E2 Maintenance Overrides Setup

Overview

Scheduling and Holidays

Maintenance overrides are set up through Time Scheduling in the E2. Time Schedules are used for timed activation and deactivation of loads and for providing occupied and unoccupied building times for occupancy-driven systems (such as Sensor Control, Lighting, and HVAC).

There are four different types of schedules used by the E2. Brief descriptions of each of these are given below:

Master schedules are the main scheduling unit used by the E2. A master schedule consists of up to 15 scheduled ON/OFF event pairs, which may be programmed to occur on any individual date and time or series of dates and times. Master schedules may also drive slave schedules.

Slave schedules are similar to master schedules, except their operation is driven by a master schedule. Slave schedules, generally, are alterations of the master schedule's event times. The ON/OFF times in a slave schedule may take place either at specific defined times of the day or relative to the times given in the master schedule. For example, a master schedule may say: "The building is occupied from 8:00 a.m. to 9:00 p.m.," while one of its slave schedules says "Dim the building lights 15 minutes before the store closes."

Slave schedules may also be mastered by other slave schedules to create a series of stacked schedules.

Holiday schedules are used to tell master and slave schedules that a special day or event is occurring. For example, master schedules and their corresponding slave schedules may be programmed with special holiday events, such as "Keep all lights off during Holiday x." The holiday schedule's job is to inform the schedules to which it is connected, "Today is Holiday x."

Although holiday schedules are used exclusively by Time Scheduling applications, they are set up as individual applications separate from Time Scheduling. See the **Holiday Schedules** section in this bulletin or refer to the E2 user manual (*P/N 026-1614*) for more information.

Maintenance schedules are not schedules but Maintenance Override functions that may be made to exist within an individual master or slave schedule. Maintenance schedules are used to override the ON/OFF instructions of an individual master or slave schedule <u>temporarily. Generally, maintenance schedules are only used for one-shot applications, such as keeping the lights on an extra hour for a single night. Maintenance schedules override all other events within a master or slave schedule, including holidays.</u>

COPELAND

How Schedules Work

Events

Master schedules and slave schedules consist of up to 15 pairs of events. *Events* are simple commands to turn the schedule output either ON or OFF at a particular time within a range of days. Events are usually programmed in pairs, so that during a specified range of days the schedule output can be turned ON and OFF at a particular time within the same day. However, events may be programmed singularly (one OFF or one ON command per day). Events may be programmed to take place on any or all days from Sunday to Saturday. In addition, events may take place on any or all of four holiday (or "special") dates, called HD1, HD2, HD3, and HD4. Holiday schedules are used to tell the master or slave schedules when these special dates occur.

Absolute and Relative Events

Master schedule events always occur at specific times of the day. In other words, when you program an event pair in a master schedule, you must specify two specific times of the day the events will occur. These types of events are called absolute events.

However, when programming event times in slave schedules, you may choose to enter event times that are relative to its master schedule's ON and OFF times. These types of events are called relative events. They are programmed not as absolute times but as amounts of time before or after its master schedule's events.

For example, suppose a master schedule is set up to be ON at 8 a.m. and OFF at 9 p.m. every day of the week, and you wish to set up a slave schedule so that its output comes ON 15 minutes before the master comes ON and OFF 15 minutes after the master goes OFF. To do this, you would set up the slave schedule to come ON at -00:15 and OFF at +00:15 every day of the week. The slave schedule will automatically determine the correct ON and OFF times.

Maintenance Schedule Events

Each schedule may also be given up to three pairs of maintenance schedule events. These events start and end at specific days and times and do not continue past those dates (in other words, maintenance events cannot be made to occur weekly or annually).

Overlapping

Events may, and often do overlap within a schedule. When events overlap, the E2 uses the following priority structure, from highest to lowest:

1. Maintenance Schedule Event #1
2. Maintenance Schedule Event #2
3. Maintenance Schedule Event #3
4. Events that occur on HD1 (Holiday #1)
5. Events that occur on HD2 (Holiday #2)
6. Events that occur on HD3 (Holiday #3)
7. Events that occur on HD4 (Holiday #4)
8. Maintenance Schedule Events of a slave schedule's master schedule (if applicable).
9. Standard events within the schedule itself.

Ranges

In addition to the 15 events within a master or slave schedule, up to 12 standard ranges may be specified. Ranges are sets of dates that specify which days within the year the schedule's events will be applied. The E2 checks the list of ranges to see if the current date falls within any of the twelve possibilities; if the date does not fall within a range, none of the schedule's events will occur.

When no date ranges are specified, the schedule is considered to be active. All scheduled events will occur normally.

Holiday Schedules

A Holiday Schedule application's primary function is to pass along the day of the week to one or more master or slave schedules, and to tell these schedules when it is a holiday (HD1 - HD4). A holiday schedule determines holidays by cross-referencing the current date with its user-programmed list of holiday date ranges. During the time periods of these date ranges, the holiday schedule tells the schedules to perform the events programmed for one of the four holiday dates (HD1, HD2, HD3, or HD4).

Because multiple E2s on a network would likely use the same holiday schedules for determining special occupied and unoccupied building hours, holiday scheduling is handled by Global Data. This means the holiday schedule can be set up in one E2 and shared with all other E2s that use time scheduling.

