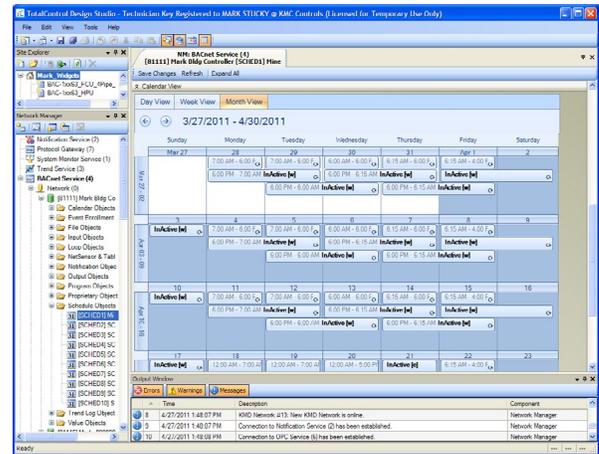


Application Guide

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Overview

In a building automation system, schedules are a convenient method for controlling recurring or future events without extensive programming. This guide has tips about using schedules in KMC BACnet controllers. (Specifics may vary among the different controller models.)

General Principles

Schedules might be created via BACstage, TotalControl Design Studio, or a web page. In a BACnet device, device schedules are maintained in schedule and calendar objects.

Use a **schedule** object dialog to enter and manage a **periodic** schedule that may recur during a range of dates. Schedules are divided into days, of which there are two types:

- Normal days are defined by the weekly schedule.
- Exception days are defined by exception schedules (and calendars).

Use a **calendar** object to enter and manage a list of **special** dates. These special dates may be holidays, special events, or other days that require special attention on a schedule.

NOTE: Be sure to specify the correct **data type** according to the controlled object. If the wrong data type is saved, the schedule

object may need to be deleted, and a new one added in its place.

Priorities of the different BACnet values are:

1. Exceptions: overrides and holidays
2. Weekly
3. Schedule Default

NOTE: See the **Sample Schedule Flowchart** section on the next page.

NOTE: Exceptions might be entered in a variety of ways: by date, by date range, by week and day, or by calendar reference.

