P_{ac,r}$)	9,995 W		11,995 W	
Max. output power	9,995 VA		11,995 VA	
Output configuration	208 / 240 V			
Frequency range (f_{min} - f_{max})	45 - 60 Hz			
Admissable conductor size AC	AWG 14 - AWG 6			
Total harmonic distortion	< 1.5 %		< 1.75 %	
Power factor (cos $\phi_{ac,r}$)	0-1 ind. / cap.			
Max. continuous output current	27.7 A	24 A	33.3 A	28.9 A
OCPD/AC breaker size	35 A	30 A	45 A	40 A

EFFICIENCY	SYMO ADVANCED 10.0-3 208-240		SYMO ADVANCED 12.0-3 208-240	
	208 V	240 V	208 V	240 V
Max. Efficiency	97.0 %			
CEC Efficiency	96.5 %		96.5 %	

TECHNICAL DATA FRONIUS SYMO ADVANCED (208-240 V VERSIONS)

GENERAL DATA	SYMO ADVANCED 10.0-3 208-240	SYMO ADVANCED 12.0-3 208-240
Dimensions (height x width x depth)	725 x 510 x 225 mm (28.5 x 20.1 x 8.9 inches)	
Weight	41.7 kg (91.9 lbs)	
Protection Class	NEMA 4X	
Night time consumption	< 1 W	
Inverter topology	Transformerless	
Cooling	Regulated air cooling	
Installation	Indoor and outdoor installation, tilt from 0 - 90 degrees [1]	
DIN rail (length x width x depth)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)	
Ambient operating temperature range	-40 - +60 °C (-40 - +140 °F)	
Permitted humidity	0 - 100 % (non-condensing)	
Elevation	max. input voltage of 600 V up to 3,400 m (11,155 ft)	
DC connection technology	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)	
AC connection technology	Screw terminals 14-6 AWG	
Warranty	10 years / extensions up to 15 and 20 years available [2]	
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547a-2014, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22. 2 No. 107.1-16, UL1699B Issue 2 -2013, CSA TIL M-07 Issue 1 -2013, UL 3741 [3]	

[1] Fronius Shade Cover required for installation angles less than 15 degree
[2] Fronius Limited Warranty Conditions for the USA. Different terms or restrictions may apply in other countries. More Information www.fronius.us/warranty
[3] The Fronius Symo Advanced string inverter is UL 3741 certified for use with the PanelClaw® and IronRidge® racking systems when the inverter is installed within the 1ft array boundary. More information: https://sitecore.fronius.com/en-us/usa/solar-energy/installers-partners/products-solutions/features/fronius-symo-advanced-ul-3741-certified

PROTECTIVE DEVICES	SYMO ADVANCED 10.0-3 208-240	SYMO ADVANCED 12.0-3 208-240
DC reverse polarity protection	Yes	
Anti islanding	Yes	
Over temperature protection	Output power derating /Active cooling	
AFCI	Yes	
Rapid shutdown compliant	Yes	
Ground Fault Protection with Isolation Monitor Interrupter	Yes	
DC disconnector	Yes	

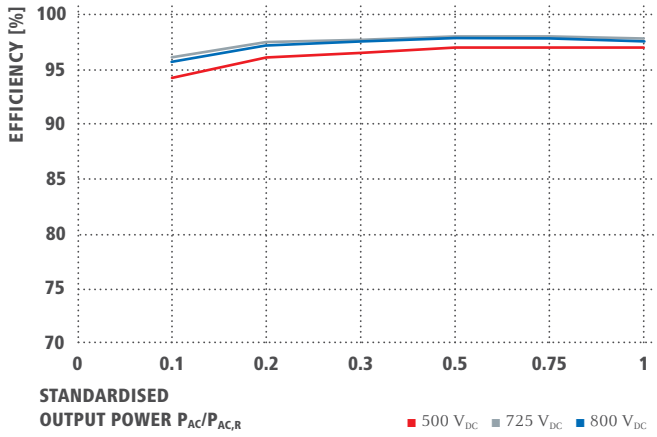
INTERFACES	SYMO ADVANCED 10.0-3 208-240	SYMO ADVANCED 12.0-3 208-240
USB (A socket)	Datalogging and inverter update possible via USB	
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol	
Power Line Communication (PLC)	Yes – SunSpec Rapid Shutdown communication standard	
Wi-Fi/Ethernet/Serial/ Datalogger and webserver [4]	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU	
6 inputs and 4 digital I/Os [3]	Load management; signaling, multipurpose I/O	

[4] Available with the Fronius Datamanager 2.0 Card (only one card required for up to 100 inverters)

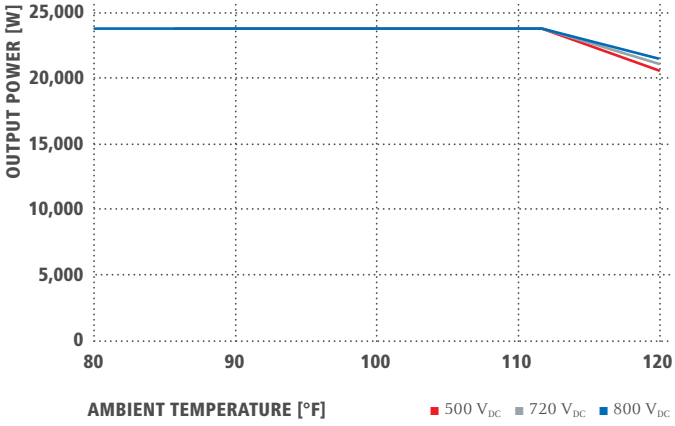
TECHNICAL DATA FRONIUS SYMO ADVANCED (480 V VERSIONS)

