

## Q&A: NFPA 72 Light Pulse Duration Requirements & Latest Solutions

**Q:** What are the NFPA light pulse duration codes?

**A:** The National Fire Protection Association (NFPA) updated visual signal light pulse characteristics in the 2016 edition of *NFPA 72 National Fire Alarm and Signaling Code*. The light pulse duration was reduced from 200 milliseconds (0.2 seconds) to 20 milliseconds (0.02 seconds) in the 2016 edition. In the 2019 edition, 18.5.3.2 states the maximum light pulse duration shall be 20 milliseconds, except as permitted in 18.5.3.3. In 18.5.3.3, light pulse durations greater than 20 milliseconds, but not greater than 100 milliseconds, shall be permitted where the alerting capability of the visual notification appliance is demonstrated to be equal to or greater than visual notification appliances with a 20-millisecond pulse duration.

**Q:** Why is the pulse duration important for fire alarm signaling?

**A:** The shorter light pulse requires a much brighter light output to reach the required candela rating. The latest research shows that the brighter light output (the high peak intensity) was found to be more effective at alerting people who were not looking directly at the strobe (indirect viewing). It also indicates that the peak level of light must be equivalent to a visual signal appliance with a pulse width of 20 ms or less to be used for both direct and indirect applications.

**Q:** What is the time interval of a visual signal appliance light pulse width?

**A:** The light pulse width is the time interval between initial (rising) and final (falling) edge of a pulsing light (on time) measured at 10 percent of maximum signal or peak intensity.

**Q:** When did these codes go into effect?

**A:** NFPA 72 2016 went into effect January 1, 2016.

**Q:** What is the responsibility of the integrator?

**A:** The light pulse duration (pulse width) is part of the listing process under UL 1971 for manufacturers. However, it does not necessitate any special attention from installers, inspectors or designers other than verifying that the device is listed to comply with the UL

1971 requirement. Installers can check the product label and/or verify that the product meets the 20 ms requirement in the installation instructions.

**Q:** Can you mix xenon visual signal appliances and LED devices in the same field of view?

**A:** Yes, by meeting the 20 ms light pulse duration requirement and passing a series of compatibility tests, the new Wheelock Eluxa notification appliances and Exceder LED3 devices by Eaton have been listed by UL to allow mixing of Wheelock xenon devices in the same field of view. This means Eluxa devices are backward compatible with one of the largest installed bases in the country.

**Q:** Are the Eluxa strobes compatible with OEM fire panels?

**A:** Yes, the Eluxa product line has been UL/ULC listed as compatible with all fire alarm control panels and accessories that have been determined to be compatible with Wheelock RSS strobe-based products.

Underwriters Laboratories (UL) confirms that the Eluxa product line has been investigated and meets NFPA's 20 millisecond light pulse duration code requirements. In addition, the Wheelock Eluxa product line (ELHS, ELST, ELHN, ELSPST, ELST, ELFHS, ELFHN) has been listed as compatible with all Fire Alarm Control Panels and accessories that have been determined to be compatible with Wheelock RSS-strobe based products including the RSS, CH, E, EH, ET,ST,HS,MT,S8, SA, STH and Z Series.

**Q:** Will the new Eluxa model numbers be listed in the OEM compatibility document?

**A:** No, not necessarily. The Eluxa product line has been listed by UL to be backward compatible with Wheelock xenon RSS strobe-based products and Exceder LED3. Therefore, any FACP that is listed with any one of Eaton's RSS strobe-based products has been determined to be compatible with the Eluxa notification appliances.

**Q:** What are the advantages of using LED as a light source for visual signal appliances?

**A:** As in most industries, LEDs provide high energy efficient technology, and LED strobes lead the industry in low current draw, which can provide substantial overall system cost savings. This includes reduction in wire size, fewer power supplies, and less battery standby capacity required for the same coverage area. LED technology as the light source for strobes is an innovative approach in more ways than just cost savings. The LED light engine can closely control and manage the light source and output. It maximizes human response to a light pulse and optimizes light based on parameters of area and perception of the human eye. LED technology provides a way to manage this engine and thus optimizes light output. In comparison, with the xenon strobes, light can't be controlled. It is flash only. In addition, light source life of the LED is 50,000 to 100,000 hours vs. the xenon strobe with 1000 to 5000 hours of life, assuming steady operation.

**Q:** Where can I find additional information on NFPA 72 2019 Visual Signal Appliance Light Pulse Duration Codes and Eaton's latest product lines that comply with these codes?

**A:** Review NFPA 72 2019 *National Fire Alarm and Signaling Code Handbook* (18.5.3), visit [Eaton.com/massnotification](http://Eaton.com/massnotification), email [LifeSafety@Eaton.com](mailto:LifeSafety@Eaton.com) or speak to your local sales representative.