POWER
ENGINEERING CATALOGUE

Hiko
Power Engineering

www.hikopower.co.nz

Safe and efficient delivery of electricity needs networks to be built with products that provide protection, performance and reliability over the long run.

That's why we partner with leading manufacturers of quality products and work with you to deliver safe and lasting solutions for your network.

At Hiko Power Engineering we deliver certainty, reliability and long-term value based on the products that we supply and on the technical support that we provide.

www.hikopower.co.nz

Contents

Solutions and Value Engineering	2
Supply Partners	3
Pillars, Cabinets and Frames	5
LV Network Monitoring	13
Underground Network and Service Boxes	21
Disconnects and Fuses	28
Cable Joints and Terminations	43
Network Fittings and Accessories	57
MV and HV Switchgear and Cable Link Boxes	73
Tools, Measurement and Test Equipment	92

Hiko
Power Engineering

Solutions and value engineering

Our approach is to actively identify value engineering opportunities for our customers – adding value throughout the asset lifecycle by reducing overall cost while continuing to meet technical specifications.

Our local manufacturing capability extends to low voltage electricity distribution switchgear frames, cabinets, underground distribution pillars and other subassemblies and equipment.

The scope of our supply ranges from large items of capital equipment through to individual hand tools. This breadth of supply means we're engaged with the power industry at all levels and at all stages of the asset lifecycle: from project engineering, through installation and commissioning, inspection and test, maintenance and refurbishment.

We understand the needs of electricity distribution companies and their contractors in terms of quality, time, cost and safety.

Working with the University of Canterbury (through our partnership with the EPECentre) and with other external facilities we have access to a wide range of electrical, thermal and mechanical test laboratories, which we use as required to provide assurance that our engineering solutions are fully compliant, appropriately rated, fit for purpose and reliable over the long term.

We maintain an in-house, on-line reference library of up-to-date New Zealand and international standards and specifications.

EPECentre
ELECTRIC POWER ENGINEERING CENTRE

eea Electricity Engineers' Association

Supply partners

We are proud to partner with specialist international component and equipment suppliers, as well as trusted New Zealand contract manufacturing partners, to deliver solutions, peace of mind and long-term reliability for electricity distribution companies.

Bowthorpe Line Taps are the industry standard split bolt system for connecting conductors. With more than 70 plus years of service and greater than 16 million connections, Bowthorpe Line Taps have proven their design, have an indefinite life and are simple to install.

EFEN makes energy distribution systems safe, whether you are active in the field of infrastructure or in the power supply sector, EFEN offers optimised safety systems and components for power distribution – tailored to the respective field of application.

GridKey is a Low Voltage multi-feeder monitoring system that remotely monitors substation feeders. Increased insight of the low voltage network data via real time warnings, status alerts and loading information helps improve network planning, reduce network maintenance costs and prevent unplanned outages.

Insulect manufactures a range of tough, modular, reliable network switchgear for overhead substation and underground applications. Designed and engineered in Australia and requiring minimal maintenance for long-lasting performance. Insulect has been helping electricity transmission and distribution customers strengthen their networks for over twenty years.

Langmatz develops and manufactures innovative, high quality cabinets and underground systems for the power supply, telecommunications and traffic engineering sectors. Langmatz cabinets and modular, structural pits employ extremely durable and environmentally benign polycarbonate.

NKT is a global supplier to the energy sector and is the joined forces of Kabeldon and nkt cables under the new common brand NKT. NKT develops and manufactures high quality cables, accessories and solutions for electricity transmission and distribution, construction and railway applications. NKT's manufacturing plants are among the most modern, flexible and cost-effective in the world.

Pfisterer can be found wherever electrical current flows for the supply of energy. Pfisterer manufactures high-quality products, which find reliable, long-term and virtually maintenance-free service in the sensitive interfaces of energy supply networks.

Polaris Electrical Connectors began manufacturing electrical connectors in 1985 and is now well known among those in the electrical industry for its unique design and high quality. This leading position affords Polaris the opportunity to develop new cutting-edge technology in manufacturing insulated products.

"Low voltage network switchgear assets are often located in publicly accessible places: on berms, in footpaths and driveways, in town centres, where public safety as well as operator safety is a paramount consideration."

Pillars, Cabinets, and Frames

Distribution Pillars and Link Pillars 6

Langmatz Polycarbonate Equipment Cabinets 8

Low Voltage Distribution/Transformer Frames 10

Distribution Pillars and Link Pillars

For up to 9.5x DIN3 style vertical disconnects and other switchgear and control gear

Low voltage network switchgear assets are often located in publicly accessible places: on berms, in footpaths and driveways, in town centres, where public safety as well as operator safety is a paramount consideration.

Hiko Distribution Pillars and Link Pillars use extremely secure, robust, fully insulated, weatherproof Langmatz polycarbonate outdoor cabinets and DIN-style switchgear, including EFEN E3 double break, fully enclosed disconnects.

They are fully compliant with the requirements of AS/NZS 3439-1 and 3439-5, which includes particular requirements for LV switchgear in public places. In addition, Hiko has conducted extensive independent performance testing.

