



# FRONIUS SYMO

/ Powering commercial projects that last. The Fronius Symo.



/ PC Board Replacement



/ SnapINverter Mounting System



/ Integrated Data Communication



/ Design Flexibility



/ Smart Grid Ready



/ AFCI & NEC 2014 Compliant

/ Featuring ten models ranging from 10 kW to 24 kW, the transformerless Fronius Symo is the ideal compact three-phase inverter for all commercial applications. The high system voltage and wide input range ensure maximum flexibility in system design. With low roof loading, NEMA 4X and 1000 V DC rating, the Fronius Symo can be mounted in many different ways, including flat on a roof or on a pole. The modern design is equipped with the SnapINverter mounting system, allowing for lightweight, secure and convenient installation. Several industry-leading features are available with the Fronius Symo including Wi-Fi®\* and SunSpec Modbus interfaces for seamless monitoring and data-logging, field proven Arc Fault Circuit Interruption (AFCI), NEC 2014 compliant, and Fronius' superb online and mobile monitoring platform Fronius Solar.web.

INPUT DATA		SYMO 10.0-3 208-240	SYMO 12.0-3 208-240	SYMO 10.0-3 480	SYMO 12.5-3 480	SYMO 15.0-3 208
Recommended PV power (kWp)		8.0 - 13.0	9.5 - 15.5	8.0 - 13.0	10.0 - 16.0	12.0 - 19.5
Max. usable input current (MPPT1/MPPT 2)		25.0 A / 16.5 A		50.0 A		50.0 A
Max. usable input current total (MPPT 1 + MPPT 2)		41.5 A		50.0 A		50.0 A
Max. array short circuit current		37.5 A / 24.8 A		75.0 A		75.0 A
Nominal input voltage	208 V	350 V	350 V	N/A	N/A	325 V
	240 V	370 V	370 V	N/A	N/A	N/A
	480 V	N/A	N/A	675 V	685 V	N/A
Operating voltage range		200-600 V		200-1000 V		325-1000 V
DC startup voltage		200 V		360 V		360 V
MPP Voltage range		300-500 V		300-800 V		325-850 V
Max. input voltage		600 V		1000 V		
Admissible conductor size DC		AWG 14-AWG 6 copper direct, AWG 6 aluminum direct, AWG 4-AWG 2 copper or aluminum with input combiner				
Integrated DC string fuse holders		NA		6- and 6+		6- and 6+
Max (Isc) input terminal rating		33A		12A		12A
Number of MPPT		2		1		1

OUTPUT DATA		SYMO 10.0-3 208-240	SYMO 12.0-3 208-240	SYMO 10.0-3 480	SYMO 12.5-3 480	SYMO 15.0-3 208
Max. output power	208 V	9995 VA	11995 VA	NA	NA	15000 VA
	240 V	9995 VA	11995 VA	NA	NA	NA
	480 V	NA	NA	9995 VA	12495 VA	NA
Output configuration		208/240 V		480 V Delta +N**		208 V
Frequency range (adjustable)		45-65 Hz				
Nominal operating frequency		60 Hz				
Admissible conductor size AC		AWG 14-AWG 6				
Total harmonic distortion		<1.5 %	<1.75 %	<1.5 %	<1.5 %	<3.5 %
Power factor range		0-1 ind./cap.				
Max. continuous output current	208 V	27.7 A	33.3 A	NA	NA	41.6 A
	240 V	24.0 A	28.9 A	NA	NA	NA
	480 V	NA	NA	12.0 A	15.0 A	NA
OCPD/AC breaker size	208 V	35 A	45 A	NA	NA	60 A
	240 V	30 A	40 A	NA	NA	NA
	480 V	NA	NA	15 A	20 A	NA
Max. Efficiency		97.0 %	97.0 %	98.1 %	98.1 %	97.3%
CEC Efficiency	208 V	96.5 %	96.5 %	NA	NA	96.5%
	240 V	96.5 %	96.5 %	NA	NA	NA
	480 V	NA	NA	96.5 %	97.0 %	NA

## TECHNICAL DATA (10.0-3 208/240, 12.0-3 208/240, 10.0-3 480, 12.5-3 480, 15.0-3 208)

GENERAL DATA	STANDARD WITH ALL FRONIUS SYMO MODELS
Dimensions (width x height x depth)	20.1 x 28.5 x 8.9 inches
Protection Class	NEMA 4X
Night time consumption	< 1 W
Inverter topology	Transformerless
Cooling	Variable speed fan
Installation	Indoor and outdoor installation
Ambient operating temperature range	-40°F - + 140 °F (-40 - +60 °C)
Permitted humidity	0 - 100 % (non-condensing)
Elevation	2000 m (6562 ft) with a max. input voltage of 1000 V / 3400 m (11155 ft) with a max. input voltage of 850 V
DC connection terminals	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)
AC connection terminals	Screw terminals 14-6 AWG
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

GENERAL DATA	SYMO 10.0-3 208-240	SYMO 12.0-3 208-240	SYMO 10.0-3 480	SYMO 12.5-3 480	SYMO 15.0-3 208
Weight	91.9 lbs.		76.7 lbs.		78.3 lbs.

