



### General Features

- Latest digital & power electronics technology
- Reliable industrial design
- User definable control and alarm set-points
- Redundant internal power supply
- CE safety and EMC standards tested and compliant
- Built to ISO 9000 QA Standards
- Can operate with or without batteries

MTI Systems' unique SCR rectifier incorporates a double wound isolation transformer to provide regulated DC output and current limiting capabilities. Multi-output filtering configurations are available to match specific load requirements. Boasting a typical MTBF of 300,000 hours and typical MTTR of less than 1 hour. MTI's user friendly digital display encompasses user definable controls and alarm set-points, allowing for easy customization and adjustments.

MTI Systems' chargers are capable of operating in a battery eliminator functions. MTI's chargers are manufactured to comply with ISO, UL, CE, CSA and EMC standards.

### Control Display

The Digital Multilingual Display delivers all charger information at your fingertips in a user friendly display. This clear and easy to use display is the standard link between the operator and all monitoring, and user definable controls and alarms.



### Custom Configurations

The MTI P45 charger offers the most flexibility and customization to deliver you the best solution for your application. The digital control board provides the industry's widest range of configurable alarms while also delivering unique battery monitoring options. Our mechanical capabilities allow us to further optimize your solution, reducing footprint, simplifying installation and saving cost by incorporating other elements like DC distribution or housing cells in the same enclosures.



Charger with DC distribution panel, compartment for NiCd cells, stepped shelves and matching cabinet



NEMA 3R charger cabinet with battery compartment & shelves



Open frame charger

### Metering & Control

#### **Standard Features**

Metering and Timing	<ul style="list-style-type: none"> <li>• 0.5% accuracy DC voltage and current metering</li> <li>• Remaining and elapsed equalize time</li> </ul>
Control modes	<ul style="list-style-type: none"> <li>• Manual float/equalize toggle</li> </ul>
Control Adjustments (password protected)	<ul style="list-style-type: none"> <li>• Float and equalize voltage</li> <li>• Current limit</li> <li>• Equalize Period (0-100 hours)</li> <li>• Float Period (0-100 days)</li> <li>• Equalize mode termination based on voltage, time and/or low DC volts event(s)</li> </ul>
Indicating LEDs	<ul style="list-style-type: none"> <li>• AC On green LED</li> <li>• Common alarm flashing red LED</li> </ul>
Alarm Menu Indications	<ul style="list-style-type: none"> <li>• Charger failure based on low volts &amp; low output DC current</li> <li>• High DC volts</li> <li>• Low DC volts</li> <li>• Positive ground fault</li> <li>• Negative ground fault</li> <li>• AC fail</li> </ul>
Alarm Menu Functions (password protected)	<ul style="list-style-type: none"> <li>• Adjustable alarm time delay</li> <li>• Indications latch</li> <li>• Alarm relays latch</li> <li>• Alarm acknowledgement</li> <li>• LED, LCD, and relay test</li> </ul>
Remote Indications	<ul style="list-style-type: none"> <li>• All alarms are wired to a common voltage free N.O. and N.C. (form "C") dry contact</li> </ul>

#### **Partial Option List**

- Individual alarms form C contacts
- RS 232/485 communication ports
- Modbus on serial ports
- SNMP interface
- DC circuit breaker
- Negative temperature compensation
- Battery circuit breaker
- Distribution panel
- High Capacity interrupting current CBs
- High temperature alarm and shut down
- High volts shutdown via the AC breaker trip
- AC input volts, amps and voltage alarm
- High ripple alarm
- Power factor correction to 0.95 lagging
- Tropicalization
- Fungus proofing
- Remote voltage sensing terminals
- Remote shutdown and equalize control
- Audible alarm
- Manual voltage control
- Input harmonic filter to comply with CE
- 50Hz or 400Hz input frequency
- Low DC volts load disconnect (load shedding)
- End of discharge alarm
- Negative slope for equal load sharing
- Battery discharge alarm
- Battery high temperature alarm and shutdown
- Battery ammeter and voltmeter
- Ampere-hour meter reading battery capacity % or Ah
- Oversized cabinets to fit batteries
- Special paint
- NEMA / IP protection
- Seismic design
- Special wiring

