

Versatile and Programmable 10-bank Lead-Based Charging System



Description

The CTMB10 is a 10 bank versatile and sophisticated charging system for lead based batteries. With a wide operating temperature range (-20C to 50C) and environmentally rugged design, it is especially suited for high end industrial applications. The CTMB10 precisely controls the charging algorithm to insure a complete recharge every time.

Each bank is independently programmable, electrically isolated with no common negative or positive, and operation is completely automatic.

The CTMB10 series is intended for use with several types of lead based battery chemistries such as SLA, AGM, and maintenance free. This multibank charging system has 6 factory standard battery algorithms that can be

- **California Energy Requirement compliant**
- **Fully isolated and programmable banks**
- **Sealed Unit with optional fan cooling**
- **Customized charge algorithms**
- **Optional Temperature compensation**
- **Transient protected input/output**
- **Over temp protection with auto reset**
- **Overcurrent / overvoltage protected**
- **Digital and Ethernet Communications**
- **Reverse polarity protected**
- **AC and DC input options**
- **Remote GUI monitoring**
- **Diagnostic Routine**
- **Four Year Warranty**

customized upon request. A programmable equalization routine provides for desulfation to extend battery life. A user friendly and very informative LCD display is also the programming interface. The display also has a digital volt meter, amp meter, charging status and timing indicators.

The enclosure is completely sealed from dust, other environmental contaminants and is splash proof. The CTMB10 can be connected indefinitely making it ideal for remote and standby applications.

An optional fan can be added for operation in extremely high ambient temperatures, This multibank product can be ordered with input and output power connectors per customer specification.

AC input model specifications

PARAMETER	DESCRIPTION / CONDITIONS
AC input voltage range	3 input ranges covering 85 VAC - 240 VAC
Input AC amps (max)	Model Dependant
AC input configuration	AC input: line, neutral , chassis ground
Connector	IEC 320

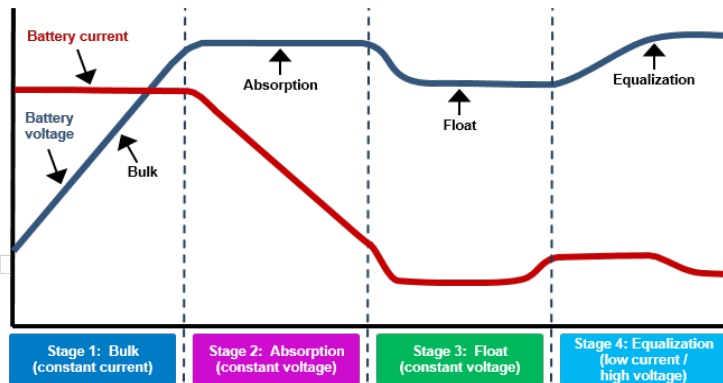
DC input model specifications

PARAMETER	DESCRIPTION / CONDITIONS
DC input voltage range	4 input ranges covering 18 VDC to 140 VDC
Input DC amps (max)	Model Dependant
DC input configuration	DC input: DC Power, DC Return, Chassis ground
Connector	PP-75 Anderson

10-Bank Charger

Charging specifications

Four Stage Lead-based battery charging curve



Charging algorithm: Supplies constant current I_{max} to battery until absorption voltage is reached (V_{FSTERM}). Transition to absorption mode follows and regulates battery voltage at V_{FSTERM} until current decreases to I_{ABTERM} . Float mode follows and regulates battery voltage at V_{FLOAT} . At the user's discretion, an equalization mode can be initiated. The equalization voltage V_{EQ} is approximately 2.5V/cell and battery current is limited. For more information, please refer to www.chargetek.com/images/pdfs/equal.pdf

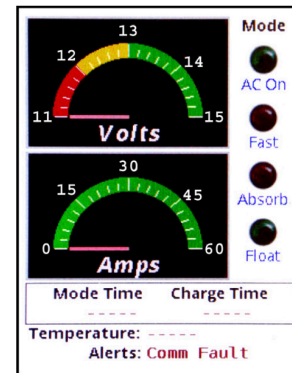
Standard LCD Displays

CHARGE TEK Model CTMB10				
Bank	Volt	Cur	Charge State	Temp
1	---	---	No Response	o
2	---	---	No Response	o
3	---	---	No Response	o
4	---	---	No Response	o
5	---	---	No Response	o
6	---	---	No Response	o
7	---	---	No Response	o
8	---	---	No Response	o
9	---	---	No Response	o
10	---	---	No Response	o

