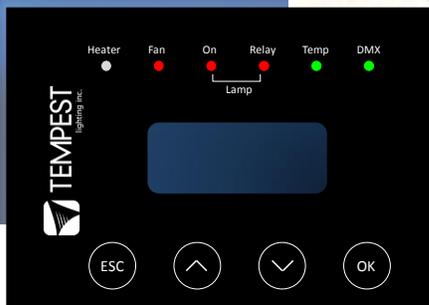




TEMPEST

User Manual

Blizzard Projector Enclosures



For the following products,
manufactured after August 2013

- Blizzard Baby**
- Blizzard Midi**
- Blizzard**
- Blizzard Stretch**
- Blizzard X-Stretch**

Tempest Lighting, Inc.
 13110 Saticoy Street, Unit C
 N. Hollywood, CA 91605, USA

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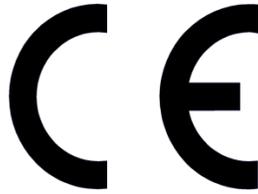
In the interest of continuous product improvement, the information in this document is subject to change without notice. Neither Tempest Lighting, Inc. nor its representatives or agents may be held liable for expense or injury arising from it.

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September, 2013

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**CERTIFICATE AND DECLARATION OF CONFORMITY
FOR CE MARKING**

Tempest Lighting, Inc.

13110 Saticoy Street, Unit C, North Hollywood, CA 91605, USA
t: +1 818 787 8984 f: +1 818 982 5770 e: info@tempestlighting.com
www.tempest.org

Tempest Lighting, Inc. declares that their:

Blizzard Projector Enclosure Series 65xx.xxx

**complies with the Essential Requirements of the following EU
Directives:**

Low Voltage Directive 2006/95/EC Test Report 60065-6500-01
Electromagnetic Compatibility Directive 2004/108/EC Test Report 61000-6500-03

and further conforms with the following EU Harmonized Standards:

EN 60065 : 2002	Test Report 60065-6500-01
EN 60529:2001-2002	Test Report 60529-6500-02
EN 61000-6-3:2007+A1:2011	Test Report 61000-6500-03
EN61000-6-1:2007	Test Report 61000-6500-03
EN55015:2006+A2:2009	Test Report 61000-6500-03

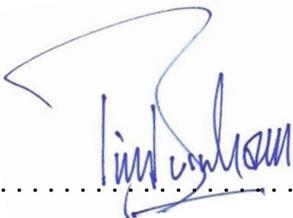
Dated: 1st March 2013

Position of signatory: President

Name of Signatory: Tim Burnham

Signed below:

on behalf of Tempest Lighting, Inc.



.....



This is to certify that the following products

- 6500.US Baby Blizzard, force cooled, 230V
- 6505.US Baby Blizzard, force cooled, 230V
- 6510.US Baby Blizzard, DEC3 Enclosure Control, 230V
- 6515.US Baby Blizzard, DEC3 Enclosure Control, 230V
- 6550.US Blizzard, DEC3 Enclosure Control, 230V
- 6555.US Blizzard Stretch, DEC3 Enclosure Control, 230V
- 6556.US Blizzard X-Stretch, DEC3 Enclosure Control, 230V
- 6560.US Blizzard, Force-cooled, 230V
- 6565.US Blizzard Stretch, Force-cooled, 230V
- 6566.US Blizzard X-Stretch, Force-cooled, 230V

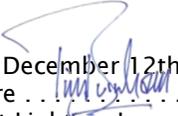
Have been tested and approved to standards UL 508 (electrical) and UL 50 (environmental), as NEMA 3R enclosures, for use in the United States and Canada.

This declaration is made by the manufacturer

Tempest Lighting, Inc.
13110 Saticoy Street, Unit C
North Hollywood, CA 91605, USA

This declaration is based on tests that were conducted on the submitted samples of the above mentioned products.

Listing Report No. 3198609LAX-001a refers.

Dated: December 12th, 2010
Signature 
Tempest Lighting Inc

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1 Introduction

Products Covered by this Manual

6515.xxH	Blizzard Baby HUSH
6515.xxl	Blizzard Baby Indoor
6515.xxO	Blizzard Baby Outdoor
6540.xxH	Blizzard Midi HUSH
6540.xxl	Blizzard Midi Indoor
6540.xxO	Blizzard Midi Outdoor
6550.xxH	Blizzard HUSH
6550.xxl	Blizzard Indoor
6550.xxO	Blizzard Outdoor
6555.xxH*	Blizzard Stretch HUSH
6555.xxl*	Blizzard Stretch Indoor
6555.xxO*	Blizzard Stretch Outdoor
6556.xxH*	Blizzard X-Stretch HUSH
6556.xxl*	Blizzard X-Stretch Indoor
6556.xxO*	Blizzard X-Stretch Outdoor

Notes: *xx = Part # suffix .US for North American electrical systems*

Xx = Part # suffix .IN for European 230V electrical systems

** North American versions are 208VAV as standard. 120VAC available to order*

Using This Manual

Please read this manual in its entirety before starting work. All the information contained is important, and should be read carefully before proceeding. Heed all warnings and advisories.

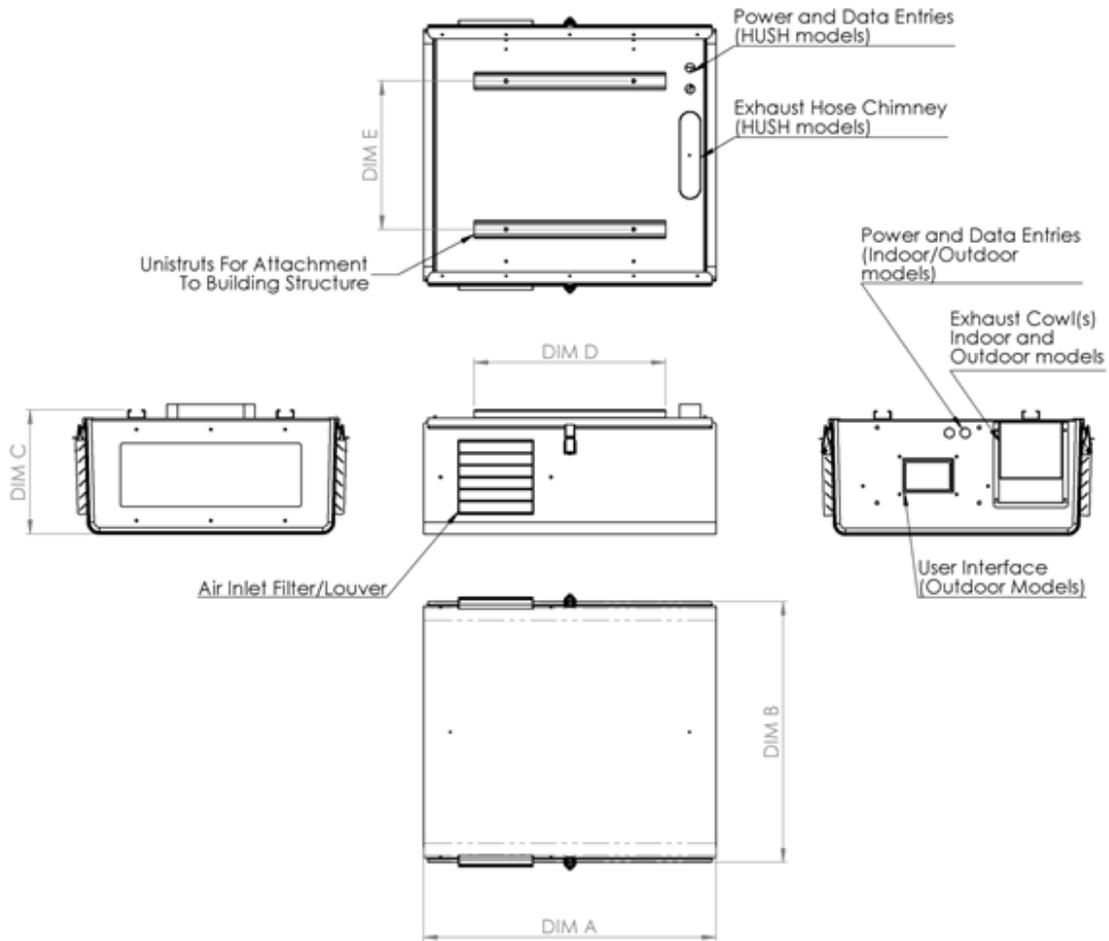
Icon Key:

① Valuable information

⚡ Electrical Warning

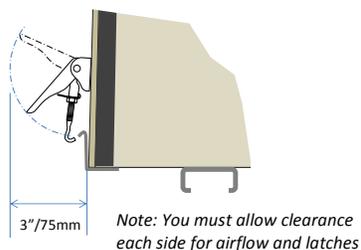
🚫 Safety Information

Dimensions, Weights and Projector Fit



	DIM A	DIM B	DIM C	DIM D	DIM E	Weight	Projector Max: Size (LWH) *	Power
Blizzard Baby	6515 24"/61cm	20"/51cm	11"/28cm	18"/46cm	14"/35.5cm	30lb/14kg	17x16.5x8.5" 43x42x22cm	400W
Blizzard Midi	6540 28"/71cm	24"/61cm	11"/28cm	18"/46cm	14"/35.5cm	45lb/20kg	21.5x20x8.5" 55x51x22cm	700W
Blizzard	6550 33"/79cm	30"/76cm	14"/36cm	18"/46cm	16"/40.6cm	69lb/31kg	25x26x12" 64x66x30cm	1,300W
Blizzard Stretch	6555 45"/89cm	30"/76cm	16"/41cm	30"/76cm	16"/40.6cm	89lb/40kg	35x26x14" 89x66x36cm	1,800W
Blizzard X-Stretch	6556 53"/135cm	30"/76cm	16"/41cm	30"/76cm	16"/40.6cm	98lb/45kg	42x26x14" 107x66x36cm	1,800W

* Be sure to allow for lenses, cables and connectors when calculating projector fit



2 Installation

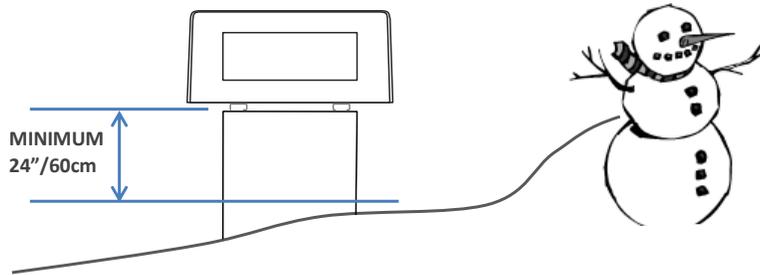
Safety and Warnings

These warnings are for your protection. Failure to comply may result in serious injury or death. Tempest Lighting, Inc. assumes no responsibility for damages or injury incurred by misuse or mishandling of product.

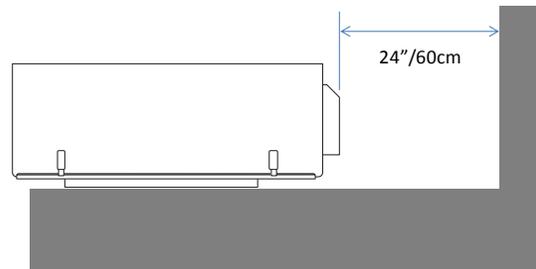
-  **Do not** attempt to install or operate the enclosure before fully reading and understanding this manual
-  **Never** allow anyone who has not read this manual to open the enclosure or perform maintenance on the projector within.
-  **Never** leave the enclosure unattended when open.
-  **Always** make sure all bolts and latches are tight and safety locks are in place after performing any form of maintenance on the unit.
-  **Do not** open any electrical boxes until power has been shut off to all supply lines to the enclosure (including the one powering the projector).
-  **Do not** open the enclosure in wet weather.

Planning

- ① Snow clearance (Outdoor):



- ① Allow at least 24"/60cm clearance behind enclosure for access and ventilation (outdoor, indoor).



- ① Enclosures with Digital Enclosure Control **MUST** be powered 24/7/365.

