PWR11 MODEL 110VDC 30A BATTERY CHARGER CATALOGUE

Since 1999

POWER ELEKTRONİK
Endüstriyel Güç Sistemleri
Industrial Power Solutions

POWERSOLAR® POWER ENGINEERING

Güç her zaman, her yerde

Power anytime, anywhere

220 Vdc | 125 Vdc | 110 Vdc | 48 Vdc | 30 Vdc | 24 Vdc

Battery Chargers are designed in accordance with international IEC/EN 60146-1-1 standards

DEFINITIONS AND SYSTEM INFORMATIONS

WHAT ARE INDUSTRIAL RECTIFIERS - BATTERY CHARGERS?

Rectifier Products are used in utility HV (High Voltage), MV (Medium Voltage) and LV (Low voltage) energy control and automation systems to meet the needs such as relay control, breaker control, communication, automatic control and emergency lighting in case of power cut or recovery. These are products designed to be battery supported.

HOW DOES INDUSTRIAL RECTIFIER WORK?

Industrial Rectifiers takes 1 Phase or 3 Phase AC mains energy, reduce it to the desired level with the help of Stepdown transformer, and at the same time provide the necessary energy to the thyristor circuits in the rectifier circuit by providing galvanic isolation. The DC energy coming out of the rectification unit is filtered and converted into smoother and cleaner DC energy.

With the help of the rectifier software, this DC energy charges the batteries according to float-boost-equalizing charging modes and provides the necessary continuous energy to DC loads. In case of grid power failure, it provides all of its DC energy needs from the batteries. Batteries continue to supply DC loads for a pre-calculated period of time (such as 4,6,8,12 hours) in accordance with the programmed discharge level. When the grid is restored, the discharged batteries begin to recharge.

WHERE ARE INDUSTRIAL RECTIFIERS - BATTERY CHARGERS USED?

» In power plants (Hydro, Thermal, Wind, Geothermal, Biomass, Natural Gas, etc.)
» HV High voltage transmission and downcomer centers
» MV Medium voltage transformers and distribution centers
» Metro stations energy control centers
» In control and command centers of all kinds of pipeline stations
» DCS, Scada automation systems

WHY ARE THERE 24, 30, 48, 110, 125, 220 VDC TYPES?

The coil control voltage of electrical equipment such as relays and breakers that industrial rectifiers will control is designed at different voltages by different manufacturers.
Generally, low voltage 24VDC rectifier is used for low power consuming DC loads.
Since it is designed as 48Vdc, 110Vdc and 220Vdc to make compact designs at lower currents for DC control equipment that draws higher power-current, the rectifier design is also installed in accordance with this DC voltage.

HOW TO SIZING RECTIFIER BATTERIES?

In industrial rectifiers, battery types can sometimes be lead acid or Nickel-Cadmium type depending on need, sometimes preference, and sometimes specifications.
While OPZV tubular plate batteries are preferred in instant high current needs, OPZS and VRLA types are preferred in systems that require a long discharge time. Ni-Cd batteries can be preferred where high performance for many years and less temperature effects are desired.
When calculating battery capacities, the required DC energy is determined by extracting the load profile (current and duration information) and using the IEEE battery calculation method.

IN WHICH CASES ARE RECTIFIERS USED AS REDUNDANT BACKUP?

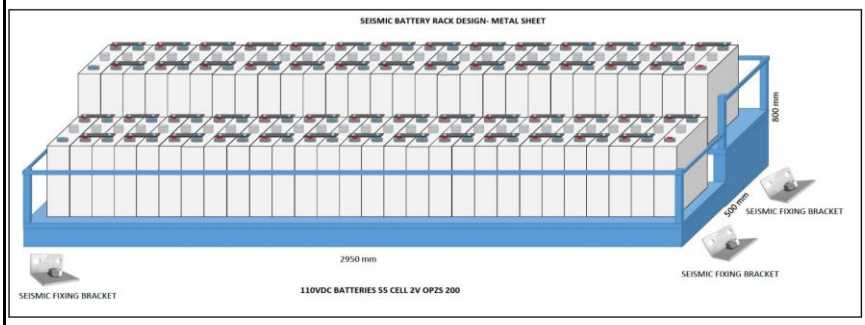
Especially in facilities where power outages may lead to critical consequences, in case one of the one of rectifier fails, it is preferred to use the other rectifier-battery set in parallel with backup to continue to supply DC energy needs without interruption.

