



Whitecroft
lighting

Lighting for Life



COMMAND FAST LINK
WIRING & CONTROLS

Command Fast Link wiring & controls

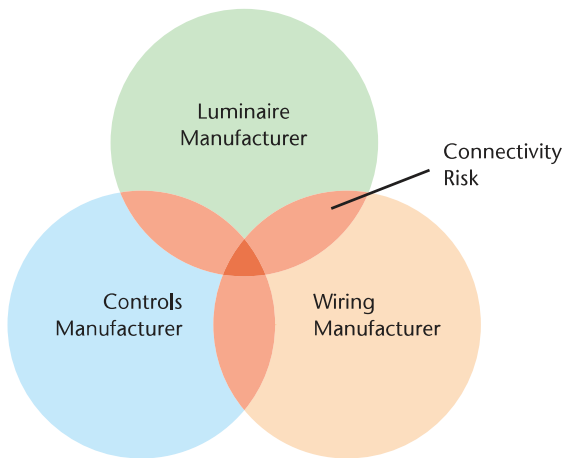


With Command Fast Link wiring systems from Whitecroft Lighting you can reduce installation time and installed cost whilst creating flexible working environments for any building.

KEEPING INSTALLATION SIMPLE

With Command Fast Link from Whitecroft Lighting, installation of any lighting scheme is significantly simplified. As a lighting scheme is designed, connectivity can be pre-planned and a complete package of luminaires, controls and wiring ready to install is delivered to site.

Not only does this reduce installation time, but eliminates both costly down time and the risk associated with traditional multi-party specifications. These systems are factory tested and guaranteed to be fault free.



In any specification, the areas where different suppliers overlap creates a connectivity risk which can be time consuming and costly to solve on site.

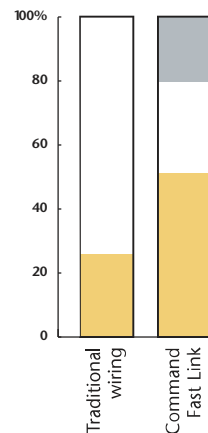
ADDING FLEXIBILITY TO THE WORKSPACE

Command Fast Link brings savings to any installation. Whilst material costs increase, on-site labour cost is significantly reduced which can result in an overall saving of around 20%.

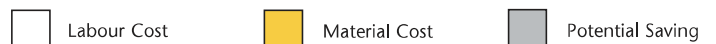
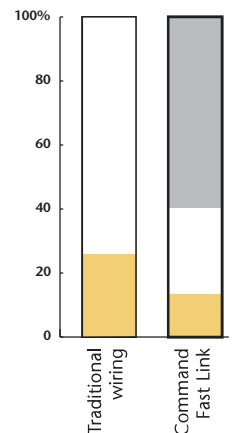
However, the benefits of Command Fast Link do not end at installation. In any modern office environment, flexibility is key to the success of the building.

As the demands on the space change, lighting and controls need to be easily and quickly re-configured to adapt to the new requirements. Command Fast Link allows the contractor to simply re-configure switching arrangements without the need for costly re-wiring.

Cost comparison - Initial Installation

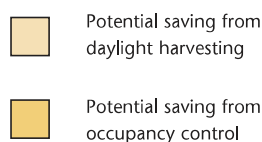
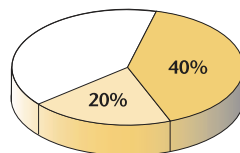


Cost comparison - Re-configuration



THE NEED FOR CONTROLS

No building is commissioned today without consideration being given to lighting controls. These control systems bring energy efficiency and sustainability to a building, along with an inherent flexibility. Whether a simple absence detection scheme or a complex, multi-control system, the savings in energy consumption can be dramatic.



INSTALLATION TIME COMPARISON

	TRADITIONAL INSTALLATION TIME	COMMAND FAST LINK INSTALLATION TIME
Luminaire	30 mins	12 mins
Control Devices	40 mins	12 mins
Manual Switch	40 mins	20 mins
Emergency Key Switch	40 mins	20 mins

If we assume that a typical installation comprises 100 luminaires, with 10 control devices, 4 switches and 4 emergency key switches, then the installation will take around 63 man hours when wired conventionally. With Command Fast Link, this installation time is reduced to around 25 hours. Furthermore, because of Command Fast Link's plug and play connectivity, less skilled labour is required to successfully install a project.

Command Fast Link components

COMMAND FAST LINK CONNECTORS

There are 6 basic elements in the Command Fast Link system which are available in both 4 and 6 core configurations. These can be combined to cater for any wiring need and are designed to allow fast, error free connection.

All plugs are mechanically keyed for easy connectivity and to prevent installation errors. Plugs are also self-locking to prevent accidental disconnection. Components are type tested to EN1313.

LSF 1.5mm² stranded cable rated at 16A is used throughout the system and is type tested to EN50267.

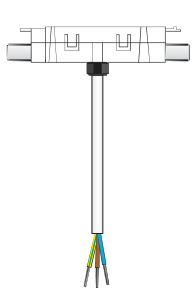
Once assembled the whole installation is factory tested for connectivity and clearly labelled. In full compliance with EN7671.



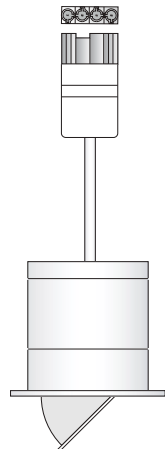
Starter Lead for connection to building power distribution



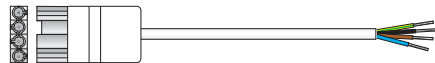
Extender to link luminaires and switch modules



Switch Module with in-line connection for wall switch



Detector unit for connection to switch module



Flying Lead to link luminaires to T piece

These can be supplied pre-wired to luminaires



T Piece to connect luminaires and detectors to extender

COMMAND FAST LINK DETECTORS

With a wide variety of detector types to choose from, getting the correct detector is critical to the running of the control system. There are two basic types of detection, daylight sensing and occupancy sensing.

Daylight sensing Photocell systems measure the ambient light in a room and control the artificial lighting levels by either switching or dimming.

Occupancy detectors monitor a room for movement and can control the lighting accordingly. These switch or dim lighting after no movement has been detected for a pre-set or programmable period of time.

Passive Infra Red (PIR) detectors measure body heat and should be used in medium to high traffic areas such as open plan offices or in areas where movement is obvious such as store cupboards or communal access areas.

Microwave detectors monitor movement and are more sensitive than PIR's, their extra range and directional capability mean that they are well suited for use in classrooms and corridors.

PASSIVE INFRA RED (PIR) DIMMING DETECTOR



- Ceiling mounted detector
- Adjustable time delay
- Detects movement up to 7m diameter range at 2.8m ceiling height
- Measures daylight penetration and dims luminaires accordingly

MICROWAVE DIMMING DETECTOR



- Ceiling mounted detector
- Wide angled lens detects movement up to 10m range at 2.6m mounting height
- Measures daylight penetration and dims luminaires accordingly
- Switches up to 6A of lighting

PASSIVE INFRA RED (PIR) DETECTOR



- Ceiling mounted detector
- Detects movement up to 7m diameter range at 2.8m ceiling height
- Measures daylight penetration and holds off luminaires if adequate daylight is present
- Switches up to 6A of lighting

MICROWAVE DETECTOR WITH ADJUSTABLE HEAD



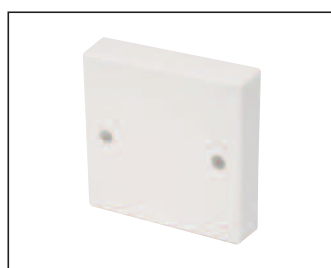
- Ceiling mounted long range detector
- Detects movement up to 25m x 10m range at 2.6m mounting height
- Adjustable angled sensor head
- Measures daylight penetration and holds off luminaires if adequate daylight is present
- Switches up to 10A of lighting

