

**EVENT TIMER / CLOCK / CONTROLLER**

# ***USER'S GUIDE***



**Entek**

**TC2100**

# TC2100

## Event Timer / Clock / Controller User's Guide

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P/N TC2100-UG-R304

## Introduction

The TC2100 Event Timer / Clock is a microprocessor controlled system that can control up to 4 output channels. It can be used to control audible or visible signaling devices such as school bells or shift start/end indicators.

The easy to use operator interface allows the user to set up to 100 events. Each programmed event can be filtered by time of day, and day of the week, and specifies the output channel(s) to activate and the pulse duration. The pulse duration sets how long the output is activated (in seconds).

The outputs are isolated load rated (10 amp) relay contacts to provide the utmost reliability. The power supply input for the TC2100 is 10 – 30 VDC or 8 – 24 VAC – allowing simple upgrades to existing systems. All connections for power and relay outputs are made via pluggable - screw type terminals for ease of installation.

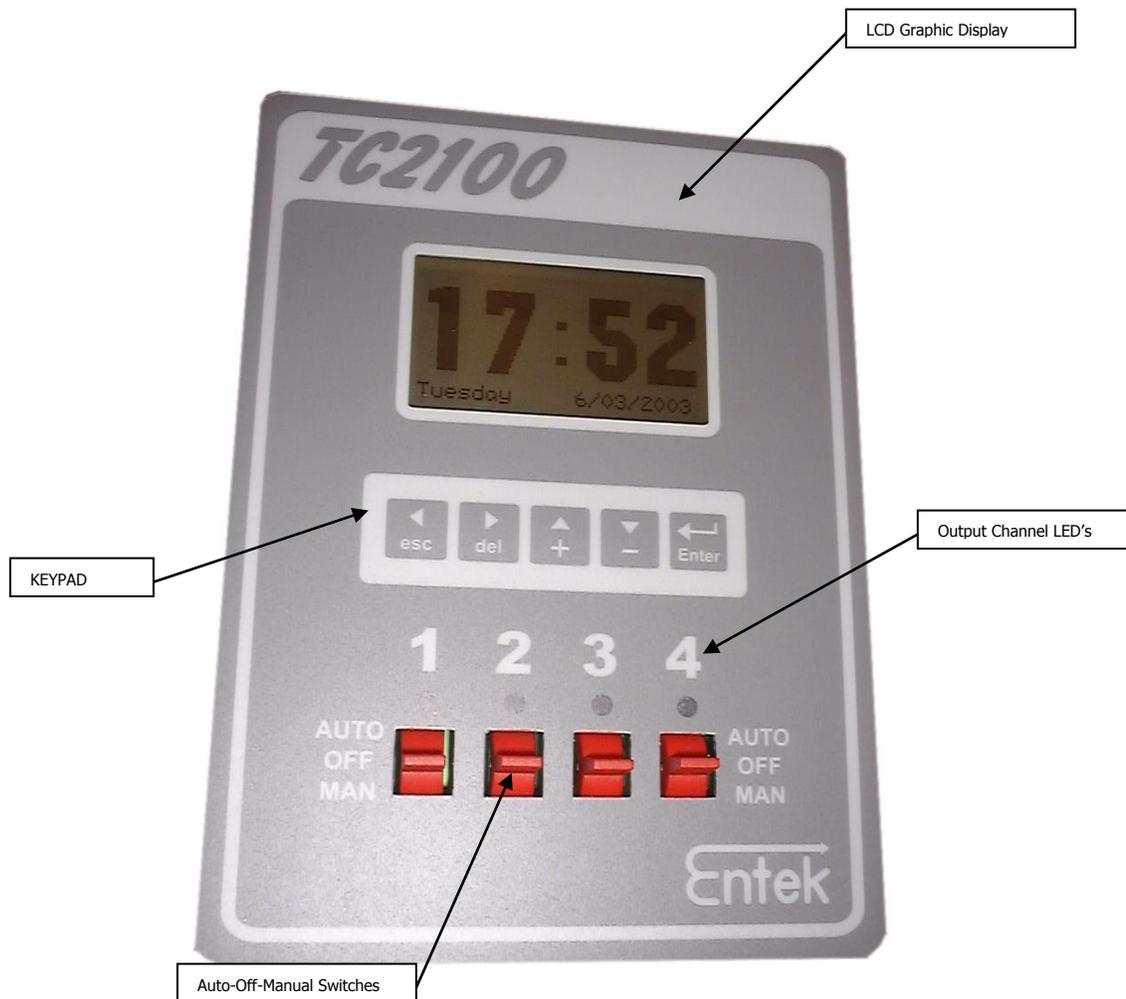
All settings are made via simple key presses and the graphic LCD display. Easy to navigate menus provide access to all settings. The settings are stored in internal flash memory for high reliability and easy programming change.

