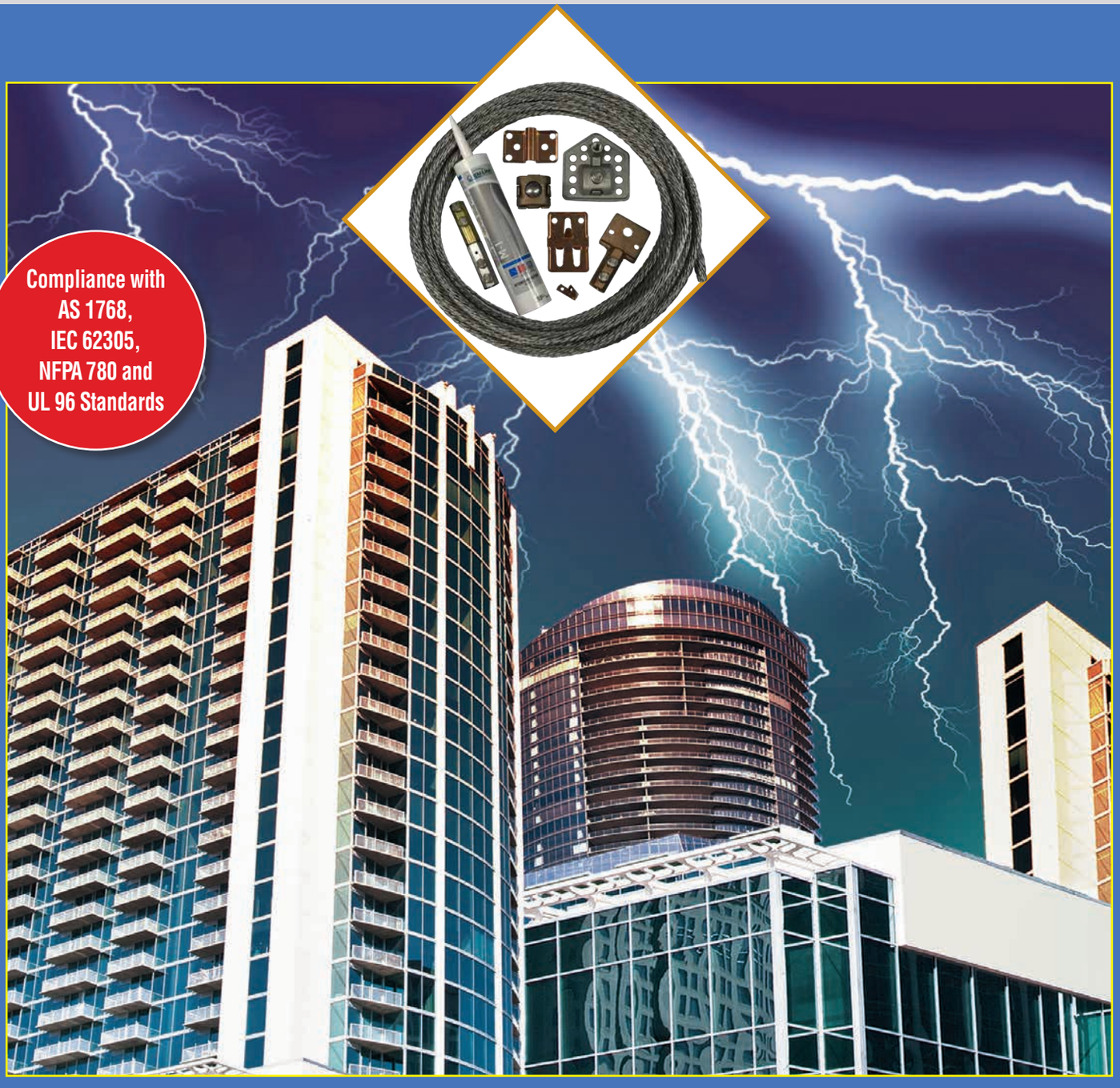
LIGHTNING PROTECTION INTERNATIONAL PTY LTD

CONVENTIONAL LIGHTNING PROTECTION SYSTEM



Compliance with AS 1768, IEC 62305, NFPA 780 and UL 96 Standards

Comprehensive Lightning, Surge Protection & Earthing Solutions **www.lpi.com.au**

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EARTHING & BONDING COMPONENTS

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LPI® LIGHTNING PROTECTION INTERNATIONAL PTY LTD

The LPI story

Lightning Protection International Pty Ltd (LPI) is a fully Australian owned designer, manufacturer and supplier of direct strike lightning protection, surge and transient protection, and earthing / grounding solutions.