 **Warning:** In most cases this installation cannot be safely completed by 1 person.

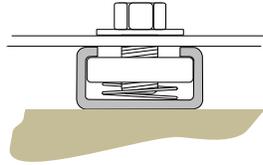
Mounting

The Blizzard enclosure is provided with a pair of Unistrut channels on the enclosure base, for mounting to your structure. You may use standard Unistrut accessories, or purchase mounting kits from Tempest Lighting – four kits are required per enclosure.

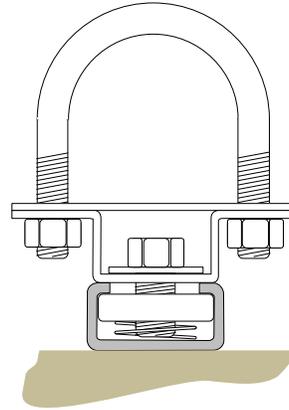
- ① Each Enclosure must be mounted with FOUR points.
- ① All mountings must be made using the two Unistrut channels on the base of the enclosure.
- ① *Tempest Lighting recommends the use of stainless steel mounting hardware.*

 **IMPORTANT SAFETY NOTICE:**

Installer must ensure that all mounting points are secure and conform to local safety regulations. Tempest Lighting Inc. accepts no responsibility for damage or injury arising from inappropriate or unsafe installation.



4900.MB Stainless Steel Unistrut channel nut, bolt and washer. Four required per enclosure.



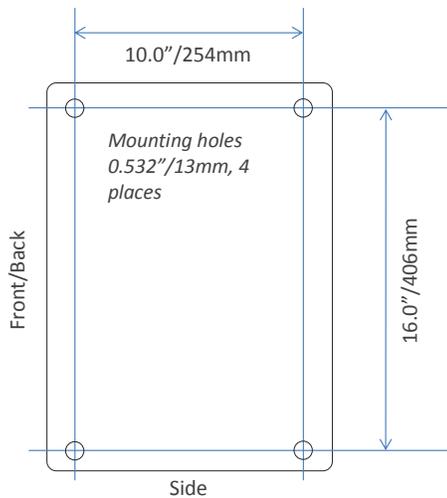
4900.MC Stainless Steel Unistrut channel nut, bolt and pipe clamp, for pipes 1.5" (38mm) to 2" (50mm) OD. Four required per enclosure.

4925.MC Stainless Steel Unistrut channel nut, bolt and pipe clamp, for pipes 2" (50mm) to 2.5" (64mm) OD. Four required per enclosure.

Mounting plate Guidelines

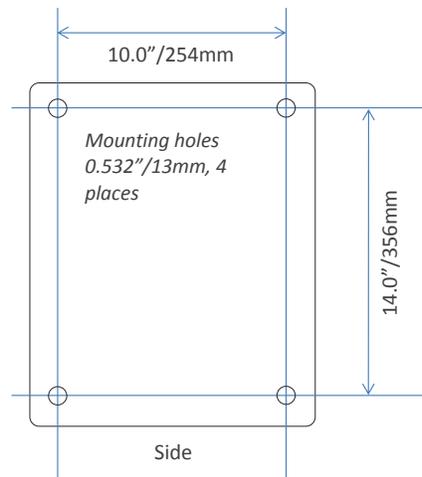
Blizzard and Blizzard Stretch

Suggested layout for mounting plate, using four 4900.MB kits.



Blizzard Baby, Midi

Suggested layout for mounting plate, using four 4900.MB kits.

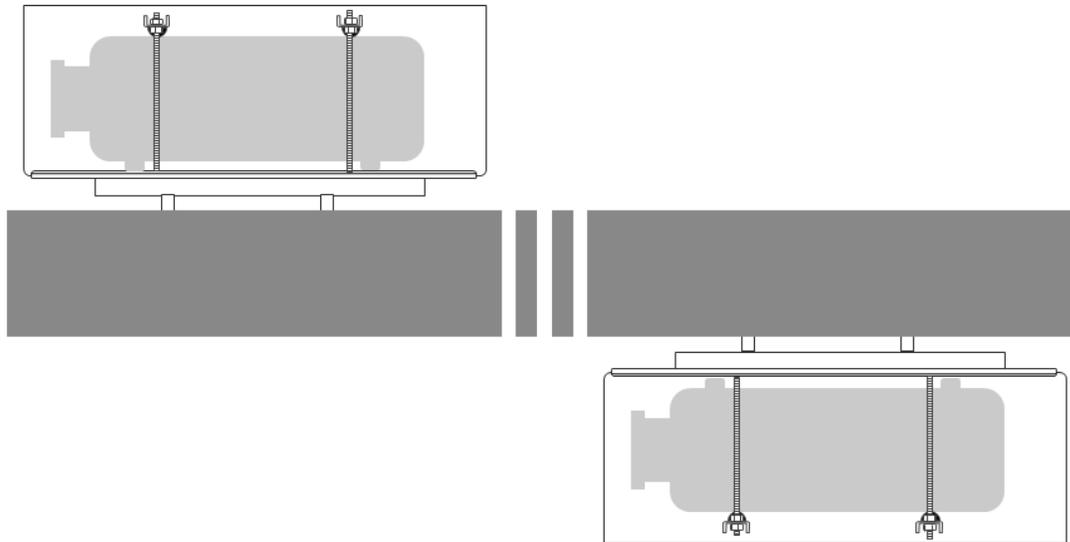


Use ¼" (6mm) or greater aluminum or stainless steel plate.

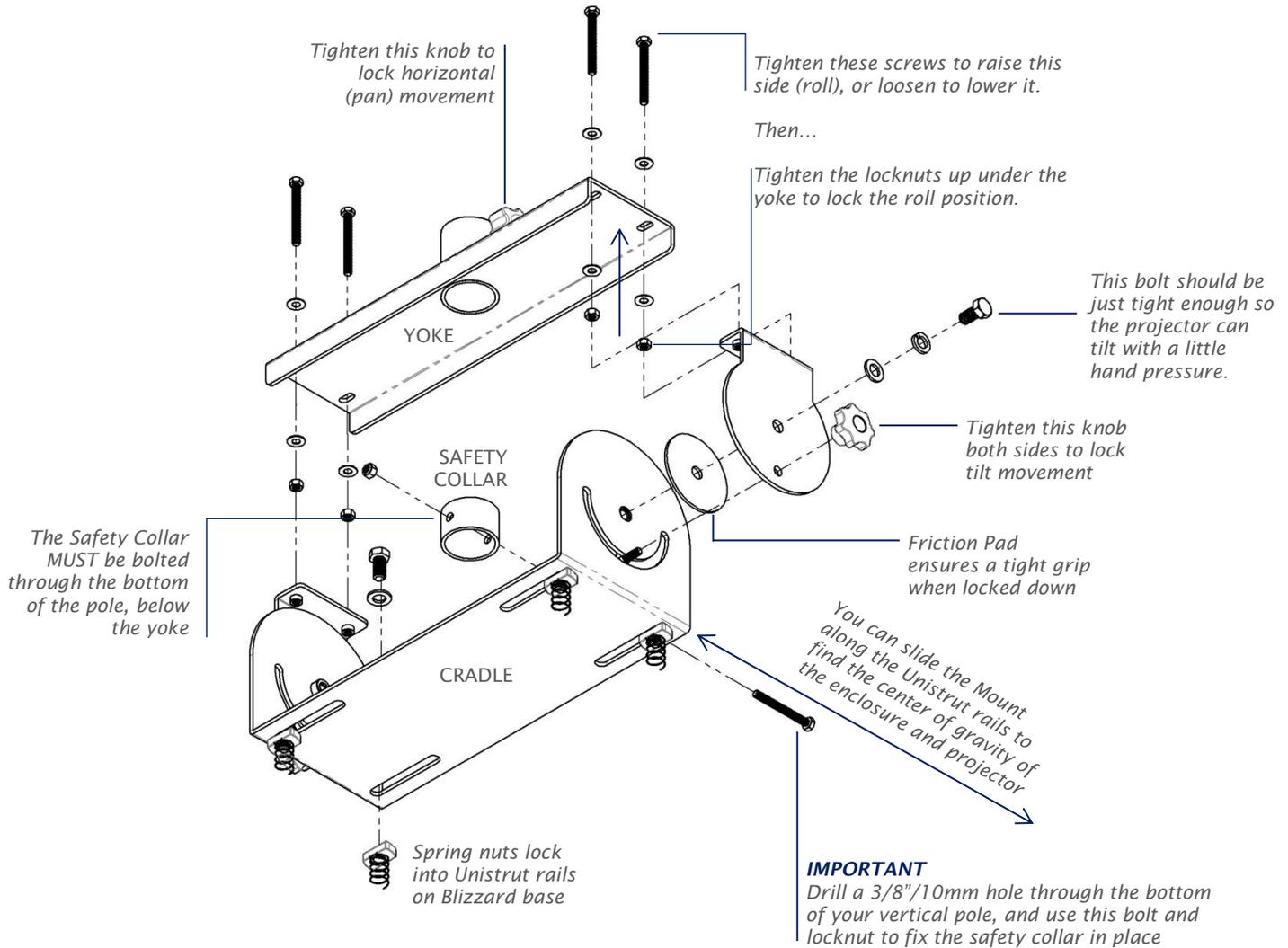
Do not obstruct wiring access.

Mounting Base-down and Base-up

All Blizzard enclosures are designed to be mounted base-down, on a solid structure, using Unistrut mounting hardware. They may also be suspended from an overhang, ceiling or truss, using the same hardware. Note that in this event it will be necessary to flip the projector image, since the projector itself will be hanging upside-down. It's important to be sure that the projector to be used supports this feature (usually referred to as Ceiling mode) before commencing installation.

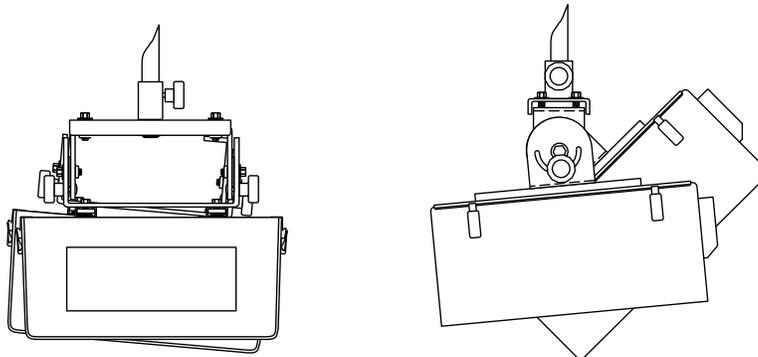


Blizzard XYZ Mount



All Blizzard enclosures may be mounted using the adjustable Blizzard XYZ mount. The XYZ Mount is designed to mount on the bottom of a piece of 1½" schedule 40 pipe (48-50mm Outside Dimension).

Part #: 6500.XYZ
 Adjustment Range:
 Vertical: +60° to -90°
 Horizontal: 360°
 Roll: ± 10°



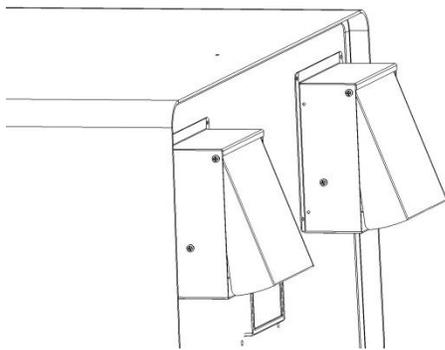
Important

- **Installation must conform to all local safety norms and building codes. Tempest Lighting, Inc will accept no responsibility for incorrect or unsafe installation.**
- **Installer must drill the bottom of the pole and install the safety bolt provided**
- **The vertical pole must be securely mounted and braced to prevent movement**

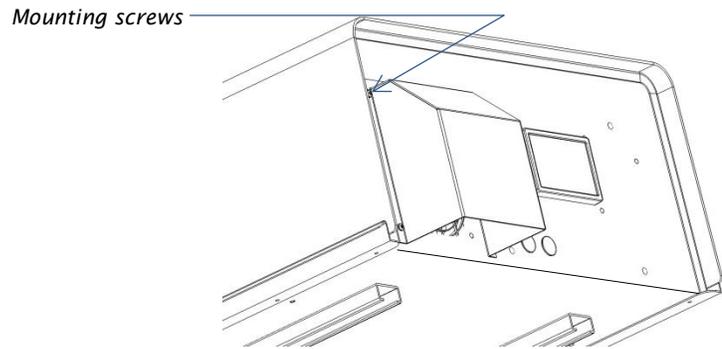
Exhaust Vents and Louvers for Base-up operation

Exhaust Cowls

Blizzard's exhaust Cowls must be installed with the openings down to prevent rainwater and dust ingress (Outdoor and Indoor versions only).



