



Cyclone

Outdoor
Projector
Enclosures
20-50K



Cyclone

Outdoor Projector Enclosures

Cyclone is the world's most popular outdoor enclosure for permanent installation of large format video projectors in any climate, for video mapping, outdoor attractions, advertising and outdoor movies.

Cyclone models are tailored specifically for each projector type. Each Cyclone model has been thoroughly tested and approved with its designated projector before being released for production.

Cyclone comes with all the features you need:

- *Lightweight aluminum welded construction*
- *Powerful AC fan*
- *Salt fog filtering, with positive pressure option*
- *Available RDM, TCP/IP or web-based monitoring options*

From 2020, standard Cyclones come with side doors and the option of projector slide to left or right. Versions with front or back slide are available to special order.

All Cyclone models feature Tempest's patented Digital Enclosure Control system (DEC4™), now available with optional remote monitoring over your TCP/IP network, or globally, using JESE Agent.

Tempest's patented DEC4 controller will keep your projector warm when it's cold, cool when it's hot, and will never allow deadly condensation to form.

And all Cyclone models feature Tempest's hydrophobic inlet filters, blocking salt, oil and other pollutants from getting near your projector.

Portrait

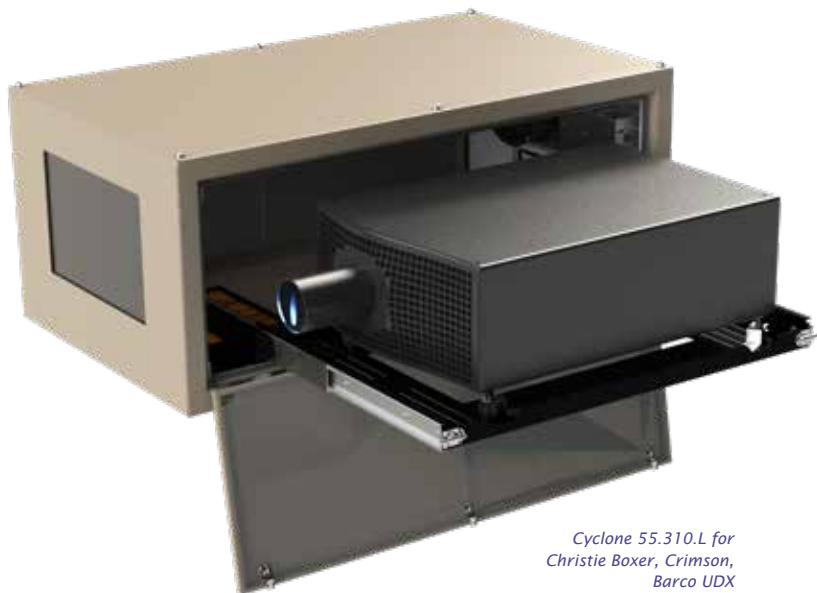
Cyclone portrait enclosures are available to order for all applicable projectors.

Ultra-Short-Throw

Cyclone is ready for the UST revolution — now you don't need to own the plot across the street to project on the front of your building! See the next page for more about UST configurations.

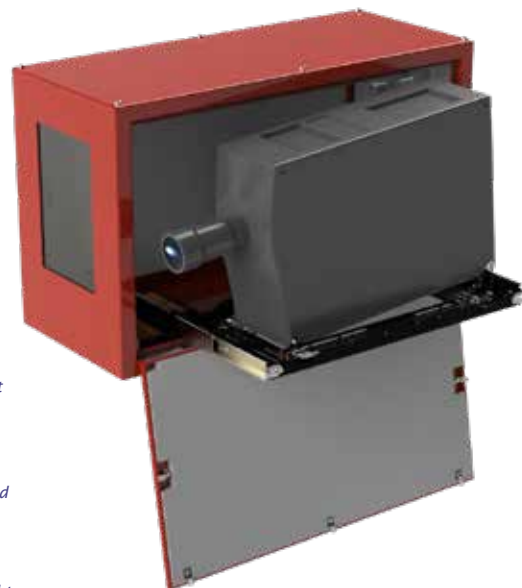
Cyclovator

Cyclovator allows any Cyclone enclosure to be tilted up to 60 degrees up or down, and restored to horizontal for safe projector service access.



Cyclone 55.310.L for Christie Boxer, Crimson, Barco UDX

Tip: Specify left (shown here) or right slide when ordering



Cyclone 55.310P Portrait enclosure.

Tip: Cyclone's Portrait mounts vary by projector type, and generally allow for $\pm 5^\circ$ tilt adjustment to compensate for limited horizontal lens shift..

Tip: Most of the shots in this brochure show Tempest standard light bronze powder coat finish, but you can specify white, black, or any RAL color when ordering.

The Cyclovator 2 under this Cyclone 55.210 can tilt its projector up to 60° either up or down, with a repeatable stop and a positive lock for accurate show positioning.