UNIVERSAL PHOTOCELL



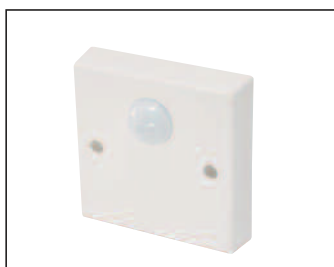
- Ceiling mounted photocell
- Passing cloud timer
- Switches up to 6A of lighting
- Measures daylight penetration and dims/holds off luminaires accordingly

MICROWAVE DETECTOR



- Wall mounted detector
- Detects movement up to 30m diameter range at 1.4m wall height
- Switches up to 10A of lighting

PASSIVE INFRA RED (PIR) DETECTOR



- Wall mounted detector
- Detects movement up to 9m diameter range at 1.4m wall height
- Switches up to 6A of lighting

DETECTOR TYPE	FLUORESCENT RATING @ 230V	SURFACE OR FLUSH MOUNTING	DAYLIGHT HOLD OFF	TIME DELAY	DSI/DALI DIMMING	ABSENCE/PRESENCE DETECTION	PROGRAMMABLE
PIR Dimming Occupancy	9 ballast	F	–	5 – 35 mins	✓	✓	✓
PIR Occupancy	6 amp	F	✓	5 – 35 mins	–	P	✓
Universal Photocell	6 amp	F	✓	–	✓	–	✓
PIR Occupancy (wall)	6 amp	✓	–	10 sec – 1 hr	–	P	–
Microwave Dimming Occupancy	25 ballast	✓	–	5 – 60 mins	✓	✓	✓
Microwave Occupancy	10 amp	✓	✓	15 sec – 30 mins	–	✓	✓
Microwave Occupancy (wall)	10 amp	✓	–	15 sec – 30 mins	–	P	–

meeting the needs of education

Control systems for education environments must take into account the high levels of daylight and frequent unoccupied periods.

MEETING THE DEMANDS OF THE CLASSROOM

Energy conservation is a key issue within the education establishment. New schools need to be 'greener' in their design and use. With classrooms only being actively used for around 6 hours per day, there is great scope for reducing energy consumption.

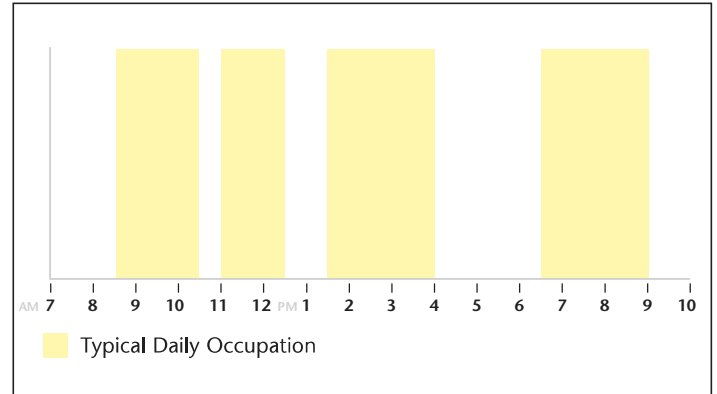
Command Fast Link can deliver much more than financial benefits. Different lighting levels and configurations can be programmed for different uses such as group working, presentation or adult education. With Command FastLink wiring

systems, ceilings can be quickly and easily re-configured to cope with the changing demands placed on the space.

OCCUPATION PATTERNS

A school differs from most other applications in that it has unusually large periods without occupation. A school is unoccupied for 13 weeks per year and in general each classroom will only be used for around 6 hours each day. This means that

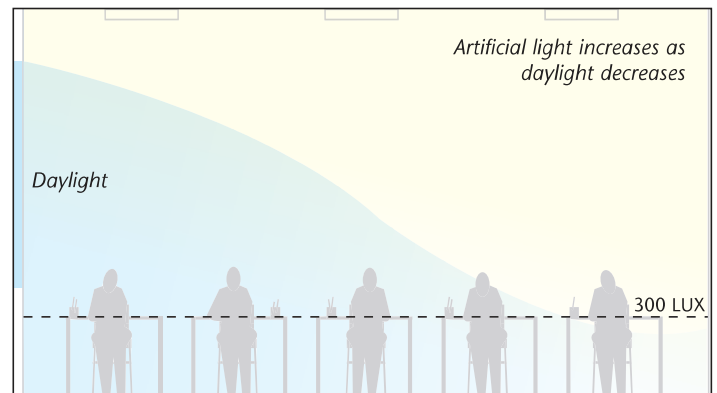
typically annual classroom usage is only 1,200 hours, less than half of that of the average office. If lighting is left on all day this means that approaching 50% of annual energy usage is wasted.



DAYLIGHT PENETRATION

A typical modern classroom will have a great deal of natural daylight, and this must be taken into account when designing the lighting scheme. Command Fast Link can sense the amount of daylight in a classroom and dim

the artificial lighting accordingly, so that only the amount of lighting and energy actually needed is used. From February to October lighting is not required at all for significant parts of the normal school day.

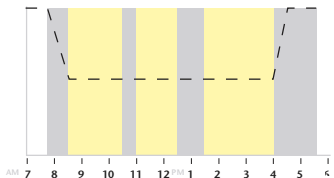




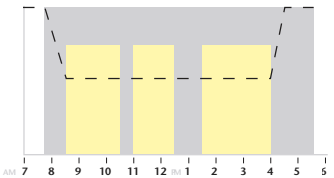
ENERGY SAVING CONTROLS

By using both Command Fast Link and dimming luminaires a significant energy saving can be made. Typically, in a normal school day, lighting could be left on for 9 hours from 8am to 5pm, where as the classroom is only occupied for around 6 hours.

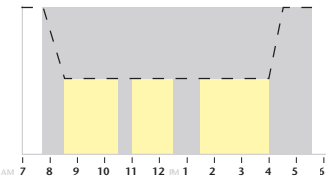
Detection



Detection + Window luminaires dimming



Detection + All luminaires dimming



Potential saving
 Energy usage
 Daylight penetration

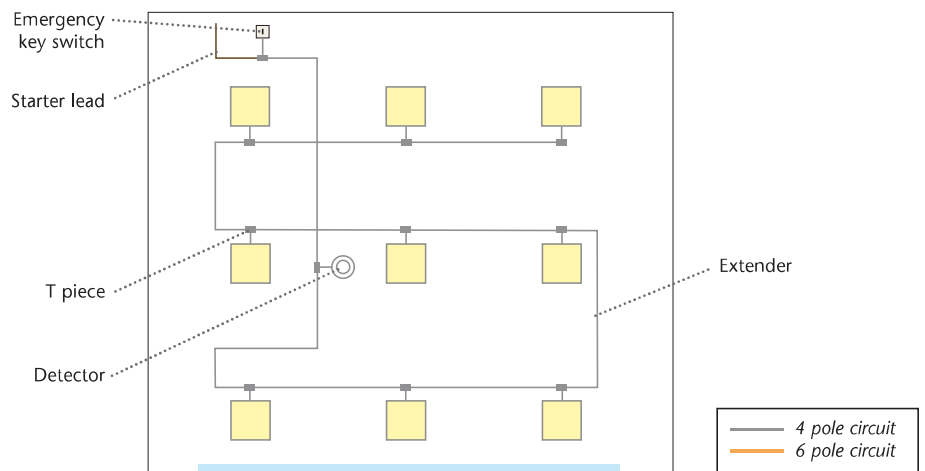
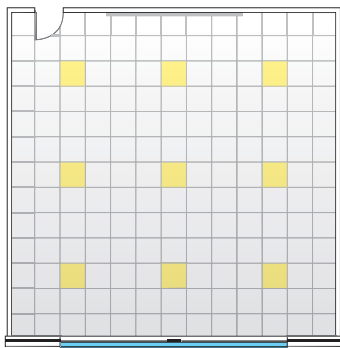
	INSTALLED LOAD (KW)	RUNNING HOURS	ANNUAL ENERGY USE (KWh)	ANNUAL ENERGY SAVING (KWh)
No Controls	0.558	1800	1004	0
Detection	0.558	1200	670	334
Detection/Window Dimming	0.558	1200	486	518
Detection/All Dimming	0.558	1200	323	681

based on a classroom with 9, 4 X 14W (62 circuit watts recessed luminaires)