Select Down Select Up Config Bank 1

Bank 1 Configuration-No Battery	
Volts	Amps
Battery Type:	AGM 1
Equalization:	None
Max Absorb Time:	10.0 Hr
Max Equalize Time:	8 Hr
Diagnostic Mode:	Off
Return to Main	

Select Up Select Down Modify Next Value Prev



10 bank Lead-Based Common Specifications

CHARGING PARAMETERS	DESCRIPTION
Absorption transition timeout	10 hours following 85% of V_{FSTERM} (factory settable upon request)
Max charging time	Terminate if $> I_{max}/3 > 15$ hours (factory settable upon request)
Overvoltage protection	Maximum Charging Voltage + 1.0V
Output noise and ripple (PARD)	<150mV, 100MHz BW
Regulation	$\pm 0.5\%$
Efficiency	Measured at max power, varies from 83% to 92% depending on model

10-Bank Charger

10 bank Lead-Based Charging Specifications

12V Battery Bank

PARAMETER	DESCRIPTION / CONDITIONS	VALUE	UNITS
V_{FSTERM}	Fast charge transition voltage	14.6 ±0.1	VDC
V_{FLOAT}	Float voltage, $I_{OUT} < I_{FS}$, 25°C	13.6 ±0.1	VDC
I_{max}	Maximum charging current	xx.x ±0.1 (8 Amp model) xx.x ±0.1 (5 Amp model) xx.x ±0.1 (3 Amp model)	Amps
I_{ABTERM}	Absorption transition current	2.5 ±0.1	Amps
V_{EQ}	Equalization voltage @ < 1A	15.5±0.1	volts
I_{SBY}	Max standby current, AC off	1.0	ma

24V Battery Bank

PARAMETER	DESCRIPTION / CONDITIONS	VALUE	UNITS
V_{FSTERM}	Fast charge transition voltage	29.2 ±0.1	VDC
V_{FLOAT}	Float voltage, $I_{OUT} < I_{FS}$, 25°C	27.2 ±0.1	VDC
I_{max}	Maximum charging current	xx.x ±0.1 (4 Amp model) xx.x ±0.1 (3 Amp model)	Amps
I_{ABTERM}	Absorption transition current	2.0 ±0.1	Amps
V_{EQ}	Equalization voltage, <1A	31.0±0.1	Volts
I_{SBY}	Max standby current, AC off	1.5	ma

36V Battery Bank

PARAMETER	DESCRIPTION / CONDITIONS	VALUE	UNITS
V_{FSTERM}	Fast charge transition voltage	43.8 ±0.2	VDC
V_{FLOAT}	Float voltage, $I_{OUT} < I_{FS}$, 25°C	13.5 ±0.2	VDC
I_{max}	Maximum charging current	xx.x ±0.1 (3 Amp model) xx.x ±0.1 (2 Amp model)	Amps
I_{ABTERM}	Absorption transition current	2.0 ±0.1	Amps
V_{EQ}	Equalization voltage @ < 1A	46.5 ±0.2	Volts
I_{SBY}	Max standby current, AC off	1.8	ma

48V Battery Bank

PARAMETER	DESCRIPTION / CONDITIONS	VALUE	UNITS
V_{FSTERM}	Fast charge transition voltage	58.4 ±0.2	VDC
V_{FLOAT}	Float voltage, $I_{OUT} < I_{FS}$, 25°C	54.4 ±0.2	VDC
I_{max}	Maximum charging current	xx.x ±0.1 (2 Amp model) xx.x ±0.1 (2 Amp model)	Amps
I_{ABTERM}	Absorption transition current	1.5 ±0.1	Amps
V_{EQ}	Equalization voltage @ < 1A	62.0 ±0.2	Volts
I_{SBY}	Max standby current, AC off	1	ma