LPI has provided specialist lightning protection advice to customers for many years in some of the most lightning-prone areas of the world. LPI personnel have extensive experience in risk management, system design, training, installation, certification, and commissioning of lightning protection systems in a wide variety of industry groups.

LPI maintains a third party Quality Management System to AS/NZS ISO 9001:2015.

LPI's range of products and services are exported from its head office and research facility (in Tasmania, Australia) and via regional offices worldwide.

The company has been recognised within Australia for its outstanding export successes and has been awarded several prestigious export awards.

LPI' s 4-Step Approach to Lightning Protection

It is the strategic aim of our company to be able to provide a complete packaged solution. LPI has identified 4 key steps when considering the complete approach to lightning protection.

Our comprehensive approach to lightning protection includes:

1. Protect critical assets against direct lightning strikes.
2. Protect equipment against incoming surges and transients
3. Provide a low impedance reference earth and bond all conductive elements to minimise voltage differences.
4. Protect people.

Active in Industry

LPI's Technical Capabilities

LPI's staff have been providing specialist lightning protection advice to customers worldwide, especially in the most lightning prone areas of the world. Using LPI's four-step approach to lightning protection, our engineers and consultants work together with clients and contractors to conduct site surveys, risk assessments and system designs in all industry sectors. Clients are provided with cost-effective and reliable recommendations for minimising the risks posed by lightning.

LPI has always maintained a strong commitment to research and development in order to better understand the lightning process and to be a world leader in innovative products for the lightning protection market.

This commitment has led to significant enhancements in the design and manufacture of all our products.

LPI's Australian-based manufacturing facility has a comprehensive test laboratory equipped with a high impulse current generator for testing manufactured products in compliance with international standards. LPI has conducted extensive high voltage testing of products in independently accredited laboratories in Australia and overseas, as well as engaging in collaborations with Australian-based universities to pursue product testing and field trials.

EXPORT AWARD WINNER

TASMANIAN EXPORT AWARDS 2019 winner

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Certified Product Australian Standard

Approvals: IEEE UL IEC

Introduction to Conventional Protection

Direct-strike lightning protection systems (LPS) can be divided into two broad categorisations, namely "conventional" and "non-conventional". LPI engages in the R&D, design, manufacture and sale of both types of systems in order to ensure that customers can receive the type of system they desire and also that the right system can be recommended for the customer's particular application and circumstances.

Conventional LPS can be divided into two categories, namely "traditional" and "modern". A traditional system uses components that require screwing and bolting onto the structure that it is protecting. A modern system allows "non-roof-penetrating" (NRP) installation via specially-designed components and the application of a strong structural adhesive.

Commensurate with its desire to provide the highest level of customer service and satisfaction, LPI is pleased to launch its new range of NRP conventional lightning protection products. It has partnered with ECLE, a high-quality component manufacturer from the USA, for completing the NRP range. All products have been engineered to maximise versatility and appearance without compromising mechanical strength or electrical performance when handling lightning strikes.

LPI's new range of conventional lightning protection products have the following features and advantages:

- All components and systems comply with AS 1768, IEC 62305, IEC 62561, NFPA 780 and UL96
- UL-approved smooth weave conductor that is flexible enough to route around all structural features, significantly reducing the number of components required
- NRP design avoids potential water ingress into structures over time
- Quality materials with excellent corrosion resistance
- Overall, the NRP and smooth weave conductor system design lower the cost of installations by 50-70%

FAQ

1. **Why should I use a woven conductor?**

   LPI's smooth weave conductor (available in aluminium and tinned copper) is extremely flexible, does not kink and is easy to handle. It makes installation of the conventional LPS much easier.

