APPLICATION NOTE #10

ADVANCED SMART FLASH

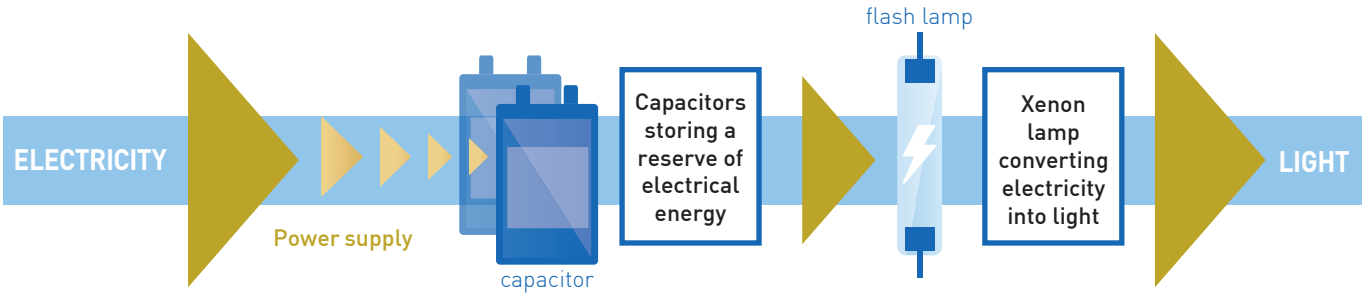
For traffic enforcement, a flash is required to correctly expose a scene and to freeze motion. Beyond the generation of powerful light in a short pulse, other functionalities are often demanded to meet the requirements of enforcement systems, such as:

- fast repetition of flashes,
- reduced loading time,
- control and adjustment of the light intensity,
- system interface.

In this document, we will detail value added features which can be demanded from a Xenon Flash to better serve traffic enforcement applications.

Quick technical background

Simplified diagram of a Xenon Flash



What can be the major differences between an advanced Xenon Flash and a standard one?

Features	Advanced Smart Xenon Flash	Standard Xenon Flash
Partial or total discharge	Partial discharge means burst capabilities, better stability of light emission over lifespan and, last but not least, dynamic adjustment of light intensity	Total discharge is more stressful for capacitors reducing their lifespan and increasing constraints on the power supply (peak current, recharge time)
Trigger inputs	Trigger inputs can be offered in various formats (Dry Contact, TTL) and different inputs can generate different light intensities as programmed levels	One single input signal to trigger the light emission without any control on the latency between trigger and actual emission
Embedded microcontroller	Different energy levels can be managed as well as supervision of flash parameters related to actual light emission, capacitors recharge status, temperature...	No supervision nor control of the energy transfer between the capacitors and the lamp
Interface	Thanks to standard communication protocol such as RS232, system can have a full control of the flash device, read all status and manage a dynamic adjustment of the light intensity	No remote supervision nor control of the device

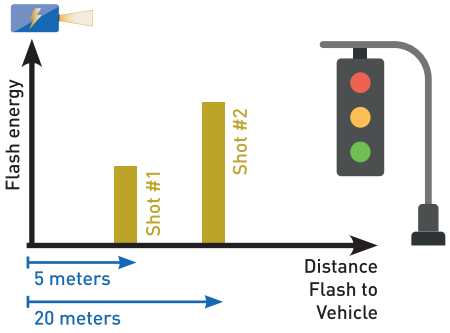
Typical enforcement scenario requiring advanced flash features

Scenario #1: multiple vehicles close to each other

Successive cars

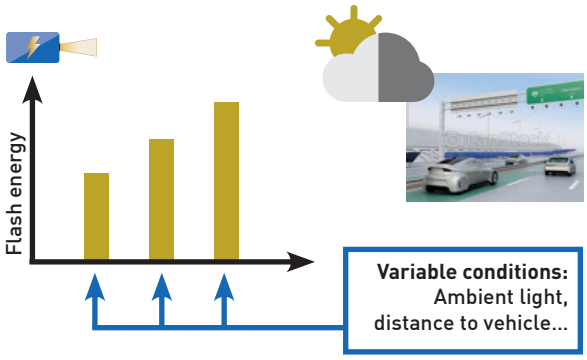
For speed enforcement scenario, system shall be capable of catching fast target vehicules. Advanced Xenon flash are able to generate burst of high power shots 10 ms apart.

Scenario #2: same vehicle but different distances



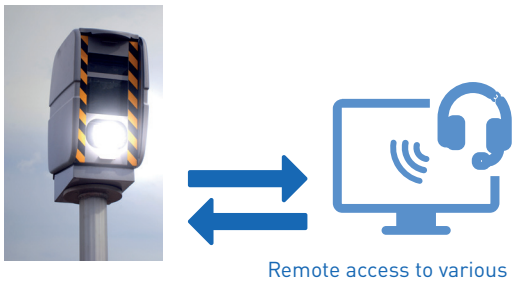
For red-light enforcement scenario, a system may have to catch the same vehicle at two or more distances: at a red-light signal and across a junction. The advanced flash device can be set so that successive shots are emitted at different light power and provide even resulting exposure on pictures.

Scenario #3: dynamic adjustment of emitted light



To adapt exposure parameters to external conditions such as ambient light or distance between camera and car, an enforcement system may use energy adjustment capabilities of an advanced flash. In less than 10 ms, the flash can illuminate the car at a requested energy level thanks to a standard communication interface.

Scenario #4: remote system maintenance



Remote access to various parameters of advanced xenon flash

Thanks to communication interface a flash device can be supervised remotely. This enables remote diagnostics, preventive maintenance scheduling or operating parameters adjustment.

Enforcement systems can integrate innovative features thanks to Advanced Smart Flash devices capabilities

- **successive vehicles capture**
- **preventive maintenance**
- **remote control**
- **adaptability to ambient light and distance**