

CELSafe - Passive Safe Equipment

TECHNICAL SPECIFICATION

Promoting safer roadsides



Charles  Endirect

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Company Profile

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Charles Endirect Ltd is a leading specialist manufacturer of a wide range of electrical components and products that are supplied into the street lighting industry.

The Company has been supplying this equipment to the UK market place and its International customers since 1978.

Our experience and professionalism in these fields gives us the expertise to manufacture and supply some of the most intelligent, highly specified and robust products delivered to the market place.

Charles Endirect Ltd is an ISO 9001, ISO 14001 & ISO 18001 accredited Quality Assured Company. This ensures that all departments within the organisation operate within stringent Quality Control Systems.

This accreditation means all Charles Endirect Ltd products are designed and manufactured and are totally compliant with, or exceed, the requirements of all current legislation and regulations and are also CE Marked.

As a founder member and active supporter of the Highway Electrical Association (HEA) and a company member of the Institution of Lighting Professionals (ILP), Charles Endirect Limited is constantly in touch with current affairs and up to date developments within the Highway Electrical Industry.



Introduction and Guidance

Historically passive safe equipment has been introduced to promote safer roadsides with emphasis on the installation of passive safe centred around major trunk roads and the countries motorways. However thinking has now switched to give the same priority into non-trunk roads as these roads are where most of our traffic casualties now occur.

This Specification document will explain the use of each option and help to get the correct solution for the Passive Safe requirements in both the design and installation stage.



Distribution Pillar

Each option has drawings and schematics to help select the correct product code for each of the four options.

The Distribution pillar options have the ability to be connected to our CELtek CMS System for reporting of any disconnection as a result of any column or sign being hit or a trip to the system.

The CELsafe system is a very robust system and has been in the market for many years. This document explains the detail of how each of the four configurations work, so the right choice is made. Charles Endirect Ltd has a team of engineers and has excellent support team that can help with any designs, if required, but we also help with any technical problems, giving you the full solution to Passively Safe Street Lighting.



CELSafe

Following statistics gathered and to our knowledge no one in the United Kingdom has been killed or seriously injured after a collision with Passively Safe street furniture or in a related accident where the equipment has broken away.

The UK continues to be a world leader in new innovation for safer roads, which reflects on being amongst the lowest injury rates in Europe. These statistics are achieved by the now common use of passive safe equipment not only on Motorways and trunk roads but now on 'A' and local roads along with urbanised roads which are maintained by the Local Authorities.

In support of Central Government's initiative to instigate a reduction in human and financial costs connected to Road Traffic Accidents, Charles Endirect Limited has developed the CELsafe Electrical Disconnection System which meets the latest requirements of BSEN 12767.

The latest edition to the Charles Endirect family is the development of a new and modified range of Passive safe products. These products have been designed for installation into all forms of street lighting equipment including the new quick disconnection solution for mounting in lighting columns and sign posts.

Within the CELsafe range four configurations are available which includes Disruption Pillars and Standard Passive connection at the Lighting Column. Each option has a number of components that can be used to get the best solution.

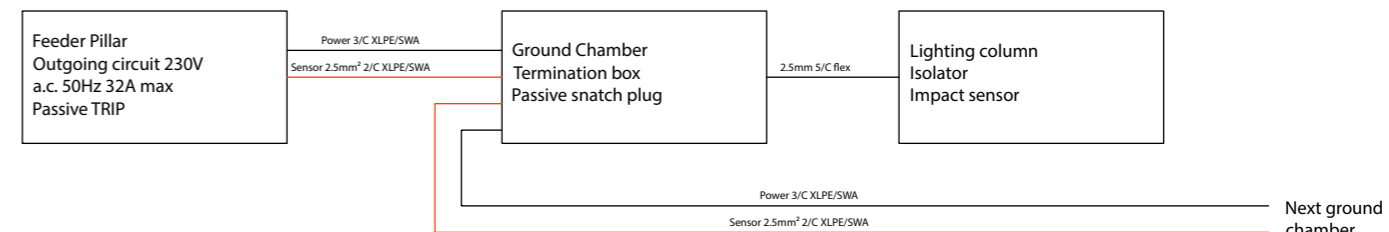


M25 Denham

Product Options

Configuration 1: Pillar based disconnection with ground chamber snatch plug and column impact sensor.

Configuration 1 (Pillar based disconnection with ground chamber snatch plug & column impact sensor)



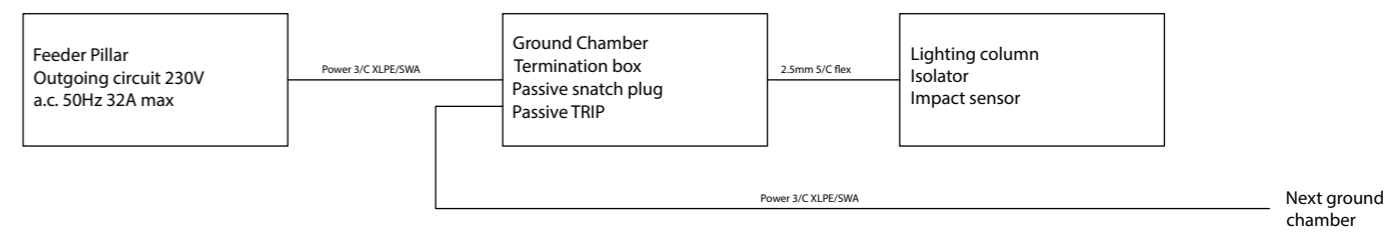
Configuration 2: Pillar based disconnection with column mounted impact sensor.

Configuration 2 (Pillar based disconnection with column mounted impact sensor)



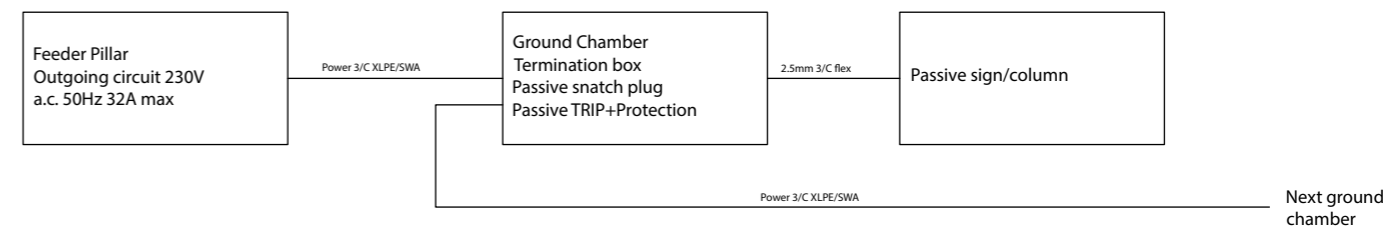
Configuration 3: Ground chamber based disconnection with impact sensor and snatch plug.

Configuration 3 (Ground chamber based disconnection with impact sensor and snatch plug)



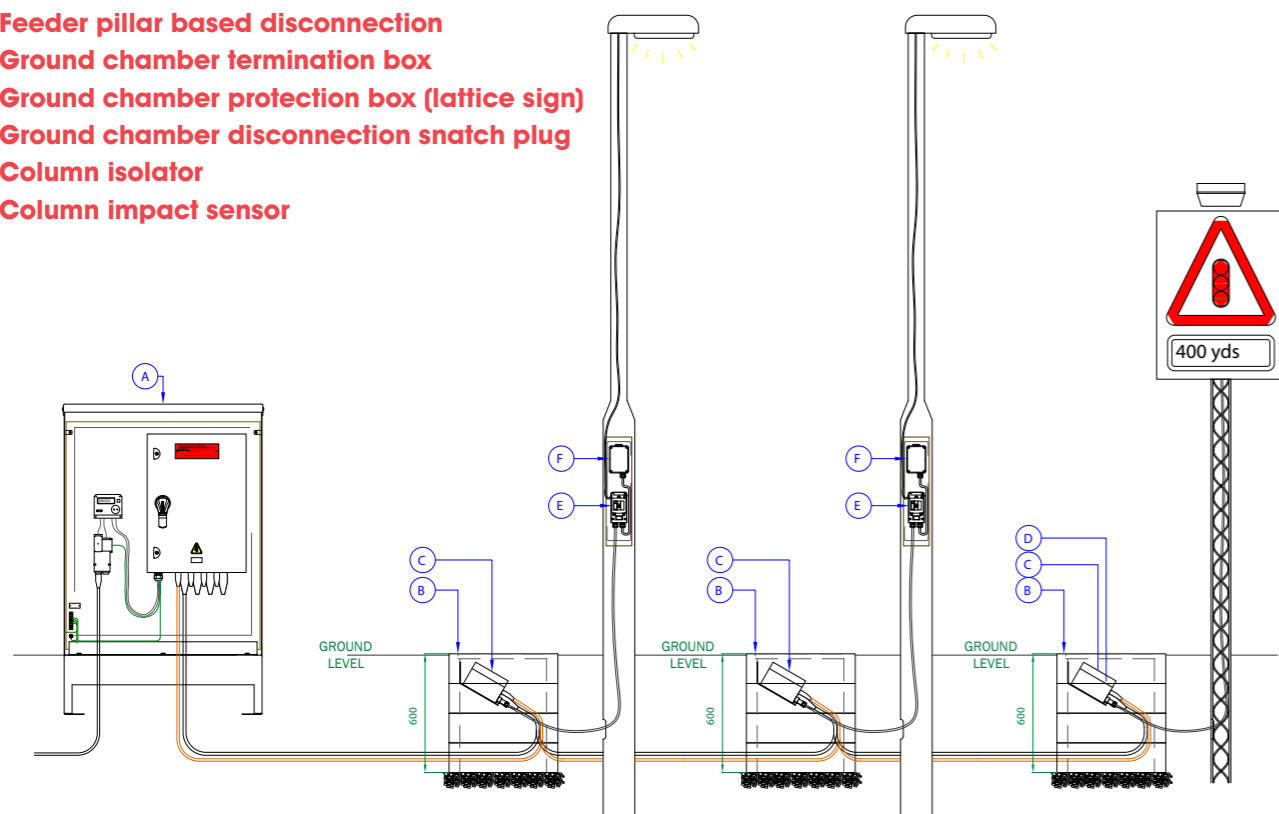
Configuration 4: Ground chamber based disconnection with snatch plug only.

