



SHIFTING THE LIMITS

FRONIUS SNAPINVERTERS SMARTER, LIGHTER, MORE FLEXIBLE

The Fronius SnapINverter range represents the latest stage in the evolution of inverter technology:

/ Smarter: Inbuilt WLAN monitoring, easy commissioning, energy management function, inbuilt DC isolator / Lighter:

Light weight, snap-in installation, less installation time and cost

/ More flexible: Generous MPPT voltage range, SuperFlex design, Smart Grid ready, future-proof upgradeability Be impressed: visit www.fronius.com.au

/ With the SnapINverter product range, Fronius covers the entire spectrum of market requirements, from 1.5 to 27 kW. Whether for a single-family home or a large photovoltaic (PV) system, the comprehensive SnapINverter portfolio contains the perfect device. Customers opting for a Fronius SnapINverter are not only rewarded with a smart inverter that maximises yield, but also with the quality assurance of a company that has been leading the way since 1945. With the Fronius 'Smarter, Lighter, More Flexible' SnapINverter range, future-proof comes as standard, and that's just the beginning.



SMARTER



WI-FI SYSTEM MONITORING

/ The Fronius SnapINverter range efficiently meets data communication and system monitoring needs. An integrated Datamanager ensures easy connection to the internet via Wi-Fi or Ethernet. Keep an eye on your yield using your PC, smart phone or tablet, without any extra cost.



SMART GRID READY

/ As the number of decentralised energy generators rises, so too does the need for an intelligent power grid. In the near future, grid operators will impose new requirements on local generators including photovoltaic systems - requirements the Fronius SnapINverter range already meets today.



OPEN DATA COMMUNICATION

/ It is easy to connect Fronius SnapINverters to components from third party suppliers. The open SunSpec Modbus TCP, RTU (RS485) and JSON protocols provide a simple way of establishing a data connection to other systems such as BMS, SCADA and home automation.



ENERGY MANAGEMENT FUNCTION

/ With an integrated energy management function, the Fronius SnapINverter can control the power flow directed to a specific electrical appliance based on the power production of the PV system. This automatic load shifting optimises self-consumption of generated solar power, fast tracking payback.



EXPORT LIMITATION

/ The Fronius SnapINverter range* in conjunction with a Fronius Smart Meter can be configured to achieve a grid export limit from -10% to 100% of the system rating. The system just requires a SnapINverter with inbuilt Datamanager and a Fronius Smart Meter.

*(except the Fronius Symo Hybrid)



PROACTIVE SERVICE

/ Trained by Fronius, Fronius Service Partners (FSPs) can remotely monitor a PV system using Fronius Solar.web. In the event of a fault, FSPs receive instant notification so they can react immediately to ensure maximum up-time. FSPs have a reserve of spare parts ready to get a PV system back up and running with one trip to site, and thanks to Fronius monitoring capabilities FSPs can also assist with upgrading to a customised battery solution.



DC ISOLATOR

/ The integrated DC isolator is compliant with installation standard AS/NZS 5033*. No additional DC isolator adjacent to the inverter is required, which saves time and cost.

*Check the Fronius Australia website for technical datasheets outlining installation suitability.

LIGHTER



LIGHT WEIGHT

/ The Fronius SnapINverter range is up to 50% lighter than comparable inverters*. This, in combination with the snap-in design, allows for quick & easy installation.

*Findings from an internal study carried out June 2015.

MORE FLEXIBLE



SUPERFLEX TECHNOLOGY

/ Fronius SuperFlex technology makes designing a PV system easier than ever. The low starting and very broad voltage range of the two Maximum Power Point Tracker's (MPPT's) allows connection of highly asymmetric configurations. This enables the designer to solve most shading issues, including multiple orientated or partly shaded roofs. In some cases a 1:9 ratio between MPPT1 and MPPT2 is even possible.



SOLAR BATTERY OPTIONS

/ Batteries can easily be added to any PV system that uses a Fronius SnapINverter, either in AC coupled or DC coupled system architecture*. With this future-proof concept, Fronius ensures that every system is primed to integrate storage. Fronius or Tesla batteries can be added at any time, and to help decide which battery size to choose, Fronius Solar.web tracks energy usage** and production.

*Depending on which SnapINverter is chosen. **Consumption monitoring with installation of additional Fronius Smart Meter.