1-PH INDUSTRIAL BATTERY CHARGER PROPERTIES

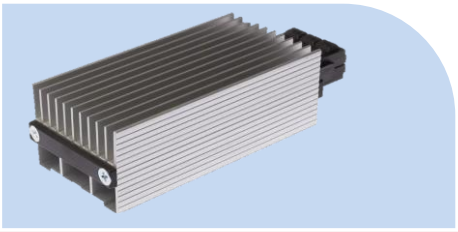
PWR11 MODEL 110VDC 30A

- 16-Bit DSP control
- Graphic LCD screen
- 5 control button
- Lower than 5% ripple
- Dry relay contacts for SCADA monitoring
- Over temperature protection
- Overload protection
- Programmable auto Boost Charge function
- Programmable Float Charge function
- Instantly input-output and battery voltage-curent viewing
- Transformer and Thyristor based digital controlled rectifier technology
- Voltage and current full controls
- Dropper diode DC voltage regulation
- Front access
- Input voltage tokerance ± 15% 1-ph 200/230/240 VAC
- Input Frequency 50 Hz/60 Hz ± 5%
- Input Surge and fuse protections
- Special multimeters for input/output/battery voltage-current monitoring
- Output voltage 110VDC nominal
- DC+ and DC - leakage protection
- Output short circuit protection
- Status and alarm LEDs
- Optional high IP protections
- Double safety door protection
- Mimic diagram

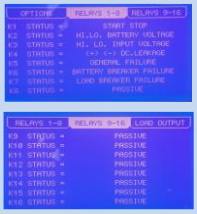
Supported Battery & Racks



BATTERY CHARGER MAIN ADVANTAGES

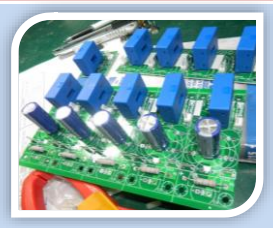


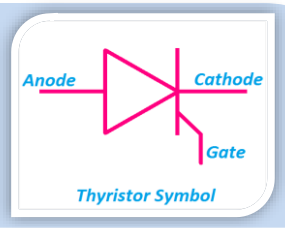
Condencing Protection by Heater



Progammable 2*8=16 Scada Dry Relay Contacts

Additional AC-DC Volt-Amp Meter

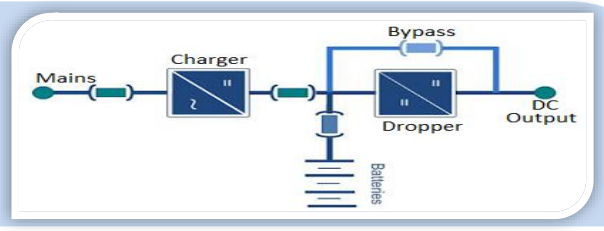




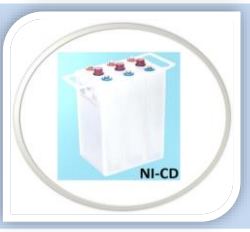
Industrial Control and Design
Thanks to Transformer and Thyristors