2. **What sort of lightning rod should I use – sharp or blunt ?**

   There is no simple or single answer to this question, other than to say that it depends on the structure height and location of the rod. Nevertheless, LPI is a pioneer in the area of corona-minimising air terminals, where a blunt tip is favoured over a sharp one in order to avoid the space charge effects that can make interception of lightning strikes unreliable. LPI can provide advice on the correct tip geometry for your structure based on in-house software tools, the computations behind which have been published in an international journal paper. Contact LPI for further details.

3. **Why should I use aluminium components ?**

   Aluminium is a very common air termination material and, as such, is included in all major lightning protection standards, including IEC 62305 and AS 1768. Aside from standards compliance, LPI's lightweight, high-strength, aluminium components are safer to manage when installing at height, corrosion resistant, more cost effective than copper and have lower freight costs.

LPI® NEW CONVENTIONAL PROTECTION RANGE

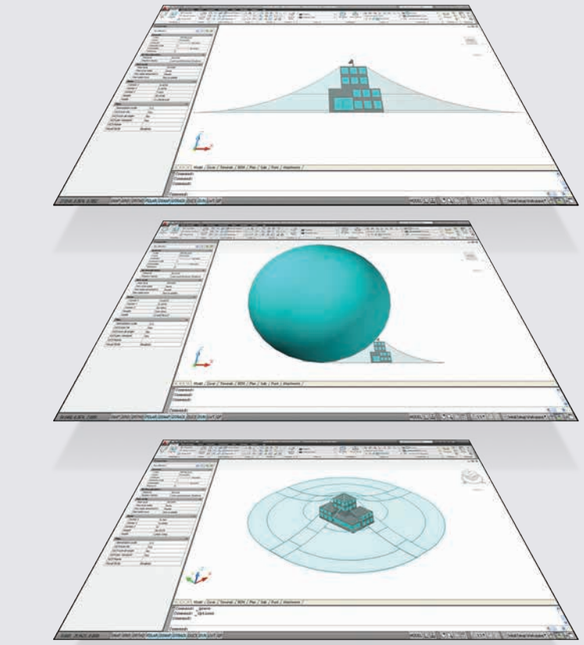
In-house Design Services

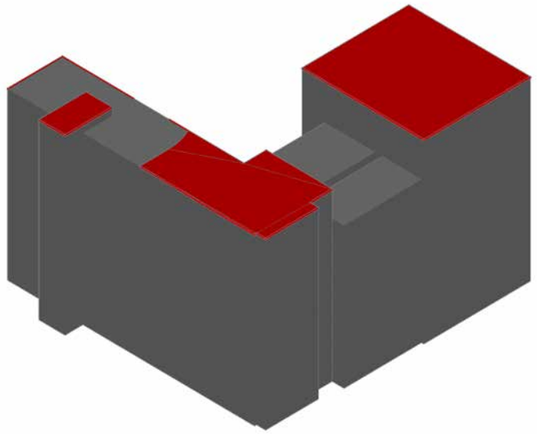
LPI offers an in-house design service producing customised direct-strike lightning protection designs.

LPI's software utilises an AutoCAD plugin which quickly analyses 3D solid models. This software capability allows LPI to confirm that a direct strike lightning protection design is fully compliant with the selected standard, and is able to clearly highlight any areas of a structure which may not be protected under that standard.

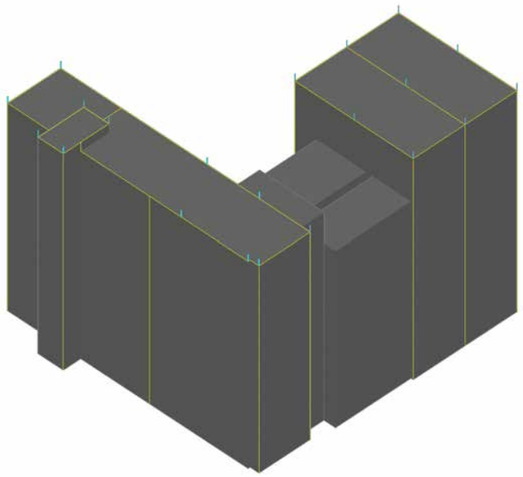
This software allows LPI to offer a

- Full risk assessment in accordance with the relevant standard
- Customised design for each project
- Accurate, efficient and cost-effective design
- Rolling sphere design compliant with AS 1768, IEC 62305, and NFPA 780.
- PDF output including a 3D view of the site, bill of materials and generic specifications





Most likely strike locations on unprotected structure



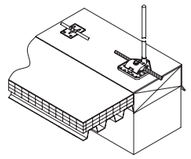
Direct-strike lightning protection designed at nominated LPL

TYPICAL APPLICATION OF NEW CONVENTIONAL PROTECTION PRODUCT RANGE

1 - Air Terminals

Refer to Page 8.

