/ Perfect Welding / Solar Energy / Perfect Charging

SHIFTING THE LIMITS

FRONIUS PRIMO

/ Optimised energy management.

/ SnapINverter technology

/ Integrated data communication

/ SuperFlex Design

/ Smart Grid Ready

/ PC board replacement

/ Zero feed-in

/ The Fronius Primo in power categories from 3.0 to 8.2 kW perfectly completes the SnapINverter generation. This single-phase, transformerless device is the ideal inverter for residential systems. Its innovative SuperFlex Design provides maximum flexibility in system design, while the SnapINverter mounting system makes installation and maintenance easier than ever before. The communication package included as standard, with WLAN, energy management, several interfaces and much more, allows the Fronius Primo to communicate with the user, the PV system and the grid.

TECHNICAL DATA FRONIUS PRIMO (3.0-1, 3.5-1, 3.6-1, 4.0-1, 4.6-1)

INPUT DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1)]	PRIMO 4.0-1	PRIMO 4.6-1[1)]
Max. input current ($I_{dc\ max\ 1}$ / $I_{dc\ max\ 2}$)	12.0 A / 12.0 A				
Max. array short circuit current (MPP_1/MPP_2)	18.0 A / 18.0 A				
Min. input voltage ($U_{dc\ min}$)	80 V				
Feed-in start voltage ($U_{dc\ start}$)	80 V				
Nominal input voltage ($U_{dc,r}$)	710 V				
Max. input voltage ($U_{dc\ max}$)	1,000 V				
Usable MPP voltage range ($U_{mpp\ min} - U_{mpp\ max}$)	80 V - 800 V				
MPP voltage range at nominal power ($U_{mpp\ min} - U_{mpp\ max}$)	200 - 800 V			210 - 800 V	240 - 800 V
Number of MPP trackers	2				
Number of DC connections	2 + 2				
Max total PV array size ($P_{dc\ max}$)	4.5 kW_{peak}	5.3 kW_{peak}	5.5 kW_{peak}	6.0 kW_{peak}	6.9 kW_{peak}

OUTPUT DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1)]	PRIMO 4.0-1	PRIMO 4.6-1[1)]
AC nominal output ($P_{ac,r}$)	3,000 W	3,500 W	3,680 W	4,000 W	4,600 W
Max. output power	3,000 VA	3,500 VA	3,680 VA	4,000 VA	4,600 VA
AC output current ($I_{ac\ nom}$)	13.0 A	15.2 A	16.0 A	17.4 A	20.0 A
Grid connection (voltage range)	1 ~ NPE 220 V / 230 V (180 V - 270 V)				
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)				
Total harmonic distortion	< 5 %				
Power factor (cos $\varphi_{ac,r}$)	0.85 - 1 ind. / cap.				

[1)] Available upon request, conditions apply.

TECHNICAL DATA FRONIUS PRIMO (3.0-1, 3.5-1, 3.6-1, 4.0-1, 4.6-1)

GENERAL DATA	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1]	PRIMO 4.0-1	PRIMO 4.6-1[1]
Dimensions (height x width x depth)	645 x 431 x 204 mm				
Weight	21.5 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	-40 - +55 °C				
Permitted humidity	0 - 100 %				
Max. altitude	4,000 m				
DC connection technology	4x DC+ and 4x DC- screw terminals 2.5 - 16 mm²				
Mains connection technology	3-pole AC screw terminals 2.5 - 16 mm²				
Certificates and compliance with standards	DIN V VDE 0126-1-1/A1, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 4777-2, AS 4777-3, G83/2, G59/3, CEI 0-21, VDE AR N 4105				