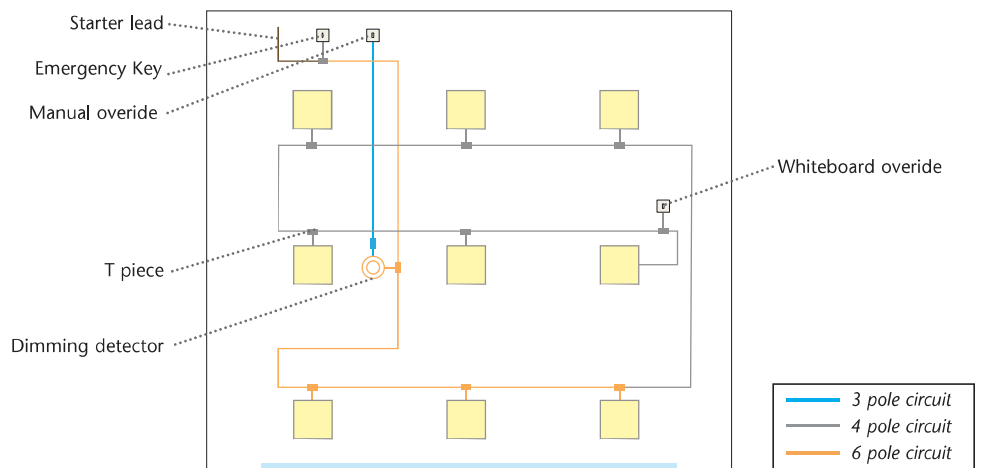
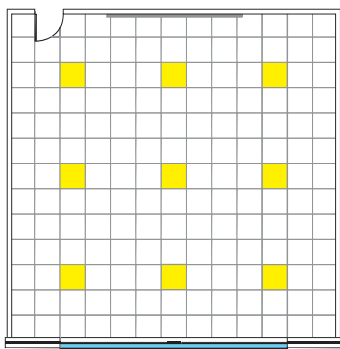
typical classroom configurations

These examples demonstrate how a typical classroom can be simply wired and configured using Command Fast Link, with both 4 pole switching and 6 pole dimming applications. These can be used with or without a distribution module and offer maximum energy efficiency with minimum installation costs.

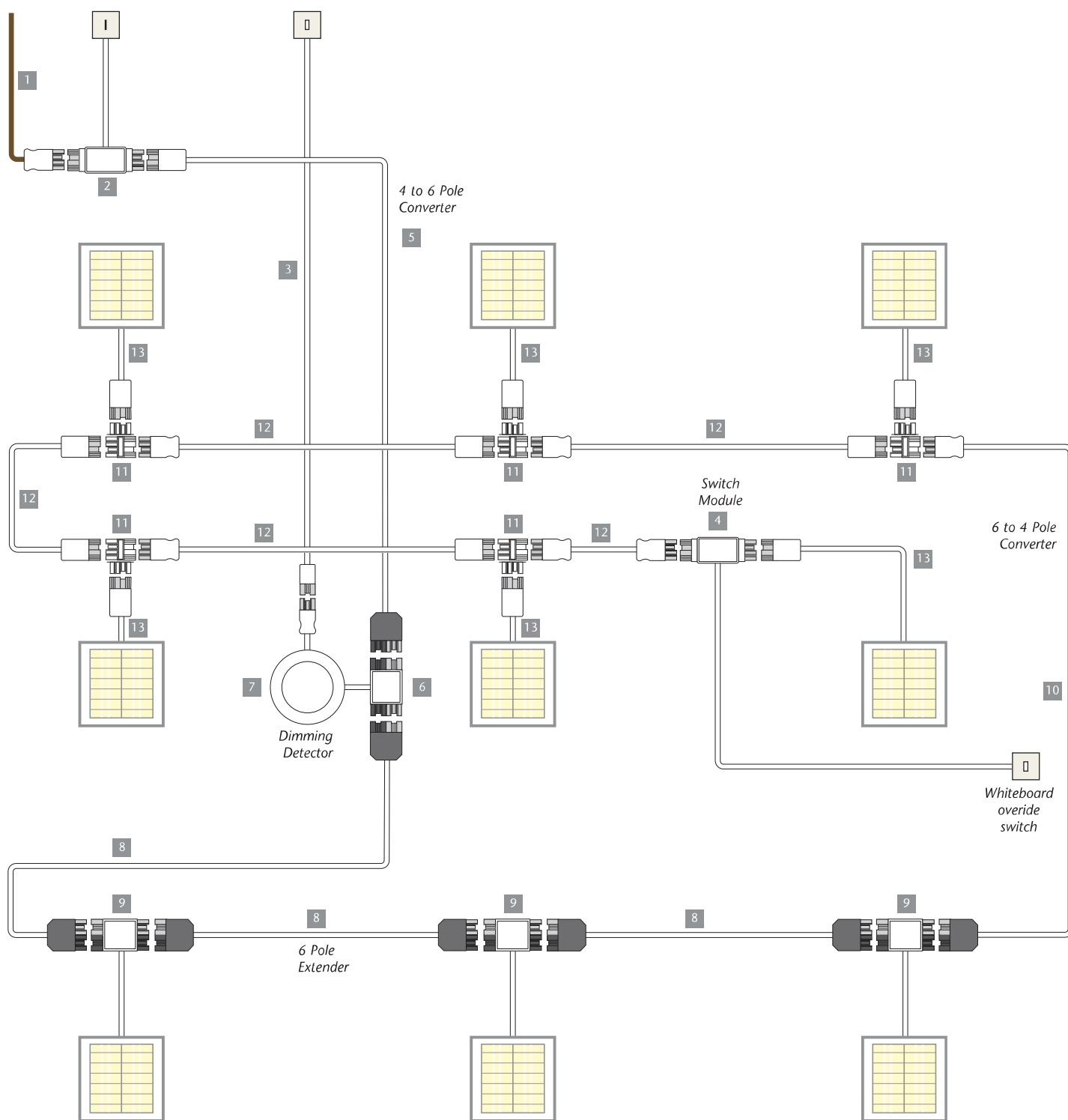
TYPICAL CONFIGURATION 1 - STANDARD DETECTION



TYPICAL CONFIGURATION 2 - WINDOW ROW DIMMING + DETECTION + MANUAL OVERRIDE



COMPONENT LAYOUT FOR CONFIGURATION 2



not to scale

COMPONENT LAYOUT ORDER CODES

NUMBER	DESCRIPTION	ORDER CODE
1	Starter Lead	CFL/ST/4P/4M
2	Emergency Switch Module	CFL/SLME/4P
3	Switch Lead	CFL/SD/3P/6M
4	Switch Module	CFL/SLM/4P
5	Converter	CFL/EX/4-6P/6M
6	Detector Module	CFL/DDM/6P
7	Detector	CFL/MDD/DSI/6P

