User Manual
Zen

Revision 12.3

October, 2026

© Tempest Lighting, Inc.

For Zen enclosures manufactured after September 2025

Table of Contents

Table of Contents 2
Approvals – US/Canada 5
Approvals – Europe 6
Approvals – China 7
Introduction 8
IMPORTANT: Safety Advisories 8
Installation 9
Dimensions, Weights & Rigging Points 10
Mounting Hardware Options 11
Mounting Bolts 11
Unistrut Kit 11
Other Mounting Options 12
Wiring the Enclosure 12
Power Wiring 12
SAFETY NOTICE 12
Electrical Standards 13
Wiring Access 13
Using the Conduit Knockouts 14
Wiring Access 14
Wiring Paths 15
Wiring: All models, North America/Japan – Single Feed 16
Wiring: All models, North America/Japan – Split Feed 17
Wiring: All models, International – Single Feed 18
Wiring: All models, International – Split Feed 19
Installing the Projector 20
General: 20
Zen Temperature Sensor 21
Projector-Specific Mounting Notes 22
Panasonic PT-RZ34K, RQ35K, RQ50K 22
Custom: Christie Griffyn with UST lens, Feet-up 23
Power Connections – Projector and Aux Equipment 25
Important: Check Lamp-on Current 25
Enclosure Operation 26
Zen PWM Fan Control Settings 26
Remote Monitoring Connections 28
DEC4 Ethernet Adapters – 51.D4.15, 51.D4.23 29

51.D4.15 Default Configuration 29
51.D4.15 Additional Support 29
RS485 (DMX/RDM) Cable Terminations 30
Line Termination Switch Settings 31
System Manager Installation 32
Enclosure Management 34
Enclosure Monitoring 34
DMX Control 36
Firmware Uploads 36
Remote Configuration 36
Tempest Equipment Management Protocol 37
Zen Digital Enclosure Control 38
Schematic (PWM) 38
DEC4 Main Functions 39
Firmware Revision 39
Factory Settings – Data Modes 39
Hardware Indicators & Fuses 40
DEC System Control Board 40
Zen PWM Fan Transition board 41
Control Interface 42
Zen DEC4 Operating Modes 43
RDM Only Monitor (Factory Default) 43
RDM+DMX Control 43
RDM+DMX Service 43
User Interface LCD Display 44
Control Interface Operation 44
Control Menu 45
Set DMX Options 45
Set Temp Units 46
Set Temp Ranges 46
Set Max Humidity 46
Set Lamp Options 46
Set Fan Function 47
Status Display 48
DEC4 Firmware Updates 49
Direct Firmware Update (System Control Board only) 49
Indirect Firmware Updates (System Control Board and RS485 Board) 53
Requirements 53

Installation Procedure 53
Routine Maintenance 58
Clean Port Glass 58
Check Filter 58
Zen - Check Temperature/Humidity Sensor 59
For After Sales Support 59
Troubleshooting 60
Warranty 61

Approvals – US/Canada

Tempest Lighting, Inc. declares that the Projector Enclosure Series listed below are authorized to use the marking specified by UL LLC:

Blizzard, Part Number 52.xxx
Whisper, Part Number 53.xxx
Typhoon, Part Number 54.xxx
Cyclone, Part No. 55.xxx
Tacit, Part No. 56.xxx
Zen, Part No. 57.xxx

Tempest projector Enclosures are UL Listed, File Number E498709.

September, 2023
Tempest Lighting, Inc.

Approvals – Europe

CE

CERTIFICATE AND DECLARATION OF CONFORMITY

FOR CE MARKING

Tempest Lighting, Inc.,

18723 Via Princessa, Unit 319, Santa Clarita, CA 9138, USA

t: +1 818 963 7069 e: info@tempest.biz

www.tempest.biz

Tempest Lighting, Inc. declares that their

Zen Projector Enclosure Series 57.xxx.x.x

complies with the Essential Requirements of the following EU Directives:

Low Voltage Directive 2014/35/EU	Test Report 57-60065-6500-08-24
Electromagnetic Compatibility Directive 2014/30/EU	Test Report 57-61000-6500-08-24

and further conforms with the following EU Harmonized Standards:

EN IEC 62368-1:2020+A11:2020	Test Report 57-62368-08-24
EN 60529:1991/A2:2013/AC:2019-02	Test Report 57-60529-08-24
EN IEC 61000-6-3:2021	Test Report 57-61000-6-3-08-24
EN IEC 61000-6-1:2019	Test Report 57-61000-6-1-08-24
EN IEC 55015:2019/A11:2020	Test Report 57-55015-08-24

Dated: 8th September 2024

Position of signatory: President

Name of Signatory: Tim Burnham

Signed below:

on behalf of Tempest Lighting, Inc.

. . . . . .

Approvals – China

强制性认证目录外产品确认书
Confirmation Letter for Products
Outside the Scope of China Compulsory Certificate

Ref. No: CL-TEMPEST-160818-1

申请人: Applicant: Tempest Lighting Inc.	地址: Address: 11845 Wicks St., Los Angeles,CA 91352 United States	
生产厂名称: Factory: Tempest Lighting, Inc.	地址: Address: 11845 Wicks St., Los Angeles, CA 91352, USA	
产品名称: Product Name: 投影仪外壳, 灯具外壳 Projector Enclosures Moving Light Enclosures Lighting Enclosures	型号: Model: 18xx.IN, 19xx.IN, 2xxx.IN,66xx.IN, 52.xxx.IN, 53.xxx.IN, 54.xxx.IN, 55.xxx.IN, 56.xxx.IN	商标: Trademark: Tornado, Twister, Thunder, Blizzard, Whispr, Typhoon, Cyclone, Tacit
产品标准: Standard: /		HS code: 9405.99.0000

产品描述(包括使用场所) Product Description (utilization of product) :
Enclosures for high-powered luminaires and video projectors for outdoor use and indoor noise attenuation. For professional use only.

产品为用于户外和室内噪声衰减大功率灯具和视频投影仪的外壳。仅供专业使用。

确认意见 Conclusion:

According to the product description, the models above are out of CCC scope.

基于产品描述，如上型号的产品在中国强制性产品目录之外。

本确认书的有效期至: August 18th , 2017
Validity Period

日期: August 18th , 2016
Issue date:

Introduction

Thank you for purchasing a Tempest enclosure! We have worked hard to provide you with the very best product available for its purpose, and we shall continue to do everything possible to ensure that it works well for you for many years to come.

Please read this manual before starting work!

In the event of difficulty, please contact your Tempest reseller or Tempest direct:

info@tempest.biz

+1 818 787 8984

We will do everything we can to help you get the very best results from your Tempest enclosure.

IMPORTANT: Safety Advisories

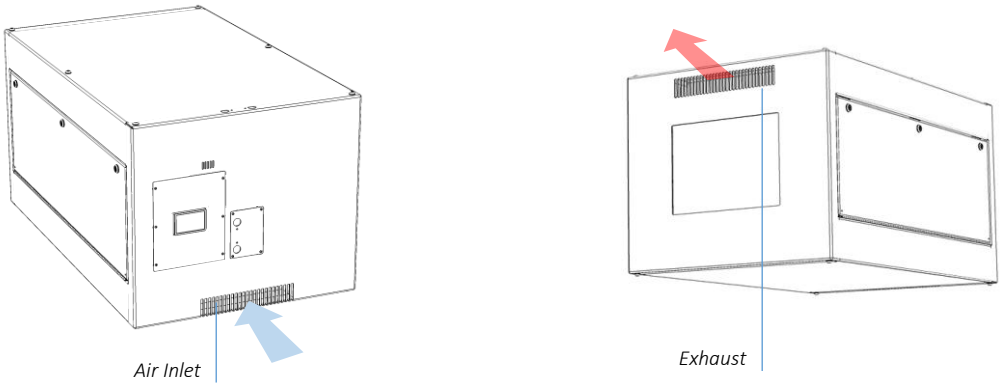
- All installation and rigging work done must where applicable be designed and built in accordance with norms and standards of the local authority having jurisdiction of the installation site. It is the responsibility of the installer to obtain such approvals as may be required to achieve full compliance.
- All electrical work must be carried out by a suitably licensed electrical contractor in full compliance with local electrical standards.
- Lifting: some enclosures and the equipment inside them may be heavy. Use properly rated lifting equipment where appropriate and never attempt to carry out work with fewer than the number of workers needed to lift safely.
- It is the responsibility of the installer to ensure that all local building, safety and electrical codes are strictly adhered to in the installation of this enclosure. Tempest Lighting, Inc., its employees and agents are in no way responsible for damage arising from failure to follow either the instructions in this manual or building, safety and electrical codes prevailing at the installation location.
- 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.

Installation

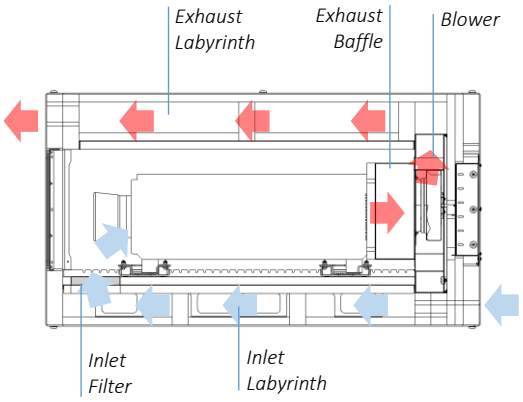
Integral Cooling

Everything is in the box – air is drawn in through an acoustic foam labyrinth in the enclosure base, and exhausted out of the front of the enclosure, driven by a variable-speed blower behind the projector, muffled by a further acoustic foam exhaust labyrinth above the projector chamber.

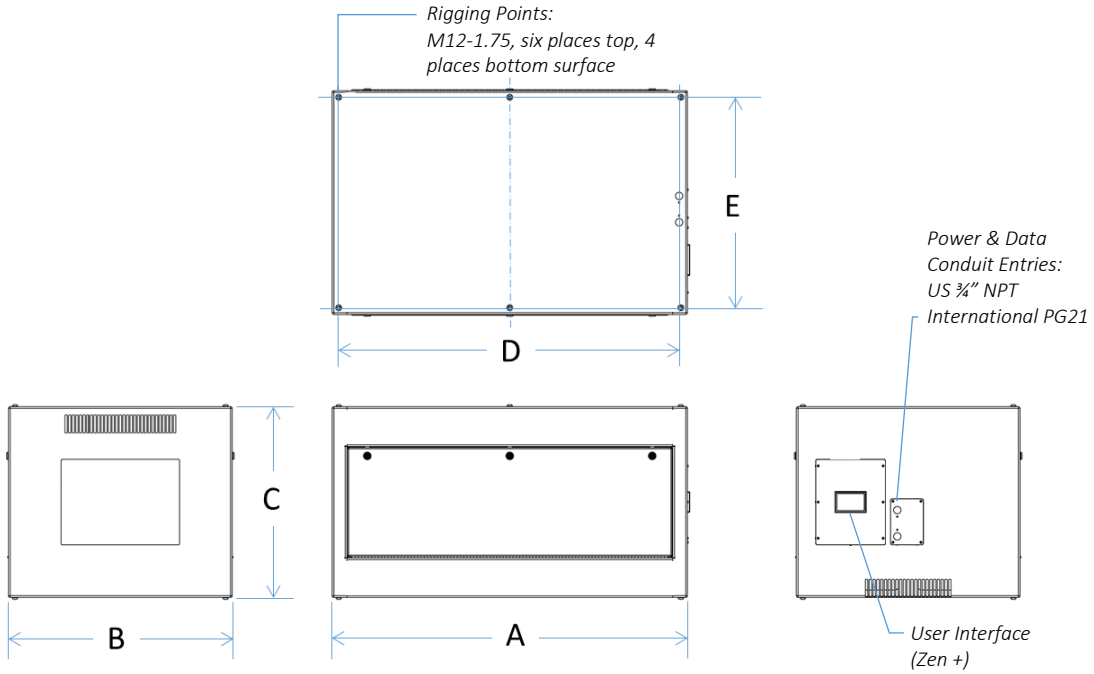
Note that the exhaust blower captures all the exhaust air leaving the back of the projector, preventing recirculation in the projector chamber. For projectors with exhausts other than on the back face of the projector chassis, consult Tempest.



DO NOT OBSTRUCT THE AIR INLET AND EXHAUST VENTS.



Dimensions, Weights & Rigging Points



Download Detailed PDF and DWG 2D drawings, and 3D CAD Blocks at www.tempest.biz

Zen	A in	A mm	B in	B mm	C in	Cmm	D in	D mm	E in	E mm	W lb	W kg
57.100L	40	1,016	32	813	24	610	38	965	30	762	89	40
57.150L	48	1,219	32	813	24	610	46	1,168	30	762	107	48
57.210L	54	1,372	34	864	29	737	52	1,321	32	813	154	70
57.305L	56	1,422	34	864	32	813	54	1,372	32	813	165	75
57.310L	62	1,575	34	864	29	737	60	1,524	32	813	177	80
57.320L	70	1,778	37	940	32	813	68	1,727	35	889	240	109
57.324L	60	1,524	37	940	35	889	58	1,473	35	889	225	102
57.525L	67	1,702	37	940	29	737	65	1,651	35	889	208	95

Projector Maximum Dimensions/Power (models 57.100-150)							
Zen	L in	W in	H in	L mm	W mm	H mm	Watts
57.100L	27	24.5	10	686	622	254	1,250
57.150L	35	24.5	12	889	622	305	1,800

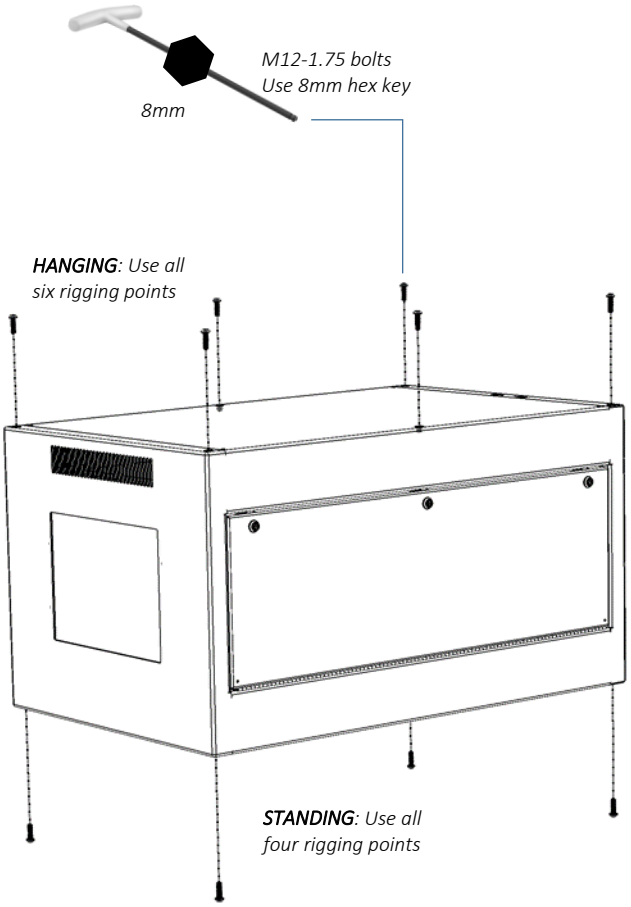
Mounting Hardware Options

Mounting Bolts

- **HANGING:** Each Enclosure **MUST** be mounted with all six rigging points (smaller Zen enclosures may have only four hanging points, in which case this does not apply).
- **STANDING:** Each Enclosure must be mounted with all four rigging points.
- All mountings must be made using the M12 threaded holes on the enclosure chassis.
- Use an 8mm hex key to secure the M12 socket cap screws provided.

IMPORTANT SAFETY NOTICE

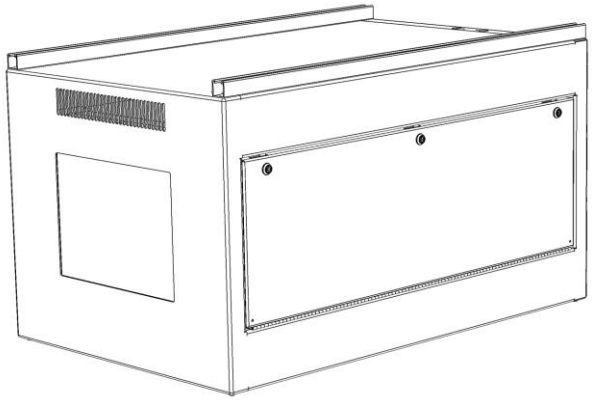
Installer must ensure that all mounting points are secure and conform to local safety regulations. Tempest Lighting Inc. accepts no responsibility for damage or injury arising from inappropriate or unsafe installation.



Unistrut Kit

If mounting positions for the corner bolts are not convenient, use the Unistrut Kit (55.UR.xxx) to add two Unistrut rails to the top or bottom of the enclosure.

Using standard Unistrut channel nuts, the enclosure may now be attached at any point along the Unistrut rails.



Other Mounting Options

Tempest has a wide range of mounting accessories, and unparalleled experience mounting projector enclosures – contact us to discuss special needs at info@tempest.biz.

Wiring the Enclosure

Power Wiring

SAFETY NOTICE

All power wiring must be performed by a competent electrician, appropriately licensed in the jurisdiction where the installation t all electrical and safety norms applicable to the installation site. Isolate all power feeds before opening the enclosure.

