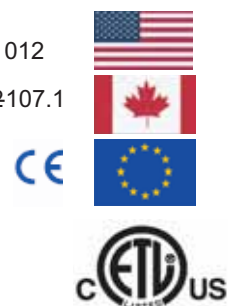


- Latest digital & power electronics technology
- Reliable industrial design
- User definable control and alarm set-points
- Simultaneous Voltage and Current readings
- CE safety and EMC standards tested and compliant
- Built to ISO 9000 QA standards



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UL/ANSI1012  
 CSA C22.2107.1



# Control Display:



The Digital Multilingual Display delivers all charger information at your fingertips. The display menu is user friendly and is the standard link between the operator and all monitoring control & alarms. All set points for control and alarm parameters are user-definable.

The P4500 series design is solid state using SCR phase control to provide regulated DC output and limited current via a smoothing filter, it can operate with or without batteries.

## Metering, Alarms & controls

<b>Standard Features</b>	<p><b>Logging, metering and timing:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Simultaneous DC voltage and current metering 0.5 % Accuracy +/- 1 digit</li> <li><input type="checkbox"/> Line frequency monitoring</li> <li><input type="checkbox"/> Rectifier ambient temperature</li> <li><input type="checkbox"/> Remaining and elapsed equalize time</li> <li><input type="checkbox"/> Events log (Up to 150 events)</li> </ul> <p><b>Control modes:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Current limit</li> <li><input type="checkbox"/> Negative slope regulation for load sharing</li> <li><input type="checkbox"/> Output current de-rating based on charger temperature</li> </ul> <p><b>Indicating LEDs:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> AC On green LED</li> <li><input type="checkbox"/> Common alarm flashing red LED</li> <li><input type="checkbox"/> LCD contrast adjustment and sleep mode</li> </ul>	<p><b>Equalize controls &amp; adjustments:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Automatic or manual float / equalize</li> <li><input type="checkbox"/> Adjustable Float and equalize voltages</li> <li><input type="checkbox"/> Equalize period 0-134 months (in hours)</li> <li><input type="checkbox"/> Float period 0-134 months (in hours)</li> <li><input type="checkbox"/> Automatic equalize mode activation based on: time, low volts, charger start, AC fail, current limit</li> <li><input type="checkbox"/> Automatic equalize mode termination based on voltage, time and/or battery voltage event(s). Can also be based on post gazing point voltage or current</li> </ul> <p><b>Alarm menu functions (password protected):</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Alarm acknowledgment and reset</li> <li><input type="checkbox"/> LED, LCD and relay test and reset</li> </ul>	<p><b>Displayed default alarms:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Rectifier failure</li> <li><input type="checkbox"/> Battery high DC volts</li> <li><input type="checkbox"/> Battery low DC volts</li> <li><input type="checkbox"/> Positive ground fault</li> <li><input type="checkbox"/> Negative ground fault</li> <li><input type="checkbox"/> AC fail</li> </ul> <p><b>Factory or customer activated displayed alarms*:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> High volts shutdown (Software)</li> <li><input type="checkbox"/> 2<sup>nd</sup> level battery low DC volts</li> <li><input type="checkbox"/> Rectifier high current</li> <li><input type="checkbox"/> High / low rectifier volts</li> </ul> <p><b>Remote indications:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> All activated alarms are wired to a common voltage free form "C" dry contact</li> </ul> <p>* Must be specified at order time</p>
	<b>Partial option list</b>	<ul style="list-style-type: none"> <li>• Individual alarms form "C" contacts</li> <li>• RS 232 / 485 communication ports</li> <li>• MODBUS, DNP3 or ETHERNET</li> <li>• DC output circuit breaker</li> <li>• Distribution panel</li> <li>• High capacity interrupting current CBS</li> <li>• High / low temperature alarm and shut-down</li> <li>• High volts shutdown via the AC breaker trip</li> <li>• AC input volts, amps and frequency readings</li> <li>• High and low AC input voltage alarm</li> <li>• Hardware high volt shutdown</li> <li>• Custom cabinets to fit batteries</li> </ul>	<ul style="list-style-type: none"> <li>• Temperature compensation, c/w battery temperature probe</li> <li>• Battery monitor</li> <li>• Battery capacity tester</li> <li>• Battery high temperature alarm and shutdown</li> <li>• Battery circuit breaker</li> <li>• Battery ammeter and voltmeter</li> <li>• Remote battery voltage sensing</li> <li>• Ampere-hour meter reading battery capacity % or Ah</li> <li>• Low DC volts load disconnect (load shedding)</li> </ul>



Heavy duty terminal block strip with optional individual form C contacts and low volts disconnect