Tip: Use Cyclovator 2 feet-up to hang Cyclones at any angle from a truss or structure

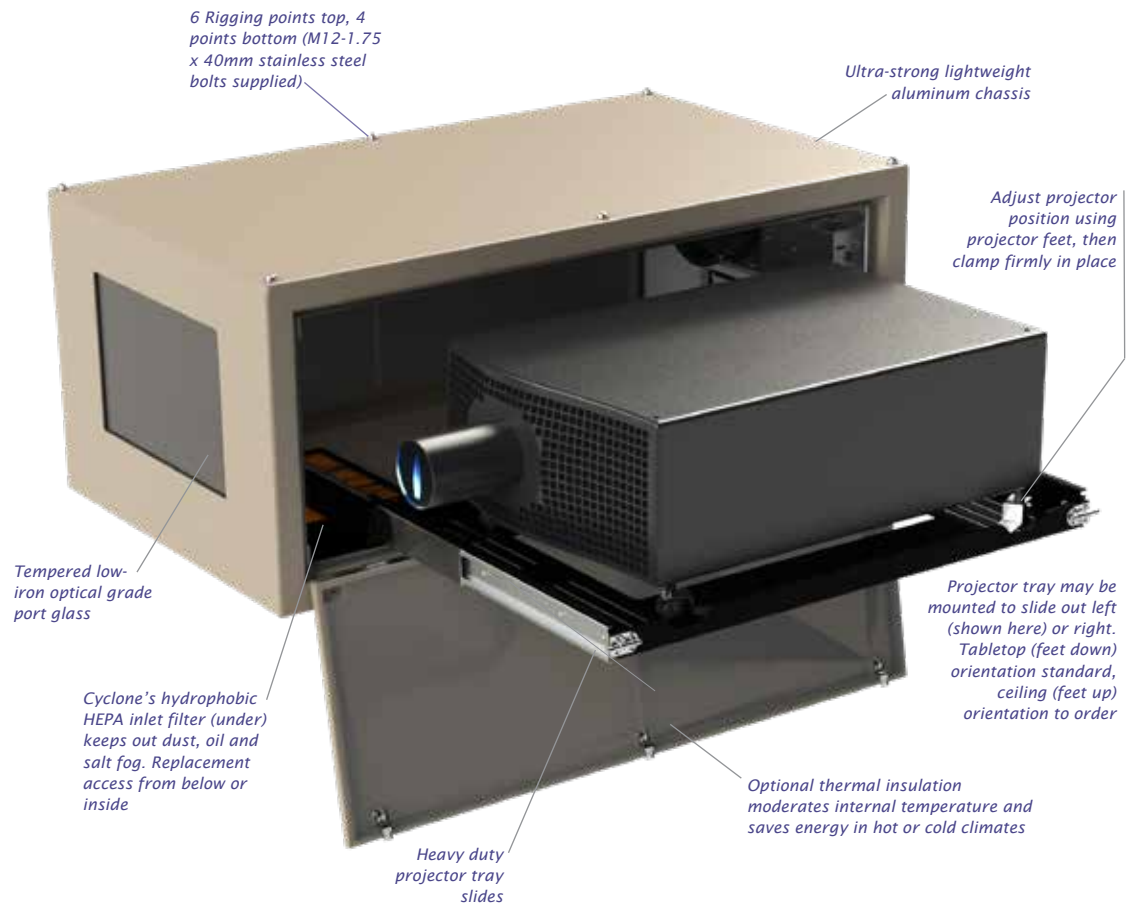


Tip: Specify the inlet cowl shown here if the tilt angle will exceed 10° up or down.

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What's in the Box?



High power AC exhaust fan changes the air inside the enclosure every few seconds when the projector is on.

Note: with the Positive Pressure option, the fan runs continuously at low speed when not required for cooling.

Exhaust fan cowl with insect screen.

All hardware and fasteners are corrosion-resistant stainless steel

DEC4 controller, including fan control and comms option cards — easy access from outside and LOTS of wiring space!

(shown here with cover removed)

Power and Signal Conduit Entries — 29mm diameter (US 3/4" NPT). And there's an alternate set on the underside.

DEC4 Enclosure Controller with patented Goldilocks™ OS and remote monitoring option

Side doors lock with a special heavy duty security key

Cyclone Outdoor Projector Enclosures

Now that UST lenses are readily available for large format projectors, the creative community is getting excited about their amazing potential for mapping, informational signs and advertising. UST outdoor enclosures allow you to paint the outside of your building without having to own the block across the street!

There are now a bewildering number of different UST configurations on the market, and it's critically important that we understand precisely which one you are planning to use. Each type will have different beam geometry, and these can be very challenging to accommodate, so most UST enclosures are in fact custom designs.

Cyclone UST enclosures may be configured to mount above the image (projecting down) or below it (projecting up).

The lenses may be fixed but the projector mount allows for adjustment of pan, tilt and roll when you get to the job site.



Some 90-degree UST lenses can be mounted in different orientations (see right panel). This one shows a Cyclone 55.310.U90R enclosure, with a Christie Crimson, with the UST lens pointing right.

Ultra Short Throw Lenses...



Cyclone 55.320.U with Panasonic PT-RZ31K and UST Lens.

