

GFS

THYREC

Battery charger

Thyristor controlled with controller GMU



- Power plants
- Substations
- Rail and infrastructure
- Industry

Battery charger

Thyristor controlled with controller GMU

Battery back-up DC-power supply systems which are securing the power supply for monitoring and regulation of manufacturing processes and electronic devices are widely used in nearly all fields of public life and industry.

In these areas safety and reliability against mains failures play an decisive role. Considering this GfS has designed the rectifier series *THYREC* that combines the proven and robust thyristor technology with the state-of-the-art controller GMU (GfS-Monitoring-Unit) and meets the highest requirements of actual DC-power supply installations.



Advantages

- Excellent industry quality
- Optimal price-performance ratio
- High reliability
- Flexible monitoring
- Made in Germany
Design life > 25 years

Applications

We offer you a perfect solution for a variety of applications:

- Complete power supply systems - chargers, sine wave inverters and AC/DC distributions boards
- Parallel mode with several chargers (redundancy)
- Stem- and additional cell technology
- Integration into existing control systems

Controller GMU

The controller GMU (GFS Monitoring Unit)
In its base version consists of two modules

Display module BAT

Bedien- und Anzeige Terminal

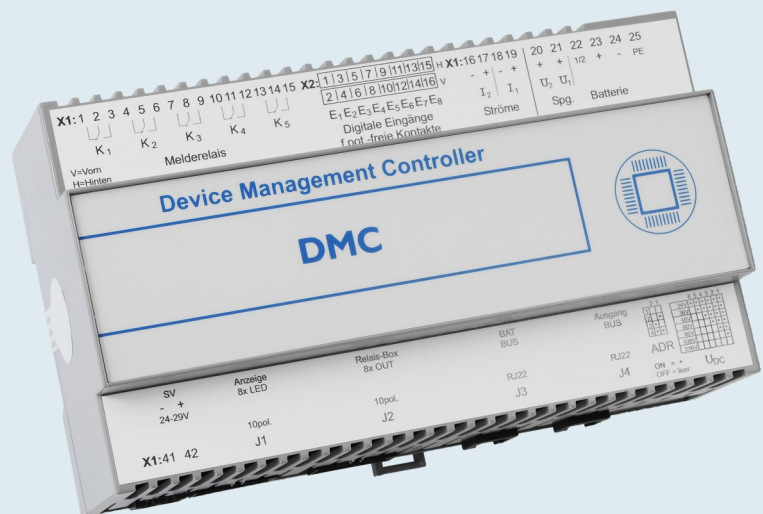
Enlighted LCD with 4 rows, ON/OFF switch, LED's to display the operational status and alarms, USB interface for programming



Base module DMC

Device-Management-Controller

Central processor unit with digital inputs and relay outputs as well as voltage and current measuring inputs, extendable with more modules via the internal bus



Standard versions and options



	Standard	Option
Measuring values / Display		
Charger output voltage	•	
Charger output current	•	
Battery voltage		•
Battery current (charging/discharging)		•
Load voltage		•
Load voltage		•
Battery symmetry voltage		•
Isolation resistance in kOhm		•
Temperature in °C (max. 3 temperature sensors)		•
Controls / Monitorings		
Charger in operation / Power	•	
Automatic boost charge (voltage controlled)	•	
Manual boost charge (start/stop function via menu)	•	
Manual equalizing charging with I-characteristic		•
Temperature controlled battery voltage		•
Output voltage too high with module shutdown	•	
Voltage too low	•	
Transformer temperature monitoring with charger shutdown	•	
Alarm / Collective failure (with remote contact)	•	
Battery discharge / Battery operation		•
Battery test with Ah counting		•
Cyclic battery test		•
Battery symmetry monitoring		•
Earth fault / Isolation fault DC, two steps (warning and alarm), with separate display Plus/Earth or Minus/Earth		•
Deep discharge (optional Low Voltage Disconnection)		•
Mains failure		•
Charger failure		•
Current monitoring		•
Fuse monitoring		•
Cabinet temperature monitoring		•
Contact for battery room fan		•
Input for battery room fan failure		•
Silicon dropper diodes		•
Programmable Logic functions		•
Memory for up to 8000 events with date/time, alarm definitions as urgent, not urgent or event	•	



Controller modules

The controller GMU is extendable, fast and easy, with the following units
To fit exactly to the required system

Relay module GRM

Gleichrichter-Relais-Modul

Module with
8 additional
Relay outputs



LED display LAI

LED-Anzeige-Instrument

Display 96x96mm with
8 additional LED's
to show alarms and
operation status, colour
of the LED's are
selectable via jumpers