2 - Air Terminal Bases



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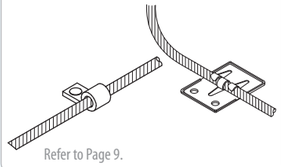
3 - Conductor Fixings



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6 - Accessories

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7 - Earthing and Bonding Components

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5 - Conductor

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6 - Accessories

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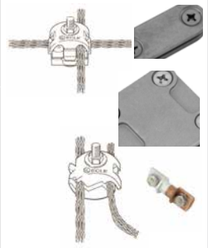
4 - Conductor Connectors



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7 - Earthing and Bonding Components

Refer to Page 12.

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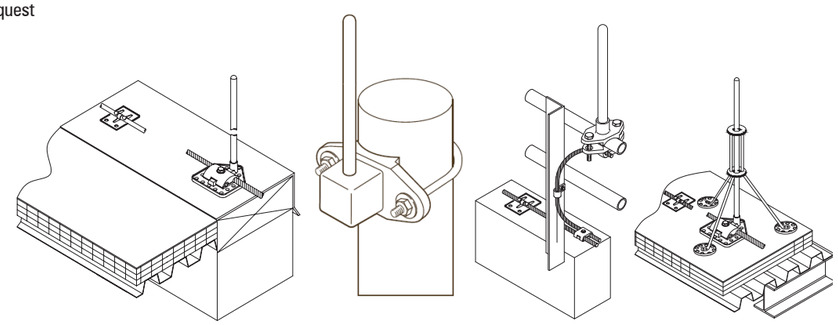
1. Air Terminals

Product Code	Description	Length (mm)	Nominal Diameter (mm)	Tip	Material	Weight (Kg)	Thread	Pack Qty.
FL1ATB0558C	Air terminal, blunt, 500 mm x 14 mm, copper, 5/8" Thread	500	14	Blunt	Copper	0.69	5/8"	1
FL1ATB1058C	Air terminal, blunt, 1000 mm x 14 mm, copper, 5/8" Thread	1000	14	Blunt	Copper	1.37	5/8"	1
FL1ATB0558A	Air terminal, blunt, 500 mm x 15 mm, aluminium, 5/8" Thread	500	15	Blunt	Aluminium	0.21	5/8"	1
FL1ATB1058A	Air terminal, blunt, 1000 mm x 15 mm, aluminium, 5/8" Thread	1000	15	Blunt	Aluminium	0.42	5/8"	1