*No-Return Exhaust Cowls,
Blizzard 6550 and up*



*Standard Exhaust Cowls,
Blizzard Baby, Midi*

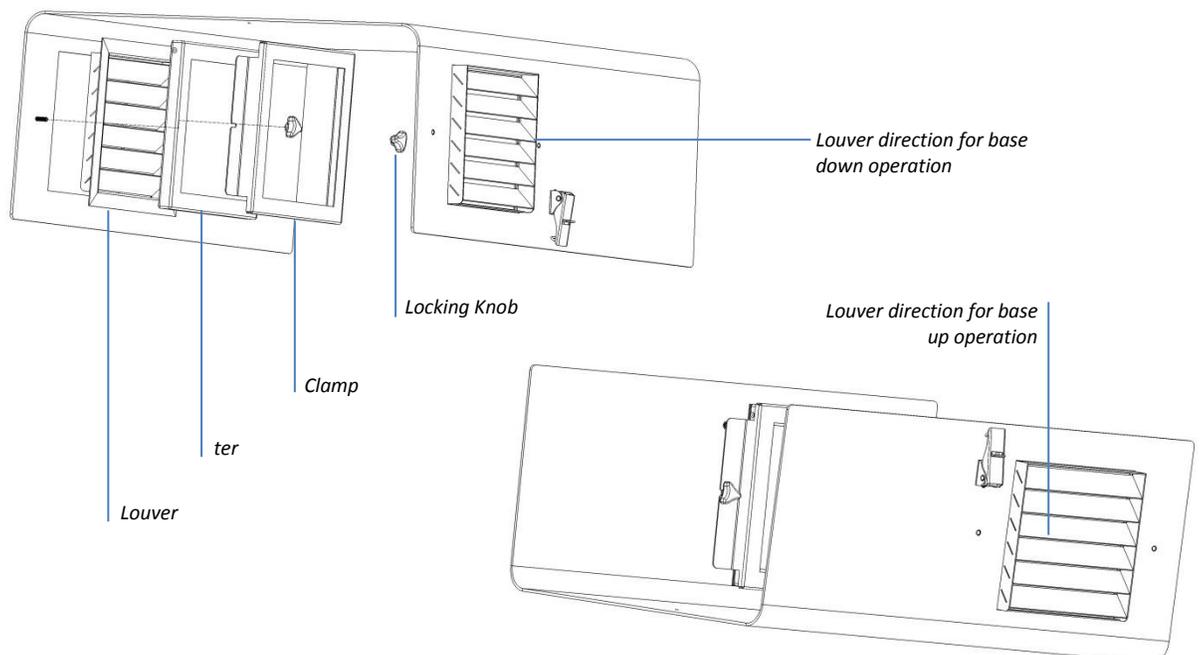
To reverse cowls, remove the four mounting screws, rotate cowl(s) and replace with the open side down.

Louvers

Make sure that the Filters Louvers are pointing down (as shown below) to protect against rain and dust.

To reverse Louver direction:

1. Remove the filter locking knobs, filter clamp, filter and louver
2. Rotate louver and replace in louver opening
3. Replace filter, filter clamp
4. Replace and tighten filter locking knobs

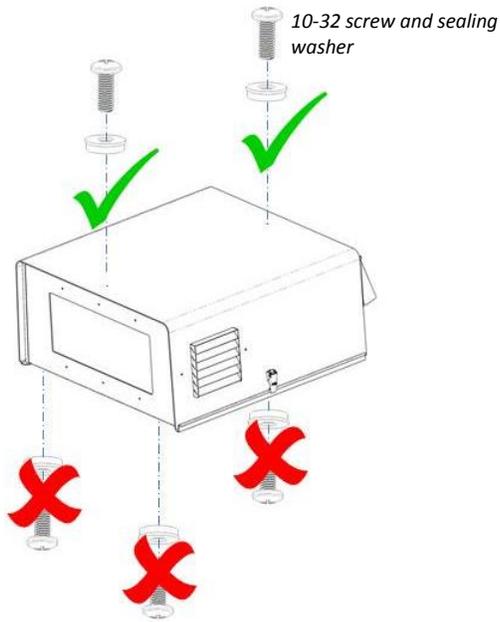


Drainage – Outdoor Enclosures Only

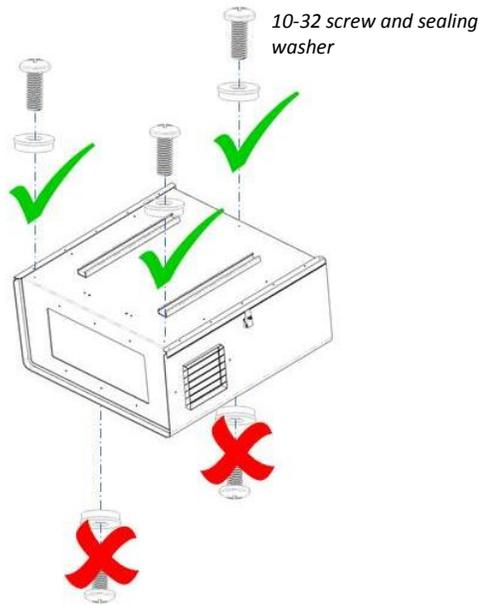
Threaded drainage holes are provided in the top and bottom of the Blizzard enclosure. Whichever side is up MUST be plugged with the sealing screws and washers provided.

The threaded holes in the underside MUST be open to allow drainage in the event of water ingress.

Base Down Installation



Base Up Installation



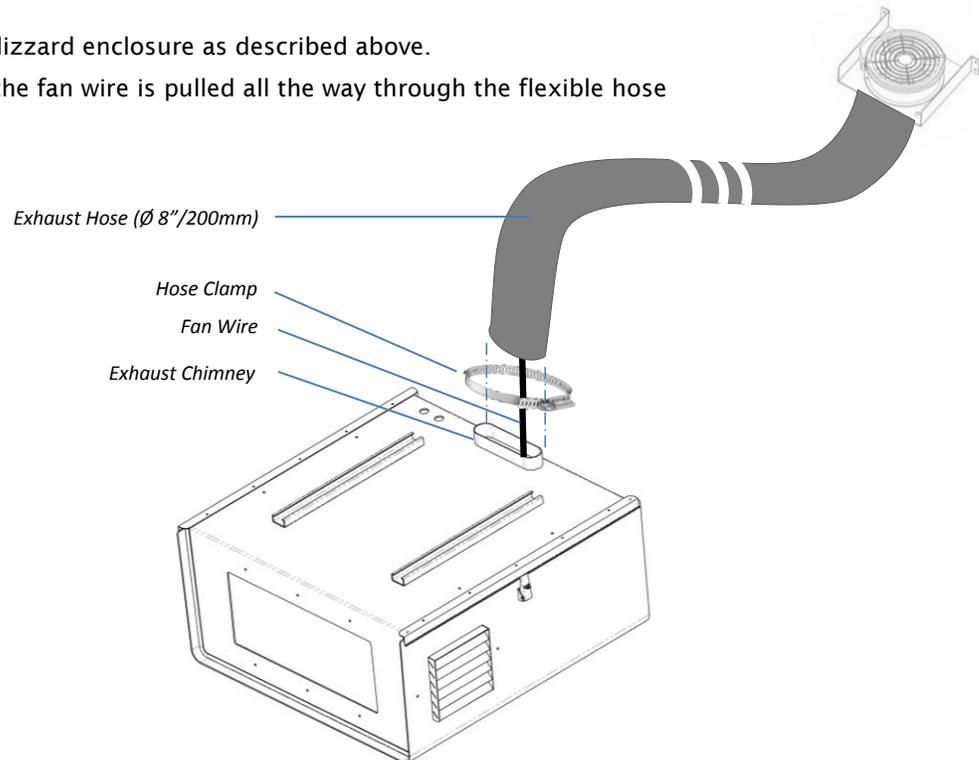
Blizzard HUSH Exhaust Hose

All Blizzard HUSH enclosures are supplied with a 25' (7.6m) exhaust hose and remote exhaust fan.

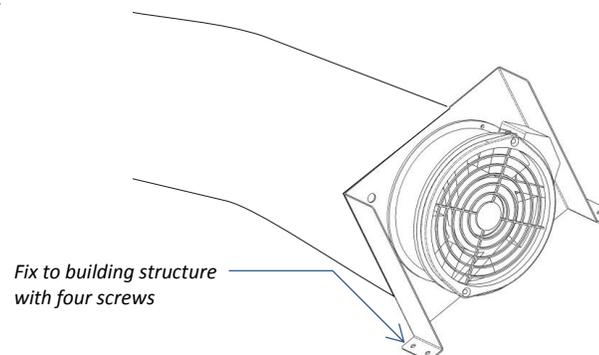
This hose may be extended to 50' (15.2m) if required – contact factory for extension hose.

The fan wire is threaded through the hose and must be terminated to the fan terminals in the Blizzard HUSH enclosure.

1. Install the Blizzard enclosure as described above.
2. Check that the fan wire is pulled all the way through the flexible hose

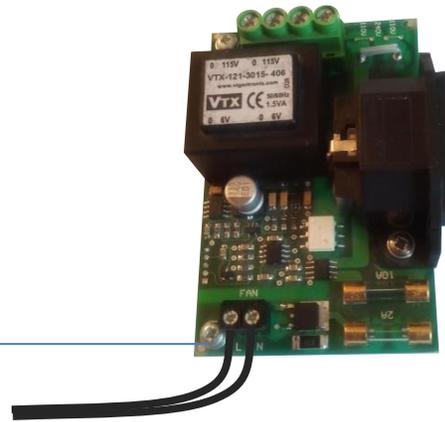


3. Install the fan in an acoustically separate space, eg: an insulated ceiling or an adjacent room
 - a. It is helpful to site the fan so that it is blowing AWAY from the projector (usually this will mean UP)
4. Screw the fan plate to a convenient surface or beam. A secure mounting is important to prevent vibration.



5. Thread the fan wire through the chimney in the top of the Blizzard enclosure and terminate on the MiniDEC™ FAN terminals. Polarity is not important.

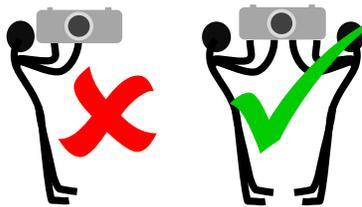
MiniDEC Fan Terminal



6. Stretch the hose over the Blizzard exhaust chimney and secure with the hose clamp provided.

Note that you can shorten the hose as desired with a sharp knife and wire-cutters, but be careful not to cut the fan wire.

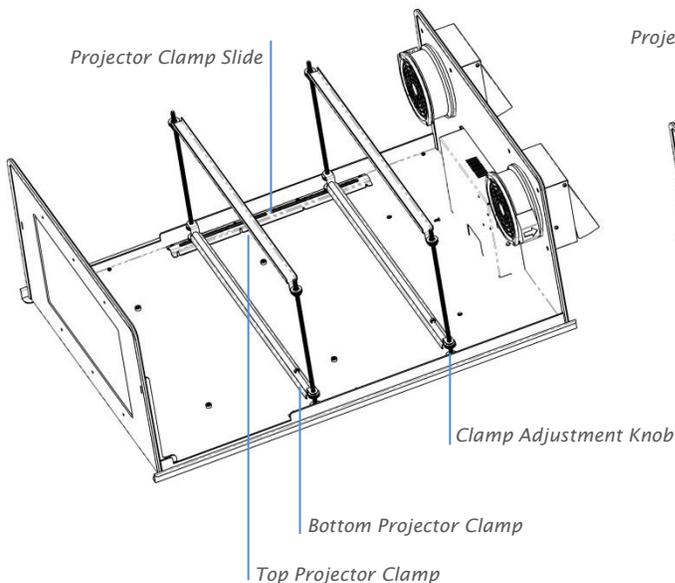
Mounting the Projector in the Blizzard Enclosure



⚠
If the Blizzard enclosure is suspended from a ceiling or overhang, this **MUST** be done by at least two people.