Shown here feet-up, projecting down, but may also be configured feet-down, projecting up.

Which UST?

This can be confusing. Please specify the UST lens configuration when ordering:



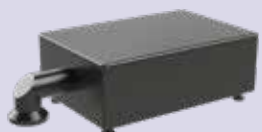
Periscope Style A



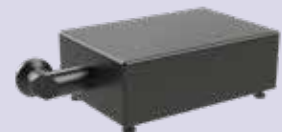
Periscope Style B



Right-angle Left



Right-angle Down



Right-angle Right



Right-angle Up

We will also need to know:

Projector and lens model #s

Projector - feet up or down?

Projector - Landscape or Portrait?

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...and Mirrors



There are several ways to project straight down onto a floor, a stage, even an ice rink — we have made enclosures to hold a projector vertically with a standard lens pointing straight down, or maybe one of the new generation of right-angle UST lenses will work for you.

A simple solution is to extend the length of a standard landscape enclosure, and add a front-silvered mirror in front of the lens, with the port glass

moving to the bottom of the housing.

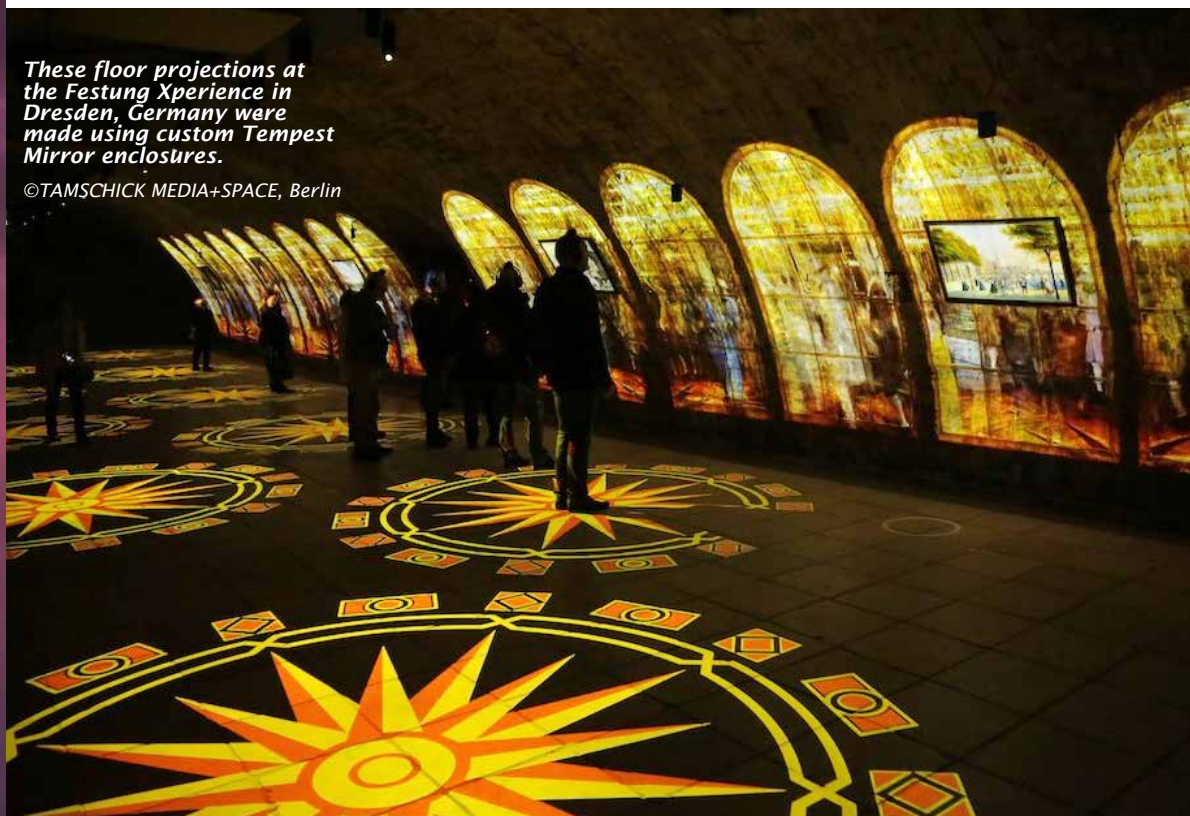
This can also work well for projecting to left or right — just talk to us and we'll figure out the best solution together...

Cyclone 55.320.M with Panasonic PT-RZ31K and front-silvered Mirror.

The mirror angle is adjustable for fine-tuning on site.

These floor projections at the Festung Xperience in Dresden, Germany were made using custom Tempest Mirror enclosures.

©TAMSCHICK MEDIA+SPACE, Berlin



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Outdoor Projector Enclosures

All Cyclones come with six M12 threaded sockets on the top surface, and four on the bottom. **So you can bolt the enclosure directly to your structure, or use them to attach these Tempest rigging accessories.**

Stainless steel bolts are provided for attachment to any suitable support structure.

Tempest recommends only the use of stainless steel hardware for installing enclosures outdoors.