An Ethernet interface provides a convenient web based programming interface. Connection of the TC2100 to a standard PC via the Ethernet port, allows all settings to be viewed and changed with a standard Web Browser program. The TC2100 can be connected to a local intranet and accessed by any computer on the network. The TC2100 is password protected to prevent unauthorized users from tampering with settings.

Manual activation of any output channel(s) is possible via the front panel controls with only a few simple keystrokes.

Manual bypass toggle switches are located on the front panel. Outputs may be activated manually by simply pressing the spring return toggle switch. Outputs may also be disabled by placing the corresponding switch in the OFF position.

### TC2100 Front Panel



## Installation

### ***Power***

The TC2100 requires 8 - 24 VAC or 10 – 30 VDC to operate. An inexpensive “bell” type transformer or existing AC or DC power can be used to power the TC2100. Polarity of the connection when using DC voltage does not matter.

### ***Output Connections***

The output relay contacts are 10 amp load rated isolated contacts. Each pair of terminals connects to one of the four relays. An external 10 Amp fuse should be installed in each circuit to protect the relay in the case of a short circuit in the field wiring.

### ***Ethernet Connection***

The Ethernet port may be connected directly to the Ethernet port of a PC using a “crossover” type Ethernet cable. If the TC2100 is connected to a network hub, a standard cable should be used.

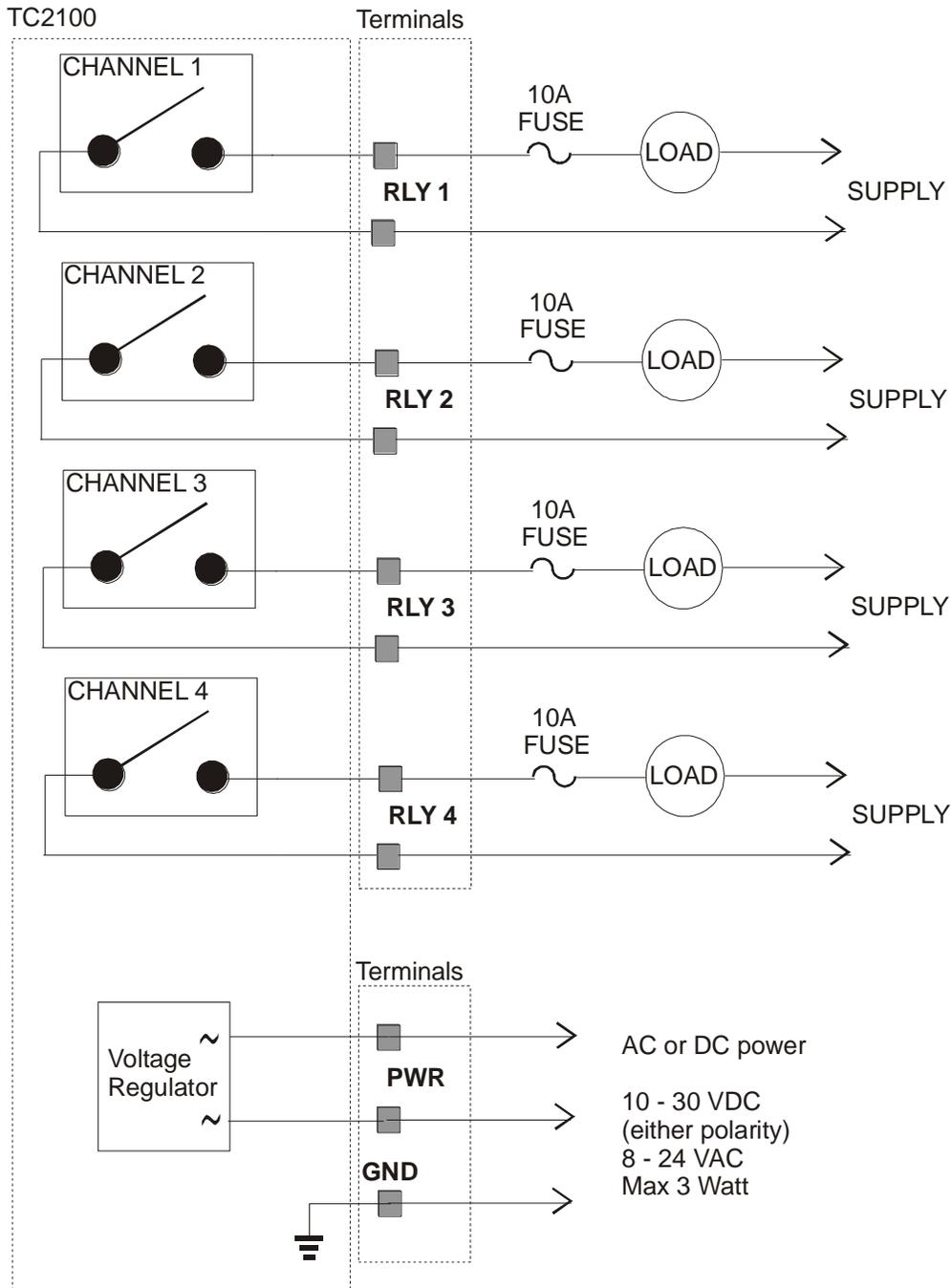
The IP address, the gateway address, and the Netmask should be set in the TC2100 before attempting to establish a connection to the network or PC. Otherwise if the default IP address of the TC2100 is the same as an existing address on the network, a conflict may arise.