The result is a high level of assurance of LV asset safety that represents taking "all reasonably practicable steps" to protect the public and operators alike.

By contrast, aluminium or steel pillars deliver a lower level of assurance.

In terms of long-term reliability, the unique Langmatz polycarbonate two-piece cabinet has proven its worth for well over 25 years in installations throughout Europe, Australia and New Zealand, and in many networks is the only approved option. This is an enviable record that cannot be matched by GRP (glass reinforced polyester) cabinets.

The modular design of Hiko Distribution Pillars and Link Pillars enables a wide range of configurations, from single switch link pillars to double-bus distribution boards. With options available for ground plant and surface mount bases, the two-piece construction facilitates quick installation and secure, straightforward inspection throughout the life of the asset.

Distribution Pillars and Link Pillars

Cabinet, door specification

Parameter	Test method	Requirement	Comments
Impact resistance (all sides)	AS/NZS 3439-5	15 kg sandbag from 1 m height	
		2 kg steel ball from 1 m height	
		5 kg sharp point from 0.4 m (20 J)	
Lateral tensile strength (top edge)	AS/NZS 3439-5	1,200 N for 5 minutes	
Distributed top load	AS/NZS 3439-5	8,500 N/m2 for 5 minutes	
Torsional strength	AS/NZS 3439-5	2,000 N for 30 seconds	
Base mechanical strength	AS/NZS 3439-5	1,000 N	Pipe test
Heat resistance	AS/NZS 3439-5	100°C / 125°C	3.2 mm rod dent impact test / 2 kg steel ball point test
Ingress protection rating (cabinet)	DIN 40050	IP43	When installed in accordance with instructions[1]
Ingress protection rating (lock)	DIN 40050	IP65	Waterproof and dust proof
Flame resistance	UL 94	V1	Burning stops within 30 seconds, no flaming drips
Flame resistance (surface)	DIN 53483 Part 3	K1 / 8 mm	Flame does not reach measuring mark at 150 mm
Flame resistance (edge)	DIN 53483 Part 2	F1 / 8 mm	
Dielectric strength	DIN 53481 Part 4.2.2	30 kV/mm	
Chemical resistance	-	Resistant to hydrocarbons including oil, grease, petrol	
Weather resistance	EN 50298 and 60439-5	No change in resistance	
	ISO 4892-2 Process A	>70% retained flexural strength	

Materials

Component	Material	Comments
Cabinet, door	Structural, foamed polycarbonate	Zero residual stress
Fixings	Stainless steel 316 / 1.4301	
Tie-bars	Galvanised steel	
Internal protective covers	Polycarbonate (transparent), PVC (grey)	
Busbar heat-shrink	Polyolefin	Colour Coded

Configurations

Maximum number of ways (vertical disconnects)		Width (mm)	Height above ground[2] (mm)	Depth (front to back) (mm)	Base depth (below ground) (mm)
DIN2/3	DIN00				
3	7	460	1170	330	600
5	10	595			
7	14	795			
10	20	1120			

Options

DIN-style switchgear (EFEN or third-party brand)
Street lighting and other auxiliary supplies
MDIs / metering / monitoring
Other switchgear or control gear
Colour (as supplied: natural grey RAL 7035; Rainforest green (AS2700 G15) RAL 6003 and other colours available on request)
Identification / warning labels to network requirements
Locking arrangements
Inspection window

Notes

1. On request, cabinets can be supplied with degree of protection up to IP54
2. Nominal, using standard in-ground base; using surface mount base gives overall height 1200

Other literature available on request

Test reports, drawings, installation instructions, O&M guidelines

EFEN Langmatz

Langmatz Polycarbonate Equipment Cabinets

For LV network switchgear, telecoms, traffic control and general

Langmatz reinforced polycarbonate equipment cabinets are made from an extremely robust, heat resistant, flame retardant, corrosion-resistant and weather resistant engineering thermoplastic: structural foamed polycarbonate.

This material has excellent impact strength and is resistant to chemicals, oils and greases including cracking from solvents and aerosols.

It is completely safe to handle, cut, drill and tap. It is also fully recyclable.

Langmatz polycarbonate cabinets have proven their worth for well over 25 years and in installations throughout Europe, Australia and NZ. Polycarbonate is a long-lasting, weather-resistant material, unlike GRP (glass reinforced polyester) which is not generally suitable for New Zealand outdoor applications.

For LV network switchgear applications, where cabinets are often located in publicly accessible places, assurance of safety is provided by compliance with the requirements of AS/NZS 3439-5.

Safety and security are assured by the absence of exposed fixings, and the hinged lockable doors with fully insulated lock and 5-point latching. All mounting screws and fixings are 316 grade stainless steel. The lifetime of the doors is the same as the lifetime of the cabinet.

Mounting points are provided for fastening of vertical or horizontal DIN standard disconnects and fuse holders that withstand all normal forces applied during cable fastening and the installation / removal of fuses.

Ground planted and surface mount cabinets are available in a range of colours. Cabinets can be pre-fitted with busbars, mounting panels and equipment as required.