NOTES: Custom lengths available upon request

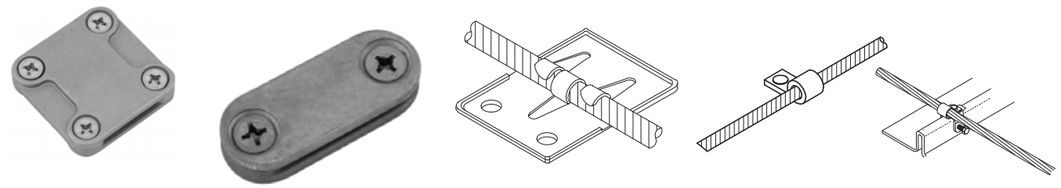


2. Air Terminals Bases

Product Code	Description	Suits	Material	Weight (g)	Pack Qty.
BB3B5/8	2 Way Cast bronze adhesive base to suit 5/8" copper finial	5/8" Threaded copper finial & tinned copper 35 mm² woven conductor	Bronze	454	5
BB3A5/8	2 Way aluminium adhesive base to suit 5/8" aluminium finial	5/8" Threaded aluminium finial & aluminium 50 mm² woven conductor	Aluminium	170	5
Air Terminal Bases					
BB14A 5/8	Narrow vertical side mount, aluminium base to suit 5/8" aluminium finial where where conductor is used	5/8" Aluminium Finial	Aluminium	142	5
BB14B 5/8	Narrow vertical side mount, bronze base to suit 5/8" copper finial where where conductor is used	5/8" Copper Finial	Bronze	422	5
BB40A5/8	4 inch horizontal top pipe mount, aluminium base to suit 5/8" aluminium finial where conductor is used	5/8" Aluminium Finial	Aluminium	468	5
BB40B5/8	4 inch horizontal top pipe mount, bronze base to suit 5/8" copper finial where conductor is used	5/8" Copper Finial	Bronze	1304	5
BB100A5/8	Aluminium strap type ridge saddle 5/8	5/8" Aluminium Finial	Aluminium	264	5
BB100B5/8	Bronze strap type ridge saddle 5/8	5/8" Copper Finial	Bronze	482	5
BB10A5/8	Aluminium standing seam base 5/8	5/8" Aluminium Finial	Aluminium	142	5
BB10B5/8	Bronze standing seam base 5/8	5/8" Copper Finial	Bronze	263	5
BB1A5/8	Aluminium ridge saddle base 5/8	5/8" Aluminium Finial	Aluminium	113	5
BB1B5/8	Bronze ridge saddle base 5/8	5/8" Copper Finial	Bronze	340	5

Notes:(1) All fastening hardware is 316 stainless steel, (2) Other options available upon request, (3) Swivel base also available (BB5A5/8 and BB5B5/8) – see price list.

Product Code	Description	Suits	Material	Weight (g)	Pack Qty.
BB7A5/8	Aluminium 1.5 inch off-set side bracket	5/8" Aluminium Finial	Aluminium	142	5
BB7B5/8	Bronze 1.5 inch off-set side bracket	5/8" Copper Finial	Bronze	369	5
BB8A5/8	Bolt base cable to 5/8" threaded rod aluminium	5/8" Aluminium Finial	Aluminium	57	5
BB8B5/8	Bolt base cable to 5/8" threaded rod bronze	5/8" Copper Finial	Bronze	142	5
BB19A5/8	Aluminium standing seam base 5/8 thread	5/8" Aluminium Finial	Aluminium	161	5
BB19B5/8	Bronze standing seam base 5/8 thread	5/8" Copper Finial	Bronze	484	5



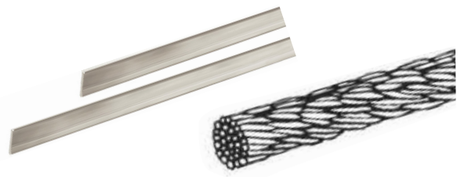
3. Conductor Fixings

Product Code	Description	Suits	Material	Weight (g)	Pack Qty.
FL6C	Layover adhesive stamped copper cable holder	Copper 35 mm² smooth weave conductor	Copper	31	25
FL6A	Layover adhesive stamped aluminium cable holder	Aluminium 50 mm² smooth weave conductor	Aluminium	14	25
FL4C	Stamped adhesive crimp copper loop for use on built-up, single membrane or other flat surfaces where mechanical penetrations must be avoided	Copper 35 mm² smooth weave conductor	Copper	40	25
FL4A	Stamped adhesive crimp aluminium loop for use on built-up, single membrane or other flat surfaces where mechanical penetrations must be avoided	Aluminium 50 mm² smooth weave conductor	Aluminium	23	25
FL1C	FL300C Large Stamped copper loop, 1/4" hole, large stamped copper loop.	Tinned copper 35 mm² smooth weave conductor	Copper	4	25
FL1A	FL300A Large Stamped aluminum loop, 1/4" hole, large stamped aluminum loop.	Aluminium 50 mm² smooth weave conductor	Aluminium	3	25
FL5B	Standing seam bronze fastener with one 1/4" bolt to anchor to the standing seam and 1/4" hole on top. Supplied with 1 x FL3C loop and extra bolt for top mounting of loop	Tinned copper 35 mm² smooth weave conductor	Bronze	94	25
FL5A	Standing seam cast aluminium fastener with one 1/4" bolt to anchor to the standing seam and 1/4" hole on top. Supplied with 1 x FL3C loop and extra bolt for top mounting of loop	Aluminium 50 mm² smooth weave conductor	Aluminium	34	25
FL4STC253A / FL3DCTC253A / FL4OTC253A	Square tape clamp D.C. tape clip Oblong test clamp	Aluminium tape 25 x 3 mm,	Aluminium	xx / xx,	25
PC2UB	Cast bronze U-bolt fits 5.1cm OD pipe, 2 way bolt pressure cable holder bronze	Tinned Copper 35mm2 smooth weave	Bronze	241	5
PC2UA	Cast aluminium u-bolt, fits 5.1cm OD pipe, 2 way bolt pressure cable holder aluminium	Aluminium 50mm2 smooth weave	Aluminium	119	5