### ***Clock Battery***

A standard coin sized 3 volt lithium battery is installed on the main circuit board. This battery provides power to the real time clock when the main supply power is removed. This battery should be replaced with the same type every 8 – 10 years to ensure continuous operation of the clock. Use a small screwdriver or pointed object to remove the old battery from the holder. Ensure power is removed from the TC2100 when replacing the battery to avoid electrical shock or damage. The time may need to be reset when the TC2100 is powered back up after replacing the battery.

Note: It is recommended to back up all settings of the TC2100 before replacing the battery in the event settings are lost during the change.

**Connection Diagram**



## Operation

### ***Backlight***

The TC2100 display is equipped with a backlight to make viewing easier in dark locations.

### ***Front Panel Access***

The correct password must be entered before the user can gain access to any of the TC2100 menus or settings. The password may be changed in the PASSWORD menu once access is gained. The factory default password is AAAA. It is suggested that the password be set to a different value to prevent unauthorized access to settings.

If the password is ever lost or forgotten, call the Entek support department for instructions on resetting the password. You must have access to the TC2100 with power applied before calling, since there are several steps you must complete while on line to the support technician.

### ***Front Panel Keys***

There are 5 keys on the TC2100 front panel.

|          |                     |
|----------|---------------------|
| < or esc | Left or Escape Key  |
| > or del | Right or Delete Key |
| ^ or +   | Up or Plus Key      |
| v or -   | Down or Minus Key   |
| <'       | Enter Key           |

Their use varies slightly with different menus and will be described with each menu option.

### ***Front Panel Toggles***

The four (4) toggle switches on the front panel may be used to manually activate or de-activate the outputs.

When the switch for a particular channel is in the "auto" position, the outputs will activate based on event settings and clock time.

If the switch for a particular channel is in the center "Off" position, then the output of the relay is disconnected and will never activate.

If the switch is pressed in the down "Man" position, then the channel output is activated while the switch is held. The switch is spring loaded and should return to off when released. Remember to set the switch back up to auto if automatic operation is to resume.

### ***Menu Navigation***

The TC2100 menu tree has several layers. The Left (<) and right (>) keys are used to navigate through the top layer menus. The Up (^) and Down (v) keys are used to navigate through the sub level menus. When the desired entry is selected, then the Enter key is used to select the entry you wish to edit. The ESC key will take you back up to the previous menu level.

The Left (<) and Right (>) keys will select the field within the entry you wish to edit and the Up (^) and Down (v) or Plus (+) and Minus (-) keys will change the value of that field.

