

Rectifier Systems of the series GHFC

in modular technology with Controller

Battery-backed DC-power supply facilities providing safe power supply for monitoring and regulating boards in manufacturing processes and electronic devices in data processing technology in case of mains network failures are used in all areas of public life and industry.

The modular rectifier units of the series *PSR3xx* with an output performance of 800W, 1200W (only for 24VDC) and 2700W have been developed to enable the customer to individually and flexibly design its power supply installations.

Combined with a state-of-the-art microprocessor monitoring unit GFS has designed a series of compact rectifiers that meets the highest requirements of nowadays DC-power supply solutions.

Your advantages:

- Best price-performance ratio
- Highest reliability thanks to:
 - Input over voltage protection
 - Active load sharing
 - Integrated active decoupling from the DC bus
 - Temperature-regulated cooling fan
 - Stand-by operation mode in case of system-BUS failure
- Easy handling thanks to:
 - Single phase slide-in rectifier modules with sinusoidal input current
 - „HOT-PLUG-IN“- design with backplane connection
 - Easy extension by automatic programming of parameters via system CAN-communication bus
- Flexible monitoring concept:
 - indication of measured values and signals as text
 - LED-indication of the most important states of operation
 - easy guidance through the menu
 - digital real time clock
 - extension by CAN-Bus



combined AC/DC power supply facility

Rectifier Systems Series GHFC

Versions

We offer the appropriate solution for the wide variety of applications:

- Complete power supply system including rectifier, DC/DC converters, inverter and AC/DC-distribution boards
- High output power thanks to parallel operation of the modules
- Rectifier systems based on N+1 reserve technology
- possibility of linking into an existing system
- The series *GHFC* is available in a voltage range between 24V and 220V and suitable for the use in power plants, power generation and distribution, railway and traffic installations, plant construction, chemical and heavy industries.



front view of microprocessor unit

Fields of application and short description of technology

The single phase rectifier modules of the series PSR308, PSR312 and PSR327 with sinusoidal input current are „hot-plug-in“-compatible units, equipped with backplane connection for easy integration in 19“- sub racks.

The rectifier modules distinguish themselves particularly by a high power density, best efficiency in combination with compact design and low weight. Few modules can be connected in parallel to reach higher output performance and to build the installation with reserve according to (n + 1) principle.

The modules of the series PSR 308 are cooled by a separate modular fan integrated in a 19“- sub rack with airflow from bottom to top.

The series PSR 312 und PS 327 are cooled similar like PSR 308 with the difference, that here the fan is built in the rectifier module. The air flows from front to rear with temperature controlling and r.p.m.-monitoring.

The power supply device is equipped with a microprocessor unit to control and monitor rectifier and battery as well as to display measuring values and failures as clear text.

The LCD-display shows voltage and current of the rectifier (optionally battery voltage, charging/discharging current of the battery, load voltage and current and mains voltage), date/time as well as the below mentioned state information and test results..

The incorporated memory chip saves up to 100 operating and fault notification and the results of manual battery tests.

LED- INFORMATION

- Power on
- $U > U_{min}$.
- $U > U_{max}$
- Isolation (option)
- free programmable
- free programmable
- Important alarm
- Alarm

TEXT INFORMATION

- Voltage too high
- Voltage too low
- Deep discharge
- Malfunction of rectifier
- Internal fault of microprocessor unit
- Mains failure (Option)
- Fault of battery circuit (Option)
- Earth fault (Option)
- Automatic charging (Option)
- Fault of battery test (Option)
- Failing of fuses (Option)
- Over temperature (Option)

POTENTIALFREE INFORMATION ON CLAMPS

- Voltage too high
- Voltage too low
- Deep discharge
- Malfunction of rectifier
- Collecting malfunction (Option)
- Mains failure (Option)
- Fault of battery circuit (Option)
- Earth fault I(Option)
- Automatic charging (Option)
- Fault of battery test (Option)
- Failing of fuses (Option)
- Over temperature (Option)
- Contact with fan (Option)

Rectifier Systems Series GHFC

General Technical data of the 19" sub racks

	PSR308	PSR312 / PSR327
Mechanical data		
Design mode	19"-rack 4HE	19"-rack 3HE
Dimensions W/H/D	483 / 177 / 320 mm	483 / 133 / 406 mm
No. of slide-in modules	6	4
Protection category and class	IP 00 / 1	IP 00 / 1
Colour	Fire-zincd	
Connections	AC-connections via AMP-6,3 plug, rear side DC-connections via CU-rails	