Monitoring module GKM

Gleichspannung-Komparator-Modul

Monitoring of DC voltage
With 4 relay outputs.
Easy integration into
the GMU system via
internal bus



Temperature module GTM

Gleichrichter-Temperatur-Modul

Temperature module with up to
three temperature probes for
temperature indication via BAT
and temperature controlled charge



Type chart

Output voltage (VDC)	Output current (ADC)	Mains voltage (VAC)	Mains current (AAC)	Cabinet	Weight (kg)
24 V	5	230	1,1	WS 2	22
24 V	10	230	2,2	WS 2	25
24 V	20	230	4,3	WS 2	31
24 V	30	230	6,5	WS 2	35
24 V	40	230	8,7	WS 2	46
24 V	50	230	10,7	WS 3	51
24 V	60	230	13,0	WS 3	54
24 V	80	230	17,3	ST 14.06.06	130
24 V	100	230	21,6	ST 14.06.06	150
24 V	60	3 x 400	4,3	WS 3	78
24 V	80	3 x 400	5,7	ST 14.06.06	83
24 V	100	3 x 400	7,1	ST 14.06.06	99
24 V	120	3 x 400	8,5	ST 14.06.06	107
24 V	150	3 x 400	10,4	ST 14.08.06	168
24 V	200	3 x 400	13,6	ST 14.08.06	172
24 V	300	3 x 400	20,3	ST 18.08.06	238
24 V	400	3 x 400	28,2	ST 18.08.06	271
24 V	500	3 x 400	34,9	ST 18.08.06	325
48 V	15	230	6,5	WS 2	33
48 V	20	230	8,7	WS 2	48
48 V	25	230	10,9	WS 3	51
48 V	30	230	13,0	WS 3	54
48 V	40	230	17,4	WS 3	60
48 V	50	230	21,6	ST 14.06.06	130
48 V	60	230	25,8	ST 14.06.06	150
48 V	40	3 x 400	5,7	WS 3	85
48 V	50	3 x 400	7,1	ST 14.06.06	99
48 V	60	3 x 400	8,5	ST 14.06.06	105
48 V	80	3 x 400	11,2	ST 14.08.06	168
48 V	100	3 x 400	14,4	ST 14.08.06	175
48 V	120	3 x 400	16,0	ST 14.08.06	184
48 V	150	3 x 400	21,5	ST 18.08.06	238
48 V	200	3 x 400	28,6	ST 18.08.06	271
60 V	5	230	2,7	WS 2	24
60 V	10	230	5,4	WS 2	31
60 V	15	230	8,2	WS 2	42
60 V	20	230	10,9	WS 2	48
60 V	25	230	13,6	WS 3	54
60 V	30	230	16,3	WS 3	62
60 V	40	230	21,6	ST 14.06.06	130
60 V	50	230	25,2	ST 14.06.06	150
60 V	60	230	30,2	ST 18.06.06	170
60 V	40	3 x 400	7,1	ST 14.06.06	88
60 V	50	3 x 400	8,9	ST 14.06.06	102
60 V	60	3 x 400	10,6	ST 14.08.06	163
60 V	80	3 x 400	14,1	ST 14.08.06	175
60 V	100	3 x 400	17,6	ST 14.08.06	185
60 V	120	3 x 400	21,2	ST 14.08.06	192
60 V	150	3 x 400	26,6	ST 18.08.06	248
60 V	200	3 x 400	31,2	ST 18.08.06	277
60 V	300	3 x 400	46,8	ST 18.08.06	313
60 V	400	3 x 400	62,4	ST 18.08.06	352
60 V	500	3 x 400	77,9	ST 18.08.06	402

