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ELECTRONIC

Innovative Power Solutions &  
Voltage Stabilizers

MRC Catalog

**ENG**

# MRC

## Modular Rectifier and Battery Charger



### Key Features

- Rectifier and Battery Charger that can be connected in parallel
- Multi-master Parallel Connection Technology
- Adjustable Output Voltage between 0V-1000VDC
- Parallel connection up to 16 units
- High power solution up to 10 MVA
- Equal Load Sharing
- Input Isolation Transformer
- Durable structure with thyristor technology
- Production at all industrial input voltages
- Ni-cd, Lead Acid and Stationary battery charging
- DC Earth Leakage protection
- Low Voltage / High Voltage protection
- Overload protection
- Over temperature protection
- Efficiency >% 95
- 7" Touchscreen Operator Panel
- Suitable design for industrial environment
- TS EN ISO 9001: 2015 Quality Certified

### Optional Features

- ETHERNET and MOD-BUS RTU interface
- Battery Reverse Polarity Protection



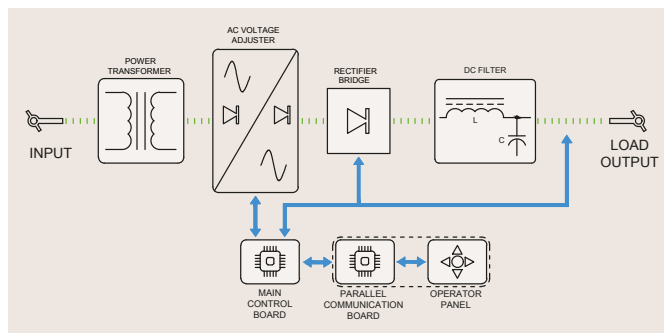
### What is MRC Modular Rectifier and Battery Charger?

The MRC rectifier is designed for applications that require high power adjustable DC voltage. Many MRC rectifiers are connected in parallel to provide a very high power rectifier-charger solution. Output voltage and output current are adjustable between zero and nominal value.

It is suitable for using in projects that require High Power and High Current, in universal battery charging and DC supply applications that require adjustable output voltage and output current, in projects that need parallel connection and redundancy, and for industrial DC motor supply.

### How does it work?

MRC modular rectifiers consist of Power Transformer, AC voltage adjusting unit, 3-phase Full-Bridge Diode rectifier unit, DC Filters and microprocessor based electronic control Boards.



Output voltage regulation in MRC modular rectifiers is done on the AC voltage side and with thyristors. The rectification process is done with a 3 phase Diode bridge. Since the voltage adjusting thyristors are switched at zero-crossings of the AC voltage, it does not generate harmonic distortion in the network voltage. Output filters keep DC voltage stable and at low ripple value.

MRC modular rectifiers have the parallel working feature. No external master unit or frame is required for parallel operation.

Microprocessor-based management board that is equipped with sensitive measuring circuits adjusts the output voltage and current values and keeps them constant.

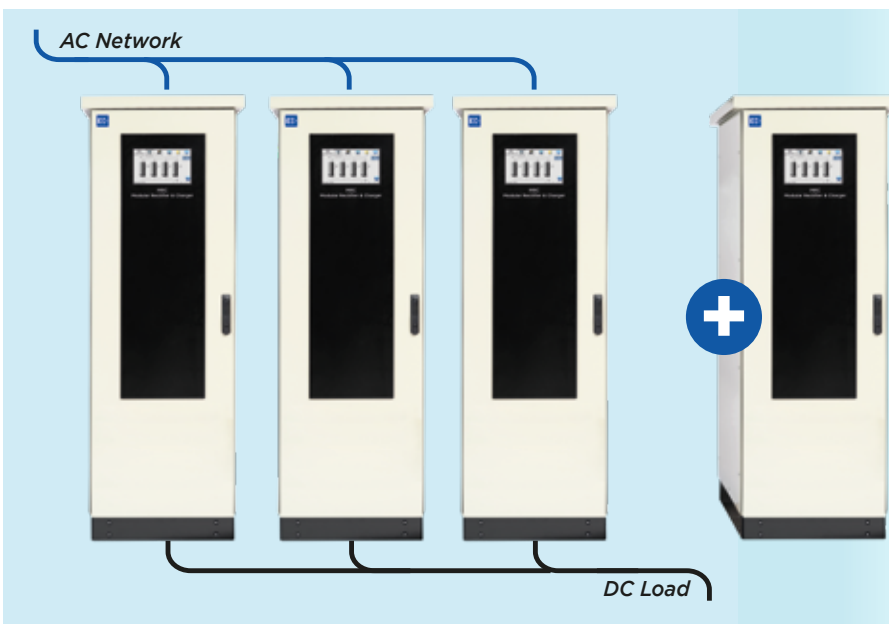
Adjustable DC voltage needs at high powers up to 10 MegaWatts can be met with MRC modular rectifiers.

