

100A-RP USER'S MANUAL

REVERSE POLARITY CLOCK CONTROLLER

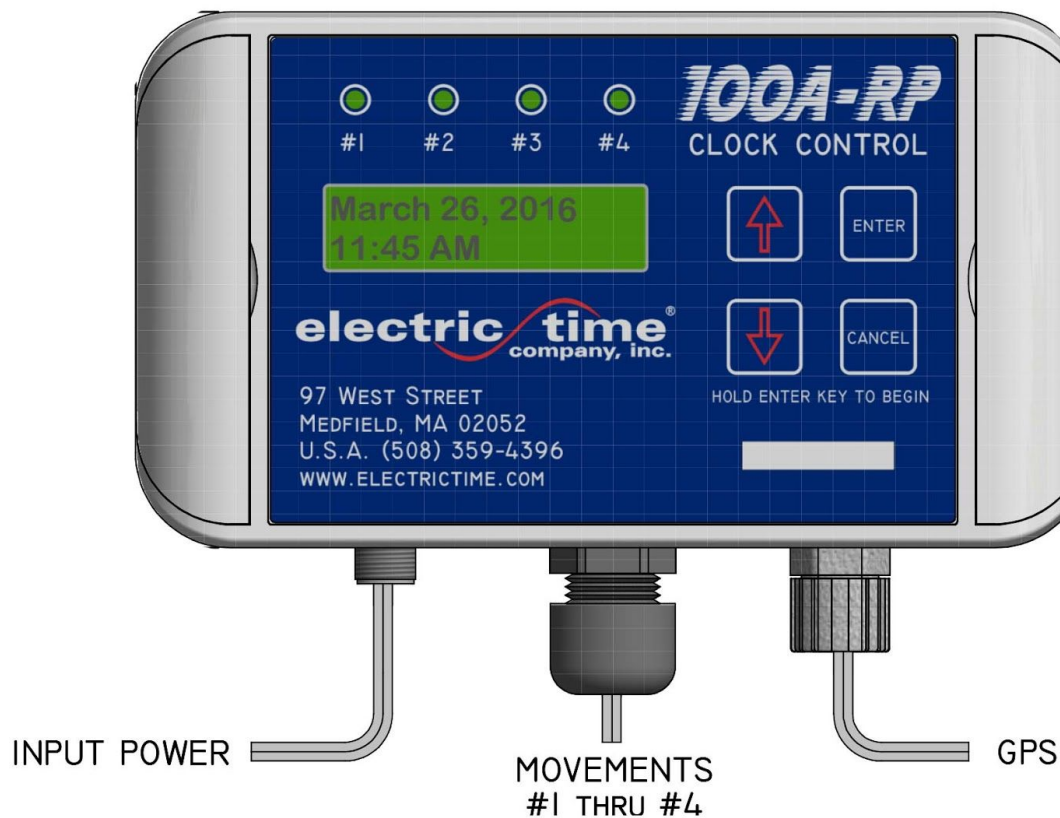


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INTRODUCTION

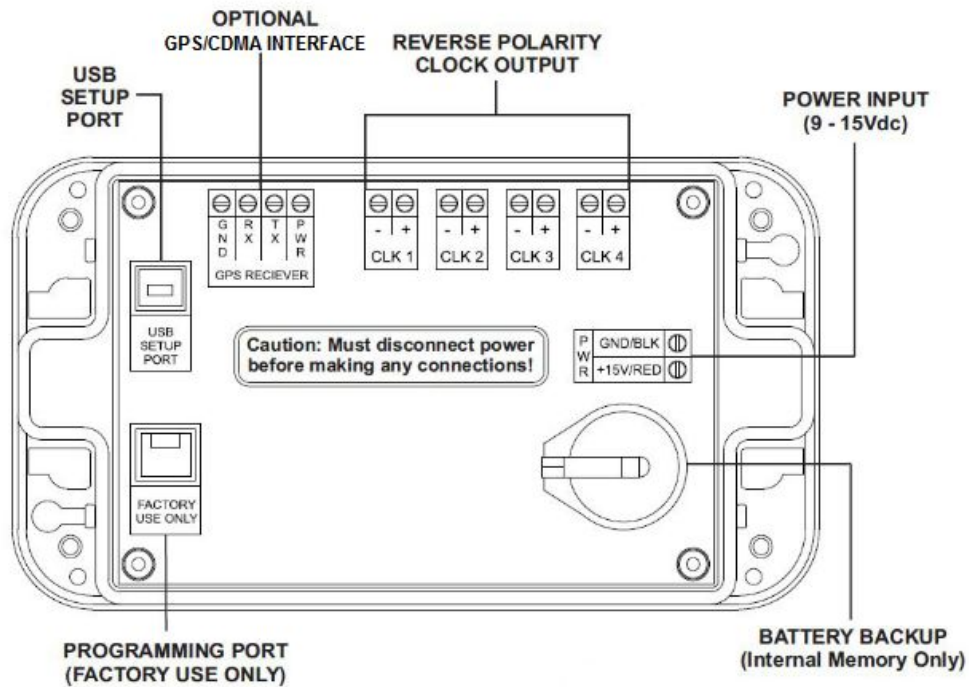
