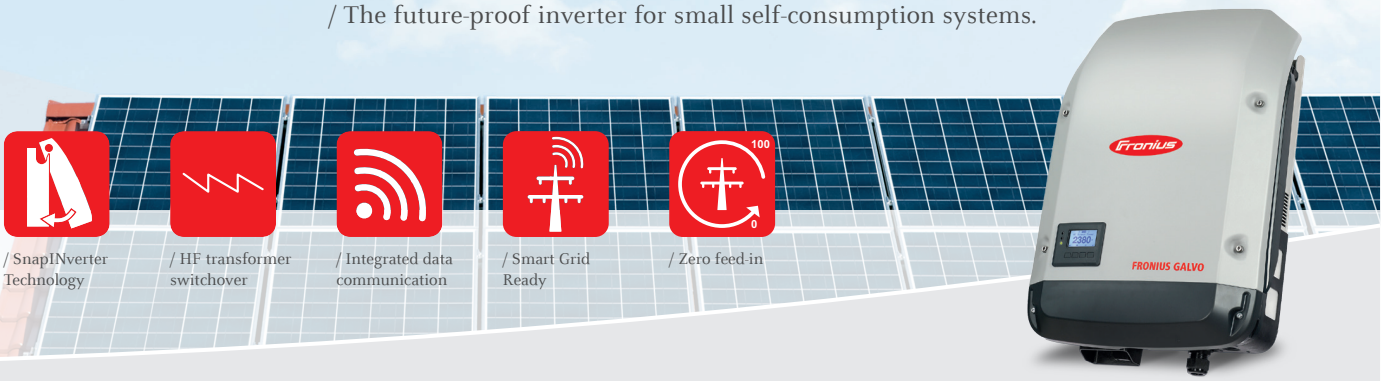
/ Perfect Welding / Solar Energy / Perfect Charging

SHIFTING THE LIMITS

# FRONIUS GALVO

/ The future-proof inverter for small self-consumption systems.




/ 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

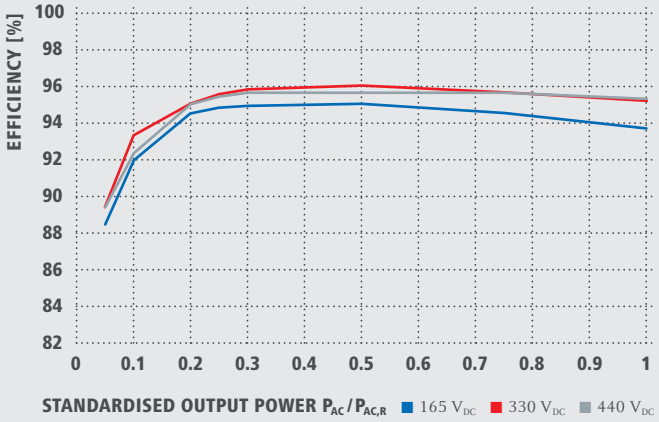
| INPUT DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1[1] | GALVO 3.1-1 |
|---|---|---|---|---|---|
| Max. input current ($I_{dc\ max}$) | 13.3 A | 17.8 A | 16.6 A | 19.8 A | 20.7 A |
| Max. array short circuit current | 20.0 A | 26.8 A | 24.8 A | 29.6 A | 31.0 A |
| Min. input voltage ($U_{dc\ min}$) | 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 | | | | |
| Max. PV generator output ($P_{dc\ max}$) | 3.0 kWpeak | 4.0 kWpeak | 5.0 kWpeak | 6.0 kWpeak | 6.2 kWpeak |

| OUTPUT DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1[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 |
| AC output current ($I_{ac\ nom}$) | 6.5 A | 8.7 A | 10.9 A | 13.0 A | 13.5 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. | | | | |