Configuration 4 (Ground chamber based disconnection with snatch plug only)



Configuration 1 System Overview 4

- Feeder pillar based disconnection
- Ground chamber termination box
- Ground chamber protection box (lattice sign)
- Ground chamber disconnection snatch plug
- Column isolator
- Column impact sensor



A FEEDER PILLAR

- DNO or private supply
- Lighting supply panel with electronic passive safety disconnection devices

B GROUND CHAMBER

- Composite lid
- Top ring section 1 x H150xL550xW400
- Riser sections 3 x H150xL550xW400
- Cable duct chamber to column
- Additional riser section can be added for more depth

C GROUND CHAMBER - TERMINATION BOX

- IP67 polycarbonate enclosure with clear lid
- Terminate or loop power cables up to 25mm² 3/C SWA
- Terminate or loop impact sensor cables 2.5mm² 2/C SWA
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable
- Partially filled with magic gel (site install)

D GROUND CHAMBER - ISOLATOR BOX

(for use with collapsible lattice posts)

- IP67 polycarbonate enclosure with clear lid
- Pre-wired cable with 5 pin plug for connection to the termination box
- 32A DP SW, 6A BS88 fuse or MCB
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable

E LIGHTING COLUMN - ISOLATOR

- Lockable safety isolator with 32A DP switch and 6A BS88 fuse (or variation)

F LIGHTING COLUMN - IMPACT SWITCH

- Polycarbonate enclosure with cable terminating block and impact switch

Operation 5

A special lighting supply distribution panel containing both outgoing circuit protection devices and electronic passive safety disconnection devices is located within a feeder pillar. The panel is cabled to a series of ground chambers located at the base of each lighting column or sign. These cables provide mains power 230V a.c. for the street lighting and a 24V d.c. loops for passive safety disconnection signalling.

Ground chamber termination boxes are connected on any given circuit run as loop IN / loop OUT and end of line. The boxes have a 5 pin socket and snatch plug arrangement with a cable connecting to an isolator unit and impact sensor located inside each lighting column. Where there is a lattice post/sign, an additional ground chamber disconnection box is used to house the local protection device and passive trip.

In normal service, the lighting column impact sensors are in the closed position. The sensors are connected to form a continuous closed loop ring circuit back to the feeder pillar. When a column is knocked down with sufficient force, the impact sensor in the column will open and remain so until manually reset. This in turn will cause the feeder pillar circuit to automatically trip and fully disconnect both the power and sensor circuit supplies in less than 400ms.

The ground chamber termination / disconnection boxes snatch plug arrangement help to prevent direct connection damage to underground cables. When the plug is pulled, automatic circuit disconnection will occur as above.

Circuit reset will only work when the damaged column has been repaired or a temporary bypass snatch plug has been fitted to the affected column / ground chamber unit.

Trip devices require no additional power supplies and are not affected by power outages.

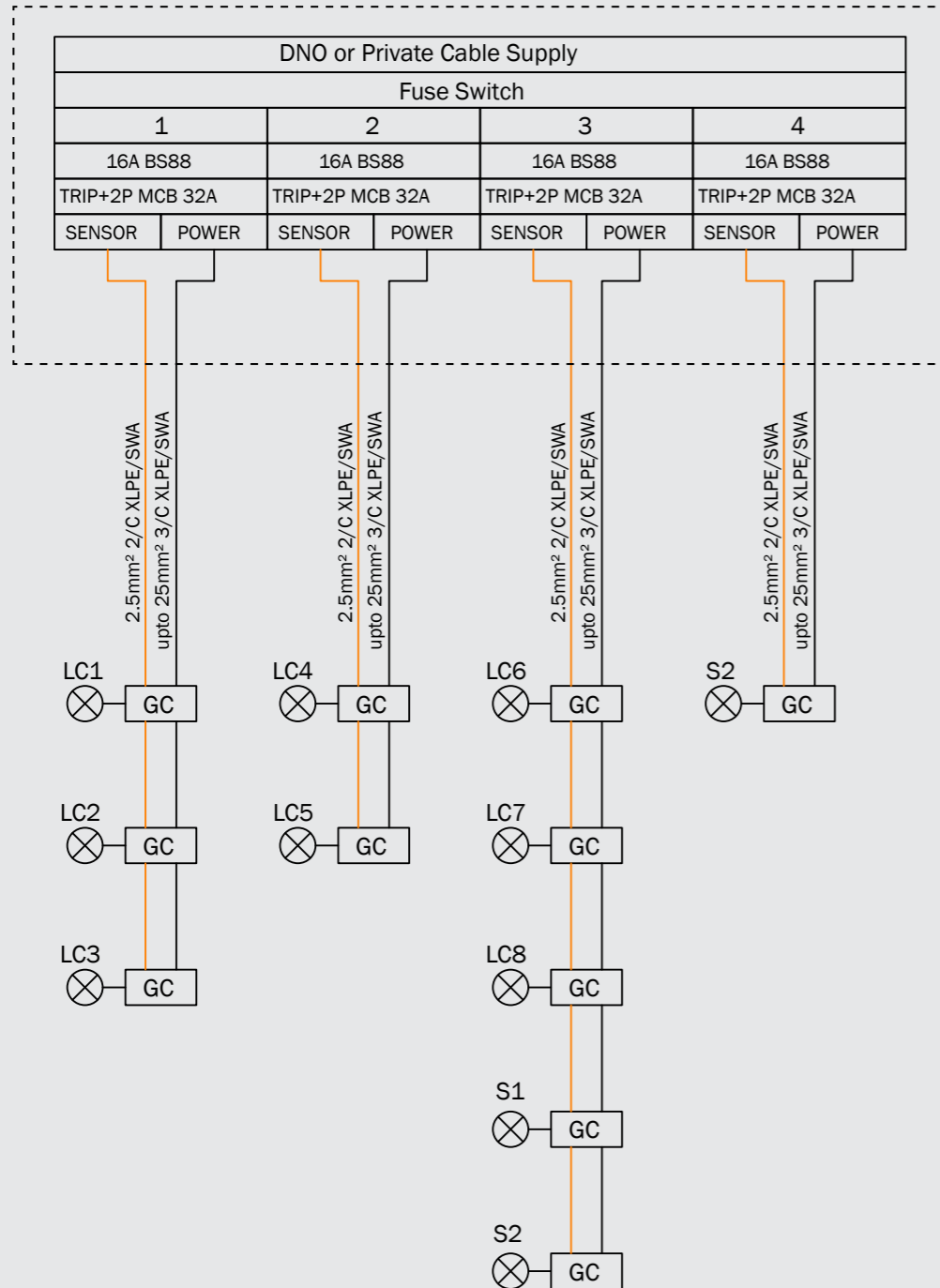
For this system, consideration and planning should be given to the locations of the columns on any one circuit so as to avoid lighting outage blackspots for a given circuit disconnection at the feeder pillar. Remember, for this system, the trips are located in the feeder pillar and not the ground chambers.

Circuit cable length of approximately 2km and 40+ impact sensors are easily achievable providing the resistance of the closed loop sensor cable end to end does not exceed 200Ω. However, in practice, more circuits with fewer lamps will reduce loss of lighting on any one circuit becoming disconnected.

Schematic

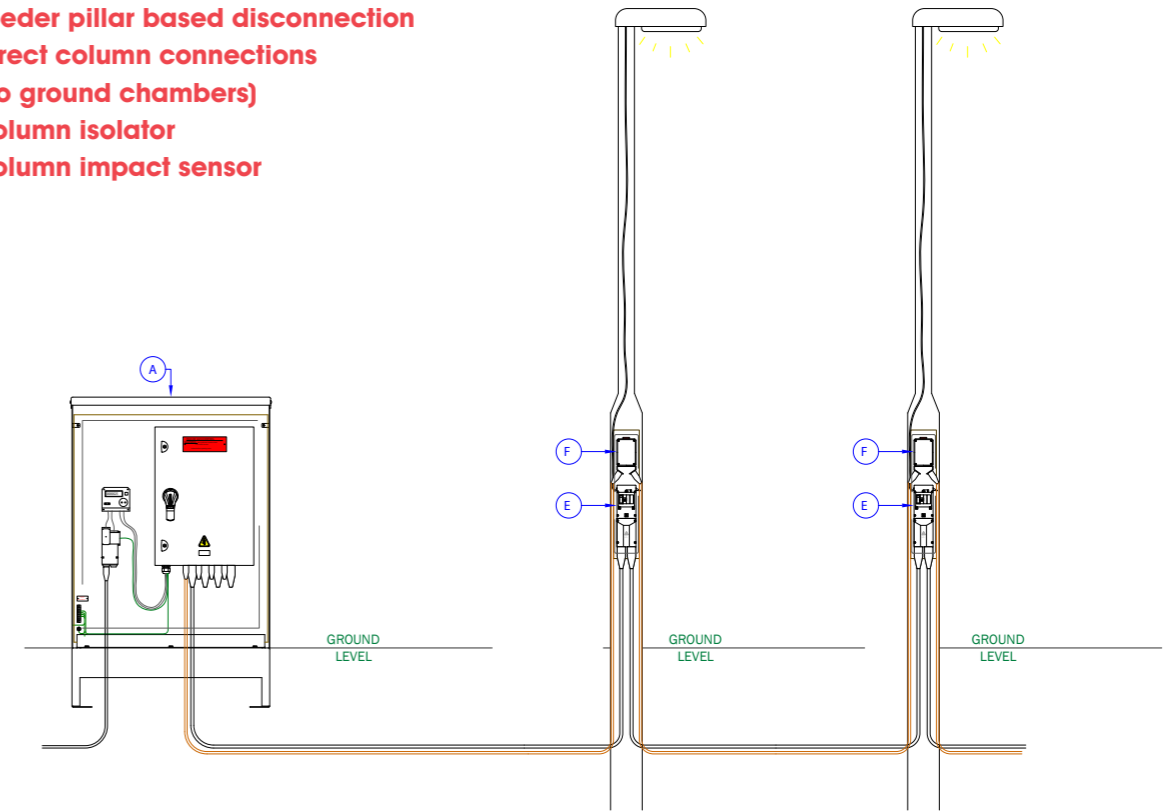
Typical single line schematic

Feeder pillar / ground chambers / lighting columns and signs



Configuration 2 System Overview

- Feeder pillar based disconnection
- Direct column connections (no ground chambers)
- Column isolator
- Column impact sensor



A FEEDER PILLAR

- DNO or private supply
- Lighting supply panel with electronic passive safety disconnection devices

E LIGHTING COLUMN - ISOLATOR

- Lockable safety isolator with 32A DP switch and 6A BS88 fuse (or variation)

F LIGHTING COLUMN - IMPACT SWITCH

Polycarbonate enclosure with cable terminating block and impact switch

Operation

A special lighting supply distribution panel containing both outgoing circuit protection devices and electronic passive safety disconnection devices is located within a feeder pillar. The panel is cabled direct to a series of lighting columns. These cables provide mains power 230V a.c. for the street lighting and a 24V d.c. loop for passive safety disconnection signalling.

In normal service, the lighting column impact sensors are in the closed position. The sensors are connected to form a continuous closed loop ring circuit back to the feeder pillar. When a column is knocked down with sufficient force, the impact sensor in the column will open and remain so until manually reset. This in turn will cause the feeder pillar circuit to automatically trip and fully disconnect both the power and sensor circuit supplies in less than 400mS.

Circuit reset will only work when the damaged column has been repaired or a temporary bypass link has been made on the sensor cable.

Trip devices require no additional power supplies and are not affected by power outages.