4. Conductor Connectors

Product Code	Description	Suits	Material	Weight (g)	Pack Qty.
BF100B	Round - Round, cast bronze bolt cable to cable clamp, specifically designed for cable splice on single membrane roofs	Tinned copper 35 mm² smooth weave conductor	Bronze	215	5
BF100A	Round - Round, aluminium bolt cable to cable clamp, specifically designed for cable splice on single membrane roofs	Aluminium 50 mm² smooth weave conductor	Aluminium	85	5
BF13B	Cross run, cast bronze cross run or cross tee clamp	Tinned copper 35 mm² smooth weave conductor	Bronze	227	5
BF13A	Cross run, aluminium cross run or cross tee clamp	Aluminium 50 mm² smooth weave conductor	Aluminium	99	5
BF21B	Cable to strip conductor, cast bronze two way cable holder with cast flat backed bottom	Tinned copper 35 mm² smooth weave conductor & 25 mm x 3 mm copper tape	Bronze	195	5
BF21A	Cable to strip conductor, aluminium two way cable holder with cast flat backed bottom	Aluminium 50 mm² smooth weave conductor & 25 mm x 3 mm aluminium tape	Aluminium	65	5
BF14A	Aluminium bolt type cable holder with steel backed bonding plate	Aluminium 50mm2 smooth weave	Aluminium	476	5
BF14B	Bronze Bolt type cable holder with steel backed bonding plate	Tinned Copper 35mm2 smooth weave	Bronze	648	5
BF18A	Aluminium bolt type fitting beam clamp aluminium	Aluminium 50mm2 smooth weave	Aluminium	377	5
BF18T	Tinned Bolt type fitting beam clamp	Tinned Copper 35mm2 smooth weave	Bronze	967	5

Notes: (1) All fastening hardware is 316 stainless steel, (2) Other options available upon. request



5. Conductors

Product Code	Description	Material	Weight (g) per metre	Reel Size (m)
BWCC35	Bare Tinned copper 35 smooth weave conductor	Tinned Copper	343	150
BWAC50	Bare Aluminium 50 smooth weave conductor	Aluminium	172	150
FL6T253A	Soft Drawn aluminium tape, 25 mm x 3 mm	Aluminium	198	50

Notes: Aluminium tape sold as 50m length only.

Tinned Flexible Connector

Product Code	Description	Length	Material	Weight (gram)	Hole Diameter
FL5TFC200C	Tinned flexible connector, 25 x 3.5, 200 long	200(mm)	Tinned copper braid	90	Ø13
FL5TFC300C	Tinned flexible connector, 25 x 3.5, 300 long	300(mm)	Tinned copper braid	120	Ø13
FL5TFC400C	Tinned flexible connector, 25 x 3.5, 400 long	400(mm)	Tinned copper braid	150	Ø13