Unistrut Kit

Easy attachment to any structure using these two Unistrut rails. Use standard Unistrut hardware to attach to your structure, without worrying about precise hole locations.

Unistruts may be mounted top (shown here) or bottom.

Note: A Unistrut Kit is required for use with Cyclovator 2.



Cyclone 55.310 with 55.UR.310 Unistrut Kit. Unistrut rails may be mounted top or bottom.

Two Cyclone 55.310.L with 51.SK Stacking Kit. The stacking kit gives the enclosures the required 3" [75] airgap, and assembles easily with clevis pins



Stacking Kit

Stack two or more Cyclone enclosures of the same type using this stacking kit.

Male and female parts attach to the threaded corner holes, and are simply joined together using a stainless steel clevis pin.

Maximum two enclosures stacked if hung, up to three with ground support.

See also the swivel stacking kit on the next page.

Cyclone 55.310 with 51.C2 Cyclovator.

NOTE: Cyclovator requires 51.UR.xxx Unistrut Rail Kit



Cyclovator 2

Our fabled Cyclovator tucks snugly under the center of gravity of the enclosure.

Use Cyclovator on the ground to cover tall buildings, or on a rooftop to project to ground level. Either way, Cyclovator allows you to project up to about 60° off horizontal, and then bring the projector safely back to horizontal for service access.

You can even bolt this Cyclovator to a truss or other structure and use it to hang any Cyclone enclosure at any angle.

In every case, Cyclovator has a positive index ring that you set to come back to your show position with absolute repeatability, time after time...

Cyclone Outdoor Projector Enclosures

Sun Shade

This aluminum panel mounts easily on the top of any Cyclone enclosure to provide extra daytime protection in hot, sunny climates. The cover not only deflects sunlight, but also provides a 75mm (3in) air gap between the shade and the enclosure top, promoting convective air movement. Use in conjunction with 55.TI thermal insulation in sunny areas with daytime temperatures frequently above 35 °C (95 °F).

See also Thermal Insulation Kit, next page.

Swivel Stacking Kit

Stack two Cyclone enclosures (must be the same model), and angle them up to 40 degrees apart — handy for short-throw edge blending jobs.

Stainless steel stacking kits attach to M12 rigging points, and locking bolts are provided to secure rotation angle when aligned.

Swivel Stacking kit part number must match Cyclone enclosure — eg 55.SS.310 is the Swivel Stacking kit for two Cyclone 55.310 enclosures shown here.

Rigging Options

55.SH.xxx Sun Shade attaches easily to the Cyclone's top rigging points. Note that the xxx matches the enclosure part number, eg 55.SH.310 for Cyclone 55.310 shown here.



Custom Rigging Options

Don't see what you need? We do a lot of custom designs and we'll be happy to work with you to find the best solution for your project.

**The Royal Opera House,
Covent Garden, London**

© 59 Productions, London



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What to do when it's HOT

Don't panic!

Tempest enclosures have been in use for years in some very warm places — think Singapore, Dubai, Las Vegas. In most cases our standard enclosures will protect your equipment without problems.

Outdoor projection, by definition, is used at night. So you need to think about daytime and showtime temperatures quite separately:

Daytime — Insulation

In hot locations (anywhere with daytime temperature regularly exceeding 35°C), we strongly recommend specifying the Cyclone Thermal Insulation option (55.TI.xxx). This is a factory-fitted thermal insulation lining to the enclosure that effectively moderates daytime temperatures, reducing stress on your equipment and prolonging fan life.

Daytime — Hot Sun

If your enclosures will be regularly exposed to hot sun, the Cyclone Sun Shade (55.SH.xxx) is a simple, low-profile aluminum cover, that protects the enclosure from the midday sun and creates a 75mm (3in) air gap above the enclosure body. This protects the enclosure and its contents from the worst of the sun anywhere in the tropics or in desert conditions.

Showtime — Cooling

Tempest has traditionally avoided the use of active air-conditioning to cool video projectors, due to the high risks of damaging condensation, as well as the effect of vibration on the projection beam, especially for long throw work.

But there are cases where some help is needed, and Tempest offers two powerful options.

Tempest AC Assist

A powerful outdoor-rated spot cooler that blends cool air through the standard Cyclone inlet filter to lower the temperature of the blended air reaching the projector inlet by as much as 12°C.

The AC Assist cooler can cool up to four projectors, depending on the projectors' thermal load and the amount of cooling needed — more details below.

AC Assist operation is fully automatic, and AC Assist will operate only when the projector is running, and the ambient temperature exceeds a preset level.



AC Assist Cooler with Cyclone
55.310.L Enclosure

Tempest ActiveCool

Some of today's most powerful laser projectors demand not only a low operating temperature, but also that the inlet temperature should be controlled within a tight temperature range. An RGB laser projector has three laser engines for the three primary colors, and they all react differently to varying temperatures. So an RGB laser system calibrated at, say 23°C, may lose its color balance if that temperature changes by more than a few degrees.

Tempest ActiveCool is an outdoor rated closed-circuit cooling system that provides a constant operating temperature for the projector, in any ambient, and is recommended for certain projectors regardless of the outside ambient conditions.