10-Bank Charger

10-bank Charger Ordering Guide,p/n Mx10Gbcd-r

P/N Field	Definition	Options	Description																																																							
x	Enclosure Options	A - High Power Enclosure B - Med Power Enclosure	Describes the enclosure type, see Output and Mounting section for descriptions. The enclosure is a factor of voltage and current options, see the description of options c, d below.																																																							
b	Input Power Type and Ranges	For AC input chargers, three options; A, B and V are available For DC input chargers, 4 options; 08, 09, 10 and 11 are available	AC Input Voltage Range Options: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Option</th> <th>AC Input Voltage Range</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>85 - 140 VAC</td> </tr> <tr> <td>B</td> <td>180 - 280 VAC</td> </tr> <tr> <td>C</td> <td>85 - 280 VAC</td> </tr> </tbody> </table> DC Input Voltage Range Options: <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Option</th> <th>DC Input Voltage Range</th> </tr> </thead> <tbody> <tr> <td>08</td> <td>18 - 36 VDC</td> </tr> <tr> <td>09</td> <td>30 - 50 VDC</td> </tr> <tr> <td>10</td> <td>38 - 75 VDC</td> </tr> <tr> <td>11</td> <td>72 - 140 VDC</td> </tr> </tbody> </table>	Option	AC Input Voltage Range	A	85 - 140 VAC	B	180 - 280 VAC	C	85 - 280 VAC	Option	DC Input Voltage Range	08	18 - 36 VDC	09	30 - 50 VDC	10	38 - 75 VDC	11	72 - 140 VDC																																					
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c, d	Output Voltage and current options	For each output voltage several output current models are available for each enclosure type, choose voltage (c) and current options (d) for the table the right	Charging Current vs Output Voltage and Enclosure Type <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="5">Lead Based Chargers</th> </tr> <tr> <th>Output Voltage</th> <th>Voltage Option(c)</th> <th>Output Current</th> <th>Current Option(d)</th> <th>Enclosure</th> </tr> </thead> <tbody> <tr><td>12V</td><td>12</td><td>8 Amps</td><td>10</td><td>MA</td></tr> <tr><td>12V</td><td>12</td><td>5 Amps</td><td>5</td><td>MB</td></tr> <tr><td>12V</td><td>12</td><td>3 Amps</td><td>3</td><td>MB</td></tr> <tr><td>24V</td><td>24</td><td>5 Amps</td><td>4</td><td>MA</td></tr> <tr><td>24V</td><td>24</td><td>3 Amps</td><td>3</td><td>MB</td></tr> <tr><td>36V</td><td>36</td><td>3 Amps</td><td>3</td><td>MA</td></tr> <tr><td>36V</td><td>36</td><td>2 Amps</td><td>2</td><td>MB</td></tr> <tr><td>48V</td><td>48</td><td>3 Amps</td><td>2</td><td>MA</td></tr> <tr><td>48V</td><td>48</td><td>2 Amps</td><td>2</td><td>MB</td></tr> </tbody> </table>	Lead Based Chargers					Output Voltage	Voltage Option(c)	Output Current	Current Option(d)	Enclosure	12V	12	8 Amps	10	MA	12V	12	5 Amps	5	MB	12V	12	3 Amps	3	MB	24V	24	5 Amps	4	MA	24V	24	3 Amps	3	MB	36V	36	3 Amps	3	MA	36V	36	2 Amps	2	MB	48V	48	3 Amps	2	MA	48V	48	2 Amps	2	MB
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r	Options	List of Available Options, listed separated by '-' characters, some options are mutually exclusive.	An: External Interface, choose n as follows: 0 - RS-232, 1 - RS-485, 2 - Wired Ethernet, 3 - CAN, 5 - Wireless Ethernet, 99 - Special Consult factory for others																																																							
<p>Example: P/N MA10GA363-R1 specifies a 10-bank Lead-based charger with an AC input voltage range of 85 - 140 VAC using enclosure A, and has 36V outputs rated at 3 amps each. An optional RS-485 interface is included.</p>																																																										

10-Bank Charger

Certifications and Compliance (model dependant - consult factory)

a	UL CSA
b	CE mark
c	California Energy Compliant
d	RF emissions: US FCC Part 15 Class A, CISPR 22:2009
e	IEC 555, power factor
f	IEC 61000-4-5; Class 4 Severity Level, Surge
g	IEEE C2-2012 National Electrical Safety Code
h	NFPA 70-2014 National Electric Code
i	IEC 60950 Safety of IT Equipment; Pollution Degree 2
j	WEEE and Restriction of Hazardous Substances (ROHS) Directives 2002/95/EC
k	T-Mark