Tempest Lighting, Inc., its employees and agents will not be held responsible for damage or injury caused by disregarding this no

Electrical Standards

Important:

Zen enclosures run on any electrical supply, from 100-250VAC, 50/60Hz.

North America and Japan: 200-208VAC using two hots and no neutral is acceptable, but a neutral should be installed to supply the two auxiliary equipment outlets at 100-120V.

L
N 220-250VAC
E

L
N 100-125VAC
E

L1
L2 200-208VAC
E
N (for 120V Aux Power if required)

Power feed Rating:

EITHER Single Feed:

Single circuit, power rating to suit projector plus 150W

OR Split Feed (see next section):

One circuit, power rating to suit projector, AND

One circuit, power rating 200W for enclosure

Note:

(1) AC Fans are 200-250Vac
(2) DC Fans are 48Vdc
(3) Fan Power Supply is autoranging between 100-240VAC, 50/60Hz
(4) DEC Controller is autoranging for any voltage 90-265VAC, 50/60Hz

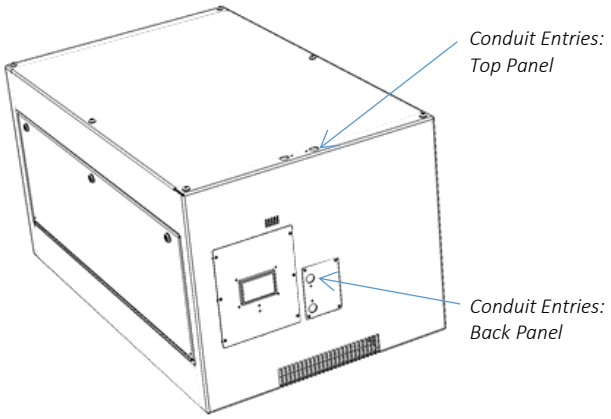
Wiring Access

You have a choice of conduit entry points: either on the top or the back panel.

Conduit openings accept PG21 (International, 29mm hole) and ¾" NPT (North America) conduit fittings.

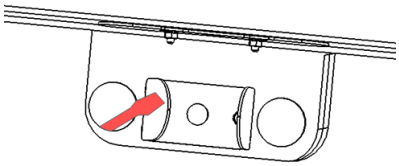
Use permanent or flexible conduit to connect power and signal cables to your enclosure.

ALWAYS RUN POWER AND SIGNAL CABLES IN SEPARATE CONDUITS.



Using the Conduit Knockouts

Use a screwdriver to bend the inner conduit blank covers back inside the enclosure. It is not necessary to break off the cover tabs – just bend them right back.

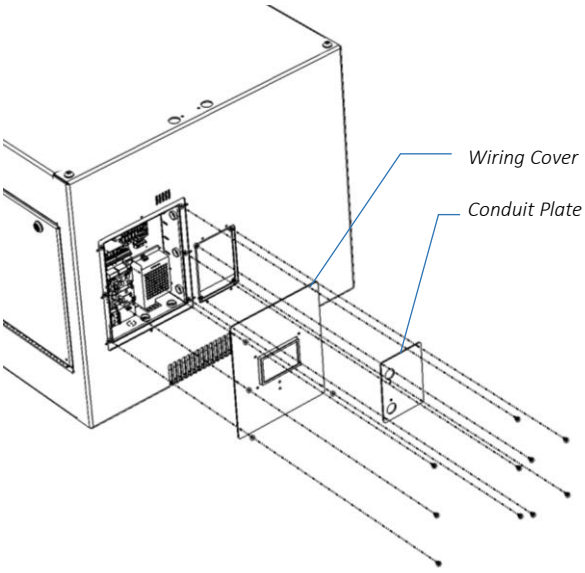


Inside view

Wiring Access

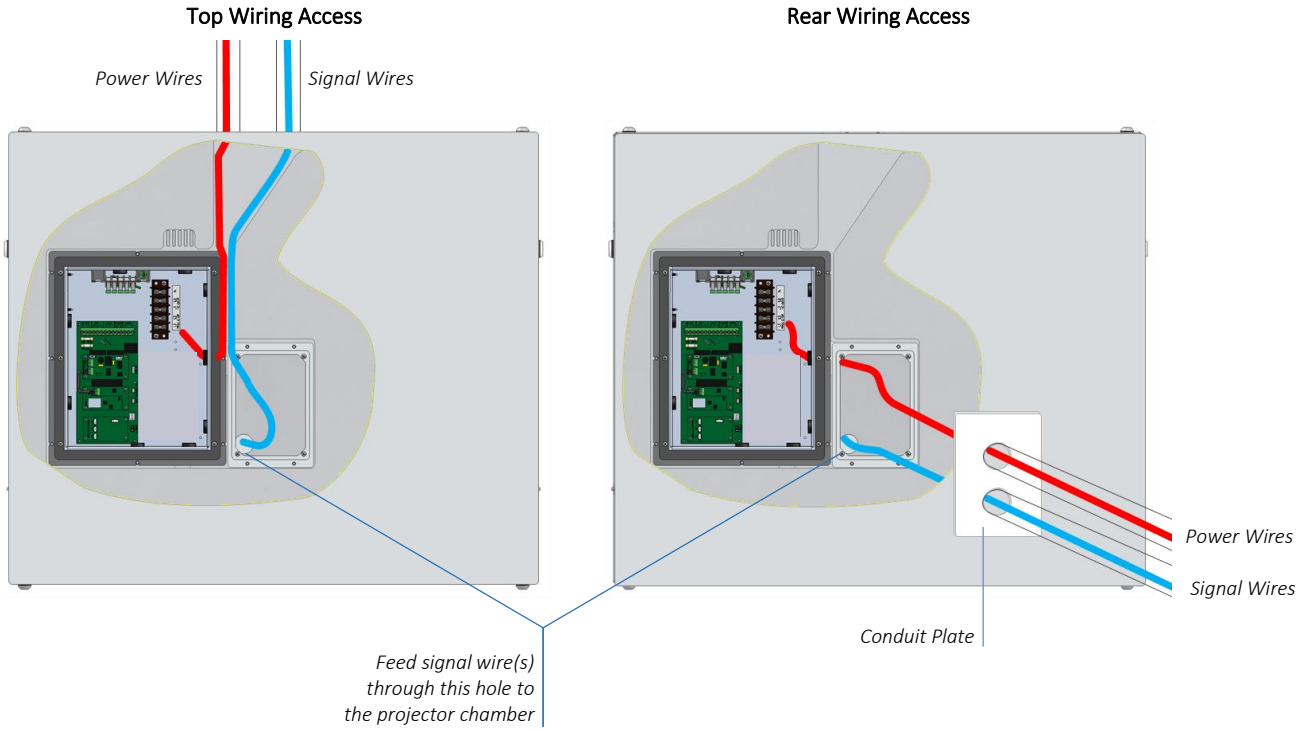
Remove the wiring cover and conduit plate screws and washers and remove both covers.

(Zen pictured here)



Wiring Paths

Follow these wiring entry paths, depending on whether you choose top or rear wiring access:



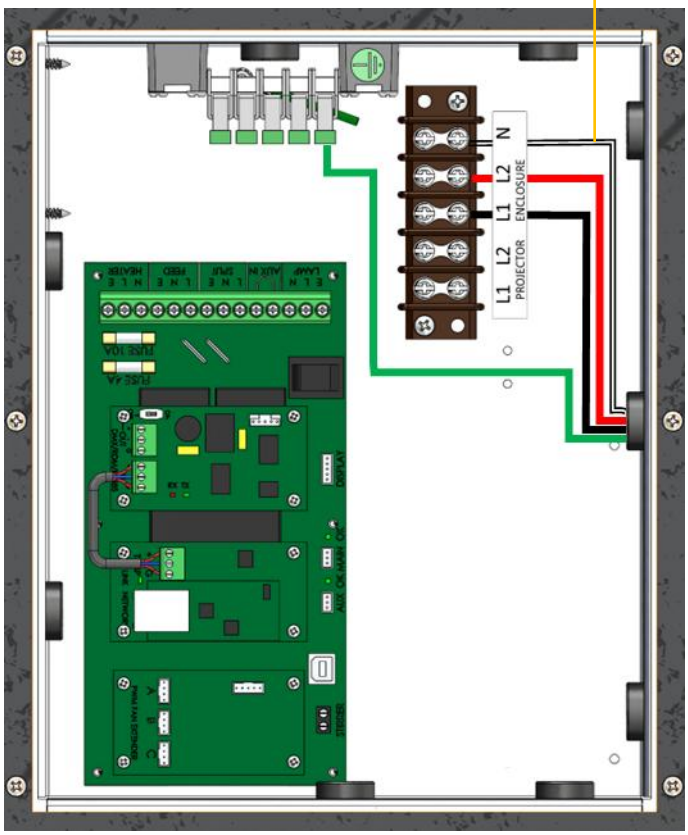
Wiring: All models, North America/Japan – Single Feed

Single Feed Wiring (most common)

Enclosure and projector are fed from the same branch circuit.

Fuse rating: projector power + 400W

Neutral is required for aux power outlets at 100-120VAC



For clarity, internal wiring is not shown

Wiring: All models, North America/Japan – Split Feed

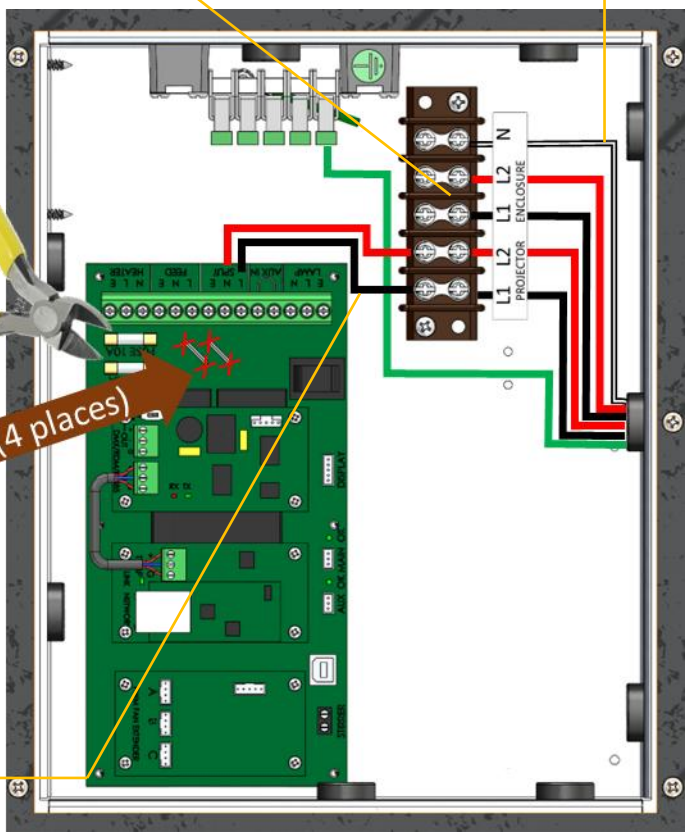
Split Feed Wiring

The enclosure and projector are fed from separate branch circuits:

Projector power: fuse to projector power rating

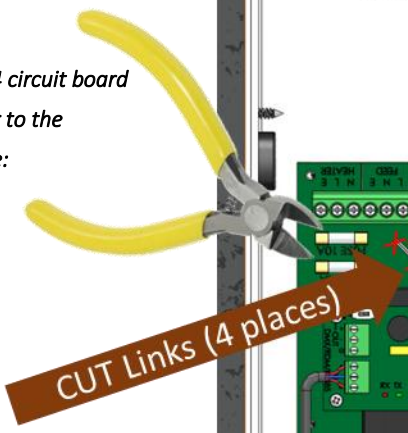
Enclosure Power: 400W

Neutral is required for aux power outlets at 100-120VAC



IMPORTANT:

Cut the links on the DEC4 circuit board before connecting power to the enclosure, as shown here:



Then:

Connect the two wires in the Split Feed Wiring Kit from the terminal block to the DEC4 power terminals, as follows:

DEC4	TERMINAL BLOCK
SPLIT L	L1 PROJECTOR
SPLIT N	L2 PROJECTOR

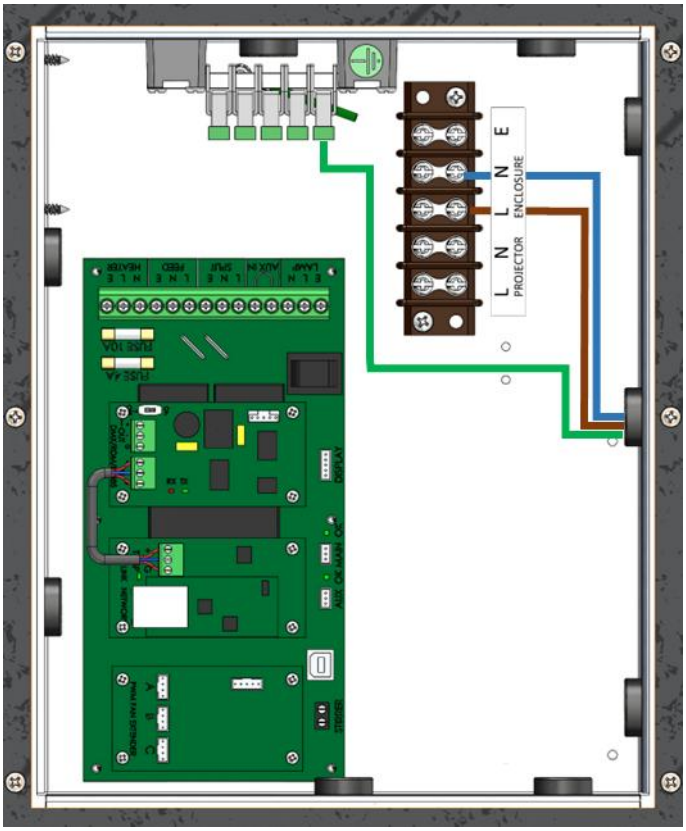
For clarity, internal wiring is not shown

Wiring: All models, International – Single Feed

Single Feed Wiring (most common)

Enclosure and projector are fed from the same branch circuit.

Fuse rating: projector power + 400W



For clarity, internal wiring is not shown

Wiring: All models, International – Split Feed

Split Feed Wiring

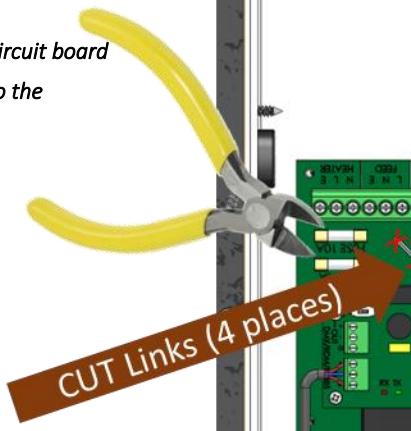
The enclosure and projector are fed from separate branch circuits:

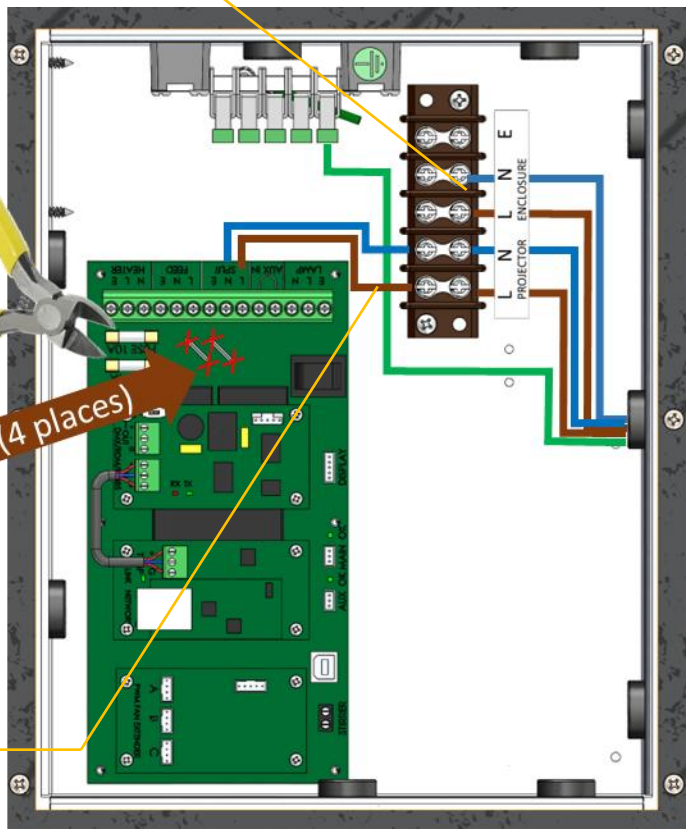
Projector power: fuse to projector power rating

Enclosure Power: 400W

IMPORTANT:

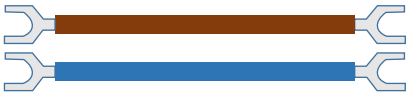
Cut the links on the DEC4 circuit board before connecting power to the enclosure, as shown here:





For clarity, internal wiring is not shown

Then:



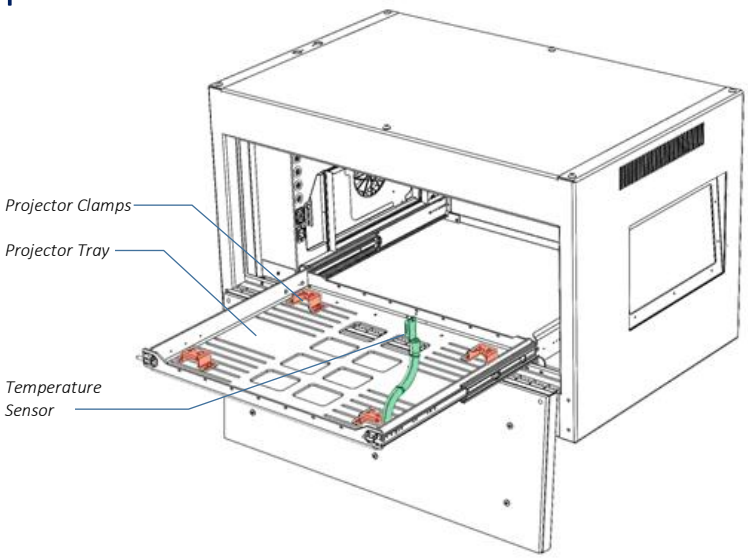
Connect the two wires in the Split Feed Wiring Kit from the terminal block to the DEC4 power terminals, as follows:

DEC4	TERMINAL BLOCK
SPLIT L	L1 PROJECTOR
SPLIT N	L2 PROJECTOR

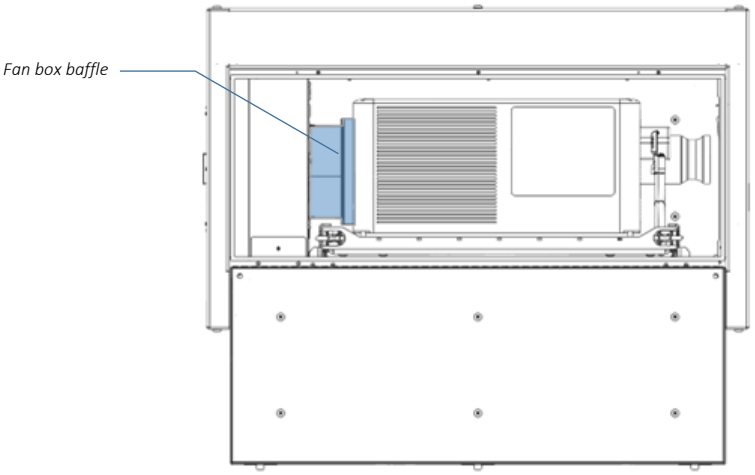
Installing the Projector

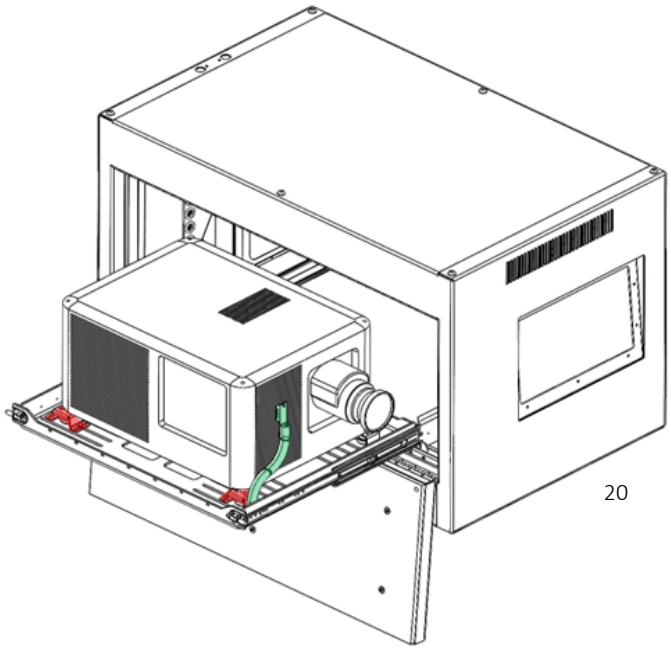
General:

The projector sets on a tray, that may be specified to slide out either the left or right side of the enclosure (right slide shown here).



1. Temporarily remove the four projector clamps
2. Set the projector on the projector tray
3. IMPORTANT: Check that the back of the projector chassis is touching the rubber seals around the fan box behind the projector.
4. Adjust the height of the baffle so that it covers the projector exhaust grille.
5. Locate the four projector clamps snugly around the projector feet (you may need to unscrew them a few turns), and secure in place, using the supplied hardware. *Note: If you ever need to remove the projector for service, remove the clamps on one side, but leave the other clamps in place to reposition the projector accurately after service.*
6. Locate the temperature sensor close to the projector's main air inlet (see the projector manual for location).
7. Connect power and signal cables, slide the tray back into the enclosure, and secure with the two slide bolts.



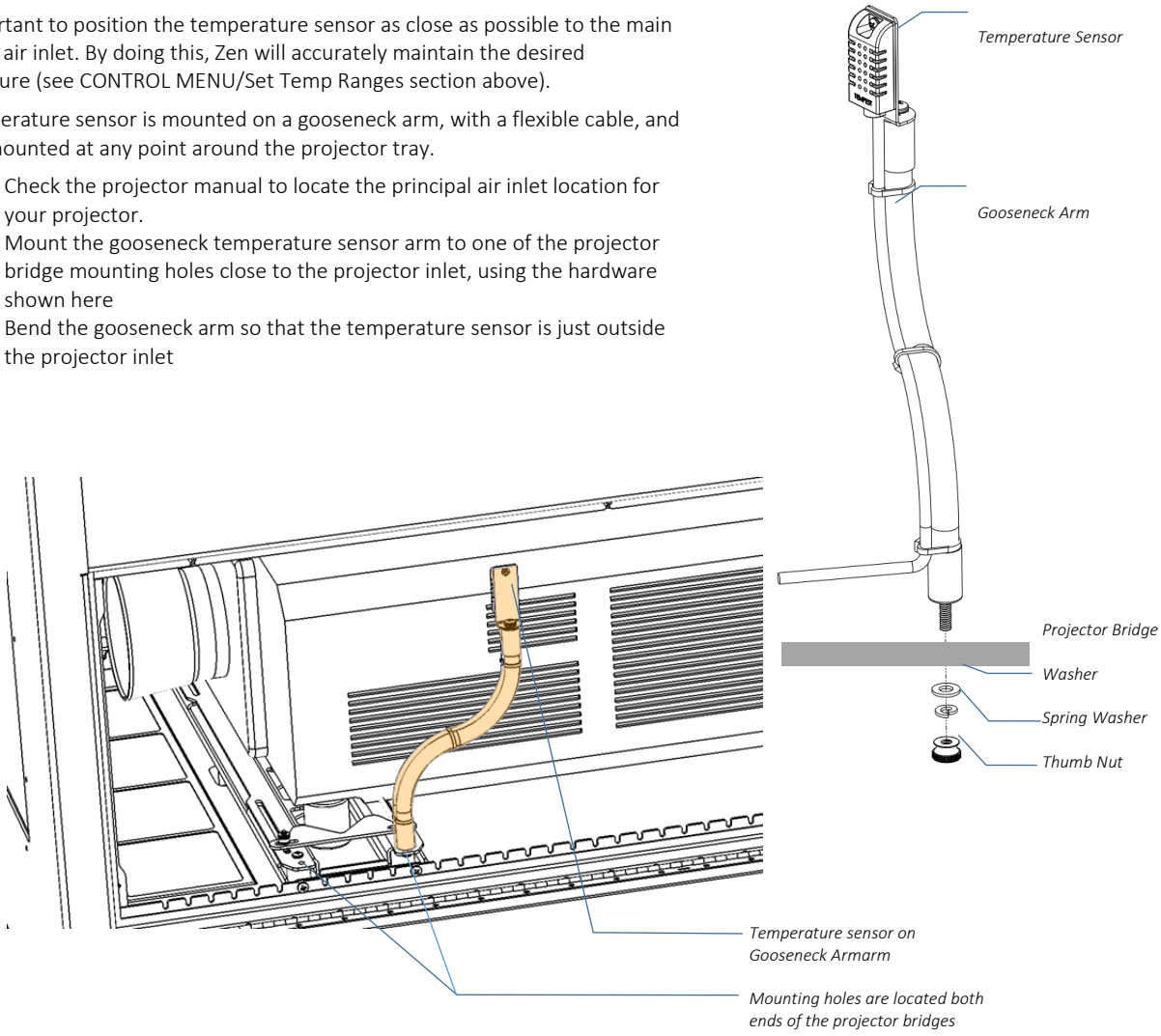


Zen Temperature Sensor

It is important to position the temperature sensor as close as possible to the main projector air inlet. By doing this, Zen will accurately maintain the desired temperature (see CONTROL MENU/Set Temp Ranges section above).

The temperature sensor is mounted on a gooseneck arm, with a flexible cable, and may be mounted at any point around the projector tray.

(1) Check the projector manual to locate the principal air inlet location for your projector.
(2) Mount the gooseneck temperature sensor arm to one of the projector bridge mounting holes close to the projector inlet, using the hardware shown here
(3) Bend the gooseneck arm so that the temperature sensor is just outside the projector inlet



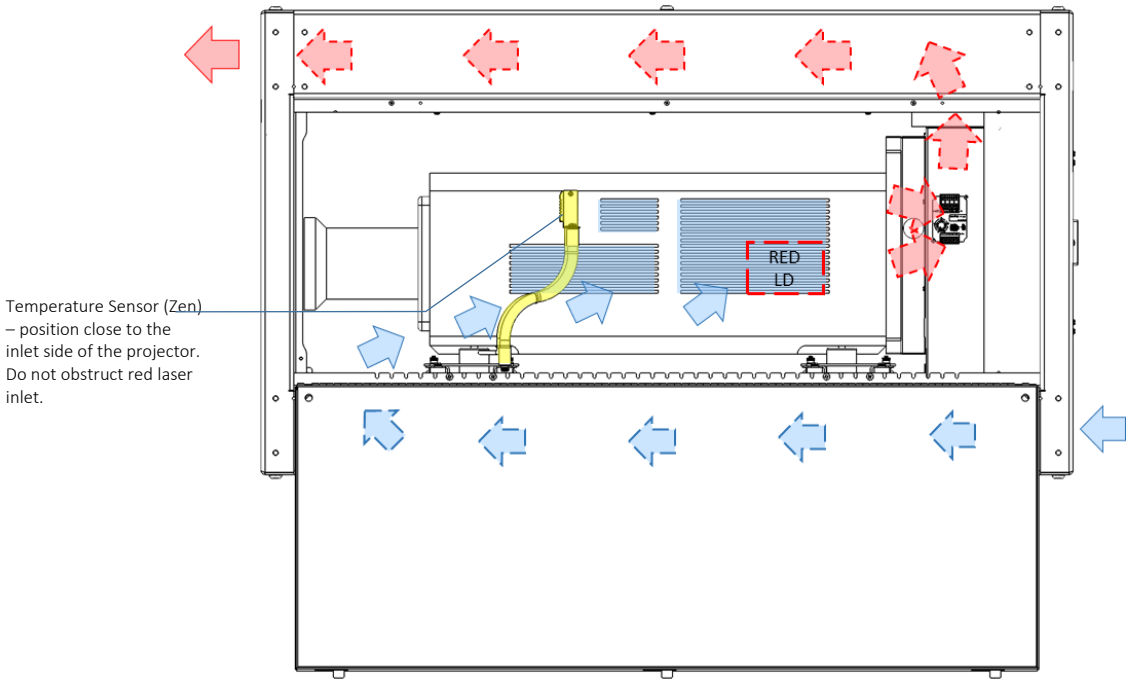
Projector-Specific Mounting Notes

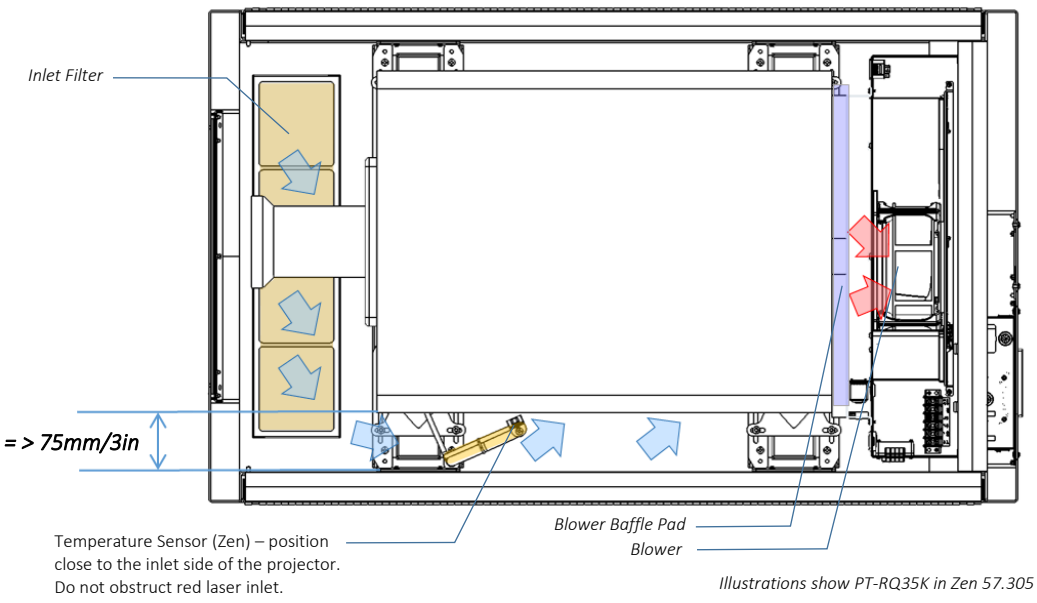
Panasonic PT-RZ34K, RQ35K, RQ50K

These projectors utilize two laser engines, blue and red. The red laser is sensitive to temperature and airflow, and care must be taken to assure adequate airflow to the red laser radiator inlet on the side of the projector.

Take care to observe these minimum spacing requirements:

- Back of projector MUST touch the foam pad on the front of the blower baffle
- Left side of projector to inside of Zen left door insulation: 75mm/3in

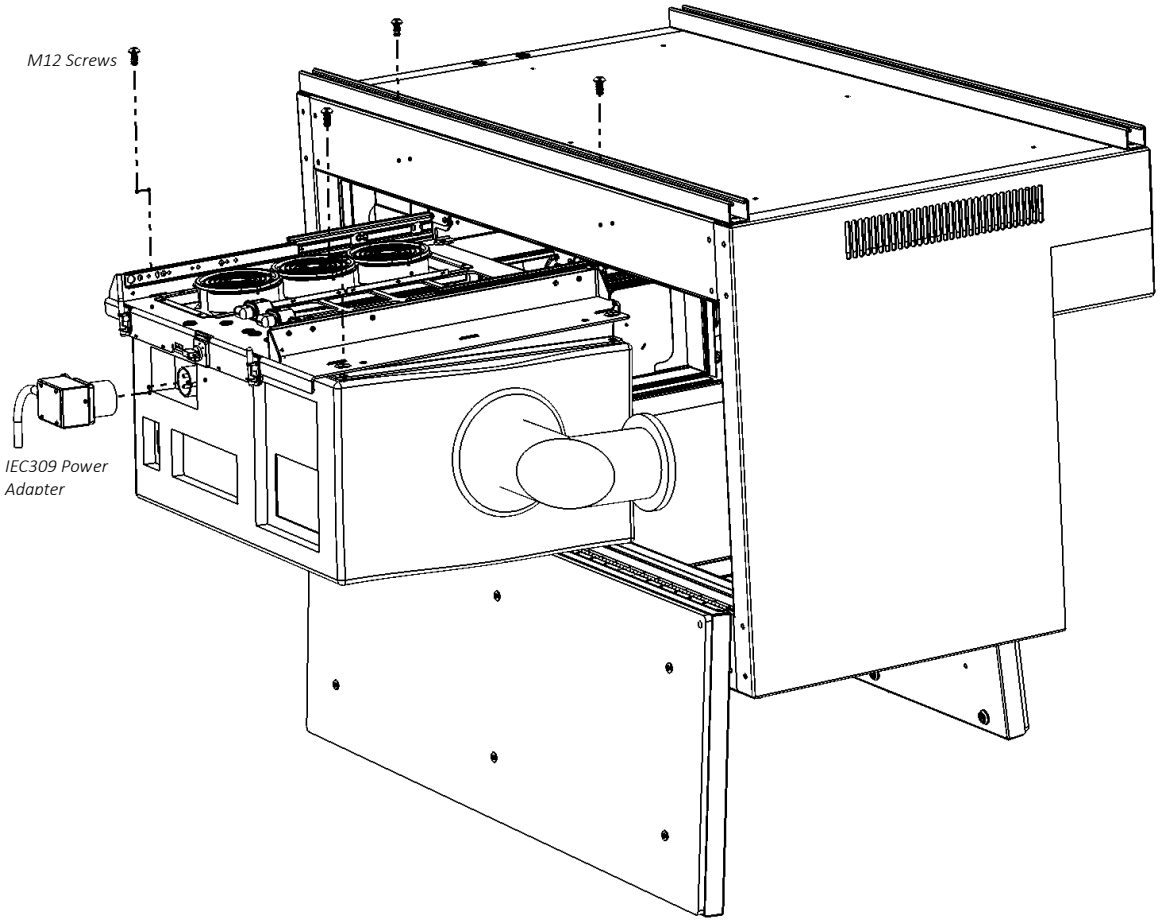




Illustrations show PT-RQ35K in Zen 57.305 Enclosure

Custom: Christie Griffyn with UST lens, Feet-up

1. Open the right side door and slide out the projector tray fully.
2. Disconnect the Neutrik PowerCon Aux fan supply cable.
3. Attach the projector using the four M12 socket cap screws provided (tighten with an 8mm Allen key).