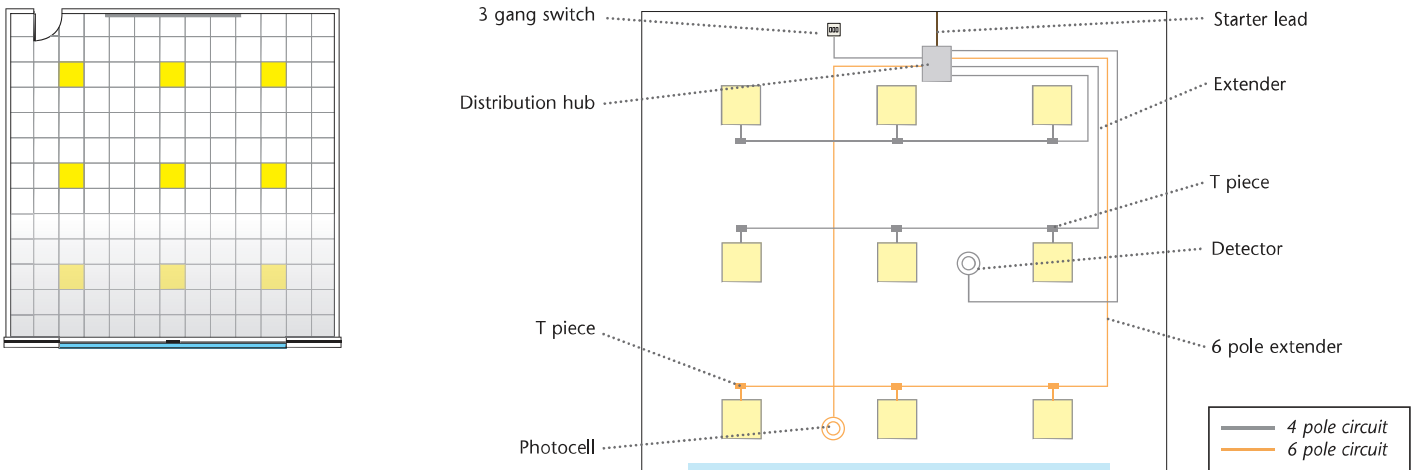
NUMBER	DESCRIPTION	ORDER CODE
8	Extender	CFL/EX/6P/5M
9	T Piece complete with lead	CFL/6T/6C/0.3M
10	Converter	CFL/EX/6-4P/6M
11	T Piece	CFL/4T
12	Extender	CFL/EX/4P/5M
13	Flying Lead	CFL/FL/4P/3C*0.3M

*(4C if emergency)

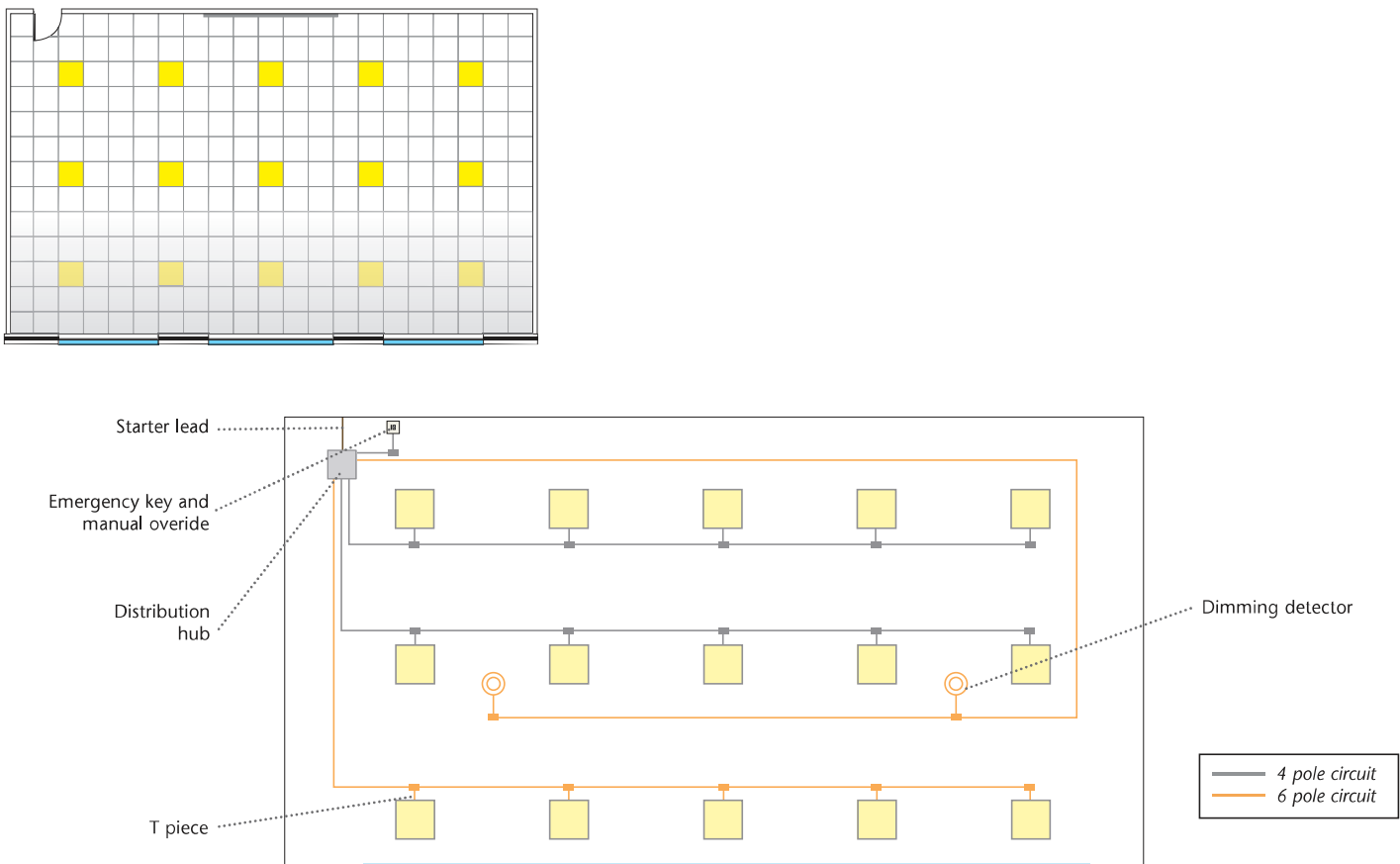
typical classroom configurations

These examples show how more complex switching arrangements can be achieved using Command fast link in conjunction with a distribution hub, configured to project requirements.

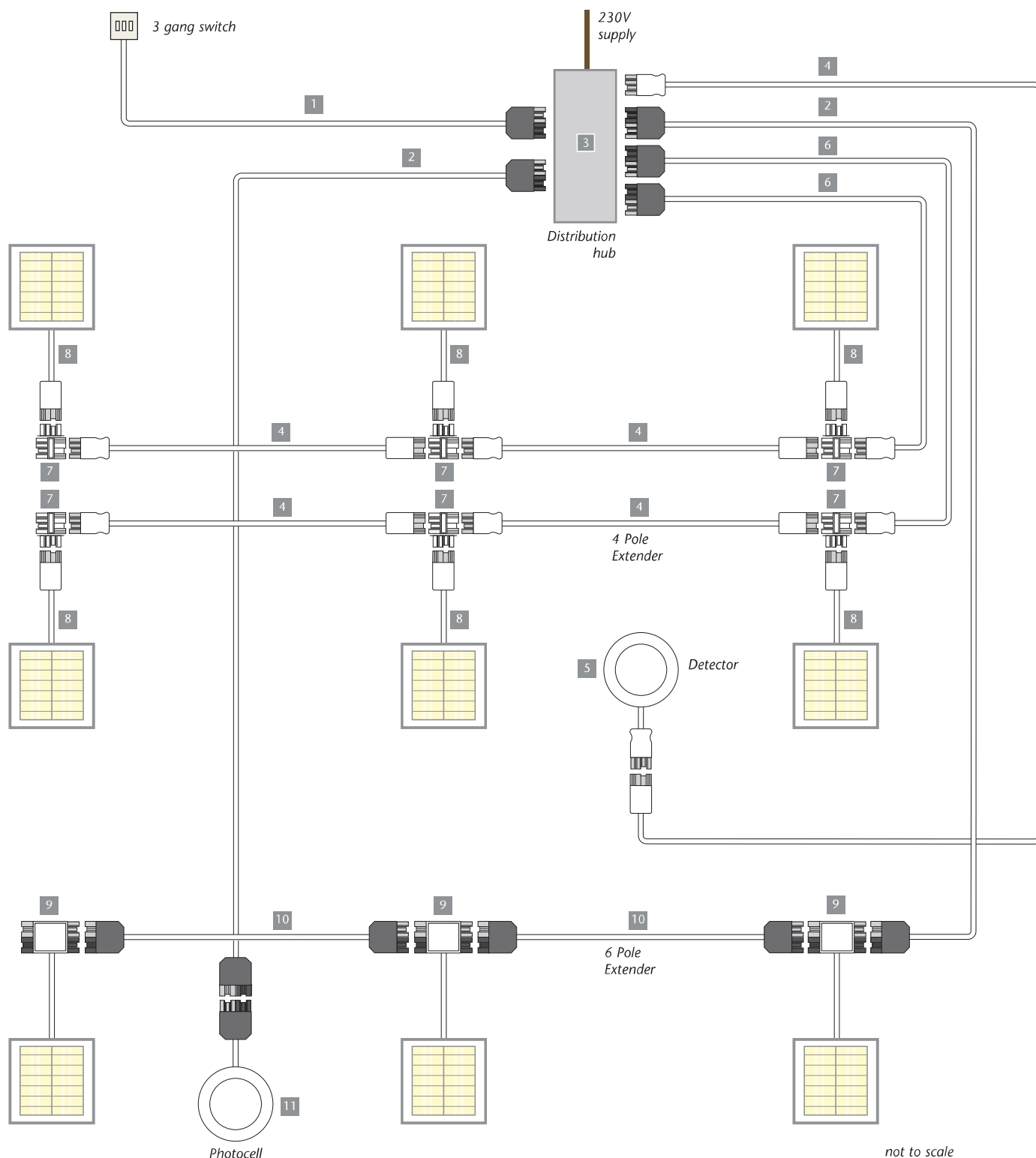
TYPICAL CONFIGURATION 3 - WINDOW ROW DIMMING + DETECTION + MANUAL 3 GANG LATCHING



