SafeBox™
by Henry Williams

Class II Range

Issue 2 - April 2018

Henry Williams

Introduction

Henry Williams have designed a new range of SafeBox products to meet with the changing requirements of the rail infrastructure. This includes 650V cable renewals, Class II, upgrading existing switchgear to Class II and also to comply with SIN119. This booklet is designed as an engineers and a maintainers guide to help them find the right equipment to resolve their specific issues.

SafeBox Features:

- Designed to Network Rail Class II Specification NR/L2/SIGELP/27409.
- Class II Electrically Insulated coating.
- Very robust, manufactured from steel formed/welded enclosure.
- Tested to IP4X/IP44 and Impact Resistance to IK10.
- Designed for 40 year life.
- Compatible with both Aluminium and Copper Cables.
- Most models are fitted with removable gland plates to aid main cable installation.
- Mounts on standard BRS-SM 440 rails or wooden backboard.
- Compatible with existing Legacy and Ring Circuit power supply arrangements.
- Main Spur versions also available.
- Every enclosure is factory tested to verify 3KV coating dielectric strength.
- Surge Arrestor (switched/fused) available on most models.
- Provides safe Isolation (Pad lockable OFF).
- Includes Isolation and fuse protection of functional output supplies.

Note that all connections between Class II enclosures must use cable accessories (glands, lugs, reducers etc.) in accordance with Network Rail Specification NR/L2/SIGELP27410. These accessories must be approved for use on Class II based signalling power supply systems.

SafeBox Product Approvals

Location Case Class II Power Conversion

(1) Select SafeBox from range
(FSP type, terminal sizes, footprint size, and functional outputs).

(2) Select Transformer/s or Rectifiers
(VA, or Current Rating, Class II Hybrid).

(3) Select Conduit/Glands/Fittings
(based on power cable sizes) –
Standard conduit sizes are M20, M25, M32, M40, M50, and M63.

The above numbers refer to the Location Case Class II Conversion Diagram shown right.

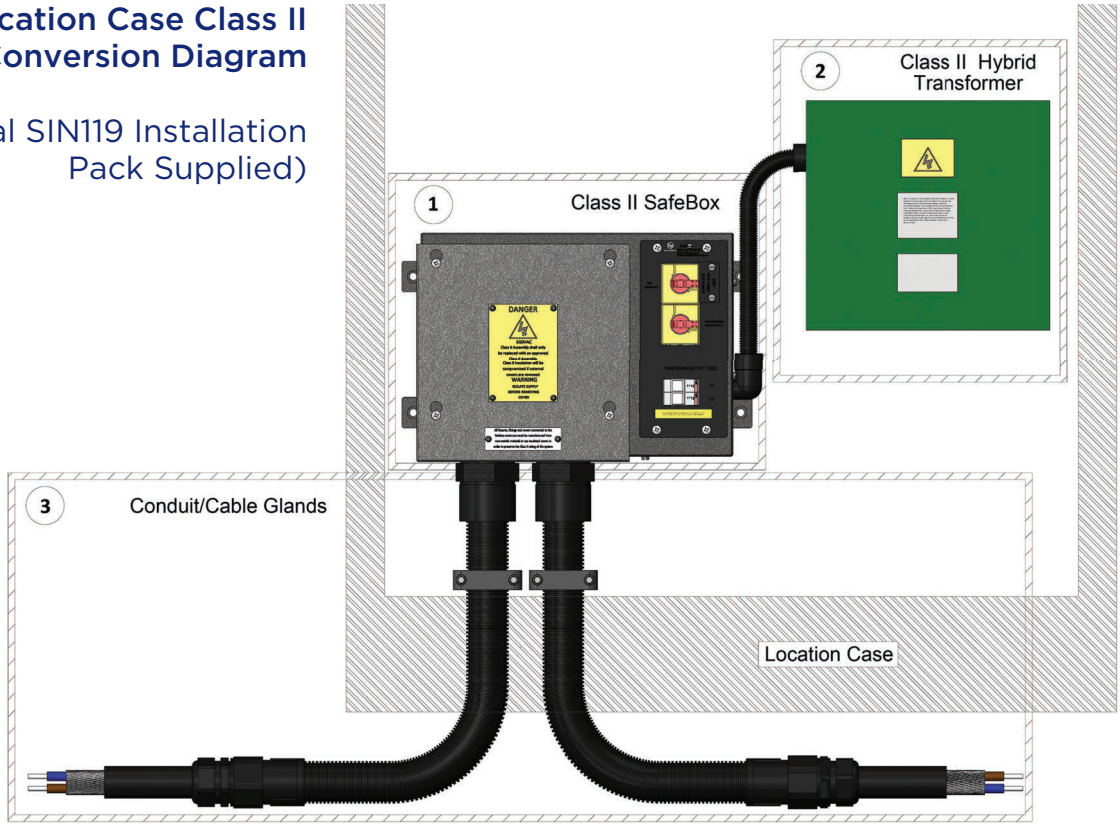
Henry Williams can assist clients with equipment selection.

We can also purchase the parts and assemble installation packs for specific projects.

Please contact us with your requirements.

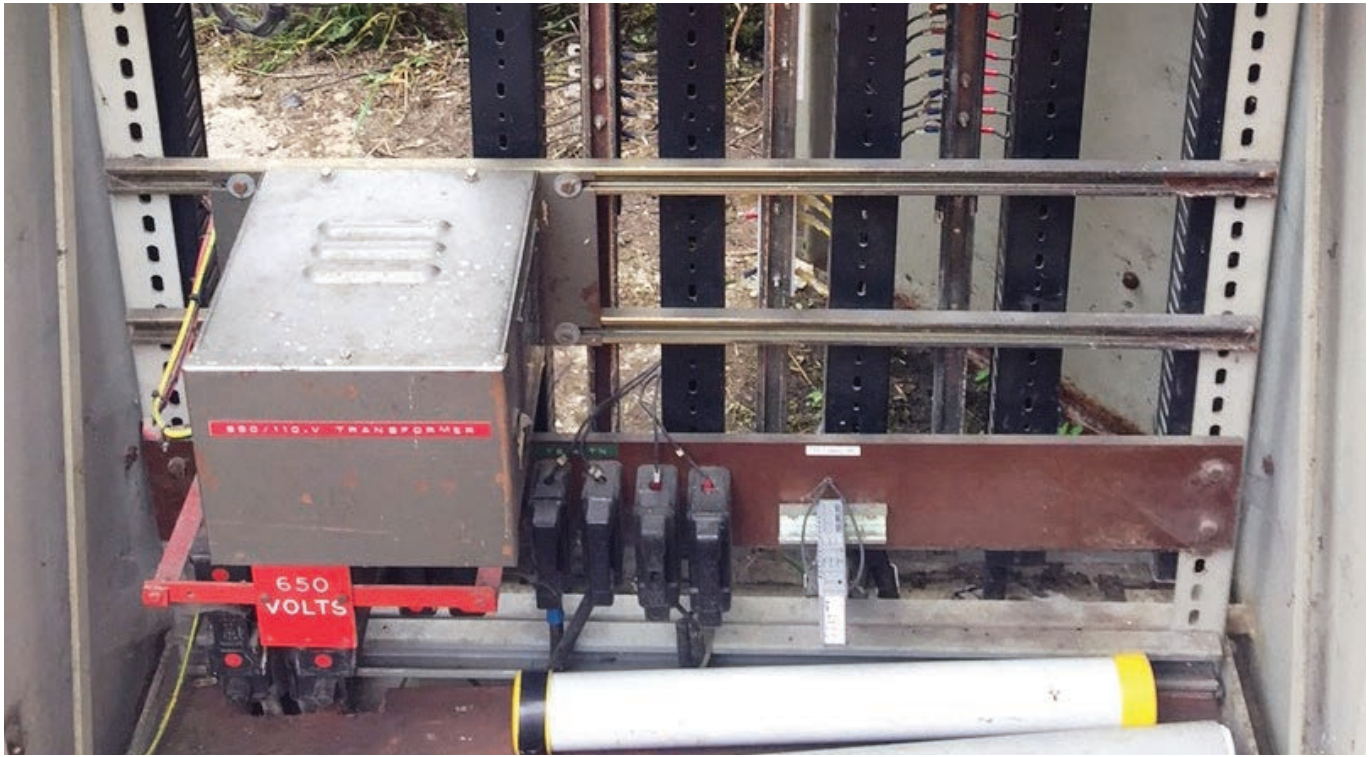
Location Case Class II Power Conversion Diagram

(Typical SIN119 Installation Pack Supplied)