CAUTION: THIS PROJECTOR IS HEAVY. Use appropriate lifting gear, sufficient trained manpower and observe all reasonable safety precautions when lifting into place.

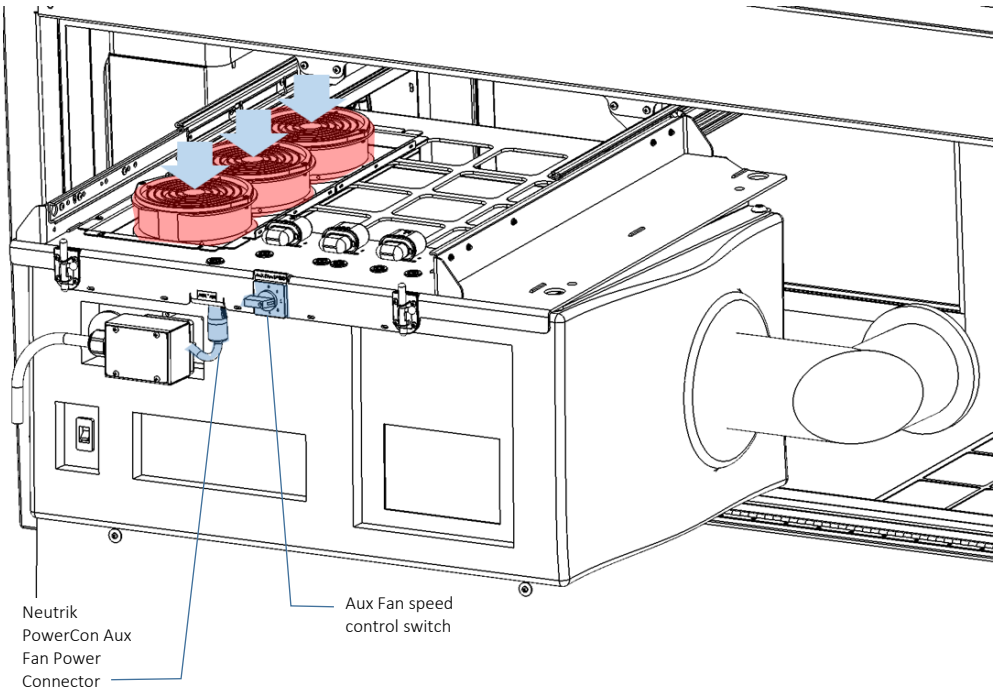
4. Connect IEC309 power feed connector.
5. Reconnect Neutrik PowerCon aux fan connector.

Continued/…

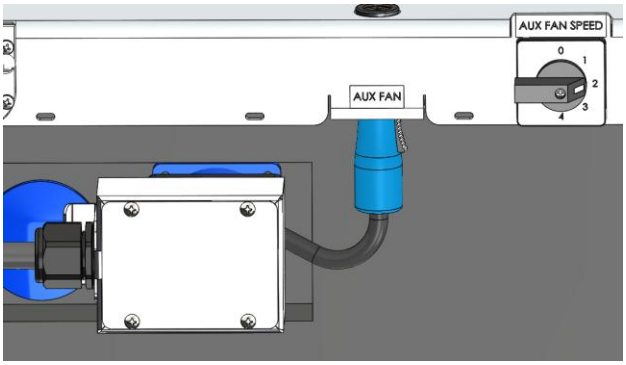
Set Aux Fan Speed

The three fans above the projector are there to ensure adequate airflow to the laser light engine. Establishing the appropriate fan speed will be an iterative process, along with setting the enclosure fan speed (see *Set Fan Function* below).

The aim is to ensure optimal projector operating temperature, at the lowest possible fan speed.



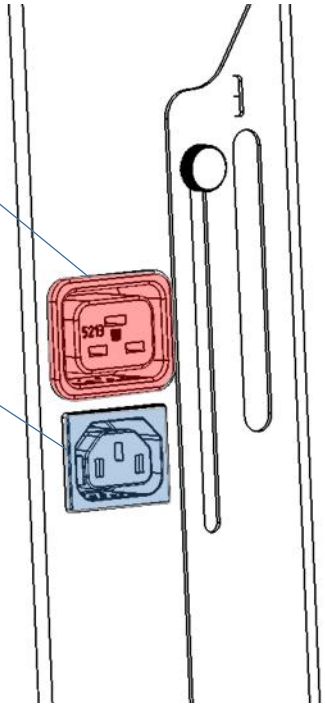
Start with the aux fan speed set to speed 2, and adjust as needed.



Power Connections – Projector and Aux Equipment

Connect the projector to the C19 outlet in the projector chamber *.

Connect aux equipment (media players, fiber boxes, etc) to the C13 outlet in the projector chamber (100-120V in US/Japan) Don't worry – no-one ever has C14 plugs in their kit, so we provide one!



** Note that for some larger projectors the connector type may vary.*

Important: Check Lamp-on Current

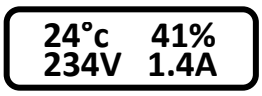
When the projector is installed and connected, check the current displayed on the User Interface, with the projector in standby mode.

If the current is 1.0A or higher, set the Lamp On Current to a setting higher than the actual displayed.

Example:

Standby Current = 1.4A

Set Lamp-On Current to 1.7A



If the Lamp-on current is set lower than the projector's actual standby current, the DEC will think the projector lamp is always on, and the fan(s) will never turn off.

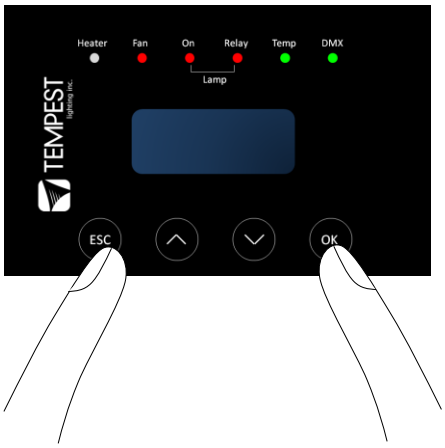
See Control Menu/Set Lamp-On Point in the DEC4 section below.

Enclosure Operation

Zen PWM Fan Control Settings

All Zen models incorporate Tempest's DEC4 (Digital Enclosure Control) system, offering sophisticated control and monitoring features.

The first step is to establish the desired blower speed required for your installation:



Open the User Interface control menu by holding ESC and OK for 5 seconds:

Scroll down to the **SET TEMP RANGES** submenu, and hit OK

SET TEMP UPPER

Set an **Upper Temperature** (UT) significantly higher than the expected ambient temperature at the enclosure location – for example 45°C.

For Zen enclosures, you can ignore the other temperature settings.

Hit OK, OK to return to the main menu.

Scroll down to the **SET FAN FUNCTIONS** submenu, and hit OK

SET FAN TYPE ID

For Zen 1xx – 2xx, choose Fan Type 220

For Zen 3xx – 5xx, choose Fan Type 270

SET FAN MAX DUTY

This limits maximum speed (and noise level) of PWM-controlled fans.

If fan type 270 is used, MAX DUTY should be set to 80%.

Range: 50-100%

Default: 100%

SET FAN MIN DUTY

Tacit and Zen Enclosures (with PWM-controlled DC Fans):

In effect this is the fan speed setting. the actual range varies for each fan type:

Start with a moderate MIN DUTY value – say 60.

Test the projector, with the enclosure closed, and monitor the projector inlet temperature over the projector control system.

If the projector is running HOT, INCREASE the MIN DUTY level

If the projector is running COOL, DECREASE the MIN DUTY level

The aim is to find the sweet spot where the projector is running at an acceptable temperature over long periods, and the blower speed is no higher than necessary, to minimize power consumption and noise level.

Remote Monitoring Connections

Tempest enclosures optionally support two types of remote monitoring:

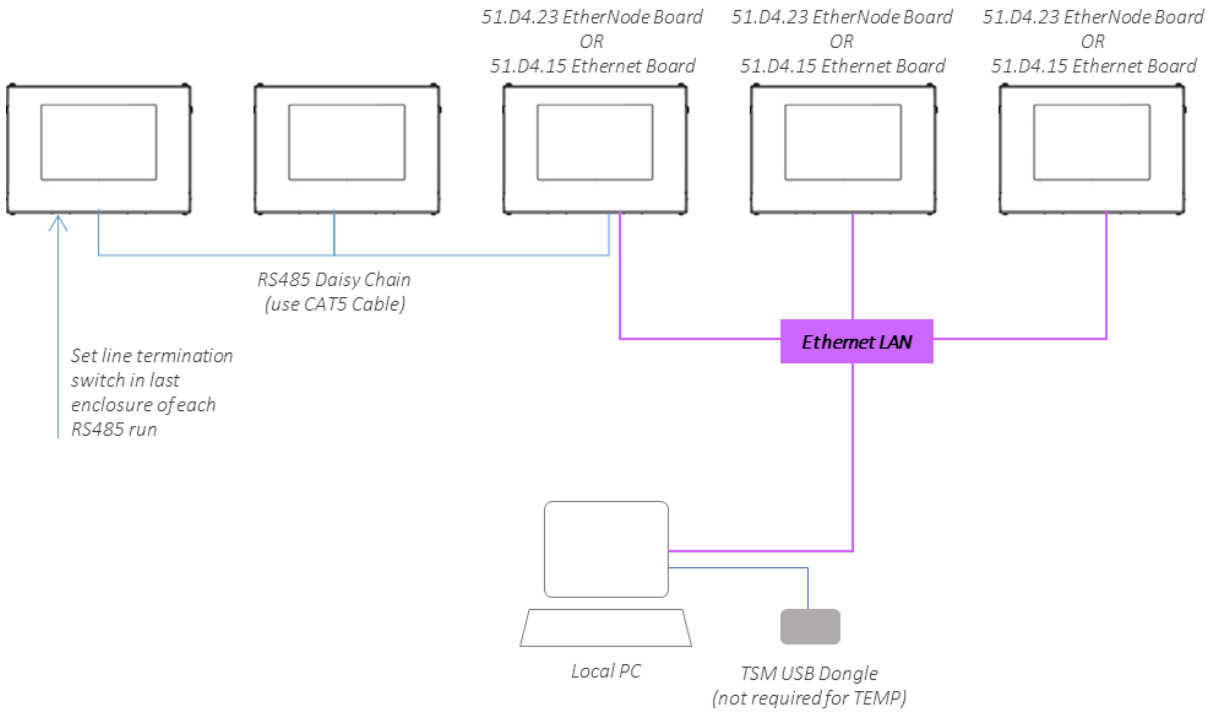
1. **Tempest System Manager (TSM)** – a dedicated network manager, with monitoring, system configuration and firmware upgrade capability over Ethernet.

   Requires 51.D4.23 EtherNode board in at least one enclosure

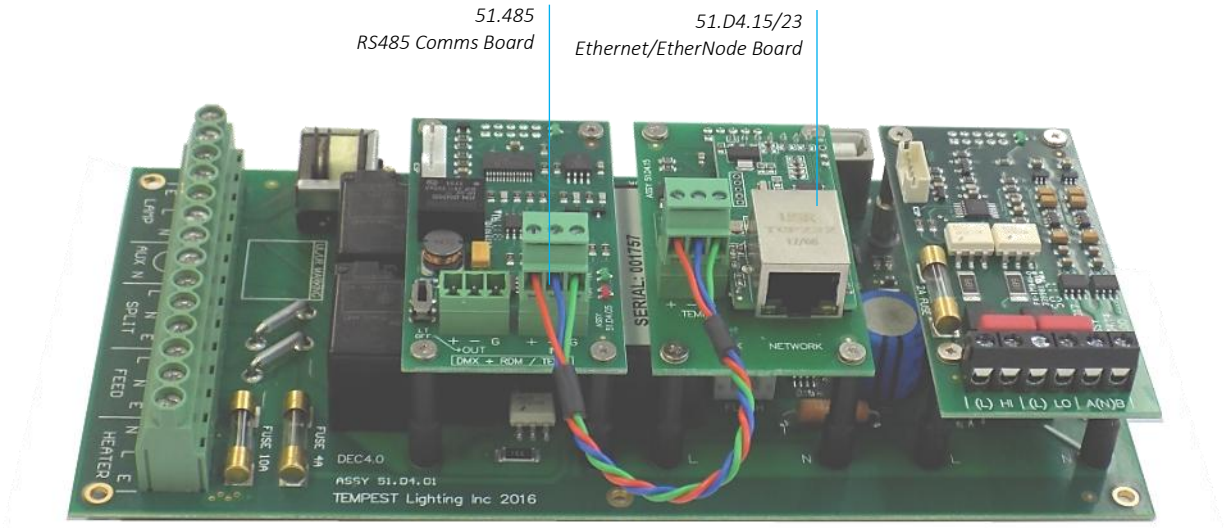
2. **Tempest Enclosure Management Protocol (TEMP)** – a simple protocol for use by system integrators wishing to monitor Tempest enclosures from their own show control network.

   Requires 51.D4.15 Ethernet board in at least one enclosure

The system topology is the same for both methods:



DEC4 Ethernet Adapters – 51.D4.15, 51.D4.23



As a default, DEC4 communicates using DMX512 and RDM, over RS485.

With the addition of either Ethernet board, any DEC4 – or any group of DEC4 boards connected using RS485 – may be connected to an Ethernet network – see above.

51.D4.15 Default Configuration

The bridge module is supplied in DHCP TCP port server configuration, with all traffic on port 3308. These settings may be changed with a web browser on port 80 at the DHCP assigned address. Login to the home page using 'admin' for user name as password.

The bridges may be discovered with a UDP broadcast on port 1500 and a payload of

(Hex) 30 31 32 33 34 35 36 37 38 39 30 31 32 33 34 35 36 37 38 39

30 31 32 33 34 35 36 37 38 39 30 31 32 33 34 35 36 37 38 39

The bridge will respond from its DHCP address

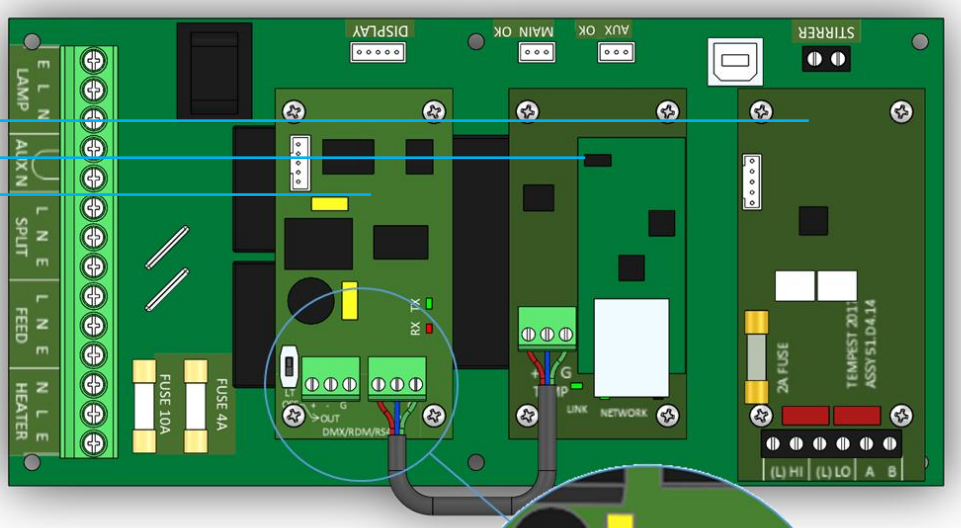
51.D4.15 Additional Support

The network IP is developed by Jinan USR, more details and software configuration utilities may be found by visiting their web site at https://www.pusr.com

RS485 (DMX/RDM) Cable Terminations

DEC4 System Control Board, with three typical Daughter Boards:

1. *AC Fan Controller*
2. *Ethernet Bridge*
3. *RS485 Comms*



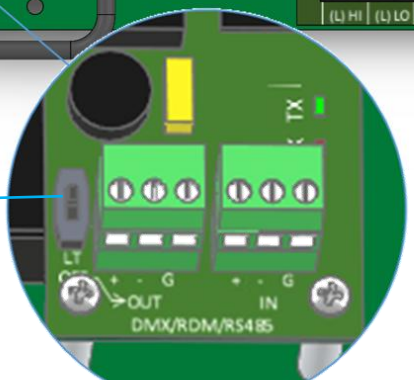
Loop a shielded twisted pair cable (eg Belden 9841, though many people now use a CAT5e cable) from the control/monitoring point, around all enclosures.

Maximum total cable length is 1,200M (4,000ft). For longer runs and wildly distributed systems, use a DMX/RDM splitter (make sure that it supports RDM) and multiple cable runs.

Use the termination switch to terminate each RS485 cable run at the last enclosure on each run.