TYPICAL CONFIGURATION 4 - LARGE CLASSROOM WINDOW ROW DIMMING + DETECTION + MANUAL OVERRIDE



COMPONENT LAYOUT FOR CONFIGURATION 3



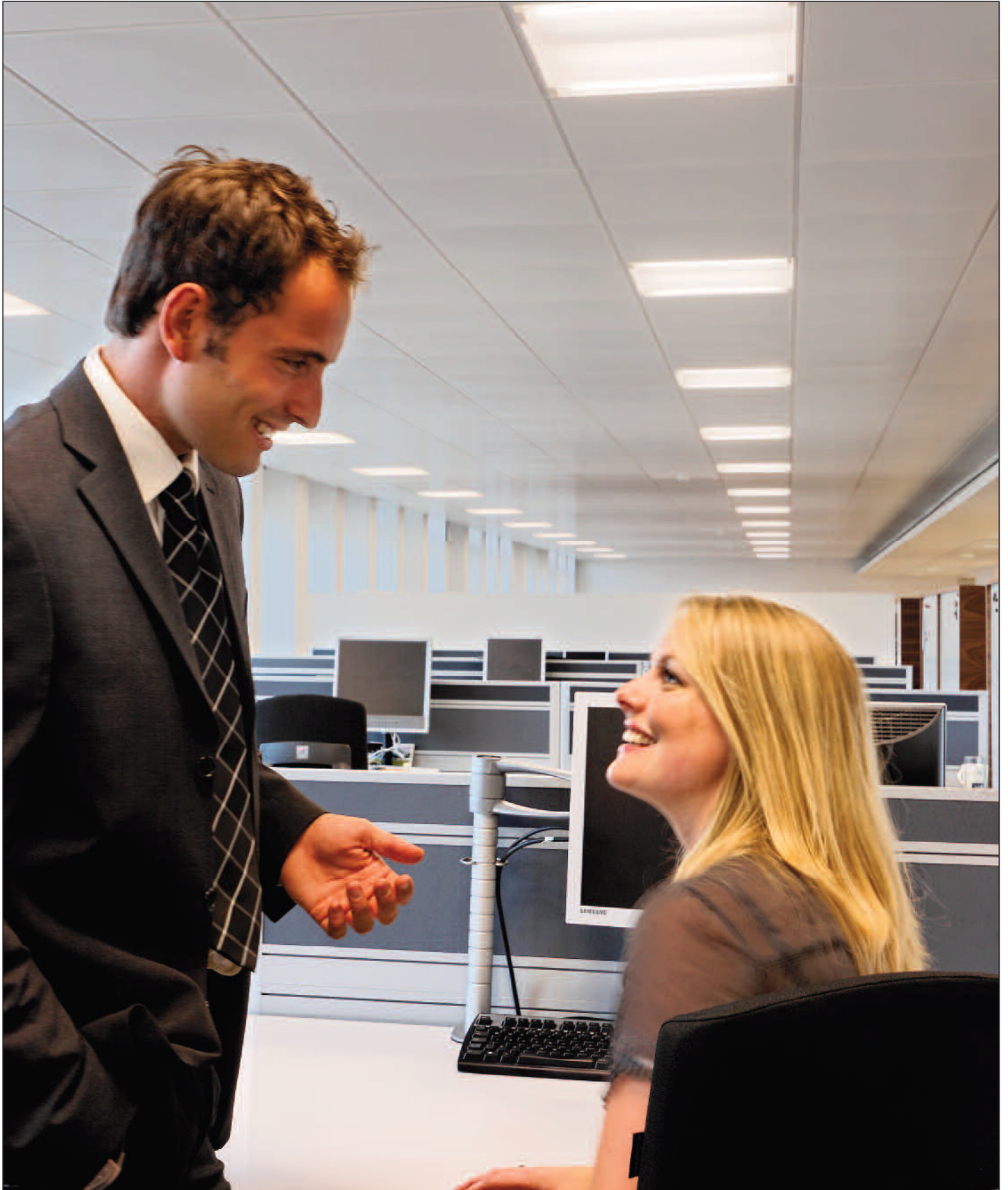
COMPONENT LAYOUT ORDER CODES

NUMBER	DESCRIPTION	ORDER CODE
1	Switch Lead	CFL/FL/6P/6C/5M
2	Extender	CFL/EX/6P/7M
3	Hub	CFL/HUB
4	Extender	CFL/EX/4P/5M
5	Detector	CFL/MD/4P
6	Converter	CFL/EX/6-4P/6M
7	T Piece	CFL/4T

NUMBER	DESCRIPTION	ORDER CODE
8	Flying Lead	CFL/FL/4P/3C*0.3M
9	T Piece complete with lead	CFL/6T/6C/0.3M
10	Extender	CFL/EX/6P/5M
11	Photocell	CFL/EPCD/6P

*(4C if emergency)

meeting the needs of the office



MEETING THE DEMANDS OF THE OFFICE

Command Fast Link offers two main benefits to the office environment, enhanced energy efficiency and flexibility. Energy efficiency is a prime driver in the specification of today's office environment, however efficient the lighting, a high proportion of energy is wasted lighting areas that are unoccupied for a large part of the day. Modern offices are used for at least 12 hours per day but typically are lit for much

longer periods. Command Fast Link is capable of ensuring that areas are only lit when needed, reducing energy usage by up to 40%

Open plan offices are designed to provide a flexible work space, and Command Fast Link allows the lighting to be easily re-configured to take account of any changes in the office layout that occur during the building's life.

DAYLIGHT PENETRATION

Much store is placed in the importance of daylight in the workplace as a motivational factor, but the resulting daylight penetration is often ignored in the lighting design. Command Fast Link can monitor the resulting

illuminance levels of this daylight and can be configured to dim or switch off luminaires near windows so that an even level of illumination is achieved across an office.

