

EG-Bravo 10 – 48/230

Modular inverter to efficiently secure critical applications from 1.25 kVA

Telecom / Datacom / Mass transport / Industry / Power Utilities / Renewable

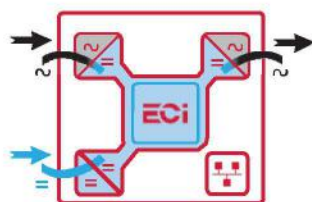


ECi
technology inside



Description

EG-Bravo 10 is a small modular inverter offering many opportunities to design a solution that perfectly fits your needs. The ECI technology offers both AC and DC inputs to provide a perfect AC power while reducing the number of power conversion (the module operates under normal condition with the AC input delivering a 96% efficiency)! In conjunction with the DC input, it provides an excellent AC backup solution.



From 1 to 32 modules, with several options available (manual external by-pass and AC distribution), EG-Bravo 10 modular inverter is also hot-swappable meaning a very easy and cheap maintenance. The modules are delivered with our new monitoring solution.

EG-Bravo 10 can be used with the Inview S (DIN or panel mounting), Inview Slot and Inview GW monitoring. One shelf can accommodate 5 modules (6.25 kVA) or 4 modules (5 kVA) with Inview S Slot monitoring included.



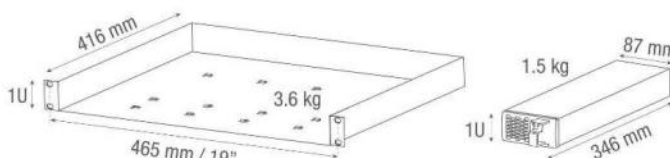
Applications

An ideal solution for securing small critical AC loads, from 1.25 kVA to 40 kVA, such as telecom small cells (4G and 5G), access control, traffic lights, security equipment, etc.

The module can be integrated into shelves for single-phase (230 Vac) or three-phase (3x400 Vac) installation with different output powers. We have already designed 3 shelves configurations: 5 modules (6.25 kVA, single-phase), 4 modules (5 kVA, single-phase) and 9 modules (11.25 kVA, single-phase).

Key features

- AC and DC input sources (highest efficiency topology)
- 1 to 32 modules and 1 or 3 phases configuration
- Customization (manual by-pass and AC distribution)
- Transfer time reduced to 0 ms
- Compact design



PMA_EG-Bravo10 / PMA02251122

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EG-Bravo 10 – 48/230

General	
Part Number: Module / Shelf	T611730201 / T614730000
Cooling / Audible noise	Fan forced cooling / < 65 dBA at 1 meter
MTBF	240 000 hrs (MIL-217IF)
Dielectric strength DC/AC	4300 Vdc
RoHS	Compliant
Operating temperature / Relative Humidity (RH) non-condensing	Tested according ETS300-019-2-3 Class 3.1 -20°C to 65°C, power de-rating from 40°C to 65°C / Max RH 95% for 96 hours per year
Storage temperature / Relative Humidity (RH) non-condensing	Tested according ETS300-019-2-1 Class 1.2 -40°C to 70°C / Max RH 95% for 96 hours per year
Public transport temperature / Relative Humidity (RH) non-condensing	Tested according ETS300-019-2-2 Class 3.1 -40°C to 70°C / Max RH 95% for 96 hours per year
Material (casing)	Zinc coated steel
Power	
AC Input data	
AC voltage: Nominal / range	230 V (150 – 265 V)
Brownout	800 W @ 150 Vac / 1000 W @ >190 Vac linear decreasing
Power factor / THD	> 99% / < 3%
Frequency range (selectable) / synchronization range	50 Hz (range 47 – 53 Hz) / 60 Hz (range 57 – 63 Hz)
DC Input data	
DC voltage: Nominal / range	48 Vdc / (40-60V) ¹⁾
Nominal current (at 48 Vdc and 1000 W output)	22.3 A
Maximum input current (at 48 Vdc for 15 second) / voltage ripple	34 A / <10 mV RMS
AC Output data	
Efficiency (Typical): Enhanced power conversion / on line	96% / >92.5%
Nominal voltage AC ²⁾ Adjustable	230 V (200 - 240 VAC)
Frequency / frequency accuracy	50 or 60 Hz / 0.03%
Nominal Output power	1250 VA / 1000 W
Short time overload capacity	150% (15 seconds)
Admissible load power factor	Full power rating from 0 inductive to 0 capacitive
Total harmonic distortion (resistive load)	< 3%
Load impact recovery time (10% - 90%)	≤ 0.4 ms
Nominal current	5.4 A @ 230 Vac
Crest factor at nominal power	3 : 1 for load P.F. ≤ 0.7
Short circuit clear up capacity 0 - 20 ms	22.7 A (peak) and 18.8 A (rms)
Short circuit current after >20 ms -15 s / after 15 s	11.3 A (peak) and 9.5 A (rms) / 8.5 A (peak) and 7.1 A (rms)
AC output voltage stability	±1% from 10% to 100% load
In Transfer Performance	
Max. voltage interruption / total transient voltage duration (max)	0 s / 0 s
Signaling & Supervision	
Display	Synoptic LED
Supervision	Inview ranges: Inview S - T302004100, Inview Slot - T602004110, Inview GW - T602004000
Remote on / off	On rear terminal of the shelf
Alarms output	2 dry contacts and 2 digital inputs
Safety & EMC	
Safety	EN62040-1
EMC	EN 61000-4-2 / EN 61000-4-3 / EN 61000-4-4 / EN 61000-4-5 / EN 61000-4-6 / EN 61000-4-8 / ETSI EN 300386 v1.9.1