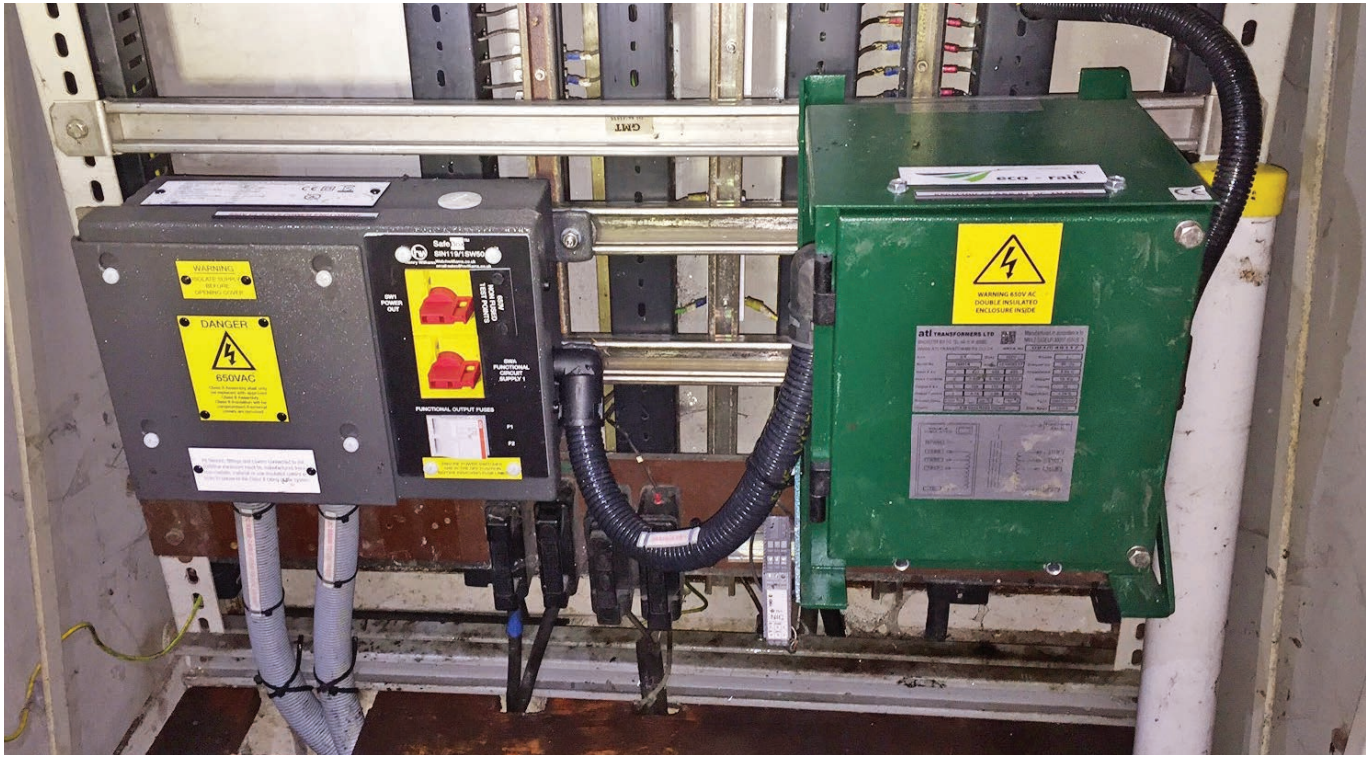


Before and After
Location Case Conversion to Class II

Before SafeBox Installation

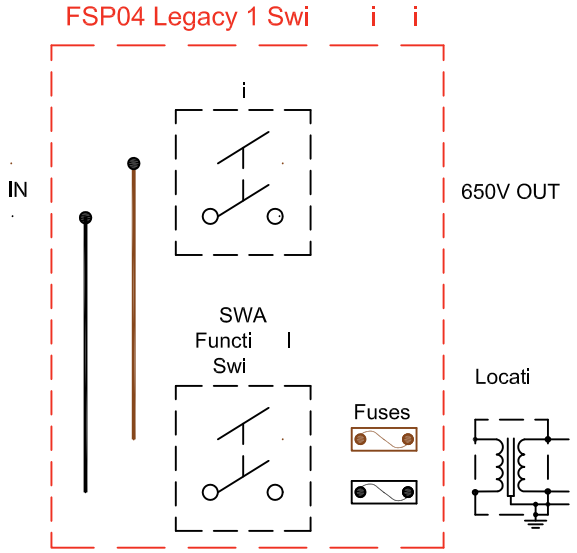


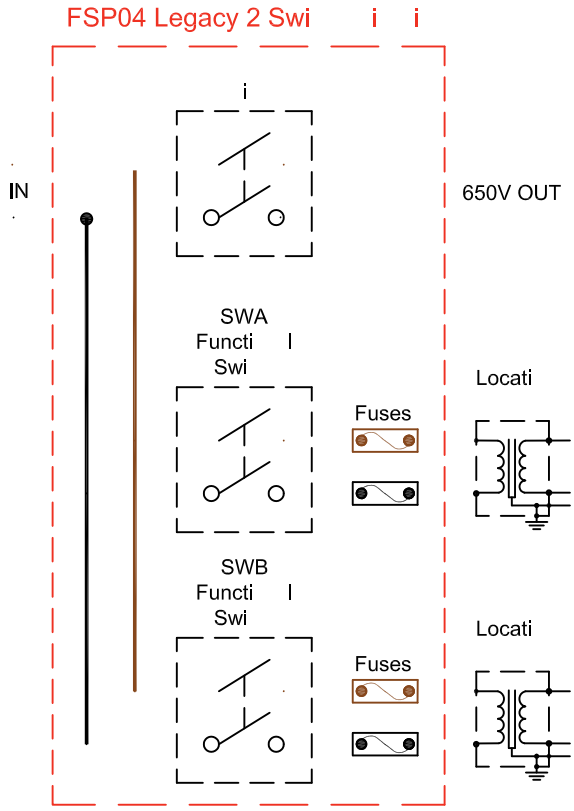
After SafeBox Installation

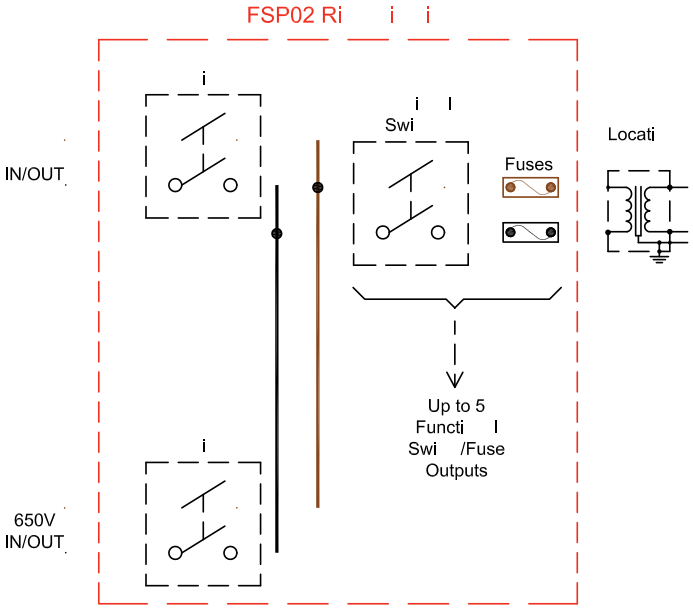


Legacy Railway Circuits

The following diagrams show the general design of Railway FSP (Functional Supply Point) Circuits as given in the Network Rail standard NR/L2/SIGELP/27409.






FSP02 Ri i i
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Fuses
Locati
IN/OUT
Up to 5
Functi l
Swi /Fuse
Outputs
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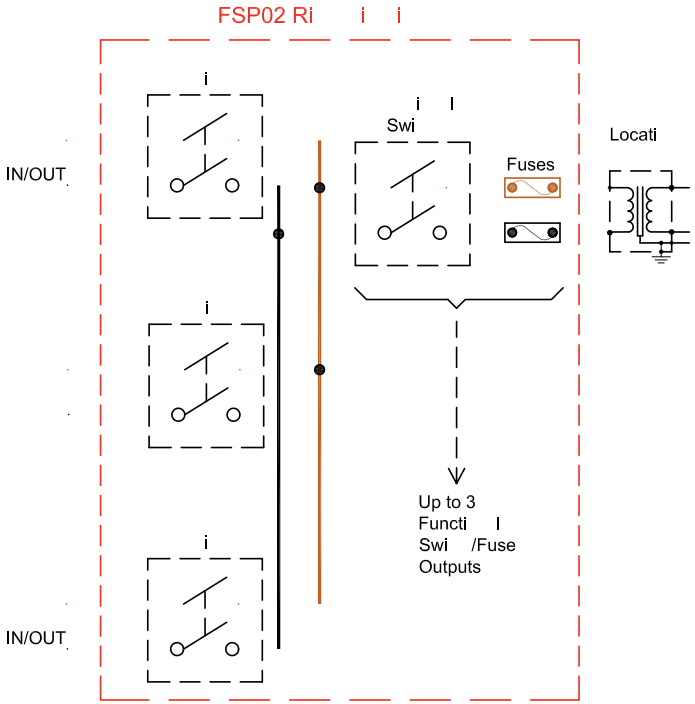
650V
IN/OUT


FSP02 Ri i i
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Fuses
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IN/OUT
i
Up to 3
Functi l
Swi /Fuse
Outputs
i
IN/OUT