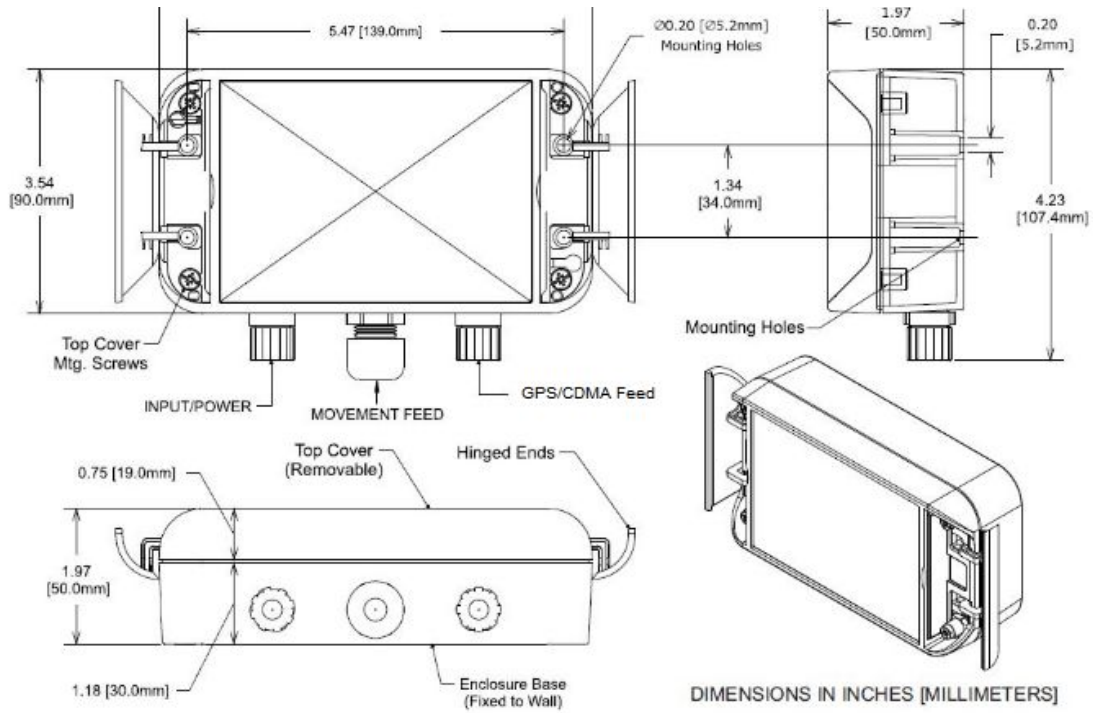
The 100A-RP Clock Controller is a microprocessor based master clock that provides completely automatic control of Electric Time “RP” clocks.