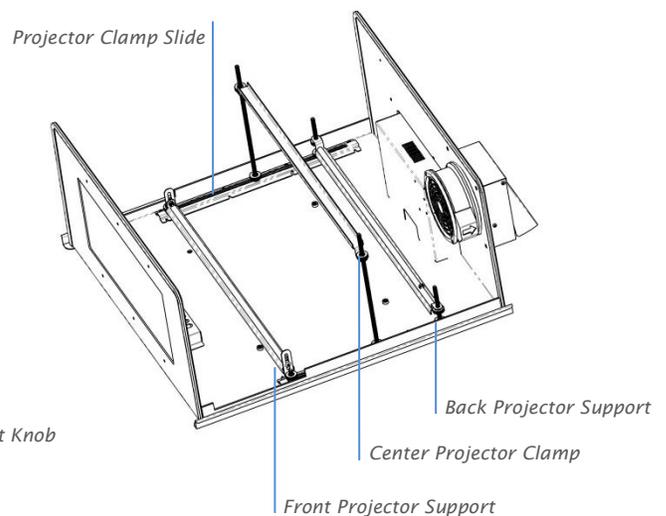
Blizzard enclosures incorporate projector clamps to mount any projector, with precise positioning control of pan, tilt and roll. There are two slightly different types of projector mount:

Blizzard X-Stretch, Stretch



1. Slide the projector clamps to find the best position, avoiding contact with projector access doors, vents and controls and tighten the bottom knobs to lock in place.
2. Remove the top projector clamps and set the projector in place. Adjust the height and pitch of the bottom clamps using the clamp adjustment knobs.
3. Replace the top clamps and tighten the clamp adjustment knobs. **DO NOT OVERTIGHTEN.**
4. Adjust for tilt, pan and roll as desired by loosening and tightening the clamp adjustment knobs.

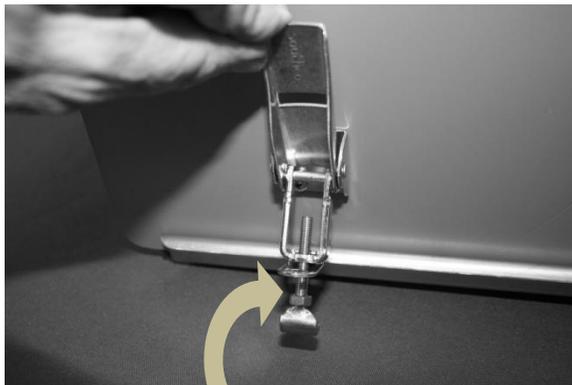
Blizzard, Blizzard Midi, Baby



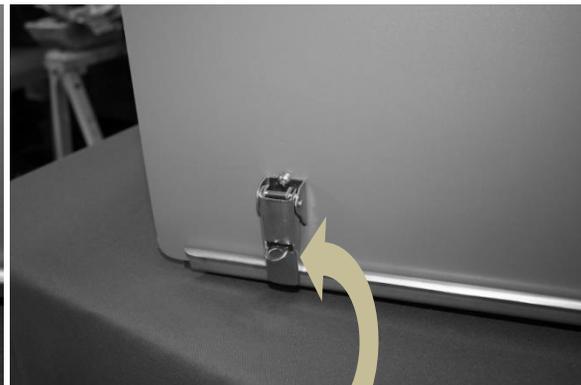
1. Slide the projector clamps to find the best position, avoiding contact with projector access doors, vents and controls and tighten the bottom knobs to lock in place.
2. Remove the center projector clamp and set the projector in place.
3. Set the desired height on the Front Projector Support, using a large Philips screwdriver. The front clamp is intended to be fixed – adjustments will be made using the back and center clamps.
4. Adjust the height and pitch of the back projector support using the clamp adjustment knobs.
5. Replace the center clamp and tighten the clamp adjustment knobs. **DO NOT OVERTIGHTEN.**
6. Adjust for tilt, pan and roll as desired by loosening and tightening the clamp adjustment knobs.

Projector Power Connection

1. Connect projector power cable to the IEC Receptacle on the side of the DEC or MiniDEC controller. Note that a rewirable IEC 320 plug is provided if needed.
 - a. **NOTE: Auxiliary power:** If you need power for auxiliary equipment inside the enclosure, cut the cable of a locally available power strip short and wire the IEC plug provided to it. Plug the projector and auxiliary equipment into the power strip.
2. Pull the projector signal cables (usually CAT5 or fiber) through the signal conduit entry and connect to your equipment per manufacturer's instructions.
3. Tie down any cables away from the exhaust fan
4. Power up the projector, check functions and adjust position and focus as needed
5. Replace the enclosure cover
6. Make sure that all latches are securely fastened. The latches are adjustable, and should be checked periodically, since the rubber seal may compress slightly over time.
7. For additional security, use a bolt or padlock to lock one or more of the latches, using the security ring provided.



The latch tension is adjusted by turning the screw - clockwise to tension, anti-clockwise to loosen.



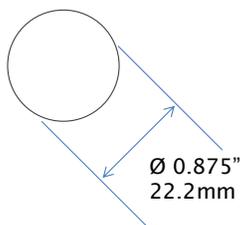
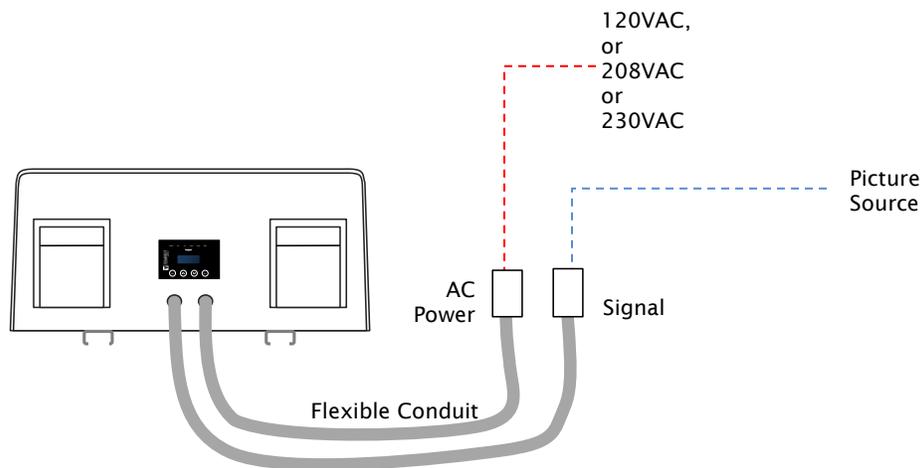
Insert a padlock in one or more security rings for additional security.



1.

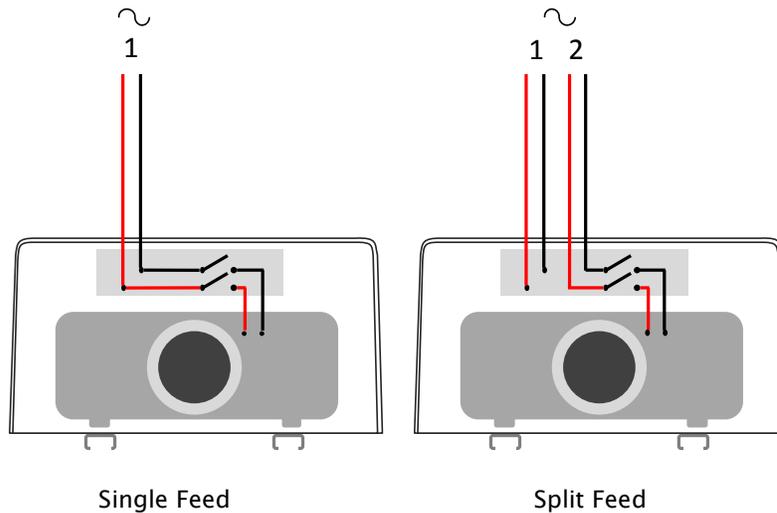
3 Wiring

- ⚡ **All electrical work must be carried out by a properly licensed electrician, in compliance with local electrical standards. Failure to observe this point will void the factory warranty for the Tempest Enclosure.**
- 1 Switch off power to the branch circuit, carefully following lockout and tag-out procedures. Failure to do so could cause serious injury or death.
- 2 You will need two electrical junction boxes, located within a short distance from the enclosure, one for power, one for signal (usually CAT5). Use outdoor-rated flexible conduit between the box and the enclosure.
- 3 AC and signal circuits must be wired in separate conduits.



The conduit entry holes accept US ½" conduit fittings, and international 20-22mm (OD) conduit fittings.

One or Two Power Circuits?



Tempest enclosures may be wired on single or double line supplies. On a single feed, both enclosure and projector are permanently on. With a double-line supply, you can switch off the projector when not in use, while the enclosure continues to protect it 24/7.

Indoor Enclosures & Hush Boxes – Single Feed

- Enclosure and Projector must be rated for the same voltage.
- Supply must be rated for projector current plus 10 watts.
- Supply may be switched off when projector is not in use.

Indoor Enclosures & Hush Boxes – Split Feed

- Enclosure power must be on when projector is on.
- Projector power may be switched independently.
- Enclosure (fan) power must be rated for 10 watts.
- Projector power must be rated for the projector (see projector manual).
- Projector and enclosure power must be same voltage.

Outdoor Enclosures - Single Feed

- Enclosure and projector are permanently on.
- Enclosure and Projector must be rated for the same voltage.
- Supply must be rated for projector current plus 150 watts.
- Supply must be permanently ON.

Outdoor Enclosures - Split feed

- Enclosure power must be permanently on.
- Projector power may be switched off.
- Enclosure power must be rated for 1150 watts.
- Projector power must be rated for the projector (see projector manual).
- Projector and enclosure power must be same voltage.

Indoor Enclosures and HUSH Boxes with MiniDEC™ Control

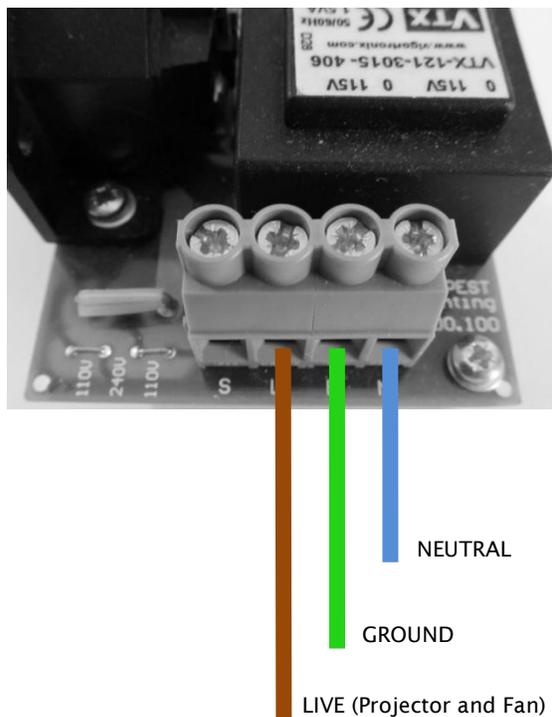
For Outdoor Enclosures with DEC3.3 Control, skip to the next section.