When you have completed editing a particular setting, the Enter key will move you to the next setting or take you back to the preceding menu layer and save the current setting.

**Menu Tree****Top Level MENUS****Sub Level Menus****3<sup>rd</sup> level Menus****MANUAL ACTIVATION**

All  
 Channel 1  
 Channel 2  
 Channel 3  
 Channel 4

**This menu is used to manually activate relays**

Use (^) and (v) keys to select specific channel or all  
 Hold the Enter key to activate the relay  
 Release the Enter key to de-activate the relay

**EVENTS MANAGEMENT**

Add Event  
 Edit / Delete Events

**This menu adds, deletes or edits event data**

(^) (v) keys to scroll through event list  
 Enter key to edit, (-) key to delete, (<) or (>) to exit

**SETTINGS**

Enable Events  
 Name Channels  
     Channel 1  
     Channel 2  
     Channel 3  
     Channel 4

Activate or De-activate ALL events  
 User can specify a unique name for each channel

Exclude Dates  
     Add Excl  
     View / Remove Excls  
     Clear All Excls

Certain days can be excluded from event processing  
 Use (^) and (v) keys to select exclusion option

**REAL TIME CLOCK**

Set Time  
 Set Date  
 Set Clock Style  
 Set Auto DS Time  
 Set Auto Time Sync

**Set real time clock and options**

12 or 24 hour format  
 Automatic Daylight Savings adjustment enabled or disabled  
 Automatically synchronize time to Internet Time Standard

**INTERNET CONFIG**

Set IP Address  
 Set Gateway  
 Set Netmask

**Set internet or intranet parameters****PASSWORD**

Edit User  
 Edit Admin  
 Edit System

**Set security passwords (4 character)****LOGOUT**

Logout

**Log out**

## **Menu Functions**

### **Manual Activation**

This menu allows you to manually activate one or all relay outputs. Use the (^) and (v) keys to select the output you wish to activate and then press the Enter key. The output should remain activated as long as the Enter is held down.

Use the (<) or (>) key to exit this menu.

### **Events Management**

This menu allows you to add, delete or edit event data. Event data includes the following parameters for each event specified. Up to 100 individual events may be specified.

Time to activate HH:MM:SS where HH=hours, MM=minutes, SS=seconds

Activation Period (seconds)

Activation begin date DD/MM/YYYY where DD=Date, MM=Month, YYYY=Year

Activation ending date DD/MM/YYYY (inclusive)

Channel(s) to activate XXXXXXXX (channel 1-8) where X=0 off and X=1 activate

Day of Week XXXXXXXX (Monday to Sunday) where X=0 skip, X=1 active

To edit or delete an event, select the Edit / Del menu option and press the Enter Key. Then scroll through the list with the (^) and (v) keys until you have found the event you wish to delete or edit. Press the (-) key to delete the event, or press the Enter Key to edit the event. Pressing either the (<) or (>) keys will take you back to the main sub-menu without changing the event list.

### **Settings**

Use the (^) and (v) keys to select from the Event Settings sub-menu.

The Enable Events menu option allows the user to disable all events with only a few keystrokes.

The Name Channels option lets you create a real text name for each channel, (ie. B WING).

Select the channel name you wish to edit with the (^) and (v) keys. Then press the Enter key.

The (<) and (>) keys then select the character position in the name to edit, and the (^) and (v) keys change the character. When the name has been completed, press the Enter key to store it and return to the list of channel names.

Exclude Dates is used to skip output activation on certain calendar days (ie. Statutory Holiday) or ranges of dates (ie. Spring Break). Up to 20 calendar dates or ranges of dates may be entered in advance. Outputs will NOT activate on these days.

## Real Time Clock

This menu is used to set the real time clock time and date. The Auto Daylight Savings setting will allow the unit to adjust for DST automatically. Version 3.03 and higher use the 2007 DST rules – 2<sup>nd</sup> Sunday in April and 1<sup>st</sup> Sunday in November. At 2am on the DST adjustment day the clock will move back to 1am or ahead to 3am depending on the season.

The Auto Time Sync setting causes the TC2100 to synchronize its clock with a time standard at midnight every day. It does this via the internet. Ensure that the gateway address is set properly under Internet Settings. When the Auto time Sync feature is selected, then the unit is automatically corrected for daylight savings time. The local time offset (in +/- hours) setting allows the unit to be set to local time based on the world time standard and is specified based on non-DST time.