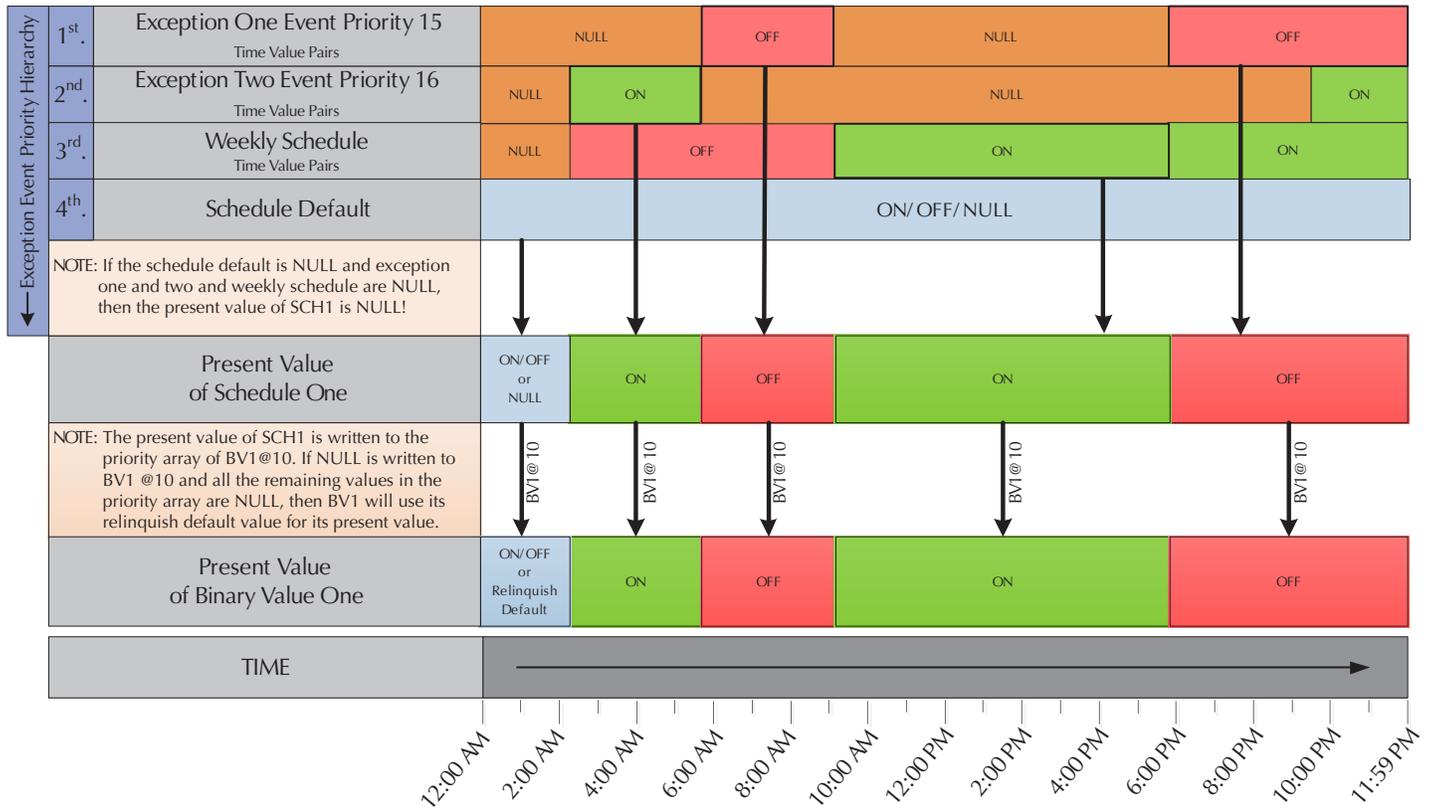
Schedule Default is the value used during times not covered during the schedule (e.g., at night). At midnight the schedule restarts with the schedule default if no value is set. If a (default) value on the schedule is **null**, objects commanded by the schedule will be relinquished at their set priority for writing. For example, a schedule writing to BO1 @ priority 8 will normally command 0 or 1 and write to the BO1's priority array @ 8. However, if the schedule default is set to null and neither the weekly nor the holiday schedules are controlling, BO1's present value will become null, and BO1 will be relinquished @ level 8 in its priority array.

For more details about creating schedules in **TotalControl** or **BACstage**, see the respective Help system.

Sample Schedule Flowchart

BACnet Binary Schedule

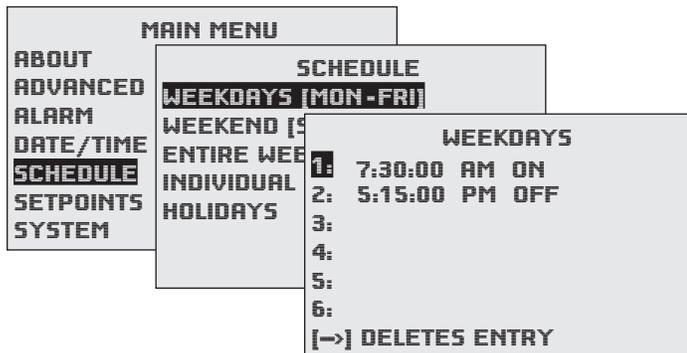
An example of Schedule One (SCH1) controlling Binary Value One (BV1)



FlexStat

Although FlexStat schedules can be modified in TotalControl, the user interface on the FlexStat LCD display is usually used to set up schedules.

Push the *Right* button, then the down button until SCHEDULE is highlighted, and then the *Enter* button.



To select the desired schedule, press:

1. *Up/Down* to move among entries.
2. *Enter* to select.
3. *Left* to go back one page.

To enter schedules for occupied (ON) and unoccupied (OFF) times, press:

1. *Right/Left* to move among days and *Enter* to select.
2. *Up/Down* to move among entries and *Enter* to select and edit.
3. *Right/Left* to move among value fields.
4. *Up/Down* to increment/decrement value.
5. *Enter* to exit value editing.
6. *Left* to move back to days or back one page.