Workmanship specifications

IPC-610	Acceptability of electronic assemblies IPC J-STD-006 Requirements for electronic grade solder alloys and fluxed and non-fluxed solid solders for electronic soldering applications
IPC-2221	FR4, 130C 94V-0
IPC/WHMA-A-620	Requirements and acceptance of wiring and cabling

Mechanical specifications

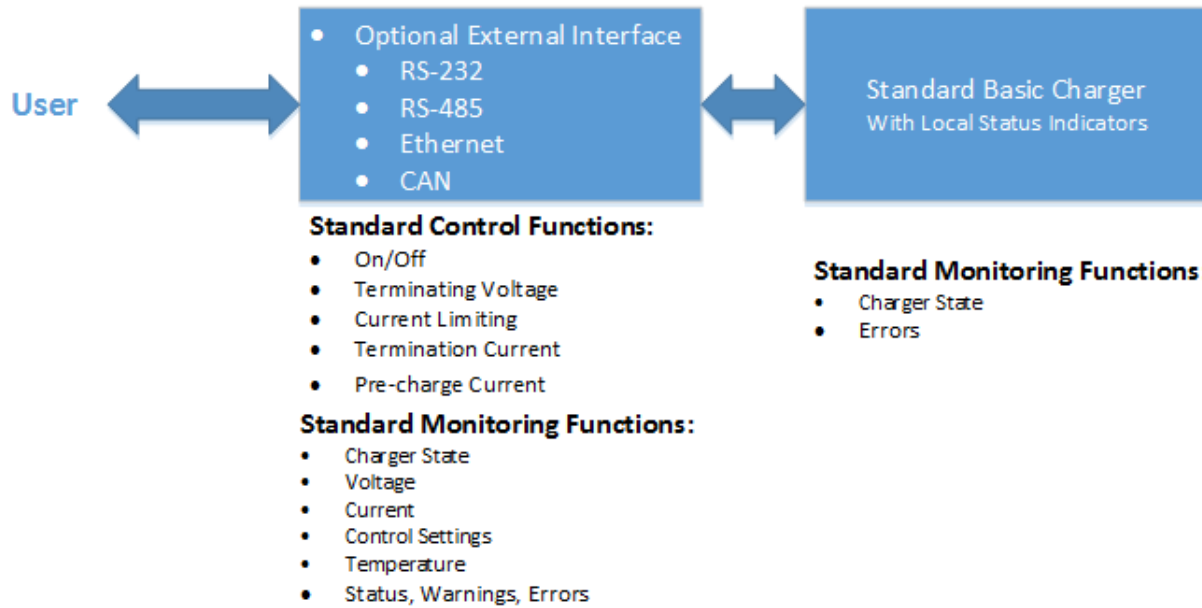
PARAMETER	(units are in inches and pounds)
Dimensions	Enclosure A/B: 18.2 (L) x 8.5 (W) x 3.35 (H)
Chassis material	Aluminum
Chassis finish	Black anodized
Clearance	15 inches all sides
Mounting	#6 screws at six locations
Battery connection	Molex P/N:0768250006 (X6)
Fan connector	Molex P/N 53048-0310
Weight	Twelve pounds
Fan noise at full speed	< 45dBA at 10 feet

Environmental specifications

PARAMETER	DESCRIPTION / CONDITIONS
Operating environment	Indoor/outdoor - IP67 -not submersible
Storage temp.	-40°C to +80°C
Operating temp.	-20°C to +50°C at maximum output over entire DC voltage range
Humidity	0°C to +95°C relative humidity (non-condensing)
Operational altitude	10,000 feet
Vibration	MIL-STD-810 or IEC60068-2-6 and -2-64 as applicable
Shock	MIL-STD-810 or IEC60068-2-27 as applicable
Isolation	Input - chassis: 2KVDC Input - output: 2KVDC Output - chassis: 500VDC
DC leakage current	Input - chassis: < 200uA at 2KVDC Input - output: < 100uA at 2KVDC
AC leakage current	< 3.5mA at 264VAC, 60Hz

Control and monitoring

Control and Monitor Interfaces



Outline and mounting