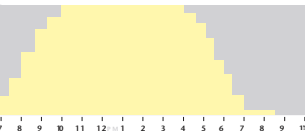
OCCUPATION PATTERNS

Most office developments contain a wide variety of spaces which are used in different ways at different periods of the day. Traditional switching will illuminate all areas of the office constantly, whilst in practice some of these areas are

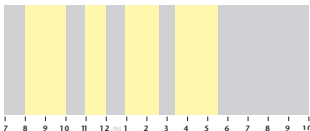
unused for large periods of the day. Open plan office areas tend to be occupied for up to 12 hours a day, but are only fully staffed for around 7 hours. Command Fast Link can sense these occupation patterns and only illuminate the

areas of the office which are occupied. For cellular offices and communal areas such as toilets, stores and kitchens, presence detectors will only illuminate the space whilst occupied.

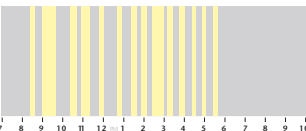
Typical Daily Occupation - Open plan office



Typical Daily Occupation - Cellular office



Typical Daily Occupation - Toilet



Time Occupied Potential energy saving

ENERGY SAVING CONTROLS

By using both detection and dimming luminaires a significant energy saving can be made. Typically, in a normal work day, lighting could be left on for 12 hours, where as the office is only occupied for around 9 hours.

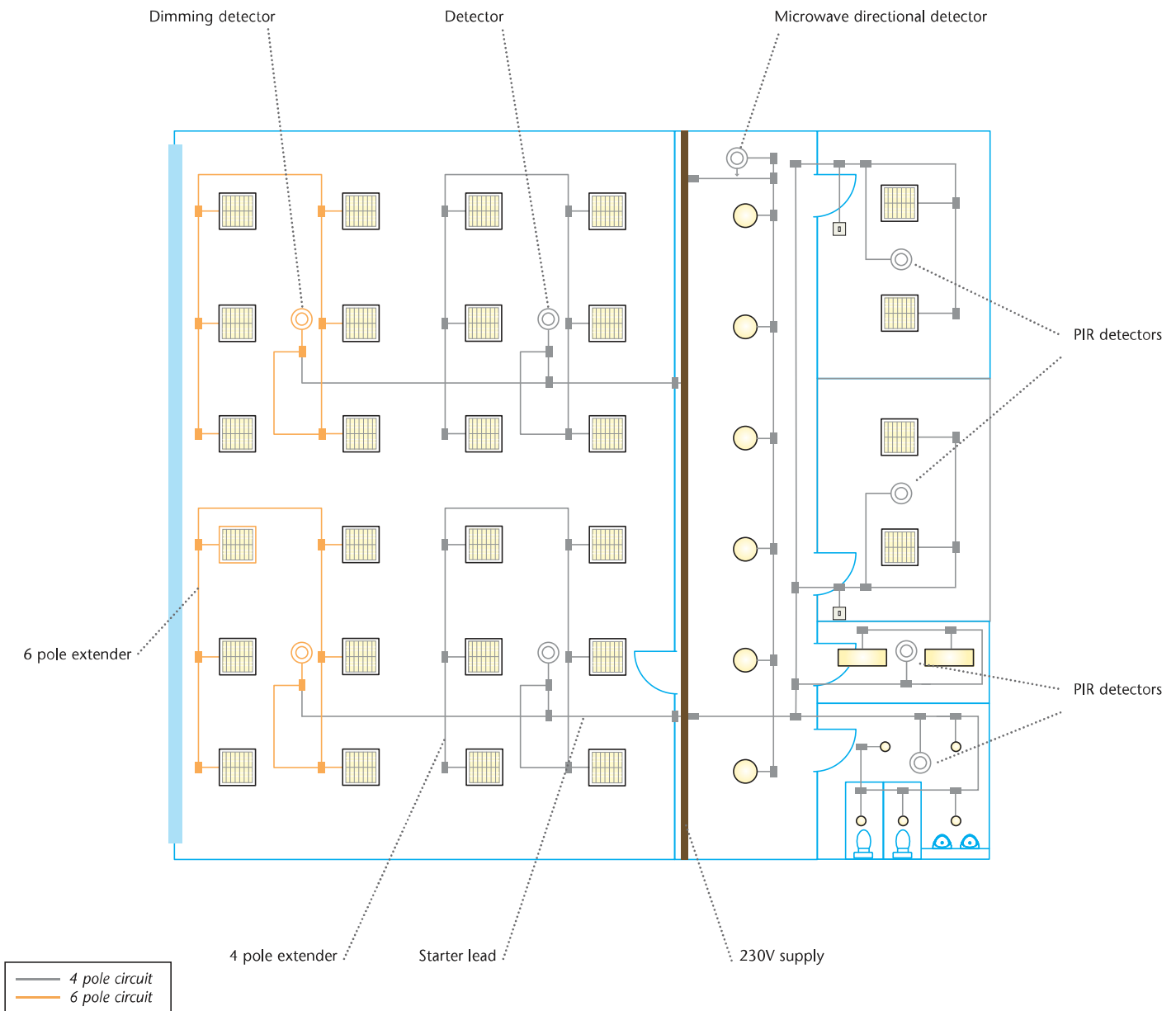
	INSTALLED LOAD (KW)	RUNNING HOURS	ANNUAL ENERGY USE (KWh)	ANNUAL ENERGY SAVING (KWh)
No Controls	6.2	3900	24180	0
Detection	6.2	2340	14508	9672
Detection with daylight dimming	6.2	1560	9672	14508

based on an office with 100, 4 X 14W (62 circuit watts recessed luminaires)