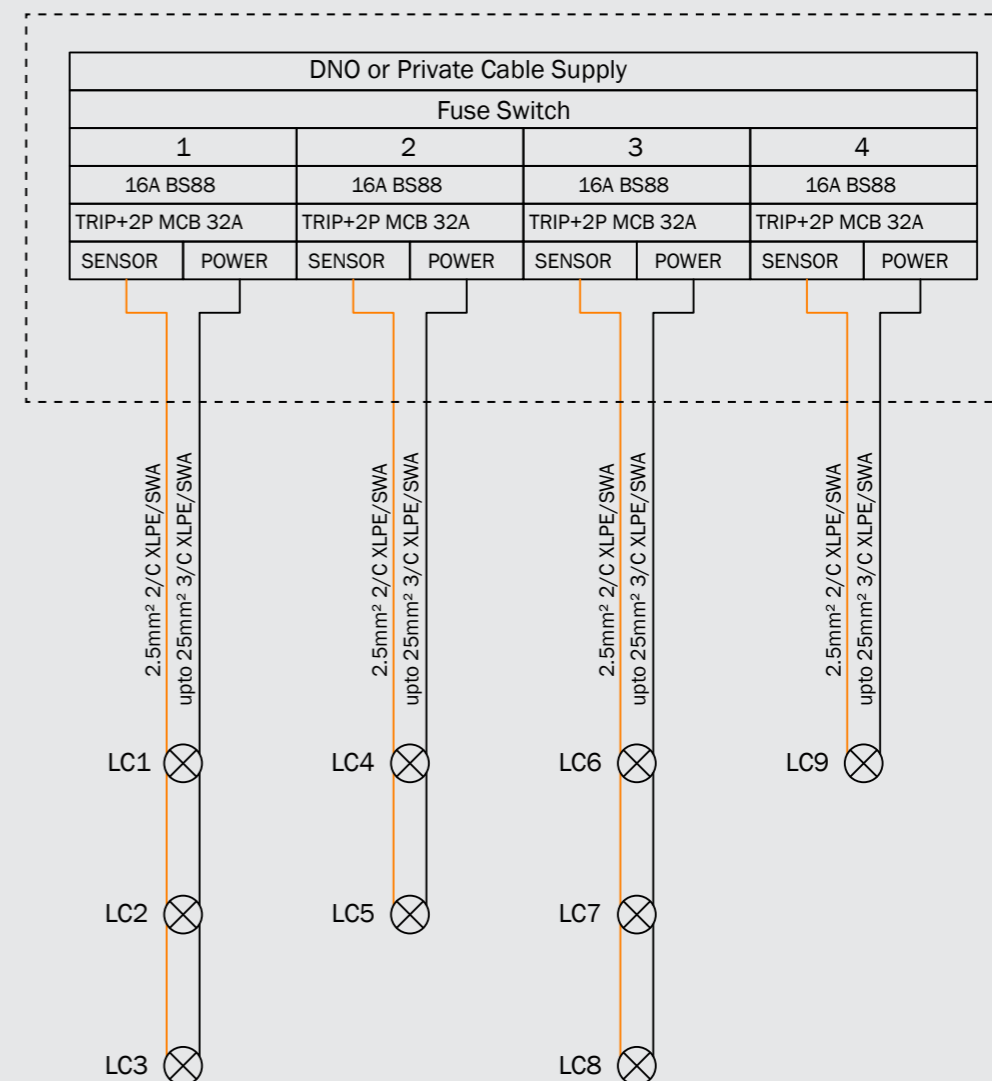
For this system, consideration and planning should be given to the locations of the columns on any one circuit so as to avoid lighting outage blackspots for a given circuit disconnection at the feeder pillar. Remember, for this system, the trips are located in the feeder pillar.

Circuit cable length of approximately 2km and 40+ impact sensors are easily achievable providing the resistance of the closed loop sensor cable end to end does not exceed 200Ω. However, in practice, more circuits with fewer lamps will reduce loss of lighting on any one circuit becoming disconnected.

Schematic

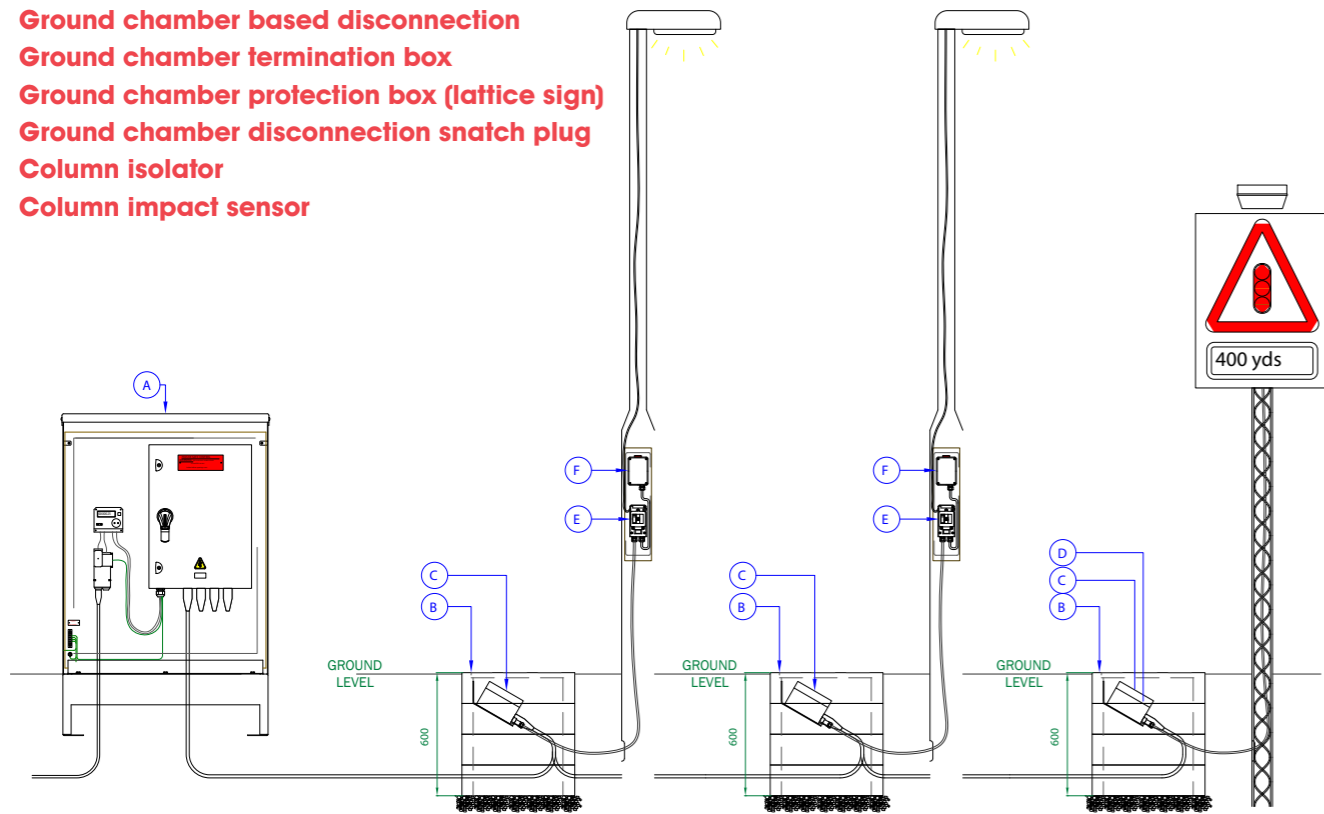
Typical single line schematic

Feeder pillar / ground chambers / lighting columns and signs



Configuration 3 System Overview 10

- Ground chamber based disconnection
- Ground chamber termination box
- Ground chamber protection box (lattice sign)
- Ground chamber disconnection snatch plug
- Column isolator
- Column impact sensor



A FEEDER PILLAR

- DNO or private supply
- Lighting supply panel with electronic passive safety disconnection devices

B GROUND CHAMBER

- Composite lid
- Top ring section 1 x H150xL550xW400
- Riser sections 3 x H150xL550xW400
- Cable duct chamber to column
- Additional riser section can be added for more depth

C GROUND CHAMBER - TERMINATION BOX

- IP67 polycarbonate enclosure with clear lid
- Terminate or loop power cables upto 25mm² 3/C SWA
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable
- Partially filled with magic gel (site install)

D GROUND CHAMBER - DISCONNECTION BOX

- IP67 polycarbonate enclosure with clear lid
- Pre-wired cable with 5 pin plug for connection to the termination box
- Electronic disconnection trip + MCB 6A or 10A SP&SN 6kA
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable

E LIGHTING COLUMN - ISOLATOR

- Lockable safety isolator with 32A DP switch and 6A BS88 fuse (or variation)

F LIGHTING COLUMN - IMPACT SWITCH

- Polycarbonate enclosure with cable terminating block and impact switch

Operation 11

A standard lighting supply distribution panel is located within a feeder pillar for providing main power 230V a.c. to a series of ground chamber termination / disconnection boxes.

The termination box provides loop IN / loop OUT and end of line connections for the power cable and a feed to an adjacent disconnection box which contains an electronic trip device with an attached MCB SP&SN. A 5 pin socket and snatch plug arrangement is cabled to an isolator unit and impact sensor located inside each lighting column.

In normal service, the lighting column impact sensors are in the closed position. The sensors are connected to form a continuous closed loop ring circuit back to the local ground chamber disconnection box. When a column is knocked down with sufficient force, the impact sensor in the column will open and remain so until manually reset. This in turn will cause the local ground chamber disconnection box to automatically trip and fully disconnect both the power and sensor circuit supplies in less than 400mS.

The ground chamber termination / disconnection boxes snatch plug arrangement help to prevent direct connection damage to underground cables. When the plug is pulled, automatic circuit disconnection will occur as above.

On repair of the damaged column, circuit reset would need to be performed at the disconnection box in the ground chamber. Circuit reset can only be achieved with the snatch plug connected and the impact sensor switch closed.

Trip devices require no additional power supplies and are not affected by power outages.