ActiveCool Cooler with Cyclone
55.324.LAC Enclosure

Special Case — Christie D4K40 RGB

Christie's super-bright RGB laser projector is in high demand for both outdoor mapping and indoor theme park rides, and Tempest has been working with Christie to optimize performance in several different enclosure types (see also Tempest Tacit and Zen enclosures for indoor solutions).

For outdoor use in any climate type we strongly recommend using Tempest ActiveCool, to provide a constant operating temperature for optimal laser life and color consistency.

For all D4K40 enclosure types we supply a special internal

fan box that rigs on the side of the projector (landscape), or in the enclosure base (portrait), and concentrates the incoming airflow into the projector inlet. This accessory is included with any Cyclone 55.324.xxx enclosure for the D4K40 projector.



Cyclone Outdoor Projector Enclosures

Tempest AC Assist blends cooled air with filtered outside air to deliver operating temperatures within limits for sensitive laser projectors, in the hottest parts of the world.

There are times — and places — where the only way to keep a projector within its operating limits is to cool the air it breathes. The new generation of laser projectors may also need lower ambient temperatures to achieve maximum life and/or brightness.

The active cooling unit is housed in a separate ETL-listed weatherproof enclosure, eliminating compressor vibration.

How Much Cooling?

As a rule of thumb, we suggest cooling to approximately 70% the projector's btu rating, for a temperature reduction of 10-12°C.

The Tempest AC Assist Cooler is rated at 14,000btu/hr, so can assist the cooling of projectors with thermal dissipation up to about 20,000btu. This may be a single projector enclosure, or a group of up to four enclosures housing smaller projectors.

There is no downside to exceeding the recommended cooling mix — it will simply result in a lower operating temperature.

Configuration

The AC Assist unit is plug and play: Set it next to the enclosure, connect the air hose and power connector to the enclosure, and run the condensate drain hose to a convenient location — easy!

Control

Enclosures equipped with AC Assist will automatically turn on the cooling unit whenever the controller senses power going to the lamp/light engine. In locations with cold seasons a simple disable function prevents winter operation.



AC Assist Cooler with Twin Manifold and two Cyclone 55.210.L enclosures

Tempest AC Assist blends cooled air through the enclosure inlet filter, only when the projector lamp is on and the outside temperature is above a preset limit.

Tempest AC Assist reduces projector inlet temperature 10-12°C, assuring optimal operating conditions in even the hottest locations. Each AC Assist unit may cool up to four enclosures, depending on the heat load of the projectors used.

**Download the
ACAssist data
sheet from
www.tempest.biz**



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Now, from Tempest, closed circuit active cooling for larger, heat-sensitive laser-phosphor video projectors used outdoors.

Tempest ActiveCool™ will keep your projector running within a narrow constant temperature range, in any climate.

Operation is completely automatic - just set the target temperature and leave the rest to Tempest's patented DEC4 control system. As soon as DEC4 senses the projector is active, cooled air starts circulating through the enclosure, regulated by the cooler control. The optional Salt Fog protection kit protects the cooler from corrosive air conditions by the beach or shipboard.

The cooler is isolated from the projector enclosure to prevent condenser vibration transmitting to the beam. An anti-vibration mounting kit is available and recommended when ActiveCool is mounted on the same base as the projector enclosure, especially for long throw applications.

Suitable Projectors

For use with projectors with thermal dissipation in the range 10—15,000btu, including:

- Barco UDX, XDL
- Christie Crimson
- Christie D4K40-RGB
- Panasonic PT-RZ21K
- Panasonic PT-RZ31K
- Panasonic PT-RZ50K

Tempest ActiveCool™



**Download the
ActiveCool data
sheet from
www.tempest.biz**



Cyclone

Outdoor Projector Enclosures

Climate and Filter Protection

55.xxx.TI Thermal Insulation Kit

Cyclone enclosures may be used safely in climates with temperatures ranging from 0-40°C. In hot climates where the enclosures may be exposed to direct sun during the day, and in cold areas where the temperature may drop below freezing, we offer a factory installed Thermal Insulation kit. With the TI kit Cyclone may be used in temperatures down to -20°C, and it will also thrive in direct sun with daytime temperatures above 50°C.

See also Sun Shade on previous page.

Positive Pressure and Salt Air

We do a lot of cruise ship jobs, as well as beach resorts and attractions where salt air can be a real problem. Now all Tempest outdoor enclosures can be supplied with a Constant Positive Pressure setting that runs the enclosure fan(s) all the time at low power, maintaining just enough positive pressure to prevent salt or other pollutants sneaking in the back door when the projector is not running.

Specify option 55.PP.

55.IC.xx Inlet Cowl

Use this cowl to keep rain out of the inlet filter if the Cyclone enclosure is angled more than 20° up or down.

55.DFB.xx Desert Filter Baffle

In desert areas severe windblown sand may damage Cyclone's inlet filter, allowing sand and dust ingress in sandstorm conditions. The desert baffle slows down these particles, preventing filter abrasion.



