

# Australian Defence Force Academy Library

Campbell, ACT

Australian Defence Force Academy (ADFA) recently completed a Lighting Energy Management upgrade project as part of the Defence Energy Efficiency Program. This program was a result of the Federal Government's commitment to reducing energy consumption and greenhouse emissions.

National Projects Consultants managed the process, with the documentation handed to Asset Services, the Comprehensive Maintenance Contractors, for delivery.

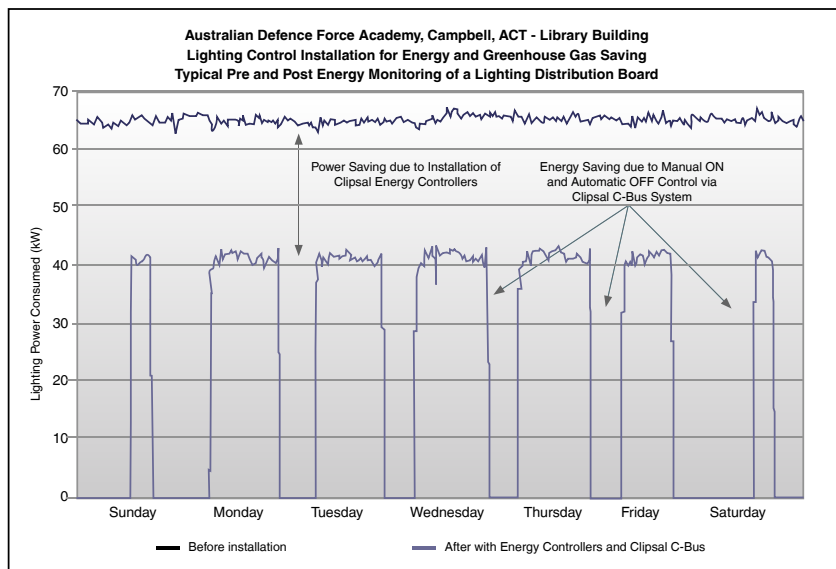
The energy management project covered a total of 36 different ADFA buildings in Canberra. The majority typically being university buildings with lecturer's offices and classrooms.

The energy management infrastructure in the ADFA Library Building in Campbell, ACT was upgraded as part of this overall program. The ADFA Library is a three storey building used by ADFA/ UNSW academics, staff, students and cadets. The building is approximately 20 years old and incorporates light fittings that are predominantly the original single tube, 36W, fluorescent up-lighting fittings.

As part of the library's energy management upgrade, Efficient Energy Systems Pty Ltd were contracted to install Clipsal Energy Controllers and a Clipsal C-Bus Lighting Control and Management System.

All works were completed within normal hours (7am to 5pm), with the heavy work carried out in the morning before the library opened, resulting in minimal disruption.

The savings achieved at one of the library's electrical distribution boards are shown in the table below.



Typical before and after energy consumption.

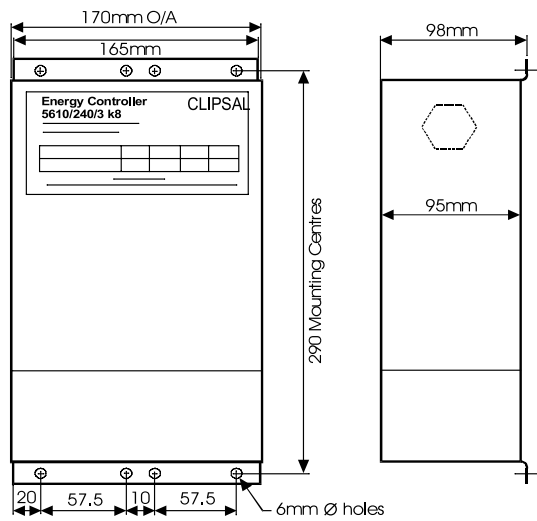
Power Reduction with Energy Controllers Installed	26.4kW
Hours per week Lighting Switched On	Best Case Approximately 85 Hours*
Savings per week	Worse Case 2244 kWh, Best Case 5535 kWh
Savings per year	Worse Case \$7,854.00, Best Case \$19,372
Approximate cost to supply and install Energy Controllers	\$16,500
Simple Payback period for Energy Controllers	Worse Case Approximately 2.1 years
GigaJoules (GJ) saved	8078 GJ

\* Note that a Clipsal C-Bus Lighting Management System was also installed as a part of the project, this provided additional savings lighting energy savings.

