

# CHOOSING THE CORRECT DIMMER

Not all dimmers are created equal!

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Panel design can be a daunting task. For many it is the most enjoyable part of an aircraft project; however, many mistakes can be made if not researched carefully. Choosing the correct dimmer for a panel is one of the things that is often overlooked. The two main types of dimmers used in aircraft are voltage-regulated and PWM (Pulse-Width Modulated) dimmers. Superior Panel Technology manufactures both of these types of dimmers. There are pros and cons to both, but with a little thought you can have the very best results possible.

Let's start with the voltage-regulated dimmer. This dimmer has been around for a long time and is a giant improvement over the old rheostats. The number one reason to use a voltage-regulated dimmer is when you want to dim more than one type of light source. For example, you have LED's, electroluminescent and incandescent lamps that you want to dim on the same circuit. The voltage-regulated dimmer will do the best job of giving a linear range of dimming to these different types of lighting. One such case I see frequently is in the instrument-lighting circuit. Superior Panel Technology offers 4 packages of voltage-regulated dimmers: 1, 2, 3 and 4 circuit units complete with on/off switch. One drawback with a voltage-regulated dimmer is that some heat is dissipated though a heat sink when dimming at the lower end of the range. This heat is wasted energy. One other drawback is that the voltage-regulated dimmer typically weighs a few ounces more than the PWM dimmer.

The PWM dimmer could be considered the newcomer to aircraft-light dimming. It is important not to follow the misconception that all PWM dimmers are created equal!! For example, there are some high-end PWM dimmers on the market that do not work well with electroluminescent lighting systems. In order to provide the very best result using PWM dimmers, Superior Panel Technology has developed three different models. The **SPT LED/EL** unit is the one to use for LEDs and Electroluminescent lighting. The LED/EL unit was specifically designed to be used with LEDs and/or electroluminescent light sources and is offered with or without a switch. This unit will give precise control through the full range of dimming for these lighting systems.

The **SPT Heavy Duty** version is a great all-around dimming unit capable of handling over 100 watts. The SPT Heavy Duty unit works great for all incandescent bulbs, as well as for small blower motors you might use for an AC/heater or fresh air. Although this unit will work with LEDs, it may have a small on/off step at the very lowest setting, which is not a problem for most installations.

The **SPT Extreme Heavy-Duty PWM** unit is a real powerhouse. You can dim your landing light with this little sucker. It is capable of handling 400 watts @ 28v and 200 watts @ 14v. It is offered only without a switch. All of SPT's PWM dimmers come with the industry's best 5-year warranty.

The PWM dimmers are very lightweight, powerful, low heat, easy-to-wire and the most energy efficient. SPT PWM dimmers offer the smallest profile for a switchable PWM dimmer on the market today. The very best panel designs allow individual control of each lighting system. A great panel layout could have a voltage-regulated dimmer for instrument lighting if it has multiple types of lights and a separate PWM dimmer for radios, LED map light, glare-shield lighting and backlighting of panel nomenclature using SPT's fiber-optic product called FiberLites.

One final point, we are sometimes asked "Why do you offer dimmers both with and without a switch?" It is really a personal preference. On planes that have 3-4 or more dimmers, it is convenient to have a master lighting-switch. That way, the lighting intensity can be set and left alone and you would simply switch on the interior-lighting master switch. With a master switch, it is not necessary to have individual switches. On the other hand, if you have only one or two dimmers, it is just as easy to use the ones with a switch and turn them off/on as needed.

Flying at night has its challenges, but having good lighting that is properly adjusted makes a big difference on safety, fatigue and pilot workload. I remember taking a night IFR instructional flight and my instructor telling me "Wow, you have a beautifully lit panel; anyone could fly night IFR in this." I knew he was kidding but he was right about one thing—having a well-lit panel makes flying easier, safer and more enjoyable!

We hope that you find this information informative.