

/ 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



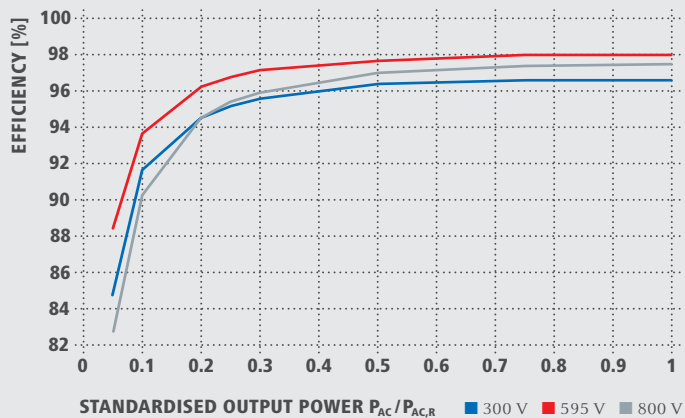
/ Boasting power categories ranging from 3.0 to 20.0 kW, the transformerless Fronius Symo is the three-phase inverter for systems of every size. Owing to the SuperFlex Design, the Fronius Symo is the perfect answer to irregularly shaped or multi-oriented roofs. The standard interface to the internet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

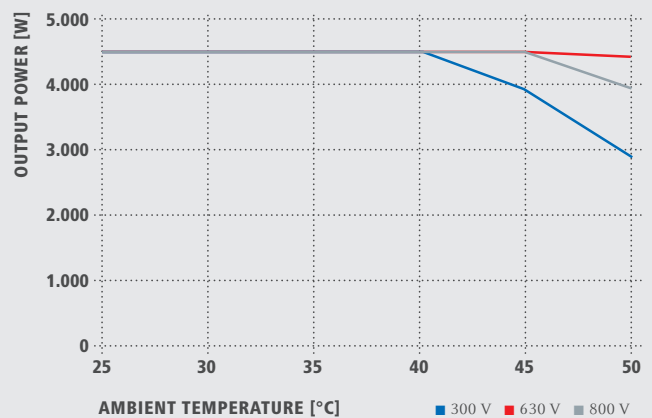
| INPUT DATA   | SYMO 3.0-3-S  | SYMO 3.7-3-S           | SYMO 4.5-3-S           | SYMO 3.0-3-M  | SYMO 3.7-3-M           | SYMO 4.5-3-M           |
|--|---|------------------------|------------------------|---|------------------------|------------------------|
| Max. input current ( $I_{dc\ max\ 1} / I_{dc\ max\ 2}^{1)}$ )                        |   |                        | 16.0 A / 16.0 A        |   |                        |                        |
| Max. array short circuit current (MPP <sub>1</sub> /MPP <sub>2</sub> <sup>1)</sup> ) |   |                        | 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 <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 ( $I_{ac\ max}$ )  | 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) <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> |                        |                        |
| Mains 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 0-211), 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

## 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 %               |
| $\eta$ at 5 % $P_{AC,r}$ <sup>1)</sup>   | 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 % |
| $\eta$ at 10 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 20 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 25 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 30 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 50 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 75 % $P_{AC,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 100 % $P_{AC,r}$ <sup>1)</sup> | 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 %             |                      |                      |                      |                      |                      |

<sup>1)</sup> 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) <sup>2)</sup>         | Datalogging, inverter update via USB flash drive                |              |              |              |              |              |
| 2x RS422 (RJ45 socket) <sup>2)</sup> | Fronius Solar Net   |              |              |              |              |              |
| Signalling output <sup>2)</sup>      | Energy management (potential-free relay output)                 |              |              |              |              |              |
| Datalogger and Webservice            | Included  |              |              |              |              |              |
| External input <sup>2)</sup>         | S0-Meter Interface / Input for overvoltage protection           |              |              |              |              |              |
| RS485                                | Modbus RTU SunSpec or meter connection                          |              |              |              |              |              |

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

<sup>2)</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)