PROTECTIVE DEVICES	STANDARD WITH ALL FRONIUS SYMO MODELS
DC reverse polarity protection	Yes
Anti islanding	Internal; in accordance with UL 1741-2010, IEEE 1547-2003 and NEC
Over temperature protection	Output power derating /Active cooling
AFCI	Yes
Rapid shutdown compliant	Yes (according to NEC 2014)
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes

INTERFACES	AVAILABLE WITH ALL FRONIUS SYMO MODELS
USB (A socket)	Datalogging and inverter update possible via USB
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol
AVAILABLE WITH THE FRONIUS DATAMANAGER 2.0 CARD ( ONLY ONE CARD REQUIRED FOR UP TO 100 INVERTERS )	
Wi-Fi/Ethernet/Serial/ Datalogger and webservice	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU
6 inputs and 4 digital I/Os	Load management; signaling, multipurpose I/O

## TECHNICAL DATA (15.0-3 480, 17.5-3 480, 20.0-3 480, 22.7-3 480, 24.0-3 480)

INPUT DATA	SYMO 15.0-3 480	SYMO 17.5-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Recommended PV power (kWp)	12.0 - 19.5	14.0 - 23.0	16.0 - 26.0	18.0 - 29.5	19.0 - 31.0
Max. usable input current (MPPT1/MPPT 2)	33.0 A / 25.0 A				
Max. usable input current total (MPPT 1 + MPPT 2)	51 A				
Max. array short circuit current (MPPT 1/MPPT 2)	49.5 A / 37.5 A				
Nominal input voltage	480 V	685 V	695 V	710 V	720 V
Operating voltage range	200-1000 V				
DC startup voltage	200 V				
MPP-voltage range	350-800 V	400-800 V	450-800 V	500-800 V	
Max. input voltage	1000 V				
Admissible conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct, AWG 4 - AWG 2 copper or aluminum with input combiner				
Integrated DC string fuse holders	NA	NA	6- and 6+		
Max (Isc) input terminal rating	33A	33A	12A		
Number of MPPT	2				

## TECHNICAL DATA (15.0-3 480, 17.5-3 480, 20.0-3 480, 22.7-3 480, 24.0-3 480)

OUTPUT DATA		SYMO 15.0-3 480	SYMO 17.5-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Max. output power	480 V	14995 VA	17495 VA	19995 VA	22727 VA	23995 VA
Output configuration		480 V Delta +N**				
Frequency range (adjustable)		45-65 Hz				
Nominal operating frequency		60 Hz				
Admissible conductor size (AC)		AWG 14-AWG 6				
Total harmonic distortion		<1.5 %	<1.25 %	<1.0 %	<1.25 %	<1.0 %
Power factor range		0 - 1 ind./cap.				
Max. continuous output current	480 V	18.0 A	21.0 A	24.0 A	27.3 A	28.9 A
OCPD/AC breaker size	480 V	25 A	30 A	30 A	35 A	40 A
Max. Efficiency		98.0 %				
CEC Efficiency	480 V	97.0 %	97.5 %	97.5 %	97.5 %	97.5 %

## TECHNICAL DATA (15.0-3 480, 17.5-3 480, 20.0-3 480, 22.7-3 480, 24.0-3 480)

GENERAL DATA	STANDARD WITH ALL FRONIUS SYMO MODELS
Dimensions (width x height x depth)	20.1 x 28.5 x 8.9 inches
Protection Class	NEMA 4X
Night time consumption	< 1 W
Inverter topology	Transformerless
Cooling	Variable speed fan
Installation	Indoor and outdoor installation
Ambient operating temperature range	-40°F - +140 °F (-40 - +60 °C)
Permitted humidity	0 - 100 % (non-condensing)
Elevation	2000 m (6562 ft) with a max. input voltage of 1000 V / 3400 m (11155 ft) with a max. input voltage of 850 V
DC connection terminals	6x DC+ and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)
AC connection terminals	Screw terminals 14-6 AWG
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

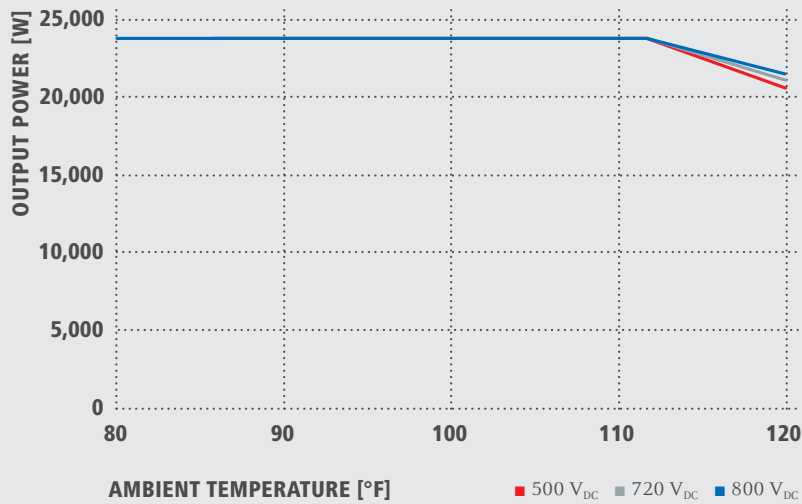
GENERAL DATA	SYMO 15.0-3 480	SYMO 17.5-3 480	SYMO 20.0-3 480	SYMO 22.7-3 480	SYMO 24.0-3 480
Weight	95.7 lbs.				