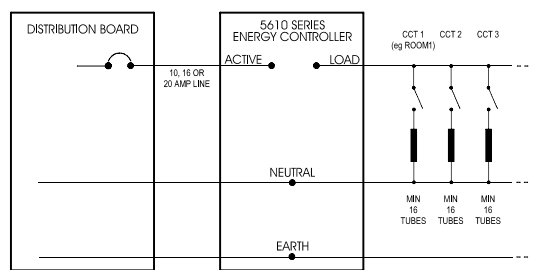
Tenderer	Efficient Energy Systems Pty Ltd (Contact Gary Egglestone)
Client Project Manager	National Projects Consultants (Contact John Morrissey)
CMC for client to deliver project	Asset Services (Contacts Dale Dummett, and Bob Cook)
Electrical Subcontractor	Five Star Electrical Pty Ltd



### Dimensions



### Typical Connection Diagram



### Maximum number of fluorescent tubes

Fluorescent Tube Type	5610/XXX/2K4	5610/XXX/3K8	5610/XXX/4K8
36W	50	80	100
40W	46	74	92
58W	34	54	68
65W	30	48	60

Note: Minimum Load 16 Tubes Per Switched Circuit

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### Product Specifications

		Supply Voltage Range		
		240V	230V	220V
Input Voltage	Supply Frequency	50/60Hz	50/60Hz	50/60Hz
	Nominal Supply Voltage	204 – 264Vac	195 – 253Vac	187 – 242Vac
	Normal Mode	240V	230V	220V
Output Voltage	Economy Mode	204V	195V	190V
	Maximum Load			
Load Ratings	5610/XXX/2K4	2400W	2400W	2400W
	5610/XXX/3K8	3800W	3800W	3800W
	5610/XXX/4K8	4800W	4800W	4800W
	Maximum Current			
	5610/XXX/2K4	10A	10. 5A	11A
	5610/XXX/3K8	16A	16. 5A	17. 5A
Mechanical Details	5610/XXX/4K8	20A	21A	22A
	Current Sensing / Under Voltage Detection	215V	205V	200V
	Timer Range (Mode Switching Delay)	1 – 5 minutes (Varies depending on load conditions)		
Mechanical Details	Shipping Weight			
	5610/XXX/2K4	5.5kg		
	5610/XXX/3K8	7kg		
	5610/XXX/4K8	7.5kg		
	Dimensions (L x W x D)	305 x 170 x 100mm		
	Operating Temperature	0 – 50°C		
Operating Humidity	10 – 95% RH			

Specifications typical @ 25°C ± 5°C

### Product Range

Catalogue No	Description
5610/240/2K4	Energy Controller, 240Vac, 50/60Hz, 2400VA
5610/240/3K8	Energy Controller, 240Vac, 50/60Hz, 3800VA
5610/240/4K8	Energy Controller, 240Vac, 50/60Hz, 4800VA
5610/230/2K4	Energy Controller, 230Vac, 50/60Hz, 2400VA
5610/230/3K8	Energy Controller, 230Vac, 50/60Hz, 3800VA
5610/230/4K8	Energy Controller, 230Vac, 50/60Hz, 4800VA
5610/220/2K4	Energy Controller, 220Vac, 50/60Hz, 2400VA
5610/220/3K8	Energy Controller, 220Vac, 50/60Hz, 3800VA
5610/220/4K8	Energy Controller, 220Vac, 50/60Hz, 4800VA

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Energy cost saving made easy!



The Clipsal Energy Controller



# The most you'll ever save with the lights on.

The Clipsal Energy Controller saves up to 30% of power used by fluorescent lights, with minimal impact on light levels. So now you can dramatically reduce energy consumption and your power bills all without lifting a finger! Plus, the Clipsal Energy Controller pays for itself in approximately 1-2 years, based on average kWh energy costs.

With the cost of electricity continuing to escalate, now is an excellent time to discover the amazing economic benefits of installing a Clipsal Energy Controller in any commercial or industrial application.



## How does it work?

The unit operates in one of two modes, Normal or Economy. In Normal mode the standard supply voltage (240Vac/230Vac/220Vac) is applied to the load. After a short time to allow lamps to strike and warm up, the Energy Controller enters Economy mode and the voltage applied to the lamps is reduced. When running in Economy mode, the voltage is decreased by approximately 15% of the supply and energy consumption by fluorescent lighting.

The Clipsal Energy Controller uses a patented, soft-switching auto-transformer to switch from normal voltage once the lights have been turned on. Lighting then operates at a reduced voltage, still within the range of the power utility, with only a small reduction in light output.