SafeBox Model Reference Table

Model	PADs	FSP Type	Functional Output Supplies	Surge Arrestor Installed	Page Ref:
SafeBox 12	092/002039	FSP02	1		**12**
SafeBox 22	092/002043	FSP02	2		**12**
SafeBox 22/SA	092/002045	FSP02	1	Y	**13**
SafeBox 32	092/002047	FSP02	3		**12**
SafeBox 35/SA	092/002053	FSP02	2	Y	**13**
SafeBox 32+Spur	PA05/05297	FSP02+S	3		**14**
SafeBox 105	092/001358	FSP02	5		**15**
SafeBox 105/SA	092/001360	FSP02	5	Y	**16**
SafeBox 100+5	092/001362	N/A	5		**17**
SafeBox Compact C11	091/019324	FSP04	1		**18**
SafeBox Compact C12	091/019325	FSP02	1		**18**
SafeBox Compact C22	091/019327	FSP02	2		**18**
SafeBox Compact C22/SA	091/019319	FSP02	1	Y	**19**
SafeBox Compact C32	091/019320	FSP02	3		**18**
SafeBox Compact C32/SA	091/019321	FSP02	2	Y	**19**
SafeBox Compact C32+Spur	PA05/06439	FSP02+S	3		**20**
SafeBox Mini 21	PA05/06439	FSP02	1		**21**

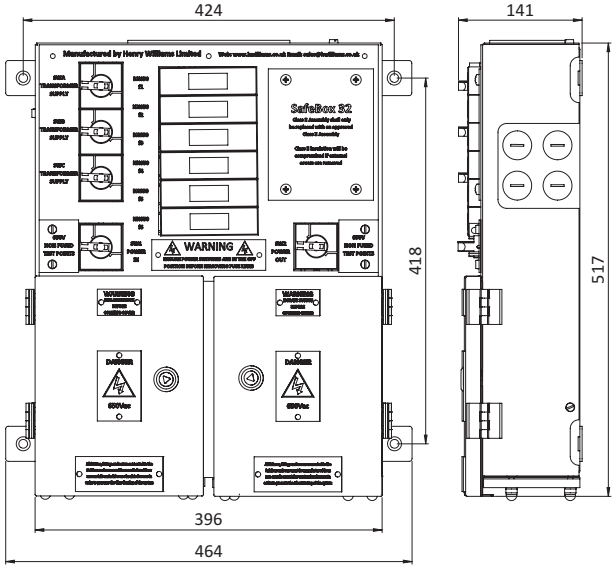
Model	PADs	FSP Type	Functional Output Supplies	Surge Arrestor Installed	Page Ref:
SafeBox Legacy SL11/C	091/019322	FSP04	1		**22**
SafeBox Legacy SL22/4AC	PA05/06505	FSP02	1		**23**
Legacy Connect Power Annexe (500VA to 3,000VA)	0054/212938 to 0054/212942	FSP04 Legacy Circuit	1		**24 & 25**
Legacy Connect Power Annexe (500VA to 3,000VA)	0054/212943 to 0054/212947	FSP02 Ring Circuit	1		**24 & 25**
SafeBox SIN119/1SW50	0091/001915	FSP04	1		**26**
SafeBox SIN119/2SW50	0091/001916	FSP04	2		**27**
SafeBox SIN119/1SW50R	0091/001917	FSP02	1		**28**
SafeBox SIN119/1SW95	0091/001918	FSP04	1		**29**
SafeBox SIN119/2SW95	0091/001919	FSP04	2		**30**
SafeBox SIN119/1SW95R	0091/001920	FSP02	1		**31**
SafeBox SIN119/1SW120	0091/001921	FSP04	1		**32**
SafeBox SIN119/2SW120	0091/001922	FSP04	2		**33**
SafeBox SIN119/1SW120R	0091/001923	FSP02	1		**34**

SafeBox 32

PADS Ref: 092/002047

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 3 functional output supplies.
- Fuse carriers: BS88.
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plates.
- Choice of terminals and fuses.
- Gland plate to terminal distance: 150mm

The above model is also available with 1 (SafeBox 12) or 2 (SafeBox 22) functional output supplies.



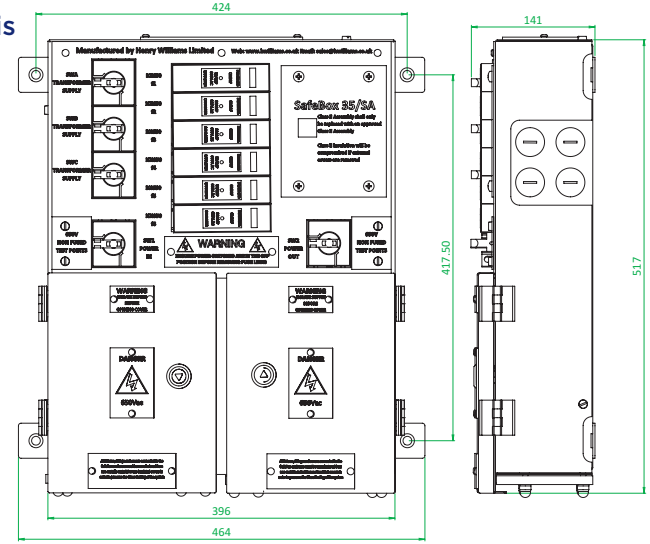
Main Terminal Arrangement

SafeBox 35/SA

PADS Ref: 092/002053

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 2 functional output supplies.
- Approved internal Surge Arrestor (switched/fused).
- Fuse carriers: BS88.
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plates.
- Choice of terminals and fuses.
- Gland plate to terminal distance: 150mm

The above model is also available with 1 (SafeBox 22/SA) functional output supply.

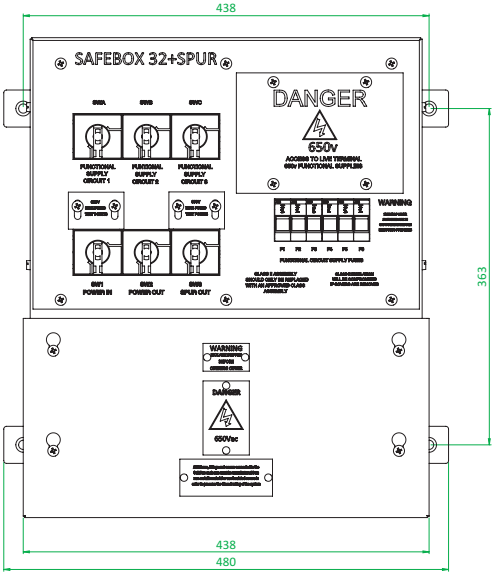


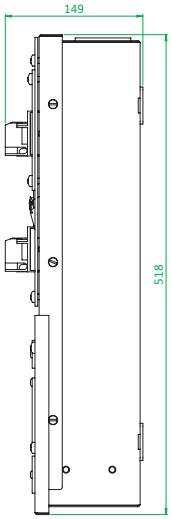
Main Terminal Arrangement

SafeBox 32 + Spur

PADS Ref: PA05/05297

- Class II Distribution Unit (690V rated).
- Power IN/OUT & SPUR with 3 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables 6 to 95mm^2.
- Ring Circuit (FSP01/02) + Spur (6 to 95mm^2).
- Removable gland plate.
- Choice of terminals and fuses.
- Gland plate to terminal distance: 117mm



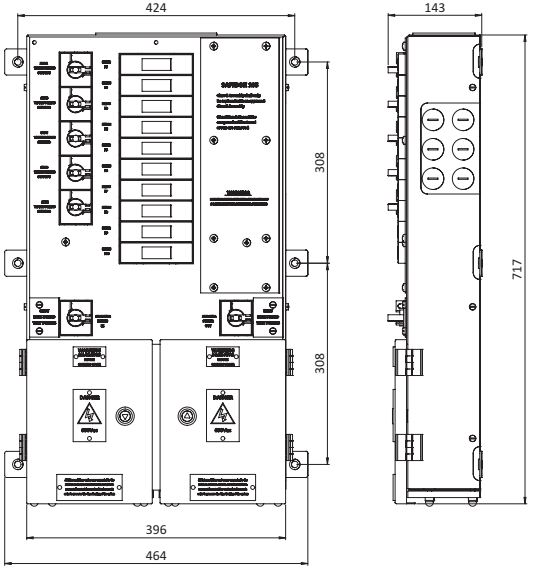


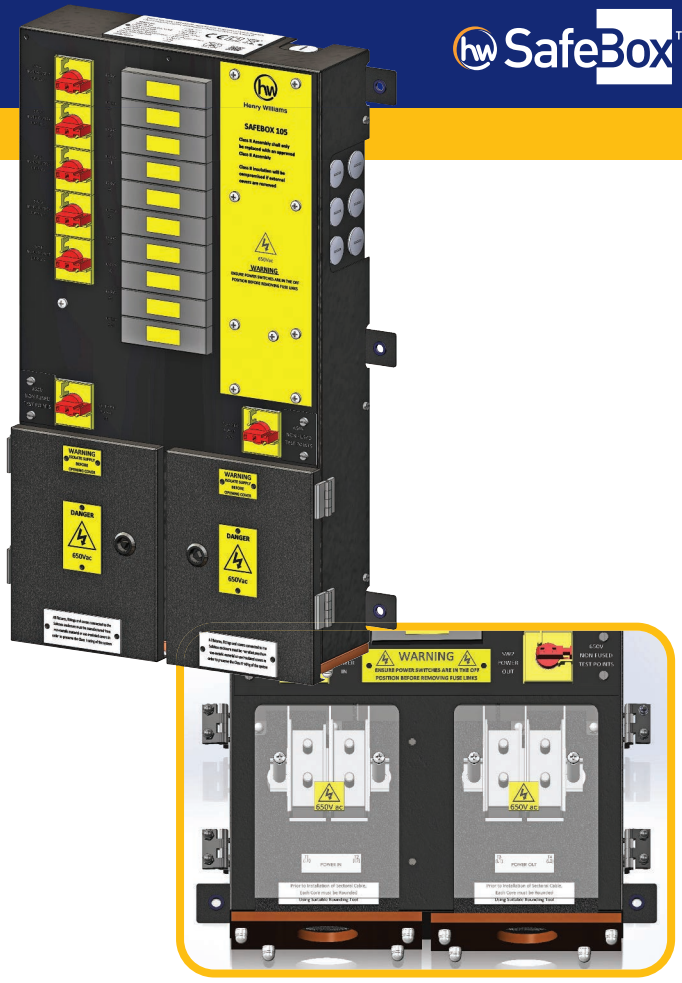
Main Terminal Arrangement

SafeBox 105

PADS Ref: 092/001358

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 5 functional output supplies.
- Fuse carriers: BS88.
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plates.
- Gland plate to terminal distance: 150mm