In order to check the Auto Sync internet communications, set the time date to incorrect values. Go to the Auto Time Sync setting and set it enabled. Press the Enter key to exit that screen and trigger the Auto Sync. Return to the logout display and see if the time and date have been corrected.

When the Auto Time-Sync option is enabled the Auto DS Time option is automatically enabled, and cannot be disabled as long as the Auto Time-Sync option remains enabled. Auto Time-Sync automatically adjusts for Daylight Savings.

## Internet / Network Configuration

A local IP address must be assigned in order to connect to the Ethernet port. This address must not conflict with any other addresses on the network or intranet. The gateway should be set if access to the TC2100 is via a gateway. Your system administrator should be able to provide this information. If a gateway is not required, set this to 0.0.0.0 Your network administrator will also provide the netmask setting. This is typically 255.255.255.0 but may differ for different networks.

## Password

You may change the passwords here to restrict access to the TC2100 settings and menus. The password must be 4 characters long and includes letters (upper and lower case letters and numbers). If you forget your password you will need to call technical support to reset the password. There are 3 passwords available and each of the three have varying levels of access associated with them.

User – Access only to the Manual Activation menu

Admin – Access to Manual activation, Event Management, Settings and Time menus

System – Full access to all settings

## Logout

When you have completed settings, use the Logout option to “lock” the front panel. Make sure you know your password before you do this.

## Web Interface

In your web browser, enter the IP address of the TC2100 into the address box of the browser and press Enter on the PC.

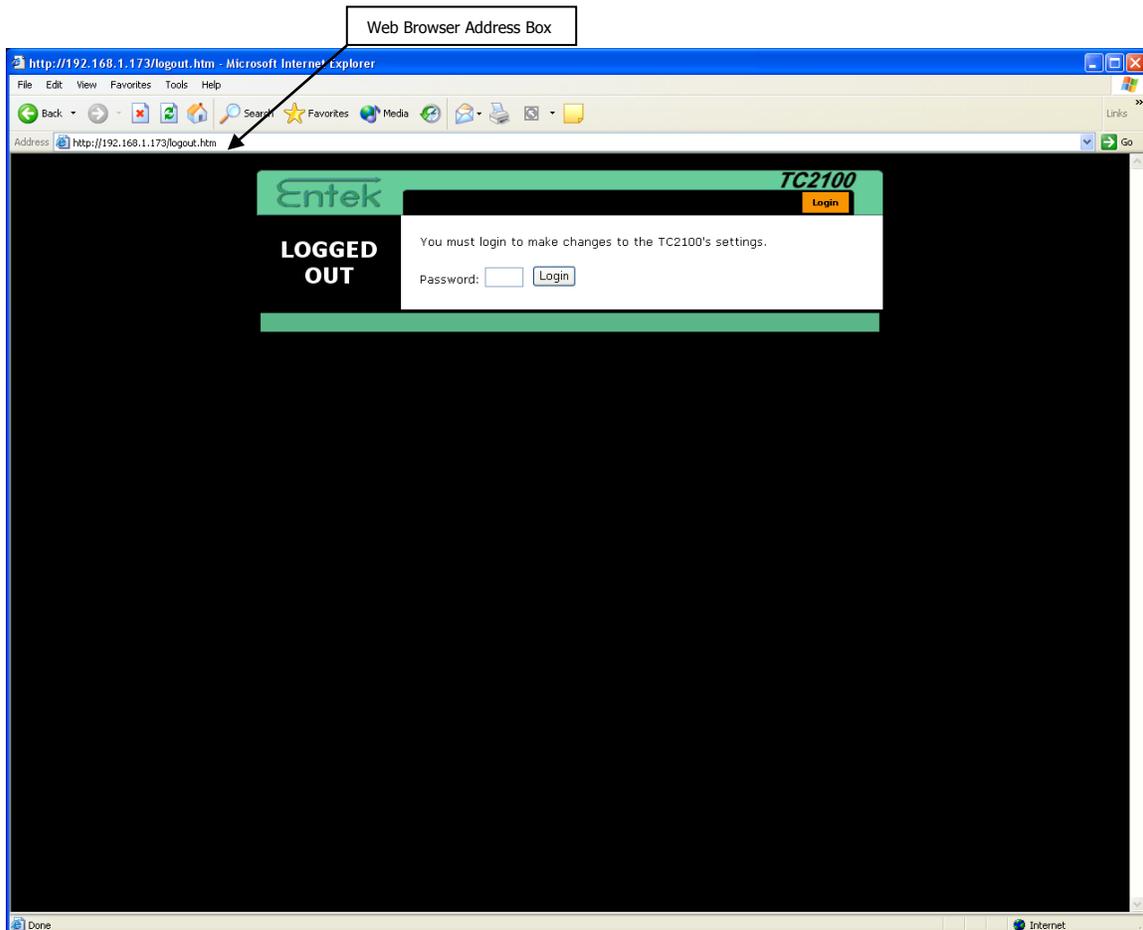
The Login screen for the TC2100 should appear in the browser window. Click on the orange Login Tab. The password screen should pop up.