Desert Filter Baffle

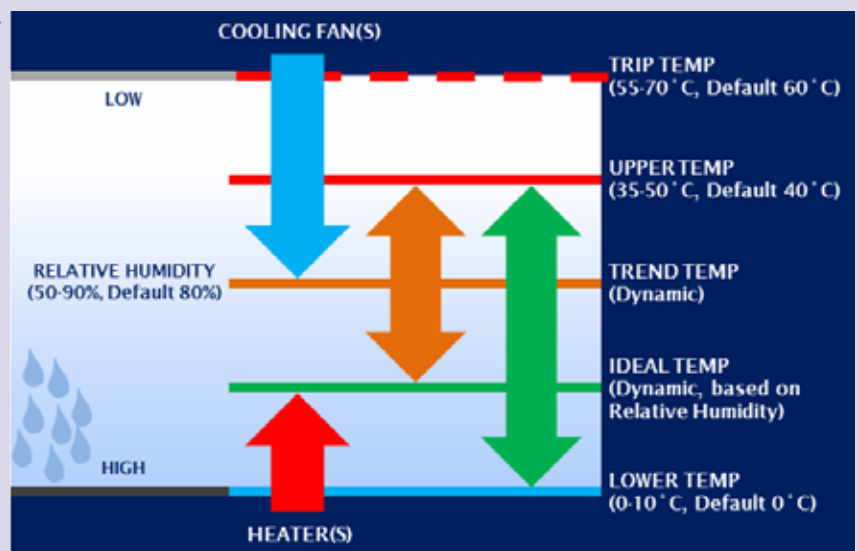
Goldilocks™

How do we keep projectors from roasting when it's 50°C and there's no shade?

And prevent condensation from destroying your projector overnight?

Tempest's unique Goldilocks™ Operating System (patents pending) brings enclosure control to a new level.

Goldilocks keeps the air temperature inside your enclosure just right, removing heat from the projector when the lamp is on or when the enclosure is heated by the sun. We're changing the air every few seconds.



Goldilocks uses a heater to maintain a minimum temperature in cold climates.

And Goldilocks tracks temperature and humidity 24/7, keeping relative humidity inside your

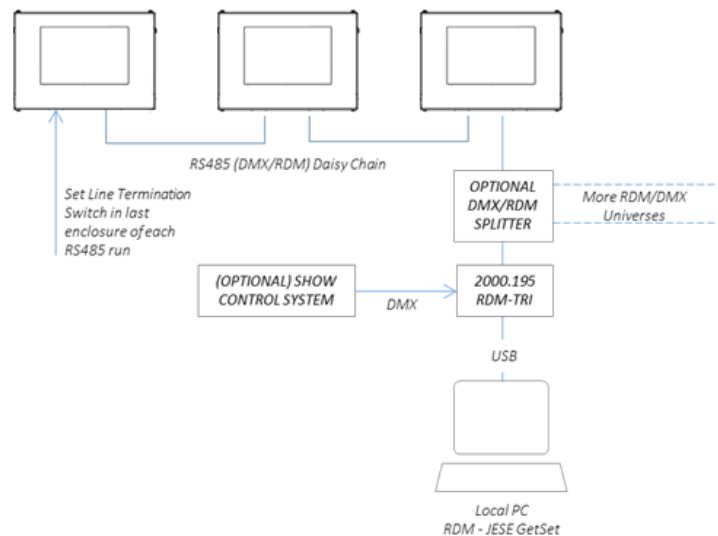
enclosure just right by using heaters to raise the air temperature when needed, adapting constantly to prevent deadly condensation.

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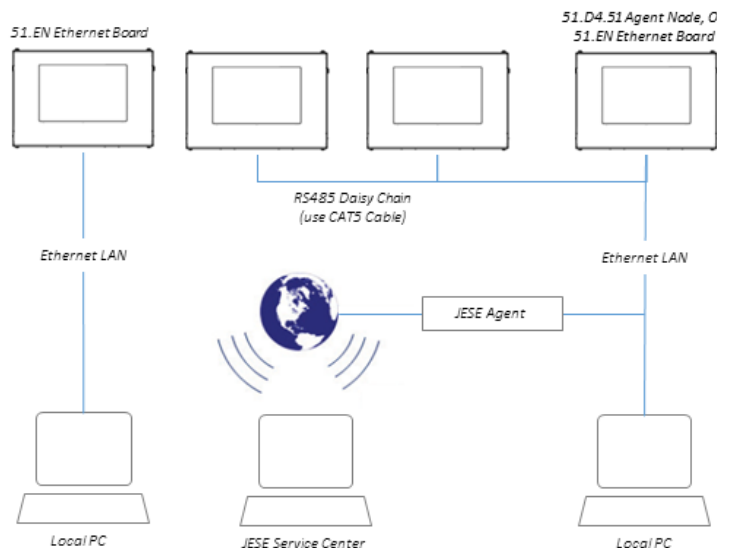
RS485 Comms (standard)

Daisy-chain a group of Cyclone enclosures together with this RS485 board — one per enclosure, and monitor using a JESE RDM-TXI interface (Tempest part # 2000.195).