IMPORTANT Tempest enclosures are supplied for either 120VAC 50/60Hz, or 208-240VAC, 50/60Hz operation. Tempest Lighting is not liable for damage or failure to operate correctly due to connection to an inappropriate electrical supply. **ALL ELECTRICAL CONNECTIONS MUST BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN, IN COMPLIANCE WITH LOCAL NORMS AND STANDARDS.**

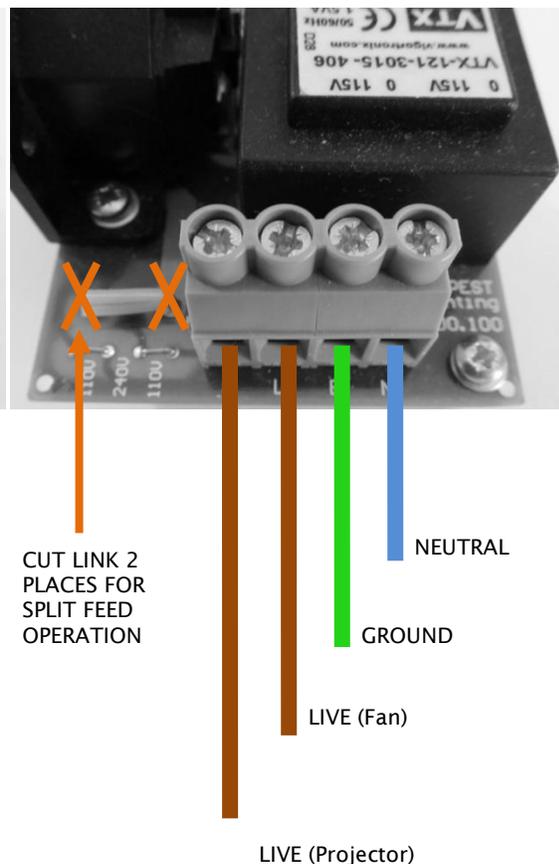
Remove the MiniDEC cover inside the back of the enclosure.

Connect AC Wiring to MiniDEC Controller

Single Feed Operation



Split Feed Operation



Single Feed Wiring

Feed the controller with a single maintained supply. The enclosure should be powered 24/7. The projector must be switched off when needed using the projector's control system.

Twister ships configured for single feed wiring operation.

Split Feed Wiring

You may switch off the supply to the projector without interfering with the cooling fan operation. Connect feeder wires as shown, **AND CUT THE COPPER LINK ON THE MiniDEC BOARD IN TWO PLACES, AS SHOWN.** Fan circuit should be maintained 24/7.

HUSH Enclosures

Connect the remote fan wire to the terminals marked FAN on the MiniDEC board (see Blizzard HUSH Exhaust Hose section above).

Replace MiniDEC Cover

MiniDEC Operation

The MiniDEC controller monitors current going to the projector inside the Blizzard enclosure, and also heat inside the enclosure. When it detects that the projector is on and/or the internal temperature is getting warm, MiniDEC runs the enclosure fan.

MiniDEC Operation is completely automatic.

Summary:	MiniDEC detects current to projector >1.5amps	Fan on
	MiniDEC detects current to projector drop below 1amp	5-minute fan cool-down, then fan off
	MiniDEC detects temperature 25-35°C (77-95°F)	Pulse fan to change air every minute
	MiniDEC detects temperature >35°C (95°F)	Switch Fan on

MiniDEC LED Indicator

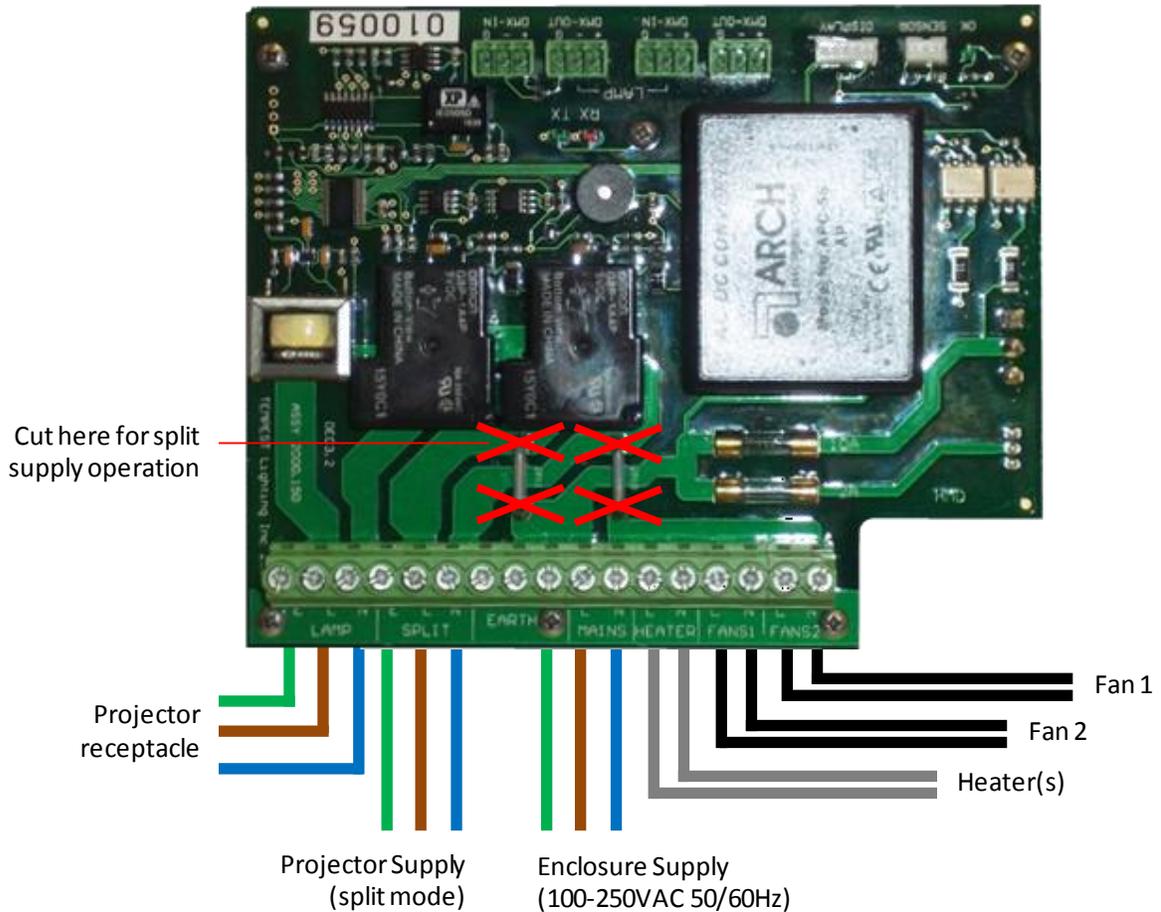
For information and faultfinding there is an LED indicator on the MiniDEC control board. Function as follows:

-  LED OFF: MiniDEC is not powered, or power supply has failed.
-  LED ON: MiniDEC is functioning normally and projector power is < 1amp
-  LED blinking slowly: Projector Power > 1 amp, fan on
-  LED blinking rapidly: Projector power has dropped below 1amp. Fan is running for five minutes for five-minute cool-down

Outdoor Enclosures with DEC3.3 Control

IMPORTANT Tempest enclosures are supplied for either 120VAC 50/60Hz, or 208-240VAC, 50/60Hz operation. Tempest Lighting is not liable for damage or failure to operate correctly due to connection to an inappropriate electrical supply.

ALL ELECTRICAL CONNECTIONS MUST BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN, IN COMPLIANCE WITH LOCAL NORMS AND STANDARDS.



Note: wire colors may differ depending on applicable electrical standards. European wire colors are shown here.

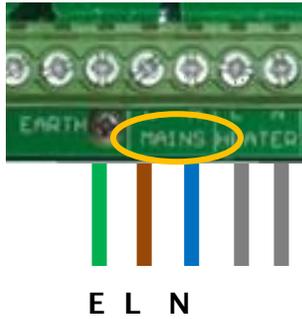
IMPORTANT: MAKE SURE THAT TERMINAL SCREWS ARE FULLY BACKED OUT BEFORE INSERTING WIRES.

Common Feed operation (factory default)

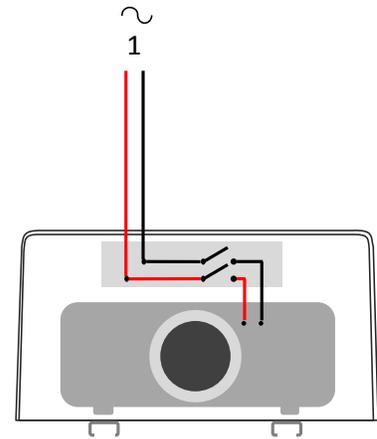
Enclosure and projector share the same electrical circuit.

Circuit must be powered ON 24/7.

Connect incoming power to the terminals labeled **MAINS**:



- (E) Earth/Ground
- (L) Live
- (N) Neutral

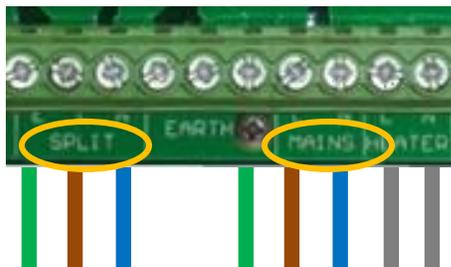
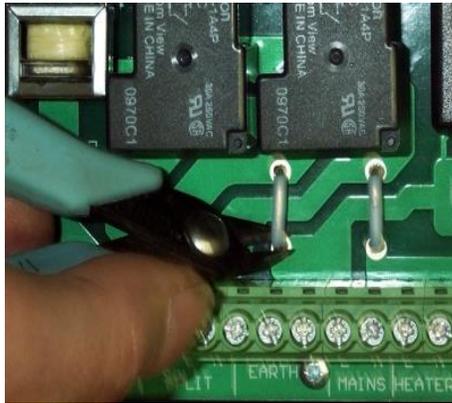


Split Feed Operation

Enclosure and projector have separate electrical feeds.

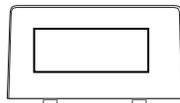
The enclosure circuit must be powered ON 24/7.

When splitting the feeders, both circuits should be on the same phase and at the same supply voltage.



E L N
Projector
Power

E L N
Enclosure
Power



1 Use a wire cutter to cut the copper links on the DEC3.2 board in four places.

2 Connect incoming **ENCLOSURE** power to the terminals labeled **MAINS**. This supply **MUST** be maintained 24/7.

(E) Earth/Ground (L) Live (N) Neutral

3 Connect incoming **PROJECTOR** power to the terminals labeled **SPLIT**:

(E) Earth/Ground (L) Live (N) Neutral

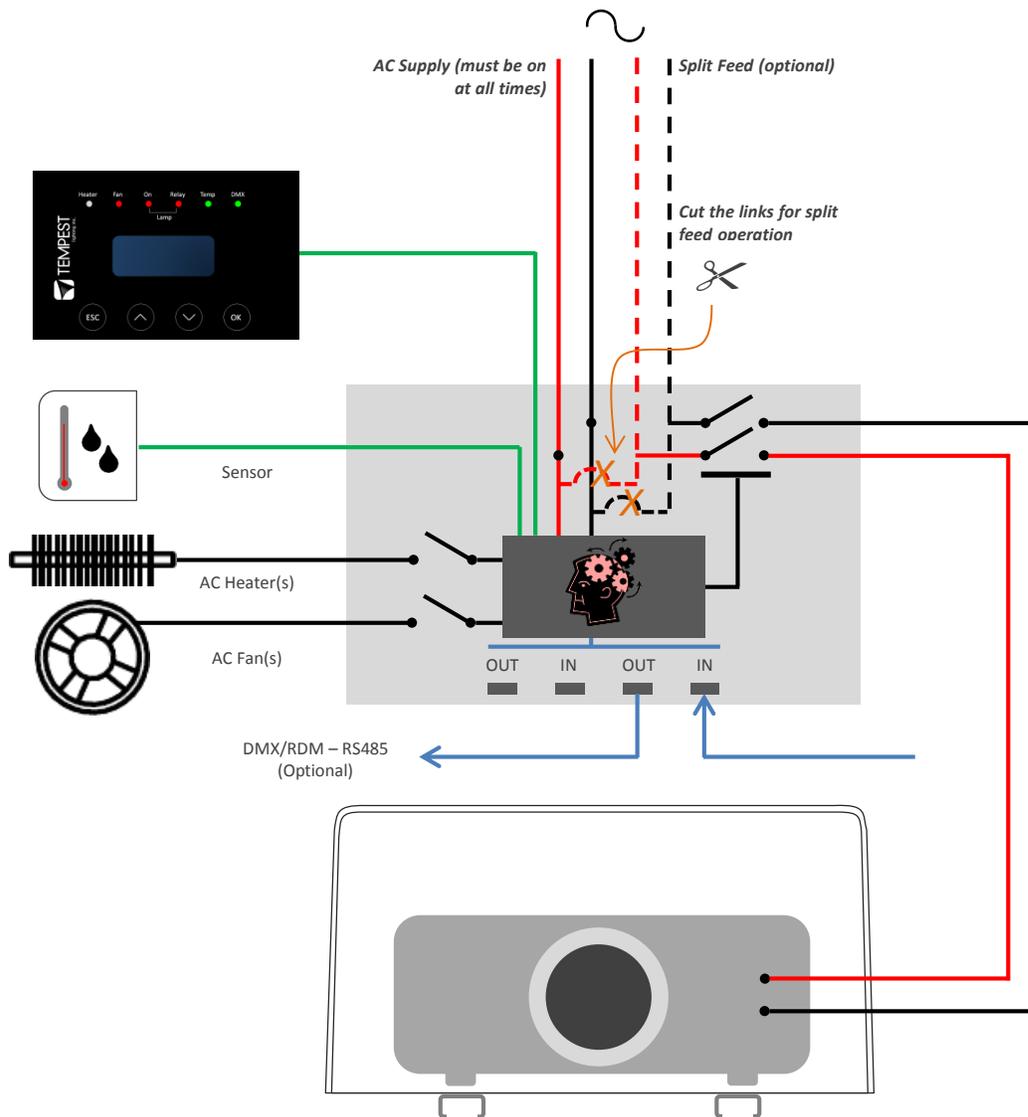
4 Digital Enclosure Control – DEC3.3™ with Goldilocks™



