

TECHNICAL DATA FRONIUS SYMO (10.0-3-M, 12.5-3-M, 15.0-3-M, 17.5-3-M, 20.0-3-M)¹⁾

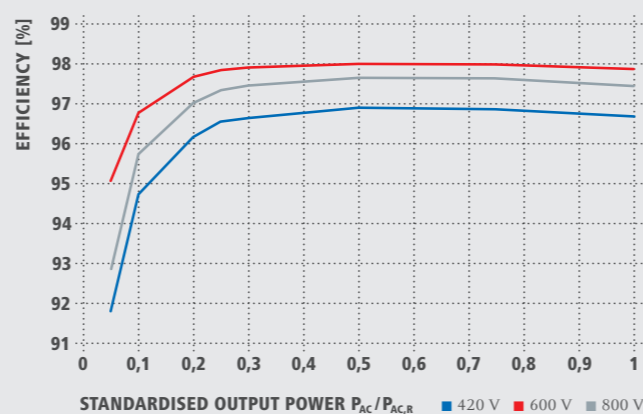
INPUT DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Max. input current (I _{dc max 1} / I _{dc max 2})	27.0 A / 16.5 A		33.0 A / 27.0 A		
Max. array short circuit current (MPP ₁ /MPP ₂)	40.5 A / 24.8 A		49.5 A / 40.5 A		
Min. input voltage (U _{dc min})			200 V		
Feed-in start voltage (U _{dc start})			200 V		
Nominal input voltage (U _{dc,r})			600 V		
Max. input voltage (U _{dc max})			1,000 V		
MPP voltage range (U _{mpp min} - U _{mpp max})	270 - 800 V	320 - 800 V	370 - 800 V	420 - 800 V	
Number MPP trackers			2		
Number of DC connections			3+3		

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
Max. output current (I _{ac max})	20 A		32 A		
Grid connection (U _{ac,r})	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V				
Min. output voltage (U _{ac min})	150 V				
Max. output voltage (U _{ac max})	280 V				
Frequency (f _s)	50 Hz / 60 Hz				
Frequency range (f _{min} - f _{max})	45 - 65 Hz				
Total harmonic distortion	< 2 %				
Power factor (cos φ _{ac,r})	0 - 1 ind. / cap.				

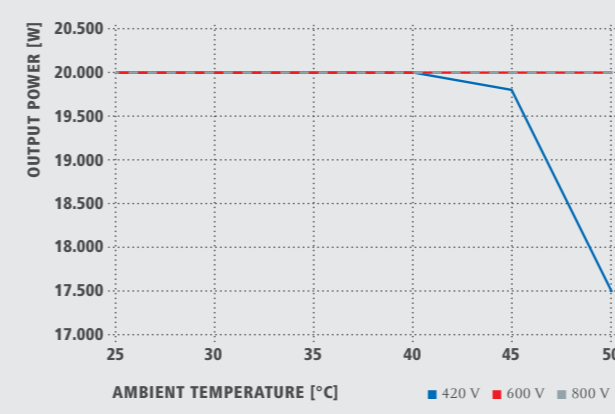
GENERAL DATA	SYMO 10.0-3-M	SYMO 12.5-3-M	SYMO 15.0-3-M	SYMO 17.5-3-M	SYMO 20.0-3-M
Dimensions (height x width x depth)			725 x 510 x 225 mm		
Weight	34.8 kg		43.4 kg		
Degree of protection	IP 66				
Protection class	1				
Overvoltage category (DC / AC)	2 / 3				
Night time consumption	< 1 W				
Inverter design	Transformerless				
Cooling	Regulated air cooling				
Installation	Indoor and outdoor installation				
Ambient temperature range	-25 - +60 °C				
Permitted humidity	0 - 100 %				
DC connection technology	6x DC+ and 6x DC- screw terminals 2.5 - 16 mm ²				
Mains connection technology	5-pole AC screw terminals 2.5 - 16 mm ²				
Certificates and compliance with standards	VDE 0126-1-1/A1, IEC 62109-1/2, IEC 62116, IEC 61727, CER 06-190, G83/2, VDE AR-N 4105, UNE 206007-1, SI 4777, CEI 0-21, AS 3100, AS 4777-2, AS 4777-3, G59/3, CEI 0-16				