16 Pcs Alarm and Status LED Indicator

AC & DC Surge Arresters protections



2-Stage Dropper diode function



» VRLA
» GEL
» OPZV
» OPZS
» NI-CD

Able to charge kind of battery types
and battery test scheduling function

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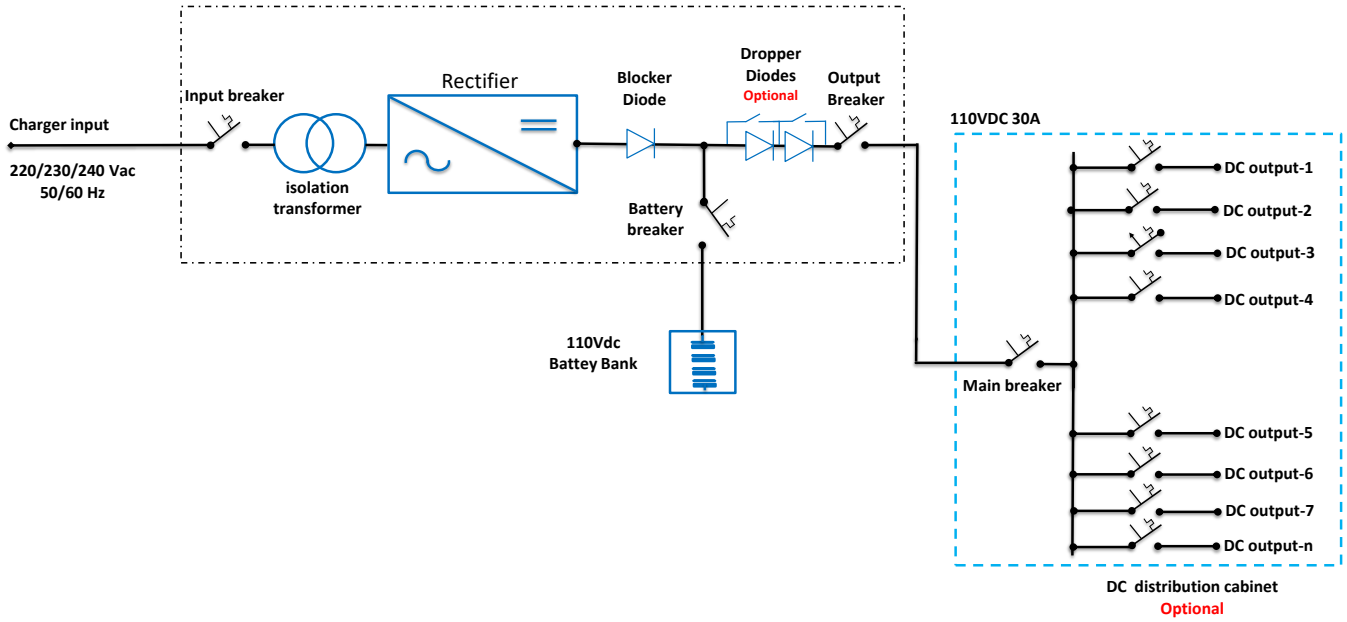
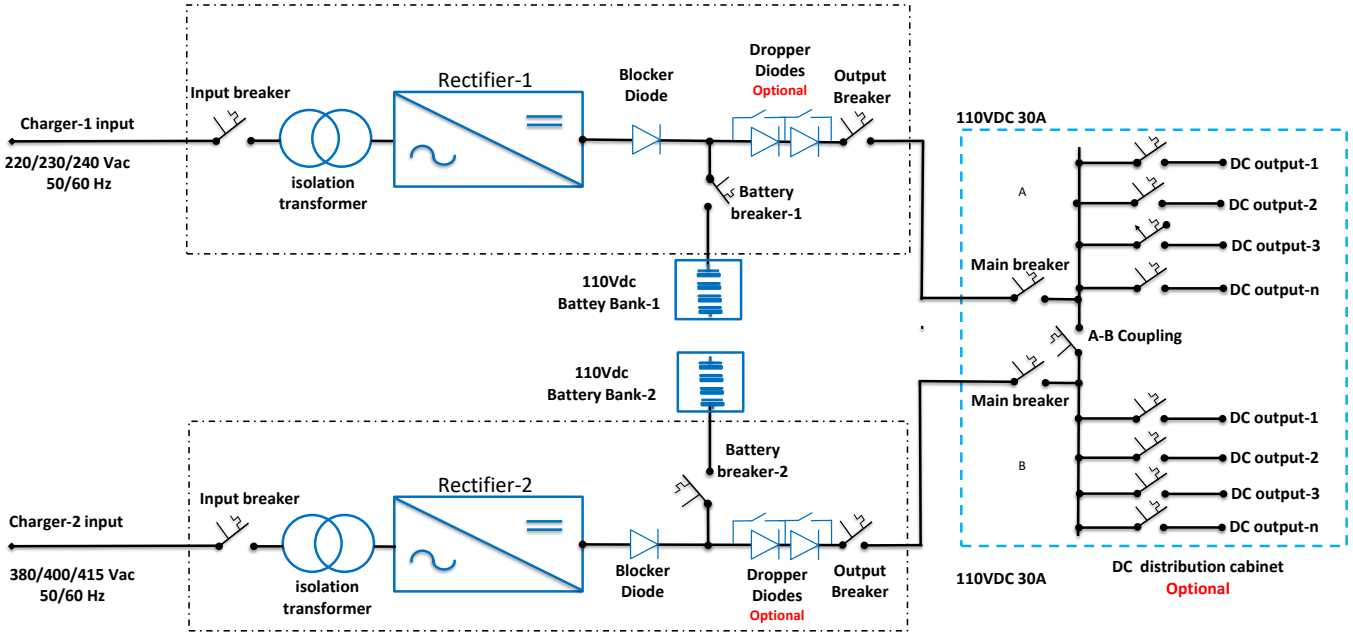
1-PH INDUSTRIAL BATTERY CHARGER SYSTEM DESIGNS

