Battery Charger / Rectifier
DC Power Supply System

- Automatic Voltage Control
- Automatic Current Limiting
- Thyrister (SCR) Control
- Input and Output Surge Protection
- Soft Start Feature
- Suitable for All Kind of Vented & Sealed Lead Acid and Nickel Cadmium Batteries
- Customize System Available
- Designed According to IEC Standard with Full Conformation

GERMAN TECHNOLOGY

General

EMNERGY Company is an acknowledged leader in the field of specialized batteries and DC power systems in the world. The product focus on industrial batteries and electronics and customer focus on five sectors (Aviation, Communication, Defense, Industry and Railway) to meet diverse requirements, offering most suitable solution for their needs. EMNERGY is a well-known International Industrial Battery manufacturer who has production plants/factories in United Kingdom, Germany, Malaysia, China and India. Our company also fully complies to many International Standard. (ISO 9001, ISO 14000, CSA, DIN & BS standard)

The main function of EMNERGY rectifier charges the battery, keeps it fully charged, and at the same time supplies a consumer connected in parallel (parallel operation) we produce reliable Thyristor controlled rectifier according to IEC standard which operated almost without exception.

Operation

Main voltage AC powers transferred to a suitable level via an isolated transformer and fed to the rectifier bridge (SCR). LC filter circuit ensures a smooth clean DC supply. Main input is either single phase or three phases. Three phases rectifier employ full control thyristor bridge (6-pulses thyristor) and snubber circuits protection.

With input voltage vary within ±10%, frequency vary within ±5% and load changes from 0 to 100%, the output voltage will be automatically regulated at ±1% (option ±0.5%) and the output current limitation is regulated at ±2% conform to DIN 41773 standard.

The system also provides excellent protection for lead-acid and nickel-cadmium battery. When the battery is fully charged, the current will be reduced to the minimum requirement (approx. 0.3 mA/AH to 1 mA/AH), just to compensate the battery's self discharge, so this will ensure the battery stay healthy and prolong its operating life. The system also comes with protection against sudden mains failure.

Due to charging optimization, charging voltages can be above the voltage window of the connected load. Counter cell technique (SID) is employed in this case to achieve the output load voltage within the consumer voltage window. Subject to requirement, SID could adjust output load voltage within ±5% or ±10% etc.

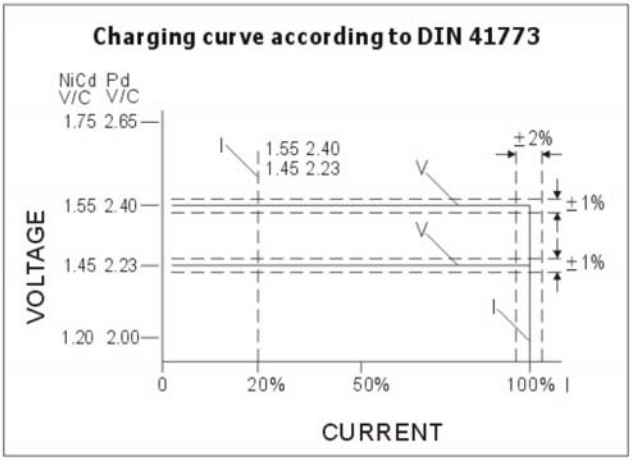


Diagram 1

Features

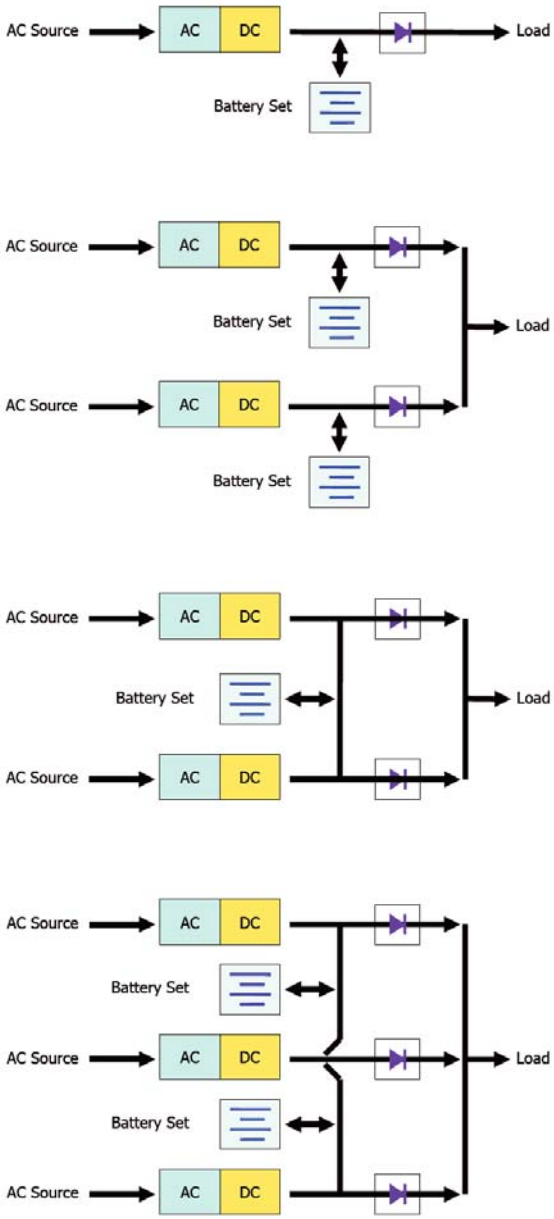
Charging characteristic is according to IU-DIN 41773 (refer to diagram 1), output current is automatically limited to preset level ±2% and output voltage is maintained at ±1% (option ±0.5%).
Our system is equipped with fast/boost charge mode (2.35-2.40V/cell for Lead Acid and 1.50-1.55V/cell for NiCd) and float charge mode (2.20-2.25V/cell for Lead Acid and 1.40-1.45V/cell for NiCd), with automatic change-over. Depend on battery's charging characteristic, automatic change-over can be selected; Boost charge mode can be initiated automatically after restore of mains (30 sec to 5 min) or initiated manually. After preset timer (adjustable 0-24 hours), it will automatically change over back to float charge mode.
According to IUI characteristic, charging voltage is rise to 2.65v/cell for Lead Acid and 1.75V/cell for NiCd for the use of initial charge and equalizing charge or maintenance charge.