6. Accessories

Product Code	Description	Suits	Material	Weight (kg)	Pack Qty.
BM3	Bimetallic 4-Bolt straight splicer for joining aluminium and copper cables complete with stainless steel bolts	Aluminium and copper smooth weave conductors	Copper / Aluminium	0.17	5
FL5BMC253	Bimetallic connector for splicing aluminium tape downconductor to copper tape earth electrode.	Aluminium and copper tape (25 x 3 mm), Copper /	Aluminum / Copper	8.5	50
M1-24	Heavy duty adhesive sealant, 300 mL, 24 tubes per box	Accessories for adhesive fixing	Sealant	6.86	24
M1	Heavy duty adhesive sealant, 300 mL, per tube	Accessories for adhesive fixing	Sealant	0.28	1
LSR2	Lightning strike recorder	Tinned Copper 35 mm² woven and "Aluminium Tape (25 x 3 mm)" to the list of options. Aluminium 50 mm² woven conductor	Polycarbonate	0.56	1
		Tinned Copper 35 mm2 and Aluminium 50 mm2 woven conductor, Aluminium Tape (25 x 3 mm)			
BM100	Bimetallic carriage round to round	Aluminium & Tinned Copper Smooth weave	Aluminium / Bronze	170	5
TS4A5/8	Aluminium Thru-Structure	Bonding Accessory	Aluminium	170	1
TS4B5/8	Bronze Thru-Structure	Bonding Accessory	Bronze	170	1

7. Earthing & Bonding Components

Earth Rods

Product Code	Description	Nominal Length (m)	Nominal Diameter (mm)	Thread Diameter	Material	Electrolytical	Weight (kg)
CBER1214	Copper bonded earth rod, 1.2 m x 14 mm, 5/8" Threaded both ends, 254 µm	1.2	14	5/8" UNC	High tensile low carbon steel	99.9 % pure copper, 254 mm	1.54
CBER3014	Copper bonded earth rod, 3.0 x 14 mm, 5/8" threaded both ends, 254 um".	3.0	14	5/8" UNC	High tensile low carbon steel	99.9 % pure copper, 254 mm	3.84

Earth Rod Couplers

Product Code	Description	Suits	Thread	Material	Weight (gram)
LEH-58R	Coupling for threaded rod, 14 mm, 5/8" Thread	14 mm Rods	5/8" UNC	High strength copper alloy	130
LEH-34R	Coupling for threaded rod, 17 mm, 3/4" Thread	17 mm Rods	3/4" UNC	High strength copper alloy	130

Supplied in pack sizes of 20

Earth Rod Clamps

Product Code	Description	Suits	Thread	Material	Weight (gram)
RCC35120	Rod to cable clamp, 14-17 mm rods, 35 – 120 mm² cable	14 mm Rods – 17 mm Rods	Cable 35 mm² - 120 mm²	UNS C84400 (high strength copper alloy)	90
RTC253	Rod to tape clamp, 25 x 3 mm tape	14 mm Rods – 17 mm Rods	Tape 25 x 3 mm	UNS C84400 (high strength copper alloy)	90

All rod clamps supplied with 316 stainless steel fasteners
Supplied in pack sizes of 20

Earth Enhancing Compounds

Product Code	Description	Pallet Size	Weight (kg)
RESLO-20	Bentonite-based resistance lowering compound	RESLO-20 and SRIMPLUS-20, insert "48 bags	20
SRIMPLUS-20	Carbon composite based resistance lowering compound	RESLO-20 and SRIMPLUS-20, insert "48 bags	20

RESLO complies with AS 2239, most of IEC 62561-7, and EPA 1311. SRIM PLUS complies fully with IEC 62561-7 and EPA 1311

Earth Points

Product Code	Description	No of Holes	Thread	Hole Spacing	Mass (g)	Stem Diameter (mm)	Material
EP2M12	Earth Point, 2 x M12	2	M12, (18 mm deep)	45 mm	190	10.5	UNS-C38000(high strength copper alloy)
EP1M12	Earth Point, 1 x M12	1	M12, (22 mm deep)	n/a	300	10.5	UNS-C38000 (high strength copper alloy)

Also available in single hole and four hole configurations

Inspection Pits

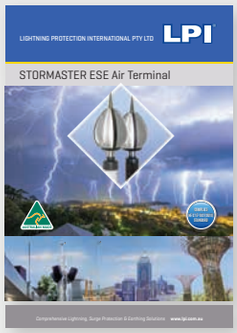
Product Code	Description	Material	Load Capacity	Mass (kg)	Dimensions (mm)
EPIT-P	Polymer Earth Pit	Polymer	5 tonnes	1.9	293 x 293 (outside), 176 x 176 (inside), 210 (deep), Ø69 Access Hole
EPIT-C1D	Concrete Earth Pit and Galv Class D LID	Poly Concrete	Class D	22.1	385 x 385 (outside), 300 x 300 (inside), 260 (deep)

