

/ Perfect Welding / Solar Energy / Perfect Charging



SHIFTING THE LIMITS

FRONIUS GALVO

/ Not just an inverter, but an energy management system.



/ SnapInverter technology



/ Integrated data communication



/ SuperFlex Design



/ Dynamic Peak Manager



/ Smart Grid Ready



/ PC board replacement process

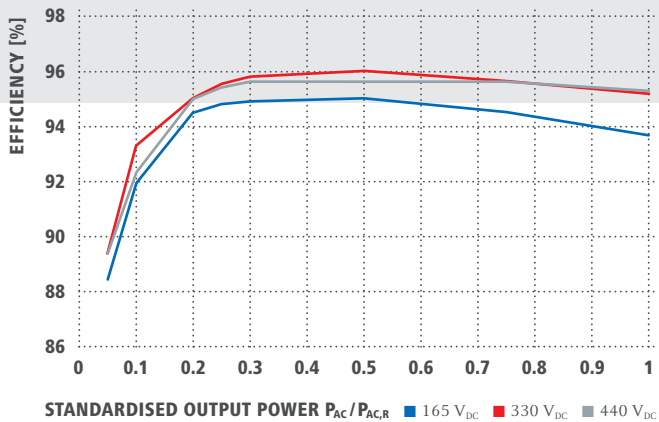
/ With power categories ranging from 1.5 to 3.1 kW, the Fronius Galvo is perfect for households – and is especially suitable for self-consumption systems. The integrated energy management relay allows the self-consumption component to be maximised. A host of other smart features make the Fronius Galvo one of the most future-proof inverters in its class: for example, the integrated datalogging, the simple connection to the internet by WLAN, or the plug-in card technology for retrofitting additional functions.

TECHNICAL DATA FRONIUS GALVO

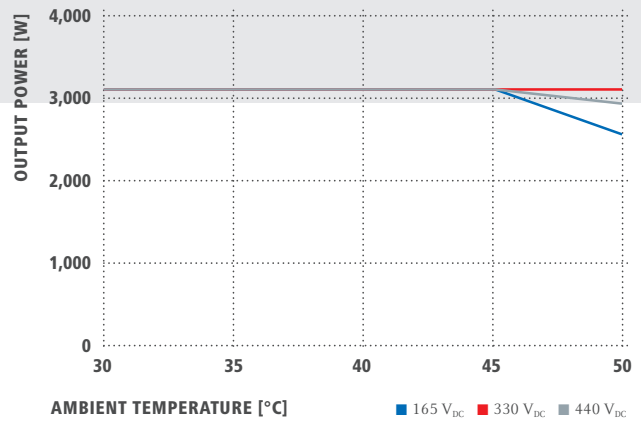
| INPUT DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
|--|---|--|---------------------------------|-------------|-------------|
| DC maximum power at $\cos \varphi = 1$ ¹⁾ | 1,600 W | 2,140 W | 2,650 W | 3,160 W | 3,310 W |
| Max. input current ($I_{dc,max}$) | 13.3 A | 17.8 A | 16.6 A | 19.8 A | 20.7 A |
| Max. array short circuit current | 20.0 A | 26.8 A | 24.8 A | 29.6 A | 31.0 A |
| Min. input voltage ($U_{dc,min}$) | | 120 V | | 165 V | |
| Feed-in start voltage ($U_{dc,start}$) | | 140 V | | 185 V | |
| Nominal input voltage ($U_{dc,r}$) | | 260 V | | 330 V | |
| Max. input voltage ($U_{dc,max}$) | | 420 V | | 550 V | |
| MPP voltage range ($U_{mpp,min} - U_{mpp,max}$) | | 120 - 335 V | | 165 - 440 V | |
| Number of MPP trackers | | | 1 | | |
| Number of DC connections | | | 3 | | |
| OUTPUT DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
| AC nominal output ($P_{ac,r}$) | 1,500 W | 2,000 W | 2,500 W | 3,000 W | 3,100 W |
| Max. output power | 1,500 VA | 2,000 VA | 2,500 VA | 3,000 VA | 3,100 VA |
| Max. output current ($I_{ac,max}$) | 7.2 A | 9.7 A | 12.1 A | 14.5 A | 15.0 A |
| Grid connection (voltage range) | | | 1-NPE 230 V (+17 % / -20 %) | | |
| Frequency (frequency range) | | | 50 Hz / 60 Hz (45 - 65 Hz) | | |
| Total harmonic distortion | | | < 4 % | | |
| Power factor ($\cos \varphi_{ac,r}$) | | | 0.85 - 1 ind. / cap. | | |
| GENERAL DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
| Dimensions (height x width x depth) | | | 645 x 431 x 204 mm | | |
| Weight | 16.4 kg | | | 16.8 kg | |
| Degree of protection | | | IP 65 | | |
| Protection class | | | 1 | | |
| Overvoltage category (DC / AC) ²⁾ | | | 2 / 3 | | |
| Night-time consumption | | | < 1 W | | |
| Inverter concept | | | HF transformer | | |
| Cooling | | | Regulated air cooling | | |
| Installation | | | Indoor and outdoor installation | | |
| Ambient temperature range | | | -25 - +50 °C | | |
| Permitted humidity | | | 0 to 100 % | | |
| Max. altitude | | 2,000 m / 3,500 m (unrestricted / restricted voltage range) | | | |
| DC connection technology | | Screw terminal connection 2.5 mm ² - 16 mm ² | | | |
| AC connection technology | | Screw terminal connection 2.5 mm ² - 16 mm ² | | | |
| Certificates and compliance with standards | AS 4777-2&3, AS3100, DIN V VDE 0126-1-1/A1, VDE AR N 4105, IEC 62109-1&2, IEC 62116, IEC 61727, CER 06-190, CEI 0-21, EN 50438, G83, G59, NRS 097 | | | | |