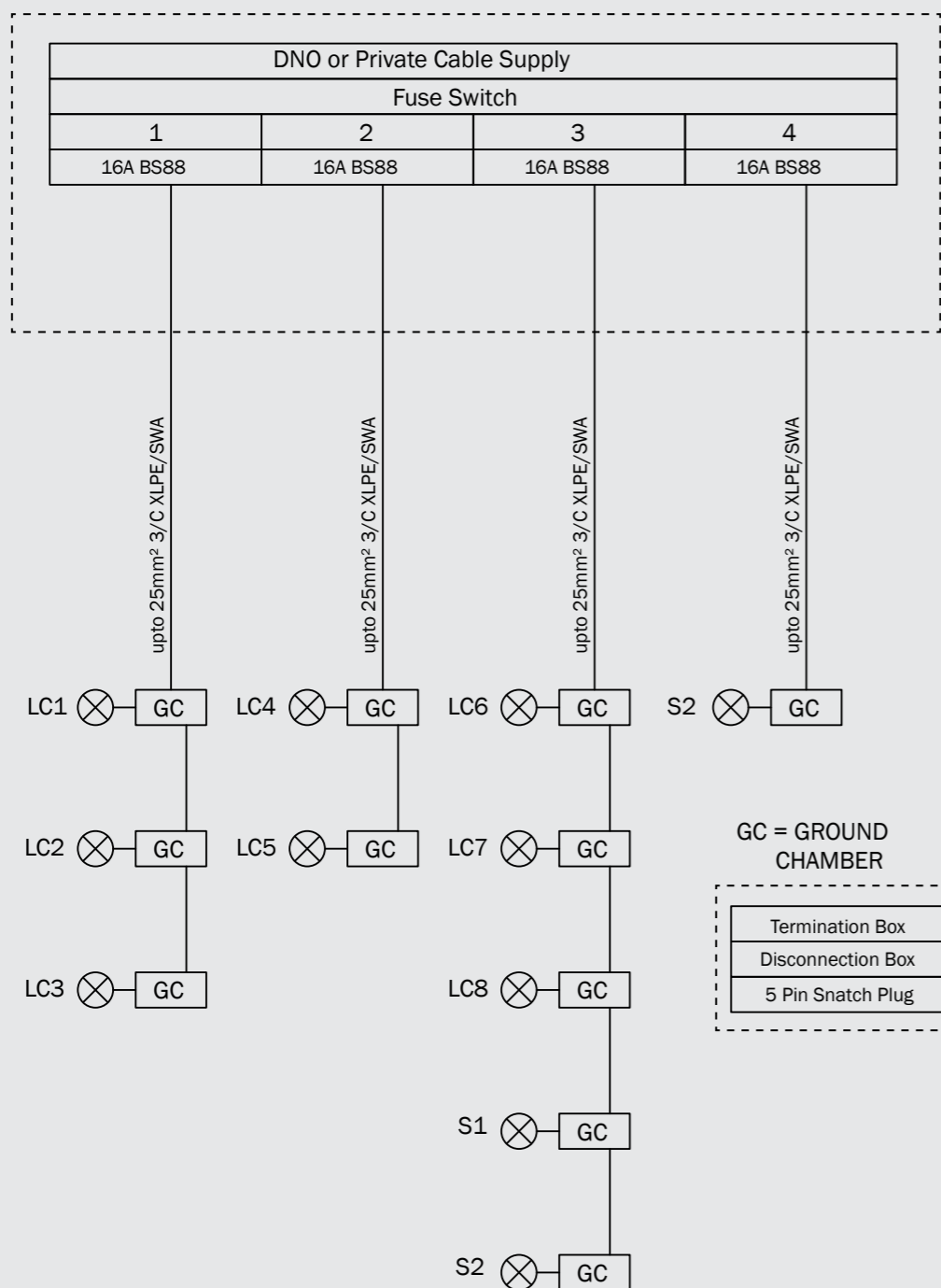
For this system, lighting outages will usually be limited to the affected column only. This is because each ground chamber will have its own disconnection device.

Maximum distance for the circuit cable length will not be limited to the impact sensor closed circuit loop resistance as with configuration 1 & 2.

Schematic

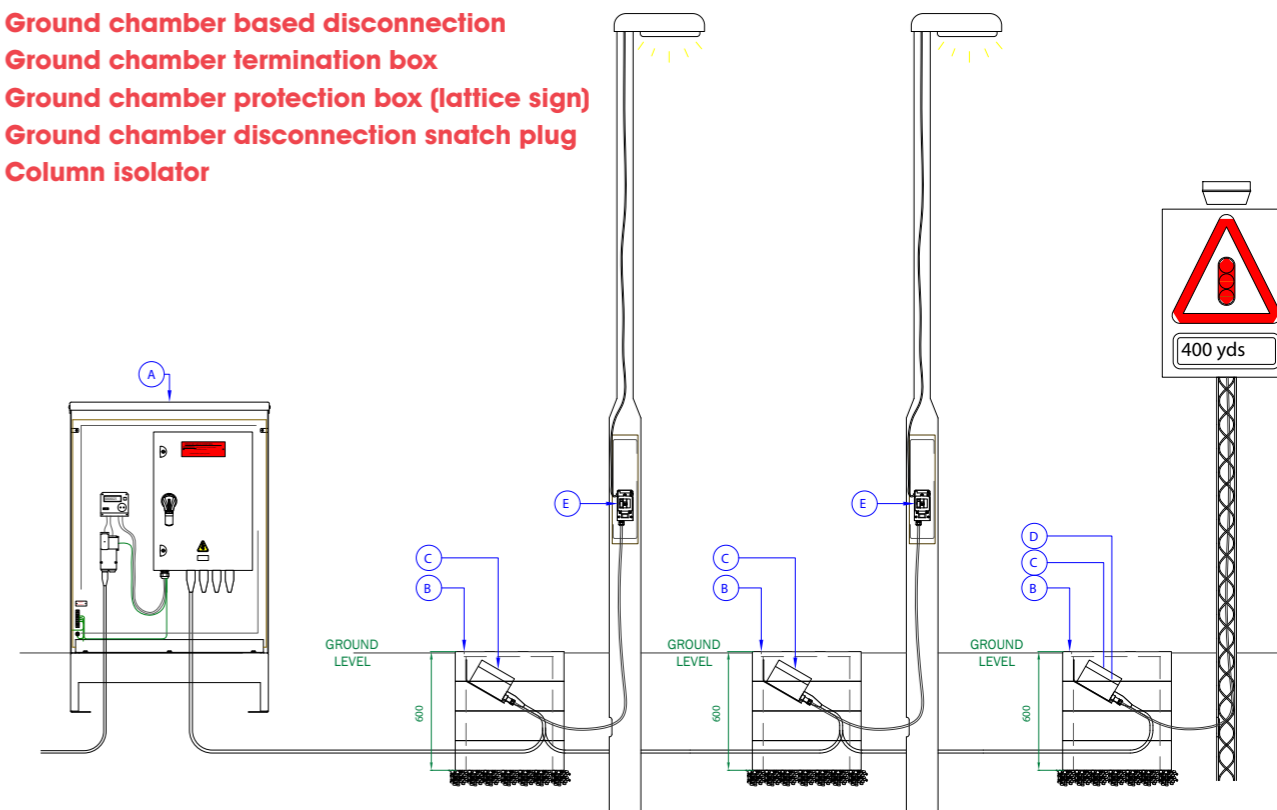
Typical single line schematic

Feeder pillar / ground chambers / lighting columns and signs



Configuration 4 System Overview 13

- Ground chamber based disconnection
- Ground chamber termination box
- Ground chamber protection box (lattice sign)
- Ground chamber disconnection snatch plug
- Column isolator



A FEEDER PILLAR

- DNO or private supply
- Lighting supply panel with electronic passive safety disconnection devices

B GROUND CHAMBER

- Composite lid
- Top ring section 1 x H150xL550xW400
- Riser sections 3 x H150xL550xW400
- Cable duct chamber to column
- Additional riser section can be added for more depth

C GROUND CHAMBER - TERMINATION BOX

- IP67 polycarbonate enclosure with clear lid
- Terminate or loop power cables upto 25mm² 3/C SWA
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable
- Partially filled with magic gel (site install)

D GROUND CHAMBER - DISCONNECTION BOX

- IP67 polycarbonate enclosure with clear lid
- Pre-wired cable with 5 pin plug for connection to the termination box
- Electronic disconnection trip + MCB 6A or 10A SP&SN 6kA
- IP67 - 5pin socket
- IP67 - 5pin snatch plug and cable

E LIGHTING COLUMN - ISOLATOR

- Lockable safety isolator with 32A DP switch and 6A BS88 fuse (or variation)

Operation

A standard lighting supply distribution panel is located within a feeder pillar for providing main power 230V a.c. to a series of ground chamber termination / disconnection boxes.

The termination box provides loop IN / loop OUT and end of line connections for the power cable and a feed to an adjacent disconnection box which contains an electronic trip device with an attached MCB SP&SN. A 5 pin socket and snatch plug arrangement is cabled to an isolator unit inside each lighting column.

The ground chamber termination / disconnection boxes snatch plug arrangement help to prevent direct connection damage to underground cables. When the plug is pulled, automatic circuit disconnection will occur, the supply to the lighting column will be full disconnected and the snatch plug socket in the ground chamber will also be fully isolated.

On repair of the damaged column, circuit reset would need to be performed at the disconnection box in the ground chamber. Circuit reset can only be achieved with the snatch plug connected or bypass plug fitted.

Trip devices require no additional power supplies and are not affected by power outages.

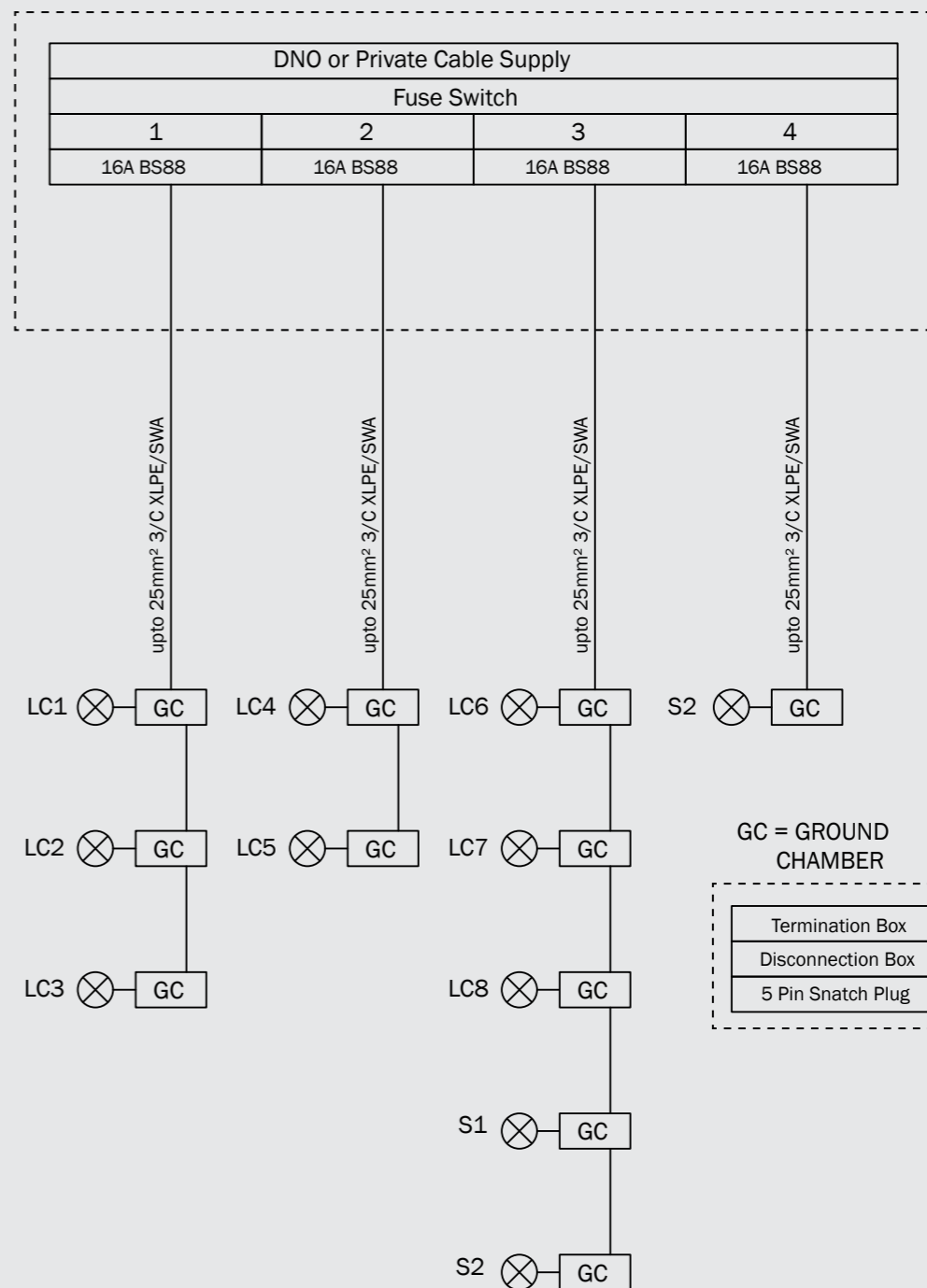
For this system, lighting outages will usually be limited to the affected column only. This is because each ground chamber will have its own disconnection device.