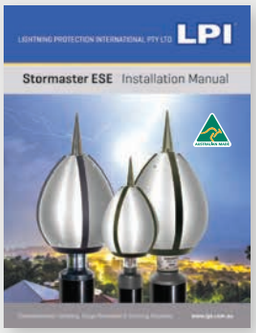
Equipotential Bonding

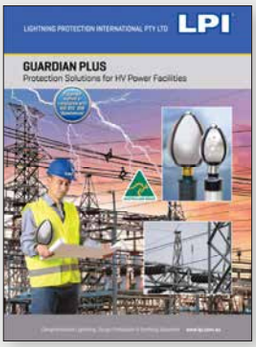
Product Code	Description	Rated DC sparkover voltage	Impulse spark-over voltage	Max. Discharge current (Imax)	Insulation resistance	Operating Temp. (°C)	Environ-ment Rating	Dims.	Mounting	Weight
TEC100-2L	Transient Earth Clamp, 600 V, 200 kA 8/20 µs	600 V (1kV/µs)	<1.5 kV (1kV/µs)	200 kA 8/20 µs	> 1 G Ohms (at 100 Vdc)	-40° to +90°	IP 66	600 mm (L) x Ø40 mm	2 x 300 mm flying lead with M10 Crimp lug	320g

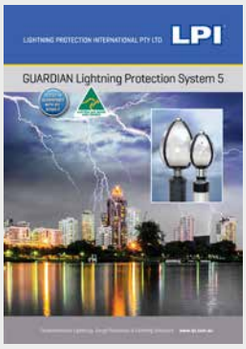
ADDITIONAL LPI LITERATURE

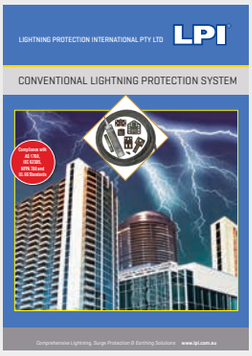
Together with the products and systems shown in this catalogue, a number of LPI publications are available for download from our website (www.lpi.com.au) that cover the entire range of Lightning Protection and Surge and Transient Protection products and systems. If you would like further information on any of these products, please contact LPI, or your nearest LPI Distributor, or visit: www.lpi.com.au

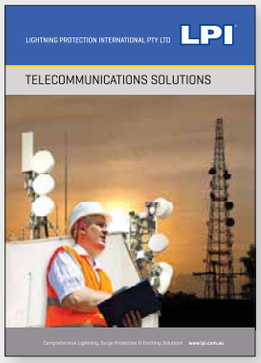


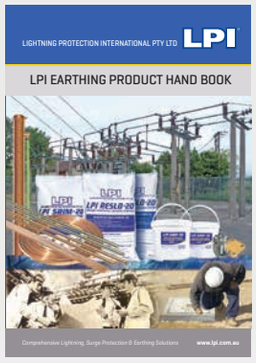


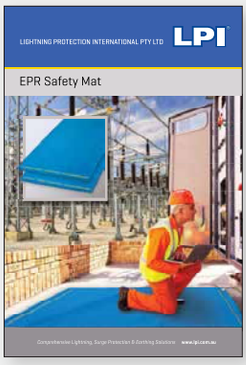


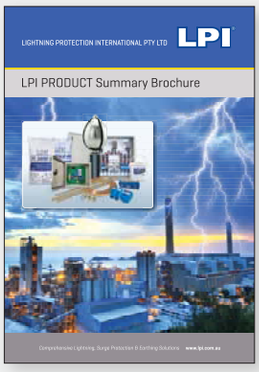












Disclaimer

- LPI maintains a policy of on-going product development, specifications are subject to change without notice.
- Application detail, illustrations and schematic drawings are representative only and should be used as guides.
- It should be noted that 100% (100 percent) protection level for direct strike lightning, lightning detection and surge and transient protection equipment is not possible and cannot be provided due to the lightning discharge process being a natural atmospheric event.

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