PWR11 MODEL 110VDC 30A

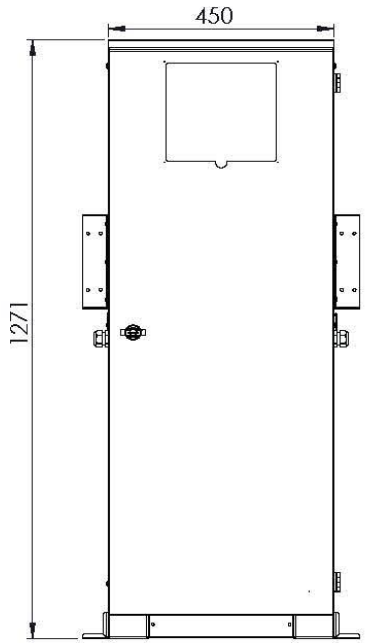
General Single Connection Line Diagram

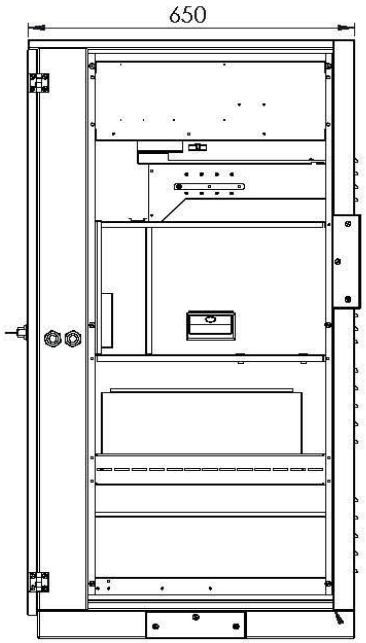


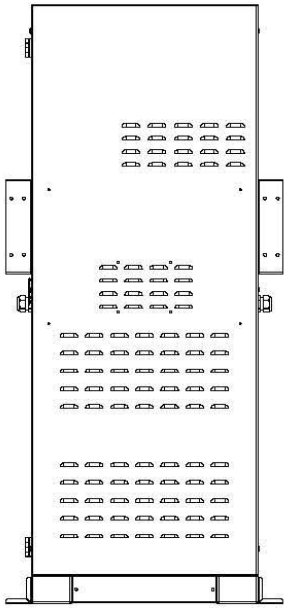
General Redundant Connection Line Diagram