PROTECTIVE DEVICES	STANDARD WITH ALL FRONIUS SYMO MODELS
DC reverse polarity protection	Yes
Anti islanding	internal; in accordance with UL 1741-2010, IEEE 1547-2003 and NEC
Over temperature protection	Output power derating/Active cooling
AFCI	Yes
Rapid shutdown compliant	Yes (according to NEC 2014)
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes

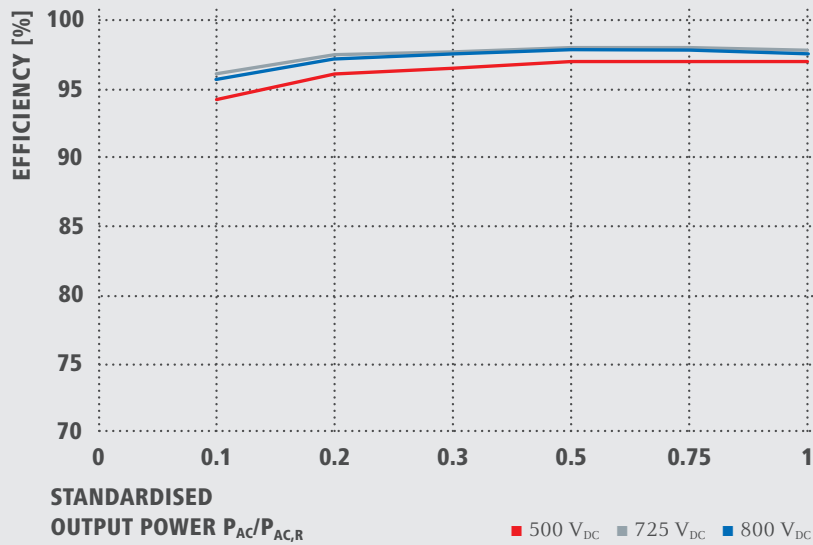
INTERFACES	AVAILABLE WITH ALL FRONIUS SYMO MODELS
USB (A socket)	Datalogging and inverter update possible via USB
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol
<b>AVAILABLE WITH THE FRONIUS DATAMANAGER 2.0 CARD ( ONLY ONE CARD REQUIRED FOR UP TO 100 INVERTERS )</b>	
Wi-Fi/Ethernet/Serial/ Datalogger and webserver	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU
6 inputs and 4 digital I/Os	Load management; signaling, multipurpose I/O

\*\*+N FOR SENSING PURPOSES - NO CURRENT CARRYING CONDUCTOR.

### FRONIUS SYMO 24.0-3 480 TEMPERATURE DERATING CURVE



### FRONIUS SYMO 24.0-3 480 CEC EFFICIENCY CURVE



/ Perfect Welding / Solar Energy / Perfect Charging

#### WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

/ Whether welding technology, photovoltaics or battery charging technology – our goal is clearly defined: to be the innovation leader. With around 3,700 employees worldwide, we shift the limits of what’s possible – our record of over 800 granted patents is testimony to this. While others progress step by step, we innovate in leaps and bounds. Just as we’ve always done. The responsible use of our resources forms the basis of our corporate policy.

Further information about all Fronius products and our global sales partners and representatives can be found at [www.fronius.com](http://www.fronius.com)



Fronius USA LLC  
6797 Fronius Drive  
Portage, IN 46368  
USA

[pv-support-usa@fronius.com](mailto:pv-support-usa@fronius.com)  
[www.fronius-usa.com](http://www.fronius-usa.com)



# FRONIUS SYMO

Maximum flexibility for the applications of tomorrow



SnapInverter technology



Integrated data communication



Dynamic Peak Manager



Smart Grid Ready



SuperFlex Design



Zero feed-in

With power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for systems of every size. Owing to the SuperFlex Design, the Fronius Symo is the perfect answer to irregularly shaped or multi-oriented roofs.

The standard interface to the internet via WLAN or Ethernet and the ease of integration of third-party components make the Fronius Symo one of the most communicative inverters on the market. Furthermore, the meter interface permits dynamic feed-in management and a clear visualisation of the consumption overview.

## TECHNICAL DATA FRONIUS SYMO (3.0-3-S, 3.7-3-S, 4.5-3-S, 3.0-3-M, 3.7-3-M, 4.5-3-M)

INPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Number MPP trackers		1			2	
Max. input current ( $I_{dc\ max\ 1} / I_{dc\ max\ 2}^{1)}$ )		16.0 A			16.0 A / 16.0 A	
Max. array short circuit current (MPP <sub>1</sub> / MPP <sub>2</sub> <sup>1)</sup> )		24.0 A			24.0 A / 24.0 A	
DC input voltage range ( $U_{dc\ min} - U_{dc\ max}$ )				150 - 1000 V		
Feed-in start voltage ( $U_{dc\ start}$ )				200 V		
Usable MPP voltage range				150 - 800 V		
Number of DC connections		3			2+2	
Max. PV generator output ( $P_{dc\ max}$ )	6.0 kW <sub>peak</sub>	7.4 kW <sub>peak</sub>	9.0 kW <sub>peak</sub>	6.0 kW <sub>peak</sub>	7.4 kW <sub>peak</sub>	9.0 kW <sub>peak</sub>