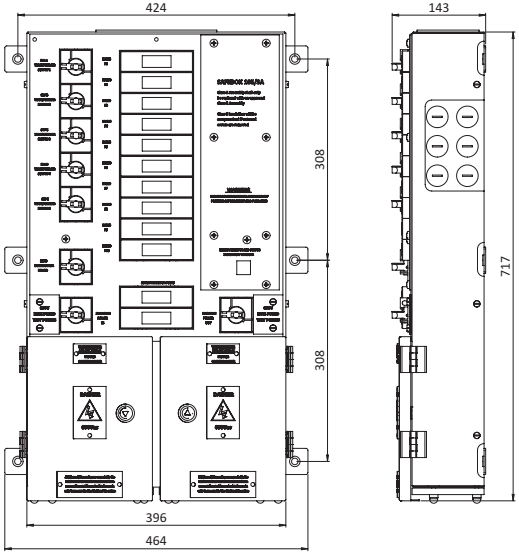


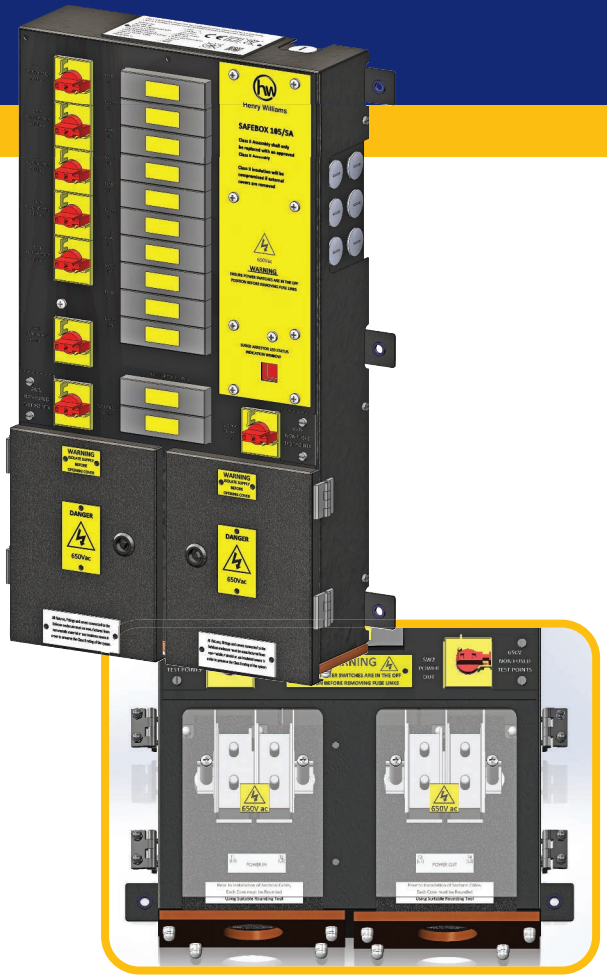
Main Terminal Arrangement

SafeBox 105/SA

PADS Ref: 092/001360

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 5 functional output supplies.
- Approved internal Surge Arrestor (switched/fused).
- Fuse carriers: BS88.
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plates.
- Gland plate to terminal distance: 150mm



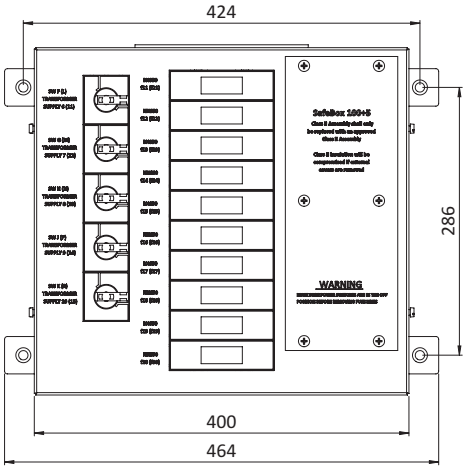


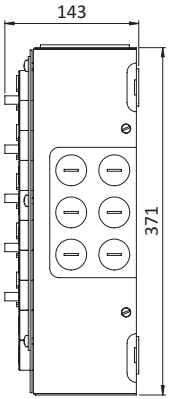
Main Terminal Arrangement

SafeBox 100+5

PADS Ref: 092/001362

- Class II Distribution Unit (690V rated).
- Connects to 105 or 105/SA models to give an extra 5 functional output supplies.
- Fuse carriers: BS88.
- Attachment brackets included.



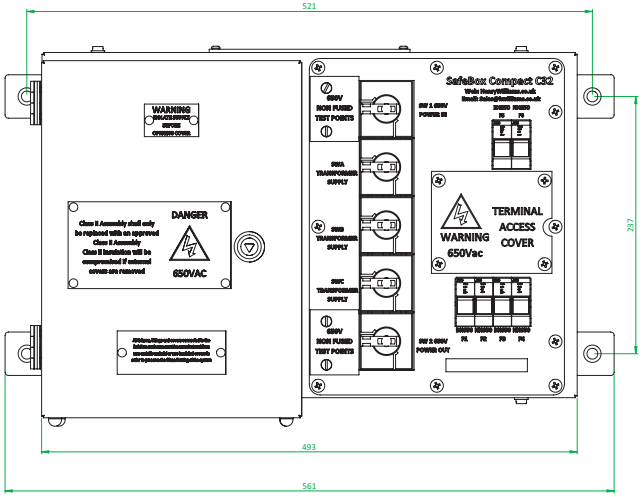


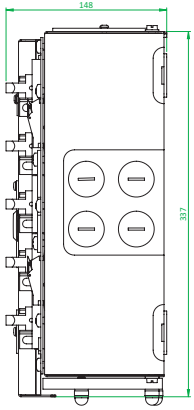
SafeBox Compact C32

PADS Ref: 091/019320

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 3 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plate.
- Gland plate to terminal distance: 180mm

The above model is also available with 1 (SafeBox C11) or 2 (SafeBox C22) functional output supplies.





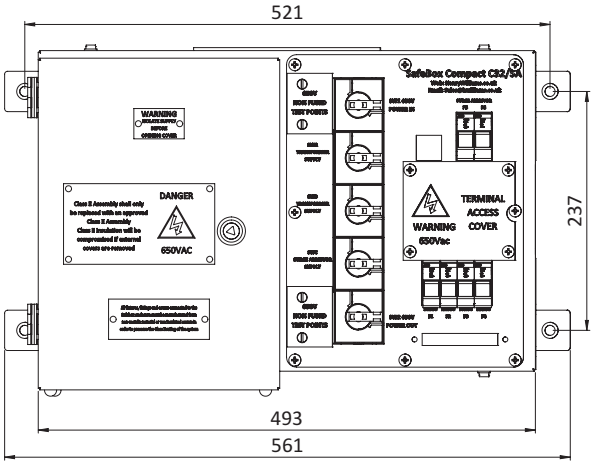
Main Terminal Arrangement

SafeBox Compact C32/SA

PADS Ref: 091/019321

- Class II Distribution Unit (690V rated).
- Power IN/OUT with 2 functional output supplies.
- Approved internal Surge Arrestor (switched/fused).
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02).
- Removable gland plate.
- Gland plate to terminal distance: 180mm

The above model is also available with 1 (SafeBox C22/SA) functional output supply.

