

A dimming system has three basic parts:

1. **Dimmer Modules** that dim the incandescent lighting circuits.
2. **Dimmer Control Electronics** that regulate the dimmers in the dimmer modules as well as any fluorescent dimming ballasts.
3. **Control Stations** that signal the dimmer control electronics to adjust dim levels or turn circuits ON or OFF.

DIMMER MODULES

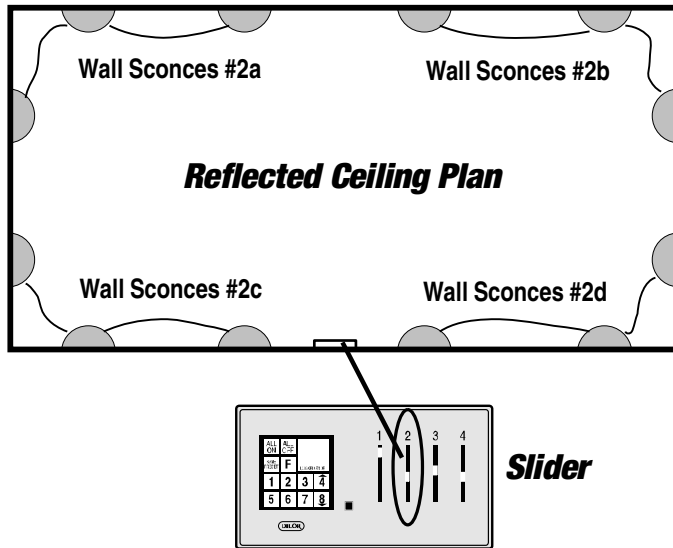
- The dimmer modules regulate the power that is fed to the incandescent lighting loads. A dimmer module is composed of an input breaker, solid state relay, dimmer(s) and the output breaker.
- There can be more than 1 dimmer in a dimmer module and more than 1 circuit can be connected to a dimmer.
- Dilor manufactures a series of dimmer modules called the ALD Series Dimmers. There are 3 module sizes:
 - ALD-160 Single 6.0 kw dimmer module
 - ALD-224 Dual 2.4 kw dimmer module
 - ALD-412 Quad 1.2 kw dimmer module

DIMMER CONTROL ELECTRONICS

- The dimmer control electronics govern the level that the dimmers, or the fluorescent dimming ballasts, operate at. The dimmer control electronics accept signals from the control stations and make the appropriate changes to the dimming levels.
- Features such as preset controls are stored in the control electronics and are activated as required.
- The Dilor ALC3 Digital Control System is a full-featured system that is targeted to satisfy the requirements of any architectural lighting application.

CONTROL STATIONS

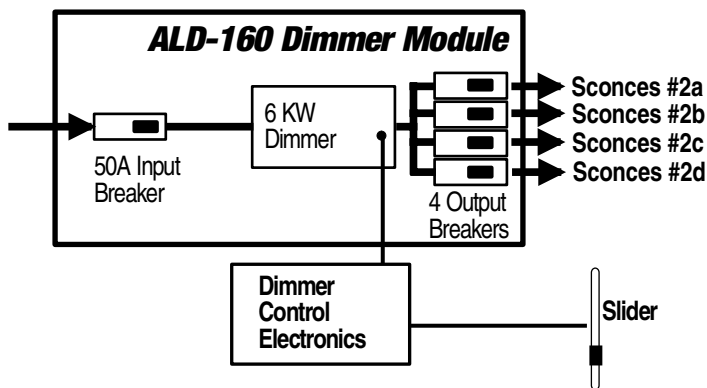
- The control stations are the user interface. Sliders for light level adjustment and ON/OFF buttons are the fundamental controls requires for any dimming system.
- Accessory features like presets are often convenient for larger or more complex applications.
- The Dilor ALC3 Control Stations are available in a variety of configurations and a wide range of sizes.



OCCUPANT ISSUES

- A slider control is usually expected to operate one group of lights. Consider the reflected ceiling plan to the left. There is a slider for the ceiling lights and another slider for the wall sconce lights. Even though there are 4 circuits servicing the wall sconce lights, 1 slider controls all of them.
- Issues such as 1 slider controlling several lighting circuits are transparent to the occupant. In the example at the left, all of the wall sconces will dim simultaneously and will have the same lighting level even though several circuits are actually involved.