DYNAMIC PEAK MANAGER

/ Even in partially shaded conditions the Fronius Dynamic Peak Manager always finds the maximum output power, ensuring that the inverter is always operating at the point of maximum output. Get up to 4 per cent more yield from a system that has to contend with shade.

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

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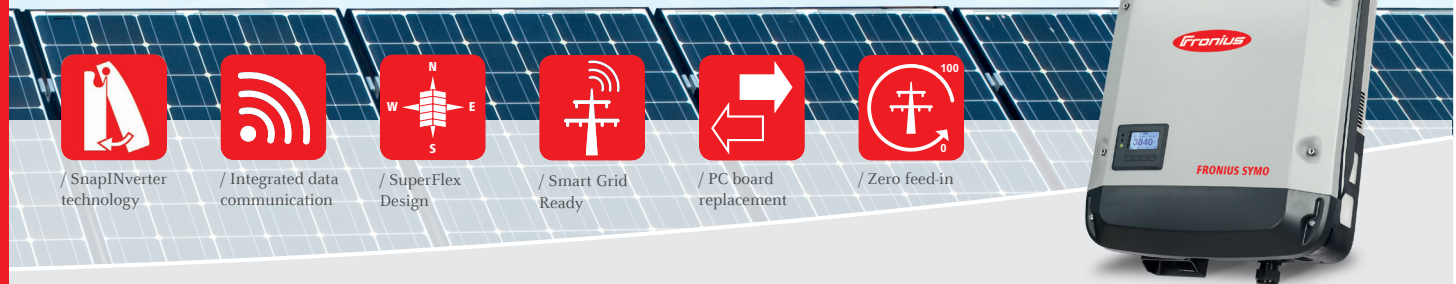
/ Perfect Welding / Solar Energy / Perfect Charging



SHIFTING THE LIMITS

FRONIUS SYMO

/ Smarter, Lighter, More Flexible



/ SnapInverter technology



/ Integrated data communication



/ SuperFlex Design



/ Smart Grid Ready



/ PC board replacement



/ Zero feed-in



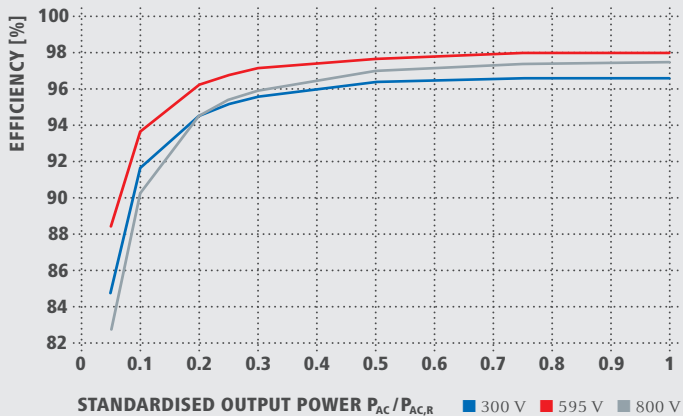
/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for systems of every size. Owing to the SuperFlex Design, the Fronius Symo is the perfect answer to irregularly shaped or multi-oriented roofs. The standard interface to the internet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

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)