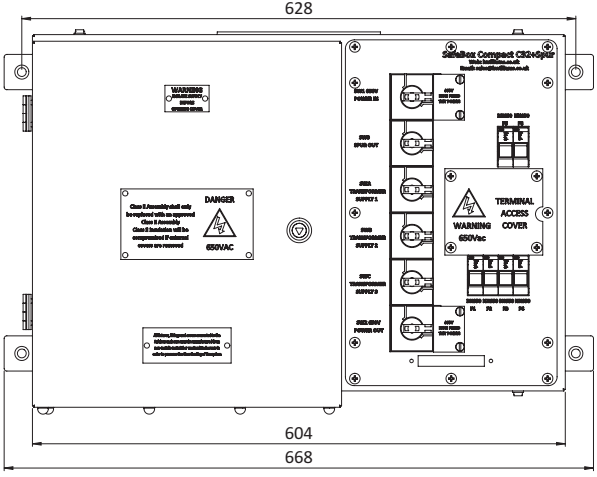


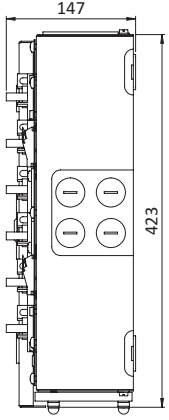
Main Terminal Arrangement

SafeBox Compact C32 + Spur

PADS Ref: PA05/06439

- Class II Distribution Unit (690V rated).
- Power IN/OUT & SPUR
  with 3 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit (FSP01/02) + Spur
  feed out (6 to 120mm^2).
- Removable gland plate.
- Gland plate to terminal distance: 265mm



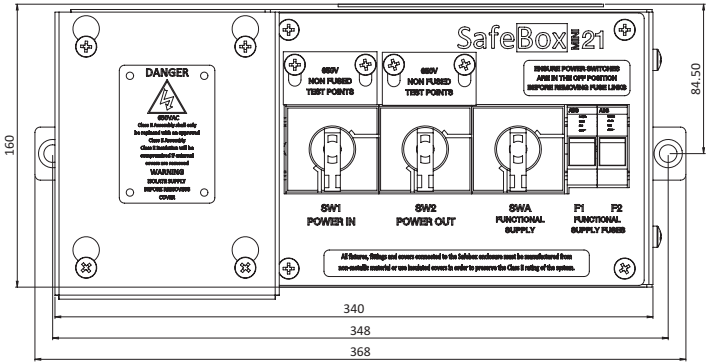


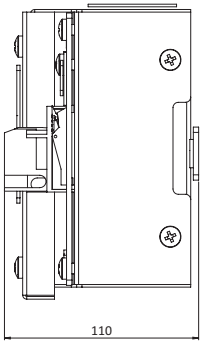
Main Terminal Arrangement

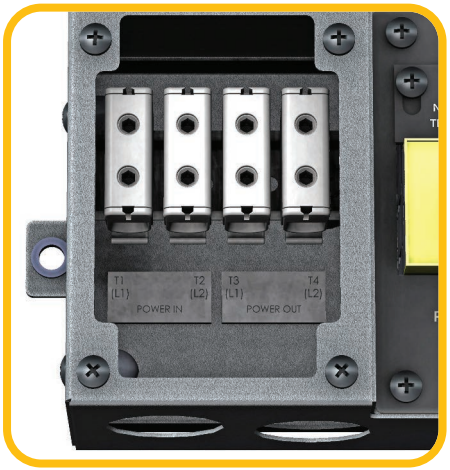
SafeBox Mini 21

PADS Ref: PA05/06439

- Smallest footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT with 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables up to 50mm².
- Ring Circuit (FSP01/02).
- Gland holes to terminal distance: 70mm





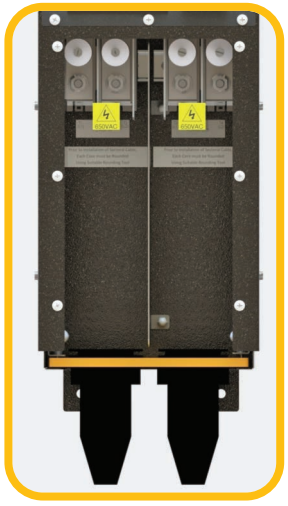


Main Terminal Arrangement

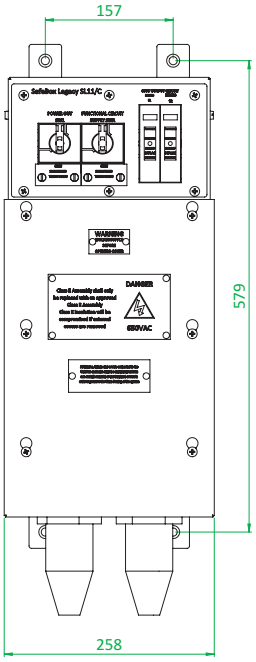
SafeBox Legacy Connect SL11/C

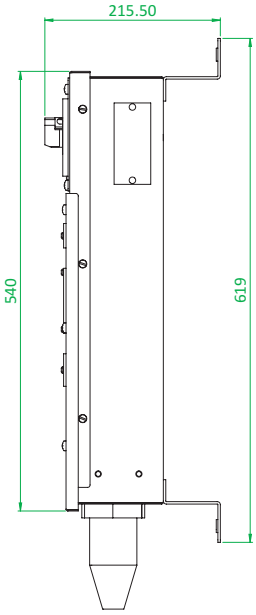
PADS Ref: 091/019322

- Designed to fit inside the Legacy Connect Annexe
- Class II Distribution Unit (690V rated).
- Power IN/OUT with 1 functional output supply.
- Fuse carriers: BS88 (Compact A1).
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Gland plate to terminal distance: 307mm
- Legacy Circuit (FSP04).
- Sliding gland plate.



Main Terminal Arrangement

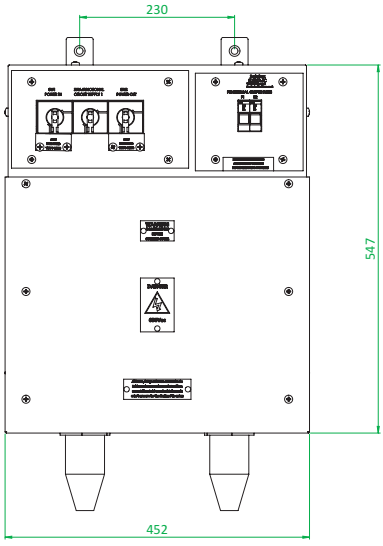


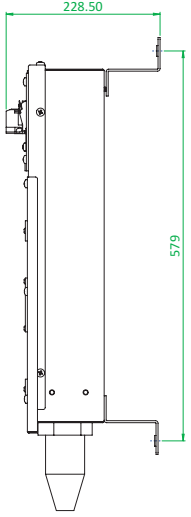


SafeBox Legacy Connect SL22/A4C

PADS Ref: PA05/06505

- 2 or 4-core IN & OUT Power Cables
- Class II Distribution Unit (690V rated).
- Designed to fit inside the Legacy Connect Annexe
- 1 functional output supply to TX.
- Fuse carriers: IEC 60269 (10 x 38mm).
- (Cu) or (Al) Feeder Cables 6 to 120mm^2.
- Ring Circuit Configuration (FSP02).
- Sliding gland plates.
- Gland plate to terminal distance: 280mm





Main Terminal Arrangement

FSP02 & FSP04 CLASS II (LEGACY) SafeBox Legacy Connect (Power Annexe) Range

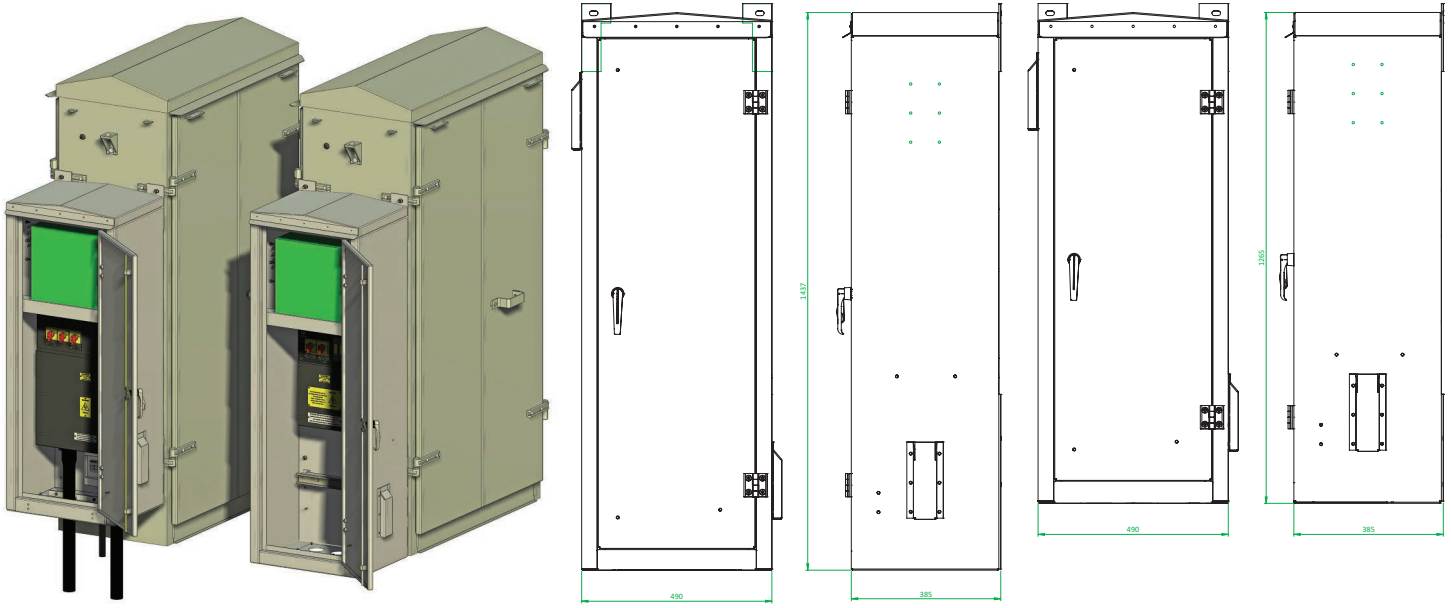
with one functional 110V switched/fused supply (various KVA ratings – see table below).