Specifications

Input Voltage:	1Φ 110Vac, 220Vac, 380Vac, 440Vac ±10%
	3Φ 220Vac, 380Vac, 440Vac, 480Vac ±10%
Input Frequency:	50Hz ±5%, 60Hz ±5%
Power Factor:	0.8 lag (full load condition)
Output:	24V. 48V. 110V. 220V.
	10 ~ 1000A DC
Ripple:	≦1% with battery connected
	(4 x the capacity of charger)
Option:	≦2% without battery connected
	≦1% without battery connected
	≦0.5% without battery connected
Efficiency:	100% load, please refer to our list
	75% load (99% of eff. At 100% load condition)
	50% load (98% of eff. At 100% load condition)
	25% load (97% of eff. At 100% load condition)
Cooling Methods:	200A and below, natural convection cooling
	250A and above, forced convection cooling
Noise Level:	60 dBA
Protection:	IP20 (option IP21, IP31, IP41, IP51 ...)
Paint Finishing:	RAL 7032 (option, according to customer requirement)
Environment Conditions:	Storage Temperature: -10□ ~ 60□
	Operation Temperature: -10□ ~ 40□
	(option: -10□ ~ 55□)
	Humidity: 95% without condensation
	Altitude: Max. 1000m above sea level
Applicable Standard:	IEC, VDE, IEEE
	BS, DIN

Typical Applications

Block Diagram Parallel Operation



Charger with Additional Functions

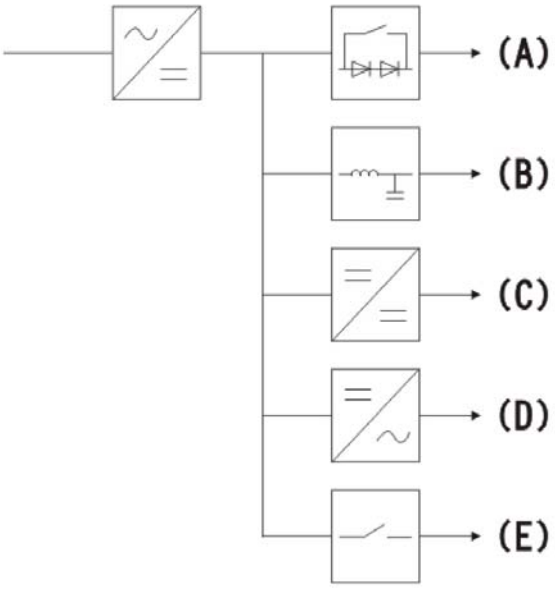
(A) Counter cell technique
Subject to consumer voltage window, counter cell (SID) can be designed to achieve output load voltage within ±10% or ±5% or ±3% … etc.

(B) DC Filter
Ripple voltage of ±5%, ±2%, ±1%, ±0.5% can be achieved on request to meet consumer requirement. In case of special load the mostly for telecommunication (24V/48V), we could also achieve 2mV upon request.

(C) Converter
DC to DC converter, to convert certain level of DC voltage to another level of DC voltage.

(D) Inverter
DC to AC converter, to convert DC voltage to AC voltage.

(E) Emergency lighting
Activate when lighting needed during emergency situation.



