



an EnerSys Company

# Shelter Cooling Systems



# Overview

Managing the internal temperature within specialist Equipment Shelters is critical when it comes to protecting your sensitive equipment.

With over 20 years experience in developing and supplying ventilation and cooling systems for the telecommunication industry throughout Australia, we can customise a cooling system based around your equipment and exact requirements to ensure the reliability of sensitive equipment and ultimately safeguard your investment.

When specifying a cooling system for a specialist equipment building there are many aspects that need to be considered, these include:

- The heat load given off by the equipment within the building.
- The ambient temperature/humidity of the environment where the building is to be located.
- The thermal protection from the environment that is provided by the building.
- The minimum and maximum temperature range the inside of the building should maintain for the equipment.
- Power source available, mains grid 240V-AC or off-grid DC solar.
- The available space within the building for the cooling system.
- Cost:
  - The capital expenditure required for the initial set up of the cooling system
  - The annual expenditure to run the cooling system
  - The ongoing expenditure to maintain the cooling system
- Green House gas emissions, the overall efficiency of the cooling system and its ability to minimise impact on the environment.
- Expandable, the ability to increase or downsize the capacity of the cooling system as your needs change over time.

# Process Coolers

## L600P

### Features

- ✓ Industrialised cooler designed specifically for the Telecommunication Market
- ✓ 6.1kW cooling capacity, 15A mains supply
- ✓ Integrated alarm and wired control options
- ✓ Metal fascia and encased connections to remove fire risk
- ✓ Outside fitted case dimensions: 670 (W) x 710 (D) x 455 (H)



### Specifications

	Unit	Measure
<b>COOLING CAPABILITY @ 35°C/30%RH(indoor) &amp; 35°C/60%RH(outdoor)</b>		
Cooling Capacity (Total cooling effect)	kW	6.18
Sensible Cooling Effect	kW	5.43
<b>POWER</b>		
Input Voltage (AC)	V	220-240
Frequency	Hz	50
Operating Current	A	9.5
Starting Current	A	≤ 15
Recommended Circuit Breaker	A	Motor Protection 20
<b>PHYSICAL</b>		
External dimensions (W*H*D) excludes frame	mm	660 * 450 * 690
Weight	kg	70
Weight with packaging	kg	75
<b>ENVIRONMENT</b>		
IP Rating		54
Outdoor Ambient Temperature Operating Range	C	10 <sup>o</sup> – 48 <sup>o</sup>
Condenser Sound Power Level	dB(A)	78
Refrigerant Type		R410A
Standard Refrigerant Charge	kg	1.6
<b>OPERATION &amp; GENERAL</b>		
Mains connection via 15A 3-PIN appliance plug		Yes
Ability to be controlled from ICS PLC Controller		Yes
Run signal display & Alarm output		Yes
Over-temperature compressor protection		Yes
Ruggedized industrial construction		Yes
MEPS compliant to AS/NZS 4965.1:2008 & 4965.2:2008		Yes
Mains Isolator switch on front panel		Yes
Mechanical internal air-flow direction adjustment		Yes

# L400P

## Features

- ✓ Industrialised cooler designed specifically for the Telecommunication Market
- ✓ 4.4kW cooling capacity, 10A mains supply
- ✓ Operates in high outdoor ambient temperatures up to 58°C
- ✓ Metal fascia and encased connections to remove fire risk
- ✓ Outside fitted case dimensions: 670 (W) x 710 (D) x 455 (H)