¹⁾ preliminary data

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)¹⁾

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	97.9 %				
European efficiency (η _{EU})	97.4 %	97.5 %	97.7 %	97.7 %	97.8 %
η at 5 % P _{ac,r} ²⁾	87.8 / 92.4 / 89.1 %	88.6 / 93.0 / 90.0 %	91.1 / 94.7 / 92.2 %	91.5 / 94.9 / 92.6 %	91.9 / 95.1 / 93.0 %
η at 10 % P _{ac,r} ²⁾	91.2 / 94.8 / 92.7 %	92.8 / 96.0 / 94.5 %	93.3 / 96.0 / 94.4 %	93.9 / 96.3 / 94.9 %	94.8 / 96.8 / 95.8 %
η at 20 % P _{ac,r} ²⁾	94.5 / 97.0 / 96.1 %	95.3 / 97.2 / 96.5 %	95.8 / 97.4 / 96.6 %	96.0 / 97.5 / 96.8 %	96.2 / 97.7 / 97.1 %
η at 25 % P _{ac,r} ²⁾	95.3 / 97.2 / 96.5 %	95.5 / 97.5 / 96.9 %	96.1 / 97.6 / 96.9 %	96.4 / 97.8 / 97.2 %	96.6 / 97.9 / 97.4 %
η at 30 % P _{ac,r} ²⁾	95.5 / 97.5 / 96.9 %	95.8 / 97.6 / 97.1 %	96.4 / 97.8 / 97.2 %	96.6 / 97.9 / 97.4 %	96.7 / 98.0 / 97.5 %
η at 50 % P _{ac,r} ²⁾	96.2 / 97.8 / 97.3 %	96.3 / 97.9 / 97.4 %	96.8 / 98.0 / 97.6 %	96.9 / 98.0 / 97.7 %	97.0 / 98.1 / 97.7 %
η at 75 % P _{ac,r} ²⁾	96.4 / 97.9 / 97.5 %	96.4 / 97.9 / 97.5 %	97.0 / 98.1 / 97.7 %	96.9 / 98.1 / 97.7 %	96.9 / 98.0 / 97.7 %
η at 100 % P _{ac,r} ²⁾	96.4 / 97.9 / 97.5 %	96.4 / 97.7 / 97.5 %	96.9 / 98.0 / 97.7 %	96.8 / 98.0 / 97.6 %	96.7 / 97.9 / 97.5 %
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 disconnect	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 / Fronius Solar.web, Modbus TCP, JSON				
6 inputs or 4 digital inputs/outputs	Interface to ripple control receiver				
USB (A socket) ³⁾	For USB-Sticks				
2x RS422 (RJ45-socket) ³⁾	Fronius Solar Net. interface protocol				
Signalling output ³⁾	Energy management (potential-free relay output)				
Datalogger und Webserver	Included				

¹⁾ preliminary data ²⁾ and at U_{mpp min} / U_{dc,r} / U_{mpp max} ³⁾ also available in the light version

/ Battery Charging Systems / Welding Technology / Solar Electronics

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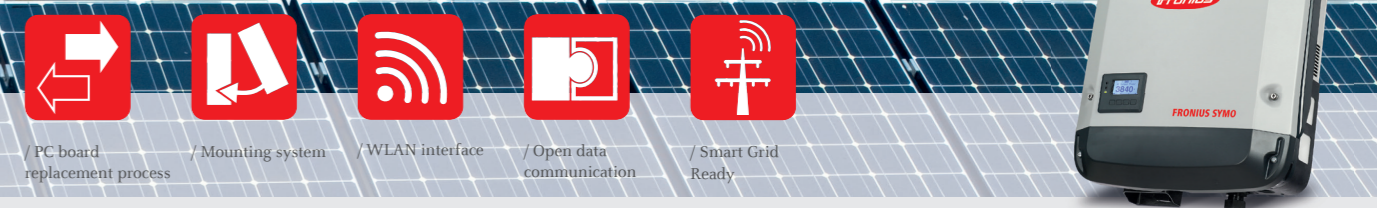
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SHIFTING THE LIMITS

FRONIUS SYMO

/ Maximum flexibility for the applications of tomorrow.



/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for systems of every size. The high system voltage, wide input voltage range and two MPP trackers ensure maximum flexibility in system design. 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.