Enter your TC2100 password and click OK. If the password is correct, the Activate Relay Form should load.

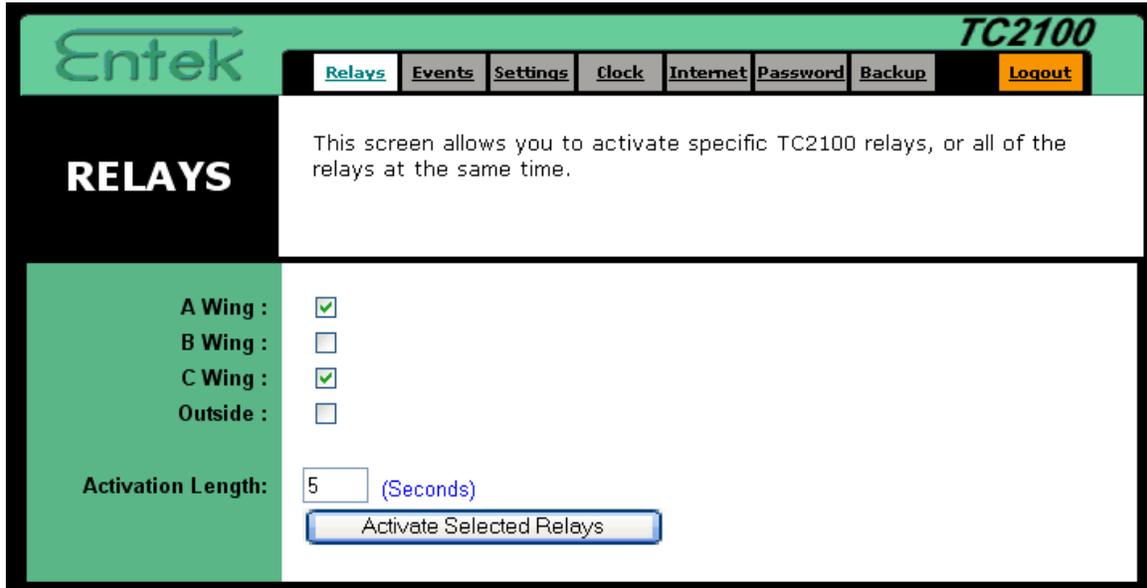
The tabs now visible across the top of the screen allow you to select any of the main forms: Relays, Events, Settings, Time, Internet, Password and Logout.

The settings provided in each of these web based forms are the same as the settings accessible through the front panel on the TC2100. In most cases, you can make changes to the settings as required and then press the APPLY button to save them to the TC2100. Delete, Add and Edit buttons are immediate, and do not require the Apply button to be clicked afterwards.

