

## Computerized Control Systems – The What, Why and How

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### The What

A *control* in lighting lingo is a switch that can turn lighting off and on, or even dim lighting. A *control system* then regulates more than one fixture. A simple control system is the switch you flick when entering a room that regulates all the lighting in that room.

When a lighting installation begins to get sophisticated, it can offer many choices of lights, levels of light and equipment by which you can regulate different activities. The light you desire in a dining room for an evening soiree is quite different from the light needed the next morning to clean this room.

Have you been in an interior complex and confronted with so many switches and dimmers that it is very difficult to select which switch to hit and then remember it for the next time?

### The Why

At this level of interior or complex of interiors, you have reached the point at which a computerized control system is a wise consideration. In this day of technology, it is obvious that a control system can be automated and computer-driven; this is the *computerized control system* (CCS). As one would expect, the options and combinations are as numerous as one's imagination can conjure.

Should you consider a computerized control system? If your facility is more than a simple one-to-one on or off, it can probably become an effective tool for saving time and energy.

### The How

Let us show you how a CCS works. Take a given house, apartment or office complex into which we will hypothetically install a CCS. Here are some of the things it can do for us.

We first have the option to program a number of "*globals*." A global is a switch (button) that controls every circuit in the total complex. Thus, we might have everything turned off or everything turned on during specific times of the day/evening, to include the security system, intrusion detection system and/or as many things as meet your needs.

The next level of switching is a "*scene*." A scene switch (button) affects a group of lights that set a particular function but not the entire system. You enter your house and would like to go to your office. You push the button that controls all light-

ing to get you into your office. Once there, you wish to work at your computer, and another scene button is pushed to activate a series of settings. This can include turning on the computer and all the lights and outlets, as well as setting the light level of each. There is no limit to the number of scenes that may be programmed and, of course, each scene button can be applied to different locations. A bank of buttons is called a "*station*." Once programmed, each button is engraved with its name for easy identification.

Lastly, in the CCS system there are individual switches (buttons) that control individual fixtures or equipment. That computer in your office can be part of the office scene ... it comes on when that scene is set to the "on" position. It can also have an individual control which allows it to be turned off while the rest of the scene remains turned "on." These, then, are the various methods of control in this system.

As stated, not only do computer controls affect fixtures, but they also affect electrical equipment, e.g., TV, radio, tape recorder, preset camera, motorized window treatment, security system. In the kitchen, controls may run the coffee maker, stove, oven, microwave, etc. In fact, any item that runs electrically can and would be part of the control system. The CCS is implemented using time and date as well as memory. For example, you can set your alarm system to repeat all the functions it would normally perform when you're at home. So, if you were away for a week, you could reset the system to duplicate all the functions it performed from the previous week; or if you preferred for the week prior to that.



The CCS may include a modem which allows even greater flexibility. By telephone you may change any global, scene or individual setting. So, while you are away you remember that you forgot to set the CCS to close the drapery at dusk, you simply dial the modem and set the forgotten item. Equally important, the manufacturer can access the CCS via modem for testing, should malfunctions arise, and run diagnostics are required to fix such.

A few examples of the scenes that a CCS is programmed to accomplish:

Turn on the coffeemaker, start the toaster, start your TV for the news, and have all the appropriate lights switched on at the appropriate time as you enter the breakfast room. It can even know that all this happens at different hours on Saturday and Sunday, using a different its date and time functionality.

If there is a robbery not only would the security system activate with all its bells and whistles, but it would activate a global to either turn on or off pre-selected lighting and other equipment, as well as reset all locks. It might (as an extreme example) activate a prerecorded tape that spoke directly to the thief with a given message, such as "You know, of course, you are being observed, and the police are on their

way!" It could display pictures of the thief on monitors from an in-house video strategically placed for the thief to see. This could create a little disturbing scene for that unfortunate fellow.

It can open and close drapery for preset times or based on extreme room temperatures.

It can be programmed to turn lighting on or off, based on the amount of natural light present in an area with windows.

In short, there is very little that cannot become a function of a good CCS. This then is what is often referred to as "the smart interior."

To understand how a CCS operates helps one to optimize the variety of tasks the system can perform. When installing a CCS, the interior is not wired in the conventional manner, i.e., wiring interrupted with switches. The "primary" is the normal power supply that services fixtures and outlets, but without any accommodation for any switch or control. The control system is a low voltage parallel system which interfaces with the primary system at the relay and dimmer panels. This is where the control interacts with every outlet and fixture as a separate item. The low voltage system from the relay and dimmer panels

### Your Control Station/Keypad Control Can Be "Off the Wall" ...



Photos courtesy of Vantage Controls

is fed to one or more computer controls which, in turn, feeds out to control stations.

The newest development for control systems is a wireless remote, connected by signals. This saves considerably on the expense of wiring and can be even more flexible.

This then is a simple overview of a computerized control system. We have only given a breadth of examples of what such a system can achieve. Naturally the more complicated the system, the more

### Your Control Can Not Only Be "Off the Wall" But Wireless



Photos courtesy of Vantage Controls

### The Hardware Behind the Button



The "Smart" System can synchronize the use of video, sound equipment, lighting, etc.



This sensor reads the amount of light and either adds more light or cuts off lights to maintain appropriate, predetermined light levels.



Heating and Cooling Control



The most simple method of retrofit is this "plug-in" remote controller, which comes as a "relay" with "On/Off" or it can come as a "Dimmer with On/Off."

Photos courtesy of Vantage Controls

expensive; but even in a relatively simple installation, one can achieve higher economical use of energy over one's manmade environment, while still maintaining control ■

#### About the Author

Bill Joel received his B.A. from Brown University with creative design courses at the Rhode Island School of Design. He did further studies in interior and lighting

design at the New York School of Design and Pratt Institute.

A professional member of AID-ASID from 1963 to 1993, Bill received a Fellowship from ASID in 1978. In 1992, he became one of the first Certified Interior Designers of the Commonwealth of Virginia. His work experience includes residential, commercial and institutional remodeling and new structures, as well as a number of feasibility studies, all with an

emphasis on effective, energy-conscious, quality-lit environments. For more details, consult *Marquis Who's Who in America*. Bill has also served as a member of the FIDER Board of Visitors and Accreditation Committee, Foundation for Interior Design Education and Research; set and lighting designer for the Richmond Forum and Barksdale Theatre; and guest speaker on various radio and TV spots. Bill may be reached at [Rich@RichArtCo.com](mailto:Rich@RichArtCo.com).