Combined Digital Control and Alarm Board

## Standard Electrical Specifications:

### Basic design features

- UL/ANSI 1012 Listed, CSA C22.2 107.1 Certified and applicable IEC standard compliant
- ISO 9000 Quality control compliant
- SCR (Thyristor) based rectifier c/w double wound isolation transformer
- Electronic control, current limiting and voltage regulation
- Alarm log, history and events
- Modular construction using the latest power and microelectronic devices
- Color coded PVC copper stranded wire for control and signals
- 30 year design, MTBF of 300 000 hours typical, MTTR less than 1 hour

### Input:

Available voltages  
Phases  
Frequency  
Power factor  
Efficiency at full load

- 110, 120, 208, 220, 240, 380, 400, 460, 480, 550, 575, and 600 VAC
- 1 and 3 phase
- 60Hz (50Hz optional)
- 0.75 (1 phase), 0.85 (3 phase) at full load when tested on battery and resistive load
- Typical 90%

### Output:

Standard nominal voltages

- 12, 24, 36, 48, 72, 110, 125, 250, 380, 480 and 600 VDC

Power

- From 60 W to 200+ kW

AC ripple voltage(RMS)

- Unfiltered units\*\*  
- Filtered\*\*  
- Eliminator

	12-24-48V	125V	250V	>250V
- Unfiltered units**	1%	2%	2%	2%
- Filtered**	30mV, 32dBrc	100mV	200mV	1%
- Eliminator	30mV	100mV	200mV	0.8%

\*\* : Values are typical, measured at the terminals of a connected test battery with capacity 4 times the charger output current

Static regulation

- < 0.5% for simultaneous variations of +10/-12% input voltage, +/- 5% input frequency and 0-100% load

Dynamic regulation

- +/-6% from 10%-90% and 90%-10% load variation (t< 300msec)

Parallel operation

- Random: Similar chargers can be operated in random parallel

Emc\*

- Conducted (150kHz-30mHz) and radiated (30MHz-1GHz): EN55011 class A
- Electrostatic discharge EN61000 4-2 level 2/3 (4kV contact, 8kV air)
- Radiated susceptibility: EN61000-4-3 level 3 annex D (80MHz- 1GHz @ 10V/m)
- Electrical fast transient: EN61000-4-4 level 3 (2kV)
- Surge immunity: EN61000-4-5 level 3 (1kV I/I, 2 kV L/GND)
- Conducted susceptibility: EN61000-4-6 level 3 (150kHz to 80mHz, 10v)
- Voltage interrupt: EN61000-4-11 (30,60&90%- 10-10&5000 ms)

### Protection:

Over-current

- Soft start
- Automatic current limiting circuit, adjustable from 20% to 120% of nominal rating
- Input thermal-magnetic circuit breaker and DC output fuse standard

Voltage transients

- Surge suppression on input and output.
- Reverse polarity.

\* CE Marked Units only

# Standard mechanical specifications:

## Mechanical and physical:

Enclosure

Finish

Cooling

- CEMA/NEMA1 (IP20), steel, c/w hinged front access door
  - Standard powder baked ASA61, light gray
  - Natural convection cooling up to 130A output current
  - Forced air cooling assistance for units with over 130A output current
- N.B. Floor mounted models are provided with 3 in. (75mm) clearance at bottom to facilitate handling by lift truck, pallet truck or slings

## Environmental

Audible noise

Operating temperature range

Temperature de-rating

Operating humidity

Altitude de-rating

- 45 to 65 dBa at 3ft (1 meter) rating dependant
- 32°F to +122°F (0°C to 50°C)/Storage -40°F to 185°F (-40°C to 85°C)
- 0.83% / °F from 122°F to 140°F (1.5% / °C from 50°C to 60°C)
- Up to 95% (non condensing)
- 0% for 1st 3300ft (1000m), 7% per 3300ft (1000m) over 3300ft (1000m)

### Charger standard adjustment range (VDC)

	12V	24V	48V	125V	250V
Float	10-15	20-30	40-60	100-145	200-290
Equalize	10-16	20-32	40-65	100-150	200-300
Single Level	10-16	20-32	40-65	100-150	200-300
Formation	10-16	20-32	40-65	100-150	200-300

### Suggested battery voltages

(May vary with manufacturer, type, duty and ambient)

Flooded L/A	Sealed L/A	Nickel Cadmium
2.15-2.25	2.25-2.35	1.35-1.45
2.3-2.5	2.3-2.4	1.45-1.55
2.23-2.3	2.25-2.4	1.42-1.55
2.5-2.7	2.5-2.7	1.55-1.65

## Other configurations



CW DC panel, Ni-Cd battery compartment, stepped shelves and matching cabinet



NEMA3R charger cabinet c/w battery compartment and shelves



Open frame charger

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