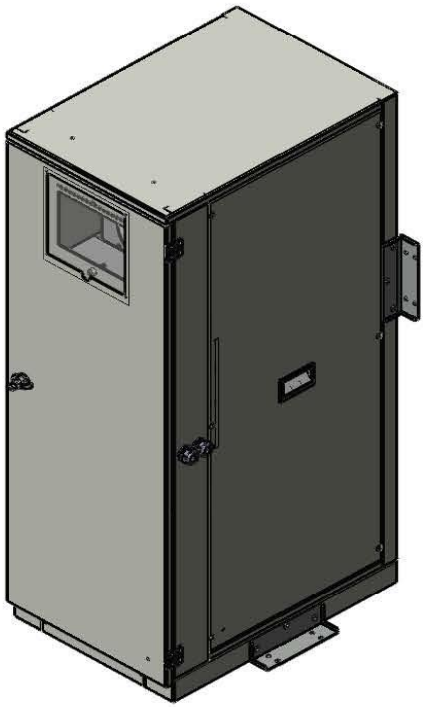


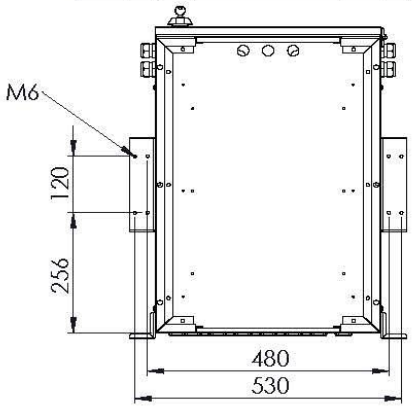
BATTERY CHARGER CABINET CUBICAL DRAWING











Notes:
- If necessary 3D data should be given to supplier.
- Missing dimensions and views can be controlled from 3D data.
- Please contact regarding unclear and missing parts.
- If there is no other tolerance indicated, tolerances are as in the below table.

GENEL TOLERANS GENERAL TOLERANCE																						
DIN ISO 2768	İŞLENEN MALZEMENİN (±)	C	0.2	0.5	0.8	1.2	2.0	3.0	4.0	5.0	6.0	7.0	8.0	İŞLENMEYEN MALZEMENİN (±)	1	3	4	6	8	11	14	18	21	24
		B	0.1	0.2	0.3	0.5	0.8	1.2	2.0	3.0	4.0	5.0	6.0		1	2	2	3	4	6	8	10	12	14
EN ISO 13920		A	0.05	0.1	0.15	0.2	0.3	0.8	-	-	-	-	-		1	1	1	2	3	4	5	6	7	8
		SEVİYE GRADE	3 ~ 5	~ 30	~ 120	~ 315	~ 1M	~ 2M	~ 4M	~ 8M	~ 12M	~ 15M	~ 20M		~ 30	~ 120	~ 315	~ 1M	~ 2M	~ 4M	~ 8M	~ 12M	~ 15M	~ 20M

ISO 1302	İNCE THIN ☐ N4, N6	ORTA MIDDLE ☒ N7, N9	KABA COARSE ☐ N10, N12	Malzeme/Material	Ölçü/Dimension
DOC. CODE İM.1	Sayfa No. Page No.	Toplam Sayfa Total Page	Parça Listesi No. Part List No. (IM.14)		
Proje Yöneticisi Project Manager				Ağırlık Weight (Kg)	ÇİZİMDEN ÖLÇÜ ALMAYINIZ. DO NOT SCALE DRAWING
Çizen Drawn By					AKSİ BELİRTİLMEDİKÇE BOYUTLAR MİLİMETREDİR. UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS
Kontrol Control				Onay Approval	
Onay Tarihi Date Of Approval					
Rev. Tarihi Rev. Date					
Değiştiren Changed By					

YAZIM ORTAMI / EDITING ENV. SOLIDWORKS.