Multi-Circuit Control: Method A



TECHNICAL ISSUES

- A slider operates a control channel in the dimmer control electronics. Sliders at different locations can operate the same control channel. The control channel can operate any number of dimmers as a group.
- Although transparent to the occupant, the number of circuits operated by a slider (channel) is important. Controlling 1 circuit with 1 slider is fairly simple. Controlling 4 circuits with 1 slider is more complex.
- There are 2 methods available to control several circuits with one slider (channel):

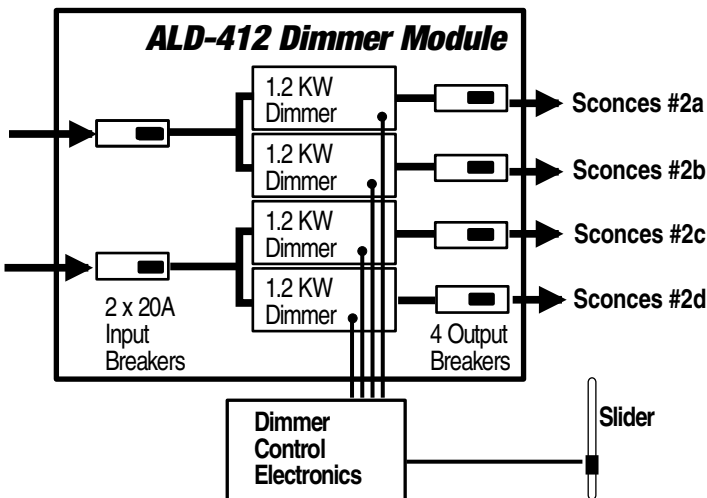
METHOD A

Use 1 large dimmer that can power several circuits. The slider controls a channel that controls 1 dimmer.

METHOD B

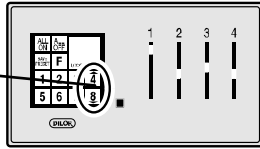
Use 4 small dimmers, each powering a circuit. The slider controls a channel that is electronically patched to control several dimmers.

Multi-Circuit Control: Method B

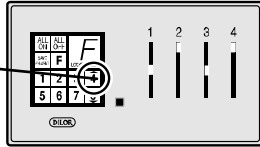


- **METHOD B** is more costly because there are more dimmers required than for **METHOD A**. However, some applications require the channels to be re-assigned to include/exclude certain dimmers (eg: dividable rooms).

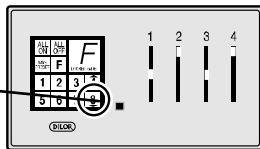
Proportional Master Controls



Increase Intensity, all Channels



Decrease Intensity, all Channels



Proportional Master Controls

PROPORTIONAL MASTER

- A proportional master controls a group of sliders in proportion.
- Proportional masters are used to brighten or dim the lights while maintaining the same balance of lighting levels that the sliders are set to.

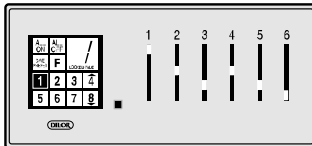
- The Dilor ALC3 Control Stations use up and down pushbuttons as proportional master controls, as shown at left.

Pressing and holding the **4** button will increase the lighting levels of all channels up to the desired intensity.

Pressing and holding the **8** button will decrease, or dim, the lighting levels of all channels down to the desired intensity.

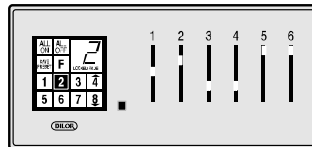
All channels will retain the relative intensity set by their sliders. In the example at left, channels 2 and 4 will always be brighter than channels 1 and 3, since their slider levels are higher.

- Slider 1 = 100%
- Slider 2 = 50%
- Slider 3 = 25%
- Slider 4 = 50%
- Slider 5 = 25%
- Slider 6 = 0%



Scene 1 (Preset #1)

- Slider 1 = 50%
- Slider 2 = 75%
- Slider 3 = 25%
- Slider 4 = 25%
- Slider 5 = 100%
- Slider 6 = 100%



Scene 2 (Preset #2)

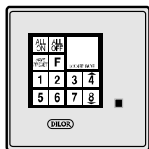
PRESETS & FADE RATES

- If a room has several sliders, there are usually a few favorite combinations of lighting levels that are called 'scenes'. In order to actuate a preset scene, a numbered button on the Control Station signals the Dimmer Control Electronics to adjust all the dimmers to the desired levels.

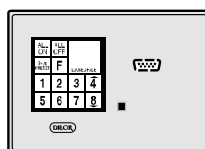
- The 'fade rate' is the speed at which the lighting levels change to reach the desired scene. Fade rates can be from 1 second to 15 minutes. Short fade rates are used in applications where a lighting change is required quickly. Long fade rates are used in mood lighting applications such as restaurants and lobbies where the lights are to change gradually without occupants noticing.