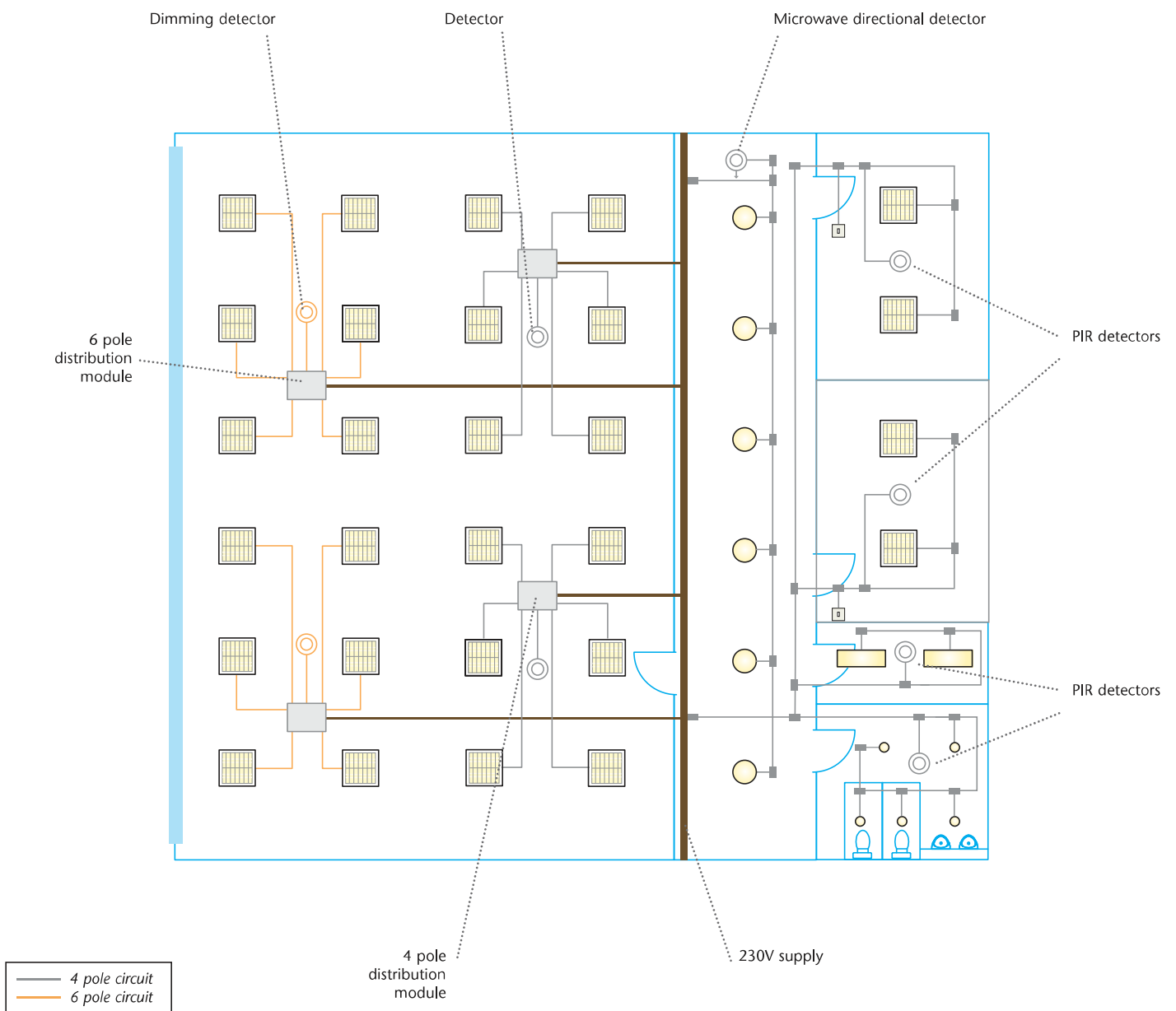
typical office configurations

These examples demonstrate how a typical office can be simply wired using Command Fast Link, with both 4 pole switching and 6 pole dimming applications. These can be used with or without distribution modules. The combination of different types of detectors ensures maximum energy efficiency with minimum installed cost.

TYPICAL CONFIGURATION WITHOUT DISTRIBUTION MODULES



TYPICAL CONFIGURATION WITH DISTRIBUTION MODULES



Command Fast Link wiring components

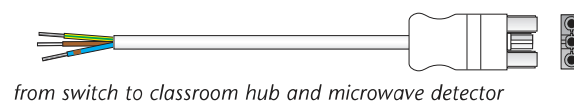
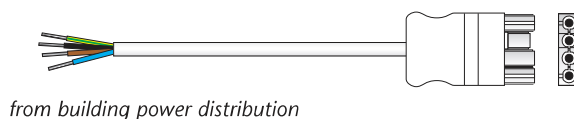
ORDER CODES – STARTER AND ONE-SWITCH LEADS

UNIT	COLOUR	ORDER CODE
4m Starter Lead	WHITE	CFL/ST/4P/4M
4m Starter Lead	WHITE	CFL/ST/6P/4M

with 4/6 Pole GST Female connector to free end

UNIT	COLOUR	ORDER CODE
6m Switch Lead	WHITE	CFL/SD/3P/6M
12m Switch Lead	WHITE	CFL/SD/3P/12M

with 3 Pole GST Female connector to free end



ORDER CODES – SWITCH MODULES

UNIT	COLOUR	ORDER CODE
4 Pole Switch Module	WHITE	CFL/SLM/4P
4 Pole Emergency Key Switch Module	WHITE	CFL/SLME/4P

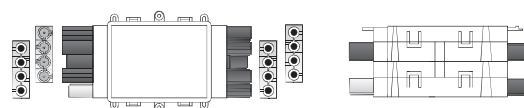
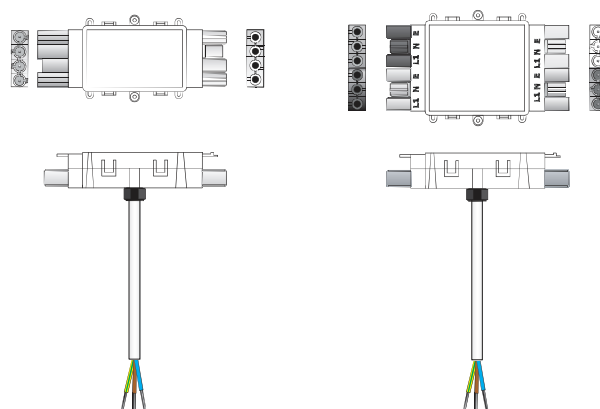
Male to Female GST 4 pole in-line connector, 4 metre 3 core cable to free end

UNIT	COLOUR	ORDER CODE
6 Pole Switch Module	BLACK/GREY	CFL/SLM/6P
6 Pole Emergency Key Switch Module	BLACK/GREY	CFL/SLME/6P

Male to Female GST 6 pole in-line connector, 4 metre 3 core cable to free end

UNIT	COLOUR	ORDER CODE
4 Pole 2 Way Switch Module	WHITE	CFL/SL2W/4P

Male to 3 Female switch connectors



ORDER CODES – DISTRIBUTION MODULES

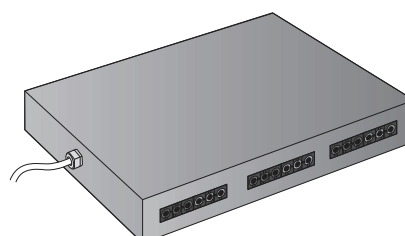
UNIT	ORDER CODE
4 Pole Distribution Module	CFL/CPDMA
6 Pole Distribution Module	CFL/CPDMB

Distribution Module with 10 output sockets



UNIT	ORDER CODE
Classroom hub	CFL/HUB

Whitecroft classroom hub provides a simple solution for connecting luminaires and control devices configured to specific customer requirements. Comprises 3 x GST 18/6 output terminals for luminaire circuits. 2 x GST 18/6 input terminals for control devices. 1 x GST 18/4 input terminal for control devices. 2 X 18/3 input terminals for key and manual override switching.



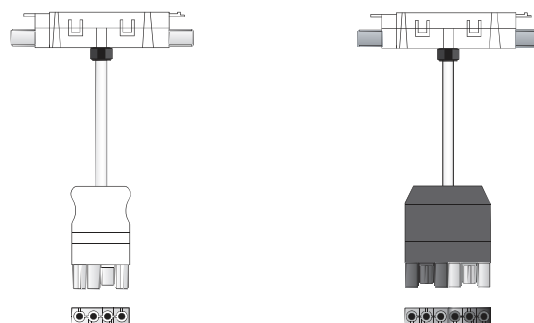
ORDER CODES – DETECTOR MODULES

UNIT	COLOUR	ORDER CODE
4 Pole Detector Module	WHITE	CFL/DM/4P

Male to Female GST 4 pole in-line connector, 0.5 metre to Female GST 4 pole connector

UNIT	COLOUR	ORDER CODE
6 Pole Dimming Detector Module	BLACK/GREY	CFL/DDM/6P

Male to Female GST 6 pole in-line connector, 0.5 metre to Female GST 6 pole connector



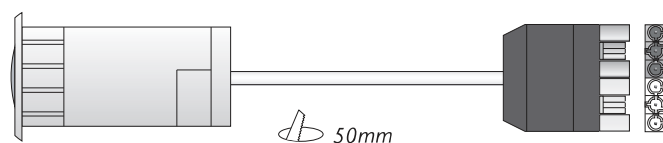
ORDER CODES – DETECTORS

UNIT	COLOUR	ORDER CODE
Photocell	BLACK GREY	CFL/EPC/6P

Switched output 6 core 0.5m lead to 6 pole GST Male connector

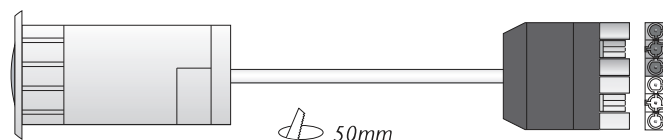
UNIT	COLOUR	ORDER CODE
Photocell	BLACK GREY	CFL/EPCD/6P

Digital DSI/DALI dimming output with 6 core 0.5m lead to 6 pole GST Male connector



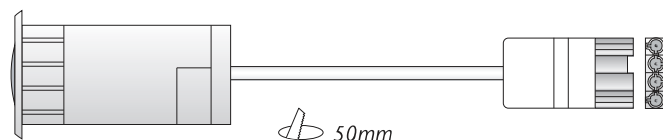
UNIT	COLOUR	ORDER CODE
PIR Dimming Detector	BLACK/GREY	CFL/PDD/DSI/6P
PIR Dimming Detector	BLACK/GREY	CFL/PDD/DALI/6P