Maximum distance for the circuit cable length will not be limited to the impact sensor closed circuit loop resistance as with configuration 1 & 2. This system has no impact sensor.

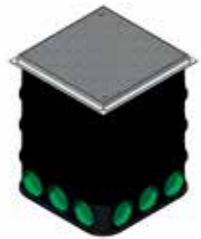

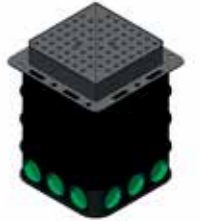

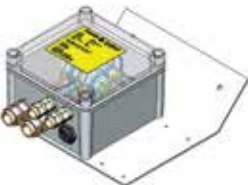
Schematic

Typical single line schematic

Feeder pillar / ground chambers / lighting columns and signs








Components

STOCK CODE	DESCRIPTION	PURPOSE	PRODUCT IMAGE
CEF4020	CELSafe V5 Ground Chamber 12.5T Size 1	Ground chamber used to house passive safe cable termination box and optional add-on protection box. Power cable terminated or looped $\leq 10\text{mm}^2$ 3/C XLPE/SWA. Load rating 12.5 tonne. Size 450mm x 450mm x 600mm. Configurations 1, 3 & 4.	
CEF4021	CELSafe V5 Ground Chamber 12.5T Size 2	Ground chamber used to house passive safe cable termination box and optional add-on protection box. Power cable terminated or looped 16 to 25mm ² 3/C XLPE/SWA. Load rating 12.5 tonne. Size 600mm x 450mm x 600mm. Configurations 1, 3 & 4.	
CEF4022	CELSafe V5 Ground Chamber 40T Size 1	Ground chamber used to house passive safe cable termination box and optional add-on protection box. Power cable terminated or looped $\leq 10\text{mm}^2$ 3/C XLPE/SWA. Load rating 40 tonne. Size 450mm x 450mm x 600mm. Configurations 1, 3 & 4.	
CEF4023	CELSafe V5 Ground Chamber 40T Size 2	Ground chamber used to house passive safe cable termination box and optional add-on protection box. Power cable terminated or looped 16 to 25mm ² 3/C XLPE/SWA. Load rating 40 tonne. Size 600mm x 450mm x 600mm. Configurations 1, 3 & 4.	
CEF4040	CELSafe V5 Termination Box 20	Junction box for above ground chambers where lighting columns require passive safe equipment. Power cable end terminated or looped $\leq 10\text{mm}^2$ 3/C XLPE/SWA. Sensor cable end terminated or looped 2.5mm ² XLPE/SWA (depending on configuration). Snatch plug and cable to local lighting column via snatch plug or feed to adjacent add-on box. Configurations 1, 3 & 4.	


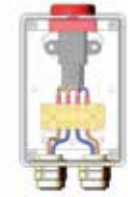


Components

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STOCK CODE	DESCRIPTION	PURPOSE	PRODUCT IMAGE
CEF4050	CELSafe V5 Termination Box 25	Junction box for above ground chambers where lighting columns require passive safe equipment. Power cable end terminated or looped 16 to 25mm ² 3/C XLPE/SWA. Sensor cable end terminated or looped 2.5mm ² XLPE/SWA (depending on configuration). Snatch plug and cable to local lighting column via snatch plug or feed to adjacent add-on box. Configurations 1, 3 & 4	
CEF4060	CELSafe V5 Addon Box 6A	To provide local protection and trip device within ground chamber where required. Fits adjacent to termination box above. MCB 1PSN C 6kA 6A. Trip < 400mS Snatch plug and cable to local lighting column or sign unit. Configurations 1, 3 & 4.	
CEF4070	CELSafe V5 Addon Box 10A	To provide local protection and trip device within ground chamber where required. Fits adjacent to termination box above. MCB 1PSN C 6kA 10A Trip < 400mS Snatch plug and cable to local lighting column or sign unit. Configurations 1, 3 & 4.	
CEL3143	CELSafe V5 Isolator L3/1Up	CELSafe V5 Isolator L3/1Up Provides lighting column isolation and fuse protection for one column lamp circuit and a connection point for the additional inertia switch where required. Configurations 1, 3 & 4.	
CEL3144	CELSafe V5 Isolator L3/2Up	Provides lighting column isolation and fuse protection for two column lamp circuits and a connection point for the additional inertia switch where required. Configurations 1, 3 & 4.	

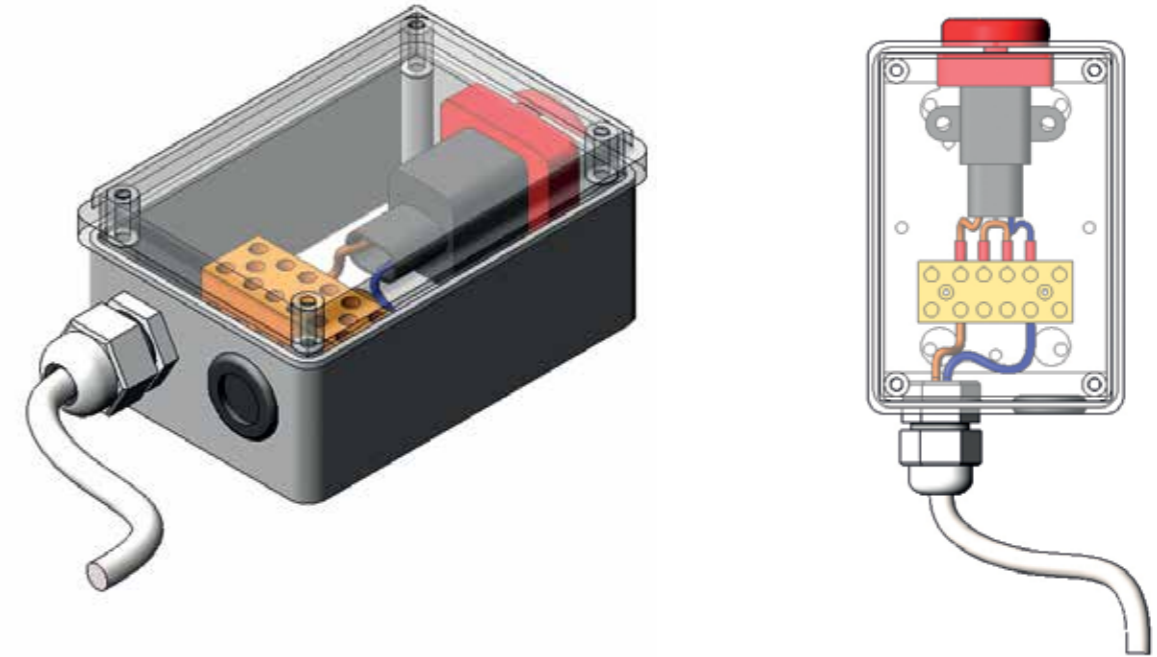
Components

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STOCK CODE	DESCRIPTION	PURPOSE	PRODUCT IMAGE
CEF3195	CELSafe V5 Inertia Switch Kit 1	Fitted with a lighting column, sign or other structure and connected to an isolator unit as above. On lighting column impact, the switch will open circuit and cause the connected circuit trip to operate within less than 400mS. Configurations 1, 3 & 4.	
CEF3196	CELSafe V5 Inertia Switch Kit 2	Fitted with a lighting column, sign or other structure. This is used for configuration 2 only. On lighting column impact, the switch will open circuit and cause the connected circuit trip to operate within less than 400mS. Configuration 2 only.	
CEF3197	CELSafe V5 Inertia Switch Kit 3	As above switch kit 2 but with a folded brass gland plate to assist cable terminations where space is limited. Configuration 2 only.	
CEF4080	CELSafe V5 Snatch Plug & 6m Cable	Cable YY 2.5mm 5 core with snatch plug connecting the ground chamber termination box or add-on box and the lighting column isolator or direct to a lamp unit. Configurations 1, 3 & 4.	

Inertia Switch Kit 1

CODE: CEF3195 VERSION: 01 DATE: 12.09.2017

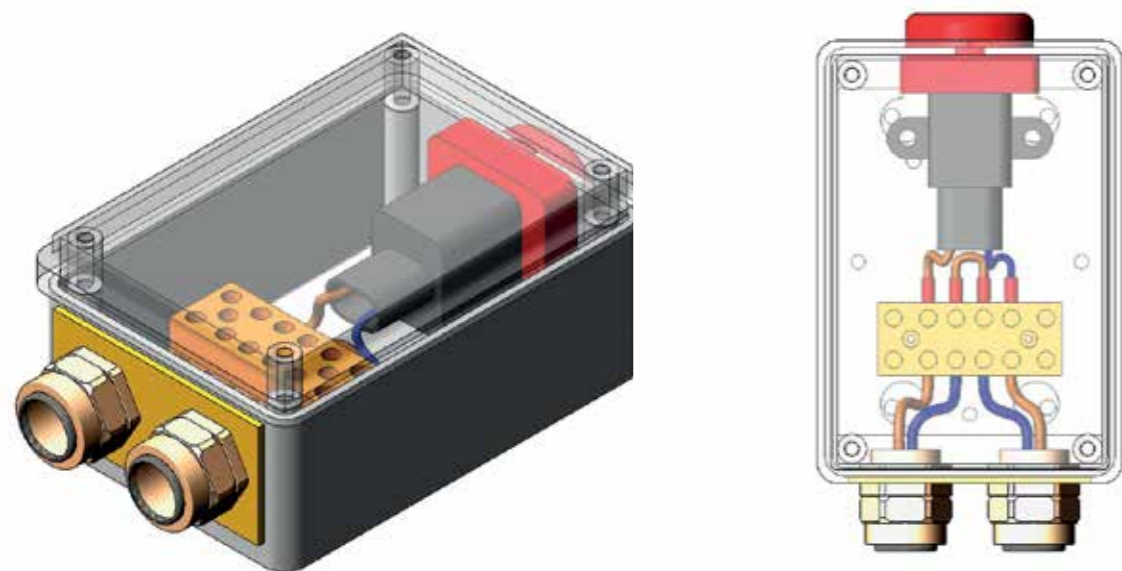


Electrical:	Rated operating voltage 230V a.c. 50Hz
	Rated insulated voltage Ui 690V
Enclosure:	Self extinguishing engineering plastic (IEC 60670)
	Colour light grey RAL 7035
	Class II insulated (EN 60439-1)
	Note, clear lid shown for illustration purposes only
Switch:	Used in the normally closed position
	Magnetic retention activated on impact > 8G
	Reset - press switch cap
Cable:	Pre-wired PVC/PVC YY 2.5mm ² 2 core x 600mm long
Degree of protection:	IP65
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 134mm x W 88mm x D 60mm
Weight:	
Connection diagram:	CAD-12-0047-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Inertia Switch Kit 2