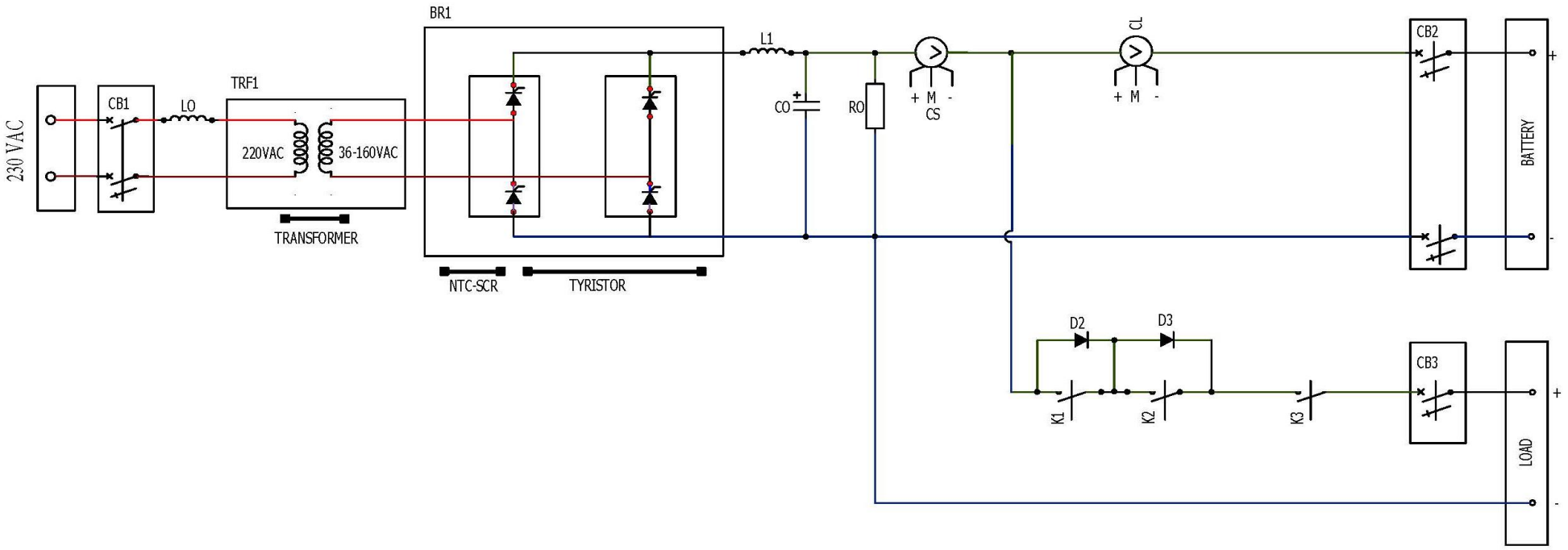
Parça. No. / Part No. : 1138051000
Dök. No. / Doc No. :