### Standard Electrical Specifications

Basic Design Features	<ul style="list-style-type: none"> <li>UL/ANSI 1012 Listed, CSA C22.2 107.2 Certified and applicable IEC standard compliant</li> <li>ISO9002-1994 quality control compliant</li> <li>SCR (thyristor) based rectifier with double wound isolation transformer</li> <li>Electronic control, current limiting and voltage regulation</li> <li>Alarm log, history and events</li> <li>Modular construction using latest power and microelectronic devices</li> <li>Color coded PVC copper stranded wire for control and signals</li> <li>30 year design, MTBF of 100,000 hours typical, MTTR less than 1 hour</li> </ul>
<b>Input</b>	
Standard Voltages	<ul style="list-style-type: none"> <li>110, 120, 208, 220, 240, 380, 400, 480, 550, 575 and 600VAC</li> </ul>
Phases	<ul style="list-style-type: none"> <li>1 and 3 phase</li> </ul>
Frequency	<ul style="list-style-type: none"> <li>50 or 60Hz</li> </ul>
Power Factor	<ul style="list-style-type: none"> <li>0.75 (1 phase), 0.85 (3 phase) at full load when tested on battery and resistive load</li> </ul>
Efficiency	<ul style="list-style-type: none"> <li>Typical 87% (1 phase), 90% (3 phase)</li> </ul>
<b>Output</b>	
Standard Voltages	<ul style="list-style-type: none"> <li>12, 24, 36, 48, 72, 125, 250, 380, 480 and 600VDC</li> </ul>
Power	<ul style="list-style-type: none"> <li>From 60W to 180kW</li> </ul>
AC Ripple Voltage	<ul style="list-style-type: none"> <li>P45: 2% RMS (when connected to a battery capacity 4 times its current)</li> <li>P45F: 1% RMS (when connected to a battery capacity 4 times its current)</li> <li>P45T: 30mV RMS / 32dB RNC weighted electrical voice band noise for up to 48VDC, 100mV for 125VDC and 200mV for 250VDC</li> </ul>
Static Regulation	<ul style="list-style-type: none"> <li>&lt;0.5% for simultaneous variations of +10/-12% input voltage, +/-5% input frequency and 0-100% load</li> </ul>
Dynamic Regulation	<ul style="list-style-type: none"> <li>+/-6% from 10-90% and 90-10% load variation (t&lt;300ms)</li> </ul>
Parallel Operation	<ul style="list-style-type: none"> <li>Random: similar chargers can be operated in random parallel</li> </ul>
EMC (CE marked units)	<ul style="list-style-type: none"> <li>Conducted and radiated: EN55011 Class A</li> <li>Electrostatic discharge: EN61000 4-2 Level 2/3</li> <li>Radiated susceptibility: EN61000 4-3 Level 3 Annex D</li> <li>Electrical fast transient: EN61000 4-4 Level 3</li> <li>Surge Immunity: EN61000 4-5 Level 3</li> <li>Conducted Susceptibility: EN61000 4-6 Level 3</li> <li>Voltage Interrupt: EN61000 4-11</li> </ul>
<b>Protection</b>	
Over-Current	<ul style="list-style-type: none"> <li>Soft start</li> <li>Automatic current limiting, adjustable from 20% to 120% of nominal</li> <li>Input thermal-magnetic circuit breaker and DC output fuse</li> </ul>
Voltage Transients	<ul style="list-style-type: none"> <li>Surge suppression on input and output reverse polarity</li> </ul>



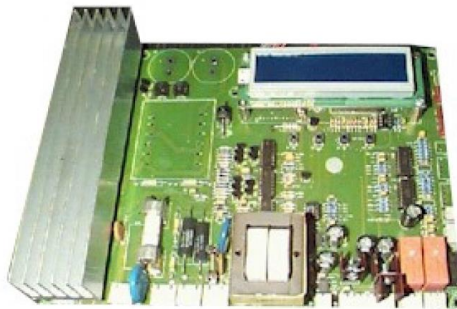
Heavy duty terminal block strip with individual form C contacts and low volts disconnect

### Standard Mechanical Specifications

Mechanical and Physical	
Enclosure	<ul style="list-style-type: none"> <li>• CEMA/NEMA1 (IP20), 14GA (2mm) steel with hinged access door</li> <li>• Floor mounted models are provided with 3in (75mm) clearance at bottom to facilitate handling by lift truck, pallet truck or sling</li> </ul>
Finish	<ul style="list-style-type: none"> <li>• Phosphatised and primed prior to painting with ASA61, light grey</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>• Natural convection cooling up to 130A output current</li> <li>• Forced air cooling assistance for units over 130A output current</li> </ul>
Environmental	
Audible Noise	<ul style="list-style-type: none"> <li>• 45 to 65 dBa at 3 ft (1 meter) rating dependant</li> </ul>
Operating Temp. Range	<ul style="list-style-type: none"> <li>• 32°F to 122°F (0°C to 50 °C)/Storage -40°F to 185°F (-40°C to 85°C)</li> </ul>
Temperature de-rating	<ul style="list-style-type: none"> <li>• 0.83%/°F from 122°F to 140°F (1.5%/°C from 50°C to 60°C)</li> </ul>
Operating humidity	<ul style="list-style-type: none"> <li>• Up to 95% (non-condensing)</li> </ul>
Altitude de-rating	<ul style="list-style-type: none"> <li>• 0% for 1<sup>st</sup> 3300ft (1000m), 7% per 3300ft (1000m) over 3300ft (1000m)</li> </ul>

### 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



Combined digital control and alarm board