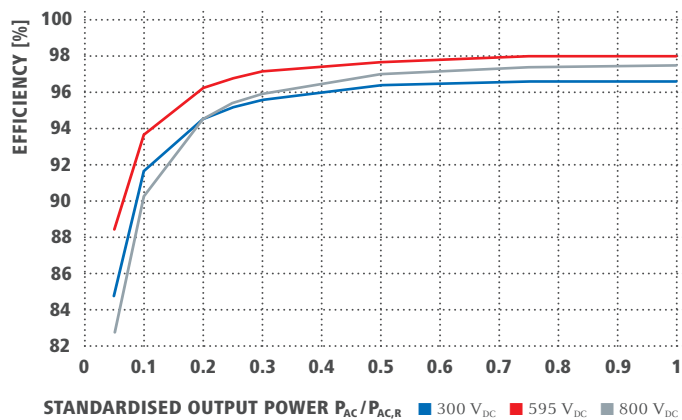
OUTPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
AC nominal output ( $P_{ac,r}$ )	3,000 W	3,700 W	4,500 W	3,000 W	3,700 W	4,500 W
Max. output power	3,000 VA	3,700 VA	4,500 VA	3,000 VA	3,700 VA	4,500 VA
AC output current ( $I_{ac\ nom}$ )	4.3 A	5.3 A	6.5 A	4.3 A	5.3 A	6.5 A
Grid connection (voltage range)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)					
Frequency (Frequency range)	50 Hz / 60 Hz (45 - 65 Hz)					
Total harmonic distortion	< 3 %					
Power factor ( $\cos\ \phi_{ac,r}$ )	0.70 - 1 ind. / cap.			0.85 - 1 ind. / cap.		

GENERAL DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Dimensions (height x width x depth)	645 x 431 x 204 mm					
Weight	16.0 kg			19.9 kg		
Degree of protection	IP 65					
Protection class	1					
Overvoltage category (DC / AC) <sup>2)</sup>	2 / 3					
Night time consumption	< 1 W					
Inverter design	Transformerless					
Cooling	Regulated air cooling					
Installation	Indoor and outdoor installation					
Ambient temperature range	-25 - +60 °C					
Permitted humidity	0 - 100 %					
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)					
DC connection technology	3x DC+ and 3x DC- screw terminals 2.5 - 16 mm <sup>2</sup>			4x DC+ and 4x DC- screw terminals 2.5 - 16mm <sup>2</sup> <sup>3)</sup>		
AC connection technology	5-pole AC screw terminals 2.5 - 16 mm <sup>2</sup>			5-pole AC screw terminals 2.5 - 16mm <sup>2</sup> <sup>3)</sup>		
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, SI 4777 <sup>1)</sup> , CEI 0-21 <sup>1)</sup> , NRS 097					

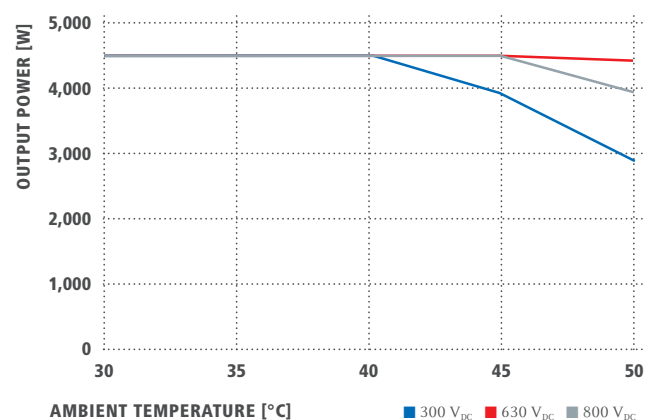
<sup>1)</sup> This applies to Fronius Symo 3.0-3-M, 3.7-3-M and 4.5-3-M. <sup>2)</sup> According to IEC 62109-1.

<sup>3)</sup> 16 mm<sup>2</sup> without wire end ferrules. Further information regarding the availability of the inverters in your country can be found at [www.fronius.com](http://www.fronius.com).

## FRONIUS SYMO 4.5-3-S EFFICIENCY CURVE



## FRONIUS SYMO 4.5-3-S TEMPERATURE DERATING



## TECHNICAL DATA FRONIUS SYMO (3.0-3-S, 3.7-3-S, 4.5-3-S, 3.0-3-M, 3.7-3-M, 4.5-3-M)

EFFICIENCY	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Max. efficiency				98.0 %		
European efficiency ( $\eta_{EU}$ )	96.2 %	96.7 %	97.0 %	96.5 %	96.9 %	97.2 %
MPP adaptation efficiency				> 99.9 %		

PROTECTIVE DEVICES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
DC insulation measurement				Yes		
Overload behaviour				Operating point shift, power limitation		
DC disconnect				Yes		
Reverse polarity protection				Yes		

INTERFACES	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
WLAN / Ethernet LAN				Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)		
6 inputs and 4 digital in/out				Interface to ripple control receiver		
USB (A socket) <sup>1)</sup>				Datalogging, inverter update via USB flash drive		
2x RS422 (RJ45 socket) <sup>1)</sup>				Fronius Solar Net		
Signalling output <sup>1)</sup>				Energy management (potential-free relay output)		
Datalogger and Webservice				Included		
External input <sup>1)</sup>				S0-Meter Interface / Input for overvoltage protection		
RS485				Modbus RTU SunSpec or meter connection		

<sup>1)</sup> Also available in the light version.