51.EN Ethernet Comms

Use this Ethernet adapter to connect one Cyclone or a group of Cyclones connected using RS485 to a PC, and monitor using Tempest TEMP protocol. Download the TEMP Developer Guide from www.tempest.biz/tech-support.



JESE Agent - Global Monitoring

Now, there's Agent, from Tempest partner JESE — monitor larger systems in the site control room, or worldwide, from our UK-based control center — see more below...

*Sakuya Lumina,
Osaka, Japan*

© Moment Factory, Montreal



Cyclone Outdoor Projector Enclosures

With JESE's groundbreaking AGENT monitoring system, you can see exactly what's going on, in every one of those mission-critical enclosures.

And so can we...

We can log into your AGENT system from JESE's UK support center, and help you identify and fix problems — even upload new firmware to your enclosures if that's what you need.

Low Risk — High Reward

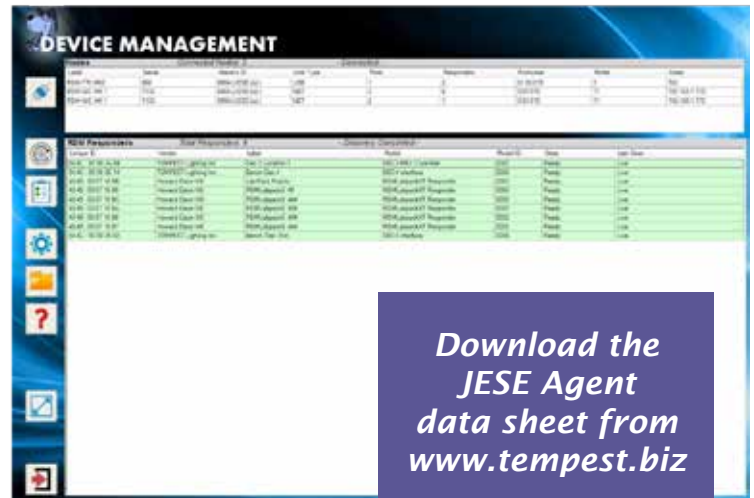
For a very modest initial outlay, and an annual service fee, you can rest assured that your system will alert you to any potential or actual problems, and you will have access to system upgrades and real-time support, from experts who can see right into your system.

Low risk, very high reward.

JESE Agent—Global Monitoring

And there's more...

AGENT supports the published ANSI DMX and RDM standards, so it can be used to monitor any compliant products, seamlessly with your Tempest enclosures.



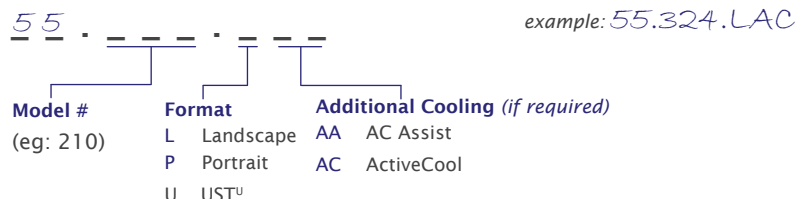
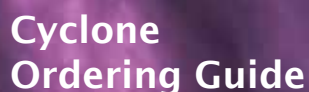
Download the
JESE Agent
data sheet from
www.tempest.biz