DEC3.3™ – that’s *Digital Enclosure Control, third Generation, revision 3* – is the brain of your Tempest enclosure. It will maintain the internal environment in a comfortable temperature and humidity range, and prevent condensation – the real killer of outdoor equipment. DEC3.3 monitors internal temperature, humidity and lamp current at all times, and uses this information to control the enclosure’s lamp relay, fan(s) and heater(s). It can report back over the DMX cable, using the RDM protocol (Remote Device Management) if desired.

From summer 2013 DEC is running Tempest’s new *Goldilocks™* operating system (patents pending). A completely new OS, *Goldilocks* analyzes temperature and humidity trends, targeting and maintaining safe ranges, and acting to prevent condensation before it happens. *Goldilocks* is also much more energy-efficient than previous generations, so your equipment is always in the Goldilocks zone, and you save money too.

DEC3.3 Schematic



Which Controller?

The following Table shows which controller is used in different types of Tempest Enclosure. This section does NOT apply to enclosures with Tempest MiniDEC™ Control

Enclosure	Type	DEC3.3/Goldilocks	MiniDEC
Blizzard	Indoor		■
	HUSH		■
	Outdoor	■	
Cyclone	HUSH	■	
	Outdoor	■	
Thunder	Outdoor	Special order	■
Tornado	Outdoor	■	
Twister	Outdoor		■

DEC3.3 Main Functions

- 1 Sense current to projector (lamp on/off)
- 2 Record lamp hours
- 3 Monitor temperature and humidity inside Enclosure
- 4 Maintain temperature at safe operating level
- 5 Maintain relative humidity within safe limits
- 6 Prevent condensation
- 7 Isolate projector in case of unsafe temperature
- 8 Report status over RDM
- 9 (Optional) remote projector relay control over DMX

DEC3.3 constantly monitors the following parameters:

- Projector/Luminaire power
- Line Voltage
- Temperature
- Humidity

DEC 3.3's patented Goldilocks™ algorithm uses a combination of heaters and fans to maintain a safe operating temperature and a safe relative humidity level that will not allow condensation to take place.

As air is heated it is able to support more moisture without condensing, so Goldilocks uses heat to raise the air temperature inside the enclosure in the event that relative humidity approaches dewpoint.

Factory Settings – Basic Mode

In most applications, DEC3.3 will operate correctly with its factory default settings, in Basic operating mode.

You do not need to do anything. Please skip to the ***Power Connections*** section below.

If your needs are more complex, read on.

Operating Modes

DEC3.3 may operate in one of four modes, set using either the Front Panel or by RDM control. In all configurations, the projector inside the enclosure may also be an RDM enabled device.

Basic Mode (factory setting)

- Standard temperature settings
- DMX and RDM disabled
- Best for standalone operation

Monitor Mode

- As Basic mode, plus:
- RDM status reporting
- RDM configuration – settings may be changed remotely or at the enclosure control panel
- DEC3.3 does not require a DMX signal to operate

Control Mode

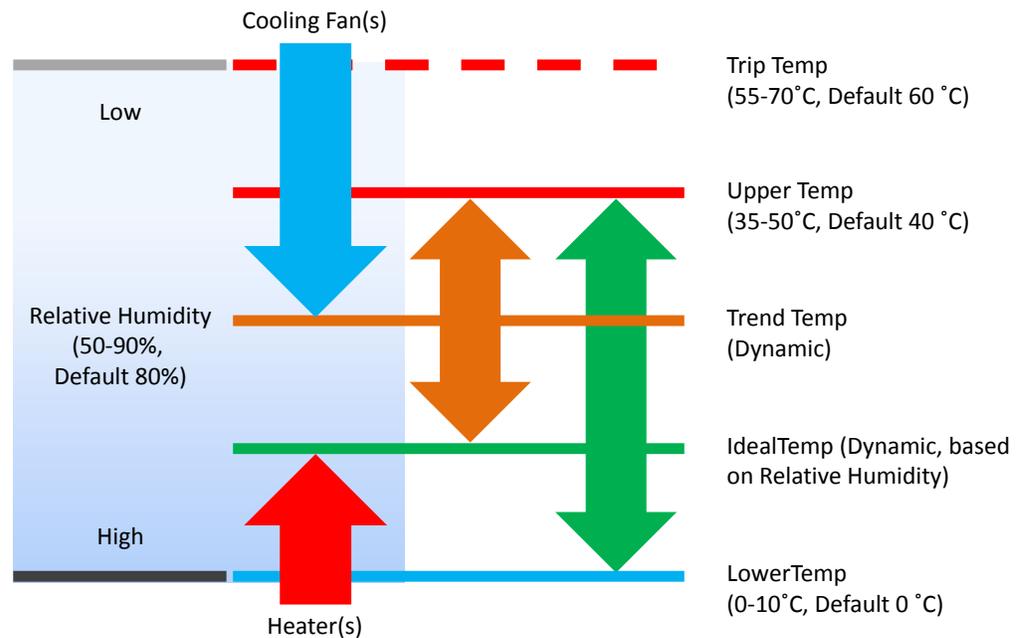
- As Basic mode, plus:
- Enclosure functions as a 1-channel DMX device, with remote control of the lamp relay
 - DMX level > 75% enables normal relay operation (normally ON)
 - DMX level < 25% disables normal relay operation (relay turns OFF)
 - This allows you to force a hard reset of the lamp relay in the event of a projector malfunction
- Control mode is recommended for show control applications, but can be risky in live show operation, since the DMX slot used for the enclosure MUST be kept high to prevent the lamp relay from opening.

Service Mode

- For trained service personnel only
- Normal operation is suspended and the enclosure functions as a 3-channel DMX device:
 - Lamp Relay (Slot 1)
 - Fans (Slot 2)
 - Heater (Slot 3)
- Service mode is ONLY for troubleshooting – DO NOT use Service mode for normal operation.

DEC3.3 Control Parameters

Temperature and Humidity Ranges:



Notes:

- 1 In moving light enclosures the temperature sensor is located in the exhaust airflow. Temperatures shown may be higher than those around the projector.
- 2 We recommend using the factory default settings for several weeks or months before making any changes. In most cases they will not be necessary.

Max Humidity Range 50-90%, Default 80%

The threshold at which air inside the enclosure is heated to raise dewpoint and prevent condensation. Setting a higher Max Humidity is not a bad thing in high-humidity climates. Setting the Max Humidity too low will result in unnecessary heating and excessive energy use. So set the Max Humidity at the top end of the relative humidity likely to be experienced on site.

DMX Address Range 001-510, Default 001

Sets the DMX address for the lamp relay control. (See also DMX Response)

Set Temp Units Display Degrees Celsius or Fahrenheit. Default Celsius

Note that temperature settings must always be Celsius.

Lamp Hours Default 0000

Counts lamp hours – you must reset to zero when changing lamps.

Lamp On Point The lamp current at which DEC detects the projector/luminaire lamp is running.

Default is 1 Amp, which allows for equipment fans and power supplies to run without changing the air in the enclosure. Lamp on point may be set in 0.2 Amp increments between 0.2 Amps and 2.0 Amps.

DMX Connections

DMX refers to USITT DMX512, a commonly used control protocol in the entertainment industry, running over RS485. Consult USITT DMX installation guidelines when laying out a system, or employ a qualified DMX system integrator.

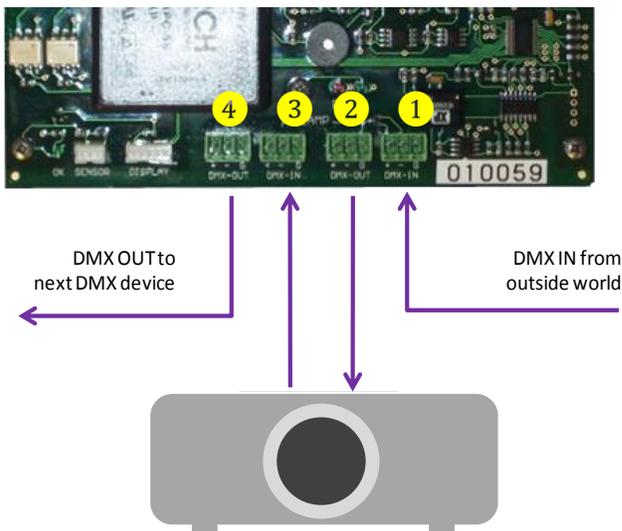
A DMX network will be required if:

- a) The projector inside the enclosure requires a DMX control signal
- b) You wish to monitor the enclosure using RDM
- c) You wish to control the enclosure lamp relay over DMX

DMX Terminations

Note: DMX will not normally be used in projector installations.

Pinout: (1) Ground, (2) Data -, (3) Data +.



DMX Connectors:

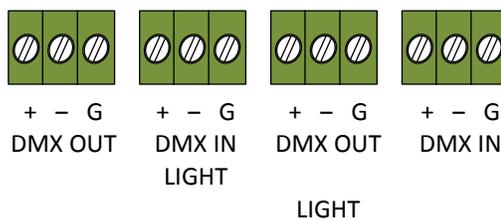
- 1 DMX IN from network
- 2 DMX OUT to projector (or to network if not controlling projector)
- 3 DMX IN from projector
- 4 DMX OUT to network

Note: If the enclosed equipment does not use DMX, then connector (2) on the controller is DMX OUT for the enclosure.

DMX Line Terminations

DMX cable runs must be terminated at the far end of the cable run with a termination resistor as detailed in the DMX512 standard.

DMX terminal Pinout Detail



The individual equipment installed inside the Tempest enclosures must NOT be terminated. It is recommended that any line termination is done using the 3-pin terminal connector fitted to the DEC3.3 control circuit board.

Remote Device Management (RDM)

RDM refers to ANSI E1.20, a control protocol in the entertainment industry used for device configuration and monitoring, and essentially an “extension” of DMX512. The use of RDM is optional, and uses *the same RS485 cable connection* as DMX512, so **no additional wiring** is required if DMX is already present. The user must ensure that any DMX splitters or other routing devices used are RDM operable as well as DMX use. Tempest strongly recommends working with a qualified RDM system integrator when designing an RDM network. Go to www.tempest.org for contact information.