- Provides “Reverse Polarity” (RP) Control
- Clock hands index from one minute to the next
- Automatically resets clocks after power failures
- Automatically resets clocks for Daylight Saving Time (if required)
- Precision Quartz Time Base
- Optional GPS or CDMA interface for ultimate time keeping accuracy
- 10 Year Battery Backup for time base
- For indoor or outdoor use - Protected to IP65
- 4 independent output channels
- Optional 4 Independent time zones, MTZ design

SPECIFICATIONS

Compact Size	6.30 in (160mm) x 3.54 in (90mm) x 1.97 in (50mm)
Input Power	Nominal 12VDC (range 9-15VDC) Mains or Battery Pack (Power Supply)
Output Power	24VDC Reverse Polarity
Maximum Outputs	Controls up to (4) Reverse Polarity (RP) Clocks {Independent setting for all (4) clocks}
Programmable	Advance Rate, Pulse Duration, DST Rule & UTC Offset
Connections	Terminals inside enclosure (Under Top Cover)
Communication	RS-485 port (GPS Interface)
Clock Settings	Automatic Resetting for DST & Power Outages
Cable Entry	Gland fittings provided on Enclosure Base

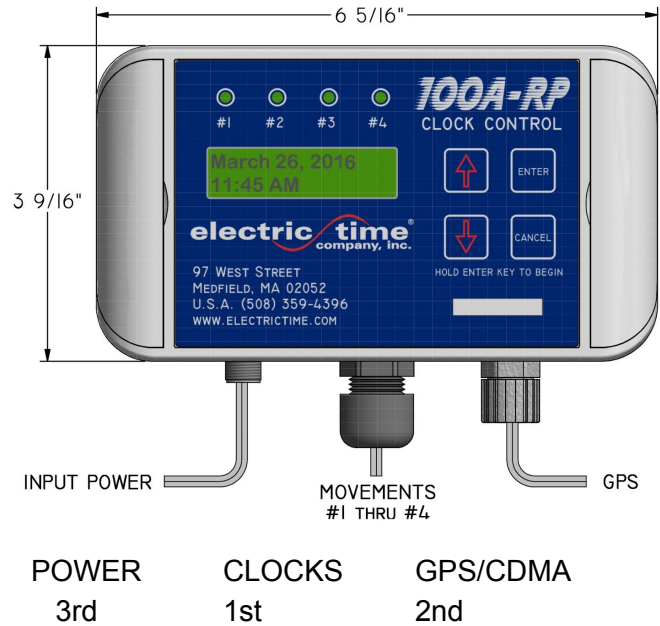
TERMINAL COMPARTMENT LAYOUT



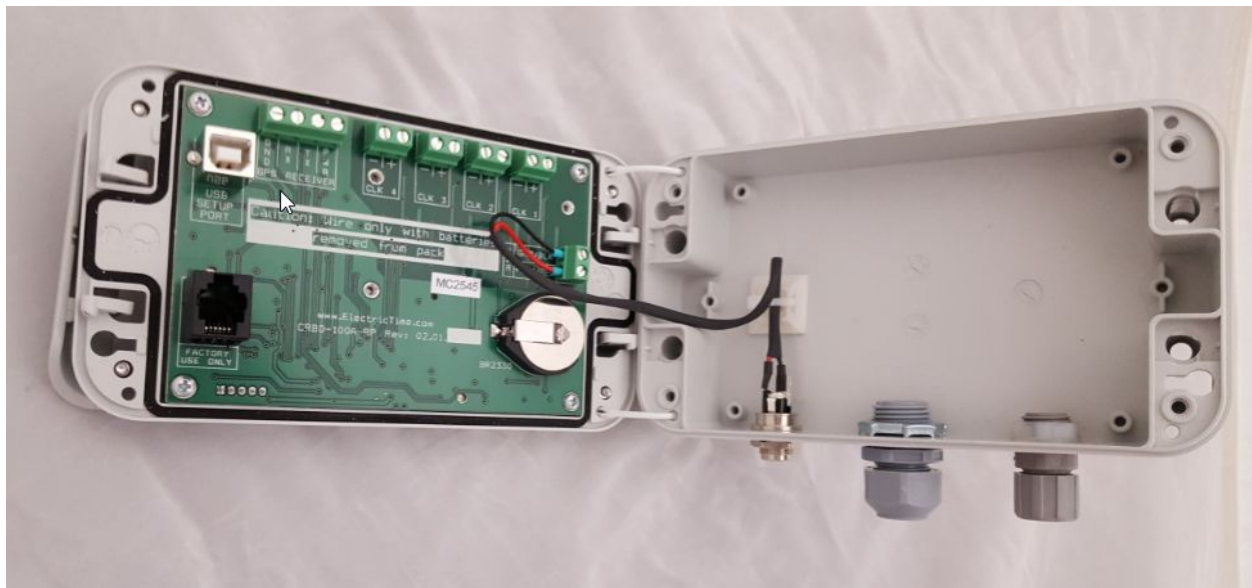
QUICK START GUIDE

MOUNTING

Expose fasteners by rotating open the left and right hinged ends. Mount to wall by means of #6/3.5mm Mounting Screws. Remove the (4) front panel screws, which are also located under the left and right flaps and turn the front panel to the left.



CONNECTING RP CLOCKS, GPS/CDMA & POWER



In order;

Wire in **CLOCKS** (recommend wire size 20/2) on the right side of the circuit board



Wire in GPS following the color code below or plug in CDMA (if supplied)



Plug in **POWER**

Turn display over to front panel. Fasten (4) screws in corners under right and left flaps. Close flaps. Display will read "Are clock(s) Connected: NO"
If connected press <ENTER> <UP> and <ENTER>



Clocks will advance to the proper position.

USER INTERFACE



1) LCD Display

2) ENTER

- Hold for (5) seconds to access menus
- Use to activate menus and make selections

3) CANCEL

- Use to cancel active menu selections
- Hold for (5) seconds to exit all menus

4) UP/ DOWN Arrows

- Use to scroll through menus and menu selections - during normal operation selection of the <DOWN> will display position of all clocks.

5) LED Lights #1, 2, 3 &4