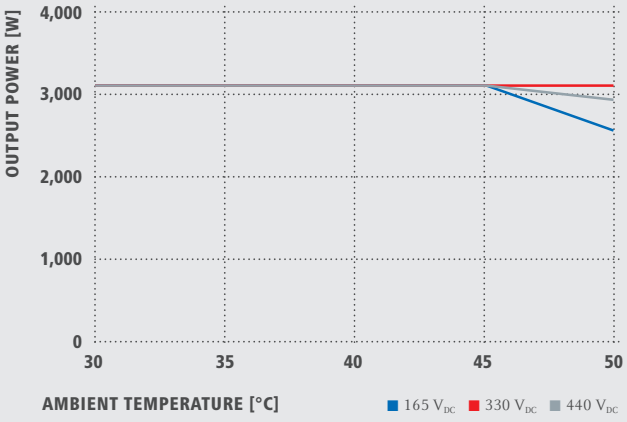
| GENERAL DATA | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1[1] | GALVO 3.1-1 |
|---|---|---|---|---|---|
| Dimensions (height x width x depth) | 645 x 431 x 204 mm | | | | |
| Weight | 16.4 kg | | 16.8 kg | | |
| Degree of protection | IP 65 | | | | |
| Protection class | 1 | | | | |
| Overvoltage 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 | 3x DC+ and 3x DC- screw terminals 2.5 - 16 mm² | | | | |
| AC connection technology | 3-pin AC screw terminals 2.5 - 16 mm² | | | | |
| Certificates and compliance with standards | ÖVE / ÖNORM E 8001-4-712, AS 4777-2, AS 4777-3, 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] Available for countries where 3 kW restrictions apply. [2] Testing to IEC 62109-1.
Further information regarding the availability of the inverters in your country can be found at **www.fronius.com.**

## 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[1] | GALVO 3.1-1 |
|---|---|---|---|---|---|
| Max. efficiency | 95.9 % | 96.0 % | 96.1 % | | |
| European efficiency ($\eta_{EU}$) | 94.5 % | 94.9 % | 95.2 % | 95.4 % | 95.4 % |
| $\eta$ at 5 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 10 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 20 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 25 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 30 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 50 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 75 % $P_{ac,r}$ [2] | 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 % |
| $\eta$ at 100 % $P_{ac,r}$ [2] | 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[1] | GALVO 3.1-1 |
|---|---|---|---|---|---|
| DC insulation measurement | Warning/shutdown (depending on country setup) at $R_{ISO}$ < 600 kOhm | | | | |
| Overload behavior | Operating point shift, power limitation | | | | |
| DC disconnector | Included | | | | |
| Reverse polarity protection | Yes | | | | |

| INTERFACES | GALVO 1.5-1 | GALVO 2.0-1 | GALVO 2.5-1 | GALVO 3.0-1[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) [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 Interface / Input for overvoltage protection | | | | |
| RS485 | Modbus RTU SunSpec or meter connection | | | | |

[1] Available for countries where 3 kW restrictions apply. [2] And at $U_{mpp\ min}$ / $U_{dc,r}$ / $U_{mpp\ max}$. [3] Also available in the light version.
Further information regarding the availability of the inverters in your country can be found at **www.fronius.com.**

/ 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 3,700 employees worldwide, we shift the limits of what's possible - our record of over 800 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**

v06 Apr 2016 EN

**Fronius India Private Limited**
GAT no 312, Nanekarwadi
Chakan, Taluka - Khed District
Pune 410501
India
pv-sales-india@fronius.com
www.fronius.in

**Fronius Australia Pty Ltd.**
90-92 Lambeck Drive
Tullamarine VIC 3043
Australia
pv-sales-australia@fronius.com
www.fronius.com.au

**Fronius UK Limited**
Maidstone Road, Kingston
Milton Keynes, MK10 0BD
United Kingdom
pv-sales-uk@fronius.com
www.fronius.co.uk

**Fronius International GmbH**
Froniusplatz 1
4600 Wels
Austria
pv-sales@fronius.com
www.fronius.com

Text and images correspond to the current state of technology at the time of printing. Subject to modifications.
All information is without guarantee in spite of careful editing. Liability excluded. Copyright © 2011 Fronius™. All rights reserved.

M,06,0091,EN v10 May 2016 as17