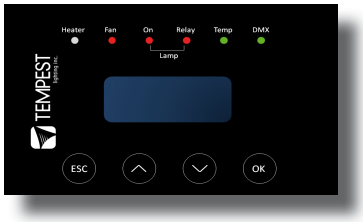
TEMPEST lighting inc.

# **Tornado** Moving Light Enclosures

*The all-new Tornado 2300 - a safe haven for all known 1200W and 1500W moving head luminaires...*

*Touchdown! The Tempest Tornado is a weather-resistant enclosure designed to provide optimum lifetime and operating conditions for high-powered automated luminaires in exterior locations.*

And now, Tornado comes with Tempest's revolutionary DEC3™ control system - all the security and reliability of Digital Enclosure Control generations 1 and 2, but now featuring DMX control, user-definable temperature and humidity settings, and a nifty new control panel, so you know exactly what's going on inside every enclosure.




Best of all, DEC3 is shipping now with optional RDM remote monitoring, so you know exactly what's going on — without climbing a ladder. DEC3 even features a lamp hour counter, so you know when to relamp — before the lights go out...

Tornado enclosures comprise a clear dome, in which the luminaire has complete freedom of movement, and an aluminum base, containing Tempest's patented Digital Enclosure Control electronics, fans and heating elements.

By monitoring the interior temperature and humidity of the enclosure, DEC3 controls humidity and dew point, eliminating condensation and corrosion, 24/7. When the fixture is running, Tornado's powerful fans exchange the filtered air inside the enclosure every 3-4 seconds, ensuring long lamp and equipment life.

Tornado 2300 has been tested and approved for most 1200W and 1500W moving head luminaires, and the list is growing all the time. If your light is not on the list, we'll test it and approve it as part of your project.

Tornados have been operating for years in deserts, through winters, and at sea, all over the world.

Now it's your turn.

**Construction**

Exterior grade powder coated aluminum and stainless steel. Acrylic optically clear 250° x 360° projection globe, 36" (915mm) diameter.

**For Luminaire Type:**
*(these fixtures have been tested and approved with this enclosure – call us for fixtures not on this list)*

**2050**
All Moving heads below 300W

**2000**
All 500-700W Moving Heads
Robe 3000DT

**2200**
Vari-Lite VL2500
Vari-Lite VL2500W

**2300**
Martin MAC 2000
Martin MAC III
Robe 1200
Robe 2500E AT
Vari-Lite VL3000/3000W
Vari-Lite VL3500/3500W
Clay Paky Alpha Spot 1200
Clay Paky Alpha Wash 1200
Clay Paky Alpha Beam 1500
DTS XR3000

**2400**
High End Showgun, Showbeam
High End DL3
Robe 7000DT

**Mounting**

Two parallel 1 5/8" x 13/16" Unistrut. Mount with suitable standard Unistrut hardware, or order 4 sets per enclosure of any of the following Tempest mounting kits. Tempest kits are made from stainless steel and aluminum hardware.

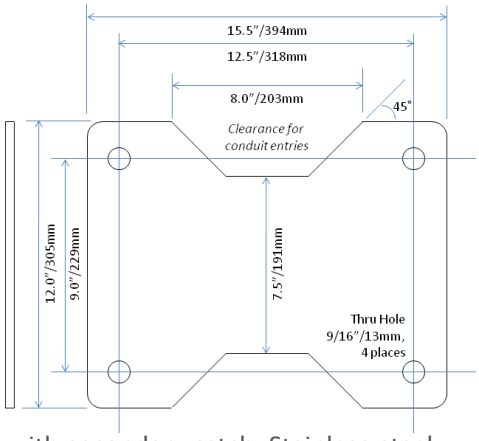
***4900.MB*** *Stainless Steel Unistrut 1/2" channel nut, bolt and washer. Four required per enclosure.*

***4900.MM*** *Same, M12 metric hardware*

***4900.MC*** *Stainless Steel Unistrut channel nut, bolt and pipe clamp, for pipes 1.5" (38mm) to 2" (50mm) OD. Four required per enclosure.*

For Pole Mounting, use this drawing to fabricate a mounting plate atop the pole.
All mounting structures must be approved to local engineering and safety codes.