## Specifications

	Unit	Measure
<b>COOLING CAPABILITY @ 35°C/30%RH(indoor) &amp; 35°C/60%RH(outdoor)</b>		
Cooling Capacity (Total cooling effect)	kW	4.40
Sensible Cooling Effect	kW	3.86
<b>POWER</b>		
Input Voltage (AC)	V	220-240
Frequency	Hz	50
Operating Current	A	6.5
Starting Current	A	≤ 15
Recommended Circuit Breaker	A	Motor Protection 20
<b>PHYSICAL</b>		
External dimensions (W*H*D) excludes frame	mm	660 * 450 * 690
Weight	kg	65
Weight with packaging	kg	70
<b>ENVIRONMENT</b>		
IP Rating		54
Outdoor Ambient Temperature Operating Range	C	15 <sup>o</sup> - 58 <sup>o</sup>
Condenser Sound Power Level	dB(A)	75
Refrigerant Type		R134A
Standard Refrigerant Charge	kg	1.55
<b>OPERATION &amp; GENERAL</b>		
Mains connection via 10A 3-PIN appliance plug		Yes
Ability to be controlled from ICS PLC Controller		Yes
Run signal display & Alarm output		Yes
Over-temperature compressor protection		Yes
Ruggedized industrial construction		Yes
MEPS compliant to AS/NZS 4965.1:2008 & 4965.2:2008		Yes
Mains Isolator switch on front panel		Yes
Mechanical internal air-flow direction adjustment		Yes

# Cooling and Control Management

## LS1 PLC Cooling Manager

The LS1 PLC Control Manager which was specifically designed for use with the L600P Process Coolers and Economy Cooling Fans. It also has a thermostat and a converter to enable 24v to 48v operation via an inbuilt relay.



The LS1 PLC Control Manager comes standard with three (3) output RJ-45 sockets for interface with Cat5e patch cables to room air conditioners and economy fan units. This controller can only be used with single set point control logics. It cannot be used for dual set point control logics (such as the 'warm mode, cool mode' program). The cables provided are 2m in length, so if possible, mount the unit close enough to the L600P's, if this cannot be achieved then purchase longer cables, all standard RJ45 Cat5 patch cables from an Electrical Wholesaler will be suitable. The significant advantage of this controller is no electrician is required, equating to a safe and simple plug in operation.

## LS4 PLC Cooling Manager

The LS4 controller comes standard with six (6) output RJ-45 sockets for interface with Cat5e patch cables to room cooling units and economy fan units. This controller can be used with single or dual set point control logics (such as the 'warm mode, cool mode' program).



# Economy Cooling Fan L350A

## Features

- ✓ Specifically designed for the Telecommunication Market
- ✓ 240V-AC Fan motor works within a range of 220-240 volts
- ✓ High capacity air-flow, positive pressure cooling
- ✓ Low power consumption, 135 watts, very efficient
- ✓ Large total area-mass filters delivering long intervals between filter maintenance



## Description

There are four (4) variants of the L350A economy cooling fan that can be ordered:

1. AC powered L350A economy cooling fan
2. AC powered Vertical mounted L350A economy cooling fan
3. Either of the AC powered L350A economy cooling fans supplied complete with matching DC Inverter Module
4. DC powered L350A-DC economy cooling fan

The L350A fan body is the same width and height as the L600P room air conditioner, 670 (W) x 455 (H) and can fit into the same wall penetration. It has a single phase, 240V-AC power supply.

The AC option has a single phase, 50Hz, 240V, 15A power supply. The DC option has 48V DC power supply. The outside fitted case dimensions are 670 (W) x 710 (D) x 455 (H). A 1m standard power socket connection, which connects directly to the AC power supply is included.

The L350A fan can be installed directly into the wall or into a Stackframe. The Stackframes add strength to the wall and provide a strong frame to secure the L350A economy cooling fan and/or L600P room air conditioner. An additional option is the Security Cage for deterring vandalism and also improving the outside look of the building where aesthetics are of concern.

## DC Inverter Module

The unit converts 40 - 64V-DC to 240V-AC. The inclusion of this module inside the fan box enables the L350A to be powered by a DC power source. Therefore, an L350A economy fan with a DC inverter module can operate in the event of mains failure.