Model	VA Rating	FSP Type	PADS No.
LC0.51	500	FSP04 Legacy	0054/212938
LC1.01	1,000	FSP04 Legacy	0054/212939
LC1.51	1,500	FSP04 Legacy	0054/212940
LC2.01	2,000	FSP04 Legacy	0054/212941
LC3.01	3,000	FSP04 Legacy	0054/212942
LC20.51	500	FSP02 Ring	0054/212943
LC21.01	1,000	FSP02 Ring	0054/212944
LC21.51	1,500	FSP02 Ring	0054/212945
LC22.01	2,000	FSP02 Ring	0054/212946
LC23.01	3,000	FSP02 Ring	0054/212947

The “FSP02 Ring” versions are suitable for 2 core or 4 core (Aluminium or Copper) cables up to 120mm^2. These annexe models are internally fitted out with a SafeBox SL22/4AC.

Complete enclosure assembly in painted 3mm aluminium with the following features;

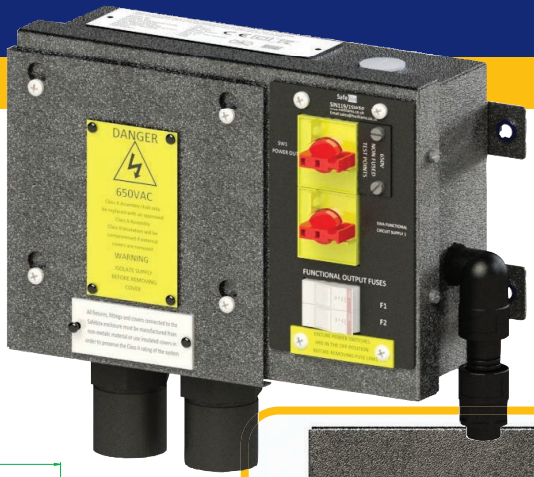
- Mounted to existing location case (side). No base required.
- Ingress Tested to IP54, Impact tested to IK10.
- Class II switchgear/termination enclosure with Isolation Switches (690VAC 80A rated).
- Incoming feeder cable size 6 to 120mm^2 Cu or Al.
- Integrated cable clamping bar and pre-punched base plate.
- BS88 fuse protection for Transformer Primary.
- Outgoing 110V functional supply cable sizes 0.5 - 10mm^2.
- Internal fully-enclosed (NR approved) Hybrid Class II Transformer (VA Rating as table shown).

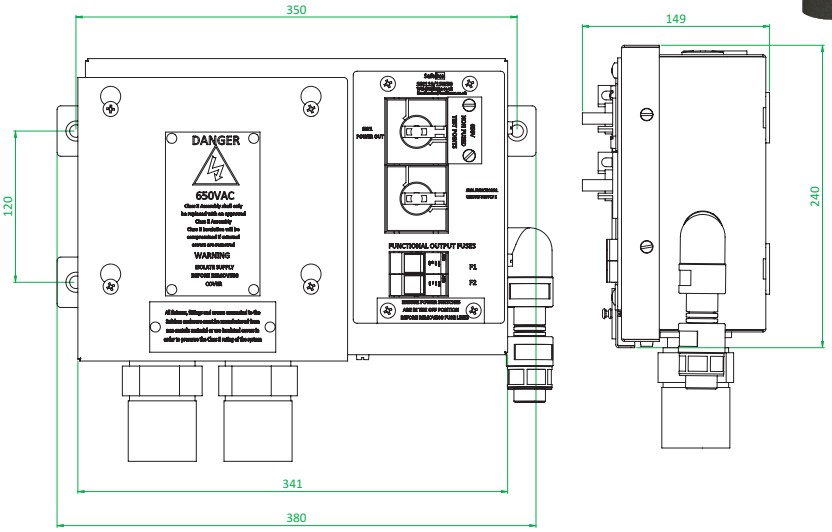

1437
490
385
490
1265
385

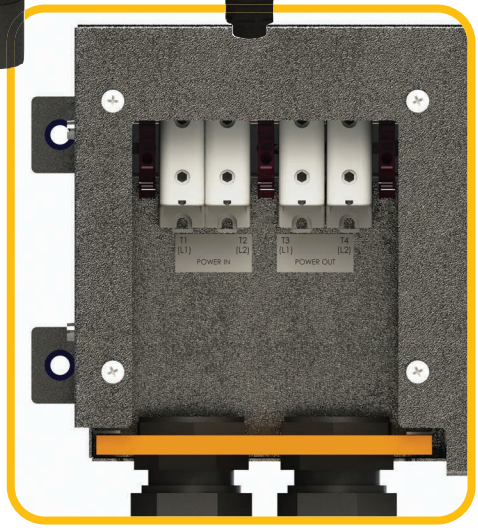
SafeBox SIN119/1SW50

PADS Ref: 0091/001915

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables 2.5(Cu)/6.0(Al) to 50mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 126mm





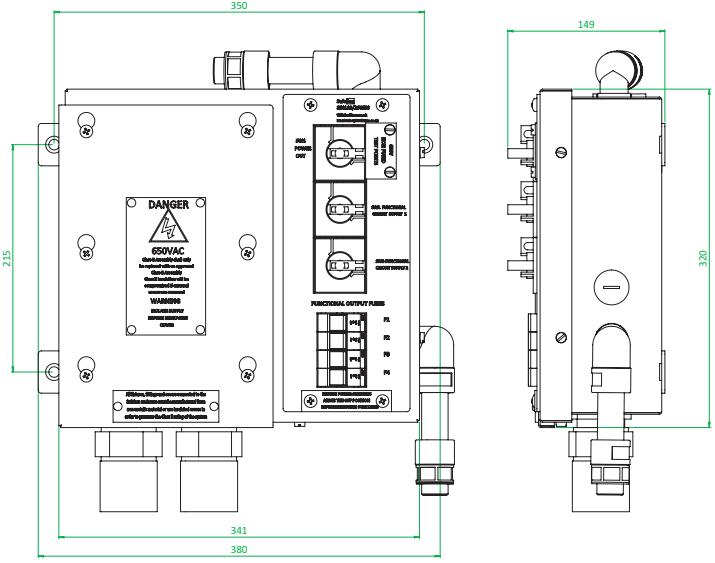


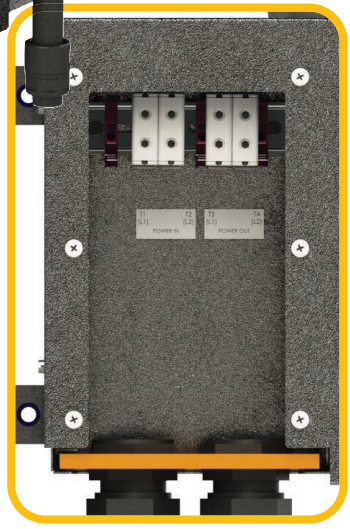
Main Terminal Arrangement

SafeBox SIN119/2SW50

PADS Ref: 0091/001916

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 2 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables 2.5(Cu)/6.0(Al) to 50mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 196mm



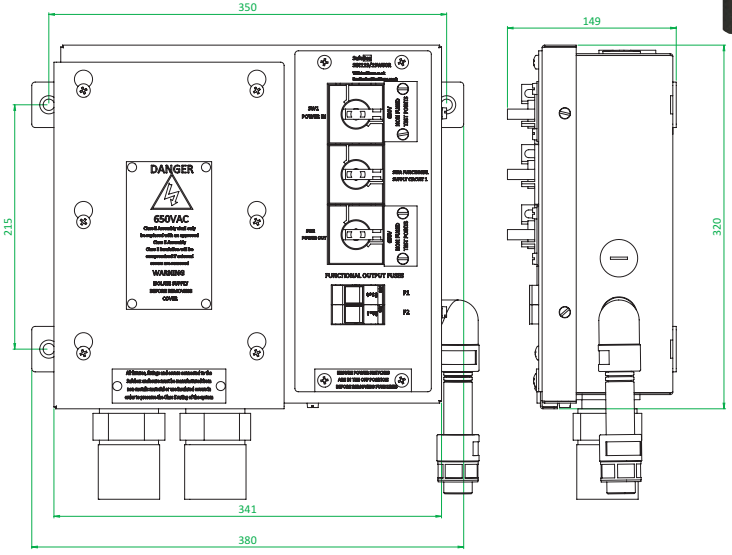


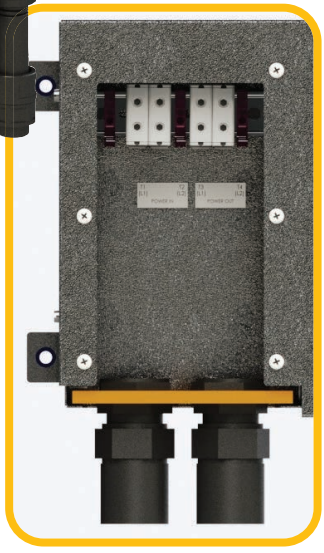
Main Terminal Arrangement

SafeBox SIN119/1SW50R

PADS Ref: 0091/001917

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables 2.5(Cu)/6.0(Al) to 50mm^2.
- Ring Circuit (FSP02).
- Sliding gland plate.
- Gland plate to terminal distance: 196mm