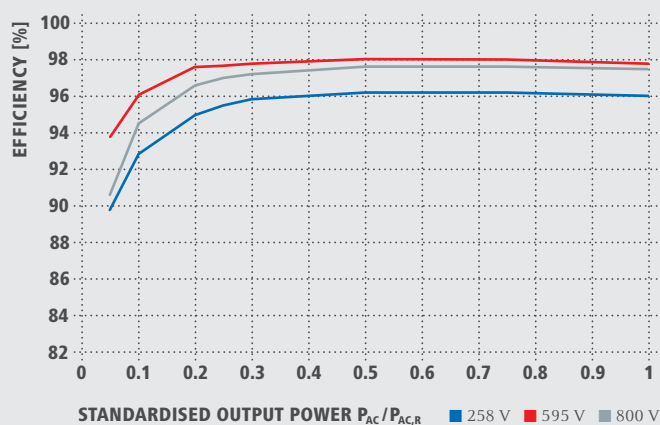
| INPUT DATA   | SYMO 5.0-3-M   | SYMO 6.0-3-M   | SYMO 7.0-3-M           | SYMO 8.2-3-M           |
|--|--|--|------------------------|------------------------|
| Max. input current ( $I_{dc \max 1} / I_{dc \max 2}$ )                 |  |  | 16.0 A / 16.0 A        |                        |
| Max. array short circuit current (MPP <sub>1</sub> /MPP <sub>2</sub> ) |  |  | 24.0 A / 24.0 A        |                        |
| 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 <sub>peak</sub>   | 12.0kW <sub>peak</sub>                                       | 14.0kW <sub>peak</sub> | 16.4kW <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 ( $I_{ac \max}$ )                                    | 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) <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>2,2)</sup> |                        |                        |
| Mains connection technology  |  | 5-pole AC Screw terminals 2.5 - 16mm <sup>2,2)</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 0-21, NRS 097 |  |                        |                        |

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

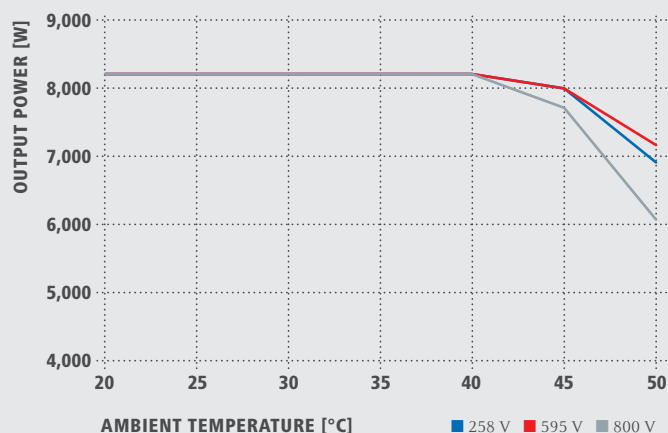
<sup>1)</sup> 16 mm<sup>2</sup> without wire end ferrules.

<sup>2)</sup> 16 mm<sup>2</sup> 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 ( $\eta_{EU}$ )      | 97.3 %               | 97.5 %               | 97.6 %               | 97.7 %               |
| $\eta$ at 5 % $P_{AC,r}$ <sup>1)</sup>   | 84.9 / 91.2 / 85.9 % | 87.8 / 92.6 / 87.8 % | 88.7 / 93.1 / 89.0 % | 89.8 / 93.8 / 90.6 % |
| $\eta$ at 10 % $P_{AC,r}$ <sup>1)</sup>  | 89.9 / 94.6 / 91.7 % | 91.3 / 95.6 / 93.0 % | 92.0 / 95.9 / 94.7 % | 92.8 / 96.1 / 94.5 % |
| $\eta$ at 20 % $P_{AC,r}$ <sup>1)</sup>  | 93.2 / 96.7 / 95.4 % | 94.1 / 97.1 / 95.9 % | 94.5 / 97.3 / 96.3 % | 95.0 / 97.6 / 96.6 % |
| $\eta$ at 25 % $P_{AC,r}$ <sup>1)</sup>  | 93.9 / 97.2 / 96.0 % | 94.7 / 97.5 / 96.5 % | 95.1 / 97.6 / 96.7 % | 95.5 / 97.7 / 97.0 % |
| $\eta$ at 30 % $P_{AC,r}$ <sup>1)</sup>  | 94.5 / 97.4 / 96.5 % | 95.1 / 97.7 / 96.8 % | 95.4 / 97.7 / 97.0 % | 95.8 / 97.8 / 97.2 % |
| $\eta$ at 50 % $P_{AC,r}$ <sup>1)</sup>  | 95.2 / 97.9 / 97.3 % | 95.7 / 98.0 / 97.5 % | 95.9 / 98.0 / 97.5 % | 96.2 / 98.0 / 97.6 % |
| $\eta$ at 75 % $P_{AC,r}$ <sup>1)</sup>  | 95.3 / 98.0 / 97.5 % | 95.7 / 98.0 / 97.6 % | 95.9 / 98.0 / 97.6 % | 96.2 / 98.0 / 97.6 % |
| $\eta$ at 100 % $P_{AC,r}$ <sup>1)</sup> | 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 %             |                      |                      |                      |

<sup>1)</sup> 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) <sup>2)</sup>         | Datalogging, inverter update via USB flash drive                |              |              |              |
| 2x RS422 (RJ45 socket) <sup>2)</sup> | Fronius Solar Net   |              |              |              |
| Signalling output <sup>2)</sup>      | Energy management (potential-free relay output)                 |              |              |              |
| Datalogger and Webservice            | Included  |              |              |              |
| External input <sup>2)</sup>         | S0-Meter Interface / Input for overvoltage protection           |              |              |              |
| RS485                                | Modbus RTU SunSpec or meter connection                          |              |              |              |

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

<sup>2)</sup> Also available in the light version.