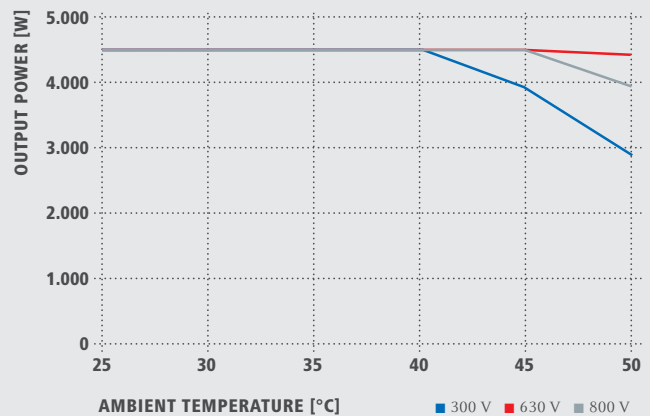
INPUT DATA	SYMO 3.0-3-S	SYMO 3.7-3-S	SYMO 4.5-3-S	SYMO 3.0-3-M	SYMO 3.7-3-M	SYMO 4.5-3-M
Max. input current ($I_{dc\ max\ 1} / I_{dc\ max\ 2}^{1)}$)				16.0 A / 16.0 A		
Max. array short circuit current (MPP ₁ /MPP ₂ ¹⁾)				24.0 A / 24.0 A		
Min. input voltage ($U_{dc\ min}$)				150 V		
Feed-in start voltage ($U_{dc\ start}$)				200 V		
Nominal input voltage ($U_{dc,r}$)				595 V		
Max. input voltage ($U_{dc\ max}$)				1,000 V		
Usable MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$)				150V - 800V		
MPP voltage range at nominal power ($U_{mpp\ min} - U_{mpp\ max}$)	200 - 800 V	250 - 800 V	300 - 800 V		150 - 800 V	
Number MPP trackers		1			2	
Number of DC connections		3			2+2	
Max total PV array size ($P_{dc\ max}$)	6.0kW _{peak}	7.4 kW _{peak}	9.0 kW _{peak}	6.0 kW _{peak}	7.4 kW _{peak}	9.0 kW _{peak}
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 ($I_{ac\ max}$)	4.3 A	5.3 A	6.5 A	4.3 A	5.3 A	6.5 A
Grid connection ($U_{ac,r}$)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)					
Min. output voltage ($U_{ac\ min}$)	260 / 150 V					
Max. output voltage ($U_{ac\ max}$)	485 / 280 V					
Frequency (f_r)	50 Hz / 60 Hz (45 - 65 Hz)					
Frequency range ($f_{min} - f_{max}$)	45 - 65 Hz					
Total harmonic distortion	< 3 %					
Power factor ($\cos\ \varphi_{ac,r}$)	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) ²⁾	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 ²			4x DC+ and 4x DC- screw terminals 2.5 - 16mm ² ³⁾		
Mains connection technology	5-pole AC screw terminals 2.5 - 16 mm ²			5-pole AC screw terminals 2.5 - 16mm ² ³⁾		
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 ¹⁾ CEI 0-211), NRS 097					

¹⁾ This applies to Fronius Symo 3.0-3-M, 3.7-3-M and 4.5-3-M. ²⁾ According to IEC 62109-1. ³⁾ 16 mm² without wire end ferrules

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 (η_{EU})	96.2 %	96.7 %	97.0 %	96.5 %	96.9 %	97.2 %
η at 5 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ ¹⁾	95.2 / 97.3 / 96.3 %	96.9 / 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 $U_{mpp, min} / U_{dcr} / U_{mpp, max}$

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					
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) ²⁾	Datalogging, inverter update via USB flash drive					
2x RS422 (RJ45 socket) ²⁾	Fronius Solar Net					
Signalling output ²⁾	Energy management (potential-free relay output)					
Datalogger and Webservice	Included					
External input ²⁾	S0-Meter Interface / Input for overvoltage protection					
RS485	Modbus RTU SunSpec or meter connection					

¹⁾ And at $U_{mpp, min} / U_{dcr} / U_{mpp, max}$.

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)