RDM and RDM Integration

DEC3.3’s RDM implementation allows system integrators to remotely configure, control or monitor DEC3.3 attributes, including:

- Relative Humidity
- Air Temperature
- PCB Temperature
- Lamp Current
- Elapsed Lamp Hours
- Lamp Relay Status
- Fan Relay Status
- Heater Relay Status
- DMX Status
- DMX Start Address
- DMX Personality (RDM Mode)
- Device Type
- Device Label
- Software Version



RDM is an effective and powerful tool for commissioning and monitoring an installation, particularly in large systems. For further guidance, please consult a qualified RDM system integrator. Tempest Lighting warrants

DEC3.3 to be compliant with the RDM standard, but is not an RDM systems integrator, and can offer only basic guidance on RDM utilization.

Control Interface



LED Indicators

Heater	ON (Green) 	Heater is ON, to maintain lower temperature level or to prevent condensation
Fan	ON (Green) 	Lamp is ON, or Temperature is HIGH and Fan is cooling enclosure. Short burst when lamp off indicates fan moving air to stabilize temp/humidity
Lamp On	ON (Green) 	Current sensing shows lamp is ON Lamp hour counter is running
	OFF	Current sensing shows lamp is OFF Lamp hour counter is not running
Lamp Relay	ON (Green) 	Lamp relay is closed (normal) Projector power receptacle is energized
	ON (Red) 	Lamp relay is open due to over-temperature event. Projector power receptacle is isolated.
Temp	FLASHING (Green) 	Temperature is below lower temp setting
	ON (Green) 	Temperature is in normal range
	ON (Amber) 	Humidity is above target limit
	ON (Red) 	Temperature is above top setting
	FLASHING (Red) 	Temperature is above Trip level Projector power is isolated
DMX	OFF	DEC3.3 is in BASIC Mode - DMX not used. OR DEC3.3 is in Monitor or Control Mode and no valid DMX or RDM packet has been detected.
	ON (GREEN) 	Good DMX or RDM data packet received.
	ON (RED) 	Control Mode: DMX Fail. A previously good DMX signal has failed. Monitor Mode: No RDM information being received (this is normal)

Control Display

The display on the Control display provides additional status information, depending on the operating mode:

Basic Mode & Monitor Mode

28 °C 47%
209V OFF

*internal temperature, relative humidity
line voltage, lamp status*

DMX Mode & Service Mode

28 °C 47%
209V OFF

*internal temperature, relative humidity
line voltage, lamp status*

Alternating with:

DMX: 001
No DMX

*DMX Start Address
DMX Status*

Control Interface Operation

The Control Interface is normally LOCKED.

To UNLOCK, hold **ESC** and **OK** together for 5 seconds.

You are now in the **CONTROL MENU**

Use **↑ ↓** to scroll up and down the menu.

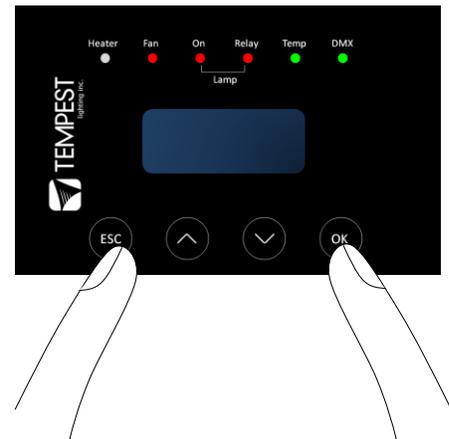
Press **OK** to enter a menu item

Use **↑ ↓** to set the item parameter, or to scroll to the next menu level.

Use **ESC** to go BACK, and **OK** to confirm settings (↵).

To LOCK, hold **ESC** for 5 seconds.

Menu will time out after ten minutes.



Control Menu

SET DMX OPTIONS

SET DMX MODE

From the Front Panel, this menu item allows the user to check (and if necessary change) the RDM mode.

BASIC	Standalone operation, no DMX/RDM (factory default)
MONITOR	Standalone, plus support for RDM remote configuration and monitoring
CONTROL	Monitor, plus use of a single DMX slot to control Lamp relay
SERVICE	Monitor, plus use of three DMX slots to control Lamp, Heater and Fan

Important: Please ensure that the DEC3.3 is NOT left in Service Mode.

SET DMX ADDRESS (in Monitor, Control or Service modes)

Select a DMX starting address in the range 001 to 510

1 - Lamp Relay

In Service Mode an addition two slots are available

2 - Fan Duty Control

3 - Heater Duty Control

Note that the DMX control is designed using a SAFETY pile-on Logic. So the DMX input can only override automatic settings within safe limits.

SET DMX CURVE

DMX Curves affect the way the fixture relay is controlled in Control Mode.

DMX levels are shown as %.

Response Curve 1 (default)

DMX level 0-25 Relay disabled (open)

DMX level 26-75 *No change to relay status*

DMX level 76-100 Relay enabled (normally closed)

Response Curve 2

DMX level 0-19 *No change to relay status*

DMX level 20-40 Relay disabled (open)

DMX level 41-59 *No change to relay status*

DMX level 60-80 Relay enabled (normally closed)

DMX level 81-100 *No change to relay status*

SET DMX RESPONSE

DMX Response sets a delay time before DMX Control Mode settings are acted on.

Setting a response delay of a few seconds would prevent unintended fixture relay state changes in the event of a short accidental change in DMX level.

NOTE: from firmware revision 0.00.100, DEC holds last valid DMX level if DMX is interrupted.

Response Delay Values are:

No Delay (default), 1, 2, 5, 10, 15, 20, 30, 60 seconds.

SET TEMP UNITS

Choose to display temperature values in Celsius or Fahrenheit (default Celsius)

Note that temperature settings must be entered in Celsius.

SET TEMP RANGES

Set three temperature trigger points for Bottom, Top and Trip temperatures, in °C.

SET TEMP LOWER (*minimum temperature to be maintained*)

(default 0°C, permissible range 0-10°C).

SET TEMP UPPER (*maximum desired temperature*)

(default 40°C, permissible range 35-50°C).

SET TEMP TRIP (*temperature at which load will be isolated – see note*)

(default 60°C, permissible range 55-70°C).

Note: A thermal emergency is when enclosure ventilation fails with the lamp on, in which case the temperature will rise very quickly. To avoid nuisance tripping we recommend setting a higher Trip temperature, 60°C or above.

SET MAX HUMIDITY

(default 80%, permissible range 50-90%).

Set target maximum relative humidity level. This should be set at or a few % higher than the normal high humidity levels expected on site.

SET LAMP ON POINT

The lamp current at which DEC detects the projector/luminaire lamp is running. Default is 1 Amp, which allows for equipment fans and power supplies to run without changing the air in the enclosure. Lamp on point may be set in 0.2 Amp increments between 0.2 Amps and 2.0 Amps.

RESET LAMP HOURS

Reset each time you change the lamp in the projector/projector.

Make this a part of your maintenance instructions.

STATUS DISPLAY

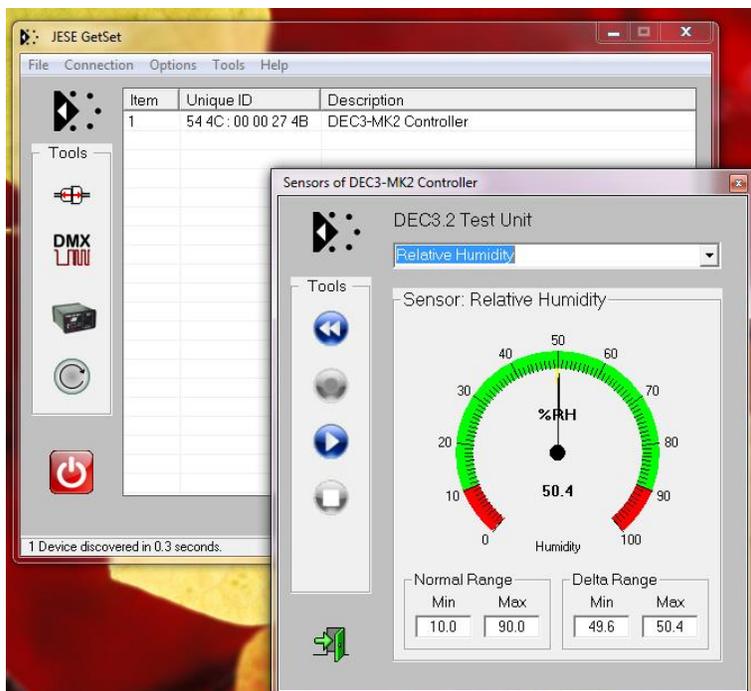
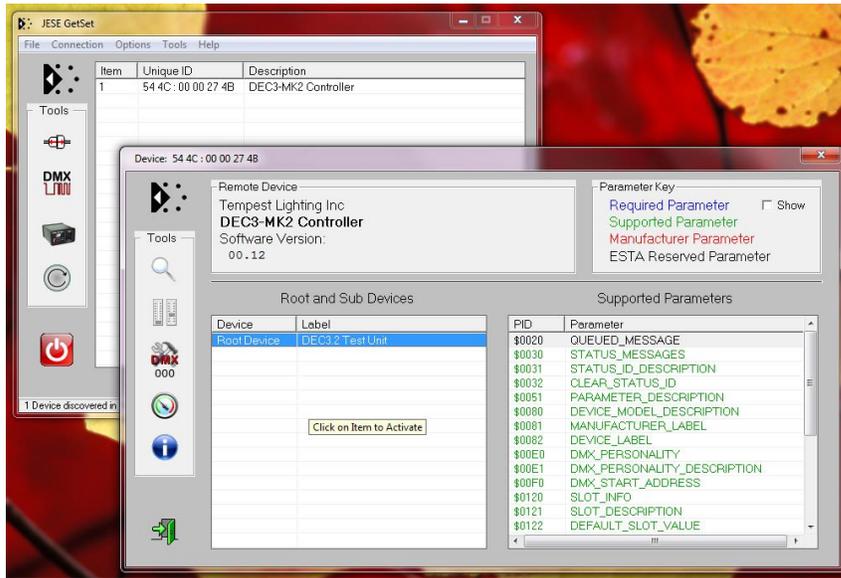
View current status information, using the arrow keys to scroll through:

- a) Humidity – relative humidity in %
- b) Air temperature, in degrees C or F
- c) PCB temperature (this will usually be significantly higher than air temperature)
- d) Voltage – line Voltage reaching the DEC

- e) Current being drawn by projector/light, in Amps
- f) Lamp Hours elapsed since last reset
- g) Firmware version

RDM Monitoring and Configuration

All the features accessible over the DEC3.3 control panel are also available over RDM. Just how this information is displayed will depend on the RDM interface used. These screen shots were taken running the GetSet program in Windows 7, and connecting to a DEC3.3 controller using a RDM TRI MK1 interface, Tempest part # 2000.190



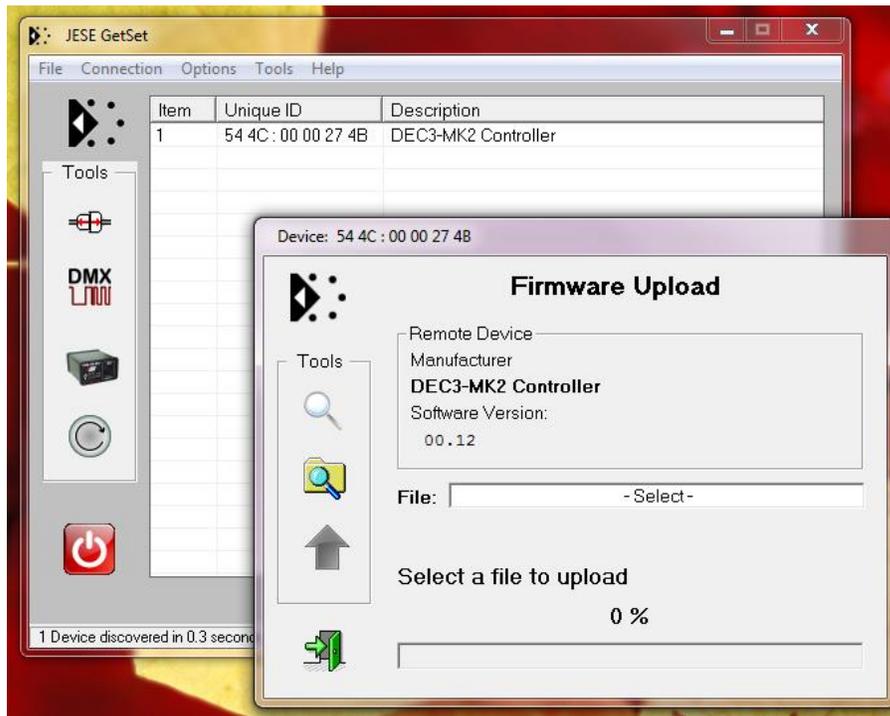
This view shows a single DEC3.2 test unit that has been correctly discovered and labeled by the GetSet software suite, and a log of RDM messages.

