

Digital Enclosure Control Technology

Outdoor Protection for your Indoor Equipment



By Frank Scarlatta

Do you have an outdoor application for special effects lighting, video or projections? If you do, you may want to check out the Tempest Lighting solutions to your problems. Tempest Lighting – Proven, Reliable, Time-Tested, and Recommended.

A difference you can't afford to ignore

- What makes a Tempest Lighting Enclosure so reliable and dependable?
- Why do all - yes I said all - major lighting and special effects equipment manufacturers recommend or prefer use of their equipment inside Tempest Enclosures?
- Why are lamps and sensitive electronics lasting longer than expected when equipment is protected by Tempest Lighting enclosures?
- Why do end users spend less maintenance time and money on their expensive lighting and projection equipment when they are installed inside Tempest Enclosures?



A Tempest Lighting Enclosure has a lot going for it. Quality workmanship; exceptional engineering, planning and testing; design parameters and concepts by industry leaders; and customized manufacturing – each unit is hand build and assembled. But possibly the single most important feature of the Tempest Enclosure is a patented technology and electronics package known as **DEC – Digital Enclosure Control System**.

The **DEC** is the brain and heart of the Tempest Enclosure and is standard on all Tempest Enclosures with the exception of Storm. This unique climate control package is the reason Tempest stands alone in the outdoor enclosure world in protecting indoor rated equipment from the hostile outdoor environment.

DEC is a custom programmed micro controlled processor and electronics package that controls all equipment and functions within the enclosure. In addition to the physical housing and dome or lens, a typical Tempest Enclosure includes fans for cooling and air handling, steel frame for mounting and structural integrity, and filtered intake air ducts. The **DEC** adds the sophistication and processing power that sets the enclosure apart in the industry.



DEC Operation

The **DEC** consists of a programmable temperature control microprocessor with digital display, heater coil for condensation and moisture control, thermocouple for temperature sensing, power relay for output power to the fixture, and related electronics and components to control the fans and monitor internal temperature operations. Fully automated and ready to operated from the factory, the **DEC** is self contained and requires minimum user interface unless reprogramming

Standby Mode

With the enclosure receiving input power 24hrs/7days, the **DEC** is designed to keep the internal climate of the enclosure at optimum operating conditions. During the “standby” mode – when the fixture is off – the **DEC** pulses one input fan and one output fan on and off every 7-10 seconds for approx 2-3 second duration. At the same time, the 750 watt heater positioned behind the intake fan is switched on/off for the same duration.

With these two actions, the air inside the enclosure is “refreshed” (fans) and dried (heater). Condensation and moisture is not allowed to form inside the dome or enclosure, and the “climate” is maintained, even while the fixture is not in use.

The **DEC** also monitors both temperature inside the enclosure (thermocouple) and the operating electric input current draw to the enclosure. When and if there is a change to either, the **DEC** will recognize the changes and switch the operation to OPERATION MODE.



Operation Mode

With the enclosure in full operating mode and the fixture or projector on, the **DEC** processor switches all fans – both intake and exhaust configurations – to full on operation, thereby creating high volume of air movement thru the enclosure. The heater is switched off as the heat from the fixture is now drying any humidity from the intake air.

The thermocouple registers the internal operating temperature of the enclosure with the **DEC** monitoring the temperature range. **DEC** also controls input power to the fixture thru a relay operation. If the designated high

temperature safety threshold of the fixture is met or exceeded despite the high velocity air cooling by the fans, the **DEC** will switch off power to the fixture until normal operating temperature is restored. At that time, the relay will be closed and the operator can re-strike the fixture.

At all times, intake air is filtered, allowing for clean air into the enclosure. The reasonable dust free environment within the enclosure helps keep maintenance on the projector or fixture to a minimum. Lenses, lamps and moving parts are kept clean and free of debris and residue.

The **DEC** will maintain full operation while the fixture or projector is on and temperature and current draw is up. Upon shutdown of the device, the **DEC** will switch automatically back to Standby mode.

Coming Soon – Upgrade to DEC 3

Next generation lighting systems incorporate logic and feedback from various devices into the control network. To accommodate the move to device management, the entertainment industry is establishing a standard protocol called RDM, or Remote Device Management.

Tempest Lighting will soon offer optional RDM functionality for most enclosures. With the RDM upgrade to our DEC 3, and with the use of third party control capability to monitor the system, Tempest enclosures can provide feedback information as to the condition and operation of the enclosure. This feedback can include many system parameters including: Fixture Current; Enclosure Temperature; Ambient Temperature; Heater on/off; Fans on/off; Fixture Status plus an Event Log, including operations and errors.

DEC 3 represents a sophisticated upgrade for the discerning practitioner requiring feedback from remote inaccessible locations or high priority operational needs. Call Tempest Lighting to check availability.

Tempest Lighting and **DEC** – A combination that keeps you looking good, and saves you money.