### LOGIN Web Page

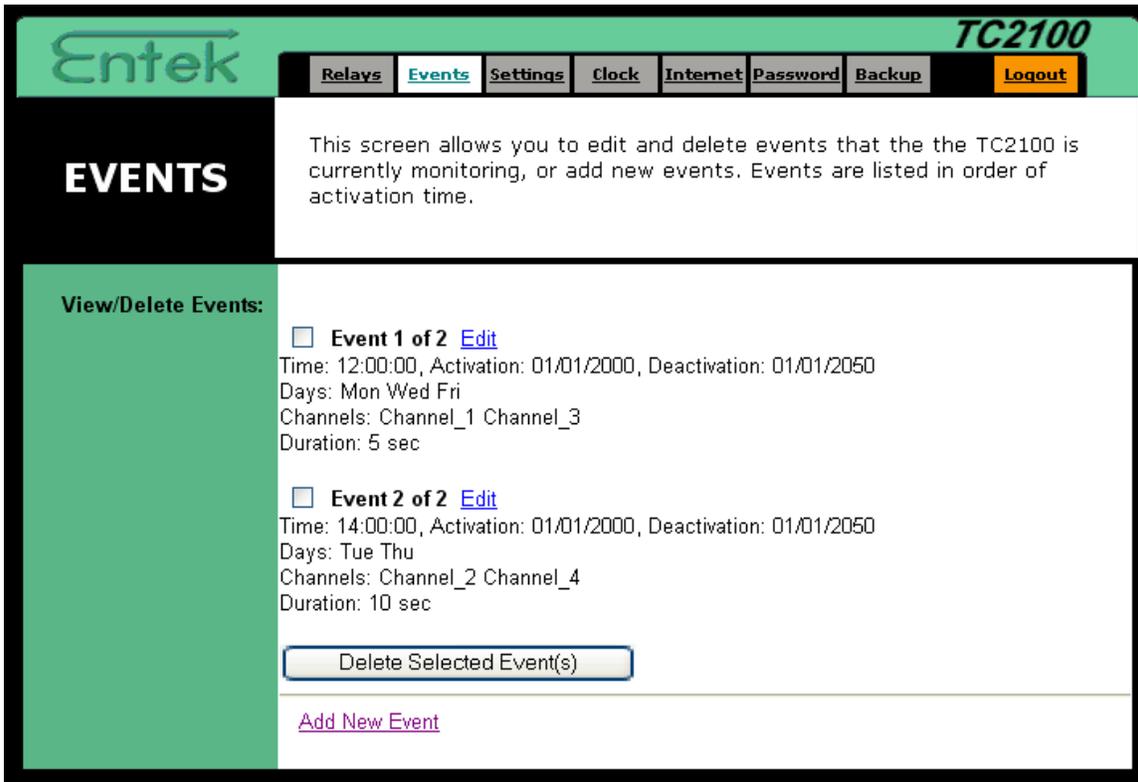


RELAYS Web Page

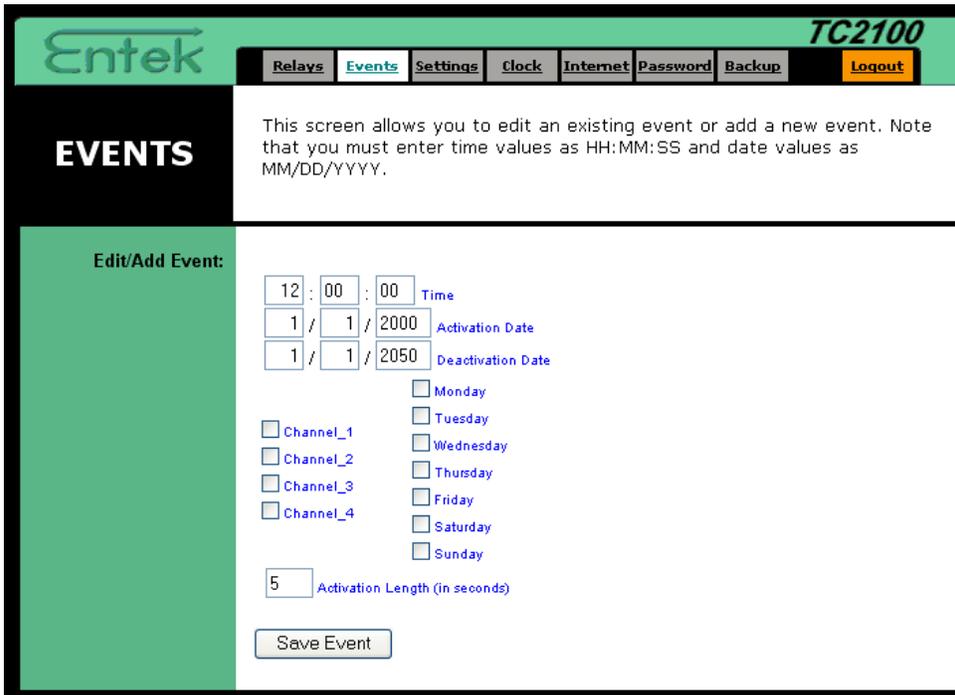


A Wing and C Wing outputs will activate for 5 seconds when the “Activate Selected Relays” button is pressed.