Output voltage (VDC)	Output current (ADC)	Mains voltage (VAC)	Mains current (AAC)	Cabinet	Weight (kg)
110 V	5	230	5,0	WS 2	32
110 V	10	230	10,0	WS 2	46
110 V	15	230	15,0	WS 3	54
110 V	20	230	20,0	WS 3	62
110 V	30	230	29,0	ST 18.06.06	150
110 V	40	230	38,0	ST 18.06.06	180
110 V	30	3 x 400	9,2	ST 14.08.06	150
110 V	40	3 x 400	12,3	ST 14.08.06	170
110 V	50	3 x 400	15,3	ST 14.08.06	190
110 V	60	3 x 400	18,3	ST 14.08.06	200
110 V	80	3 x 400	25,7	ST 18.08.06	240
110 V	100	3 x 400	31,4	ST 18.08.06	280
110 V	120	3 x 400	37,1	ST 18.08.06	300
110 V	150	3 x 400	42,4	ST 18.08.08	340
110 V	200	3 x 400	55,1	ST 18.08.08	380
110 V	300	3 x 400	82,4	ST 18.08.08	470
110 V	400	3 x 400	109,9	ST 20.10.08	570
110 V	500	3 x 400	137,4	ST 20.10.08	660
220 V	5	230	10,0	WS 2	46
220 V	10	230	20,0	WS 3	62
220 V	15	230	29,0	ST 18.06.06	150
220 V	20	230	38,0	ST 18.06.06	180
220 V	20	3 x 400	12,3	ST 14.08.06	160
220 V	30	3 x 400	18,3	ST 14.08.06	180
220 V	40	3 x 400	25,7	ST 14.08.06	200
220 V	50	3 x 400	31,4	ST 18.08.06	230
220 V	60	3 x 400	37,1	ST 18.08.06	250
220 V	80	3 x 400	49,5	ST 18.08.08	300
220 V	100	3 x 400	55,1	ST 18.08.08	340
220 V	120	3 x 400	66,2	ST 18.08.08	380
220 V	150	3 x 400	82,4	ST 18.08.08	420
220 V	200	3 x 400	109,9	ST 18.08.08	500
220 V	250	3 x 400	137,4	ST 20.10.08	580
220 V	300	3 x 400	164,8	ST 20.10.08	700
220 V	400	3 x 400	219,8	ST 20.10.08	900
220 V	500	3 x 400	273,3	ST 20.10.08	1100
220 V	600	3 x 400	303,0	2 x ST 20.08.08	1400

Cabinet dimensions

*more cabinets on request

Cabinet type	Height (mm)	Width (mm)	Depth (mm)
WS 2	750	550	410
WS 3	900	600	500
ST 14.06.06	1400	600	600
ST 14.08.06	1400	800	600
ST 18.06.06	1800	600	600
ST 18.08.06	1800	800	600
ST 18.08.06	1800	800	800
ST 20.08.08	2000	800	800
ST 20.10.08	2000	1000	800

General technical data THYREC

- Smoothing output voltage 5% eff. (without battery)
- Fully controlled SCR bridge (3-phase)
- Characteristic IU acc. DIN 41773
- Sustained short circuit proof
- Cooling: < 100A convection cooling
> 120A temperature controlled fan
- Ambient conditions:
 - a) ambient temperature: -10°C to +40°C
 - b) humidity: 5% bis 90%, non-condensing
- 3-phase 400VAC and 1-phase 230VAC systems and special mains - 50Hz, 60Hz and 16,7Hz
- EMC acc. EN 55011 calss A (option class B)
- Installation altitude up to 1000m above SL (>1000m with derating)
- Noise level: <60 dB(A) in 1m distance
- Cabinet ST and STK with integrated transport- and cable socket
- Protection class IP20 (higher protection on request)
- Colour RAL 7035 (other RAL colours on request)

Standards and regulations

- CE certified, manufactured acc. ISO9001
- EMC guideline 2014/35/EU
- Low-voltage directive 2014/30/EU
- Electrical isolation acc. EN 60742
- Precautions acc. VDE 0100 Teil 410
- Accident prevention regulation DGUV 3
- Low-voltage switchgear acc. EN 60439-1
- Semiconductor converters, general Requirements and line commutated converters. Specification of basic requirements acc. EN 60146/1-1
- Electronic equipment for use in power installations EN 50178

Options (selection)

- Commissioning charge up to 2,65 V/c (Pb) resp. 1,75 V/c (NiCd) with I-characteristic
- Reinforced smoothing (1/2 mV) resp. 2% or 1% eff. without battery
- Mains fuses, Battery fuses
- Decoupling diode for parallel operation
- Load fuses
- Measurement converter for voltage/current
- AC- and DC distribution boards
- Battery cabinets and cabinets with battery compartment for charger and battery



Innovative power supplies

More products

- Emergency lighting
- Equipment for energy engineering
- UPS for signal technology
- Central battery backup systems
- UPS for operating room lighting
- Chargers for traction batteries

- Chargers PWM controlled
- Chargers thyristor controlled
- IGBT sine wave inverters
- DC/DC converters
- DC-Distributions
- AC-Distributions

- Battery management components
- Control electronics
- Transformers
- Cabinets
- Custom designs

Our quality management is certified acc. DIN EN ISO 9001.



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