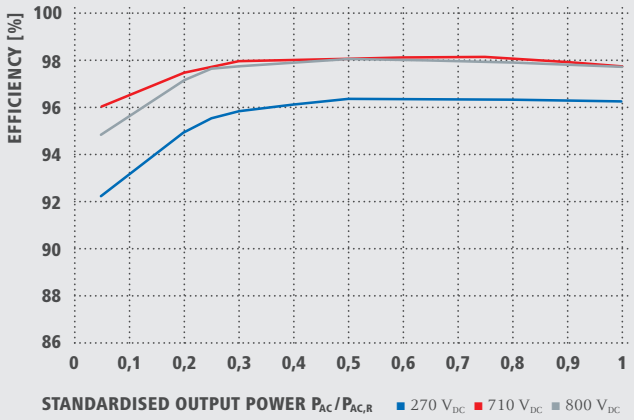
EFFICIENCY	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1]	PRIMO 4.0-1	PRIMO 4.6-1[1]
Max. efficiency	97.9 %	98.0 %	98.0 %	98.0 %	98.0 %
European efficiency (η_{EU})	96.1 %	96.8 %	96.8 %	97.0 %	97.0 %
η at 5 % $P_{ac,r}$[3]	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %
η at 10 % $P_{ac,r}$[3]	84.1 / 86.5 / 86.1 %	86.3 / 93.6 / 91.8 %	86.3 / 93.6 / 91.8 %	86.6 / 93.9 / 92.2 %	88.9 / 94.4 / 92.9 %
η at 20 % $P_{ac,r}$[3]	90.3 / 95.5 / 94.8 %	91.6 / 96.2 / 95.2 %	91.6 / 96.2 / 95.2 %	92.2 / 96.7 / 95.6 %	93.0 / 97.0 / 95.9 %
η at 25 % $P_{ac,r}$[3]	91.8 / 96.4 / 95.1 %	92.7 / 96.9 / 95.8 %	92.7 / 96.9 / 95.8 %	93.2 / 97.2 / 96.1 %	93.9 / 97.2 / 96.6 %
η at 30 % $P_{ac,r}$[3]	92.7 / 96.9 / 96.0 %	93.5 / 97.2 / 96.3 %	93.5 / 97.2 / 96.3 %	94.0 / 97.2 / 96.8 %	94.5 / 97.3 / 96.9 %
η at 50 % $P_{ac,r}$[3]	94.5 / 97.4 / 97.0 %	95.0 / 97.7 / 97.3 %	95.0 / 97.7 / 97.3 %	95.2 / 97.8 / 97.4 %	95.6 / 97.9 / 97.6 %
η at 75 % $P_{ac,r}$[3]	95.4 / 97.9 / 97.7 %	95.6 / 97.8 / 97.8 %	95.6 / 97.8 / 97.8 %	95.8 / 97.9 / 97.8 %	96.0 / 97.9 / 97.8 %
η bei 100 % $P_{ac,r}$[3]	95.7 / 97.9 / 97.8 %	95.8 / 98.0 / 97.8 %	95.8 / 98.0 / 97.8 %	95.9 / 98.0 / 97.9 %	96.2 / 97.9 / 98.0 %
MPP adaptation efficiency	> 99.9 %				

PROTECTIVE DEVICES	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1]	PRIMO 4.0-1	PRIMO 4.6-1[1]
DC insulation measurement	Yes				
Overload behaviour	Operating point shift. Power limitation				
DC disconnector	Yes				
Reverse polarity protection	Yes				

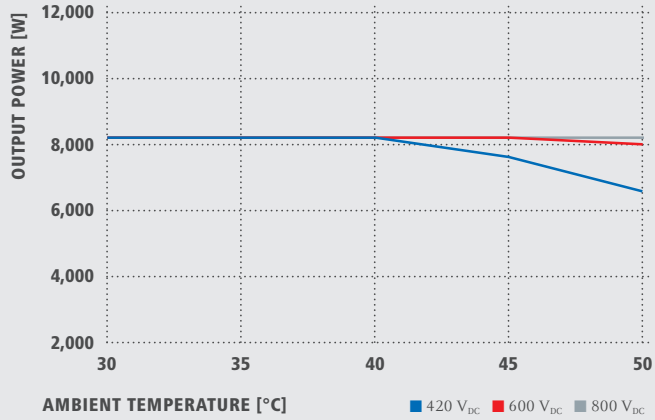
INTERFACES	PRIMO 3.0-1	PRIMO 3.5-1	PRIMO 3.6-1[1]	PRIMO 4.0-1	PRIMO 4.6-1[1]
WLAN / Ethernet LAN	Fronius Solar.web, Modbus TCP SunSpec, Fronius Solar API (JSON)				
6 inputs and 4 digital in/out	Interface to ripple control receiver				
USB (A socket) [4]	Datalogging, inverter update via USB flash drive				
2x RS422 (RJ45 socket) [4]	Fronius Solar Net				
Signalling output [4]	Energy management (potential-free relay output)				
Datalogger and Webserver	Included				
External input [4]	S0-Meter Interface / Input for overvoltage protection				
RS485	Modbus RTU SunSpec or meter connection				

[1] Available upon request, conditions apply.
[2] According to IEC 62109-1.
[3] And at Umpp min / Udc,r / Umpp max.
[4] Also available in the light version.