- Indicates each clock, blinks between red and green when moving (in reset mode and at the top of each minute)

GENERAL NOTES

- When complete - press and hold <CANCEL> until 100A reboots

BASIC DISPLAYS

POWER UP DISPLAY

- Displays when controller is first powered on, and when it reboots



Electric Time Co.
Ver: 01.06.05

RUNNING DISPLAY

- Displays current Date and Time
- Display turns off when running on battery power.
- Displays “DST” during periods of the year when Daylight Saving Time is observed (will not be displayed in locations not observing Daylight Saving Time)



FRI APR 14, 2017
03:22:44 PM DST

CORRECTING CLOCK DISPLAY

- Appears when clock is resetting, and at the top of each minute
- Alternates with Running display every 6 seconds
- Press <DOWN> to view target time for each clock
- Press <UP> to view current location of hands



Hands Moving to
Correct Position

OPERATION

The 100A-RP Clock Controller is designed for fully automatic operation. However, should user intervention be required, review the following instructions for proper operation of the 100A-RP.

ACCESSING MENUS

- Press and hold <ENTER> for (5) seconds

MAKING MENU SELECTIONS

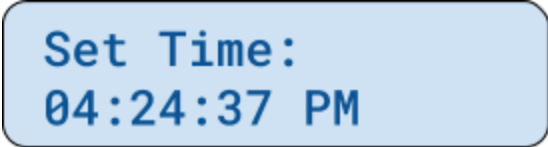
- Use <UP/DOWN> arrows to scroll through menus
- Press <ENTER> once to activate menu choices

- Use <UP/DOWN> to scroll through menu choices
- Press <ENTER> to select menu choice
- Hold <CANCEL> for (5) seconds to exit menus and return to Running display

BASIC SETUP FUNCTIONS

SET TIME

- Allows user to set time shown on LCD Display
- Displays “GPS” or “CDMA” if GPS or CDMA unit is being used.
- **NOTE:** User cannot set time when GPS or CDMA is locked, these units always maintain correct time and will override user input



Set Time:
04:24:37 PM

SET DATE


- Allows user to set Date



Set Date:
2017-APR-14 FRI

CHECK CLOCK HAND POSITION

- Press <DOWN> until you see Sync Hands
- Press <ENTER> to select, then <UP> to select YES
- Enter time clocks 1 through 4 (or verify position of hands)
- Press UP/DOWN to set hour, then ENTER



Sync Hands:
NO

- Press UP/DOWN to set minute, then ENTER
- Press ENTER to select next clock
- Save Setting, press ENTER
- Press and hold <CANCEL>, 100A-RP will reboot

1)10:00 2)10:00
3)10:00 4)10:00

BATTERY DAYS REMAINING (battery mode only)

Display number of days until battery should be replaced.