## TECHNICAL DATA FRONIUS SYMO (5.0-3-M, 6.0-3-M, 7.0-3-M, 8.2-3-M)

INPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Number MPP trackers	2			
Max. input current ( $I_{dc\ max\ 1} / I_{dc\ max\ 2}$ )	16.0 A / 16.0 A			
Max. array short circuit current (MPP <sub>1</sub> /MPP <sub>2</sub> )	24.0 A / 24.0 A			
DC input voltage range ( $U_{dc\ min} - U_{dc\ max}$ )	150 - 1000 V			
Feed-in start voltage ( $U_{dc\ start}$ )	200 V			
Usable MPP voltage range	150 - 800 V			
Number of DC connections	2+2			
Max. PV generator output ( $P_{dc\ max}$ )	10.0 kW <sub>peak</sub>	12.0 kW <sub>peak</sub>	14.0 kW <sub>peak</sub>	16.4 kW <sub>peak</sub>

OUTPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
AC nominal output ( $P_{ac,r}$ )	5,000 W	6,000 W	7,000 W	8,200 W
Max. output power	5,000 VA	6,000 VA	7,000 VA	8,200 VA
AC output current ( $I_{ac,nom}$ )	7.2 A	8.7 A	10.1 A	11.8 A
Grid connection (voltage range)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)			
Frequency (Frequency range)	50 Hz / 60 Hz (45 - 65 Hz)			
Total harmonic distortion	< 3 %			
Power factor ( $\cos\ \phi_{ac,r}$ )	0.85 - 1 ind. / cap.			

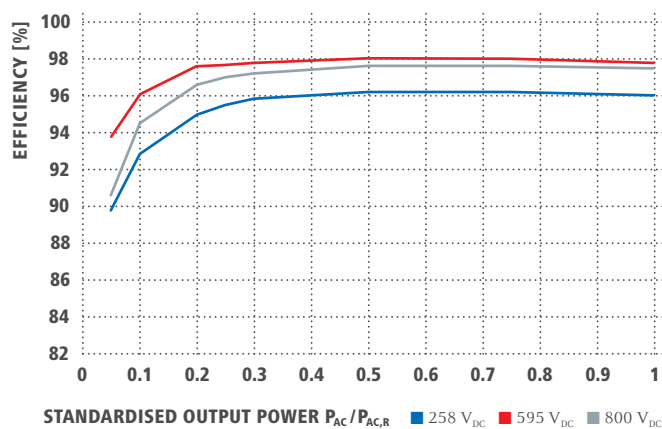
GENERAL DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Dimensions (height x width x depth)	645 x 431 x 204 mm			
Weight	19.9 kg			21.9 kg
Degree of protection	IP 65			
Protection class	1			
Overvoltage category (DC / AC) <sup>1)</sup>	2 / 3			
Night time consumption	< 1 W			
Inverter design	Transformerless			
Cooling	Regulated air cooling			
Installation	Indoor and outdoor installation			
Ambient temperature range	-25 - +60 °C			
Permitted humidity	0 - 100 %			
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)			
DC connection technology	4x DC+ and 4x DC- Screw terminals 2.5 - 16mm <sup>2</sup> <sup>2)</sup>			
AC connection technology	5-pole AC Screw terminals 2.5 - 16mm <sup>2</sup> <sup>2)</sup>			
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, S1 4777, CEI 0-21, NRS 097			

<sup>1)</sup> According to IEC 62109-1.

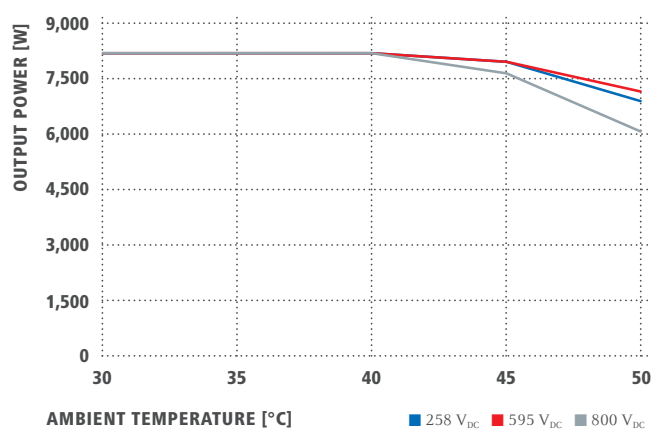
<sup>2)</sup> 16 mm<sup>2</sup> without wire end ferrules.

Further information regarding the availability of the inverters in your country can be found at [www.fronius.com](http://www.fronius.com).

## FRONIUS SYMO 8.2-3-M EFFICIENCY CURVE



## FRONIUS SYMO 8.2-3-M TEMPERATURE DERATING



## TECHNICAL DATA FRONIUS SYMO (5.0-3-M, 6.0-3-M, 7.0-3-M, 8.2-3-M)

EFFICIENCY	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. efficiency	98.0 %			
European efficiency (η <sub>EU</sub> )	97.3 %	97.5 %	97.6 %	97.7 %
MPP adaptation efficiency	> 99.9 %			

PROTECTIVE DEVICES	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
DC insulation measurement	Yes			
Overload behaviour	Operating point shift, power limitation			
DC disconnect	Yes			
Reverse polarity protection	Yes			

INTERFACES	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital in/out	Interface to ripple control receiver			
USB (A socket) <sup>1)</sup>	Datalogging, inverter update via USB flash drive			
2x RS422 (RJ45 socket) <sup>1)</sup>	Fronius Solar Net			
Signalling output <sup>1)</sup>	Energy management (potential-free relay output)			
Datalogger and Webserver	Included			
External input <sup>1)</sup>	S0-Meter Interface / Input for overvoltage protection			
RS485	Modbus RTU SunSpec or meter connection			

<sup>1)</sup> Also available in the light version.