FRONIUS PRIMO 8.2-1 EFFICIENCY CURVE



FRONIUS PRIMO 8.2-1 TEMPERATURE DERATING



TECHNICAL DATA FRONIUS PRIMO (5.0-1, 5.0-1 AUS, 6.0-1, 8.2-1)

INPUT DATA	PRIMO 5.0-1[1]	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Max. input current ($I_{dc\ max\ 1}$ / $I_{dc\ max\ 2}$)	12.0 A / 12.0 A	18.0 A / 18.0 A		
Max. array short circuit current (MPP_1/MPP_2)	18.0 A / 18.0 A	27.0 A / 27.0 A		
Min. input voltage ($U_{dc\ min}$)	80 V			
Feed-in start voltage ($U_{dc\ start}$)	80 V			
Nominal input voltage ($U_{dc,r}$)	710 V			
Max. input voltage ($U_{dc\ max}$)	1,000 V			
Usable MPP voltage range ($U_{mpp\ min}$ – $U_{mpp\ max}$)	80 V - 800 V			
MPP voltage range at nominal power ($U_{mpp\ min}$ – $U_{mpp\ max}$)	240 - 800 V			270 - 800 V
Number of MPP trackers	2			
Number of DC connections	2 + 2			
Max. input voltage ($P_{dc\ max}$)	7.5 kW_{peak}	7.5 kW_{peak}	9.0 kW_{peak}	12.3 kW_{peak}

OUTPUT DATA	PRIMO 5.0-1[1]	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
AC nominal output ($P_{ac,r}$)	5,000 W	4,600 W	6,000 W	8,200 W
Max. output power	5,000 VA	5,000 VA	6,000 VA	8,200 VA
AC output current ($I_{ac\ nom}$)	21.7 A	21.7 A	26.1 A	35.7 A
Grid connection (voltage range)	1 ~ NPE 220 V / 230 V (180 V - 270 V)			
Frequency (frequency range)	50 Hz / 60 Hz (45 - 65 Hz)			
Total harmonic distortion	< 5 %			
Power factor (cos $\varphi_{ac,r}$)	0.85 - 1 ind. / cap.			

GENERAL DATA	PRIMO 5.0-1[1]	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Dimensions (height x width x depth)	645 x 431 x 204 mm			
Weight	21.5 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	-40 - +55 °C			
Permitted humidity	0 - 100 %			
Max. altitude	4,000 m			
DC connection technology	4x DC+ and 4x DC- screw terminals 2.5 - 16 mm^2			
Mains connection technology	3-pole AC screw terminals 2.5 - 16 mm^2			
Certificates and compliance with standards	DIN V VDE 0126-1-1/A1, IEC 62109-1/-2, IEC 62116, IEC 61727, AS 4777-2, AS 4777-3, G83/2, G59/3, CEI 0-21, VDE AR N 4105			

[1] Available upon request, conditions apply.
[2] According to IEC 62109-1.

EFFICIENCY	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
Max. efficiency	98.0 %	98.0 %	98.0 %	98.1 %
European efficiency (η_{EU})	97.1 %	97.1 %	97.3 %	97.5 %
η at 5 % $P_{ac,r}$ [1]	80.8 / 82.5 / 82.5 %	80.8 / 82.5 / 82.5 %	84.6 / 86.5 / 86.0 %	85.5 / 89.6 / 88.5 %
η at 10 % $P_{ac,r}$ [1]	89.6 / 94.8 / 93.1 %	89.6 / 94.8 / 93.1 %	90.5 / 95.5 / 94.6 %	92.2 / 96.0 / 94.8 %
η at 20 % $P_{ac,r}$ [1]	93.4 / 97.2 / 96.2 %	93.4 / 97.2 / 96.2 %	94.0 / 97.2 / 96.8 %	94.9 / 97.4 / 97.2 %
η at 25 % $P_{ac,r}$ [1]	94.1 / 97.3 / 96.8 %	94.1 / 97.3 / 96.8 %	94.7 / 97.4 / 97.0 %	95.5 / 97.7 / 97.6 %
η at 30 % $P_{ac,r}$ [1]	94.7 / 97.4 / 97.0 %	94.7 / 97.4 / 97.0 %	95.1 / 97.6 / 97.3 %	95.8 / 97.9 / 97.7 %
η at 50 % $P_{ac,r}$ [1]	95.8 / 97.9 / 97.7 %	95.8 / 97.9 / 97.7 %	96.0 / 97.9 / 97.8 %	96.3 / 98.0 / 98.0 %
η at 75 % $P_{ac,r}$ [1]	96.1 / 98.0 / 97.9 %	96.1 / 98.0 / 97.9 %	96.2 / 98.0 / 98.0 %	96.3 / 98.1 / 97.9 %
η at 100 % $P_{ac,r}$ [1]	96.2 / 97.9 / 97.9 %	96.2 / 97.9 / 97.9 %	96.2 / 98.0 / 97.9 %	96.2 / 97.7 / 97.7 %
MPP adaptation efficiency	> 99.9 %			

PROTECTIVE DEVICES	PRIMO 5.0-1	PRIMO 5.0-1 AUS	PRIMO 6.0-1	PRIMO 8.2-1
DC insulation measurement	Yes			
Overload behaviour	Operating point shift. power limitation			
DC disconnector	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 Webserver	Included			
External input [2]	S0-Meter Interface / Input for overvoltage protection			
RS485	Modbus RTU SunSpec or meter connection			

[1] And at Umpp min / Udc,r / Umpp 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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