RS485 Line Termination (LT) Switch:

TERMINATED



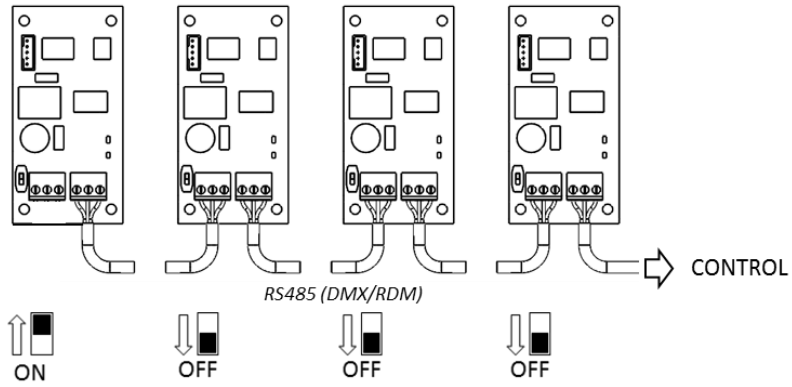
Data + Data - Common Data + Data - Common

DATA OUT **DATA IN**

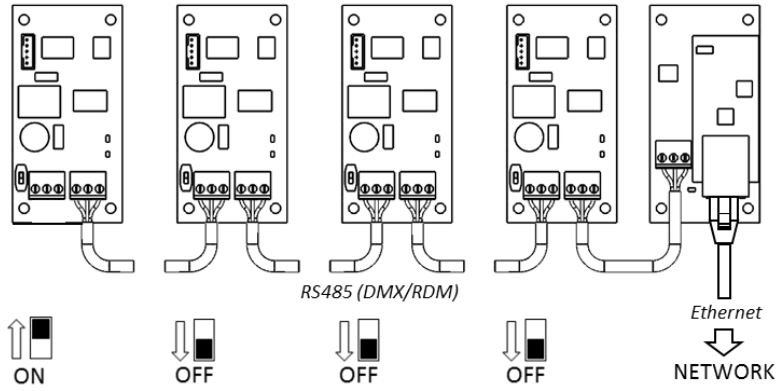
Terminal Screw Torque Setting 0.5Nm/4.5in-lb

Line Termination Switch Settings

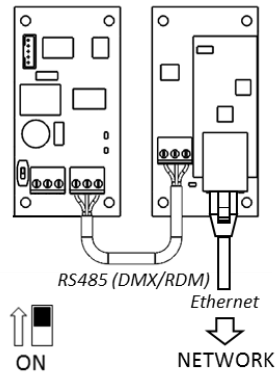
1. DMX/RDM control over RS485:



2. TSM/TEMP Control of an enclosure group via Ethernet



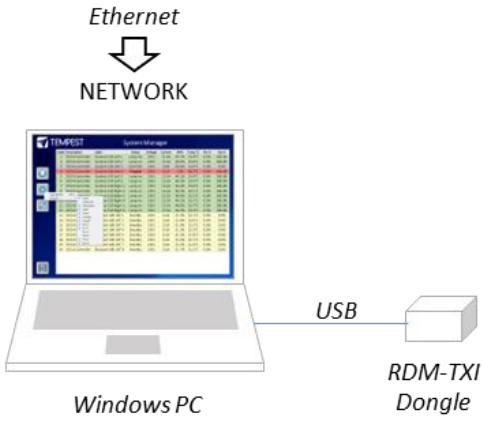
3. TSM/TEMP Control of a single enclosure via Ethernet



System Manager Installation

Connect the enclosure(s) to a Windows PC running Windows 10 or later, using the diagram above. The JESE RDM-TXI is required to act as a dongle to enable TSM functions.

Connect the JESE RDM-TXI dongle to the PC via RDM:



Note that Tempest System Manager is an operating mode of GetSet MV, a software application written and marketed by Tempest's electronics partner JESE. You will need to download GetSet MV from JESE's web portal:

https://www.jese.co.uk/support/

Use the Serial Number and Check ID from the RDM-TXI to log in:

IMPORTANT!

Do not connect any JESE USB device in to your windows PC before installing the software. Doing so may cause windows to install the incorrect USB driver for your device and prevent normal operation of the software.

JESE GetSet is licensed software and registered to a qualifying hardware component. Qualifying components include a USB controller such as an RDM-TRI or RDM-TXI.

The software license is perpetual and includes one year of updates and feature additions. Further updates and supports are available from JESE with an annual subscription fee.

Having installed GetSet, connect the RDM-TXI to the PC using the provided USB cable, and then launch the application.

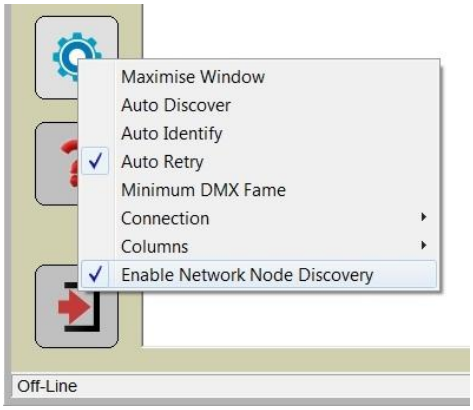
Network Configuration

By default, EtherNode modules are configured for network DHCP addressing. In the absence of a DHCP service, modules will default to an address in 10.0.0.0/8 network range until a DHCP address is assigned. The default address may be determined by translating a modules' Serial Number to an address greater than $10 00 00 00. For instance, a Serial Number of 1234 in hex is $ 04 D2 which yields a default network address of 10.0.4.170 and network mask of 255.0.0.0

If there is no DHCP server available, the PC NIC (Network Interface Controller) may be configured to the 10.0.0.0 /8 CIDR. This may require administrator privileges to change settings. Please refer to the documentation or support resources for your operation system for configuring a static IP address.

3.4 Setting Up GetSet MV

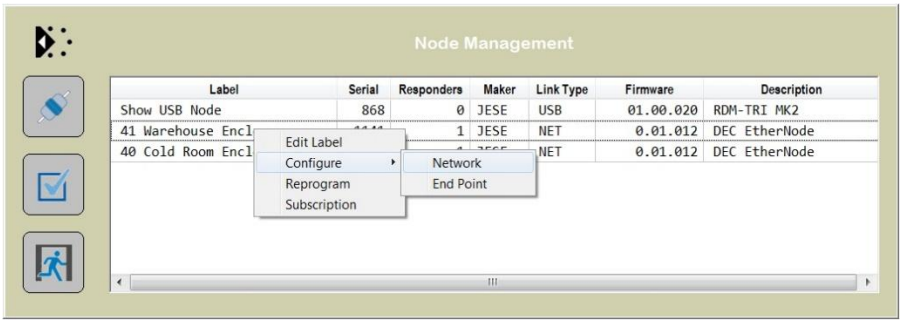
For GetSet to discover EtherNodes on the same network, check the 'Enable Network Node Discovery' option in the Settings menu.



Next, click on the Node Button to open the Node Manager.

Click on the Connect Button to initiate a node discovery and populate the Node Manager with all USB and network enabled Nodes.

To assign a meaningful label to each of the nodes in the manager, right click on an entry and select the 'Edit Label' option.

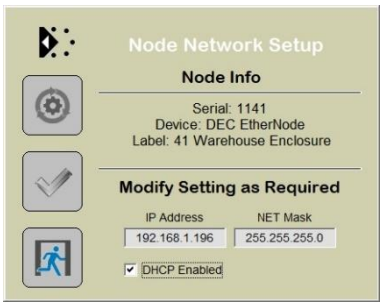


EtherNode Configuration

A node network configuration tool mat be accessed from the Node Manager by right clicking on an entry and selecting the Configure->Network Option.

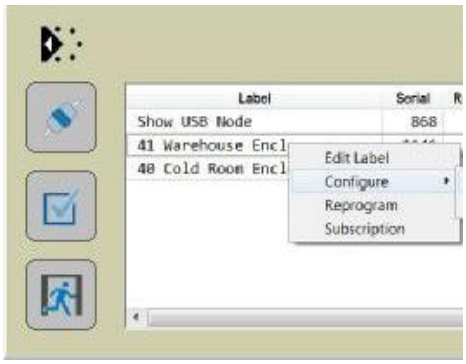
Be aware, that setting an address and mask outside of the network used, will cause the connection to be lost.

To restore an EtherNode to default addressing and DCHC, Press and hold the DHCP reset on the EtherNode module, whilst powering up the DEC.



EtherNode Firmware Updates

On occasion, there will be new firmware releases for EtherNodes and USB Controllers. The Firmware may be applied using the ‘Reprogram’ option, then selecting the File to load.

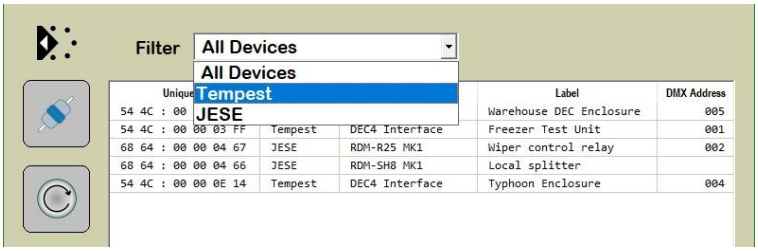


Enclosure Management

Running Discovery

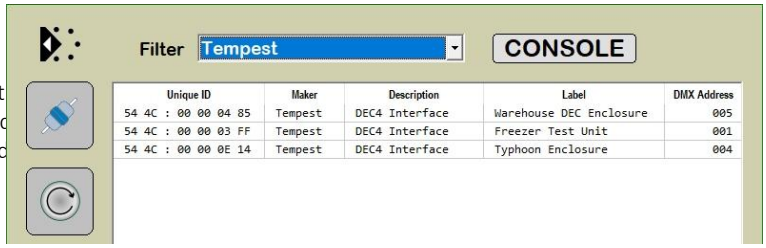
Having set up all EtherNodes and any other USB Devices, clicking on the discovery button will initiate a global discovery of all Tempest Enclosures and any other RDM compliant responders detected in the system.

For Tempest Management options, select Tempest responders from the drop down filter list.

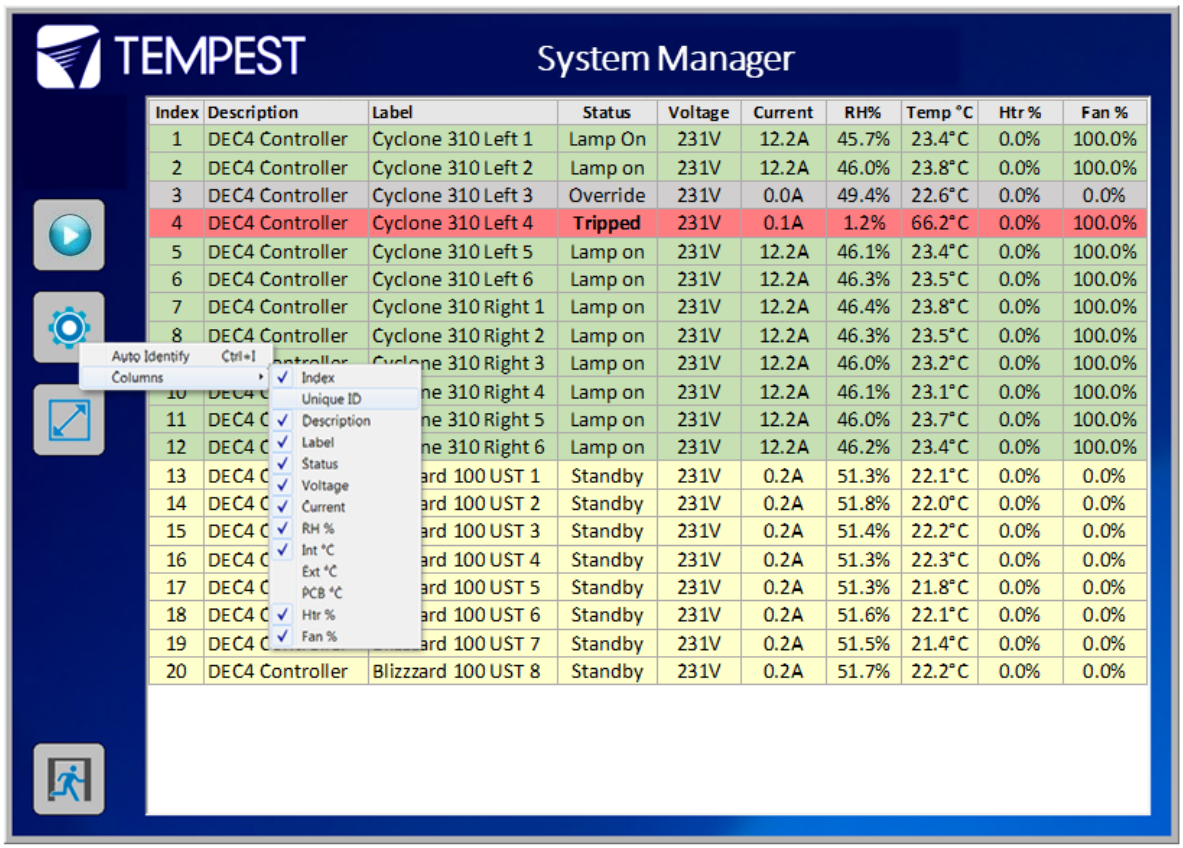


Enclosure Monitoring

On selection, the 'CONSOLE' button for Tempest enclosures provides access to t Tempest System Manager. The displayed responders will be limited to the Filtered items.



The Enclosure management window, shown here, loads from 'CONSOLE' button.



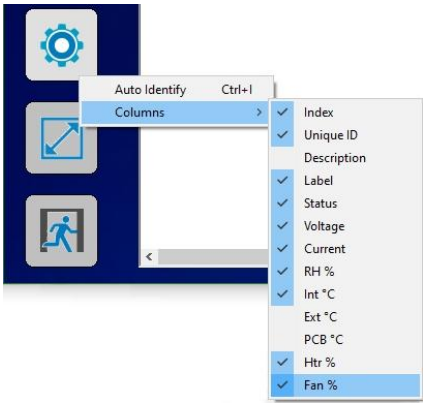
Index	Description	Label	Status	Voltage	Current	RH%	Temp °C	Htr %	Fan %
1	DEC4 Controller	Cyclone 310 Left 1	Lamp On	231V	12.2A	45.7%	23.4°C	0.0%	100.0%
2	DEC4 Controller	Cyclone 310 Left 2	Lamp on	231V	12.2A	46.0%	23.8°C	0.0%	100.0%
3	DEC4 Controller	Cyclone 310 Left 3	Override	231V	0.0A	49.4%	22.6°C	0.0%	0.0%
4	DEC4 Controller	Cyclone 310 Left 4	**Tripped**	231V	0.1A	1.2%	66.2°C	0.0%	100.0%
5	DEC4 Controller	Cyclone 310 Left 5	Lamp on	231V	12.2A	46.1%	23.4°C	0.0%	100.0%
6	DEC4 Controller	Cyclone 310 Left 6	Lamp on	231V	12.2A	46.3%	23.5°C	0.0%	100.0%
7	DEC4 Controller	Cyclone 310 Right 1	Lamp on	231V	12.2A	46.4%	23.8°C	0.0%	100.0%
8	DEC4 Controller	Cyclone 310 Right 2	Lamp on	231V	12.2A	46.3%	23.5°C	0.0%	100.0%
9	DEC4 C	Cyclone 310 Right 3	Lamp on	231V	12.2A	46.0%	23.2°C	0.0%	100.0%
10	DEC4 C	ne 310 Right 4	Lamp on	231V	12.2A	46.1%	23.1°C	0.0%	100.0%
11	DEC4 C	ne 310 Right 5	Lamp on	231V	12.2A	46.0%	23.7°C	0.0%	100.0%
12	DEC4 C	ne 310 Right 6	Lamp on	231V	12.2A	46.2%	23.4°C	0.0%	100.0%
13	DEC4 C	ard 100 UST 1	Standby	231V	0.2A	51.3%	22.1°C	0.0%	0.0%
14	DEC4 C	ard 100 UST 2	Standby	231V	0.2A	51.8%	22.0°C	0.0%	0.0%
15	DEC4 C	ard 100 UST 3	Standby	231V	0.2A	51.4%	22.2°C	0.0%	0.0%
16	DEC4 C	ard 100 UST 4	Standby	231V	0.2A	51.3%	22.3°C	0.0%	0.0%
17	DEC4 C	ard 100 UST 5	Standby	231V	0.2A	51.3%	21.8°C	0.0%	0.0%
18	DEC4 C	ard 100 UST 6	Standby	231V	0.2A	51.6%	22.1°C	0.0%	0.0%
19	DEC4 C	ard 100 UST 7	Standby	231V	0.2A	51.5%	21.4°C	0.0%	0.0%
20	DEC4 Controller	Blizzzard 100 UST 8	Standby	231V	0.2A	51.7%	22.2°C	0.0%	0.0%

To start monitoring the discovered enclosures, select the Run button. On-line enclosures will be polled in turn and status data updated.

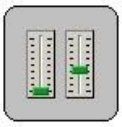
The monitor may be toggled between sizeable and full screen view with the scale view button.

The fields displayed in the window may be customized to suit the Enclosure configuration options and user preference. From the setting button, a drop down menu details all available fields, some of which may not apply to the enclosures in a particular installation.