# Stackframes & Security Cages

## Overview

### Features

- ✓ Available in 1 to 4 units
- ✓ Custom built to order
- ✓ Available in 3 colours
  - PB - Paper Bark
  - PE - Pale Eucalypt
  - SM - Surf Mist
- ✓ Supplied flat-packed (assembly required)

### Range of accessories to suit your configurations

We manufacture a range of mounting accessories to support a vast range of configurations enabling total flexibility when designing your cooling system solution.

To assist in controlling airflow, we manufacture a standard range of Stack Frames and Cages, as well as being able to offer you customisable options.

The Stack Frames add strength to the wall and provide a strong frame to secure fans and air conditioners. An additional option is the security cage for deterring vandalism and improving the outside look of the building where aesthetics are of concern.





# Economy Cooling System

## Overview

### Key components of the system:

- Process Cooler modules
- Fresh Air Cooler modules
- Mounting Frames
- Central Control Management Panels
- PLC Module

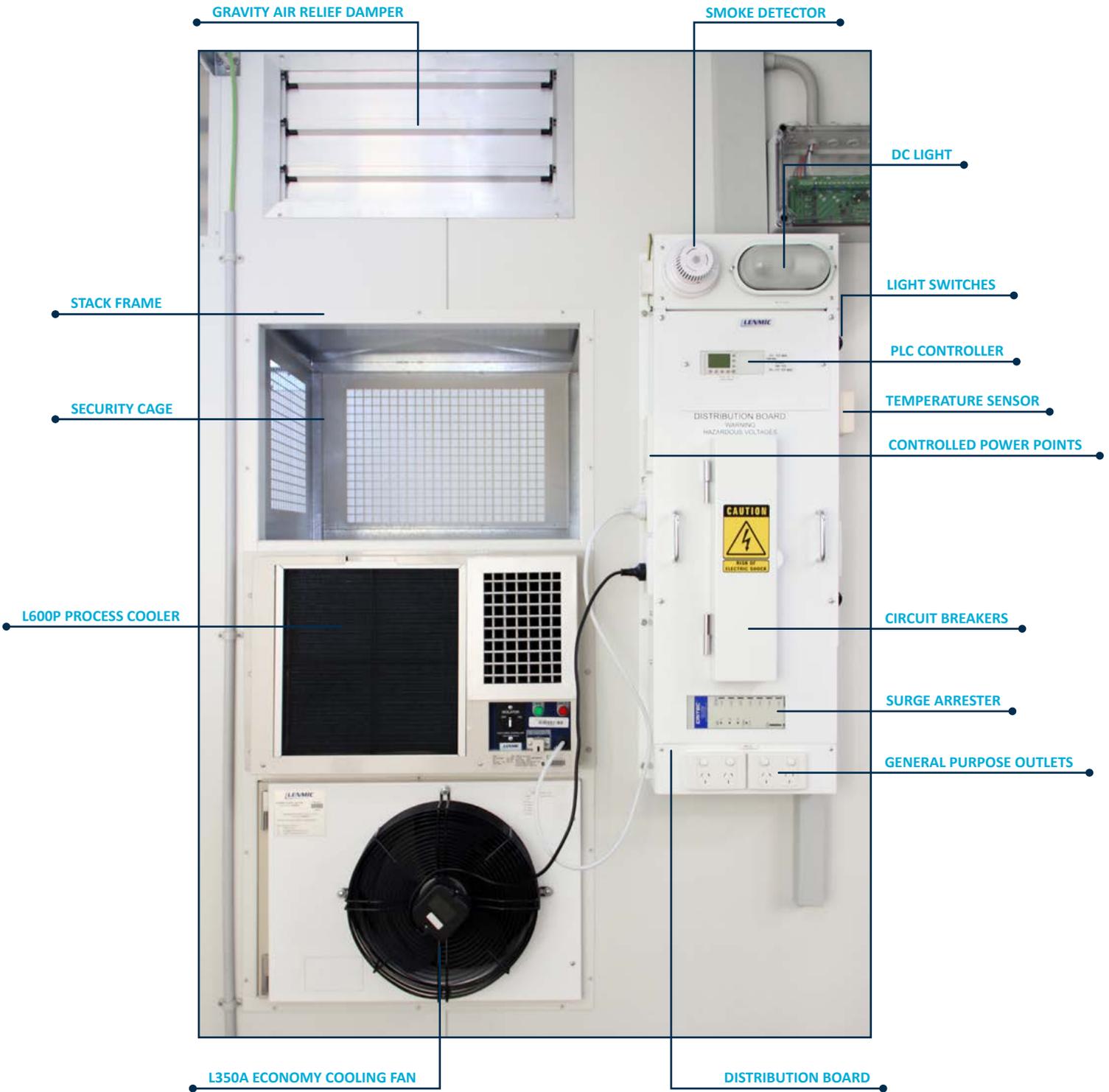
### How the system operates

Our industrial Air-conditioners and Economy Cooling Fans are designed to operate in conjunction with our electrical Distribution Boards and Control Systems, to manage heat loads and regulate temperatures within equipment shelters.