**EVENTS** Web Page



The “Add New Event” button allows the user to add new events (up to 100). To delete one or more events, select the event(s) with the checkbox and then press the “Delete Selected Event(s)” button.



Clicking on the “Edit” link next to an event allows the user to edit the settings for that specific event.

**SETTINGS Web Page**

**Entek** **TC2100**

Relays Events **Settings** Clock Internet Password Backup Logout

**SETTINGS**

This screen contains all of the TC2100's basic setup functions. Most users will be able to use the default settings without making any changes. If you require help during configuration, please see the user guide. Note that the characters used to compose the Channel Names must be alphanumeric or "." or "\_". No other keys are supported. Note also that you must enter date values as Month/Day/Year.

**Event Triggering:**  Enable

**Channel Names:** (Max: 9 Characters)

A Wing  
B Wing  
C Wing  
Outside

**Calendar Exclusions:** MM / DD / YYYY

|      |           |    |           |
|------|-----------|----|-----------|
| From | 3/12/2003 | To | 3/16/2003 |
| From | 5/18/2003 | To | 5/18/2003 |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
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| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |
| From | Empty     | To | Empty     |

Apply Changes

Removing the check in the Event Triggering Enable checkbox will disable ALL activation of outputs. This is a convenient way to disable outputs for a temporary situation.

Custom channel names may be entered for each of the four (4) output channels. These names will appear in the front panel menus and on the Backup Spreadsheet.

Up to 20 Calendar Exclusions may be entered specifying either a range of dates or a single date (you must enter the single date in both the From and To boxes).

The "Apply Changes" button must always be clicked in order to submit any changes to the Settings page.

**TIME Web Page**

**Entek** **TC2100**

Relays Events Settings **Clock** Internet Password Backup Logout

**TIME**

This screen allows you to set the time and date that the TC2100 runs by. You can also allow the TC2100 to update to Daylight Savings Time automatically on the first Sunday of April and the last Sunday of October. Note that you must enter time values as HH:MM:SS and date values as MM/DD/YYYY.

Time: 12 : 21 : 28

Date: 06 / 09 / 2003

Auto Daylight Savings:  Enable

Auto Internet Time Sync:  Enable

Timezone Offset: -8 hours

Apply Changes

This page allows the user to set the Real Time Clock and to select various options related to the Real Time Clock.

Selecting the Auto Daylight Savings Enable option, will cause the TC2100 to adjust the clock automatically for daylight savings. This adjustment is only applicable to North American rules and should not be used in other Countries with different rules.

The Auto Internet Time Sync causes the TC2100 to synchronize the real time clock with a standard time base via the Internet. If the TC2100 does not have Internet access via the Ethernet port, then this option will not work.

The timezone offset is specified so that the Auto Internet Time Sync function can set the TC2100 clock for local time. The timezone offset value is specified for non-DST time.

**PASSWORD Web Page**

This page is used to set the three (3) passwords for the User, Admin and System levels. This page is only visible if the user logged on with the System password.

**INTERNET Web Page**

Network settings are made on this page. Contact your network administrator for the proper settings.

**BACKUP Web Page**

**Entek** **TC2100**

Relays Events Settings Clock Internet Password Backup Logout

**BACKUP**

This screen allows you to save event settings to a file for backup purposes. You may also restore previously saved event settings.

**Save Settings:** Click [here](#) to backup current settings.

**Restore Settings:**

To save a copy of TC2100 event and exclusion settings, click on the [here](#) in the Save Settings line. You will be prompted for a filename and path. Choose a filename that will represent the current settings. The filename will end with .CSV by default. It is recommended that you do not change this since a spreadsheet program such as Excel will be able to open this file directly.

The file may be edited and viewed using a standard spreadsheet. It is important that columns are not deleted or added, and that each line begins with the keyword "event" or "exclusion".

To upload or restore the settings from a saved file to the TC2100, use the Browse button to select the file and path, then click the restore button to send it to the TC2100. It is recommended that you check the event and exclusion settings after the Restore is complete to confirm successful upload.