## TECHNICAL DATA FRONIUS SYMO (10.0-3-M, 12.5-3-M, 15.0-3-M, 17.5-3-M, 20.0-3-M)

INPUT DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Number MPP trackers	2				
Max. input current ( $I_{dc\ max\ 1} / I_{dc\ max\ 2}$ )	27.0 A / 16.5 A <sup>1)</sup>		33.0 A / 27.0 A		
Max. usable input current total ( $I_{dc\ max\ 1} + I_{dc\ max\ 2}$ )	43.5 A		51.0 A		
Max. array short circuit current (MPP <sub>1</sub> /MPP <sub>2</sub> )	40.5 A / 24.8 A		49.5 A / 40.5 A		
DC input voltage range ( $U_{dc\ min} - U_{dc\ max}$ )	200 - 1000 V				
Feed-in start voltage ( $U_{dc\ start}$ )	200 V				
Usable MPP voltage range	200 - 800 V				
Number of DC connections	3+3				
Max. PV generator output ( $P_{dc\ max}$ )	15.0 kW <sub>peak</sub>	18.8 kW <sub>peak</sub>	22.5 kW <sub>peak</sub>	26.3 kW <sub>peak</sub>	30.0 kW <sub>peak</sub>

OUTPUT DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
AC nominal output ( $P_{ac,r}$ )	10,000 W	12,500 W	15,000 W	17,500 W	20,000 W
Max. output power	10,000 VA	12,500 VA	15,000 VA	17,500 VA	20,000 VA
AC output current ( $I_{ac\ nom}$ )	14.4 A	18.0 A	21.7 A	25.3 A	28.9 A
Grid connection (voltage range)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)				
Frequency (Frequency range)	50 Hz / 60 Hz (45 - 65 Hz)				
Total harmonic distortion	1.8 %	2.0 %	1.5 %	1.5 %	1.3 %
Power factor ( $\cos\ \phi_{ac,r}$ )	0 - 1 ind. / cap.				

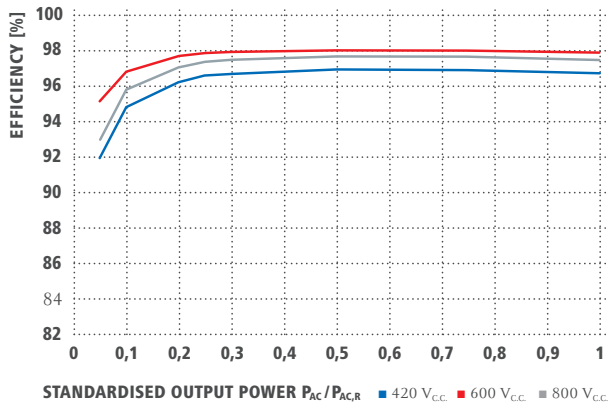
GENERAL DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Dimensions (height x width x depth)	725 x 510 x 225 mm				
Weight	34.8 kg		43.4 kg		
Degree of protection	IP 66				
Protection class	1				
Overvoltage category (DC / AC) <sup>2)</sup>	2 / 3				
Night time consumption	< 1 W				
Inverter design	Transformerless				
Cooling	Regulated air cooling				
Installation	Indoor and outdoor installation				
Ambient temperature range	-40 - +60 °C				
Permitted humidity	0 - 100 %				
Max. altitude	2,000 m / 3,400 m (unrestricted / restricted voltage range)				
DC connection technology	6x DC+ and 6x DC- screw terminals 2.5 - 16 mm <sup>2</sup>				
AC connection technology	5-pole AC screw terminals 2.5 - 16 mm <sup>2</sup>				
Certificates and compliance with standards	ÖVE / ÖNORM E 8001-4-712, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 3100, AS 4777-2, AS 4777-3, CER 06-190, G83/2, UNE 206007-1, SI 4777, CEI 0-16, CEI 0-21, NRS 097				

<sup>1)</sup> 14.0 A for voltages < 420 V

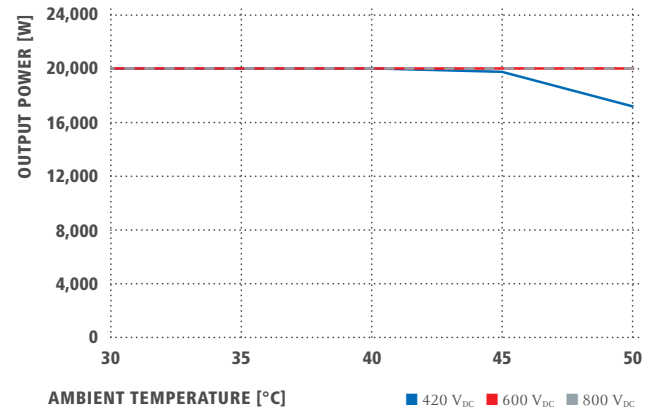
<sup>2)</sup> According to IEC 62109-1. DIN rail for optional type 1 + 2 or type 2 surge protection device available.