Digital dimming outputs with 0.5m lead to 6 pole GST Male connector



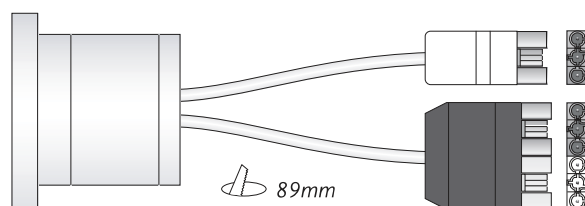
UNIT	COLOUR	ORDER CODE
PIR Detector	WHITE	CFL/PD/4P

Recessed with 0.5m lead GST Male 4 Pole connector



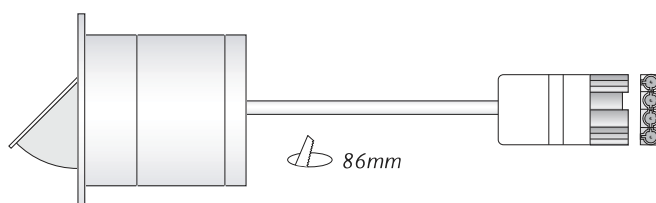
UNIT	COLOUR	ORDER CODE
Microwave Dimming Detector	BLACK GREY	CFL/MDD/DSI/6P
Microwave Dimming Detector	BLACK GREY	CFL/MDD/DALI/6P

Digital DSI/DALI dimming output with 5 core 0.5m lead to 6 pole GST Male connector and 3 core 0.5m lead to 3 pole GST Male connector



UNIT	COLOUR	ORDER CODE
Microwave Detector	WHITE	CFL/MD/4P

Recessed with 0.5m lead GST Male 4 Pole connector

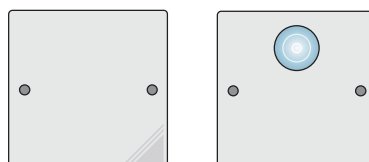


UNIT	ORDER CODE
PIR occupancy detector	CFL/WPD

Wall mounted PIR detector

UNIT	ORDER CODE
Microwave occupancy detector	CFL/WMD

Wall mounted microwave detector



Command Fast Link wiring components

ORDER CODES – 4 POLE EXTENDERS

UNIT	COLOUR	ORDER CODE
1m Lighting Extender Lead	WHITE	CFL/EX/4P/1M
3m Lighting Extender Lead	WHITE	CFL/EX/4P/3M
5m Lighting Extender Lead	WHITE	CFL/EX/4P/5M
7m Lighting Extender Lead	WHITE	CFL/EX/4P/7M
9m Lighting Extender Lead	WHITE	CFL/EX/4P/9M

4 Pole – 4 Core Male to Female GST connectors



ORDER CODES – 6 POLE EXTENDERS

UNIT	COLOUR	ORDER CODE
1m Lighting Extender Lead	BLK/GREY	CFL/EX/6P/1M
3m Lighting Extender Lead	BLK/GREY	CFL/EX/6P/3M
5m Lighting Extender Lead	BLK/GREY	CFL/EX/6P/5M
7m Lighting Extender Lead	BLK/GREY	CFL/EX/6P/7M
9m Lighting Extender Lead	BLK/GREY	CFL/EX/6P/9M

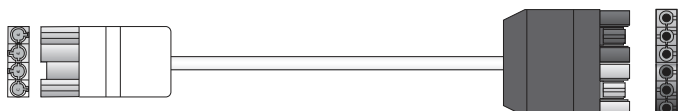
6 Pole – 6 Core Male to Female GST connectors



ORDER CODES – 4 TO 6 POLE CONVERTERS

UNIT	COLOUR	ORDER CODE
3m 4 to 6 Pole Converter	WHITE/BLK/GREY	CFL/EX/4-6P/3M
6m 4 to 6 Pole Converter	WHITE/BLK/GREY	CFL/EX/4-6P/6M

4 Pole Male to 6 Pole Female GST connectors



ORDER CODES – 6 TO 4 POLE CONVERTERS

UNIT	COLOUR	ORDER CODE
3m 6 to 4 Pole Converter	BLK/GREY/WHITE	CFL/EX/6-4P/3M
6m 6 to 4 Pole Converter	BLK/GREY/WHITE	CFL/EX/6-4P/6M

6 Pole Male to 4 Pole Female GST connectors



ORDER CODES – 4 POLE FLYING LEADS

UNIT	COLOUR	ORDER CODE
0.3m Flying Lead	WHITE	CFL/FL/4P/4C/0.3M
3m Flying Lead	WHITE	CFL/FL/4P/4C/3M
5m Flying Lead	WHITE	CFL/FL/4P/4C/5M

Male GST to Free end 4 Pole 4 Core

UNIT	COLOUR	ORDER CODE
0.3m Flying Lead	WHITE	CFL/FL/4P/3C/0.3M
3m Flying Lead	WHITE	CFL/FL/4P/3C/3M
5m Flying Lead	WHITE	CFL/FL/4P/3C/5M

Male GST to Free end 4 Pole 3 Core

NOTE: To pre-wire these leads to Whitecroft luminaires please contact the sales office for references.



ORDER CODES – 6 POLE FLYING LEADS

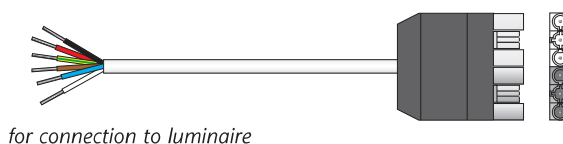
UNIT	COLOUR	ORDER CODE
3m Flying Lead	BLK/GREY	CFL/FL/6P/6C/3M
5m Flying Lead	BLK/GREY	CFL/FL/6P/6C/5M

Male GST to Free end 6 Pole 6 Core

UNIT	COLOUR	ORDER CODE
3m Flying Lead	BLK/GREY	CFL/FL/6P/5C/3M
5m Flying Lead	BLK/GREY	CFL/FL/6P/5C/5M

Male GST to Free end 6 Pole 5 Core

NOTE: To pre-wire these leads to Whitecroft luminaires please contact the sales office for references.



ORDER CODES – T PIECE

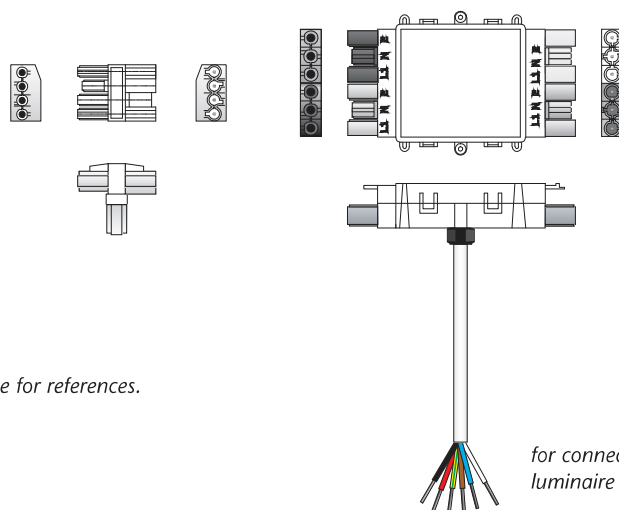
UNIT	COLOUR	ORDER CODE
T Piece	WHITE	CFL/4T

4 Pole molded T Piece, 1 in 2 out

UNIT	COLOUR	ORDER CODE
T Piece	BLK/GREY	CFL/6T/3C/0.3M
T Piece	BLK/GREY	CFL/6T/4C/0.3M
T Piece	BLK/GREY	CFL/6T/5C/0.3M
T Piece	BLK/GREY	CFL/6T/6C/0.3M

6 Pole GST T Piece, 0.3m Lead (3, 4, 5 or 6 Core)

NOTE: To pre-wire these leads to Whitecroft luminaires please contact the sales office for references.





Lighting for Life

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