22

CODE: CEF3196 VERSION: 01 DATE: 12.09.2017

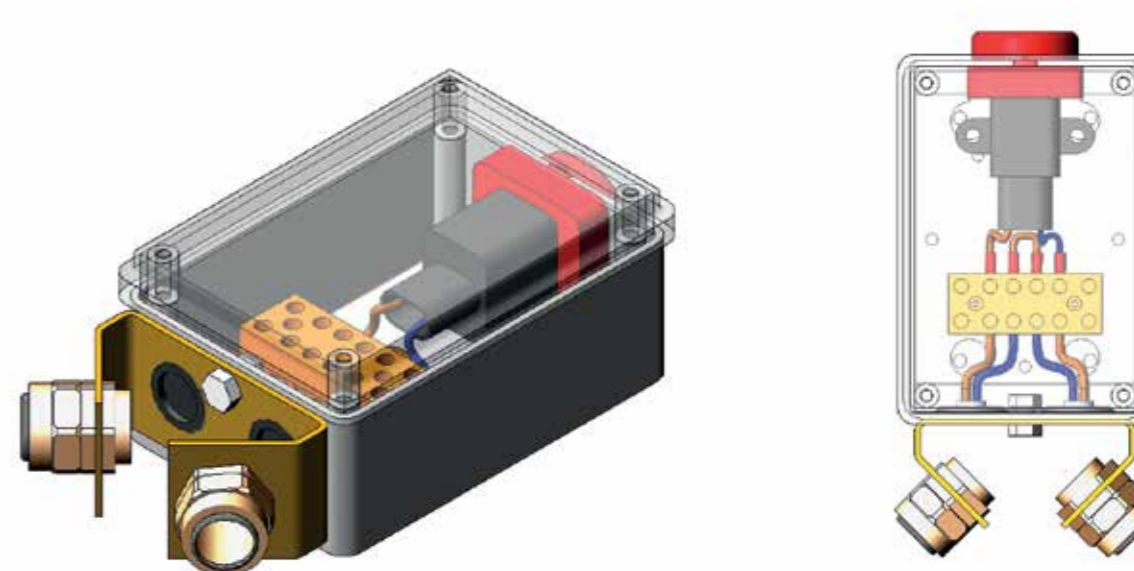


Electrical:	Rated operating voltage 230V a.c. 50Hz Rated insulated voltage Ui 690V
Enclosure:	Self extinguishing engineering plastic (IEC 60670) Colour light grey RAL 7035 Class II insulated (EN 60439-1) Note, clear lid shown for illustration purposes only
Switch:	Used in the normally closed position Magnetic retention activated on impact > 8G Reset - press switch cap
Gland plate:	Brass 2mm with 2 x 20mm holes
Glands:	Supplied with 2 x BW20 brass compression cable glands
Degree or protection:	IP65
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 134mm x W 88mm x D 60mm
Weight:	
Connection diagram:	CAD-12-0048-01
Used where:	CELSafe V5 passive safety configuration 2 only

Inertia Switch Kit 3

23

CODE: CEF3197 VERSION: 01 DATE: 12.09.2017



Electrical:	Rated operating voltage 230V a.c. 50Hz Rated insulated voltage Ui 690V
Enclosure:	Self extinguishing engineering plastic (IEC 60670) Colour light grey RAL 7035 Class II insulated (EN 60439-1) Note, clear lid shown for illustration purposes only
Switch:	Used in the normally closed position Magnetic retention activated on impact > 8G Reset - press switch cap
Gland plate:	Folded brass 2mm with 2 x 20mm holes
Glands:	Supplied with 2 x BW20 brass compression cable glands
Degree or protection:	IP65
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 134mm x W 88mm x D 60mm
Weight:	
Connection diagram:	CAD-12-0049-01
Used where:	CELSafe V5 passive safety configuration 2 only

Ground Chamber 12.5T Size 1 24

CODE: CEF4020 VERSION: 01 DATE: 12.09.2017



Chamber:	Light weight modular twin wall ring sections
	1 x access section for cable ducts
	3 x riser sections
Cover and frame:	Composite cover
	Galvanised steel frame
Vertical load rating:	12.5 tonne
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	450mm x 450mm x 600mm
Weight:	
Drawing:	CAD-28-0001-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Ground Chamber 12.5T Size 2 25

CODE: CEF4021 VERSION: 01 DATE: 12.09.2017



Chamber:	Light weight modular twin wall ring sections
	1 x access section for cable ducts
	3 x riser sections
Cover and frame:	Composite cover
	Galvanised steel frame
Vertical load rating:	12.5 tonne
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	600mm x 450mm x 600mm
Weight:	
Drawing:	CAD-28-0002-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Ground Chamber 40T Size 1

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CODE: CEF4022 VERSION: 01 DATE: 12.09.2017



Chamber:	Light weight modular twin wall ring sections
	1 x access section for cable ducts
	3 x riser sections
Cover and frame:	Ductile iron
Vertical load rating:	40 tonne
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	450mm x 450mm x 600mm
Weight:	
Drawing:	CAD-12-0050-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Ground Chamber 40T Size 2

27

CODE: CEF4023 VERSION: 01 DATE: 12.09.2017

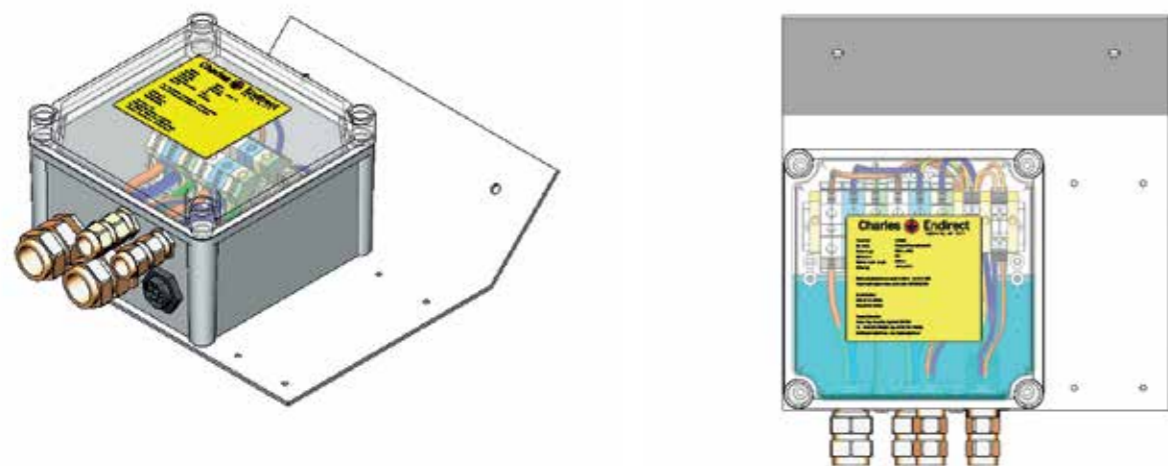


Chamber:	Light weight modular twin wall ring sections
	1 x access section for cable ducts
	3 x riser sections
Cover and frame:	Ductile iron
Vertical load rating:	40 tonne
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	600mm x 450mm x 600mm
Weight:	
Drawing:	CAD-12-0051-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Termination Box 20

28

CODE: CEF4040 VERSION: 01 DATE: 12.09.2017

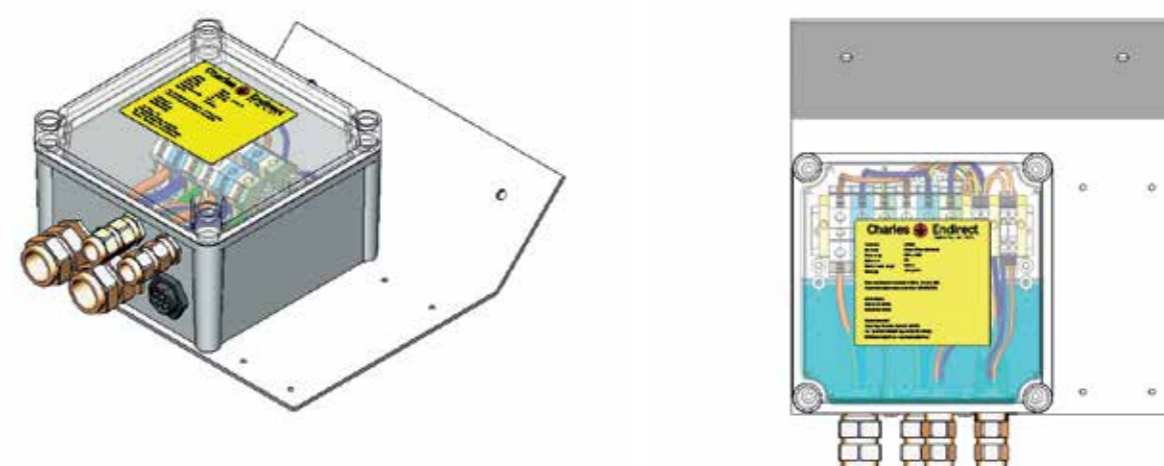


Electrical:	Rated operating voltage 230V a.c. 50Hz	
	Design current max 32A (loop through)	
Enclosure:	Polycarbonate with clear transparent lid	272.25
	Ingress protection IP66/67 (EN 60529)	
	Impact resistance (IK08/09 (EN 62262)	
	Halogen free (DIN/VDE 0472, part 815:1)	
	UV resistant (UL 508), Flame rating (UL 754C 5)	
	Glow wire tested (IEC 695-2-1) °C 690	
	Colour RAL7035 light grey	
Fixing plate:	Stainless steel 3mm grade 304	
Cable terminations:	Power loop or terminated =< 10mm ² 3 core XLPE/SWA (gland 2xE1W20)	
	Sensor loop or terminated =< 2.5mm ² 2 core XLPE/SWA (gland 2xE1W16S)	
Device connector:	5 pin female chassis mounted connector	
Degree or protection:	IP66/67	
Operating temperature:	-25 °C to +40 °C	
Pollution degree:	3	
External dimensions:	H 140mm x W 280mm x D 240mm (inc plate)	
Weight:		
Connection diagram:	CAD-50-0403-01	
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4	