Each Column may be ordered or grouped by right clicking the heading and selecting an option form the drop down menu.



DMX Control



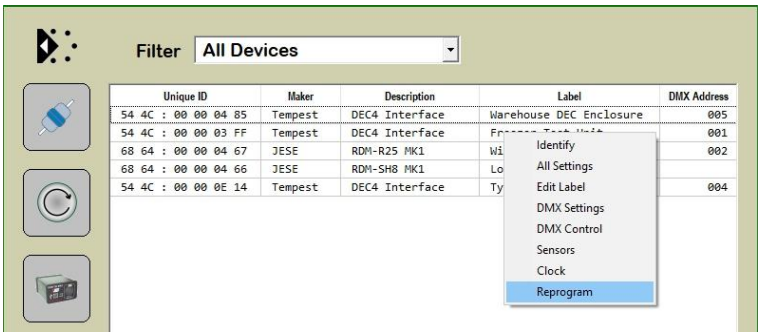
A fully configurable DMX Control Desk is accessible from the Desk button in the Main GetSet Form.

When there is a requirement to control DMX operable devices on the network, each device should be configured to the required DMX address and DMX personality. The desk may then be set to the required DMX footprint and all of the used slots labelled for convenience. See the Latest GetSet MV User guide for full and latest details.

Firmware Uploads

From time to time, new firmware with enhancements or feature additions for the enclosures will be released.

To load firmware to the enclosures, right click the entry in the main window and select 'Reprogram' from the drop down window. For additional details, refer to the latest GetSet MV User Guide.



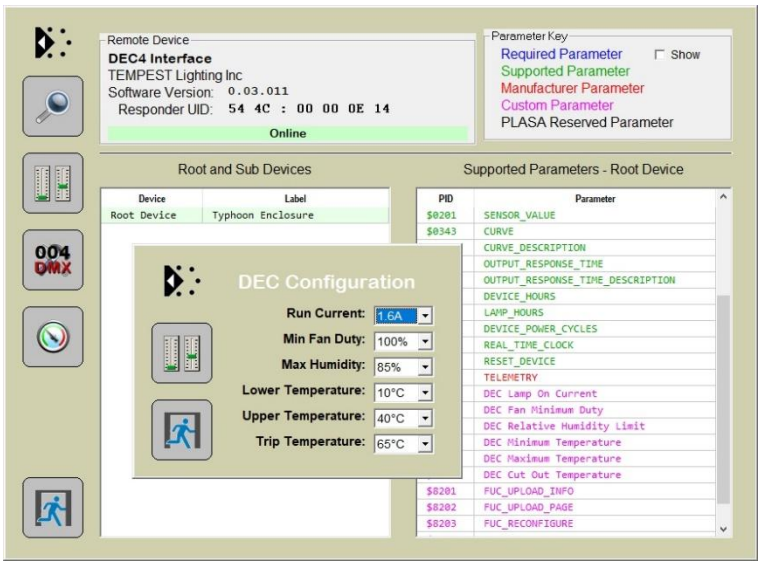
Remote Configuration

User configurable settings that may be accessed from the enclosures' user interface, may also be accessed from GetSet.

To access the settings window, double click the entry shown on the above window to bring up the device manger. Select one of the related 'Custom Parameters' to open the configuration window.

Settings may be selected from the presented values in each of the drop down windows.

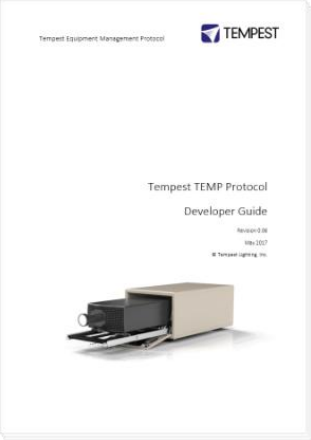
Note that various other generic services and tools are available from the Device Manager window. Details on each of these features are available in the latest GetSet MV User guide.



Tempest Equipment Management Protocol

TEMP allows you to access status information and set configuration values on DEC3.3 and DEC 4 enclosure controllers, using the 51.D4.15 Ethernet Adapter, over an Ethernet network.

Download the Developer Guide at
www.tempest.biz/tech_support



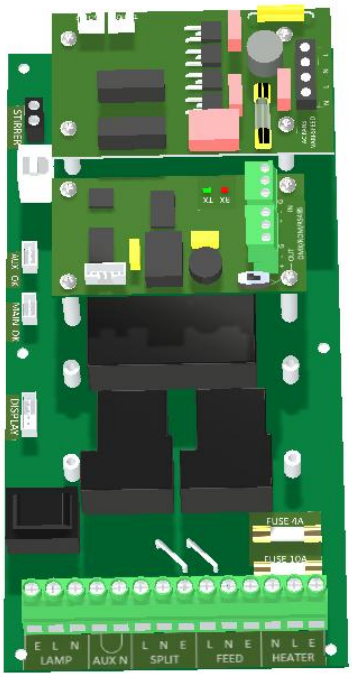
IMPORTANT:
Tempest warrants that, if correctly implemented, TEMP will provide a reliable and accurate method of monitoring Tempest DEC3 and 4 controllers over an Ethernet network. However, the integrator is entirely responsible for the connection between the Ethernet Bridge and the network.

Zen Digital Enclosure Control

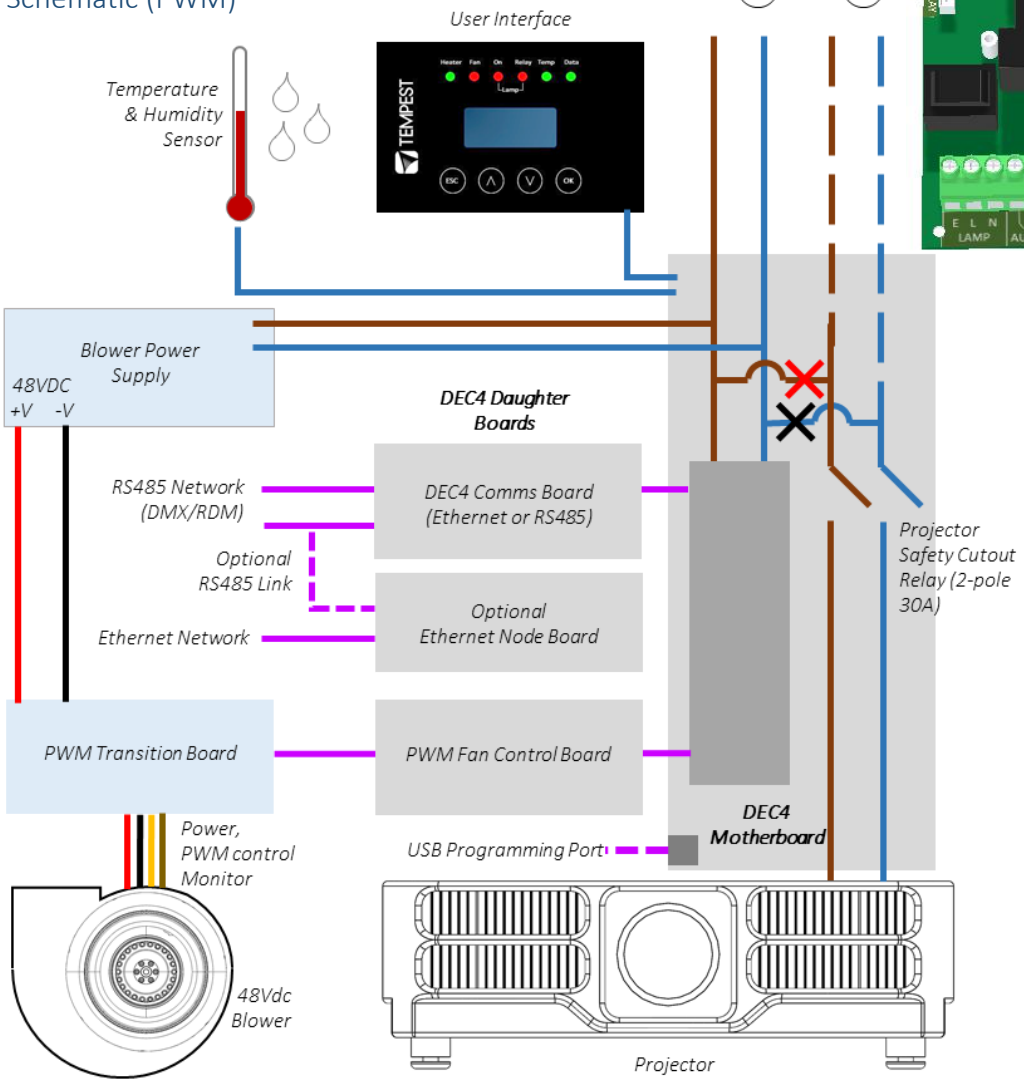
THIS SECTION IS PROVIDED FOR REFERENCE.

DEC4™ – that's Digital Enclosure Control, fourth Generation – is the brain of your Zen enclosure. It will maintain the internal environment in a comfortable temperature and humidity range, and prevent condensation – the real killer of outdoor equipment. DEC4 monitors internal and external 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 an RS485 network, using the RDM protocol (Remote Device Management), or connect to your TCP/IP network for remote monitoring amd management using Tempest's TEMP protocol.

Typical DEC4 configuration, with Motherboard, fan control board and RS485 comms board



Schematic (PWM)



DEC4 Main Functions

Firmware Revision

This manual covers DEC4 Firmware revision 2.03.000 and higher.

To check the Firmware revision, on the User Interface menu, go to Status Display/Firmware.

1. Sense current to projector (lamp on/off)
2. Record lamp hours
3. Monitor temperature and relative humidity inside Enclosure
4. Monitor temperature outside enclosure
5. Maintain internal temperature at safe operating level
6. Maintain relative humidity within safe limits to prevent condensation
7. Isolate projector in case of unsafe temperature
8. Report status over RS485, RDM, TCP/IP
9. Maintain positive pressure (optional) 24/7 to prevent ingress of salt air and other contaminants through the exhaust path
10. Circulates air internally to prevent hot and cold spots when projector is idle

DEC4 constantly monitors the following parameters:

- Projector/Luminaire current
- Line Voltage
- External Temperature
- Internal Temperature
- Internal Relative Humidity

DEC 3.3's patented Goldilocks™ algorithm uses a combination of sensors, 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.

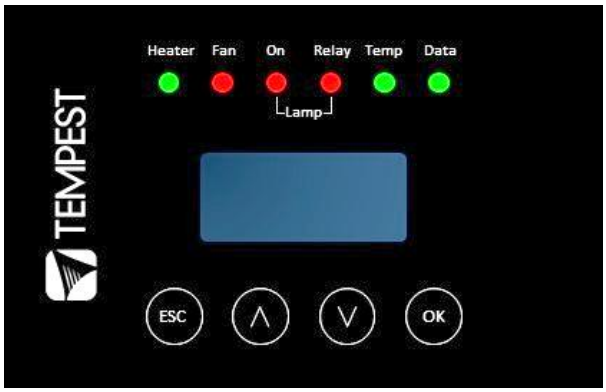
Factory Settings – Data Modes

In most applications, DEC4 will operate correctly with its factory default settings, in Basic operating mode.

You do not need to do anything. Please skip to the next section.

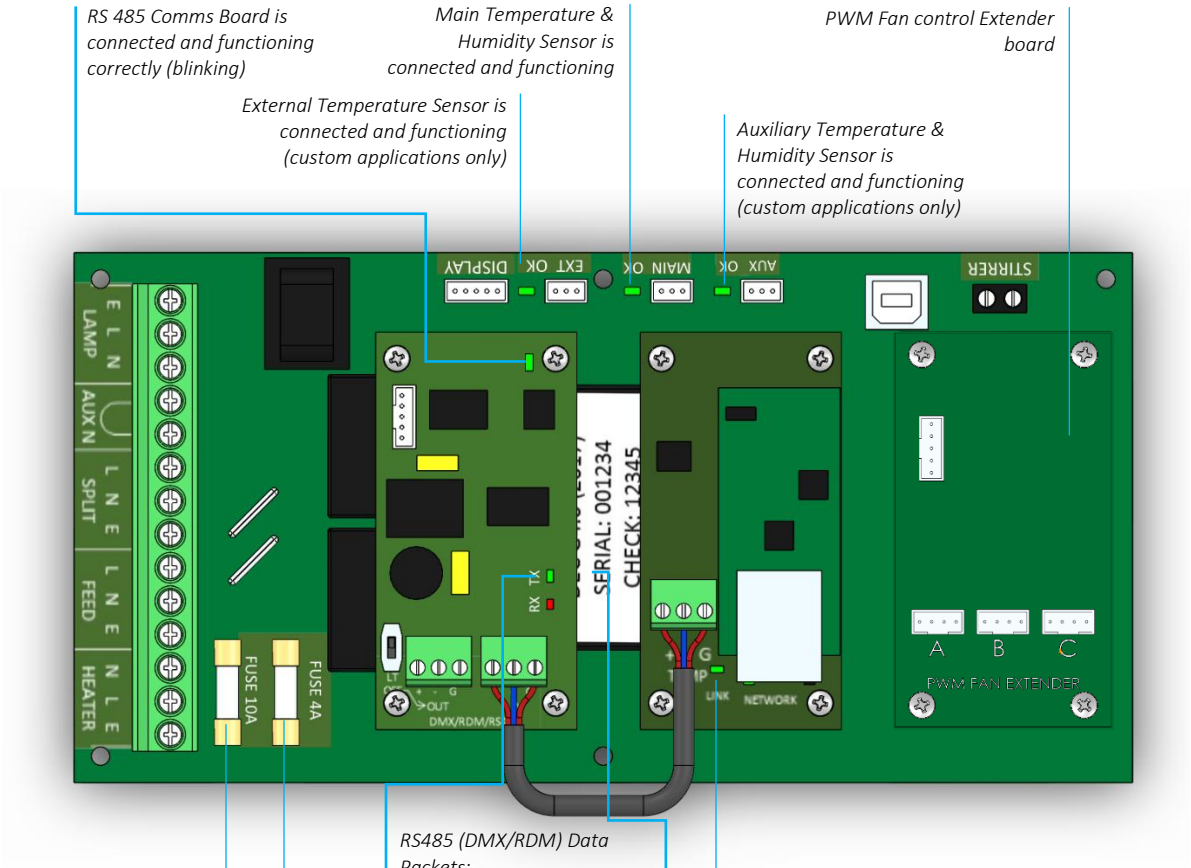
- Standard default temperature and humidity settings
- DMX, RDM and Remote Monitoring disabled
- Best for standalone operation

If your needs are more complex, read on.



Hardware Indicators & Fuses

DEC System Control Board



Zen PWM Fan Transition board

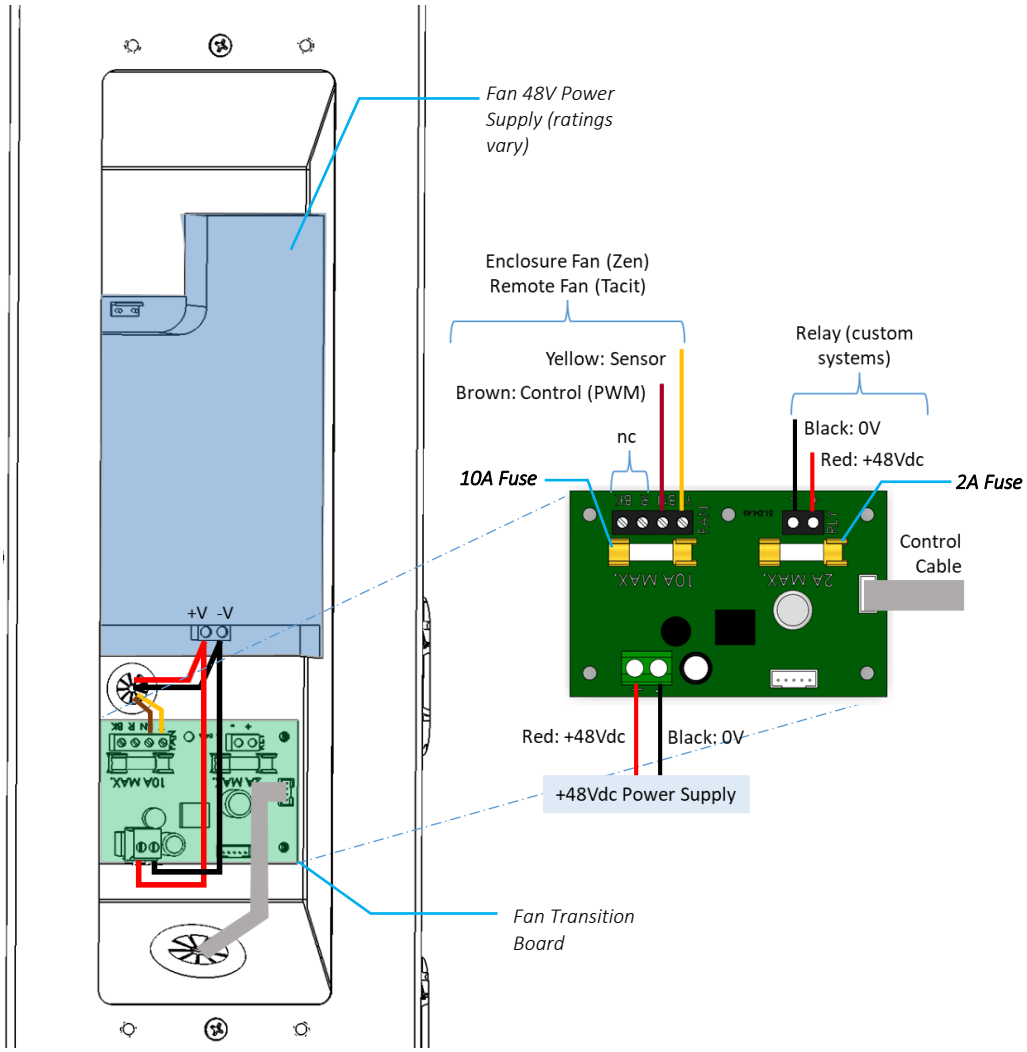
The transition board converts fan speed information from the DEC to a PWM signal for the fan. It is located in the fan power supply compartment on the side of the fan box.

