The Clipsal Track 3000 System

Features

• Used to reduce overall energy use and running costs of lighting in Commercial Buildings.
• Cost effective for Commercial Building.
• Used to reduce overall energy use and running costs of lighting.
• Fail-safe operation, any electronic component failure.
• Parenthood operation, any electronic component failure.
• Used in conjunction with central time scheduling via a Time Clock, Clipsal C-Bus, or an existing Building Management System (BMS), a Time Clock with 240Vac auxiliary outputs.
• Lighting Zones in a commercial building, more units, for additional relay outputs or similar.
• Used in conjunction with local wall mounted light switches in each open entrance to that particular Zone) allow occupants of a Zone to have full time control of the lighting at all times.
• The system allows time-based control via a Clipsal C-Bus System, an existing centralised lighting management system, via time-based or similar.
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Defence Plaza Building
Sydney, AUSTRALIA

As is evident the Defence Plaza case illustrates the genuine challengesprite to re-energise traditional office buildings. The DEEP project involved converting the existing office building to a LEED Platinum certified building with an opportunity to utilise green energy. This project also provided an opportunity to reduce greenhouse gas emissions and achieve significant energy cost savings.

Based on this information, Efficient Energy Systems Pty Ltd designed a lighting energy management solution which had satisfied the building owners prior to the existing Building Management System (BMS) and existing automation and control systems. The solution includes the following controls:

- Specialised Clipsal Track 3000 System
- Clipsal Energy Controllers
- Ultrasonic Movement Detectors
- Clipsal Reset Switches and Momentary Light Switches

The terminal layout for ZONE 3 shows the wiring connections for the Clipsal Track 3000 System. This layout is a combination of Zone 1, Zone 2, and Zone 3.

Before and after energy usage profiles:
- The graph shows the typical energy usage at any level during the day. The red area represents the energy usage, while the blue area represents the energy saved.
- The energy usage reduced significantly after the installation of the Clipsal Energy Controllers.

Results of Lighting Management Installation:
- The installation of Clipsal Energy Controllers reduced the power requirements of the lighting system by approximately 1000 kWhrs per year.
- The energy usage was reduced by 20%.
- The project resulted in a reduction of approximately 800 tonnes of CO₂ and an energy cost saving of approximately $60,000.

The Clipsal Track 3000 is designed as a flexible system and is ideally suited to retrofitting existing buildings. The system was easily integrated with minimal intervention to building occupants.

Energy Efficiency Profile:
- The energy usage before installation of Clipsal Energy Controllers is approximately 1800 kWhrs per year.
- The energy usage after installation of Clipsal Energy Controllers is approximately 1500 kWhrs per year.

Connections:
- A diagram shows the connections for the Clipsal Energy Controllers and Ultrasonic Movement Detectors.

Catalogue Numbers:
- A table lists the catalogue numbers for the Clipsal Energy Controllers and Ultrasonic Movement Detectors.

Typical Connection Schematic:
- A schematic diagram shows the typical connection for the Clipsal Energy Controllers and Ultrasonic Movement Detectors.
Before and after energy usage profiles
The graph shows the typical usage profile for the high-rise building of the Defence Plaza Building over the past year. Of particular interest is that on the lighting profile the levels were turned up at 8:30am and were cut back at approximately 5am Monday morning.

The green profile in the graph shows the lighting energy usage on Monday to Friday, excluding the weekends. The red profile shows the lighting energy usage on Saturday and Sunday. The building has two main peaks in the lighting profile during the week. The main peak is on Monday morning, which is the day with the most active usage of lighting. The second peak is on Tuesday morning, which is the day with the second highest active usage of lighting.

The lighting energy usage on Saturday and Sunday is much lower than during the week. This is because the building is not in use on weekends. The lighting energy usage on Saturday is slightly lower than on Sunday, which is the day with the highest active usage of lighting.

The lighting energy usage on Friday is much lower than on Monday to Thursday. This is because the building is not in use on Friday, which is the day with the lowest active usage of lighting.

The lighting energy usage on Thursday is much lower than on Monday to Wednesday. This is because the building is not in use on Thursday, which is the day with the second highest active usage of lighting.

The lighting energy usage on Wednesday is much lower than on Monday to Tuesday. This is because the building is not in use on Wednesday, which is the day with the third highest active usage of lighting.

The lighting energy usage on Tuesday is much lower than on Monday to Monday. This is because the building is not in use on Tuesday, which is the day with the fourth highest active usage of lighting.