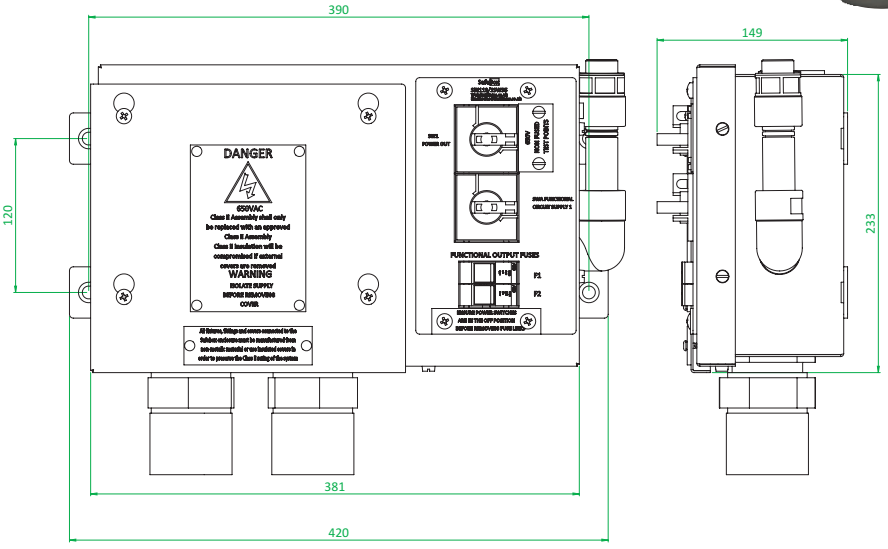


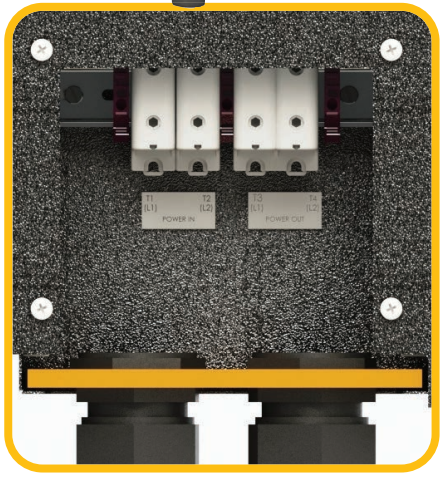
Main Terminal Arrangement

SafeBox SIN119/1SW95

PADS Ref: 0091/001918

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 16 to 95mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 126mm



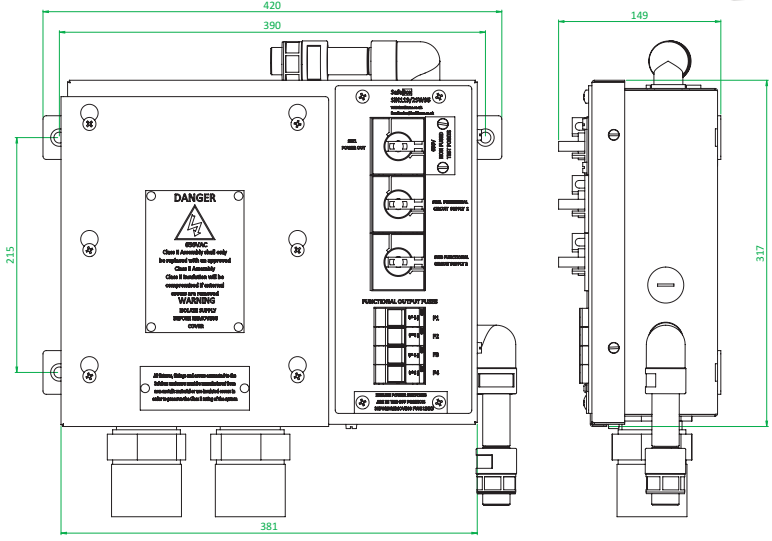


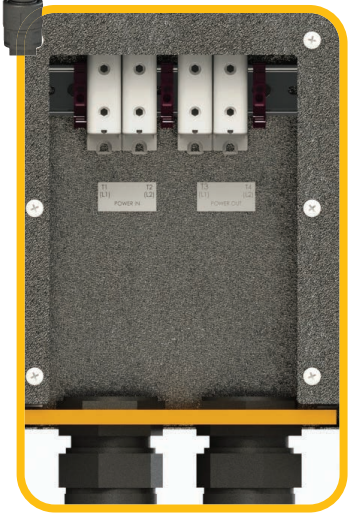
Main Terminal Arrangement

SafeBox SIN119/2SW95

PADS Ref: 0091/001919

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 2 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 16 to 95mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 196mm



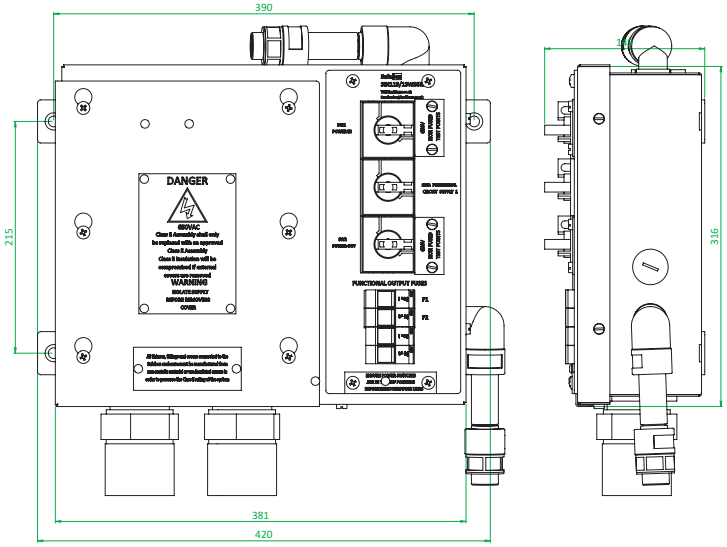


Main Terminal Arrangement

SafeBox SIN119/1SW95R

PADS Ref: 0091/001920

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 16 to 95mm^2.
- Ring Circuit (FSP02).
- Sliding gland plate.
- Gland plate to terminal distance: 196mm

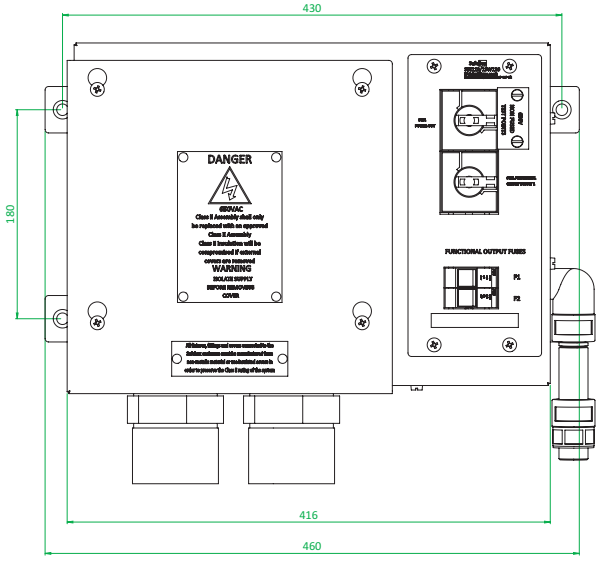


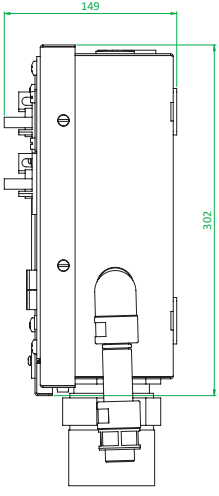
Main Terminal Arrangement

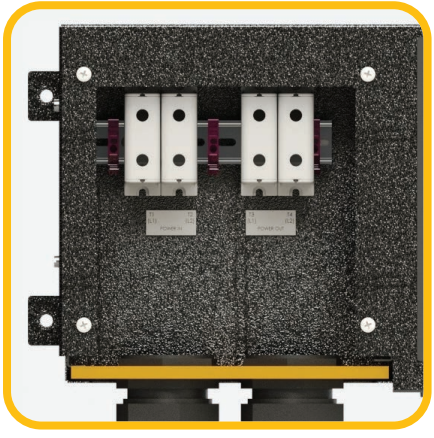
SafeBox SIN119/1SW120

PADS Ref: 0091/001921

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 35 to 120mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 153mm