The automated cooling system consists of a Lenmic Distribution Board or Control Panel employing a PLC Controller with sensor inputs providing accurate monitoring, and outputs providing actions to control the Shelter cooling as well as activating voltage-free alarms.

### Give your equipment the best operating conditions

To ensure sensitive equipment operates reliably in optimum conditions, our PLC programs monitor the internal and external temperatures of an enclosure. The PLC activates or de-activates the cycle of cooling fans and air-conditioners at pre-programmed set-points to maintain temperature within pre-determined parameters in an energy efficient manner. In unexpected circumstances, the PLC Module will provide voltage-free alarms to provide instant notification of any irregularity on site.



# Zonecool™ Management System

## Overview

### Features

- ✓ Environmentally friendly solution
- ✓ Minimal DC power required reduces energy consumption
- ✓ Rack temperature independently controlled
- ✓ Works in with 240V-AC, 48V-DC, and 24V-DC
- ✓ Minimal maintenance costs



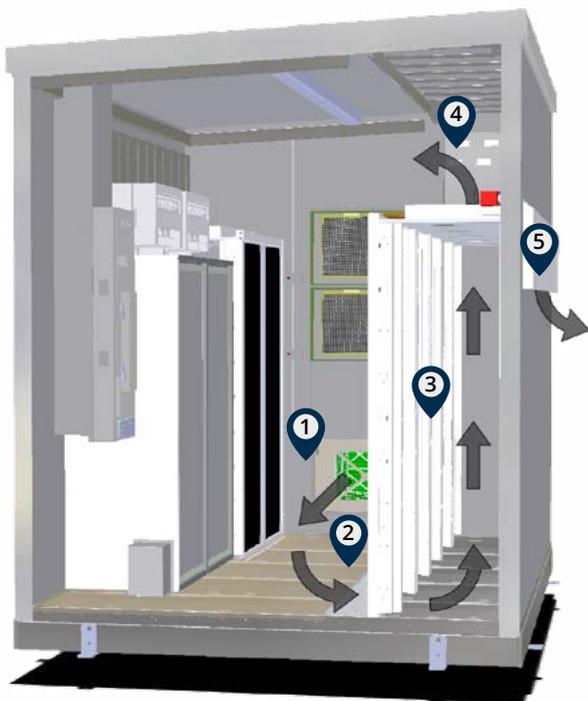
### Latest advancement in cooling technology

Exclusive to ICS Industries, Zonecool™ is the latest advancement in energy efficient cooling solutions developed for outdoor equipment buildings in both mains-grid and off-grid power situations.

### Individual equipment zones

Our latest development has a high capacity racking system built into the equipment shelter structure. This racking system incorporates clever cable management and thermal barriers between each bay of equipment.