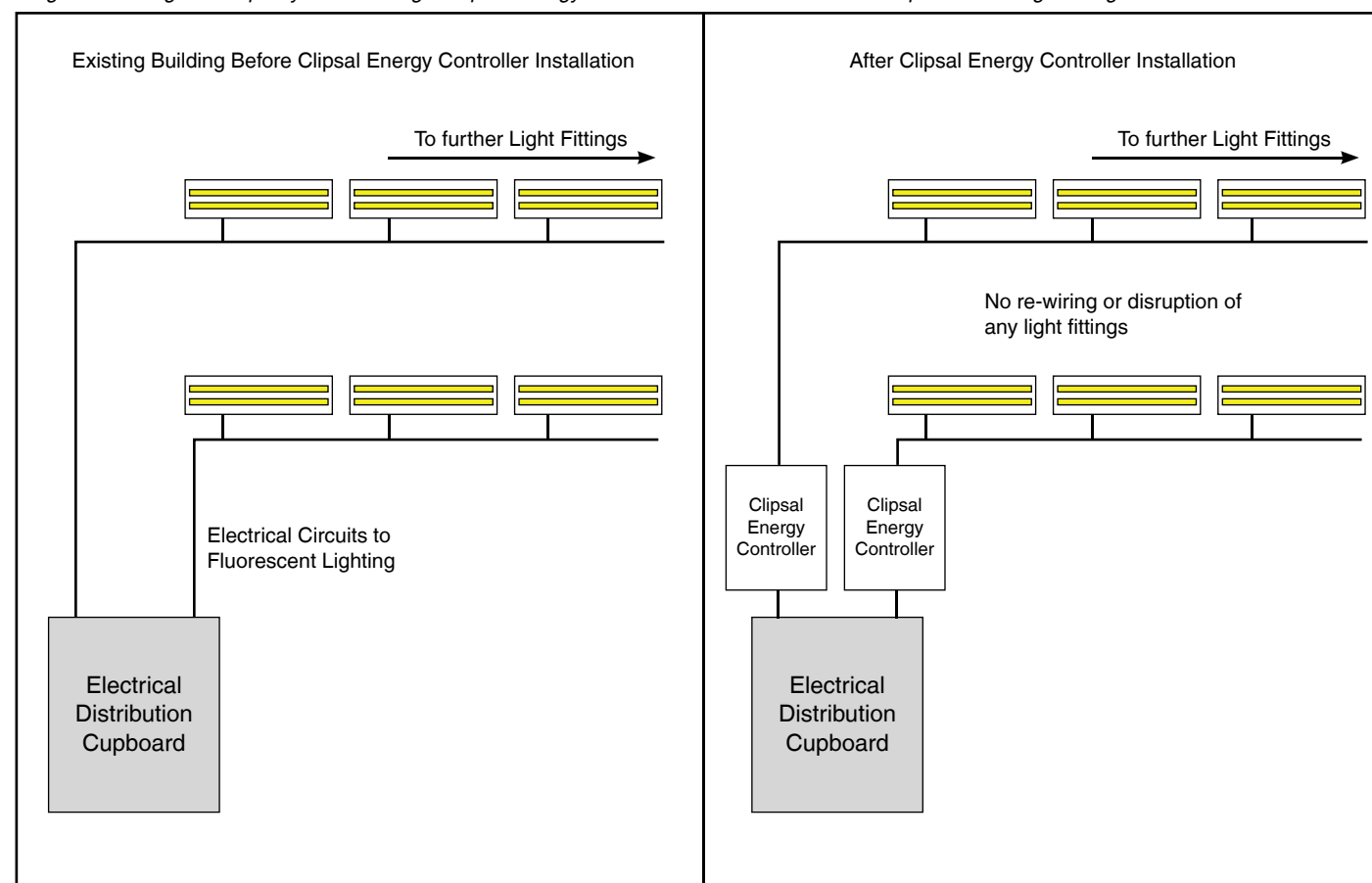
Install the Clipsal Energy Controller in a bank or line of fluorescent lights with any type of linear fluorescent lamp using a magnetic ballast, and any type of starter. It can be retrofitted into existing installations with no modification required to existing light fittings. Simply wire it into the lighting circuit before or after the light switches and between the power distribution board and the lighting load. It can also be mounted vertically, horizontally or hung from false ceiling hangers.