- To program a preset, sliders are required to adjust the light levels. Once the levels are set on the sliders, they are saved as a preset. It is best that the sliders are in the same room as the lights controlled by the preset, so that the lighting levels can be viewed while setting the presets.

- Preset controls are very convenient, and are often preferable over slider controls for the users. Dilor ALC3 Control Stations, called *Preset Activation Stations*, are available that have only presets. They may contain a hidden socket, or a wall socket can be installed, for connecting a portable slider station to program presets.



Preset Activation Station

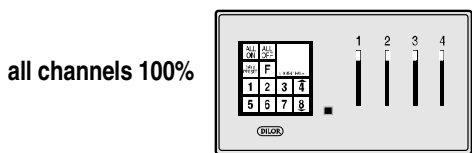


Station with Hidden Socket (under removable face plate)

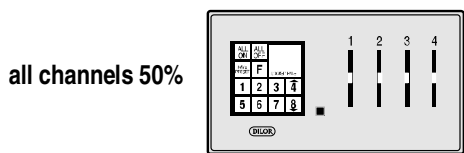


Wall Socket for Portable Station

Preset Activation Station



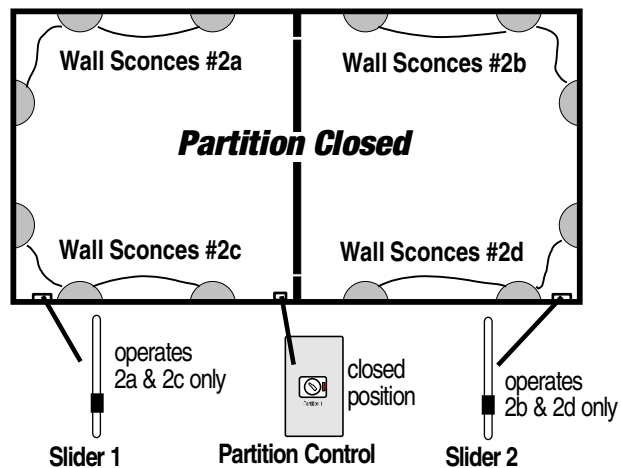
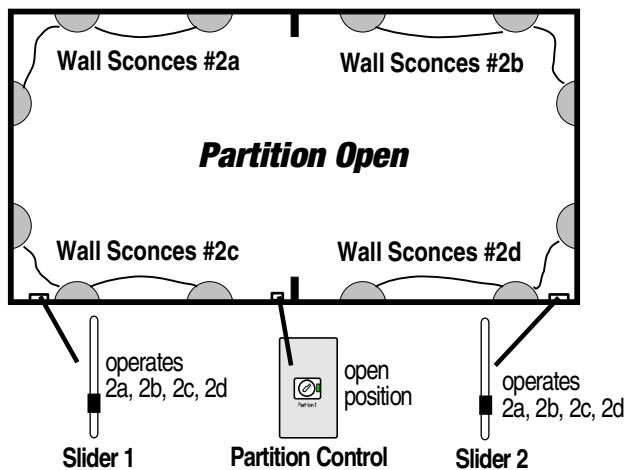
Station 1



Station 2

TAKE CONTROL

- In larger rooms, there can be more than one control station. Only 1 station can be in control of the room's dimmers at any given moment. When a button or a slider on a station is touched, that station 'takes control' and all of the room lights change to its dimming levels.
- In the example at left there are two control stations for the same room. When a slider on Station 1 is touched, all of the room lights go to 100%. When a slider on Station 2 is touched, all of the room lights go to 50%. If a preset button on either station is touched, the lights go to that preset's levels.
- Moving a slider on a control station allows you to 'take control' of that channel. Once the slider is moved, the channel's lights are under control of the slider and will immediately change to the intensity you set on the slider.



DIVIDABLE ROOMS

- Large dividable rooms, such as ballrooms or banquet rooms, require the slider (channel) assignments to be changed.
- In the dividable room example to the left, there are two sliders for the wall sconces, one at each end of the room. When the room partition is open, each slider must operate ALL of the wall sconces together. When the partition is closed and the room is divided in half, each slider must operate only the sconces located in its half.
- In the Dilor ALC3 System, dividable control is accomplished by a keyswitch wall control. The keyswitch, by its position, signals the dimmer control electronics if the room divider is open or closed.