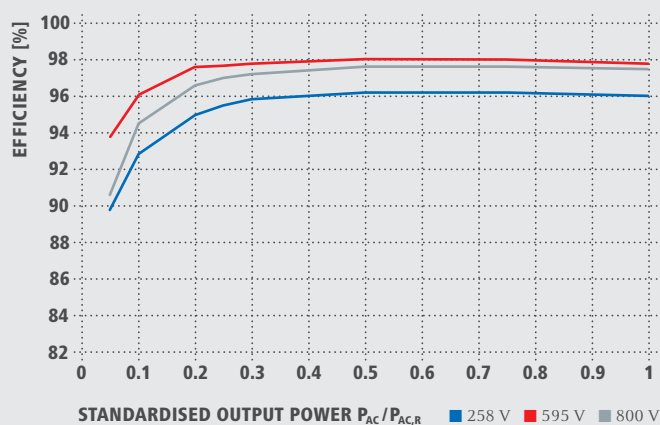
INPUT DATA	SYMO 5.0-3-M	SYMO 6.0-3-M	SYMO 7.0-3-M	SYMO 8.2-3-M
Max. input current ($I_{dc \max 1} / I_{dc \max 2}$)			16.0 A / 16.0 A	
Max. array short circuit current (MPP ₁ /MPP ₂)			24.0 A / 24.0 A	
Min. input voltage ($U_{dc \min}$)			150 V	
Feed-in start voltage ($U_{dc \text{ start}}$)			200 V	
Nominal input voltage ($U_{dc,r}$)			595 V	
Max. input voltage ($U_{dc \max}$)			1,000 V	
Usable MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)			150 V - 800 V	
MPP voltage range at nominal power ($U_{mpp \min} - U_{mpp \max}$)	163 – 800 V	195 - 800 V	228 – 800 V	267 – 800 V
Number MPP trackers			2	
Number of DC connections			2 + 2	
Max total PV array size ($P_{dc \max}$)	10.0kW _{peak}	12.0kW _{peak}	14.0kW _{peak}	16.4kW _{peak}
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 ($I_{ac \max}$)	7.2 A	8.7 A	10.1 A	11.8 A
Grid connection ($U_{ac,r}$)		3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)		
Min. output voltage ($U_{ac \min}$)		260 / 150 V		
Max. output voltage ($U_{ac \max}$)		485 / 280 V		
Frequency (f_r)		50 Hz / 60 Hz		
Frequency range ($f_{\min} - f_{\max}$)		45 - 65 Hz		
Total harmonic distortion		< 3 %		
Power factor ($\cos \varphi_{ac,r}$)		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) ¹⁾		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 ^{2,2)}		
Mains connection technology		5-pole AC Screw terminals 2.5 - 16mm ^{2,2)}		
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 0-21, NRS 097			

¹⁾ according to IEC 62109-1.

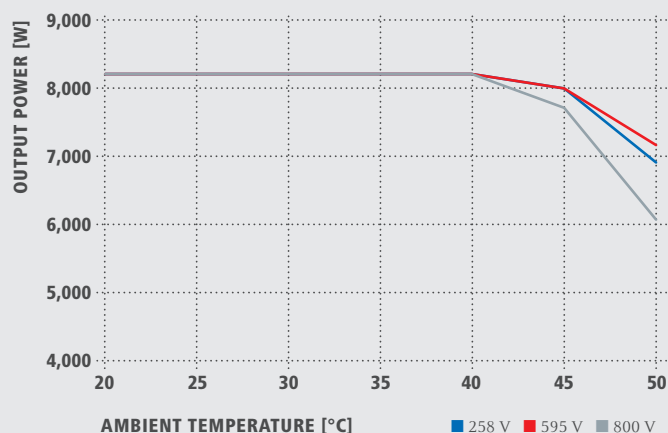
¹⁾ 16 mm² without wire end ferrules.

²⁾ 16 mm² 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 (η_{EU})	97.3 %	97.5 %	97.6 %	97.7 %
η at 5 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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 % $P_{AC,r}$ 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			
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) ²⁾	Datalogging, inverter update via USB flash drive			
2x RS422 (RJ45 socket) ²⁾	Fronius Solar Net			
Signalling output ²⁾	Energy management (potential-free relay output)			
Datalogger and Webservice	Included			
External input ²⁾	S0-Meter Interface / Input for overvoltage protection			
RS485	Modbus RTU SunSpec or meter connection			

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

²⁾ Also available in the light version.

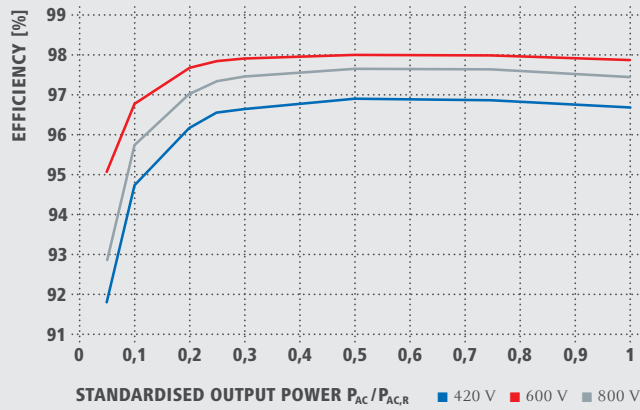
TECHNICAL DATA FRONIUS SYMO (10.0-3-M, 12.5-3-M, 15.0-3-M, 17.5-3-M, 20.0-3-M)

