



### Main Features

- Industrial Applications
- 8 x 30A Array Current (max)
- 2 x 25A Load Current
- Solid-state Switching
- Micro-processor Control
- Alphanumeric LCD Display
- Field Adjustable set-points
- Available in Painted, Stainless Steel, GRP, GRP IP66 Enclosure or as a 19" Rack Unit
- Ambient Temperature range -10°C to +55°C

### Specification Highlights

➤ System Voltages: 12V, 24V, 36V, 48V	➤ 40A Array Input MCB's fitted as standard
➤ System Polarity: Positive or Negative Earth	➤ 32A Load Output MCB's fitted as standard
➤ Regulation: Three stage series regulation	➤ Induced Lightning Protection
➤ High Volts, Low Volts, Load Cut 1, Load Cut 2 Alarms with LED indication and relay contacts	➤ Steel Enclosures have PG21 Glands for Battery, Array and Load cables (13-18mm cable dia.) : PG11 Gland for Battery Sense and Alarm cables (5-10mm cable dia.)
➤ Battery Protection: Load Disconnect / Reconnect	➤ Rack Units have Display, Keypad and MCB's on front panel, with all cable terminals on rear panel.
➤ Temperature Compensation (External sensor)	
➤ Regulation, Switch, and Alarm Status LED's	
➤ Disable Link (disconnects arrays and load)	

### Versions

Charge Controller	MSRx2	MSRx4	MSRx6	MSRx8
Number of Array Inputs	2	4	6	8
Total Array Current	60A	120A	180A	240A
Load Current	2 x 25A	2 x 25A	2 x 25A	2 x 25A
Steel Enclosure Size (HxWxD)	600x400x200	600x400x200	600x600x200	600x600x200
Steel Enclosure Weight	19 Kg	20 Kg	29 Kg	30 Kg
19" Rack Unit Height	4U	4U	8U	8U
Quiescent Current (excluding additional options)		12V : 700mW	24V : 700mW	48V : 1.1W

### Options

➤ RS232 Port	➤ 2-channel Analogue Input Board (1 for Reference Cell)
➤ RS232 Port with Data Logger	➤ 4-20mA Transducer (1-3 channels)
➤ Modem - GSM and PSTN	➤ Earth Leakage Detector
➤ 4-channel Auxiliary Output Relay Board	
➤ 8-channel Digital Input Board	

### Control

## MSRx Series Charge Controllers

The heart of the regulator is an Arizona Microchip PIC micro-controller, which continuously monitors the battery voltage sense input, temperature sensor, array inputs, load current and array current. Based on the regulation set-points, a three-stage charging scheme (Boost, Equalisation and Float Modes) is used to control the charging of the battery. The battery is protected from over-voltage and under-voltage conditions by High Volts, Low Volts and Load Disconnect Alarms (there are two Load Disconnects, one of which can be used for non-essential load shedding). All Alarms have LED indication and changeover relay contacts available. All the set-points can be adjusted on-site.

## Display

**The two line alphanumeric display is the interface between the user and the controller. Using push-button switches, an operator can readily monitor and, where appropriate, vary the controller parameters.**

Parameters to view	Set-points to change	Manual Control
<b>Battery Voltage</b>	<b>Boost, Equalisation, Float</b>	<b>Reset AmpHour Counters</b>
<b>Battery Current</b>	<b>High Volts set and reset</b>	<b>Test Alarm Relays</b>
<b>Array Voltage</b>	<b>Low Volts set and reset</b>	<b>Test Load Switches</b>
<b>Array Current &amp; AmpHours</b>	<b>Load Cut 1 &amp; 2 set and reset</b>	<b>Test Array Switches</b>
<b>Load Current &amp; AmpHours</b>	<b>Equalisation Time</b>	
<b>Regulation Mode</b>	<b>Temperature Compensation</b>	

## Array Switches

The array switch modules are made from high power MOSFETs configured to act as blocking diodes when switched off. The low voltage-drop featured allows a typical maximum current of 30A per array. The array switches are manufactured in dual-array modules and can be extended to a maximum of eight array switches.

## Load Switches

The load switch modules are made from high power MOSFETs. The controller is provided with two solid-state load switch modules capable of handling up to 25A each. The trip and reset points of both these switches can be individually set and the two 25A Load switches can be combined to give a single 50A rating.

## Alarms

Volt-free change-over relay contacts for High Volts, Low Volts, Load 1 Disconnect and Load 2 Disconnect are provided as standard. There is a delay between the activation of the Load Disconnect alarms and the activation of the Load Disconnect Switches. If required, the user can adjust this period.

## Flexibility

The charge controllers will be supplied pre-configured to customer-specified voltage and polarity settings. The System Voltage of the MSRx Charge Controller may be changed by fitting the appropriate power supply module within the unit. The System Polarity of the MSRx Charge Controller may be changed by the re-wiring of four internal cable connections.

## Options

The charge controllers can be supplied in Painted Steel IP66, Stainless Steel IP66, GRP IP66 enclosures or in 19" Rack Units.

The Units are supplied as standard with 40A single pole MCB's on each Array Input and 32A single pole MCB's on each Load Output. The units may be supplied with double-pole MCB's if required.

Optional Auxiliary Relay PCB Assemblies may be fitted to allow the addition of signals such System Normal and Array Failure Alarm relays and indicators.

An RS232 Port PCB Assembly may be fitted to allow communication with a local PC or modem. With data-logging, various parameters and measurements can be logged at 15, 30 or 60 minute intervals, allowing up to 3 months of data storage. An optional Modem may be fitted to allow interrogation of the MSRx Charge Controller from a remote PC.

The 4-20mA Transducers are controlled by the charge controller software and can be set to give an expanded range - e.g. 4-20mA represents a battery voltage of 18V to 36V.