1) Permanent 1000 W / derating apply based on internal heatsink temperature.

2) Operation within lower voltage networks leads to de-rating of power performances.

The producer reserves the right to change data without prior notice.



TSI Bravo 230 Vac

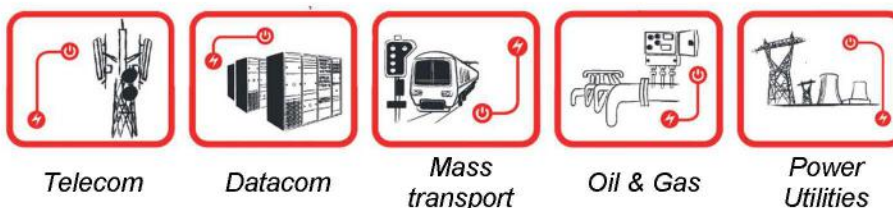
Modular inverter module

Power **2.5 kVA (1.5 kVA*)**
 Input **24* / 48 / 60 / 110 220 Vdc**
 Output **230 Vac**



Main features

- Dual input sources (AC & DC) with wide AC input range 150 Vac to 265 Vac
- Compact design
- High efficiency
- Transfer time reduced to 0
- Up to 10 kVA in 2 U
- Up to 225 kVA in 3 enclosures of 75 kVA each



Description

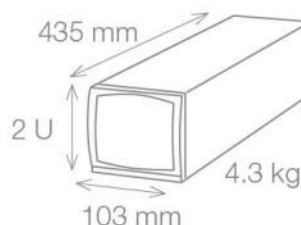
BRAVO is a compact and scalable modular inverter providing a pure sine wave AC supply. In conjunction with a DC Power system, it provides an excellent AC backup solution. It uses the latest inverter technology, providing superior energy efficiency in a compact size.

The "Twin Sine Innovation" (TSI) technology eliminates all single points of failure with full scalability; up to 32 modules in parallel and high efficiency of up to 96% reducing operating costs.

Applications

All business critical applications and all types of AC loads.

The design is modular and scalable with hot-swappable inverter modules which ensures low Mean Time to Repair (MTTR), reduction in service costs and meets the changing needs for future expansion.



The producer reserves the right to change data without prior notice.

* Operation within lower voltage networks leads to de-rating of power performances.