ÖLÇEK SCALE	REV NO:
1:10	A3

Tanım / Description : 110VDC 30A CHARGER

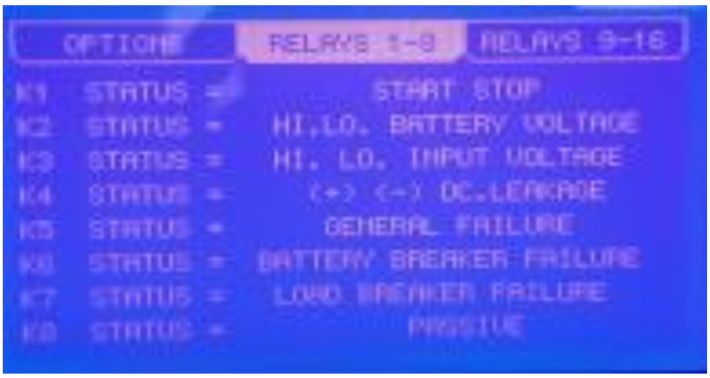
POWER ELEKTRONİK

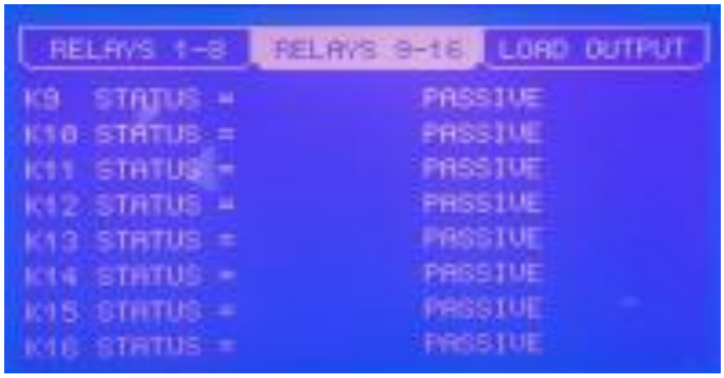
REECTIFIER ELECTRICAL SINGLE LINE DIAGRAM

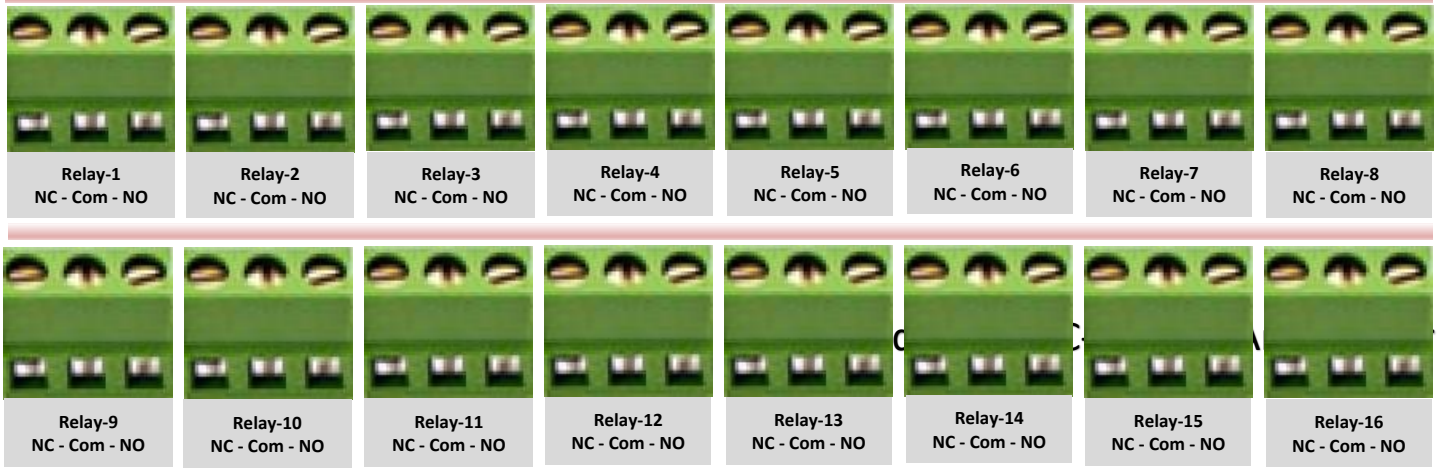


POWER ELEKTRONİK	DRAWING	EBRU DOĞAN	REVIZION MAKING	------	MODEL	PWR33	PROJE	TEDAŞ MLZ 2018-065	DATE	18.03.2019	PAGE	
POWER ENGINEERING POWERSOLAR	CONTROL	KAYHAN KABİL	REVIZION NO/ DATE	------	POWER		INPUT	220VAC	OUTPUT	24-48-110VDC	CONFIRMATION	

BATTERY CHARGER PROGRAMMABLE SCADA DRY RELAY OUTPUTS







Relay-1 NC - Com - NO	Relay-2 NC - Com - NO	Relay-3 NC - Com - NO	Relay-4 NC - Com - NO	Relay-5 NC - Com - NO	Relay-6 NC - Com - NO	Relay-7 NC - Com - NO	Relay-8 NC - Com - NO
Relay-9 NC - Com - NO	Relay-10 NC - Com - NO	Relay-11 NC - Com - NO	Relay-12 NC - Com - NO	Relay-13 NC - Com - NO	Relay-14 NC - Com - NO	Relay-15 NC - Com - NO	Relay-16 NC - Com - NO

Available Dry Relay Definitions

1. START STOP:
Indicates the operating status of the Rectifier. When the start button on the front panel is pressed, the dry contact warns you.

2. OVERHEAT:
Whenever the heat reaches to the limit that defined in the menü, this dry contact gives warning.

3. INPUT CIRCUIT BREAKER IS OFF:
Whenever the input circuit breaker is off; this dry contact gives warning.

4. BATTERY CIRCUIT BREAKER IS OFF:
Whenever the batter circuit breaker is offi this dry contact gives warning.

5. LOAD CIRCUIT BREAKER IS OFF:
Whenever the load circuit breaker is off, this dry contact gives warning.

6. HIGH BATTERY VOLTAGE:
Whenever the voltage reaches to the “Vo High Limit” value, defined in the menu, this dry contact gives warning .

7. LOW BATTERY VOLTAGE:
Whenever the voltage reaches to the “Vo Low Limit” value, defined in the menu, this dry contact gives warning.

8. BATTERY VOLTAGE HIGH + LOW:
Controls both situations above in a single dry contact.

9. FAN ERROR:
Whenever the limits on the “Fan Error” menu is reached, the dry contact gives warning.

10. BATTERY LINE DISCONNECTED:
Whenver the device is “ON” and there is a disconnection on the battery cables, the dry contact gives warning.

11. REVERSE BATTERY LINE:
Indicates that the Battery connection is wrong. This warning is advised to be kept on the dry contact choices. Must be checked! Before the device is turned on.