Bat Days Remaining:
1100

ADVANCE HANDS

- Allows user to advance all clocks
- Select NO to return to menus
- Select TO 12 to advance all clocks to 12
- Select ADVANCE to advance all clocks until desired point
- When advancing, press ANY KEY to cancel

Advance Hands:
No

EXT TIME STATUS

- Allows user to check status of GPS or CDMA unit
- If no unit is connected, menu will read "NO COMMS"
- If connected, menu will read "CDMA/GPS Locked"
- If device found, but not acquiring time, menu will read "CDMA Reg retry/GPS comm"

Ext Time Status:
No Comms

LAST LOCK

- Displays time of last time base lock

Last Lock:
Enter

NEXT TRY

- Displays next opportunity to acquire time base from CDMA or GPS unit.

NEXT TRY: ENTER
22day 22hr 03min

GPS LOCK TIME

- How long to turn the GPS on for time to lock on.

GPS Lock Time:
60 (sec)

INITIATE LOCK

- Will force a CDMA or GPS lock.

Initiate Lock:
No

ENTER TECH MODE

- Allows user to access special technician menus
- Select NO to do nothing, remain in active menu screens
- Select YES to enter mode (See **TECH MODE**)

Enter Tech Mode:
No

EXIT MENU

- Select NO to remain in active menu screens
- Select YES to exit all menus, reboot controller

Exit Menu:
No

TECH MODE

POWER MODE

- Allows user to indicate power source
- Will be preprogrammed at factory
- Select Plug In DC/Battery (factory preset)

Power Mode:
Plug In DC

DST OPTION

- Allows user to disable or modify Daylight Saving Time rule
- When ENABLED, 100A-RP will automatically reset for DST on the set month, week and day at 2 AM local time (DST Start adjusts local time forward, DST End adjusts local time backward)
- When DISABLED, 100A-RP will not reset for Daylight Saving Time

DST Option:
ENABLE

- DST OFFSET allows customization of the Daylight Saving Time Offset. (Note: This only changes offset amount, not forward or backward)
- DST Start allows user to customize DST rule change
 - Week: Sets the time change to start on the 1st, 2nd, 3rd, 4th or Last week of the month
 - Day: Sets the day the time changes. All time changes take place at 2am.
 - Month: Sets the month the time change will start
- DST End allows user to customize DST rule change
 - Week: Sets the time change to end on the 1st, 2nd, 3rd, 4th or Last week of the month
 - Day: Sets the day the time changes. All time changes take place at 2am.
 - Month: Sets the month the time change will end

**DST Offset:
60 Minutes**

**DST Start:
2nd SUN MAR**

**DST Ending:
1st SUN NOV**

TIME ZONE CHECK

United States & Canada GMT/UTC Offsets
(controller handles DST):

**TimeZone Offset:
-05:00 UTC/GMT**

Time Zone	UTC Offset (hh:mm)
Newfoundland (Canada only)	UTC-3:30
Atlantic (Canada only)	UTC-4
Eastern	UTC -5
Central	UTC -6 (disable DST for most of Saskatchewan)
Mountain	UTC -7 (Disable DST for Arizona)
Pacific	UTC -8
Hawaii	UTC-10 (Disable DST)

- Press and hold <ENTER> until display changes to date and time
- Press <DOWN> until you see the "TimeZone/Offset"
- If correct go to **GPS CHECK**
- If incorrect, to change time zone:
- Press ENTER to select

- Press UP/DOWN to set hour, then ENTER
- Press UP/DOWN to set minute (only for some ½ hour time zones)
- Press ENTER to complete

DRIVE PULSE

- Set length of RP movement pulse length.
- We recommend .160 seconds for battery power.

Drive Pulse:
00.160 (sec)

DRIVE GAP

- Sets time between pulses.

Drv Gap interval:
03.0 (sec)

DC VOLTAGE

- DC Volt: Input voltage to device
- DRV Volt: output voltage
- Press <ENTER> to view current voltage

DC Volt:12.00
DRV Volt:

SHIP CLOCK

- Used to ship and/or reset clocks
- When selected clocks will advance to 12 and stop If ENTER key hit - controller will then assume clocks are at 12.00.