# MRC Modular: Easy, Power boost technology. You are always ready to increase capacity.

## Parallel Operation Technology

MRC modular rectifiers have power increasing technology by connecting in parallel. For parallel operation, the inputs and outputs of MRC rectifiers are short-circuited and the communication cable between the devices is plugged. Parallel connected devices operate together as one device and share the load between them. The number of

devices that can be connected in parallel is 16 pcs. MRC rectifiers with patented parallel operation technology operate together and simultaneously and provide uninterrupted and safe DC power and battery charging solution at very high power.



## Multi-Master Modular System

There is no need a separate master unit to operate MRC rectifiers in parallel.

All MRC rectifiers can operate as master. The master unit is selected automatically with patented software protocol. When the master unit is disabled, a new master is selected in less than a second. There is no power interruption during master change. For parallel operation, it is sufficient to be connected communication cable.

## Galvanic Isolation Transformer;

There is galvanic isolation transformer in MRC rectifiers. Galvanic isolation transformer provides full isolation between AC input and DC output. Voltage of isolation is 2500V. Galvanic isolation transformer provides the adjustment of DC output voltage to requested value and cut off the direct electrical connection between the network installation and DC loads. This feature ensures the detection of earth leakages in DC distribution installations and safe operation.

## Earth Leakage Monitoring:

MRC Battery Chargers have an Earth Leakage monitoring circuit. The isolation resistance between the DC output (+) and (-) terminals and the ground line is measured. In case of any DC leakage, the warning signal is activated.

## Production at All Industrial Voltages (optional)

MRC Battery Chargers are manufactured in all industrial input voltages.

3 Phase + with Neutral connection , 208VAC, 220VAC, 380VAC, 400VAC, 415VAC, 480VAC, 600VAC

The nominal operating voltage of the MRC Battery Chargers is determined at the time of order and cannot be changed later.

*Standard type Three Phase input MRC rectifiers can operate in 3 Phase + Neutral (4-wire) installations.*

*Neutral connection is required for safe operation.*

*However, for special needs, it can also be produced in accordance with 3-Phase 3-Wired Delta connection installations.*

Please contact with the sales representative for special production requests and right solutions.



## Application

MRC Modular Rectifiers and Battery Chargers are designed to be used in the following applications.

- ✓ Battery Charging in industrial facilities,
- ✓ Emergency lighting systems
- ✓ Battery charging and DC supply in hydroelectric power plants
- ✓ Operation of commercial and industrial engines and machines
- ✓ Applications of Coating and Electro Galvanized
- ✓ Adjustable DC load supply at very high power
- ✓ Railway applications
- ✓ Offshore projects



MRC Chargers have an ergonomic and user-friendly Operator Panel designed for management and monitoring.

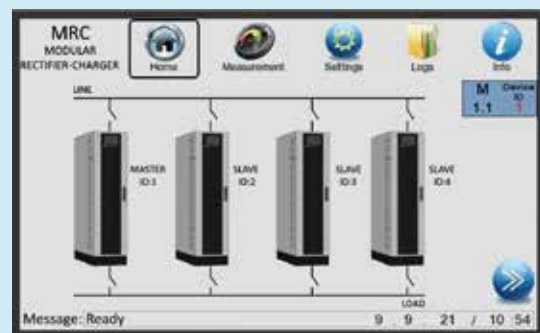
All operating parameters can be monitored from this panel and some operating parameters can be adjusted. There are 2-level password protection for parameter changing.