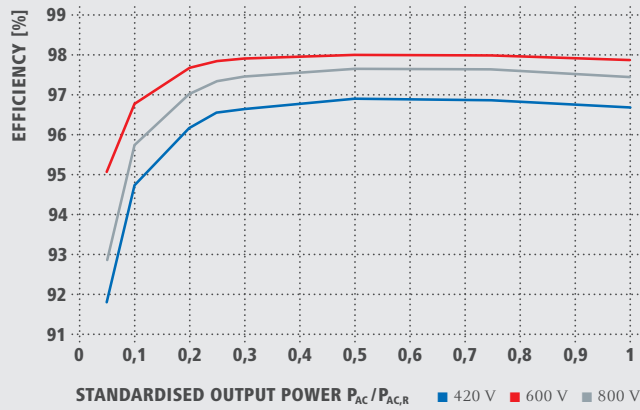
## TECHNICAL DATA FRONIUS SYMO (10.0-3-M, 12.5-3-M, 15.0-3-M, 17.5-3-M, 20.0-3-M)

| 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           |
|--|--|------------------------|-------------------------|-------------------------|-------------------------|
| 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         |                         |                         |
| 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  |                        |                         |                         |                         |
| 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 <sub>peak</sub>  | 18.8kW <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 ( $I_{ac\ max}$ )                                    | 14.4 A   | 18.0 A                 | 21.7 A                  | 25.3 A                  | 28.9 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  | 1.8 %  | 2.0 %                  | 1.5 %                   | 1.5 %                   | 1.3 %                   |
| Power factor ( $\cos \varphi_{ac,r}$ )                                 | 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>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   | 6x DC+ and 6x DC- screw terminals 2.5 - 16 mm <sup>2)</sup>  |                        |                         |                         |                         |
| Mains connection technology  | 5-pole AC screw terminals 2.5 - 16 mm <sup>2)</sup>  |                        |                         |                         |                         |
| 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 |                        |                         |                         |                         |

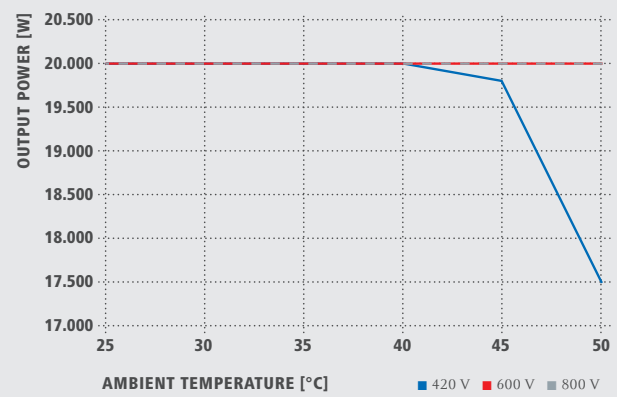
<sup>1)</sup> 14.0 A for voltages < 420 V

<sup>2)</sup> 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 ( $\eta_{EU}$ )      | 97.5 %  | 97.6 %               | 97.8 %               | 97.8 %               | 97.9 %               |
| $\eta$ at 5 % $P_{Ac,r}$ <sup>1)</sup>   | 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 % |
| $\eta$ at 10 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 20 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 25 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 30 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 50 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 75 % $P_{Ac,r}$ <sup>1)</sup>  | 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 % |
| $\eta$ at 100 % $P_{Ac,r}$ <sup>1)</sup> | 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) <sup>2)</sup>             | Datalogging, inverter update via USB flash drive                |                      |                      |                      |                      |
| 2x RS422 (RJ45 socket) <sup>2)</sup>     | Fronius Solar Net   |                      |                      |                      |                      |
| Signalling output <sup>2)</sup>          | Energy management (potential-free relay output)                 |                      |                      |                      |                      |
| Datalogger and Webservice                | Included  |                      |                      |                      |                      |
| External input <sup>2)</sup>             | S0-Meter Interface / Input for overvoltage protection           |                      |                      |                      |                      |
| RS485                                    | Modbus RTU SunSpec or meter connection                          |                      |                      |                      |                      |

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

<sup>2)</sup> Also available in the light version.

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v05 May 2015 EN

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