Further information regarding the availability of the inverters in your country can be found at [www.fronius.com](http://www.fronius.com).

## FRONIUS SYMO 20.0-3-M EFFICIENCY CURVE



## FRONIUS SYMO 20.0-3-M TEMPERATURE DERATING



## TECHNICAL DATA FRONIUS SYMO (10.0-3-M, 12.5-3-M, 15.0-3-M, 17.5-3-M, 20.0-3-M)

EFFICIENCY	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Max. efficiency		98.0 %		98.1 %	
European efficiency (η <sub>EU</sub> )	97.4 %	97.6 %	97.8 %	97.8 %	97.9 %
MPP adaptation efficiency			> 99.9 %		

PROTECTIVE DEVICES	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
DC insulation measurement			Yes		
Overload behaviour			Operating point shift, power limitation		
DC disconnecter			Yes		
Reverse polarity protection			Yes		

INTERFACES	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
WLAN / Ethernet LAN		Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)			
6 inputs and 4 digital inputs/outputs		Interface to ripple control receiver			
USB (A socket) <sup>1)</sup>		Datalogging, inverter update via USB flash drive			
2x RS422 (RJ45-socket) <sup>1)</sup>		Fronius Solar Net			
Signalling output <sup>1)</sup>		Energy management (potential-free relay output)			
Datalogger and Webserver		Included			
External input <sup>1)</sup>		S0-Meter Interface / Input for overvoltage protection			
RS485		Modbus RTU SunSpec or meter connection			

<sup>1)</sup> Also available in the light version.

Further information and technical data can be found at [www.fronius.com](http://www.fronius.com).

/ Perfect Welding / Solar Energy / Perfect Charging

### 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 3,800 employees worldwide and 1,242 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](http://www.fronius.com)

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**Fronius India Private Limited**  
 GAT no 312, Nanekarwadi  
 Chakan, Taluka - Khed District  
 Pune 410501  
 India  
[pv-sales-india@fronius.com](mailto:pv-sales-india@fronius.com)  
[www.fronius.in](http://www.fronius.in)

**Fronius Australia Pty Ltd.**  
 90-92 Lambeck Drive  
 Tullamarine VIC 3043  
 Australia  
[pv-sales-australia@fronius.com](mailto:pv-sales-australia@fronius.com)  
[www.fronius.com.au](http://www.fronius.com.au)

**Fronius UK Limited**  
 Maidstone Road, Kingston  
 Milton Keynes, MK10 0BD  
 United Kingdom  
[pv-sales-uk@fronius.com](mailto:pv-sales-uk@fronius.com)  
[www.fronius.co.uk](http://www.fronius.co.uk)

**Fronius International GmbH**  
 Froniusplatz 1  
 4600 Wels  
 Austria  
[pv-sales@fronius.com](mailto:pv-sales@fronius.com)  
[www.fronius.com](http://www.fronius.com)



SHIFTING THE LIMITS

# FRONIUS PRIMO



/ SnapInverter mounting system



/ Wireless monitoring



/ Open data communication



/ Smart Grid Ready



/ Arc Fault Circuit Interruption

The transformerless Fronius Primo is the ideal compact single-phase inverter for residential and small-scale commercial applications with power categories from 3.8 to 8.2 kW. In accordance with ESA rules for residential applications, the Fronius Primo can operate efficiently at a maximum input voltage of 600 V. And for increased efficiency and additional cost savings for commercial applications, the Fronius Primo can operate at the maximum input voltage of 1,000 V. Industry-leading features now come standard with the Fronius Primo, including: dual maximum power point tracking, arc fault protection, integrated wireless monitoring and SunSpec Modbus interfaces for seamless monitoring and datalogging via Fronius' online and mobile platform, Fronius Solar.web.

## TECHNICAL DATA FRONIUS PRIMO

GENERAL DATA	FRONIUS PRIMO 3.8 - 8.2	FRONIUS PRIMO 10.0-15.0
Dimensions (width x height x depth)	16.9 x 24.7 x 8.1 in. / 42.9 x 62.7 x 20.6 cm	20.1 x 28.5 x 8.9 in. / 51.1 x 72.4 x 20.6 cm
Weight	47.4 lb. / 21.5 kg	82.5 lbs. / 37.4 kg
Degree of protection	NEMA 4X	
Night time consumption	< 1 W	
Inverter topology	Transformerless	
Cooling	Controlled forced ventilation, variable speed fan	
Installation	Indoor and outdoor installation	
Ambient operating temperature range	-40 to 131 F / -40 to 55 C	-40 to 140 F / -40 to 60 C
Permitted humidity	0 - 100 %	
DC connection terminals	2x DC+1, 2x DC+2 and 4x DC- screw terminals for solid: copper and aluminium stranded / fine stranded: copper and aluminium	4x DC+1, 2x DC+2 and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminium (solid / stranded)
AC connection terminals	Screw terminals 12 - 6 AWG	
Revenue Grade Metering	Optional (ANSI C12.1 accuracy)	
Certificates and compliance with standards	UL 1741-2015, UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2014 Article 690, C22. 2 No. 107.1-01 (September 2001) , UL1699B Issue 2 -2013, CSA T1L M-07 Issue 1 -2013	UL 1741-2015, UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC Article 690-2014, C22. 2 No. 107.1-01 (September 2001) , UL1699B Issue 2 -2013, CSA T1L M-07 Issue 1 -2013