**Monitorable parameters:** Device Input Voltages, DC Output Voltage, Battery Voltage, Output Current, Battery Current, Operating Frequency, Charge Mode, Number of Devices Connected in Parallel, Date-Time, Device Status Information, Fault and Error Codes.

**Changeable Parameters:** Float Charge Set Value, Boost Charge Set Value, Equalizing Charge Set Value, Output Current Set Value, Battery Charge Current, LVD Voltage, Manual Boost Charge Time, ID Number of Device, Communication Parameters, Date-Time Information.

### 1. Touchscreen Operator Panel

- 7" inch Color Display
- Resistive Feature,
- Backlight
- Three Language Options (On Order)
- Simple and Understandable Menu



Please contact with the sales representative for special production requests and right solutions. 

## Remote Monitoring and Management



**Ethernet Web Server (optional):**

It is designed for remote monitoring over the network. It can be monitored and managed by connecting with an Ethernet cable. The remote management interface is designed as browser-based. It can be connected from any computer with a web browser. No additional software is required. With the remote management interface, all parameters of MRC Battery Chargers can be monitored and some parameters can be changed. There is 2-level password protection for accessing the remote monitoring interface.



**MOD-BUS RTU (optional):**

It is designed for monitoring and management via Mod-Bus. It can be monitored and managed by connecting with a cable. All parameters of MRC Battery Chargers can be monitored and some parameters can be changed with Mod-Bus protocol.

# Technical specifications

MRC Modular Rectifier and Battery Charger	
<b>General Features</b>	
Model	MRC
Technology	Parallel Connectable, Multi-master Rectifier and Charger
Number of Parallel Connection	It can be connected in parallel up to 16 units
Unit Power	50kva, 200kva
<b>Input</b>	
Rated Input Voltage	400VAC 3 Phase + Neutral + Ground (Different voltages are Optional)
Voltage Tolerance	+15 % , -15 %
Frequency	50 Hz. +/-5% (60 Hz. Optional)
<b>Output</b>	
Nominal Output Voltage	Between 0VDC-1000VDC determined at order
Voltage Tolerance	+/-2%
Voltage Adjustment	It can be adjusted between 0% - 100% <i>x</i> V nominal
Soft Start	Adjustable between 0 - 30 seconds
Current Adjustment	Adjustable between 2% - 100% <i>x</i> I nominal
Charging Mode	Constant Voltage/Constant Current, Boost Charge, Float Charge
Efficiency	85% - 95% (Depends on device specifications)
Response Time	20 msec
Correction Time	100 msec - 200 msec
<b>Protection Functions</b>	
Over Temperature Protection	Fan cooling works at 50C. At 80C, the power to the load is cut.
Surge Arrester	Class-I or Class-II (optional)
Earth Leakage Protection	It monitors the isolation between DC(+) or DC(-) and ground. It gives an alarm in case of leakage.
<b>Management Monitoring and Communication Interfaces</b>	
Touchscreen Operator Panel	7" Touch Color screen, Input Voltage, Output Voltage, Output Current, Boost Voltage, Float voltage, Boost Timer, Date-time, Status and Fault information, Parameter settings
Remote Management Interface (optional)	Browser-based remote management with Ethernet connection MOD-BUS RTU with RS485 connection
<b>Environmental Conditions</b>	
Operating temperature	-10 °C ~ +40 °C
Altitude Operating Height	1.500m
Humidity	90% none condensed
Acoustic Noise	< 55dB (at 1m distance and doors closed)
<b>Cabinet Specifications</b>	
Type-Protection Class	Free Standing Modular Cabinet, IP21 Indoor type (IP54 and higher protection class, Outdoor Type Cabinets are optional)
Paint-Color	Epoxy-Polyester Powder Paint - RAL 7035
Cooling	Air cooling with thermostat controlled fan.

## ORDER CODE

**MRC-3P380-750V250A-16T-xx-xx**



<https://www.editelektronik.com.tr>

You may visit our Website for more detailed information and solutions.