Ship Clock:
NO

Move to 12 >SHIP
ENTER skips 12

EXIT MENU

- Select NO to remain in active menu screens
- Select YES to exit all menus, reboot controller

Exit Menu:
No

BATTERY REPLACEMENT (100a with battery pack only)

The 100A-RP control has an internal timer that keeps track of battery life. This timer is set at the factory, dependent on the type of battery package provided. When the battery life is near exhaustion, the display will read "Pack Near End of Life/Replace Battery".

Pack Near End of Life
Replace Battery

We recommend you replace the battery and then the control will restart. You will need to verify the date and time and confirm that the battery pack was replaced, by following the instructions below;

- Press and hold <ENTER> for (5) seconds
- Press <DOWN> until display reads "Battery Pack Replaced?"
- Press <ENTER> to select, then <UP> to select YES then <ENTER>
- Verify the current time and date

NOTE: if the battery was allowed to run down completely, the clock hand positions may need to be reset. See **CHECK CLOCK HAND POSITION** above.

SERVICE

For assistance in troubleshooting problems with your 100A-RP Clock Controller, or to request service, contact the Electric Time Company Service Department at the address shown below:

Electric Time Company, Inc.
Service Department
97 West Street
Medfield, MA 02052 USA

Ph: (508) 359-4396
Fax: (508) 359-4482
Email: service@electrictime.com

ACCESSORIES

BRKT-100A-CTRL-MTG	Offset mounting bracket per drawing - reference drawing A-15014
PLAT-100A-CTRL-MTG	Flat mounting bracket per drawing - reference drawing A-14982
CTRL-CDMA-RECEIVER	CDMA Receiver Kit
CTRL-GPS-RECEIVER-KIT	GPS Receiver Kit
CTRL-100A-MTD	Multiple Time zone/Multi Function display unit

POWER SUPPLIES

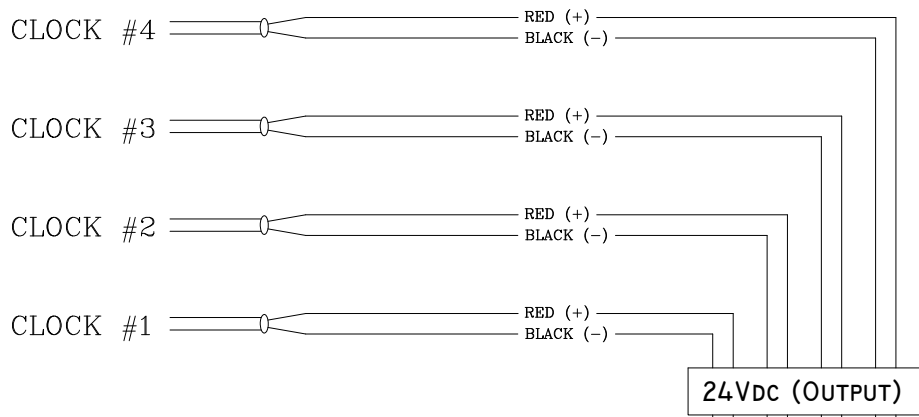
CTRL-100A-PWR-HW	110/240VAC 50/60 HZ Power Supply Hard Wired
CTRL-100A-PWR-WW	110/240VAC 50/60 HZ Power Supply Wall Wart North American Plug
CTRL-100A-BATT-ALK	Alkaline Battery Kit
CTRL-100A-BATT-LIT	Lithium Battery Kit
WIRE-20-2C	Clock Connection Wire available in 100' lengths