Setting up Overrides (Lighting Example)

In this example overrides will be set up in the Lighting application. To access the Lighting application in the CX and BX models of E2:

- Log into the E2 controller.
- Press **F2** Lighting.
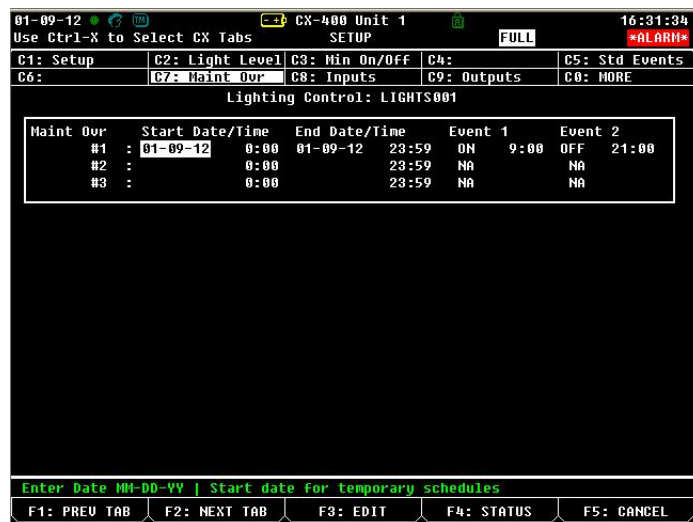- From Lighting Setup, press **F2**: Next Tab to go the Maintenance Override (Maint Ovr) screen.

Figure 1 - Maintenance Override Tab in the Lighting Application

Step 1

Set up the override "window" where the scheduled events will occur. <u>Both a window and the events </u>must be set up for the original schedule to be overridden and the new events to be recognized.

Start Date and Time

Enter the start date at which the Time Schedule will ignore its standard events and start following its maintenance events under **Start/Date.**

Enter the start time at which the Time Schedule will stop following its standard events and start using its maintenance events. If you want the temporary schedule (the maintenance override) to be followed for the entire day, leave this field set to **0:00** and the end time to **23:59**.

NOTE: <u>The **Start Time** is not the time you wish for the Time Schedule to make a state transition --it is the time when you want to start the schedule override.</u> For example, if you want to use a Maintenance Override to turn the schedule output ON at 8:00 and OFF at 15:00, you would not enter 8:00 and 15:00 in the **Start Time** and **End Time** fields. <u>You must enter those times in the **Event 1** and **Event 2** fields, and enter the times and dates for beginning and ending this override in the **Start Date/Time** and **End Date/Time** fields</u>.

In **Figure 1** and **Figure 2**, start and end times are entered in 24-hour intervals. For example, **0:00** = 12:00 a.m.

End Date and Time

Enter the date you wish the Maintenance Override to end under **End/Date.** If the Maintenance Override is only going to last one day, enter the same date in this field as is in the **Start Date** field.

Enter the end time at which the Time Schedule will stop following the Maintenance Override and start using its standard events. If you want the Maintenance Override to be followed for the entire day, leave this field set to **23:59** and the **Start Time** to **0:00.**

NOTE: <u>The **End Time** is not the time you wish for the Time Schedule to make a state transition - it is the time when you want to end the schedule override.</u> For example, if you want to use a Maintenance Override to turn the schedule output ON at 8:00 and OFF at 15:00, you would not enter 8:00 and 15:00 in the **Start Time** and **End Time** fields. <u>You must enter those times in the **Event 1** and **Event 2** fields, and enter the times and dates for beginning and ending this override in the **Start Date/Time** and **End Date/Time** fields.</u>
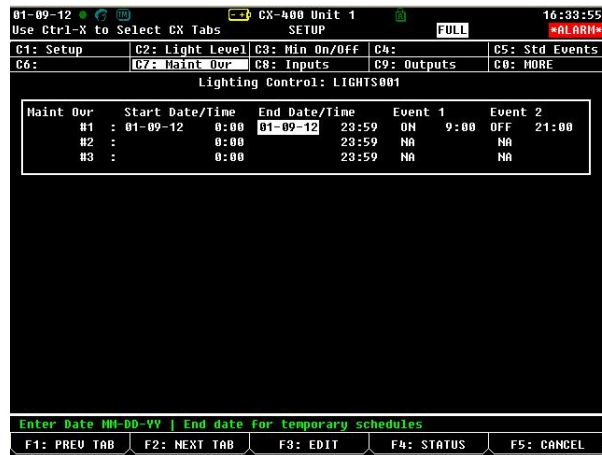

Figure 2 - Enter the End Date and Time

Step 2

Define the ON and OFF times for the new event. When new event times are defined, the original schedule with the standard events will be overridden.

Events - ON and OFF Times

Enter the time of day you wish the schedule output to be ON when the Lighting application is following this Maintenance Override.

Enter the time of day you wish the schedule output to be OFF when the Lighting application is following this Maintenance Override.

In **Figure 3**, **Event 1** (lighting) has been set up to turn ON at 9:00 a.m., and to turn OFF at 21:00 (9:00 p.m.), entered as **Event 2.**

Figure 3 - Enter the Event ON and OFF Times

Step 3

Verification

The Event ON and OFF times on the Lighting Status screen can be verified using the **Schedule Next Change** and **Schedule Last Change** parameters:

Figure 4 - Lighting Status Screen

Schedule Next Change shows the duration of time in hours and minutes until the next change is scheduled to occur. **Schedule Last Change** shows the duration of time in hours and minutes that has elapsed since the last change to the schedule occurred.

NOTE:

- Any schedule that occurs outside of the window will follow the original schedule.
- If no events are defined within the window, the current state of the light output will be followed.
- When the maintenance override window ends, the original schedule will resume.

Visit our website at **copeland.com/en-us/products/controls-monitoring-systems** for the latest technical documentation and updates.

For Technical Support call **833-409-7505** or email **ColdChain.TechnicalServices@Copeland.com**

COPELAND