Each rack has its own independent zone incorporating an ACM (Airflow Control Module) that monitors temperature, and controls each rack's fan and motorised damper accordingly. **The ACM is connected back to the main PLC. The core component is the ZMS (Zonecool Management System), which maintains varying temperature thresholds in the one building.**



1 Filtered air is drawn into the building with negative pressure

2 Cooler air settles and is drawn through the perforated floor

3 Fan units draw air upwards through the equipment rack

4 Air re-circulates into the shelter (depending on temperature)

5 Air is exhausted out the shelter (depending on temperature)



# Active & Passive Cooling

## Overview

These are many considerations when planning the most appropriate cooling solution for an outdoor cabinet.

These include:

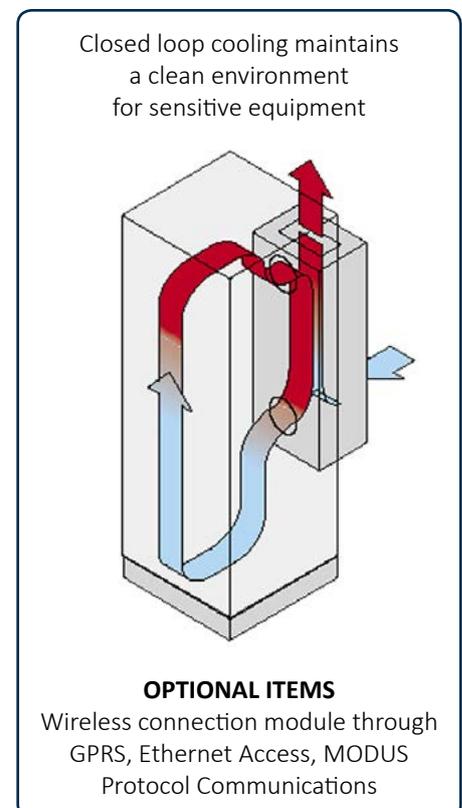
- ✓ Manufacturers specifications of the equipment housed inside
- ✓ Location, direct sun, snow, seaside, roadside, etc
- ✓ Location, outdoor ambient temperature min/max
- ✓ Noise Pollution
- ✓ Power, mains grid or remote

ICS has 25 years experience in researching and incorporating the latest technologies, we develop cooling systems and can assess your project and advise on the pros and cons of the different options available to you.

We utilise specialist cabinet air-conditions, heat exchangers and fresh air cooling venting and fans along with solar shields and insulation material. All of these can be used in isolation or in hybrid combinations to best match your needs, ICS have specialists who can work with you and support you in your project to ensure that your needs are satisfied.

## Features

- ✓ Alarming output, voltage free contact for monitoring systems
- ✓ Inbuild management systems that can be programmed via laptop to any temperature set points
- ✓ Can operate in partnership with HEX or active fan to provide economy cooling options
- ✓ Closed loop coolings maintains a clean environment for sensitive equipment
- ✓ 48V AC and 240V DC versions available with cooling capacities from 300W- 3000W
- ✓ Ability to operate as a slave unit to a central management system allowing N+1 solutions
- ✓ Automatic self-start and test after power recovery with intelligent functions
- ✓ Expandable ability to increase or decrease





## ICS Bundled Solutions

With over 6000 specialist buildings supplied for telecommunication, mining, railway, switchrooms, fibre networks, remote monitoring, emergency services and more, all purpose designed and built by ICS.



Consultation



Design



Prototype & Engineer



Manufacture



Construct



Assemble



Fit-out & Installation



QA & Testing



Site Works



Site Delivery

*“Our vision is to be the recognised Shelter Specialist, providing equipment enclosures, associated products and solutions with professional engineering and field services Australia wide and into selected international markets.”*

# Additional Services and Support

Our Field Services Divisions can provide total care and deployment services for your Rapid Deployment fleet including:

- Site design, civil & electrical engineering
- Deployment, integration and decommissioning services
- Fleet management, including warehousing and logistics
- Planned & emergency services, maintenance & upgrade works

At ICS, we undertake a consultative approach towards your project. Whether you require one or all of our services offered, we can provide you with cost effective solutions to deliver consistent results.

Contact us today



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