Instruments and Indicators

Instruments and Indicators are installed in the front of charger cabinet (digital display is available upon request)

Display Meter: 96*96, Class 1.5
DC Output Voltage
DC Output Current
(others for option)

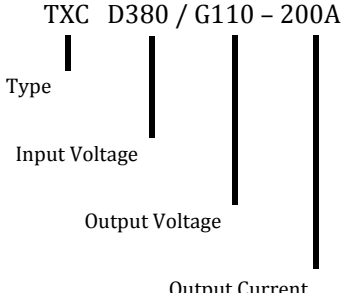
LED Indicators:

- AC Power Normal
- AC Power Failure
- Float Charge
- Boost Charge
- Initial Charge
- Charger Output Limit
- Battery Charge Limit
- DC Too High Shutdown
- Charger Failure
- DC High Voltage
- DC Low Voltage
- + Earth Fault
- − Earth Fault

Controls

- Reset / Alarm switch
- Boost Charge Timer
- Lamp Test

Type



Technical Data Sheet

MODEL	OUTPUT VOLTAGE	OUTPUT CURRENT	DIMENSION AND WEIGHT				INPUT SOURCES					EFFICIENCY	
			Height	Length	Depth	Weight	380V	LINE	220V	LINE	POWER FACTOR	EFF.	HEAT LOSE
Type	Vdc	Adc	mm	mm	mm	Kg	A	mm²	A	mm²	KVA	%	KW
EU	24	30	800	450	400	80	2.2	3.5	3.8	3.5	1.5	80	0.19
EU	24	50	800	450	400	100	3.6	3.5	6.3	3.5	2.4	81	0.29
EU	24	100	1100	600	600	165	7.2	3.5	12.4	3.5	4.7	82	0.56
EU	24	200	1100	600	600	200	14.1	3.5	24.5	5.5	9.3	83	1.05
EU	24	300	1500	600	600	270	21.0	5.5	36.3	5.5	13.8	84	1.49
EU	24	400	1500	800	600	300	27.6	5.5	47.9	8	18.2	85	1.86
EU	24	500	1800	800	600	375	34.5	5.5	59.8	14	22.8	85	2.33
EU	24	800	2000	800	800	500	55.3	14	95.7	30	36.5	85	3.72
EU	48	30	800	450	400	125	4.2	3.5	7.3	3.5	2.8	80	0.35
EU	48	50	1100	600	600	200	6.8	3.5	11.8	3.5	4.5	82	0.53
EU	48	100	1100	600	600	280	13.1	3.5	22.8	3.5	8.7	85	0.89
EU	48	200	1500	600	600	320	26.0	3.5	45.0	5.5	17.2	86	1.65
EU	48	300	1800	600	600	380	38.5	5.5	66.7	14	25.4	87	2.30
EU	48	400	1800	800	600	450	50.8	8	88.0	22	33.5	88	2.83
EU	48	500	2000	800	600	530	62.8	14	108.7	30	41.4	89	3.25
EU	48	800	2000	1000	800	650	99.3	22	172.1	60	65.6	90	4.72
EU	110	20	1100	600	600	150	6.3	3.5	11.0	3.5	4.2	82	0.49
EU	110	40	1100	600	600	200	12.2	3.5	21.2	5.5	8.1	85	0.82
EU	110	60	1100	600	600	250	18.1	3.5	31.4	5.5	11.9	86	1.15
EU	110	80	1500	600	600	290	23.9	5.5	41.3	8	15.7	87	1.42
EU	110	100	1500	600	600	320	29.5	5.5	51.1	14	19.5	88	1.64
EU	110	150	1500	600	600	350	43.2	8	74.9	22	28.5	90	2.06
EU	110	200	1800	600	600	420	57.7	14	99.9	30	38.1	90	2.74
EU	110	250	1800	600	600	480	71.3	14	123.5	38	47.0	91	3.08
EU	110	300	1800	800	600	560	85.5	22	148.2	60	56.5	91	3.70
EU	110	400	1800	800	800	620	114.1	30	197.6	80	75.3	91	4.93
EU	110	500	2000	800	800	700	141.0	38	244.3	125	93.1	92	5.48
EU	110	800	2000	800	800	820	225.6	100	390.8	80 x 2	148.9	92	8.77
EU	110	1000	2000	1000	800	980	282.0	150	488.6	125 x 2	186.1	92	10.96
EU	220	20	1100	600	600	180	12.6	3.5	21.8	5.5	8.3	82	0.98
EU	220	40	1100	600	600	240	24.3	3.5	42.1	8	16.1	85	1.64
EU	220	60	1100	600	600	270	36.1	5.5	62.5	14	23.8	86	2.29
EU	220	80	1500	600	600	330	47.5	8	82.4	22	31.4	87	2.84
EU	220	100	1500	600	600	350	58.8	14	101.8	30	38.8	88	3.28
EU	220	150	1800	600	600	390	86.2	22	149.3	50	56.9	90	4.10
EU	220	200	1800	600	600	480	114.9	30	199.0	80	75.8	90	5.46
EU	220	250	1800	800	600	560	142.0	38	246.1	125	93.8	91	6.14
EU	220	300	1800	800	600	680	170.5	60	295.3	150	112.5	91	7.37
EU	220	400	2000	1000	800	740	227.3	100	393.7	80 x 2	150.0	91	9.83
EU	220	500	2000	1000	800	820	281.0	150	486.8	125 x 2	185.5	92	10.92
EU	220	800	2000	1200	800	920	449.6	125 x 2	778.8	125 x 3	296.7	92	17.47
EU	220	1000	2000	1200	800	1100	562.0	150 x 2	973.6	125 x 4	370.9	92	21.84

In line with our policy of continuous improvement, we reserve the right to change product specifications and design without notice.
The user is responsible for obtaining updated and current technical specifications and technical information.