Termination Box 25

29

CODE: CEF4050 VERSION: 01 DATE: 12.09.2017

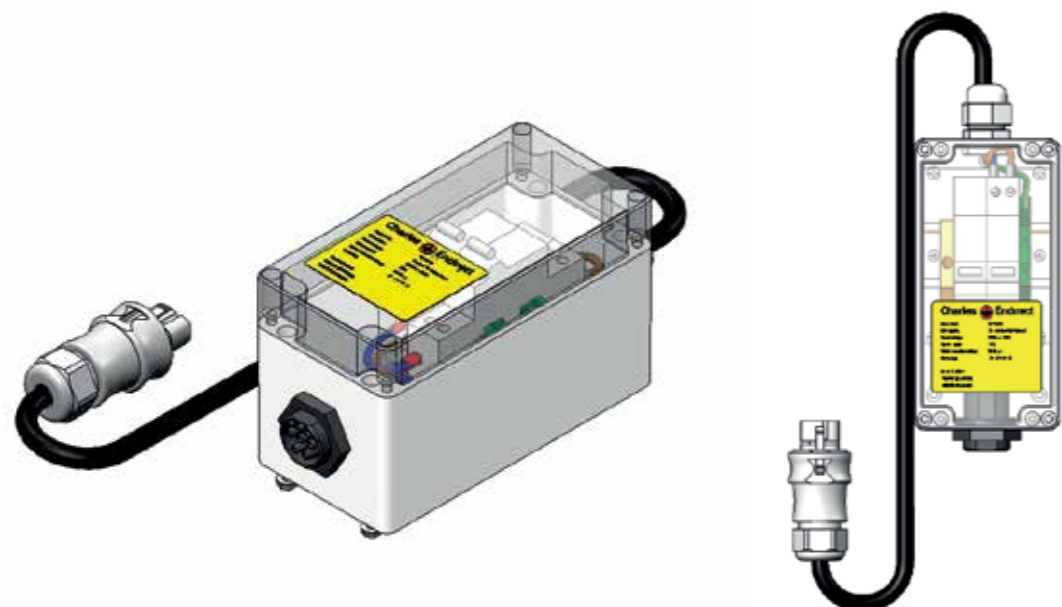


Electrical:	Rated operating voltage 230V a.c. 50Hz	
	Design current max 32A (loop through)	
Enclosure:	Polycarbonate with clear transparent lid	
	Ingress protection IP66/67 (EN 60529)	
	Impact resistance (IK08/09 (EN 62262)	
	Halogen free (DIN/VDE 0472, part 815:1)	
	UV resistant (UL 508), Flame rating (UL 754C 5)	
	Glow wire tested (IEC 695-2-1) °C 690	
	Colour RAL7035 light grey	
Fixing plate:	Stainless steel 3mm grade 304	
Cable terminations:	Power loop or terminated 16 to 25mm ² 3 core XLPE/SWA (gland 2xE1W25)	
	Sensor loop or terminated =< 2.5mm ² 2 core XLPE/SWA (gland 2xE1W16S)	
Device connector:	5 pin female chassis mounted connector	
Degree or protection:	IP66/67	
Operating temperature:	-25 °C to +40 °C	
Pollution degree:	3	
External dimensions:	H 140mm x W 280mm x D 240mm (inc plate)	
Weight:		
Connection diagram:	CAD-50-0404-01	
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4	

Addon Box 6A

30

CODE: CEF4060 VERSION: 01 DATE: 12.09.2017

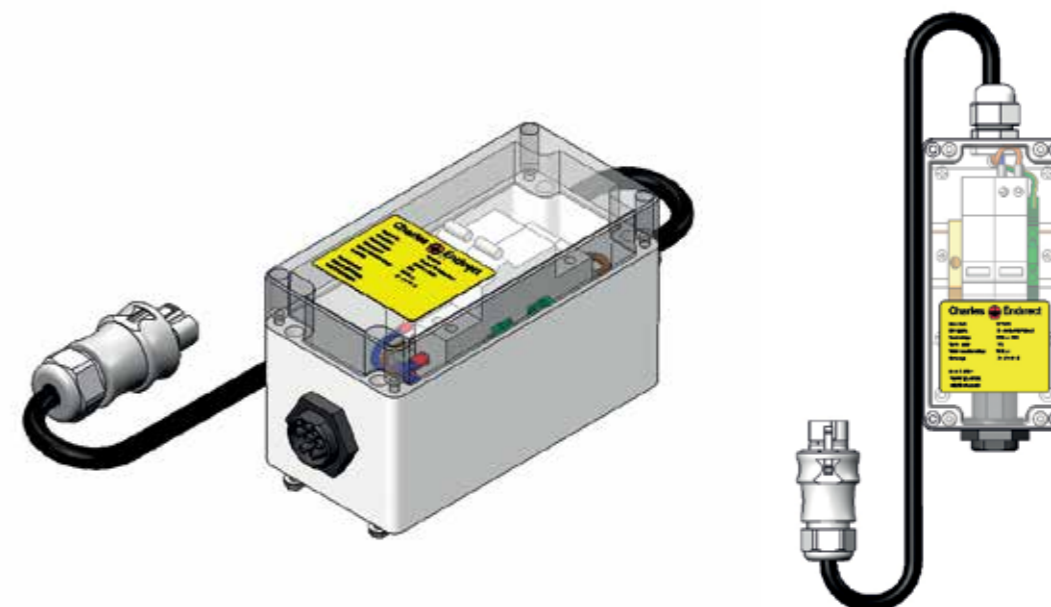


Electrical:	Rated operating voltage 230V a.c. 50Hz Rated current 20A
Enclosure:	Polycarbonate with clear transparent lid Ingress protection IP66/67 (EN 60529) Impact resistance (IK07/08 (EN 62262) Halogen free (DIN/VDE 0472, part 815:1) UV resistant (UL 508), Flame rating (UL 754C 5) Glow wire tested (IEC 695-2-1) °C 690 Colour RAL7035 light grey
Protection device:	MCB 1PSP C 6kA 6A (BS EN 60947-2)
Trip device:	MNx Trip < 400ms (EN/IEC 60947-5-1)
Snatch plug connector:	5 pin female chassis mounted connector
Degree or protection:	IP66/67
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 160mm x W 80mm x D 100mm
Weight:	
Connection diagram:	CAD-50-0401-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Addon Box 10A

31

CODE: CEF4070 VERSION: 01 DATE: 12.09.2017

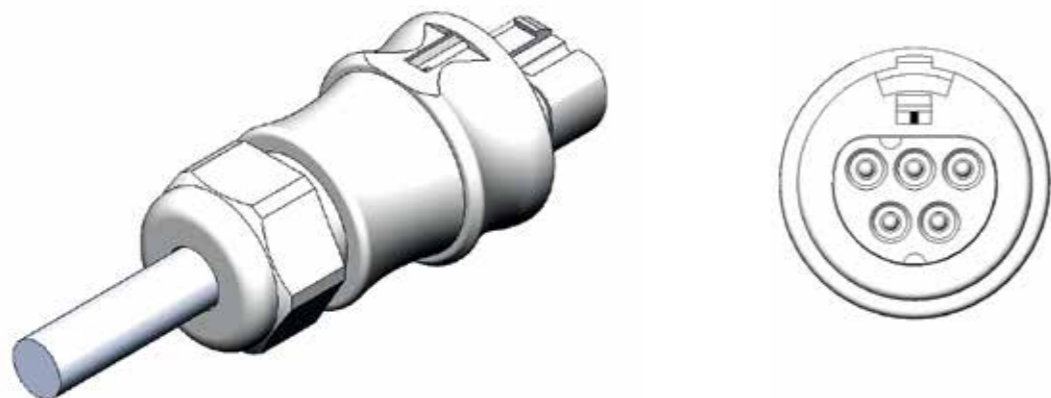


Electrical:	Rated operating voltage 230V a.c. 50Hz Rated current 20A
Enclosure:	Polycarbonate with clear transparent lid Ingress protection IP66/67 (EN 60529) Impact resistance (IK07/08 (EN 62262) Halogen free (DIN/VDE 0472, part 815:1) UV resistant (UL 508), Flame rating (UL 754C 5) Glow wire tested (IEC 695-2-1) °C 690 Colour RAL7035 light grey
Protection device:	MCB 1PSP C 6kA 6A (BS EN 60947-2)
Trip device:	MNx Trip < 400ms (EN/IEC 60947-5-1)
Snatch plug connector:	5 pin female chassis mounted connector
Degree or protection:	IP66/67
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 160mm x W 80mm x D 100mm
Weight:	
Connection diagram:	CAD-50-0401-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Snatch Plug & 6m Cable

32

CODE: CEF4080 VERSION: 01 DATE: 12.09.2017

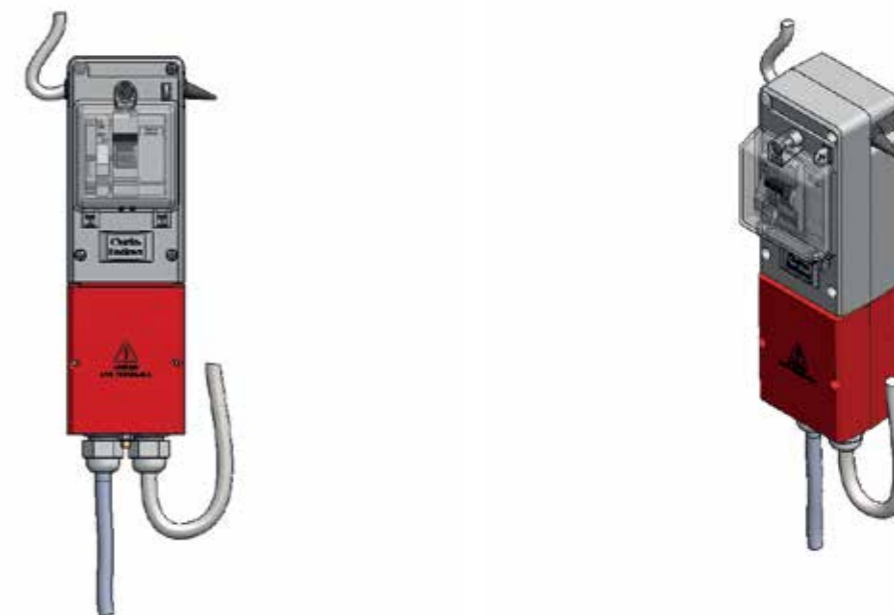


Electrical:	Rated operating voltage 230V a.c. / 24V d.c.
	Design current max 20A
Cable:	YY PVC / BS EN 50525-2-11
	2.5mm ² 5 core
	Voltage rating Uo/U 300/500V
	Temperature rating -40°C to +70°C
	Pre-wired 6000mm long
Snatch plug:	5 pin male
	Rated voltage 400V a.c.
	Rated current 20A
	Pollution degree 3
	Ingress protection IP66/68 (3m:2h)/IP69
	Dia 35mm x L 80mm
Weight:	
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4
Connection diagram:	CAD-50-0405-01
Stock Code:	CEF4080