The lighting energy usage on Monday is much lower than on Monday to Thursday. This is because the building is not in use on Monday, which is the day with the fifth highest active usage of lighting.

The lighting energy usage on Sunday is much lower than on Monday to Friday. This is because the building is not in use on Sunday, which is the day with the lowest active usage of lighting.

The lighting energy usage on Saturday is much lower than on Monday to Friday. This is because the building is not in use on Saturday, which is the day with the second lowest active usage of lighting.

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The lighting energy usage on Wednesday is much lower than on Monday to Tuesday. This is because the building is not in use on Wednesday, which is the day with the fifth lowest active usage of lighting.

The lighting energy usage on Tuesday is much lower than on Monday to Monday. This is because the building is not in use on Tuesday, which is the day with the sixth lowest active usage of lighting.

The lighting energy usage on Monday is much lower than on Monday to Sunday. This is because the building is not in use on Monday, which is the day with the lowest active usage of lighting.

The lighting energy usage on Sunday is much lower than on Monday to Saturday. This is because the building is not in use on Sunday, which is the day with the second lowest active usage of lighting.

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The lighting energy usage on Tuesday is much lower than on Monday to Monday. This is because the building is not in use on Tuesday, which is the day with the seventh lowest active usage of lighting.

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**Defence Plaza Building**

**Sydney, AUSTRALIA**

This is a result of the defence sector's commitment to greenhouse gas emission reduction. Case study:

- **Three Zone Track 3000 Lighting**
  - Approximately 936,500 kWhrs per year
  - Approximately $89,000 per year

- **Switched Active N.O.**
  - 2 x 2.5mm cable
  - 220 / 240Vac
  - AUX OUT
  - 3.5kg
  - 10 – 95% RH
  - 2A (Contactor Coil load)
  - Active connection.
  - Normally Open output terminal. This terminal is normally not connected.
  - 50Hz
  - 2 seconds
  - Inductive (Contactor Coil loads)

- **Switched Active N.C. & N.O.**
  - Earth connection.
  - Neutral connection.
  - 2A
  - Min. On Pulse Time (On_P) required
  - 3750Vac for 1 minute

**_IN**

**Local override-switch (in-built) input terminal.**

** Normally Closed output terminal.**

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**Before and after energy usage profiles**

The graph shows the typical usage for one week of the 3G levels. The red bar indicates the lighting energy usage from the existing Building Management System (BMS). The black bar indicates the energy savings achieved by installing a Clipsal Track 3000 system to control the lighting in the open plan offices, which were previously not controlled at all by the building management system. The lower overall maximum lighting energy consumption is due to the energy efficiency of the installed Track 3000 System and the other Clipsal lighting controls. This indicates that lighting is now being turned on later in the morning and the same floor after installation of all the Clipsal reset switches was found to be approximately 900 tonnes of CO² per year.

**Results of Lighting Management Installation**

- **Energy Usage (kW)**
  - Monday: 10
  - Tuesday: 60
  - Wednesday: 70
  - Thursday: 80
  - Friday: 90
  - Saturday: 100
  - Sunday: 60

**Connections**

- **Off-Pulse (NC)**
- **On-Pulse (NO)**
- **Failsafe terminal**
- **Auxiliary zone**
- **Override switch**
- **Neutral terminal**
- **Auxiliary output**

**Catalogue Numbers**

- **OS1-1 and OS1-2**
- **OS2-1 and OS2-2**
- **OS3-1 and OS3-2**
- **OS4-1 and OS4-2**

**Energy Management System**

- **Energy Efficient Systems Pty Ltd**

**Product Specifications**

<table>
<thead>
<tr>
<th>Terminals</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input</strong></td>
<td>24Vac_Off_Pulse</td>
</tr>
<tr>
<td><strong>Auxiliary Input</strong></td>
<td><strong>Input terminals for remote momentary light switch for Zones 1, 2 and 3.</strong> These switches are usually wall mounted in the Zone and wired back to the control panel.</td>
</tr>
<tr>
<td><strong>Auxiliary Output</strong></td>
<td>The switched active output may come from one of two different sources.</td>
</tr>
</tbody>
</table>

**Dimensions**

- **Width:** 375mm
- **Height:** 227mm
- All dimensions are in millimetres. No user-serviceable parts inside.
The Track 3000 System is a reliable, energy efficient lighting management product. The system is used primarily to reduce unnecessary lighting energy consumption in buildings.