This RDM interface provides a graphic view of the various sensor functions supported by DEC3.2 and up

Important:

Check that your RDM interface vendor has tested his interface with Tempest enclosures and all other RDM devices you plan to use on the same network.

Firmware Upgrade over RDM



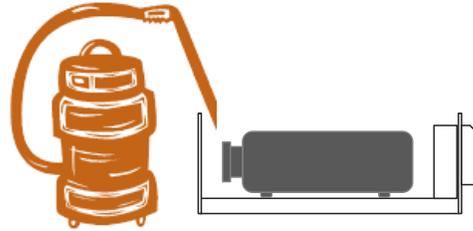
DEC3.3 firmware is field-upgradeable, using RDM. A field upgrade requires a JESE RDM TRI MK1 interface to be connected to the DMX network on which the DEC3.3 is located, and the use of JESE GetSet software. The kit is available from Tempest under part # 2000.190.

5 Closing up the Enclosure

- 1 Check all electrical connections

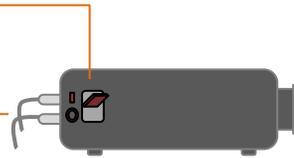


- 2 Clear the enclosure and projector of all dust and debris.



- 3 Check that the power switch on the projector is in the ON position.

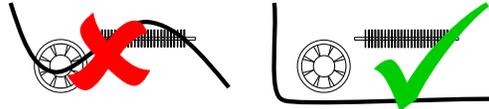
- 4 Complete all signal connections, following projector manufacturer's instructions.



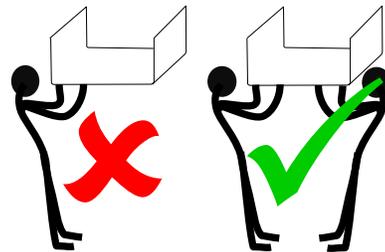
- 5 Test projector



- 6 Tie down cables so that they will not touch heaters or fans.



- 7 Replace the cover on the Blizzard base. This may require two people.



Congratulations! Your system is now ready for use.

6 Operation

- ① Outdoor Enclosures must receive power at all times. Enclosure, and will not provide proper protection for the projector inside if it is not connected to AC power.
- ① Unless the enclosure or projector is undergoing routine maintenance, the cover should be in place and locked down at all times.
- ① Only authorized personnel should open the enclosure (see maintenance warnings in the next section).
- ① If the ambient temperature is high enough, the over-temperature shutdown feature may engage and temporarily cut off power to the projector. Once the temperature reaches acceptable levels, power will be automatically restored after 5 minutes.

7 Routine Maintenance

It is very important to perform routine maintenance on both the enclosure and the projector within. Failure to do so may reduce lifetime for both the enclosure and the projector.

Note

Maintenance schedules depend on location and environment. The times given here are general guidelines for you to use. It is up to you to judge whether maintenance should be done more often. We do advise doing these tasks no less often than mentioned here.

Safety

-  Although maintenance can be performed while the enclosure is powered, it is safer to carry it out with the power disconnected with proper lockout and tag out procedures followed.
-  Be aware that once the enclosure has had power applied to it, the heater will get hot and the fans will start to turn. Make sure that your hands are clear of these areas before applying power to the enclosure.
-  Only authorized personnel should perform maintenance on the enclosure or projector
-  Do not service the unit in the rain or other adverse weather conditions (snow, sleet, high winds, etc.).
-  Be aware that the cover is a large object that can be awkward to handle, especially when standing on a ladder or scaffolding.

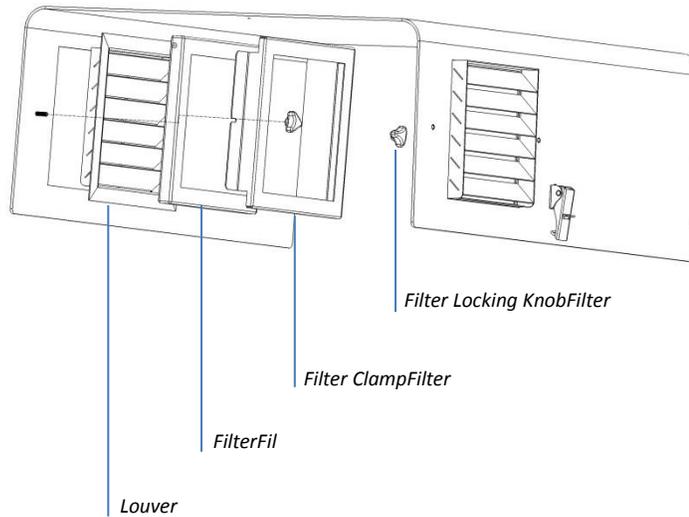
Inspection Checklist: - Every Three (3) Months

- All weep (drain) holes should be clear
- All vents should be free of debris
- Enclosure should be free of debris both inside and out
- Bolts should be tight
- Lid seal should be in good condition, Check seal inside and out for gaps.
- Window should not be cracked
- Fans should be moving (it will be necessary to have the power on to check this), with corresponding indicator status

Except for the last two items (concerning globe and fan), problems with any of these things can be easily remedied. Contact technical support for problems with the last two items.

Air Filter Replacement

The air filters should be removed and checked on a regular basis. We recommend initial inspection every three months. Inspection interval may be adjusted based on site conditions.



Remove any buildup of dust on the outside of the filter with a vacuum cleaner.

Eventually the filters will need to be replaced. Filters will appear dirty and clogged after vacuuming and the internal temperature will increase.

Replacement Filters are available from Tempest:

Filter Part #	Size	Blizzard Model
6500.799.HF	11"x11"/279x279mm	Blizzard X-Stretch (6556)
		Blizzard Stretch (6555)
6500.977.HF	8.5"x8.5"/216x216mm	Blizzard (6550)
		Blizzard Midi (6540)
		Blizzard Baby (6510, 6515)

8 Troubleshooting

This is a guide to the general symptoms, problems, and solutions that may occur during the lifetime of your enclosure. However, it is important to remember that problems may occur within the projector itself and these must also be considered.

Projector does not have power.

Check power switch of projector. (Note: the following actions should be performed by a licensed electrician) If power is on, check wiring (including metering supply voltages, enclosure must receive 200-240VAC to operate properly). If LEDs on the DEC3 control panel controller are lit, check the Lamp Relay LED. If it is on, meter power in receptacle. If no power is present at the receptacle, contact technical support.

In case of over-temperature, the power disconnection is an intended function of the enclosure and is for the protection of the projector, which is not meant to operate in extreme conditions. In this case, the problem will only continue until temperature drops to acceptable levels. It is possible that the air intake or exhaust has become clogged, leading to higher temperatures inside the enclosure. Make sure that these areas are clear, the filters are clean, and the fans are working properly.

Projector turns on and off repeatedly

Check that vent areas and airways are clear. If so, ambient temperature may be too high (see over-temperature note above) or projector may have internal problem.

Fans are not spinning.

Fan cords may have become disconnected. Check connections between fan and cord.

Fans may be obstructed. Shut off power to enclosure and check for obstructions. Turn power back on to see if fans will start spinning. If fans do not turn and display on temperature controller is lit, contact technical support. If fans do not turn display is not lit, then enclosure is not receiving power. Turn off all power and check wiring. If the wiring is correct, contact technical support.

Excessive debris in unit.

Filters may not be properly seated. Check for gaps.

Excessive Water in enclosure.

Weep (drain) holes may be clogged. Clear them.

Latches do not latch properly.

Check for obstructions.

9 Limited Warranty

INSPECTION/WARRANTY/RETURNS.

A. Customer, at its sole expense, shall inspect all Goods promptly upon receipt and accept all Goods that conform to the specifications or catalog. All claims for any alleged defect in or failure of the Goods or Seller's performance to conform to the Contract, capable of discovery upon reasonable inspection, must be set forth in a written rejection notice detailing the alleged non-conformity, and be received by Seller within thirty (30) calendar days of Customer's receipt of the Goods. Failure by Customer to notify Seller of the alleged non-conformity within thirty (30) days will be conclusive proof that the Goods have been received by Customer without defects or damage, and in the quantities specified on the bill of lading and shall constitute an irrevocable acceptance of the Goods and a waiver of any such claim in connection with the Goods.

B. Seller warrants to Customer only that the Goods will be free from defects in material and workmanship at the time of delivery and, subject to the exceptions and conditions set forth below, for the following period (the "Warranty Period"): twelve (12) months from the date of shipment by Seller. Seller may provide additional years of warranty coverage beyond 12 month, at the rate of 2.5% of the net sale price per year, up to a total of four additional years' coverage beyond the standard 12 month warranty period. Seller will remedy a defect as set forth in paragraph 7 D, below, (the "Warranty"). The Warranty is subject to each of the following exceptions and conditions:

1. Customer must promptly (and in all events within the Warranty Period) notify Seller of any alleged defect in a written notice (the "Notice") which shall set forth the quantity, catalog number, finish, original purchase order number, Seller's invoice number on which Goods were originally billed and a statement of the alleged defect, along with digital photographs showing such defects where feasible.

2. The Warranty shall not apply: (i) to any claimed defect that was capable of discovery upon reasonable inspection and deemed to be waived under paragraph A, above; (ii) to any Goods that have been subject to misuse, abnormal service or handling, or altered or modified in design or construction; (iii) to any Goods repaired or serviced by any person other than Seller's authorized service personnel or to Goods installed other than according to installation instructions, or (iv) with respect to normal wear and tear.

3. Seller makes no Warranty with respect to parts or components that are not the product of Seller, and specifically makes no warranty whatsoever for equipment housed inside enclosure products manufactured by Seller.

4. The Warranty is Seller's exclusive warranty with respect to the Goods. Seller makes no warranties, guarantees or representations, express or implied, to Customer except as set forth in this section. ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR USE OR FOR A PARTICULAR PURPOSE, ARE HEREBY EXCLUDED AND DISCLAIMED.

C. Seller will accept the return of Goods properly rejected under paragraph A, above, or as to which Notice of an alleged breach of Warranty has been timely given and such Goods may be returned to Seller, freight prepaid, but only upon Customer's receipt of Seller's written return material authorization ("RMA") and shipping instructions. The RMA shall be void if the Goods are not received within 45 days after issuance of the RMA. No deduction or credit in respect of any rejected or returned Goods shall be taken until Customer has received Seller's further written deduction or credit/authorization following Seller's inspection to confirm nonconformity or defect. Seller will charge to Customer any and all costs incurred by Seller in connection with the handling, shipping, inspection and disposition of any returned Goods that are determined by Seller not to have been nonconforming upon Delivery or as to which the warranty hereunder is not applicable.

D. UPON ANY PROPER RETURN PURSUANT TO PARAGRAPH C, ABOVE, WHETHER IN CONNECTION WITH A REJECTION OF GOODS OR AN ALLEGED BREACH OF WARRANTY AND BASED UPON THE CONDITIONS SET FORTH IN THIS PARAGRAPH 7, SELLER AGREES THAT IT WILL, AS THE SOLE AND EXCLUSIVE REMEDY UNDER THE CONTRACT OR OTHERWISE, FOR ANY NONCONFORMITY OR BREACH OF WARRANTY, AND AT SELLER'S SOLE ELECTION: (i) REPAIR SUCH GOODS; OR (ii) REPLACE SUCH GOODS.

10 Tempest Product Support

Step 1: First contact your local Dealer for support. Your dealer is best placed to respond quickly to your needs.

Step 2: If your dealer is unable to answer your questions please contact

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Fax +1 818 982 5582
info@tempestlighting.com

Visit our web site for current information and specifications:

www.tempest.org