*Tempest Lighting, Inc. accepts no responsibility whatsoever for damages arising from deficient mounting design or installation by others.*




**Security**

4 Heavy-Duty stainless steel key draw latches, 2 with secondary catch. Stainless steel eyebolt for safety bond. Order Marine Latch Option **2000.ML** for bolt-down marine grade latches.

**Finish**

Exterior grade epoxy powder coat, charcoal metallic. Custom colors available to special order. All RAL colors and most Pantone colors can be matched as required.

**Climate Control**

Patented Digital Enclosure Control (DEC3) System, microprocessor controller and display controls temperature, humidity and dewpoint. DEC3 system runs 24/7 for round-the-clock protection.
Factory default settings may be used without any adjustment, or user may modify temperature and humidity threshold settings to optimize performance in different climate types and with different equipment.
All values and status information are available for remote monitoring over RDM (for more information, please refer to DEC3 data sheet).

**Cooling**

Filtered fresh air cooled using powerful AC fans. Tornado 2400 has six fans, 2300 has four fans; Tornado 2000 and 2200 have two fans, and Tornado 2050 has one. Washable air inlet filters may be simply removed for periodic cleaning.

**Heating**

Proportionally controlled 500 watt heater(s) dry intake air and maintain internal temperature within bounds in cold climates. Heaters pulse when fixture lamp is detected to be off, to maintain internal temperatures above dewpoint and prevent condensation.

**Protection**

Fixture over-temperature double pole relay isolates fixture if temperature exceeds safe operating limit. This relay may also be controlled over DMX, providing a simple 'hard reset' in the event of fixture malfunction.

**Control Wiring**

DMX IN terminal on main circuit board. Two DMX THRU terminals - one for internal fixture, and one to next enclosure. Cable by others.

**Electrical Connections**

Connections landed through conduit entry port provided on enclosure base.
Enclosure – hardwired on site, 200-240VAC, 50/60Hz, 5amps (max)
Light Fixture: Americas: NEMA L6-20 receptacle provided
Asia/Europe: CE17 16amp receptacle provided

## Orientation

Standard product is for base-down operation (figure 1). For base-up operation, add suffix V to part number (figure 2). For Horizontal operation, add suffix H (figure 3).

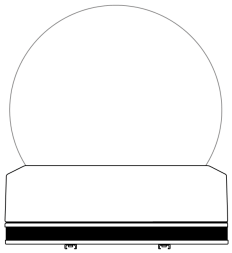


*fig. 1 — Base Down Operation. Use standard part number.*

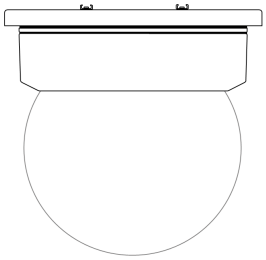


*fig. 2 — Base Up Operation. Add part number suffix V*

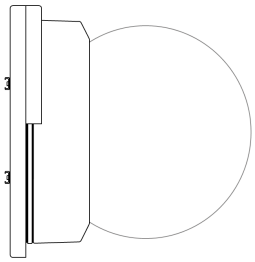


*fig. 3 — Horizontal Operation. Add part number suffix H*

# Digital Enclosure Control

DEC3™ – that's Digital Enclosure Control, 3rd Generation – takes enclosure control to the next level. DEC3 is a an entirely new controller, featuring high-reliability surface-mount electronics, extreme heavy-duty switching components, and a handy water-proof user control panel on the outside of the enclosure. DEC3 offers communication via DMX and RDM, or may be used in its entirely automatic standalone operating mode. DEC3 monitors internal temperature, humidity and lamp current at all times, and uses this information to control its lamp relay, fans and heaters, and report back over RDM if desired.