INPUT DATA	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
Max. PV generator output ($P_{dc\ max}$)	22.5 kW_{peak}	30 kW_{peak}	34 kW_{peak}	36 kW_{peak}
Max. input current ($I_{dc\ max1}$ / $I_{dc\ max2}$)	33 A / 25 A			
Max. array short circuit current (MPP_1 / MPP_2)	49.5 A / 37.5 A			
Nominal input voltage	685 V	710 V	720 V	
DC input voltage range ($U_{dc\ min}$ + $U_{dc\ max}$)	200 - 1,000 V			
DC startup voltage	200 V			
Usable MPP voltage range ($U_{mpp\ min}$ + $U_{mpp\ max}$)	350 - 800 V	450 - 800 V	500 - 800 V	
Max. input voltage	1,000 V			
Admissable conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct, AWG 4 - AWG 2 copper or aluminum with input combiner			
Number of MPP trackers	2			

FRONIUS SYMO ADVANCED 24.0-3 480 CEC EFFICIENCY CURVE



FRONIUS SYMO ADVANCED 24.0-3 480 TEMPERATURE DERATING CURVE



TECHNICAL DATA FRONIUS SYMO (480 V VERSIONS)

OUTPUT DATA	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
AC nominal Ouput ($P_{ac,r}$)	14,995 W	19,995 W	22,727 W	23,995 W
Max. ouput power	14,995 VA	19,995 VA	22,727 VA	23,995 VA
Grid connection	480 / 277 V WYE [5]			
Frequency (frequency range f_{min} - f_{max})	60 Hz (45 - 65 Hz)			
Admissable conductor size (AC)	AWG 14-AWG 6			
Total harmonic distortion	< 1.5 %	< 1 %	< 1.25 %	< 1 %
Power factor ($C_{os\ ac,r}$)	0-1 ind. / cap.			
Max. continuous output current	18 A	24 A	27.3 A	28.9 A
OCPD/AC breaker size	25 A	30 A	35 A	40 A

EFFICIENCY	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
Max. Efficiency	98 %			
CEC Efficiency	97 %	97.5 %		

GENERAL DATA	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
Dimensions (height x width x depth)	725 x 510 x 225 mm (28.5 x 20.1 x 8.9 inches)			
Weight	43.4 kg (95.7 lbs)			
Protection Class	NEMA 4X			
Night time consumption	< 1 W			
Inverter topology	Transformerless			
Cooling	Regulated air cooling			
Installation	Indoor and outdoor installation, tilt from 0 - 90 degree [6]			
DIN rail (length x width x depth)	max. 106 x 90 x 66 mm (max. 4.2 x 3.5 x 2.6 inches)			
Ambient operating temperature range	-40 - +60 °C (-40°F - + 140 °F)			
Permitted humidity	0 - 100 % (non-condensing)			
Elevation	2,000 m (6,562 ft) with a max. input voltage of 1,000 V / 3,400 m (11,155 ft) with a max. input voltage of 850 V			
DC connection technology	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)			
AC connection technology	Screw terminals 14-6 AWG			
Warranty	10 years / extensions up to 15 and 20 years available [7]			
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547a-2014, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22. 2 No. 107.1-16, UL1699B Issue 2 -2013, CSA TIL M-07 Issue 1 -2013, UL 3741 [8]			

[5] +N for sensing purposes - no current carrying conductor
[6] Fronius Shade Cover required for installation angles less than 15 degree
[7] Fronius Limited Warranty Conditions for the USA. Different terms or restrictions may apply in other countries. More Information www.fronius.us/warranty
[8] The Fronius Symo Advanced string inverter is UL 3741 certified for use with the PanelClaw® and IronRidge® racking systems when the inverter is installed within the 1ft array boundary. More information: https://sitecore.fronius.com/en-us/usa/solar-energy/installers-partners/products-solutions/features/fronius-symo-advanced-ul-3741-certified

PROTECTIVE DEVICES	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
DC reverse polarity protection	Yes			
Anti islanding	Yes			
Over temperature protection	Ouput power derating / Active cooling			
AFCI	Yes			
Rapid shutdown compliant	Yes			
Ground Fault Protection with Isolation Monitor Interrupter	Yes			
DC disconnector	Yes			

INTERFACES	SYMO ADVANCED 15.0-3 480	SYMO ADVANCED 20.0-3 480	SYMO ADVANCED 22.7-3 480	SYMO ADVANCED 24.0-3 480
USB (A socket)	Datalogging and inverter update possible via USB			
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol			
Power Line Communication (PLC)	Yes – SunSpec Rapid Shutdown communication standard			
Wi-Fi/Ethernet/Serial/ Datalogger and webserver[9]	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU			
6 inputs and 4 digital I/Os[8]	Load management; signaling, multipurpose I/O			

[9] Available with the Fronius Datamanager 2.0 Card (only one card required for up to 100 inverters)

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THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 5,660 employees worldwide and 1,321 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at **www.fronius.com**

Rapid Shutdown CERTIFIED

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