12. BATTERY GENERAL ERROR:
Dry contact warns you whenever there is an Error about the Battery.

13. (+) DC LEAK:
(+) DC Leakage warning.

14. (-) DC LEAK:
(-) DC Leakage warning.

15. (+) /(-) DC LEAK:
(+) or (-) DC Leakage warning together.

16. MAINS ON/OFF:
Provides a dry contact information about the presence of the mains voltage.

17. MAINS HIGH:
If the mains voltage is higher than the value Vi HIGH LIMIT set on the MENU, dry contact gives warning.

18. MAINS LOW:
If the mains voltage is higher than the value Vi LOW LIMIT set on the MENU, dry contact gives warning.

19. MAINS HIGH + LOW:
In the case of the mains voltage out of the set values, dry contact gives warning.

20. BOOST CHARGE:
Indicates that the Rectifier is in the fast charging mode.

21. FLOAT CHARGE:
Indicates that the Rectifier is in the normal charging mode.

22. GENERAL ERROR:
If this option is chosen, whenever one of the errors above is occured, dry contact gives warning .

PWR11 INDUSTRIAL BATTERY CHARGER

110VDC 30A BATTERY CHARGER TECHNICAL TABLE

Rectifier Input:

Voltage	230	VAC	-%15	+%15	
Current	27	A			
Frequency	50	Hz			
Input Fuse	40	A	Special value	No	
Configuration	☑ Single Charger		☐ edundant Charger	☐ t Specified	
Input Isolation transformer	Yes				

Load Output:

Voltage	110	Vdc	Max. Load Voltage	127,88	by dropper
Current	30	Amp			
Dropper	Yes				
Ripple	< 5 % Without Battery		< 1 % With Battery		
Voltage Regulation:	± %1	rms	** battery mode*		
Output Breakers	1 x 40A MCCB				
Additional Distribution Breaker	*Not Specified*				

Battery and Charging:

Battery Block Voltage	*Not Specified*		Battery Brand	*Not Specified*	
Battery Type	Lead Acid,Ni-Cd, OPZV,OPZS		Battery Cells Nr	LeadAcid:54-55	Ni-Cd:87-92
Charging Current	1 to 30	Amper	Battery Breaker ampere	40A	
Float Charge Voltage	127,88	V/Cell	Battery placement	EXT Metal Rack	
Boost Charge Voltage	138,00	V/Cell	Battery capacity	*Not Specified*	ah
Battery test voltage	110,00	V/Cell	Battery sizes L X H X W	See datasheet	mm
Load Current Limit	30	A	Battery unit weight	See datasheet	kg
Charge Characteristic	DIN 41773		Battery Configuration	1 string *1 charger	

Cabinet:

Cabinet type	Stand Floor	Control and LCD	Graphic LCD
Cooling	Fan cooling with thermostat controlled	Door stop	Right
Cable Entry	Bottom Entry	LCD language	English
Label	Grey - Pasted	Color	RAL 7032
Cabinet Lighting	Yes	Locking	Lockable
Cabinet dimensions	WxDxH: 450 x 650 x 1271 mm	Weight	110 kg

General Values:

Operating Temperature Range	0 /+40 °C	IEC Standard	IEC 60146-1-1		
Condensing resistance Heater	Yes	Noisy	<65 dB		
Storage temp. Range	-25 /+55 °C	Humidity	<90%		
Communication	RS232,dry relay, RS 485	Isolation Voltage	2kV	*1 min*	
Altitude	Max. 1000m NN	Protection degree	IP21		

Protections:

DC Low-High protection	☑	Overload	☑	Over Temp	☑
Phase Failure	☑	DC± to GND Leakage	☑	Reverse Battery	☑
Inpur Mains Surge protection	☑	DC Surge protection	☑	Emergency Stop	☑

Lamp Indicators:

16 Pcs

Mains ON · Mains OFF · Start · Stop · Mains High · Mains Low · DC High · DC Low · +DC Leakage · -DC Leakage · Current Limit · Fan Fault · Over Temp. · Battery Fault · Temp. Comp. · General Fault

Notes & Options :

- Dry Relay contacts included
- Dropper diodeS function included
- RS 485 RTU Communication included
- Blocker diodes included
- Input AC Breakers included
- Output DC Breakers included
- Battery DC Breaker included