In conjunction with local wall mounted switches in each open plan lighting Zone, the Track 3000 system provides a centrally located control panel where each lighting area is independently switched off. The system can be used to ensure that lighting is allowed to be switched off when not in use. The local wall mounted switches give the option of automatic operation, but the presence in any Zone conditions the automatic switching off of lighting in that area. The system allows individual Zone control at all times. This allows a manual switch on, automatic switch off control philosophy to be adopted throughout a building. This provides much greater efficiency than the Automatic On and Off used in a number of existing buildings.

One Tracks 3000 unit allows control of three separate open plan lighting Zones, can be added as required. The unit also has an auxiliary output that allows time-based switches to be added to the control system, to maximise potential lighting energy savings, with little or no risk of interruption during normal working hours.

The local wall mounted switches generally located near the entrance to that particular Zone) allow occupants of a Zone to have full local control of the lighting at all times. This allows manual switch on, automatic switch off control philosophy to be adopted throughout a building. This provides much greater efficiency than the Automatic On and Off used in a number of existing buildings.

The Track 3000 System has been designed as an efficient, failsafe system, to maximise potential lighting energy savings, with little or no risk of interruption to occupants.

The system allows time-based control via a Clipsal C-Bus System, an existing Building Management System (BMS), a Time Clock or an existing Building Management System.

One Tracks 3000 unit allows control of three separate open plan lighting Zones, is a commercial building, for example, for whole floor zones, can be added as required. The unit also has an auxiliary output to allow time-based switches of other areas with Clipsal C-Bus Switches. Switches installed Clipsal Catalogue Number 1057-465. Control of C-Bus allows, in conjunction with Clipsal C-Bus Zone control provides maximum flexibility in building expansion. The Clipsal C-Bus System’s powerful programming software is used to configure the diagram over used for typical connections of a Track 3000 System.

The Track 3000 System has been designed as an efficient, failsafe, building wide, to maximise potential lighting energy savings, with little or no risk of interruption during normal working hours.

Features:

- Local control of individual zone and auxiliary outputs.
- Failure of operation, any electronic component before takes lights on.
- Cost effective for Commercial Building retro-fit applications.
- Cutting the cost of lighting in Commercial Buildings.

Local enable/disable of individual Zone and Auxiliary Outputs.

The Clipsal Track 3000 System

Products of Clipsal Integrated Systems Pty Ltd

Features

- Designed to reduce overall energy use and running costs of lighting in Commercial Buildings.
- Cost effective for Commercial Building retro-fit applications.
- Used in conjunction with central time scheduling via a time clock, Clipsal C-Bus, or an existing Building Management System.
- Local enable/disable of individual zone and auxiliary outputs.
- Failure of operation, any electronic component before takes lights on.
The Clipsal Track 3000 System

Features
- Ideal to reduce overall energy use and running costs of lighting in Commercial Buildings.
- Cost-effective for Commercial Building retro-fit applications.
- Used in conjunction with central time scheduling via a time clock, Clipsal C-Bus, or an existing Building Management System.
- Local control at individual zones and auxiliary outputs.
- Flexible operation, any electric component can be switched on/off.

The Track 3000 System is a retrofittable lighting energy management product. It is used to automatically reduce fluorescent lighting energy consumption. Its flexibility to be used in conjunction with central time scheduling via a time clock, Clipsal C-Bus, or an existing Building Management System makes it suitable for a wide range of applications. In situations where mains voltage interruptions occur, it is specially suited to retro-fit in multistorey buildings and is easily installed with minimal risk of interruption during normal working hours.

The system allows time-based control via a Clipsal C-Bus System, an existing Building Management System (BMS), a Time Clock or with 3040C mains controlled relays or similar.

One Clipsal Track 3000 unit allows control of three separate open plan lighting Zones, in a commercial building, more units, for additional Zones, can be added as required. The unit also has an auxiliary output to allow the time-based switching of individual units with Clipsal Heat Switches. Control of Cellular offices in conjunction with Open Plan Zone control provides maximum flexibility. The diagram over leaf for typical connections of a Track 3000 System.

The Track 3000 System has been designed as an efficient, flexible system, to maximize potential lighting energy savings, whilst allowing maximum control and flexibility to switch to other uses in existing buildings and is easily adapted with minimal interruption to occupants.

Products of Clipsal Integrated Systems Pty Ltd

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