PROTECTIVE DEVICES	STANDARD WITH ALL PRIMO MODELS
AFCI	Yes
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes
DC reverse polarity protection	Yes

INTERFACES	AVAILABILITY	AVAILABLE WITH ALL FRONIUS PRIMO MODELS
USB (A socket)	Standard	Datalogging and inverter update via USB
2x RS422 (RJ45 socket)	Standard	Fronius Solar Net, interface protocol
Wi-Fi*/Ethernet/Serial/Datalogger and webserver	Optional	Wireless standard 802.11 b/g/n / Fronius Solar.web, SunSpec Modbus TCP, JSON / SunSpec Modbus RTU
6 inputs or 4 digital inputs/outputs	Optional	External relay controls

\*The term Wi-Fi® is a registered trademark of the Wi-Fi Alliance.

## TECHNICAL DATA FRONIUS PRIMO 3.8-1 TO 8.2-1

INPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. permitted PV power (kWp)	5.7 kW	7.5 kW	9.0 kW	11.4 kW	12.3 kW
Max. usable input current (MPPT 1/MPPT 2)	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A	18 A / 18 A
Total max. DC current	36 A				
Max. admissible input current (MPPT 1/MPPT 2)	27 A				
Operating voltage range	80 V - 1,000 V				
Max. input voltage	1,000 V				
Nominal input voltage	410 V	420 V	420 V	420 V	420 V
Admissible conductor size DC	AWG 14 - AWG 6				
MPP voltage range	200 - 800 V	240 - 800 V	240 - 800 V	250 - 800 V	270 - 800 V
Number of MPPT	2				

OUTPUT DATA	PRIMO 3.8-1	PRIMO 5.0-1	PRIMO 6.0-1	PRIMO 7.6-1	PRIMO 8.2-1
Max. output power	240 V 3,800 W	5,000 W	6,000 W	7,600 W	8,200 W
	208 V 3,800 W	5,000 W	6,000 W	7,600 W	7,900 W
Max. output fault current / Duration	240 V 584 A Peak / 154 ms	584 A Peak / 154 ms	584 A Peak / 154 ms	584 A Peak / 154 ms	584 A Peak / 154 ms
Max. continuous output current	240 V 15.8 A	20.8 A	25.0 A	31.7 A	34.2 A
	208 V 18.3 A	24.0 A	28.8 A	36.5 A	38.0 A
Recommended OCPD/AC breaker size	240 V 20 A	30 A	35 A	40 A	45 A
	208 V 25 A	30 A	40 A	50 A	50 A
Max. efficiency (Lite version)	97.9 %				
CEC efficiency (Lite version)	240 V 95.5 %	96.5 %	96.5 %	97.0 %	97.0 %
Admissible conductor size AC	AWG 14 - AWG 6				
Grid connection	208 / 240 V				
Frequency	60 Hz				
Total harmonic distortion	< 5.0 %				
Power factor (cos $\phi_{ac,r}$ )	0.85 - 1 ind./cap.				

## TECHNICAL DATA FRONIUS PRIMO 10.0-1 TO 15.0-1

INPUT DATA	PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1
Max. permitted PV power (kWp)	15.00 kW	17.10 kW	18.75 kW	22.50 kW
Max. usable input current (MPPT 1/MPPT 2)	33.0 A / 18.0 A			
Total max. DC current	51 A			
Max. admissible input current (MPPT 1/MPPT 2)	49.5 A / 27.0 A			
Operating voltage range	80 V - 1,000 V			
Max. input voltage	1,000 V			
Nominal input voltage	655 V	660 V	665 V	680 V
Admissible conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct, AWG 4 - AWG 2 copper or aluminum with optional input combiner			
MPP Voltage Range	220 - 800 V	240 - 800 V	260 - 800 V	320 - 800 V
Number of MPPT	2			

OUTPUT DATA	PRIMO 10.0-1	PRIMO 11.4-1	PRIMO 12.5-1	PRIMO 15.0-1
Max. output power	240 V 9,995 W	11,400 W	12,500 W	15,000 W
	208 V 9,995 W	11,400 W	12,500 W	13,750 W
Max. output fault current / Duration	240 V 916 A Peak / 6.46 ms	916 A Peak / 6.46 ms	916 A Peak / 6.46 ms	916 A Peak / 6.46 ms
Max. continuous output current	240 V 41.6 A	47.5 A	52.1 A	62.5 A
	208 V 48.1 A	54.8 A	60.1 A	66.1 A
Recommended OCPD/AC breaker size	240 V 60 A	60 A	70 A	80 A
	208 V 60 A	70 A	80 A	90 A
Max. efficiency (Lite version)	97.9 %			
CEC efficiency (Live version)	240 V 96.5 %	96.5 %	96.5 %	97.0 %
Admissible conductor size AC	AWG 10 - AWG 2 copper (solid / stranded / fine stranded) , AWG 6 - AWG 2 copper (solid / stranded)			
Grid connection	208 / 240 V			
Frequency	60 Hz			
Total harmonic distortion	< 2.5 %			
Power factor (cos $\phi_{ac,r}$ )	0-1 ind./cap.			