The transition board supports one PWM controlled 48Vdc fan, and/or one relay, for custom applications.

Fuse Ratings (20mm x 5mm):

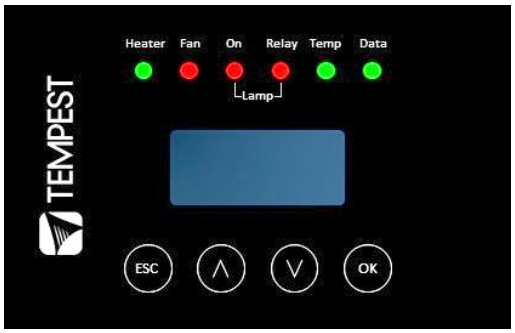
Fan: 10A slow blow

Relay: 2A slow blow



Control Interface

LED Indicators



Heater	ON (Green)	Heater is ON, to maintain lower temperature level or to prevent condensation
	ON (Amber)	Enclosure is temporarily outside the Goldilocks zone, and DEC is working to restore it
Fan	ON (Green)	Lamp is ON, or Temperature is HIGH and fan is cooling enclosure. OR: Lamp is OFF, and internal temperature =/> UPPER TEMP setting
	ON (Amber)	Fan should be ON, but no status response received. *Tacit and Zen systems: check the integrity of the yellow status fan wire.*
	ON (Red)	No fan detected at initialization. *Tacit and Zen systems, check that the yellow (status) and brown (PWM) wires are not crossed or disconnected.*
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
Data	OFF	Data not used in present Mode. **OR** DEC4 is in RDM + DMX Control Mode and no valid data packet has been detected.
	ON (GREEN)	Good data packet received.
	ON (RED)	RDM + DMX Control Mode: Data Fail. A previously good data signal has failed.

Zen DEC4 Operating Modes

RDM Only Monitor (Factory Default)

- Supports RDM monitoring over RS485 if present
- Supports TEMP monitoring if present
- RDM Status Reporting over RS485
- RDM Configuration – settings may be changed remotely or at the enclosure user interface.
- No DMX control

RDM+DMX Control

- 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
- RDM Status Reporting over RS485
- RDM Configuration – settings may be changed remotely or at the enclosure user interface.
- 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.

RDM+DMX Service

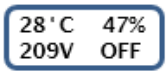
For trained service personnel only

- Normal operation is suspended and the enclosure functions as a 3-channel DMX device:
    - Lamp Relay (Slot 1)
    - Fans (Slot 2)
    - Heater (Slot 3)
- RDM Status Reporting over RS485
- RDM Configuration – settings may be changed remotely or at the enclosure user interface.
- ***Service mode is ONLY for troubleshooting – DO NOT use Service mode for normal operation.***

User Interface LCD Display

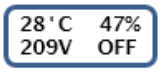
The display on the Control display provides additional status information, depending on the operating mode:

RDM Only Monitor Mode



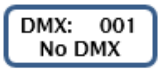
internal temperature, relative humidity
line voltage, lamp status

RDM+DMX Control Mode
RDM+DMX Service Mode



internal temperature, relative humidity
line voltage, lamp status

Alternating with:



DMX Start Address
DMX Status

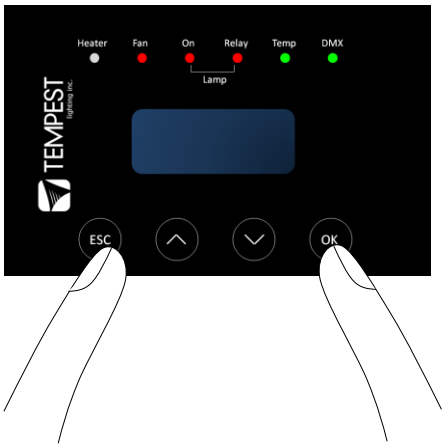
(Alternating DMX Display requires a DMX signal to be present)

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, or **OK** to confirm settings (↵).
- To exit and LOCK, hold **ESC** for 5 seconds.

Menu will time out and the display will lock after ten minutes.



Control Menu

Set DMX Options

SET Data Mode

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

RDM Only Monitor	DEFAULT	Supports RDM or TEMP if connected. No DMX Control.
RDM+DMX Service		Service mode – 3 DMX slots, starting with the DMX address set
		Important: Please ensure that DEC4 is NOT left in Service Mode.
RDM+DMX Control		DMX (set 1 address for lamp relay) plus RDM

SET DATA ADDRESS (in RDM Only Monitor, RDM+DMX Service or RDM+DMX Control 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 DATA CURVE

DMX Curves affect the way the fixture relay is controlled in RDM+DMX 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 DATA 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 10°C, permissible range 0-10°C).

SET TEMP UPPER (maximum desired daytime temperature)

(default 45°C, permissible range 25-50°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

Sets highest desired Relative Humidity: Default 85%, permissible range 80-90%.

Note that, when the projector/luminaire lamp is OFF, the enclosure heaters will switch on to raise the temperature and lower the risk of condensation. We recommend setting the highest Max Humidity that works in your location, to avoid unnecessary heater use.

Set Lamp Options

SET LAMP ON POINT

The lamp current at which DEC detects the projector/luminaire lamp is running. Default is 1 Amp, which allows for most equipment fans and power supplies to run without changing the air in the enclosure. Lamp on point may be set in 0.1 Amp increments between 0.2 Amps and 2.0 Amps.

If the enclosure fans never turn off, the Lamp On point is probably set below the standby current draw of the projector/luminaire. Check the standby current draw on the display and set the Lamp on Current higher.

RESET LAMP HOURS

Reset each time you change the lamp in the projector.

Make this a part of your maintenance instructions.

Set Fan Function

SET FAN TEST

To test the enclosure fan(s), press [OK]

The enclosure fan will run

The Display Fan LED lights green

DEC Beeps

To stop the fan test, press [ESC]

SET FAN TYPE ID (Tacit and Zen Enclosures)

For Zen 1xx, choose Fan Type 175

For Zen 2xx, choose Fan Type 220A

For Zen 3xx – 5xx, choose Fan Type 270

SET FAN RUNNING (Oasis, Tacit and Zen Enclosures)

This is the fan speed when the projector is RUNNING

The range is from 100% (full speed) down to the lowest supported fan speed for the selected fan type, and OFF.

Factory Setting: 50%

Tacit and Zen: Select a fan speed consistent with maintaining a comfortable projector temperature at lowest fan speed/noise level.

Oasis: See *Adjusting the Internal Airflow*

SET FAN STANDBY (Oasis, Tacit and Zen Enclosures)

This is the fan speed when the projector is off or in STANDBY

The range is from 100% (full speed) down to the lowest supported fan speed for the selected fan type, and OFF.

Factory Setting: OFF – recommended for all standard enclosure types

SET FAN RUN ON

Time the fan will run after system detects LAMP OFF (cooldown).

Range: 5 – 15 minutes

Default: 5 minutes

Status Display

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

a) Humidity – relative humidity in %

b) Internal temperature, in degrees C or F

c) External Temperature (custom enclosures with external temperature sensors only)

d) PCB temperature (this will usually be significantly higher than air temperature)

e) Voltage – line Voltage reaching the DEC

f) Current being drawn by projector/light, in Amps

g) Lamp Hours elapsed since last reset

h) Firmware version

i) UID – unique system ID number

DEC4 Firmware Updates

From time to time Tempest may introduce new DEC4 firmware for feature enhancements and bug fixes. Please note that the main System Control Board (SCB) and the various optional daughter boards each have their own firmware, and it will be good practice to update all firmware in an enclosure for optimal performance and interoperability.

- System Control Board firmware may be updated DIRECTLY using JESE JUST software and a USB cable, or INDIRECTLY, over an RDM network, using JESE GetSet software and a JESE RDM-TXI interface.
- Fan board firmware is extremely simple and is unlikely to require updating.
- RS485 Board (51.485) firmware may be updated over an RDM network, using JESE GetSet software and a JESE RDM-TXI interface.

All required files are available for download at https://www.tempest.biz/tech-support/

Direct Firmware Update (System Control Board only)

<u>Requirements</u>

Windows Laptop / PC, Windows XP through Windows 10 A standard USB A to B cable

Latest version of JUST application (download from https://www.tempest.biz/tech-support/)

A copy of the firmware file to upload (download from https://www.tempest.biz/tech-support/)

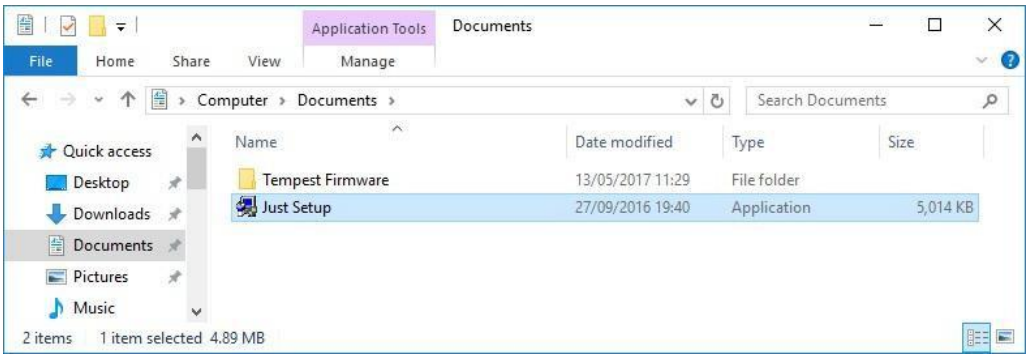
Powered Target DEC4 SCB

<u>Preliminaries</u>

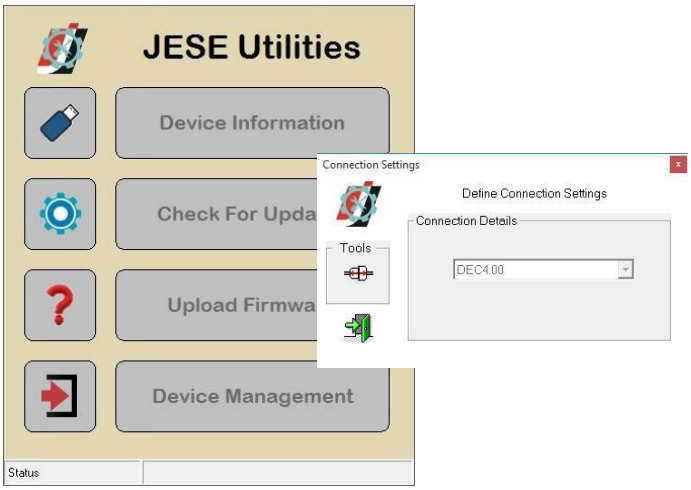
1. Power up the target DEC4 System Control Board and connect the USB Port to the PC or laptop.

2. If not already installed, install the latest version of JUST. ***IMPORTANT: If this is the first time using JUST, the PC***

MUST be connected to a live System Control Board for the installation to complete correctly.

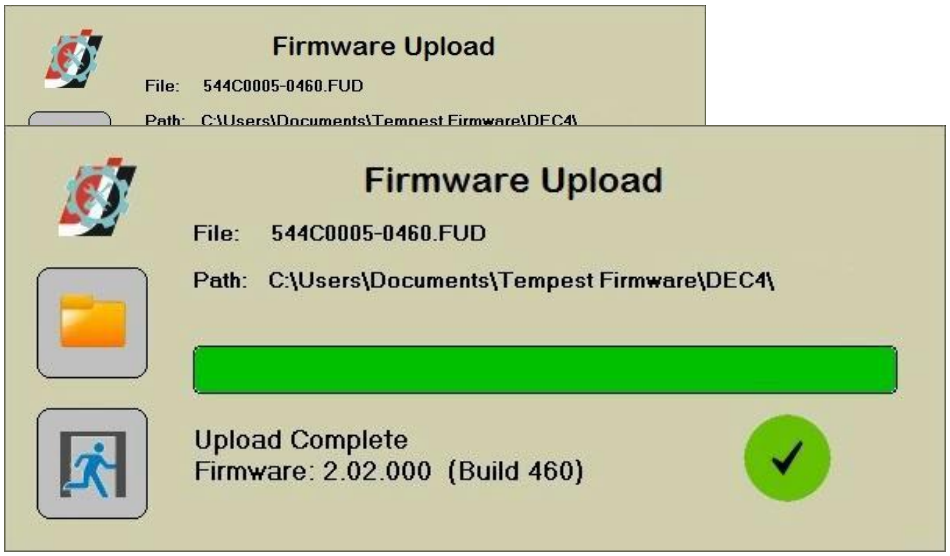


3. Run JUST and select the top left USB connection Icon. Select the DEC4 from the Connection Details option and click the connect/plug Icon. Having connected, close the connection window.



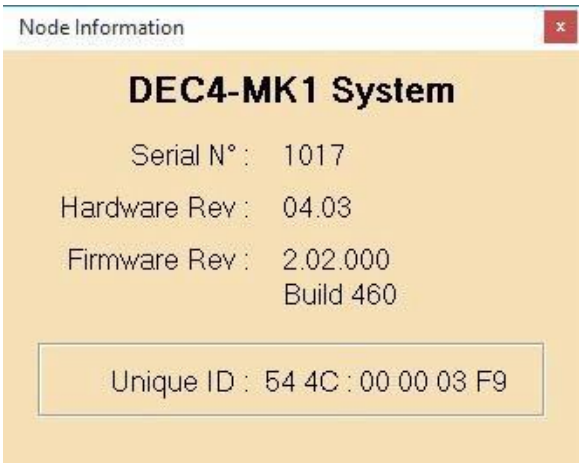
4. From the main window, select the ‘Upload Firmware’ option. Select the file Icon and navigate to the firmware file to upload

5. On selection, the firmware upload will begin and run until complete.



6. On completion of the upload, dismiss the upload window and return to the main window.

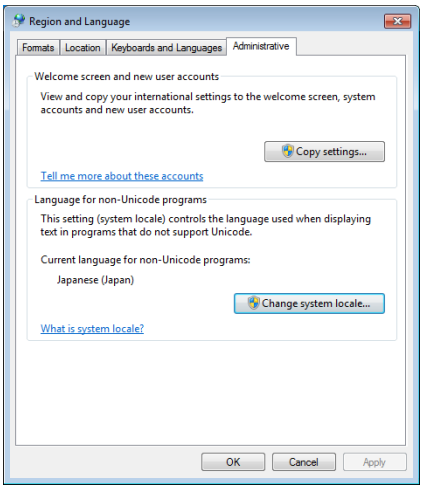
7. The details of the SCB and firmware version may be viewed and verified by selecting the 'Device Information' option



8. Close the application and disconnect the USB Cable from the SCB

- END -

Indirect Firmware Updates (System Control Board and RS485 Board)



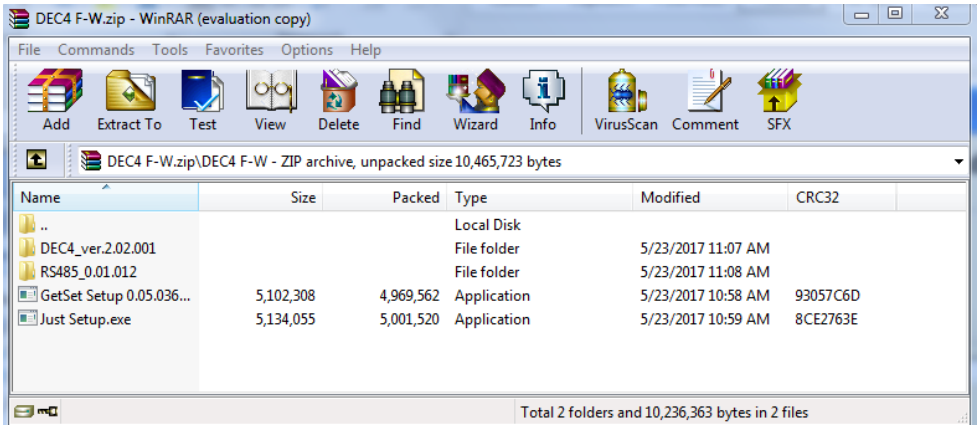
Requirements

Windows Laptop / PC, Windows XP through Windows 10

A JESE RDM-TXI interface, programming cable and USB connection *(available from Tempest, part # 2000.195).*

An installed version of the JESE GetSet RDM configuration utility (included with RDM-TXI.