DEC3 works right out of the box – if you don't want to play with its default settings, you don't need to. DEC3's mission is to maintain temperature and humidity inside the enclosure within the 'Goldilocks' band – never to hot, never too cold, and never, never, allowing deadly condensation to form. Condensation is fatal to electronic equipment, particularly in polluted areas or saline environments, where condensation brings not only rust and short-circuits, but also a steady buildup of mineral and salt deposits. Incidentally, this is very hard to control with air-conditioning type systems, which is why we don't use them.

DEC3's function depends on whether the fixture/projector lamp is on or off:

### Lamp ON

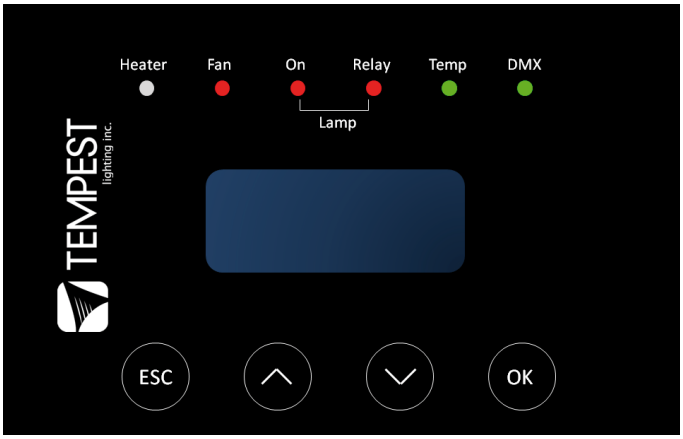
When the projector/fixture is running, the heat from the lamp takes care of humidity, and DEC3 runs the enclosure's fans to change its air every few seconds – ensuring minimal temperature rise above outside ambient.

### Lamp OFF

When the lamp is off, DEC3 goes to work. When conditions are within normal bounds, DEC 3 pulses the heater at a low level to prevent condensation, and gently changes the enclosure air every 30 seconds or so. We call this 'pulse mode', and it is the key to preventing damaging condensation inside your equipment.

If the temperature rises above the top set limit, DEC3 runs the fans to cool it down. In cold conditions, DEC3 will run the heater as required to maintain the bottom set temperature.

And while doing all of this, DEC3 can tell you what's happening over your RDM network – a real boon in larger installations.




*DEC3's user interface uses capsense™ technology for a watertight control panel that's easy to use and easy to read.*

*LED indicators show the status of all major functions, and the display shows DMX address, temperature, humidity and any error messages you need to know about.*

*Use the simple menus to optimize temperature and humidity settings, set DMX address, view and reset lamp hour counter, and more.*

*And if you need to step back from the Tornado enclosure, all of this is available over RDM, in your control room, or over the internet.*

### Operating Modes

**Standalone:** The enclosure operates independently, and automatically, requiring no user intervention. User may set parameters such as temperature and humidity thresholds, and monitor sensor information and DEC status at the DEC3 user interface. Standalone is the default DEC3 setup mode unless specified otherwise.

**DMX:** All of the Standalone features, but the user can override the lamp relay over DMX, to force a hard reset of any moving light that loses its mind!

**RDM:** As above, plus the ability to discover and monitor DEC3 over RDM.

DEC is why, again and again, users around the world have chosen Tempest enclosures to protect their investment in Lighting and projection equipment.

Tempest Lighting and DEC3 – A combination that keeps you looking good, and saves you money.

TEMPEST lighting inc.

## Ordering Information

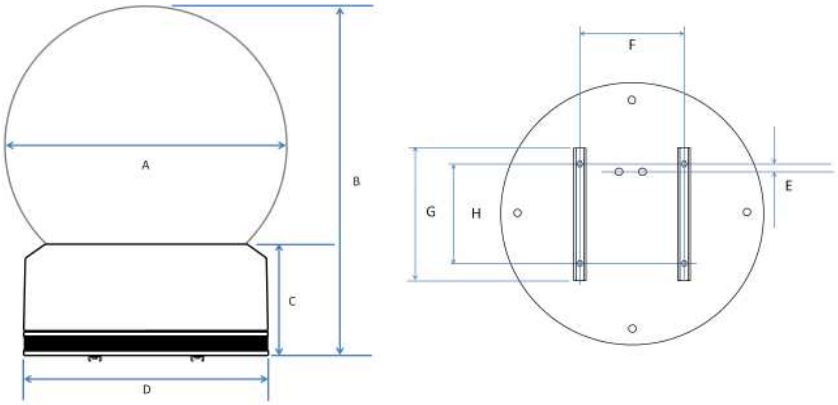
The following information must be provided with each order:

- Luminaire type, model number and lamp power
- Orientation (base-down, base-up, or other angle)
- Custom Colors – provide RAL or Pantone reference
- **.US** style (NEMA 6-20 receptacle) or **.IN**ternational (CE17 16amp (blue) receptacle)

| | | |
|---|---|---|
| 2050.IN | Tornado 2050, for all moving head luminaires up to 300W | 24"/61cm Globe |
| 2050.US | Tornado 2050, for all moving head luminaires up to 300W | 24"/61cm Globe |
| 2000.IN | Tornado 2000, for all moving head luminaires up to 700W | 30"/76cm Globe |
| 2000.US | Tornado 2000, for all moving head luminaires up to 700W | 30"/76cm Globe |
| 2200.IN | Tornado 2200, for some moving head luminaires up to 1200W | 36"/91cm Globe |
| 2200.US | Tornado 2200, for some moving head luminaires up to 1200W | 36"/91cm Globe |
| 2300.IN | Tornado 2300, for all moving head luminaires up to 1500W | 36"/91cm Globe |
| 2300.US | Tornado 2300, for all moving head luminaires up to 1500W | 36"/91cm Globe |
| 2400.IN | Tornado 2400, for most moving head luminaires up to 2500W | 42"/107cm Globe |
| 2400.US | Tornado 2400, for most moving head luminaires up to 2500W | 42"/107cm Globe |
| 0000.RD | RDM Functionality – optional – order one for each enclosure | |

*Important: Add Suffix V for Base-up installation, Suffix H for Horizontal, eg 2300.INH, 2000.USV*

## Dimensions & Weights




| Model | A | B | C | D | E | F | G | H | Weight |
|---|---|---|---|---|---|---|---|---|---|
| 2050 | 24/61 | 35/89 | 15/38 | 25/64 | na | 4.25/11 | 16/41 | 10/25 | 42/19 |
| 2000 | 30/76 | 38/97 | 15/38 | 32/80* | 1/2.5 | 12.5/31.8 | 16/41 | 12/30 | 80/36 |
| 2200-2300 | 36/91 | 45/114 | 15/38 | 32/80* | 1/2.5 | 12.5/31.8 | 16/41 | 12/30 | 85/39 |
| 2400 | 42/107 | 56/143 | 22/56 | 43/110 | 9/23 | 12.25/31.1 | 32/81 | 17/43 | 105/48 |

** Base Up and Horizontal versions, D = 36"/91cm*

*Dimensions shown in inches/centimeters. Weight in pounds/kilos.*

## Shipping Weights/Dims.
*(Palletized Carton)*

| | |
|---|---|
| 2050 | 30"x30"x46" (h), weight 100lb - 76 x 76 x 115cm, 45kg |
| 2000 | 39"x39"x54" (h), weight 138lb - 100 x 100 x 137cm, 63kg |
| 2200-2300 | 39"x39"x54" (h), weight 143lb - 100 x 100 x 137cm, 65kg |
| 2400 | 48"x48"x69" (h), weight 185lb - 122 x 122 x 175cm, 84kg |
| *All* | *Schedule B Export Code: 8536.30.0000* |

## Approvals

ETL and cETL listed to UL Standard 50, 508

CE: EN55015, EN61000-3-4, EN61000-3-5, EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-8, EN61000-4-11, EN60598-1

NEMA Type 3R Enclosure (approximately equivalent to IP54)

This product is protected by US Patent Number 6,352,358.



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