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
Max. input current (I _{dc max 1} / I _{dc max 2})				16.0 A / 16.0 A		
Max. array short circuit current (MPP ₁ /MPP ₂)				24.0 A / 24.0 A		
Min. input voltage (U _{dc min})	150 V					
Feed-in start voltage (U _{dc start})	200 V					
Nominal input voltage (U _{dc,r})	595 V					
Max. input voltage (U _{dc max})	1,000 V					
MPP voltage range (U _{mpp min} - U _{mpp max})	200 - 800 V	250 - 800 V	300 - 800 V	150 - 800 V		
Number MPP trackers	1			2		
Number of DC connections	3			2+2		

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
Max. output current (I _{ac max})	9.0 A			13.5 A		
Grid connection (U _{ac,r})	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V					
Min. output voltage (U _{ac min})	150 V					
Max. output voltage (U _{ac max})	280 V					
Frequency (f _s)	50 Hz / 60 Hz					
Frequency range (f _{min} - f _{max})	45 - 65 Hz					
Total harmonic distortion	< 3 %					
Power factor (cos φ _{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 55					
Protection class	1					
Overvoltage category (DC / AC)	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 %					
DC connection technology	3x DC+ and 3x DC- screw terminals 2.5 - 16 mm ²			4x DC+ and 4x DC- screw terminals 2.5 - 16mm ² ²⁾		
Mains connection technology	5-pole AC screw terminals 2.5 - 16 mm ²			5-pole AC screw terminals 2.5 - 16mm ² ²⁾		
Certificates and compliance with standards	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 ¹⁾ , CEI 0-21 ¹⁾					

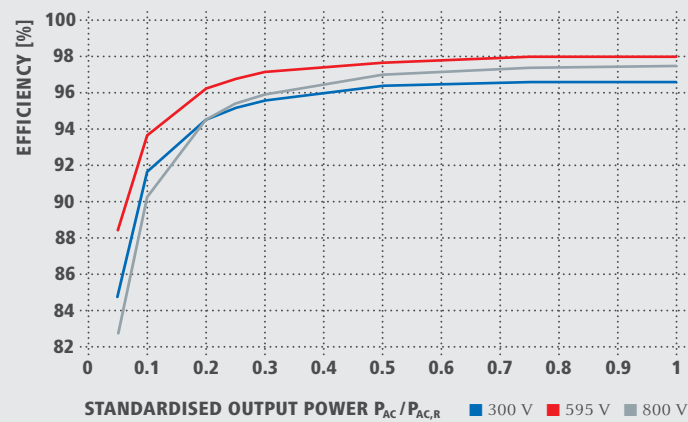
¹⁾ This applies to Fronius Symo 3.0-3-M, 3.7-3-M and 4.5-3-M

²⁾ 16mm² without wire end ferrules. Further information regarding the availability of the inverters in your country can be found at www.fronius.com.

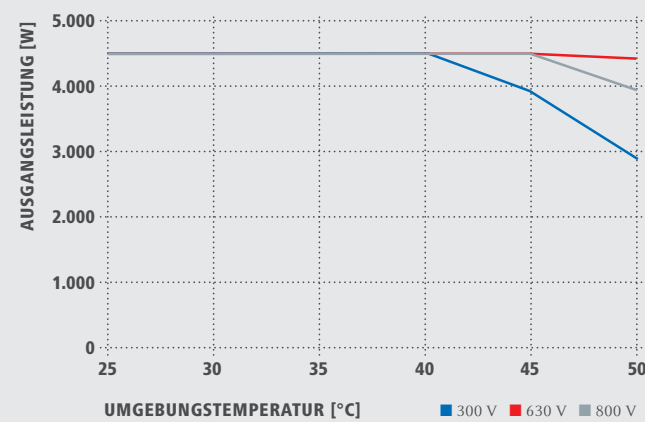
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FRONIUS SYMO 4.5-3-S EFFICIENCY CURVE