Isolator L3/1Up

33

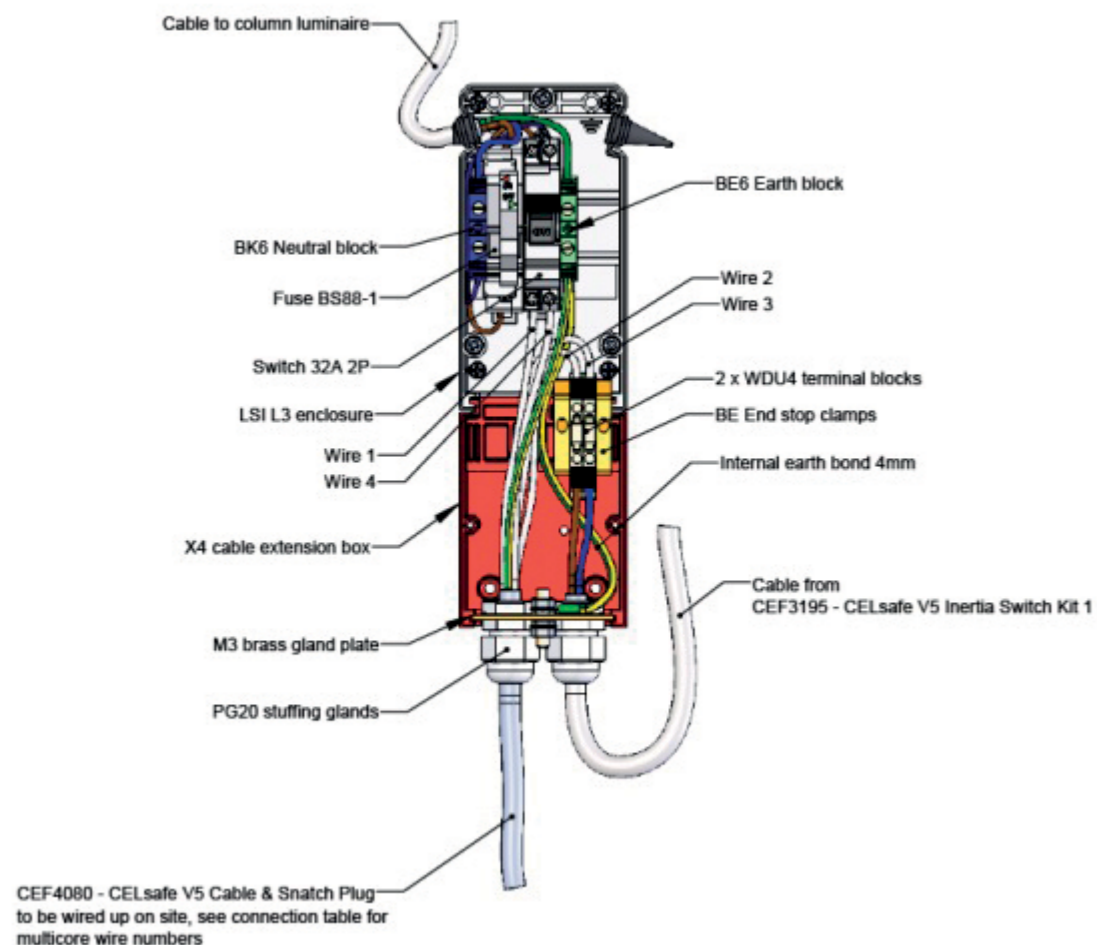
CODE: CEL3143 VERSION: 01 DATE: 12.09.2017



Electrical:	Rated operating voltage 230V a.c. 50Hz
	Rated insulation voltage Ui 690V
Components:	LSI L3 enclosure
	Switch 32A 2P (BS EN 60947-3)
	Rotary lock fuse holder BS88-1 (IEC 60269-1/2/3)
	X4 cable extension box
	Brass gland plate with earth stud
	PG20 stuffing glands
Connections:	Snatch plug cable from ground chamber
	1 upward fuse circuit to column lamp 230V a.c.
	Cable from inertia switch kit 1
Degree or protection:	IP22
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 256mm x W 79mm x D 82mm
Weight:	
Connection diagram:	CAD-04-0321-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Isolator L3/1Up – Wiring details 34

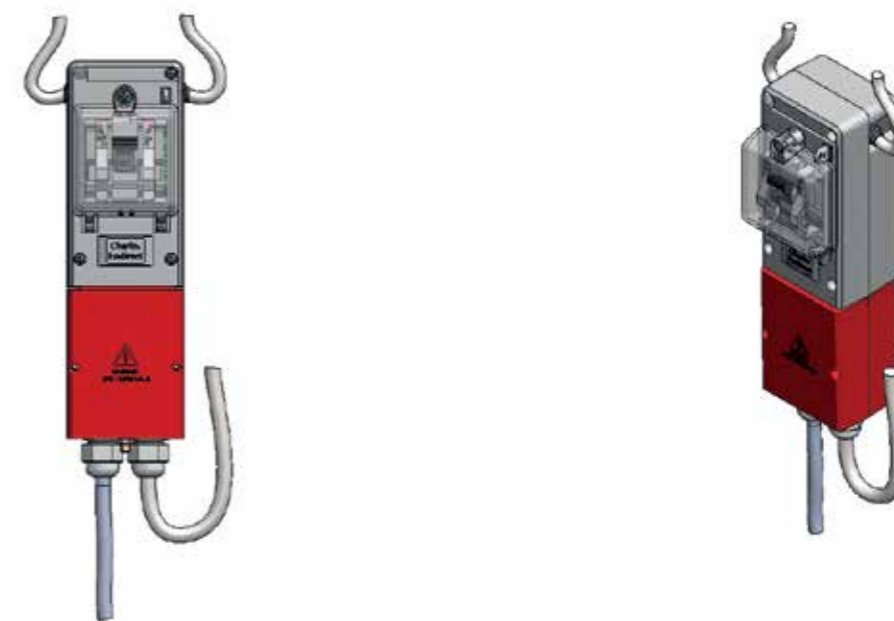
CODE: CEL3143 VERSION: 01 DATE: 12.09.2017



CONNECTION TABLE	
CABLE WIRE NO.	ISOLATOR CONNECTIONS
1	LIVE
2	Inertia switch
3	Inertia switch
4	Neutral
G/Y	Earth

Isolator L3/2Up 35

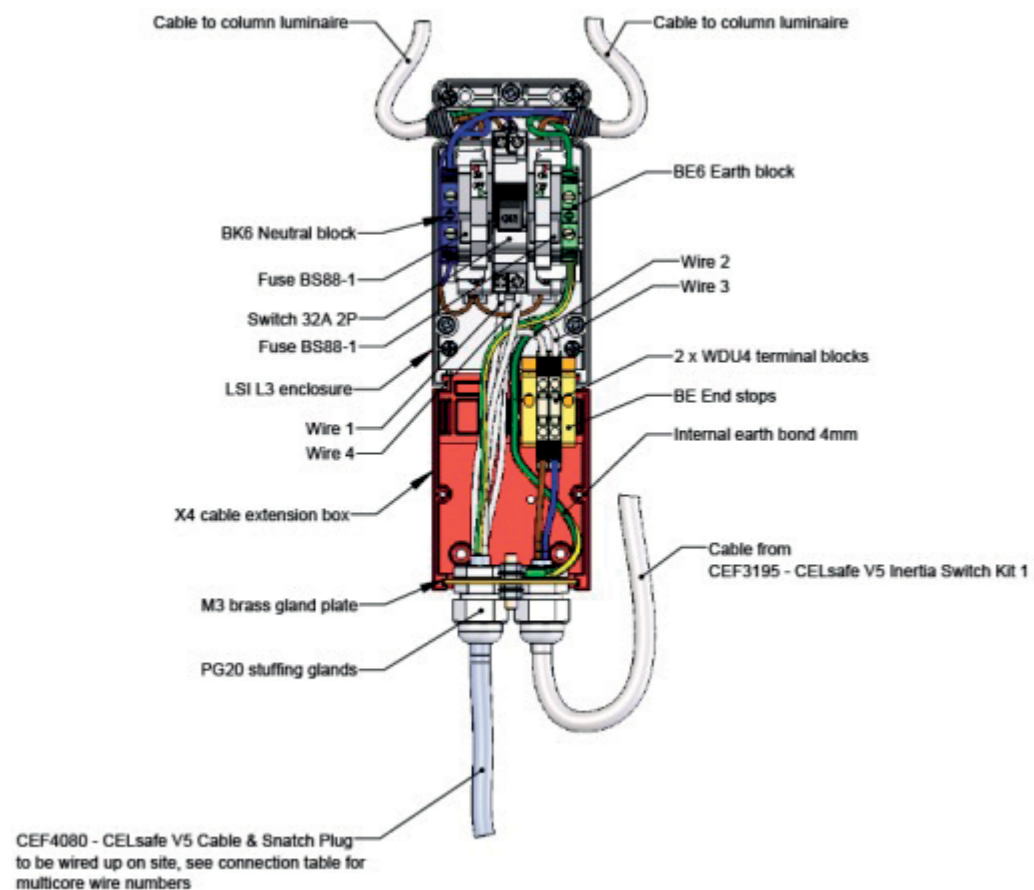
CODE: CEL3144 VERSION: 01 DATE: 12.09.2017



Electrical:	Rated operating voltage 230V a.c. 50Hz
	Rated insulation voltage Ui 690V
Components:	LSI L3 enclosure
	Switch 32A 2P (BS EN 60947-3)
	Rotary lock fuse holder BS88-1 (IEC 60269-1/2/3)
	X4 cable extension box
	Brass gland plate with earth stud
	PG20 stuffing glands
Connections:	Snatch plug cable from ground chamber
	2 upward fuse circuit to column lamp 230V a.c.
	Cable from inertia switch kit 1
Degree or protection:	IP22
Operating temperature:	-25 °C to +40 °C
Pollution degree:	3
External dimensions:	H 256mm x W 79mm x D 82mm
Weight:	
Connection diagram:	CAD-04-0322-01
Used where:	CELSafe V5 passive safety configurations 1, 3 & 4

Isolator L3/2Up – Wiring details 36

CODE: CEL3144 VERSION: 01 DATE: 12.09.2017



CONNECTION TABLE

CABLE WIRE NO.	ISOLATOR CONNECTIONS
1	LIVE
2	Inertia switch
3	Inertia switch
4	Neutral
G/Y	Earth

Passive Design 37

Charles Endirect have a design team that can take your passive requirements and produce the design and see which configuration suits your needs.

The inhouse design team will produce detailed drawings, together with schematics and any other help required. The design team will work with each customer on the project so the correct solution is met.



This is an example showing IP65 Distribution Panels for group switched lighting with electronic Passive Safety Disconnection.

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ISO 9001, ISO 14001,
ISO 45001