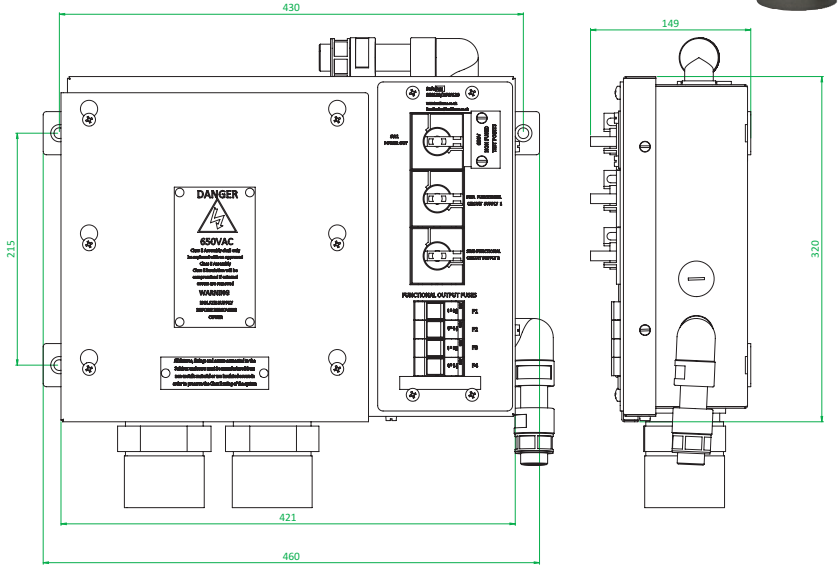


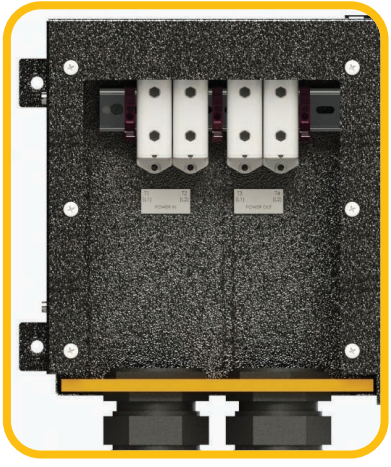
Main Terminal Arrangement

SafeBox SIN119/2SW120

PADS Ref: 0091/001922

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 2 functional output supplies.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 35 to 120mm^2.
- Legacy Circuit (FSP04).
- Sliding gland plate.
- Gland plate to terminal distance: 186mm



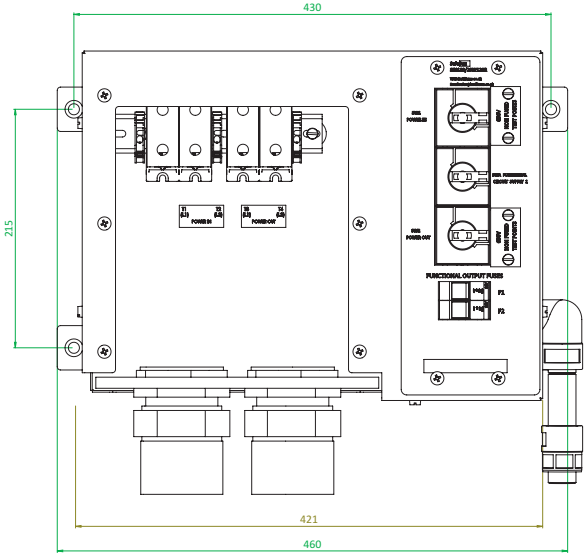


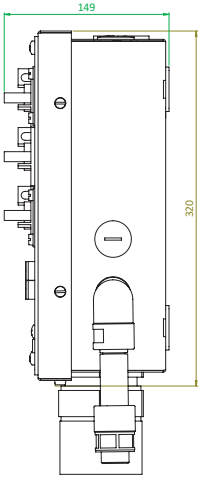
Main Terminal Arrangement

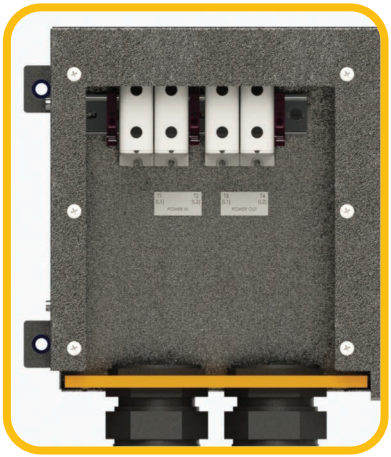
SafeBox SIN119/1SW120R

PADS Ref: 0091/001923

- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel type terminals).
- 1 functional output supply.
- Fuse carriers: IEC 60269 (10 x 38mm).
- Feeder Cables (Cu) or (Al) 35 to 120mm^2.
- Ring Circuit (FSP02).
- Sliding gland plate.
- Gland plate to terminal distance: 186mm





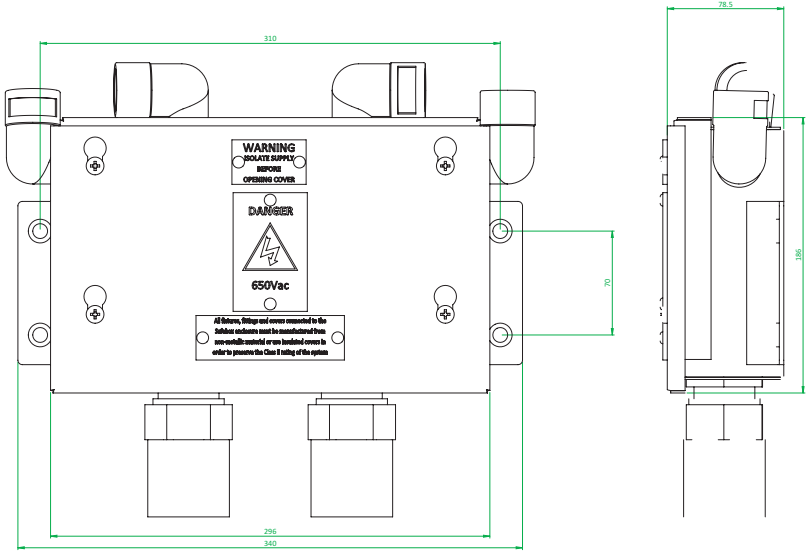


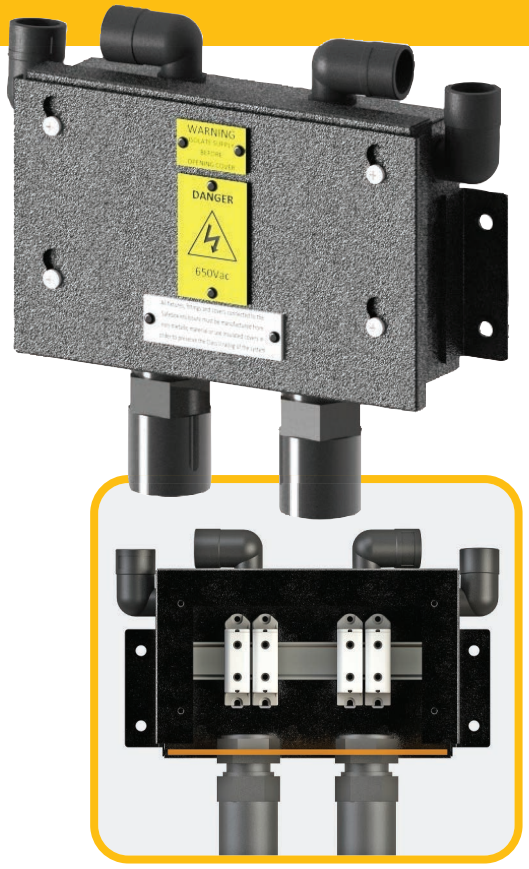
Main Terminal Arrangement

SafeBox Legacy Terminal Box SIN119/LT1

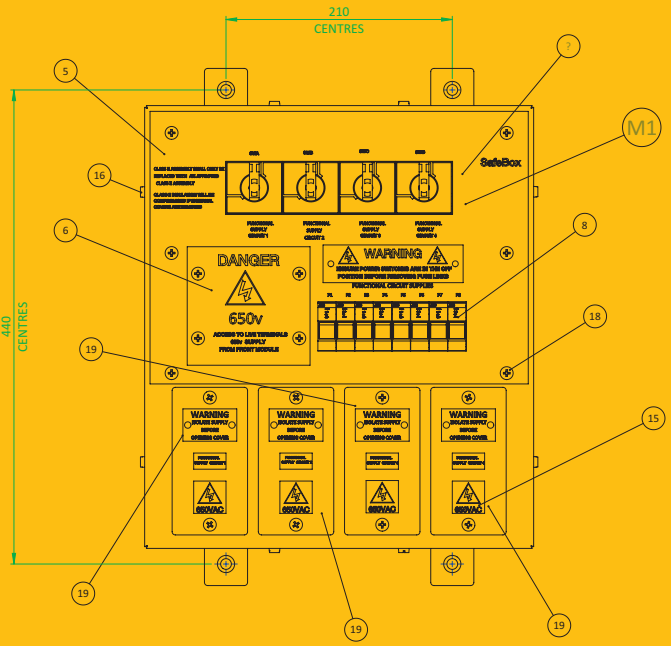
PADS Ref: PA05/06439

- Small size fits within Legacy 650V fuse holder cover footprint for safe termination of original cables.
- Small footprint for legacy retrofit use.
- Class II Distribution Unit (690V rated).
- Power IN/OUT (Tunnel or Stud type terminals).
- Distances gland plate to Stud (59mm) to Tunnel (79mm).
- Feeder Cables (Cu) or (Al) 6 to 120mm^2.
- Sliding gland plate.





Main Terminal Arrangement



At Henry Williams we design, manufacture, and test each of our products in-house. We can therefore offer our clients bespoke products to meet specific requirements if necessary. **Contact our Sales Team for further details.**

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