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 (ηEU)	96.2 %	96.7 %	97.0 %	96.5 %	96.9 %	97.2 %
η at 5 % Pac,r ¹⁾	80.3 / 83.6 / 79.1 %	83.4 / 86.4 / 80.6 %	84.8 / 88.5 / 82.8 %	79.8 / 85.1 / 80.8 %	81.6 / 87.8 / 82.8 %	83.4 / 90.3 / 85.0 %
η at 10 % Pac,r ¹⁾	87.8 / 91.0 / 86.2 %	90.1 / 92.5 / 88.7 %	91.7 / 93.7 / 90.3 %	86.5 / 91.6 / 87.7 %	87.9 / 93.6 / 90.5 %	89.2 / 94.1 / 91.2 %
η at 20 % Pac,r ¹⁾	92.6 / 95.0 / 92.6 %	93.7 / 95.7 / 93.6 %	94.6 / 96.3 / 94.5 %	90.8 / 95.3 / 93.0 %	91.9 / 96.0 / 94.1 %	92.8 / 96.5 / 95.1 %
η at 25 % Pac,r ¹⁾	93.4 / 95.6 / 93.8 %	94.5 / 96.4 / 94.7 %	95.2 / 96.8 / 95.4 %	91.9 / 96.0 / 94.2 %	92.9 / 96.6 / 95.2 %	93.5 / 97.0 / 95.8 %
η at 30 % Pac,r ¹⁾	94.0 / 96.3 / 94.5 %	95.0 / 96.7 / 95.4 %	95.6 / 97.2 / 95.9 %	92.8 / 96.5 / 95.1 %	93.5 / 97.0 / 95.8 %	94.2 / 97.3 / 96.3 %
η at 50 % Pac,r ¹⁾	95.2 / 97.3 / 96.3 %	96.3 / 97.6 / 96.7 %	96.4 / 97.7 / 97.0 %	94.3 / 97.5 / 96.5 %	94.6 / 97.7 / 96.8 %	94.9 / 97.8 / 97.2 %
η at 75 % Pac,r ¹⁾	95.6 / 97.7 / 97.0 %	96.2 / 97.8 / 97.3 %	96.6 / 98.0 / 97.4 %	94.9 / 97.8 / 97.2 %	95.0 / 97.9 / 97.4 %	95.1 / 98.0 / 97.5 %
η at 100 % Pac,r ¹⁾	95.6 / 97.9 / 97.3 %	96.2 / 98.0 / 97.5 %	96.6 / 98.0 / 97.5 %	95.0 / 98.0 / 97.4 %	95.1 / 98.0 / 97.5 %	95.0 / 98.0 / 97.6 %
MPP adaptation efficiency	> 99.9 %					

¹⁾ and at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$

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 disconnecter	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 / Fronius Solar.web, Modbus TCP, JSON					
6 inputs or 4 digital in/out	Interface to ripple control receiver					
USB (A socket) ²⁾	For USB sticks					
2x RS422 (RJ45 socket) ²⁾	Fronius Solar Net, interface protocol					
Signalling output ²⁾	Energy management (potential-free relay output)					
Datalogger and Webserver	Included					

²⁾ 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)

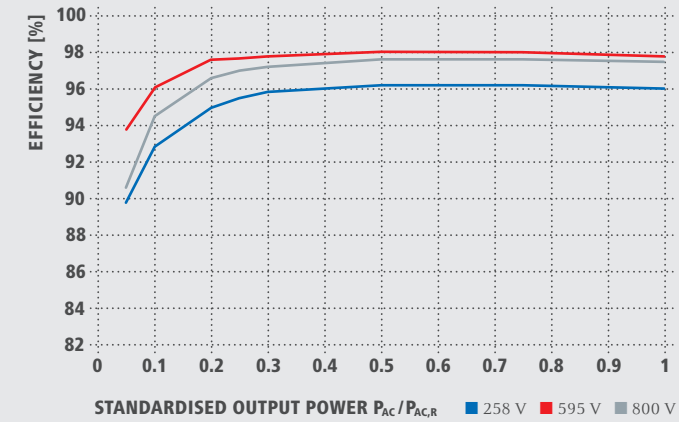
INPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. input current ($I_{dc\ max\ 1} / I_{dc\ max\ 2}$)	16.0 A / 16.0 A			
Max. array short circuit current (MPP ₁ /MPP ₂)	24.0 A / 24.0 A			
Min. input voltage ($U_{dc\ min}$)	150 V			
Feed-in start voltage ($U_{dc\ start}$)	200 V			
Nominal input voltage ($U_{dc,r}$)	595 V			
Max. input voltage ($U_{dc\ max}$)	1,000 V			
MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$)	163 - 800 V	195 - 800 V	228 - 800 V	267 - 800 V
Number MPP trackers	2			
Number of DC connections	2 + 2			

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
Max. output current ($I_{ac\ max}$)	13.5 A			
Grid connection ($U_{ac,r}$)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V			
Min. output voltage ($U_{ac\ min}$)	150 V			
Max. output voltage ($U_{ac\ max}$)	280 V			
Frequency (f_g)	50 Hz / 60 Hz			
Frequency range ($f_{min} - f_{max}$)	45 - 65 Hz			
Total harmonic distortion	< 3 %			
Power factor ($\cos \phi_{pac,r}$)	0.85 - 1 ind. / cap.			