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
Max. input current ($I_{dc \max 1} / I_{dc \max 2}$)	27.0 A / 16.5 A ¹⁾		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 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 ($U_{dc \text{ start}}$)	200 V				
Nominal input voltage ($U_{dc \text{ r}}$)	600 V				
Max. input voltage ($U_{dc \max}$)	1,000 V				
Usable MPP voltage range ($U_{mpp \min} - U_{mpp \max}$)	200 V - 800 V				
MPP voltage range at nominal power ($U_{mpp \min} - U_{mpp \max}$)	270 - 800 V	320 - 800 V		370 - 800 V	420 - 800 V
Number MPP trackers	2				
Number of DC connections	3+3				
Max total PV array size ($P_{dc \max}$)	15.0 kW _{peak}	18.8kW _{peak}	22.5 kW _{peak}	26.3 kW _{peak}	30.0 kW _{peak}
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 ($P_{ac \text{ r}}$)	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 ($I_{ac \max}$)	14.4 A	18.0 A	21.7 A	25.3 A	28.9 A
Grid connection ($U_{ac \text{ r}}$)	3-NPE 400 V / 230 V or 3-NPE 380 V / 220 V (+20 % / -30 %)				
Min. output voltage ($U_{ac \min}$)	260 / 150 V				
Max. output voltage ($U_{ac \max}$)	485 / 280 V				
Frequency (f_r)	50 Hz / 60 Hz				
Frequency range ($f_{\min} - f_{\max}$)	45 - 65 Hz				
Total harmonic distortion	1.8 %	2.0 %	1.5 %	1.5 %	1.3 %
Power factor ($\cos \varphi_{ac \text{ r}}$)	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) ¹⁾	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	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	AS 4777-2, AS 4777-3, AS 3100, IEC 62109-1/-2, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62116, IEC 61727, CER 06-190, G83/2, G59/3, UNE 206007-1, SI 4777, CEI 0-16, CEI 0-21				

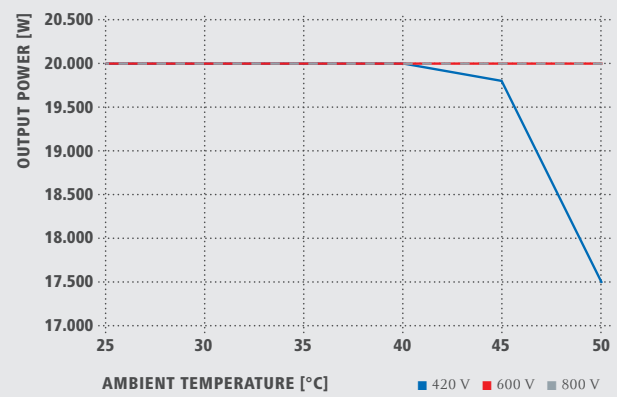
¹⁾ 14.0 A for voltages < 420 V

²⁾ According to IEC 62109-1. DIN rail for optional overvoltage protection (type 2) is included.