REFERENCES

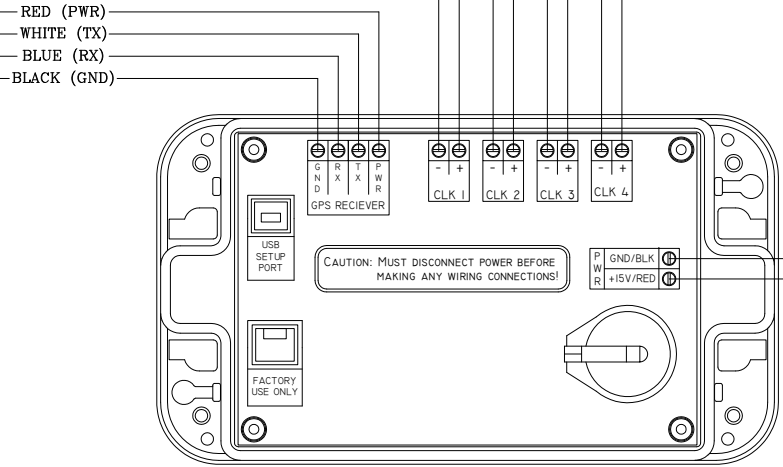
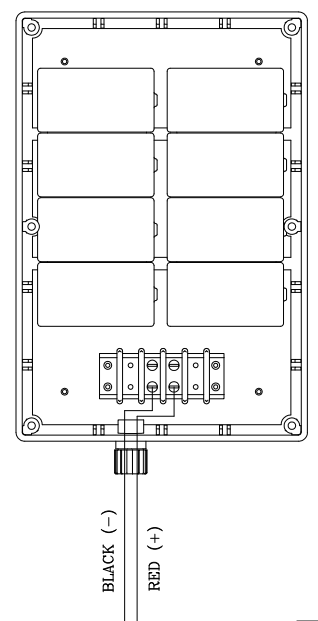
Manual 409 for 100A-RP MTZC Control Function

REVISION HISTORY

08-01-2017 First Release

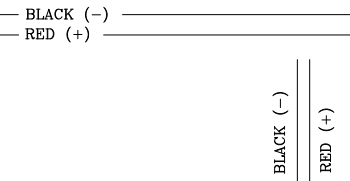


BATTERY PACK OPTION
[CTRL-100A-BATT]

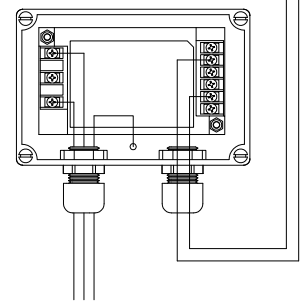


TOP COVER (BACK VIEW)

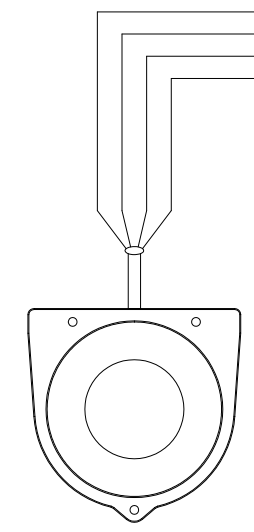
12VDC
(INPUT)



POWER SUPPLY OPTION
[CTRL-100A-PWR-SPLY]



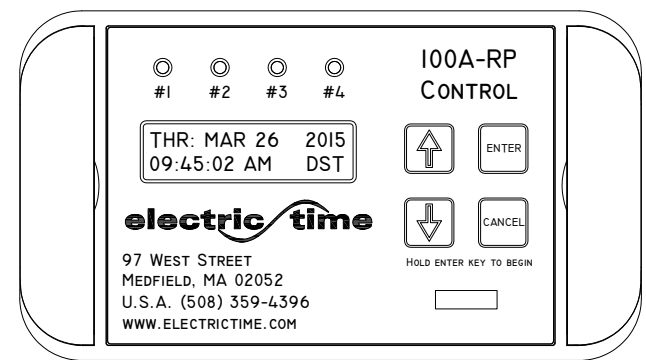
Universal Input
(100-240Vac)



GPS RECEIVER
(OPTIONAL)

PRIMARY FEED
(INPUT OPTIONS)

POWER SUPPLY
OR
BATTERY PACK



TOP COVER (FRONT VIEW)

VIEW LASER	PATH	M:\ACAD10\A-14323.DWG			
	TITLE	Wiring Diagram/Connection Details			
DRAWING A-14323	REVISIONS				
	SCALE	DATE	DRAWN	APP'V	
	As Noted	3-19-15	DMC	TDE	
		 company, inc. medfield, ma			