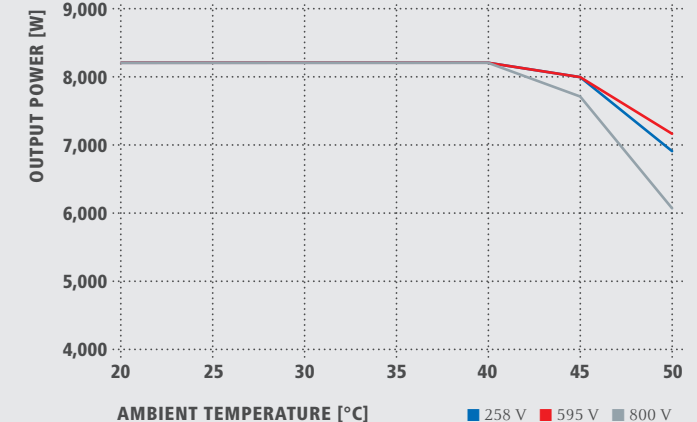
GENERAL DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Dimensions (height x width x depth)	645 x 431 x 204 mm			
Weight	19.9 kg		21.9 kg	
Degree of protection	IP 55			
Protection class	1			
Overvoltage category (DC / AC)	2 / 3			
Night time consumption	< 1 W			
Inverter design	Transformerless			
Cooling	Regulated air cooling			
Installation	Indoor and outdoor installation			
Ambient temperature range	-25 - +60 °C			
Permitted humidity	0 - 100 %			
DC connection technology	4x DC+ and 4x DC- Screw terminals 2.5 - 16mm ² ¹⁾			
Mains connection technology	5-pole AC Screw terminals 2.5 - 16mm ² ²⁾			
Certificates and compliance with standards	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 0-21			

¹⁾ 16mm² without wire end ferrules

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 (ηEU)	97.0 %	97.2 %	97.3 %	97.5 %
η at 5 % Pac,r ¹⁾	84.9 / 91.2 / 85.9 %	87.8 / 92.6 / 87.8 %	88.7 / 93.1 / 89.0 %	89.8 / 93.8 / 90.6 %
η at 10 % Pac,r ¹⁾	89.9 / 94.6 / 91.7 %	91.3 / 95.6 / 93.0 %	92.0 / 95.9 / 94.7 %	92.8 / 96.1 / 94.5 %
η at 20 % Pac,r ¹⁾	93.2 / 96.7 / 95.4 %	94.1 / 97.1 / 95.9 %	94.5 / 97.3 / 96.3 %	95.0 / 97.6 / 96.6 %
η at 25 % Pac,r ¹⁾	93.9 / 97.2 / 96.0 %	94.7 / 97.5 / 96.5 %	95.1 / 97.6 / 96.7 %	95.5 / 97.7 / 97.0 %
η at 30 % Pac,r ¹⁾	94.5 / 97.4 / 96.5 %	95.1 / 97.7 / 96.8 %	95.4 / 97.7 / 97.0 %	95.8 / 97.8 / 97.2 %
η at 50 % Pac,r ¹⁾	95.2 / 97.9 / 97.3 %	95.7 / 98.0 / 97.5 %	95.9 / 98.0 / 97.5 %	96.2 / 98.0 / 97.6 %
η at 75 % Pac,r ¹⁾	95.3 / 98.0 / 97.5 %	95.7 / 98.0 / 97.6 %	95.9 / 98.0 / 97.6 %	96.2 / 98.0 / 97.6 %
η at 100 % Pac,r ¹⁾	95.2 / 98.0 / 97.6 %	95.7 / 97.9 / 97.6 %	95.8 / 97.9 / 97.5 %	96.0 / 97.8 / 97.5 %
MPP adaptation efficiency	> 99.9 %			

¹⁾ and at $U_{mpp\ min} / U_{dc,r} / U_{mpp\ max}$

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 disconnecter	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 / Fronius Solar.web, Modbus TCP, JSON			
6 inputs or 4 digital in/out	Interface to ripple control receiver			
USB (A socket) ²⁾	For USB-Sticks			
2x RS422 (RJ45 socket) ²⁾	Fronius Solar Net, Interface Protokoll			
Signalling output ²⁾	Energy management (potential-free relay output)			
Datalogger and Webserver	Included			

²⁾ also available in the light version