A copy of the firmware file(s) to upload, available for download from www.tempest.biz/tech_support.

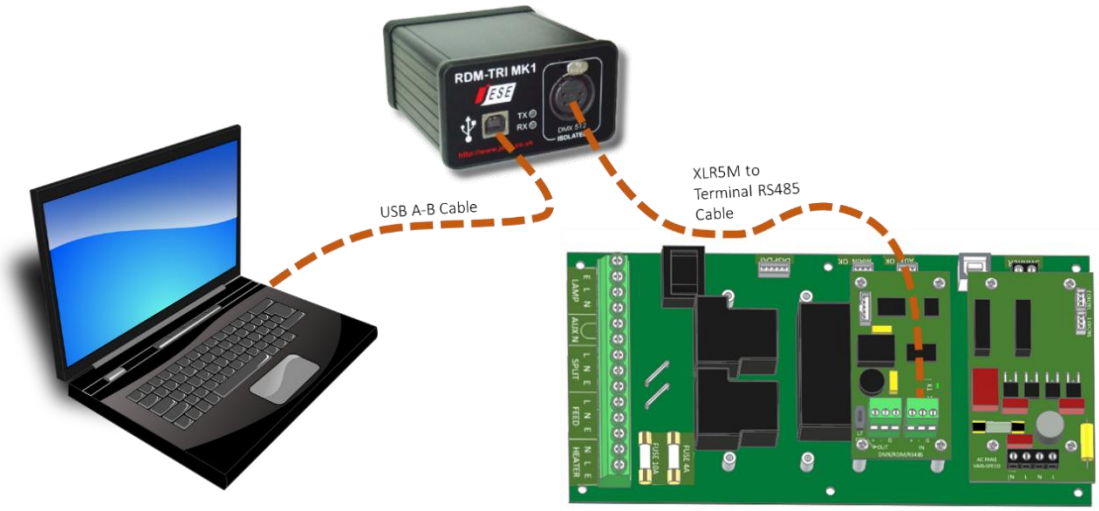


Powered Target DEC4 with 51.485 RS485 communication interface card.

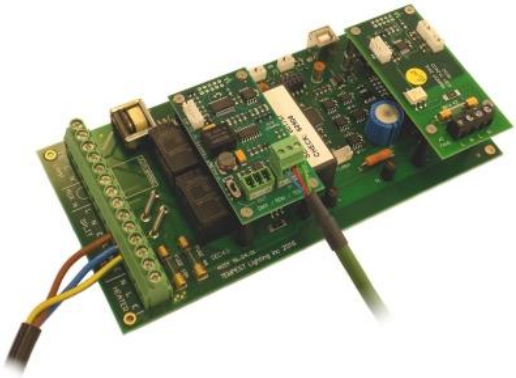
Installation Procedure

1. If not already installed, install a copy of GetSet. *To ensure that the correct USB drivers are loaded, the software should be installed and the PC/Laptop re-started before connection to an RDM-TXI.*
2. If using an Asian character set, go to control panel and select Region and Language. Ensure input locale for non Unicode programs is set to a non Asian language

3. Plug you RDM-TXI in to your PC and connect to the RS485 connection on the DEC4 communications board with the fly lead, as shown below.

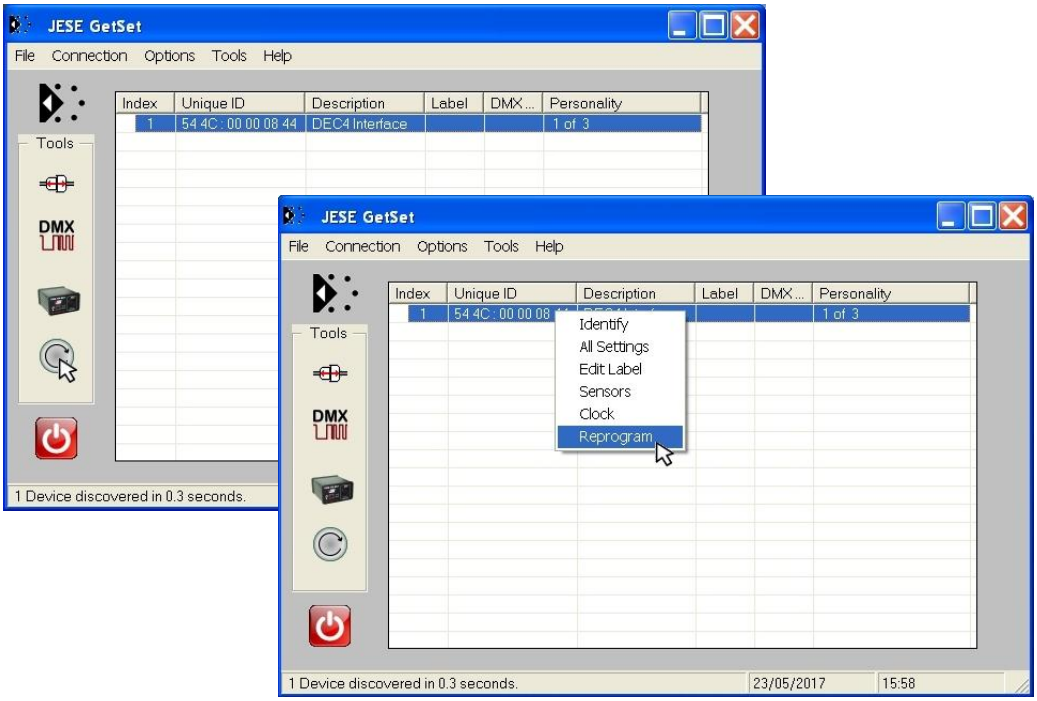


4. Power up the target SCB, ideally with mains power, or alternatively, with a USB power adaptor connected to the USB Port on the SCB.

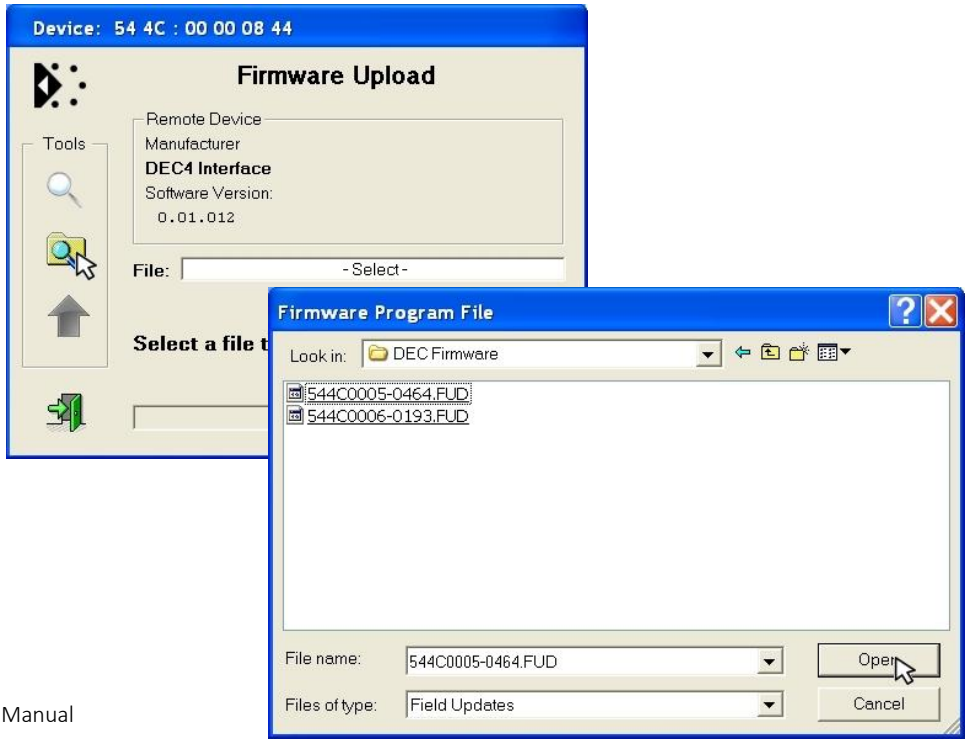


5. On older revisions of DEC Firmware, if the elected DEC ‘DATA MODE’ is set to ‘RS485 TEMP’, select ‘RDM MONITOR’ mode using the DEC user display. On more recent revisions of Firmware, the appropriate mode will be automatically selected.
6. Open the GetSet application, connect to the RDM-TXI and discover the DEC. To run discovery, click the Icon indicated below

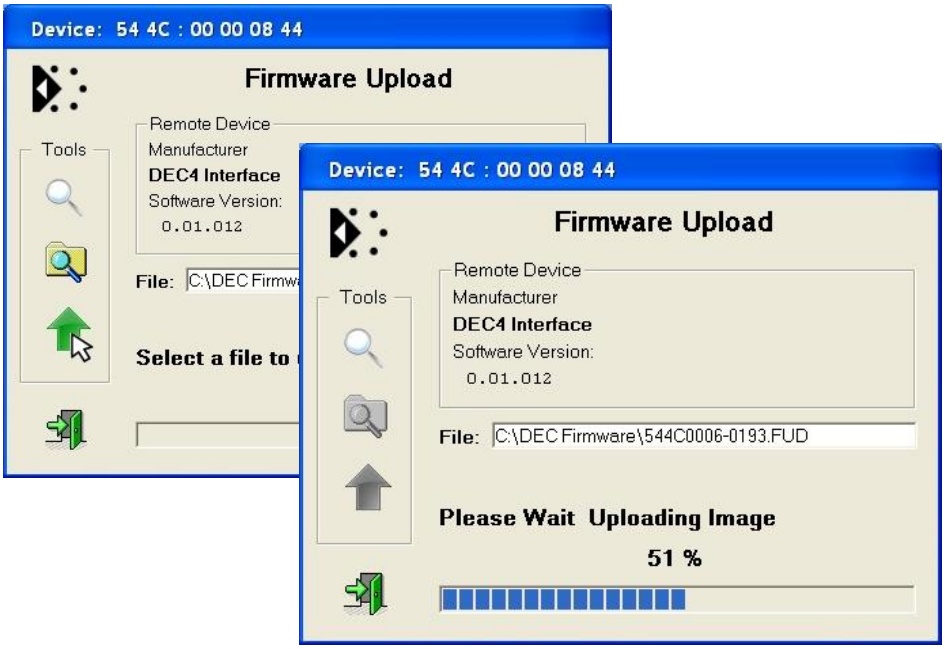
7. Right click on the highlighted item in the list view and select ‘Reprogram’ from the popup menu. This will open the firmware upload tool.



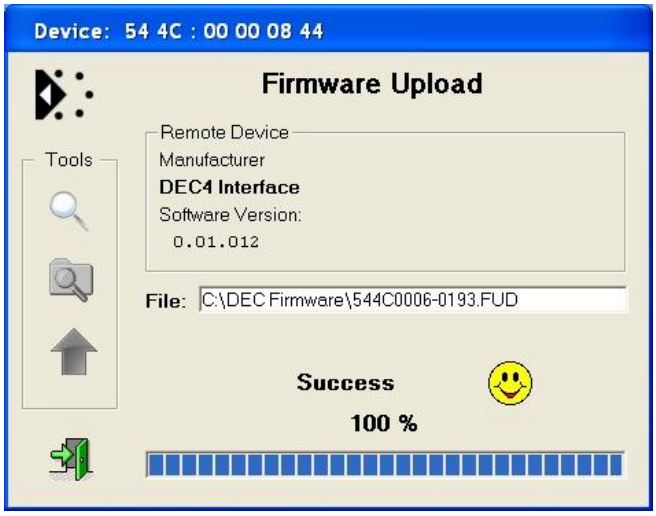
8. In the Firmware upload handler, search for a file to upload by clicking the file icon. Find and select the file to load and click the Open button.



9. On returning to the File upload tool window, select the green upload arrow to initiate the upload process. The upload will the start.



10. On successful completion of upload and restart, the firmware upload is complete.



Repeat from stage 8 to 11 for each additional file to upload.

On completion of the upload, dismiss the upload window and return to the main window.

Close the application and disconnect the USB Cable from the SCB

Important:

For Remote monitoring or control, set the **DATA MODE** for each enclosure as follows:

RDM ONLY MONITOR	To view status information over **RDM** or control/monitor via **TEMP**
RDM + CONTROL	To monitor and over **RDM** and control the Lamp/Projector relays via **DMX**

For more information on DEC control modes see your enclosure user manual, available for download at www.tempest.biz .

End.

Routine Maintenance

Check the following every six months:

Clean Port Glass

Clean port glass using a window cleaning fluid or detergent. Use a soft, lint free cloth.

Check Filter

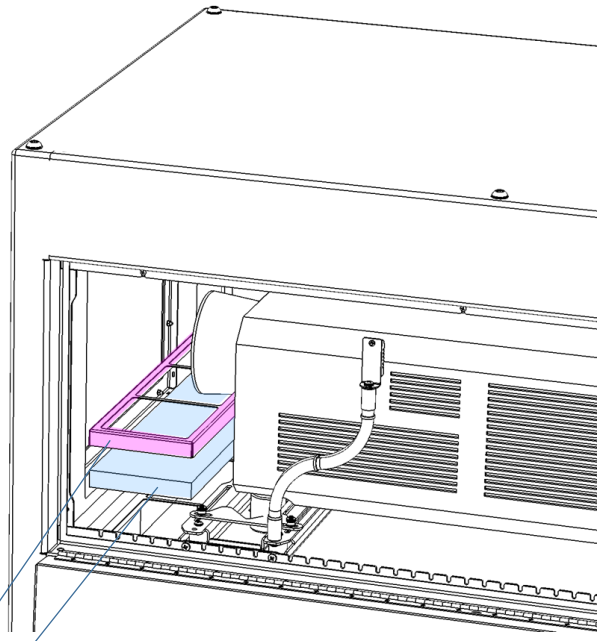
In most cases the filter will be good for 1-2 years, but this may vary a lot, depending on the source of inlet air and how much the projector is used.

If the filter becomes clogged the temperature inside the enclosure will start to rise. This is an indication that the filter must be cleaned or possibly replaced.

Part Numbers:

57.IFL.xxx.11 Replacement Inlet Filter Zen Series

(where xxx is the Zen model number)



To clean or replace filter

1. Lift out the Filter Clamp
2. Remove filter
3. Wash filter with warm water and mild detergent if needed
4. Dry filter
5. Replace

Zen - Check Temperature/Humidity Sensor

If the sensor is defective, the controller may not operate correctly. A defective sensor will result in one of three messages appearing on the DEC user interface.

If you see any of these messages, contact Tempest for a replacement sensor.

RH: 5%

RH: 100%

RH: ####

For After Sales Support

Contact your Tempest dealer or email info@tempest.biz

Troubleshooting

Projector does not have power:	1. Check Projector power switch 2. Check projector is plugged into DEC4 projector outlet 3. Check that enclosure feed circuit is on 4. Check DEC4 User Interface leds are on. If feed circuit is on and UI leds are off, check feed wiring to DEC terminals and meter DEC4 projector outlet for power 5. If UI lamp led is on and DEC4 projector outlet is live, there is a projector fault.
Enclosure overheats:	1. **Is the projector connected to the DEC4 projector receptacle?** If the projector is powered independently the controller has no way to know when to turn on the exhaust fans! 2. Is the filter clogged or obstructed? 3. Check that the Fan led on the UI is on when the projector is running. If not, then the projector is probably not connected to the DEC (see 1). 4. If the fan led is on, check that the fan is running. If not, check fan wiring. If wiring is ok, fan may be faulty. 5. Check the UI display for RH (relative humidity) message. If display reads RH 5%, RH 100%, or RH###, there is a sensor fault. Contact Tempest for a replacement sensor.
Dirt/Debris inside enclosure	1. Filter is either missing or damaged? 2. Filter is not properly seated 3. Side panels or back door is not firmly latched
Fan LED is on but fans do not operate	The exhaust fan is protected by a 20mm 4A slow-blow fuse on the DEC4 motherboard, and a secondary fuse on the fan board. In very exceptional cases it is possible that either fuse could fail. Check visually. The fuse is protected with a clear resin sealant and soldered to the circuit board. With care, you can de-solder the fuse and replace it, but we recommend replacing the DEC4 motherboard to maintain the integrity of the board's conformal coating.
Heater LED is on but heater does not operate	The heater is protected by a 20mm 10A slow-blow fuse on the DEC4 motherboard. In very exceptional cases it is possible that it could fail. Check visually. The fuse is protected with a clear resin sealant and soldered to the circuit board. With care, you can de-solder the fuse and replace it, but we recommend replacing the DEC4 motherboard to maintain the integrity of the board's conformal coating.
None of the above?	Contact info@tempest.biz

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"): twenty four (24) months from the date of shipment by Seller. Seller may provide additional years of warranty coverage beyond 24 months, at the rate of 2.5% of the net sale price per year, up to a total of three additional years' coverage beyond the standard 24 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 7 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. Seller warrants materials and finishes to customary commercial standard and makes no warranty whatsoever to cover minor imperfections of finish not affecting the performance of the Goods.

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 paragraph 7. 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 7 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 7C, 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.

NOTE: All sales are subject to Tempest Lighting, Inc. Standard Terms and Conditions (Standard Terms). In the case of any discrepancy between the foregoing and Standard Terms, Standard Terms shall prevail. Download Standard Terms here.