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_{EU})	97.5 %	97.6 %	97.8 %	97.8 %	97.9 %
η at 5 % $P_{Ac,r}$ ¹⁾	87.9 / 92.5 / 89.2 %	88.7 / 93.1 / 90.1 %	91.2 / 94.8 / 92.3 %	91.6 / 95.0 / 92.7 %	91.9 / 95.2 / 93.0 %
η at 10 % $P_{Ac,r}$ ¹⁾	91.2 / 94.9 / 92.8 %	92.9 / 96.1 / 94.6 %	93.4 / 96.0 / 94.4 %	94.0 / 96.4 / 95.0 %	94.8 / 96.9 / 95.8 %
η at 20 % $P_{Ac,r}$ ¹⁾	94.6 / 97.1 / 96.1 %	95.4 / 97.3 / 96.6 %	95.9 / 97.4 / 96.7 %	96.1 / 97.6 / 96.9 %	96.3 / 97.8 / 97.1 %
η at 25 % $P_{Ac,r}$ ¹⁾	95.4 / 97.3 / 96.6 %	95.6 / 97.6 / 97.0 %	96.2 / 97.6 / 97.0 %	96.4 / 97.8 / 97.2 %	96.7 / 97.9 / 97.4 %
η at 30 % $P_{Ac,r}$ ¹⁾	95.6 / 97.5 / 96.9 %	95.9 / 97.7 / 97.2 %	96.5 / 97.8 / 97.3 %	96.6 / 97.9 / 97.4 %	96.8 / 98.0 / 97.6 %
η at 50 % $P_{Ac,r}$ ¹⁾	96.3 / 97.9 / 97.4 %	96.4 / 98.0 / 97.5 %	96.9 / 98.1 / 97.7 %	97.0 / 98.1 / 97.7 %	97.0 / 98.1 / 97.8 %
η at 75 % $P_{Ac,r}$ ¹⁾	96.5 / 98.0 / 97.6 %	96.5 / 98.0 / 97.6 %	97.0 / 98.1 / 97.8 %	97.0 / 98.1 / 97.8 %	97.0 / 98.1 / 97.7 %
η at 100 % $P_{Ac,r}$ ¹⁾	96.5 / 98.0 / 97.6 %	96.5 / 97.8 / 97.6 %	97.0 / 98.1 / 97.7 %	96.9 / 98.1 / 97.6 %	96.8 / 98.0 / 97.6 %
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	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1	
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) ²⁾	Datalogging, inverter update via USB flash drive				
2x RS422 (RJ45 socket) ²⁾	Fronius Solar Net				
Signalling output ²⁾	Energy management (potential-free relay output)				
Datalogger and Webservice	Included				
External input ²⁾	S0-Meter Interface / Input for overvoltage protection				
RS485	Modbus RTU SunSpec or meter connection				

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

²⁾ Also available in the light version.

/ 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 3,300 employees worldwide, we shift the limits of what's possible - our record of over 900 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.

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FRONIUS ECO

/ The compact project inverter for maximum yields.



/ SnapINverter technology



/ Integrated data communication



/ SuperFlex Design



/ Smart Grid Ready



/ PC board replacement



/ Zero feed-in



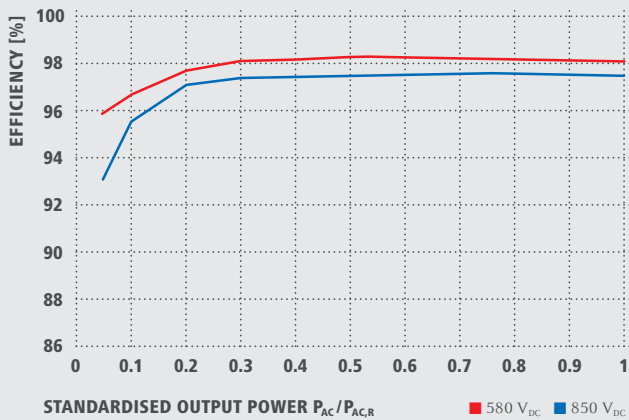
/ The three-phase Fronius Eco in power categories 25.0 and 27.0 kW perfectly meets all the requirements of large-scale installations. Thanks to its light weight and SnapINverter mounting system, this transformerless device can be installed quickly and easily either indoors or outdoors. This inverter range is setting new standards with its IP 66 protection class. Furthermore, thanks to its integrated double pole fuse holders and optional overvoltage protection, string collection boxes are no longer necessary.