NOTE: If a day of a week (e.g., Friday) has a different schedule than the rest, using the Weekdays menu first and then modifying that one day in the Individual Days menu may be easier (two entries) than entering schedules for each day separately in the Individual Days menu (five entries).

The Holiday entries will override the normal occupied weekly schedule entries and keep those days' settings at their setback values. Setback values are entered in the Setpoints section of the Main Menu.

For more information about configuring and operating the FlexStat, see the FlexStat's operation guide.

General Tips

Before modifying any Building Controller schedule, be sure to understand the operation of existing schedules. (See the Schedule Viewer Operation section.) This is especially true with the web interface Schedule Viewer since it is the most “automatic” of the options. If the user sets up a schedule with the Schedule Viewer, then modifies the schedule with TotalControl or Setup > Schedules > Weekly Schedule (or Exceptions Schedule) in the web interface, changes may not work if improperly done. In general, a time schedule configured with the Schedule Viewer should only be modified with the Schedule Viewer — this concerns the time scheduling portion since object references must still be configured as needed in Setup > Schedules. Conversely, a schedule configured via TotalControl may not be properly interpreted by the Schedule Viewer.

Also, generally keep “custom” schedules hidden from the Schedule Viewer (by clicking on the Admin button and configuring the user profiles).

Schedules in the BAC-A1616BC Building Controller can control objects in the Building Controller and other controllers as well.

Priorities of the different BACnet values are:

1. Exceptions: overrides (@ priority 15) and holidays (@ priority 16)
2. Weekly
3. Schedule Default

At midnight the schedule restarts with the schedule default if no value is set. If a (default) value on the schedule is **null** objects commanded by the schedule will be relinquished at their set priority for writing. For example, a schedule writing to BO1 @ priority 8 will normally command 0 or 1 and write to the BO1's priority array @ 8. However, if the schedule default is set to null and neither the weekly nor the holiday schedules are controlling, BO1's present value will become null, and BO1 will be relinquished @ level 8 in its priority array. (See the Sample Schedule Flow-chart section.)

Schedule Viewer Operation

Overview

The Schedule Viewer is available in BAC-A1616BC firmware versions 1.6.0.11 and later. The viewer has two separate views. The Weekly view shows a full week of day-to-day settings with an override provision. The Holiday view shows a full calendar year of holiday schedules.

NOTE: Linking the schedule to desired object properties must be done under “List of Object Property References” on the Schedule page (not the Schedule Viewer). An administrator must also define which schedules can be viewed and configured by which users (by clicking on the Admin button and configuring the user profiles).

Weekly View

The weekly view shows the time and values (On, Off, or Null) assigned to a particular schedule on a weekly basis. To **add** a value to a particular day, double-click the desired time slot for the day. A default value will appear and can be edited to the desired value. To resize a value block, click on the top or bottom of the block and drag the block up or down.

Time slot increments can be “zoomed” from one hour each to 15 minutes each by clicking the +/- buttons above the time column. If the time is “zoomed out” any increments smaller than the the rest will be highlighted in yellow. Time increments with values as small as one minute can also be created directly by double-clicking in a slot in the time column and typing in the desired time. The schedule's On/Off must also be adjusted for this to have an affect.

To **copy** the schedule for one day to another, click the day name at the top of the column (e.g., “Mon”), drag the day to the desired day, release the button over the new column, and click *Yes*.

An **override** is an exception that **takes precedence over the weekly and holiday values for that day only**. An override exception can be added to any day by clicking on the *Override* check box located above the desired day of the week. Once checked, a translucent copy of the weekly day will be seen over the column. Value blocks can then be adjusted by clicking on the override grid and adjusting just as in the weekly view. If an override for a particular day is no

Schedule Disable

Holiday View Selector

Current Week Selector

Current Schedule Object

Time Increment Zoom

"Hidden" Fractional Hour Increment Indicator

Typing a Fractional Hour

Schedule Viewer Button

Save Button

Date Selectors

Default Setting Selector

Holiday Indicator (from Holiday Schedule)