## Has the Energy Controller been proven?

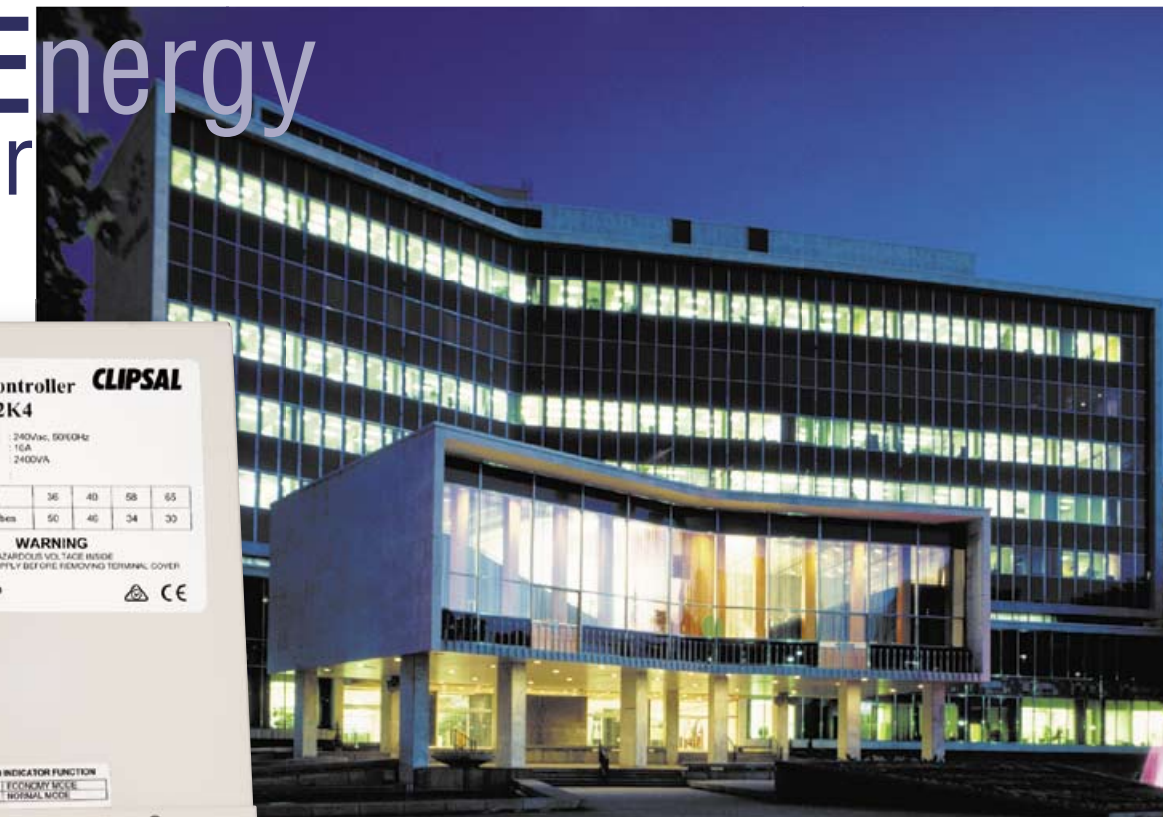
The Energy Controller has been tested in a wide range of sites including schools, supermarkets, banks, factories, hotels, hospitals, office blocks and car parks. Service stations and warehouses are also prime locations for the Energy Controller. For example, one fully loaded Energy Controller situated in a small factory where 60 fluorescent tubes are 'on' for 20 hours a day will save approximately \$470 on the annual electricity account, save 5 tonnes of carbon dioxide with a Return on Investment of more than 70%, and a simple payback of approximately 17 months. (Savings based on an average energy cost of 10 cents per kWh).

The Clipsal Energy Controller is entirely failsafe. In the event of a failure it returns to standard mains power. The controller continuously monitors the mains voltage and avoids "Brown-outs" by switching out of Economy mode when the voltage drops by 12.5%. 30% energy savings comprise 15% reduction in step voltage and 15% power factor improvement.

Diagram showing the simplicity of retrofitting a Clipsal Energy Controller. No modifications are required to the light fittings.



# Clipsal Energy Controller



## Features

**SAVE UP TO 30% OFF LIGHTING ENERGY COSTS**

- Typically saves 25 - 30% of lighting energy cost
- For use with fluorescent lighting with iron-core ballasts
- Easy to retrofit. Simple, quick installation
- No modification of luminaires required
- No limit to the number of units installed per site
- Fail-safe operation
- Current sensing for stable lamp switching
- Voltage sensing, "Brown-out" minimization
- Increases the lighting system power factor and reduces reactive power
- Static Device – No maintenance requirements