¹⁾ Maximum power inverter can convert ²⁾ Testing to IEC 62109-1.

FRONIUS GALVO 3.1-1 EFFICIENCY CURVE



FRONIUS GALVO 3.1-1 TEMPERATURE DERATING



TECHNICAL DATA FRONIUS GALVO

| EFFICIENCY | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
|-------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Max. efficiency | 95.9 % | 96.0 % | | 96.1 % | |
| European efficiency (η_{EU}) | 94.5 % | 94.9 % | 95.2 % | 95.4 % | 95.4 % |
| η at 5 % $P_{AC,R}^{1)}$ | 84.5 / 86.0 / 86.0 % | 84.2 / 86.1 / 85.9 % | 88.6 / 89.6 / 89.4 % | 88.2 / 89.2 / 89.1 % | 88.4 / 89.4 / 89.4 % |
| η at 10 % $P_{AC,R}^{1)}$ | 87.5 / 89.7 / 89.6 % | 89.6 / 91.4 / 91.3 % | 91.2 / 92.3 / 91.4 % | 91.8 / 93.1 / 92.1 % | 91.9 / 93.3 / 92.3 % |
| η at 20 % $P_{AC,R}^{1)}$ | 91.3 / 93.3 / 93.1 % | 92.6 / 94.3 / 93.9 % | 94.0 / 94.8 / 94.5 % | 94.4 / 95.0 / 94.9 % | 94.5 / 95.0 / 95.0 % |
| η at 25 % $P_{AC,R}^{1)}$ | 92.4 / 94.1 / 93.9 % | 93.3 / 94.9 / 94.5 % | 94.5 / 95.1 / 95.0 % | 94.8 / 95.5 / 95.3 % | 94.8 / 95.5 / 95.4 % |
| η at 30 % $P_{AC,R}^{1)}$ | 93.0 / 94.6 / 94.3 % | 93.6 / 95.2 / 94.9 % | 94.8 / 95.5 / 95.3 % | 94.8 / 95.7 / 95.6 % | 94.9 / 95.8 / 95.6 % |
| η at 50 % $P_{AC,R}^{1)}$ | 93.9 / 95.5 / 95.2 % | 94.3 / 95.8 / 95.2 % | 95.0 / 95.7 / 95.2 % | 95.0 / 96.0 / 95.5 % | 95.0 / 96.1 / 95.6 % |
| η at 75 % $P_{AC,R}^{1)}$ | 94.2 / 95.6 / 95.4 % | 94.0 / 95.9 / 95.6 % | 94.8 / 95.9 / 95.6 % | 94.6 / 95.8 / 95.6 % | 94.5 / 95.6 / 95.6 % |
| η at 100 % $P_{AC,R}^{1)}$ | 94.0 / 95.9 / 95.6 % | 93.5 / 95.6 / 95.5 % | 94.4 / 95.7 / 95.5 % | 93.9 / 95.4 / 95.3 % | 93.7 / 95.2 / 95.3 % |
| MPP adaptation efficiency | > 99.9 % | | | | |

| PROTECTION DEVICES | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
|---------------------------|--|-------------|-------------|-------------|-------------|
| DC insulation measurement | Warning/shutdown (depending on country setup) at $R_{ISO} < 600 \text{ k}\Omega$ | | | | |
| Overload behavior | Operating point shift, power limitation | | | | |
| DC disconnecter | Included | | | | |

| INTERFACES | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1 | GALVO 3.1-1 |
|---------------------------------------|---|-------------|-------------|-------------|-------------|
| 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) ²⁾ | Datalogging, inverter update via USB flash drive | | | | |
| 2x RS422 (RJ45 socket) ²⁾ | Fronius Solar Net | | | | |
| Signalling output ²⁾ | Energy management (floating relay output), Earth Fault Alarm | | | | |
| Datalogger and Webserver | Included | | | | |
| External input | S)-Meter Interface / Input for overvoltage protection | | | | |
| RS485 | Modbus RTU SunSpec or meter connection | | | | |

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

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

v05 May 2015 EN

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