***Bravo 220 Vdc
 DNV-OS-D202 Section 4
 CLASS 4

KM 621103
 BS EN 50171
 Central Power
 Supply Systems

PMA_Bravo_TSI / PMA03260125

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Technical specifications

	24 / 230	48 / 230	60 / 230	110 ** / 230	220*** / 230
General					
EMC (immunity)	EN 61000-4-2 / EN 61000-4-3 / EN 61000-4-4 / EN 61000-4-5 / EN 61000-4-6 / EN 61000-4-8				
EMC (emission) (class)	EN 55022 (A)	EN 55022 (B)			
Safety	EN62040-1				
Cooling / Isolation	Forced / Doubled				
MTBF	240 000 hrs (MIL-217-F)				
Efficiency (Typical): Enhanced power conversion / on line	>95.5% / >89.5%	96% / 91%			96.5% / 92.5%
Dielectric strength DC/AC	4300 Vdc				
True Redundant Systems – compliant	3 disconnection levels on AC out and DC in power ports 4 disconnection levels on AC in port				
RoHS	Compliant				
Vibration	GR63 office vibration 0 to 100 hz-0.1 g / transport vibration 5-100 Hz 0.5 g 100 to 500 Hz-1.5 g / Drop test				
Operating conditions	Designed for installation in an IP20 or IP21 environment. When installed in a dusty or humid environment, appropriate measures (air filtering, ...) must be taken.				
Altitude above sea without de-rating	< 1500 m / derating > 1500 m – 0.8 % per 100 m				
Ambient / storage temperature	-20 to 50°C / -40 to 70°C				
Relative humidity	95 %, non-condensing				
Material (casing)	Coated steel-ALU ZINC				
AC Output Power					
Nominal output power (VA) / (W)	1500 / 1200	2500 / 2000			
Short time overload capacity	150% (15 seconds) 110% permanent within T° range				
Admissible load power factor	Full power rating from 0 inductive to 0 capacitive				
Internal temperature management and switch off	Yes				
DC Input Specifications					
Nominal voltage (DC)	24 V	48 V	60 V	110 V	220 V
Voltage range (DC)	19 – 35 V	40 – 60 V	48 – 72 V	90 – 160 V	170 – 300 V
Nominal current	56A (at 24Vdc & 1200W output)	46A (at 48Vdc & 2000W output)	35A (at 60Vdc & 2000W output)	19A (at 110Vdc & 2000 W output)	9.8A (at 220Vdc & 2000W output)
Maximum input current (for 15 second) / voltage ripple	84 A / <100 mV rms	84 A / < 2 mV Psopho	52 A < 100 mV rms	29 A / < 200 mV rms	14.9 A / < 200 mV rms
Input voltage boundaries	User selectable with T2S interface				
AC Input Specifications (AC input available only with EPC modules, REG modules do not have any ACin)					
Nominal voltage (AC)	220/230/240 V 1P or 3P (Min 3 shelves for 3P)				
Voltage range (AC)	150-265 V				
Brownout	150 to 185 V linear derating 150 VA/120 Watts per 10 Vac				
	1200VA / 960W @ 150 Vac	2000VA/1600W @ 150 Vac			
Conformity range before transfer to DC	Adjustable				
Power factor	> 99%				
Frequency range (selectable) / synchronization range	50 – 60 Hz / range 47 – 53 Hz / 57 – 63 Hz				
AC Output specifications					
Nominal voltage (AC*)	220/230/240 V				
Frequency / frequency accuracy	50 - 60 Hz / 0.03 %				
Total harmonic distortion (resistive load)	< 1.5 %				
Load impact recovery time	0.4 ms				
Turn on delay	20 s to 40 s depending on the number of module installed				
Nom. current. Protected against reverse cur.	6.6 A	10.9 A			
Crest factor at nominal power	2.8:1	3 : 1			
With short circuit management & protection					
Short circuit clear up capacity	10 x I _n for 20 msec - Available while Mains is available at AC input port With magnitude control and management				
Short circuit current after clear up capacity	2.1 I _n during 15 s and 1.5 I _n after 15 s				
In Transfer Performance					
Max. voltage interruption / total transient voltage duration (max)	0 s / 0 s				
Signalling & Supervision					
Display	Synoptic LED				
Alarms output / supervision	Dry contacts on shelf / Standard USB port and MODBUS on T2S, optional : Candis Display / Candis TCP-IP				
Remote on / off	on rear terminal of the shelf via T2S				