General Technical data of the rectifier modules

	PSR308 (24V – 216V)	PSR312 (24V)	PSR327 (48 – 216V)
Mains Input			
Nominal input voltage	100 – 250V AC	230V AC	230V AC
Input voltage tolerance	+10%/-20%	± 20%	± 20%
Nominal input current	5,5A at 120V / 3,9A at 230V	5,8A	12,9 A
Input frequency range	47 – 63 Hz		
Power factor	> 0,99		
Total harmonic distortcion	< 5%		
Efficiency	≥ 90%	≥ 88%	≥ 91%
DC-Output			
Output power	800W (600W at mains voltage < 175V AC)	1200W	2700W
Characteristic	IU-characteristic acc. to DIN 41772/ 71773; power regulated		
Voltage ripple acc. to CCITT	≤1,2mV (24V) bzw. ≤1,8mV (48-60V)	≤1,2mV	≤1,8mV (48-60V)
Voltage ripple	≤0,1%ss		
Dynamic accuracy of charging voltage	< 3% U _{nenn} at sharp load changes between 10% - 90% - 10%; I _{nenn} , transient time ≤ 1ms		
Short-circuit protection	Continuousy short-circuit proof, 1xI _{nenn}		
Parallel operation	Yes, current sharing ≤ 10% I _{nenn}		
Internal decoupling at the output	Yes, active decoupling on the minus side	Yes, active decoupling on the plus side	
Standard Accessories			
LED-Signalling	Operation (green); Ua OK (green); Ua> (redt); Alarm (rot)		
Potential free relay contacts	Collective fault: 1 breaker		
Communication interface	CAN-Bus, proprietary protocol		
Ambient Conditions			
Ambient temperature	Betrieb -25°C bis +55°C / Lagerung -30°C bis +70°C		
Cooling	Fan cooling 1U sub rack, temperature- controlled, r.p.m.-monitored	Fan cooling, temperature-controlled, r.p.m.-monitored	
Climatic conditions	Acc. to IEC 721-3-3 Class 3K3/3Z1/3B1/3C2/3S2/3M2		
Humidity class	F		
Max. Installation altitude	≤ 1500m a.s.l. (above with derating factor)		
Mechanical Parameters			
Type of construction	19"-sub rack, 3U		
Audible noise	≤ 45dBA	≤ 45dBA	
Dimensions W/H/D	71 / 128 / 280 mm	106 / 133 / 327 mm	
Weight	2,2 kg	3,9 kg	
Protection class	IP 20 (cover plate) / 1		
Colour	RAL 7035 / fire-zincd		
Electrical connection	DIN 416412-M-connector		
Norms and Regulations			
CE-Conformity	Yes		
Compliance to safety standards	EN 60950; VDE 0100 T410; VDE 0110;EN 50178; EN 60146; UL 950		
Compliance to EMC standards	EN 55011/22 Class „B“; EN 61000-4 T2 bis 5		

Output Parameters DC type PSR308

	PSR308/24-30	PSR308/48-16,7	PSR308/60-13,5	PSR308/108-7,5	PSR308/216-3,7
DC-Output					
Setting range	19,0 – 36,0 V	38,0 – 75,0 V	48,0 – 88,5 V	87,0 – 160,0 V	172,0 V – 313,0 V
Voltage ripple acc. to CCITT	$\leq 1,2\text{mV}$ (24V) bzw. $\leq 1,8\text{mV}$ (48-60V)			—	—
Voltage ripple	$\leq 20\text{mVss}$			$\leq 100\text{mVss}$	$\leq 200\text{mVss}$
Nominal output current	30A DC (25A bei $U_{\text{Netz}} < 173\text{V AC}$)	16,7A DC (12,5A bei $U_{\text{Netz}} < 173\text{V AC}$)	13,5A DC (10,0A bei $U_{\text{Netz}} < 173\text{V AC}$)	7,5A DC (5,5A bei $U_{\text{Netz}} < 173\text{V AC}$)	3,7A DC (2,7A bei $U_{\text{Netz}} < 173\text{V AC}$)
Standard charging voltage	27,24 V	54,5 V	68,1 V	123,0 V	245,0 V

Output Parameters DC type PSR312 / PSR327

	PSR312/24-50	PSR327/48-56	PSR327/60-45	PSR327/108-25	PSR327/216-12,5
DC-Output					
Setting range	21,0 – 33,0 V	42,0 – 62,0 V	52,5 – 78,0 V	87,0 – 150,0 V	170,0 V – 295,0 V
Voltage ripple acc. to CCITT	$\leq 1,2\text{mV}$ (24V) bzw. $\leq 1,8\text{mV}$ (48-60V)			—	—
Voltage ripple	$\leq 20\text{mVss}$			$\leq 100\text{mVss}$	$\leq 200\text{mVss}$
Nominal output current	50A DC	56A DC	45A DC	25A DC	12,5A DC
Standard charging voltage	27,24 V	54,5 V	68,1 V	122,6 V	245,2 V

Types of cabinet of the series GHFC

- ▶ Standard type of cabinet, protection class IP20

Standing cabinet	WS 3	(HxWxD)	900 x 600 x 500 mm
Standing cabinet	ST 5.20	(HxWxD)	1400 x 600 x 600 mm
Standing cabinet	ST 8.20	(HxWxD)	1800 x 600 x 600 mm
Standing cabinet	ST 9.20	(HxWxD)	2000 x 600 x 600 mm
- ▶ Additional standing cabinets (ST...) or combined cabinets (STK...) are available on request.

Options

Controlling functions

- ▶ Automatic charge with IUoU-characteristic up to 2,40V/c (NC 1,55V/c), voltage-controlled (Lu) or timer-controlled
- ▶ Equalizing charge up to 2,65 V/c resp. 1,75 V/c with IUI-characteristic only available for PSR308
- ▶ Temperature controlled charging voltage
- ▶ Manual or automatic battery test

Monitoring functions

- ▶ DC-Voltage too high
- ▶ Monitoring of battery fault
- ▶ DC monitoring of earth fault
- ▶ Mains monitoring
- ▶ Collective malfunction
- ▶ Integration of external signal contacts via digital display

Further Options

- ▶ Mains fuses
- ▶ Battery fuses
- ▶ Deep discharge protection with cut-off of the consumer via contactor
- ▶ Counter cell to reduce consumer voltage
- ▶ Load fuses (2-poles) wired on clamps



19 " sub rack DCR PSR308 with 6 modules PSR308



19" sub rack DCR PSR327 with 4 modules PSR327



Gesellschaft für Stromversorgungstechnik mbH
 Nägelseestrasse 35
 D - 79288 Gottenheim
 Tel. +49 (0) 7665/904-0
 Fax +49 (0) 7665/41807

E-Mail: info@gfs-gmbh.de
 Internet: www.gfs-gmbh.de