TECHNICAL DATA FRONIUS ECO

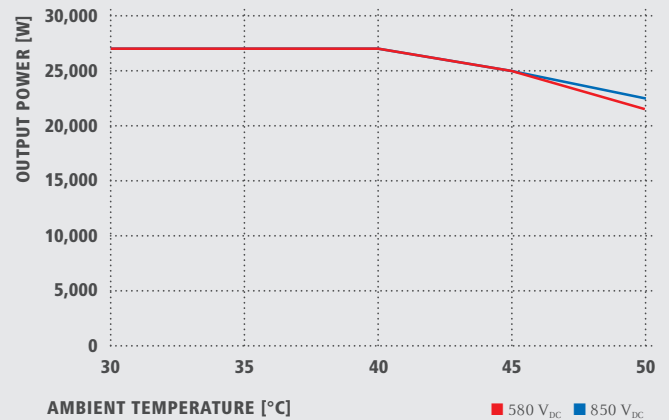
INPUT DATA	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
Max. input current ($I_{dc\ max}$)	44.2 A	47.7 A
Max. array short circuit current		71.6 A
Min. input voltage ($U_{dc\ min}$)		580 V
Feed-in start voltage ($U_{dc\ start}$)		650 V
Nominal input voltage ($U_{dc,r}$)		580 V
Max. input voltage ($U_{dc\ max}$)		1,000 V
MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$)		580 - 850 V
Number of MPP trackers		1
Number of DC connections		6
Max total PV array size ($P_{dc\ max}$)		37.8 kW _{peak}
OUTPUT DATA	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
AC nominal output ($P_{ac,r}$)	25,000 W	27,000 W
Max. output power	25,000 VA	27,000 VA
AC output current ($I_{ac\ nom}$)	37.9 A / 36.2 A	40.9 A / 39.1 A
Grid connection (voltage range)	3-NPE 380 V / 220 V or 3-NPE 400 V / 230 V (+20 % / - 30 %)	
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)	
Total harmonic distortion	< 2.0 %	
Power factor ($\cos \varphi_{ac,r}$)	0 - 1 ind. / cap.	
GENERAL DATA	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
Dimensions (height x width x depth)	725 x 510 x 225 mm	
Weight	35.7 kg	
Degree of protection	IP 66	
Protection class	1	
Overvoltage category (DC / AC) ¹⁾	1 + 2 / 3	
Night-time consumption	< 1 W	
Inverter concept	Transformerless	
Cooling	Regulated air cooling	
Installation	Indoor and outdoor installation	
Ambient temperature range	-25 - +60 °C	
Permitted humidity	0 to 100 %	
Max. altitude	2,000 m	
DC connection technology	6x DC+ and 6x DC- screw terminals 2.5 - 16 mm ²	
AC connection technology	5-pole AC screw terminals 2.5 - 16 mm ²	
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, G59/3, UNE 206007-1, SI 4777, CEI 0-16, CEI 0-21	

¹⁾According to IEC 62109-1. DIN rail for optional type 1 + 2 and type 2 overvoltage protection available.

FRONIUS ECO 27.0-3-S EFFICIENCY CURVE



FRONIUS ECO 27.0-3-S TEMPERATURE DERATING



TECHNICAL DATA FRONIUS ECO

EFFICIENCY	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
Max. efficiency	98.2 %	98.3 %
European efficiency (η_{EU})	98.0 %	98.0 %
η at 5 % $P_{AC,r}$ ¹⁾	95.1 / 91.5 %	95.9 / 93.1 %
η at 10 % $P_{AC,r}$ ¹⁾	97.0 / 95.2 %	96.8 / 95.7 %
η at 20 % $P_{AC,r}$ ¹⁾	97.8 / 96.9 %	97.7 / 97.1 %
η at 25 % $P_{AC,r}$ ¹⁾	98.0 / 97.0 %	98.1 / 97.3 %
η at 30 % $P_{AC,r}$ ¹⁾	98.1 / 97.2 %	98.1 / 97.4 %
η at 50 % $P_{AC,r}$ ¹⁾	98.2 / 97.5 %	98.3 / 97.5 %
η at 75 % $P_{AC,r}$ ¹⁾	98.2 / 97.5 %	98.2 / 97.6 %
η at 100 % $P_{AC,r}$ ¹⁾	98.2 / 97.5 %	98.1 / 97.5 %
MPP adaptation efficiency	> 99.9 %	

PROTECTION DEVICES	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
DC insulation measurement		Yes
Overload behavior	Operating point shift, power limitation	
DC disconnecter		Yes
Integrated string fuse holders ²⁾		Yes
Reverse polarity protection		Yes

INTERFACES	FRONIUS ECO 25.0-3-S	FRONIUS ECO 27.0-3-S
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) ³⁾	Datalogging, inverter update via USB flash drive	
2x RS422 (RJ45 socket) ³⁾	Fronius Solar Net	
Signalling output ³⁾	Energy management (floating relay output)	
Datalogger and Webserver	Included	
External input ³⁾	S0 meter connection / Input for overvoltage protection	
RS485	Modbus RTU SunSpec or meter connection	

¹⁾ And at $U_{mpp\ min} = U_{dc,r} / U_{mpp\ max}$. ²⁾ Optionally fitted with 6 fuses 15 A / 1,000 V on the plus side. ³⁾ Also available in the light version.

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