"Today" Indicator

On, Off, Default Selector

Override Schedule

Schedule Disable

Weekly View Selector

Calendar Object

Holiday Override Schedule (Visible When Edit Mode is On)

Schedule Disable

Weekly View Selector

Calendar Object

Holiday Override Schedule (Visible When Edit Mode is On)

Edit Mode Toggle

Year Selector

"Today" Indicator (Black)

Override Indicators (Red)

Holiday Indicators (Green)

Schedule Viewer (Weekly and Holiday Screens)

longer wanted, uncheck the override box. **A total of up to five overrides are available per schedule, and overrides in the past disappear (freeing them for use on other days) if needed for a new day. (A sixth override may be available if no holidays are used.)**

Navigate to different weeks by clicking on the *Right* or *Left* arrow buttons located at the top of the weekly view. Alternately, click the calendar icon to select a month view and click on the week desired. The weekly schedule is the same for all the viewable weeks, but some weeks may have overrides and holidays that affect only those particular days.

To **disable or enable** the schedule, check or uncheck the *Disable* box at the upper left of the screen. The status of the schedule being viewed is shown by a green "Schedule is Enabled" message or a flashing red "Schedule is Disabled" message.

Holiday View

To set up holidays:

1. Click on the *Holiday* button in the upper left of the screen.
2. Click the *Edit Mode* button to toggle it On.
3. Click on desired individual days (turning them green).

NOTE: Checking the *Show All Exceptions* box will highlight any overrides that are currently configured on the Weekly schedule. Unchecking the box will hide the overrides. This is an easy way to see if there are any conflicts in scheduling. Overrides take priority over both Weekly values and Holiday values.

4. In the Time/Override column on the left, adjust each block by clicking and dragging just as in the weekly view. Value changes are automatically saved.

NOTE: All holidays for the year use the same schedule values.

5. When done adding holidays, click on the Edit Mode button to disable the edit mode. Changes are automatically saved.

NOTE: Navigate to other schedule holiday views, if desired, by clicking on the desired schedule in the Schedule tree. View holidays in various years by clicking on the *Left* or *Right* arrow buttons.

NOTE: Up to 20 unique holidays can be included on a particular year, and consecutive days (e.g., Thursday and Friday) count as a single holiday. "Holidays" can be legal holidays, special events, and any other days that need an exception schedule for that day.

NOTE: At midnight, the schedule restarts with the schedule default if no value is set. If a (default) value on the schedule is **null** objects commanded by the schedule will be relinquished at their set priority for writing. For example, a schedule writing to BO1 @ priority 8 will normally command 0 or 1 and write to the BO1's priority array @ 8. However, if the schedule default is set to null and neither the weekly nor the holiday schedules are controlling, BO1's present value will become null, and BO1 will be relinquished @ level 8 in its priority array. (See the Sample Schedule Flowchart section.)

NOTE: **Priorities** of the different BACnet values are:

1. Exceptions: overrides (@ priority 15) and holidays (@ priority 16)
2. Weekly
3. Schedule Default

Operational Details

Weekly schedules are mapped directly to the BACnet Weekly_Schedule property in the schedule object. A change on the weekly view, such as dragging a value to a different time slot, will make a direct change to the Weekly_Schedule property.

An **override** is mapped to a BACnet Exception_Schedule property in the schedule object. Adding an override to a particular day will result in an exception entry with that particular date and time-values as seen in the override grid. Overrides are exceptions with a priority of 15.

A **holiday** is mapped to a BACnet Exception_Schedule property in the schedule object. This exception references a calendar object which in turn, contains all days associated with the holidays. The Schedule viewer automatically chooses an unused Calendar object and assigns holiday dates and date ranges (if possible). Holiday exceptions have a priority of 16. Therefore, an override will take precedence over a holiday.

Enabling a schedule via the viewer results in all wildcards being written to the Effective_Period of the schedule. **Disabling** a schedule results in Jan 1, 1900 being written to both Start and End dates.

More Information

For more information about the **Building Controller**, see the BAC-A1616BC installation and operation guide.

For more information about the **FlexStat**, see the FlexStat operation guide.

For more details about creating schedules in **TotalControl** or **BACstage**, see the respective Help system.

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