Remote Access
over Internet

Windows PC
running JESE
Agent Client





Model	Description	Dimensions	(lwh)	Weight	Projector Type ¹	Shipping Dimensions (lwh)/Weight	
55.210.L	Cyclone 210.L	51x32x22in	130x81x56cm	177lb/80kg	Panasonic PT-DZ21K, PT-RZ12K, PT-RZ21K, Barco UDM, F90, DPI Highlite 4K	60x42x35in/152x107x89cm	297lb/135kg
55.210.P	Cyclone 210.P	51x25x34in	130x64x86cm	213lb/97kg		60x35x47in/152x89x119cm	333lb/151kg
55.240.L	Cyclone 240.L	53x34x26in	135x86x66cm	230lb/105kg	Christie Roadster, BARCO HDX	62x44x39in/157x112x99cm	360lb/164kg
55.240.P	Cyclone 240.P	53x25x34in	135x64x86cm	222lb/101kg		62x35x47in/157x89x119cm	352lb/160kg
55.250.L	Cyclone 250.L	51x37x24in	130x94x61cm	223lb/101kg	Epson Pro L25000U	60x47x37in/152x119x94cm	363lb/165kg
55.250.P	Cyclone 250.P	51x25x41in	130x64x104cm	257lb/117kg		60x35x54in/152x89x137cm	397lb/181kg
55.305.L	Cyclone 305.L	51x34x24in	130x86x61cm	193lb/88kg	Panasonic PT-RQ35K, PT-RZ34K, Epson L20000	60x44x37in/152x112x94cm	345lb/157kg
55.305.P	Cyclone 305.P	51x25x36in	130x64x91cm	213lb/97kg		60x35x49in/152x89x124cm	366lb/166kg
55.310.L	Cyclone 310.L	59x34x25in	150x86x64cm	247lb/112kg	Christie Boxer, Christie Crimson, Barco UDX, DPI Insight 4K	68x44x38in/173x112x97cm	387lb/176kg
55.310.P	Cyclone 310.P	59x25x36in	150x64x91cm	261lb/119kg		68x35x49in/173x89x124cm	401lb/182kg
55.314.L	Cyclone 314.L	58x37x27in	147x94x69cm	285lb/130kg	Christie Griffyn	67x47x40in/170x119x102cm	425lb/193kg
55.314.P	Cyclone 314.P	58x25x38in	147x64x97cm	271lb/123kg		67x35x51in/170x89x130cm	411lb/187kg
55.320.L	Cyclone 320.L	67x37x25in	170x94x64cm	305lb/139kg	Panasonic PT-RZ31K,RQ32K	76x47x38in/193x119x97cm	455lb/207kg
55.320.P	Cyclone 320.P	67x25x40in	170x64x102cm	313lb/142kg		76x35x53in/193x89x135cm	463lb/210kg
55.324.LAC ⁴	Cyclone 324.LAC	58x37x34in	147x94x86cm	369lb/168kg	Christie CP4325-30, D4K40	67x48x47in/170x122x119cm	539lb/245kg
55.324.PAC ⁴	Cyclone 324.PAC	58x30x41in	147x76x104cm	363lb/165kg		67x40x54in/170x102x137cm	521lb/237kg
55.525.L	Cyclone 525.L	67x37x29in	170x94x74cm	363lb/165kg	Panasonic PT-RQ50K, DPI Insight Dual	76x47x42in/193x119x107cm	534lb/243kg
55.525.P	Cyclone 525.P	67x30x40in	170x76x102cm	363lb/165kg		76x40x53in/193x102x135cm	556lb/253kg
55.525.LAC ⁴	Cyclone 525.LAC	67x37x33in	170x94x84cm	402lb/183kg	Panasonic PT-RQ50K	76x47x46in/193x119x117cm	582lb/265kg
55.525.PAC ⁴	Cyclone 525.PAC	67x30x44in	170x76x112cm	415lb/189kg		76x40x57in/193x102x145cm	595lb/271kg

All Cyclone products are built to order. Please consult factory for lead times.

Available Options

For custom options please consult factory

CAD drawings and user manuals at www.tempest.biz

Cyclone Configurator

Please complete this form and email to us at info@tempest.biz

Name	
Company	
Email	
Phone	
Project Name & Location	
Projector Model	
Lens Model	
Cyclone Model	55. _____
Quantity	
Destination Country	
Install Date	
Enclosure Type	Landscape <input type="checkbox"/> Portrait <input type="checkbox"/> UST <input type="checkbox"/>
Projector Slide	Left* <input type="checkbox"/> Right* <input type="checkbox"/> Front <input type="checkbox"/> Back <input type="checkbox"/>
Projector Mount	Landscape/UST: Feet Down <input type="checkbox"/> Feet Up <input type="checkbox"/> Portrait: Feet Left <input type="checkbox"/> Feet Right <input type="checkbox"/>
Required Options	
Thermal Insulation	Yes <input type="checkbox"/> No <input type="checkbox"/>
Inlet Cowl	Yes, Qty _____ No <input type="checkbox"/>
Desert Filter Baffle	Yes, Qty _____ No <input type="checkbox"/>
Positive Pressure	Yes, Qty _____ No <input type="checkbox"/>
Sun Shade	Yes, Qty _____ No <input type="checkbox"/>
AC Assist	Yes, Qty _____ No <input type="checkbox"/>
ActiveCool	Yes, Qty _____ No <input type="checkbox"/>
Cyclovator	Yes, Qty _____ No <input type="checkbox"/>
Stacking Kit	Yes, Qty _____ No <input type="checkbox"/>
Swivel Stacking Kit	Yes, Qty _____ No <input type="checkbox"/>
Unistrut Kit	Yes, Qty _____ No <input type="checkbox"/>
Ethernet Comms	Yes, Qty _____ No <input type="checkbox"/>
Spare Inlet Filter	Yes, Qty _____ No <input type="checkbox"/>

Color, standard	Light Bronze <input type="checkbox"/> Black <input type="checkbox"/> White <input type="checkbox"/>
Color, custom	Custom, RAL # _____ Gloss Level _____%

UST Lens Configuration:

		
90deg Up <input type="checkbox"/>	90deg Down <input type="checkbox"/>	Periscopic A <input type="checkbox"/>
		
90deg Right <input type="checkbox"/>	90deg Left <input type="checkbox"/>	Periscopic B <input type="checkbox"/>
		
Straight, Vshift Down <input type="checkbox"/>	Straight, Vshift Up <input type="checkbox"/>	

Custom Requests:

Custom Requests:	
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Factory Use Only:	
SO Number	
Date	
Electrical	IEC <input type="checkbox"/> NEMA <input type="checkbox"/>



* Left Slide
Shown here

User manuals and
CAD drawings at
www.tempest.biz