Polycarbonate Equipment Cabinets

Cabinet, door specification

Parameter	Test method	Requirement	Comments
Impact resistance (all sides)	AS/NZS 3439-5	15 kg sandbag from 1 m height	
		2 kg steel ball from 1 m height	
		5 kg sharp point from 0.4 m (20 J)	
Lateral tensile strength (top edge)	AS/NZS 3439-5	1,200 N for 5 minutes	
Distributed top load	AS/NZS 3439-5	8,500 N/m² for 5 minutes	
Torsional strength	AS/NZS 3439-5	2,000 N for 30 seconds	
Base mechanical strength	AS/NZS 3439-5	1,000 N	Pipe test
Heat resistance	AS/NZS 3439-5	100°C / 125°C	3.2 mm rod dent impact test / 2 kg steel ball point test
Ingress protection rating (cabinet)	DIN 40050	IP44	When installed in accordance with instructions[1]
Ingress protection rating (lock)	DIN 40050	IP65	Waterproof and dust proof
Flame resistance	UL 94	V1	Burning stops within 30 seconds, no flaming drips
Flame resistance (surface)	DIN 53483 Part 3	K1 / 8 mm	Flame does not reach measuring mark at 150 mm
Flame resistance (edge)	DIN 53483 Part 2	F1 / 8 mm	
Dielectric strength	DIN 53481 Part 4.2.2	30 kV/mm	
Chemical resistance	-	Resistant to hydrocarbons including oil, grease, petrol	
Weather resistance	EN 50298 and 60439-5	No change in resistance	
	ISO 4892-2 Process A	>70% retained flexural strength	

Materials

Component	Material	Comments
Cabinet, door	Structural, foamed polycarbonate	Zero residual stress
Fixings	Stainless steel 316 / 1.4301	
Tie-bars	Galvanised steel	

Cabinet					
Product code[2]	Max. number of ways (vertical disconnects) DIN2/3	DIN00	Width (mm)	Height above base (mm)	Depth (front to back) (mm)
LA460CAB	3	7	460	870	330
LA595CAB	5	10	595		
LA795CAB	7	14	795		
LA1120CAB	10	20	1120		

In-ground base		
Hiko code[2]	Height above ground (mm)	Depth below ground (mm)
LA460IGB	300	600
LA595IGB		
LA795IGB		
LA1120IGB		

Surface mount base	
Hiko code[2]	Height above ground (mm)
LA460SMB	330
LA595SMB	
LA795SMB	
LA1120SMB	

Accessories

Door stay: LAA0005 (door stay)
Black door handle: LAA0004 (black handle)

Colour

Refer to note 2; other colours available on request

Options

Pre-fitted with busbars, neutral-earth bar
Street lighting and other auxiliary supplies
MDIs / metering / monitoring
Identification / warning labels to network requirements
Locking arrangements
Inspection window

Notes

1. On request, cabinets can be supplied with degree of protection up to IP54
2. Colour: add suffix GY for Grey RAL 7035; add suffix GN for rainforest green (AS2700 G15) RAL 6003; add "A" for anti-graffiti formula
3. Contact Hiko for more information

Other literature available on request

Test reports, drawings, technical data sheets, installation instructions, O&M guidelines

Langmatz

Low Voltage Distribution/Transformer Frames

Modular, precision-built and custom built for pad mount or wall mount applications

Hiko Low Voltage switchgear frames for transformer and distribution applications are designed, engineered and built for safety and reliability to deliver value through the asset lifecycle.

Safety is embedded into Hiko LV switchgear frames through:

- fully insulated busbars
- generously sized high temperature rated polycarbonate transparent covers
- latest generation EFEN vertical fuse-switch disconnects (and optional circuit breakers and other arc-flash mitigating treatments)
- integral CT's, high voltage CT wiring and fully rated CT test blocks.

Safe operating performance and long-term reliability are assured by our design methodology that includes mechanical, electrical and thermal modelling and testing, and our manufacturing process in line with the requirements of AS/NZS3439.1

A modular range of precision-built pad mount, wall mount and tank mount frames are available, using laser-cut stainless steel structural components and accommodating a wide range of sizes and configurations. Precisely engineered design is combined with light weight construction to support ease of installation. Any almost unlimited variety is available

Auxiliary panels are available for all frames to suit customer requirements. These can be fitted pre-wired with analogue or digital metering, MDIs, street-lighting and hot water pilot wire connections and LV network monitoring systems.

Hiko LV switchgear frames are fully modelled in 3D to simplify, speed up and deliver certainty through the design-in process. One-off frames can also be produced for trial-fit purposes.

LV Switchgear Frames

Materials

Component	Material	Comments
Frame	Stainless steel 304 or 316	Hot dip galvanised frames also available
Fixings	Stainless steel 304	
Protective covers	Polycarbonate (transparent), PVC (grey)	For accidental flashover protection
Busbar heat-shrink	Polyolefin	For accidental flashover protection

Standard configurations: pad mounted, bolted frames, Type LVF

Rating (kVA)	Busbar size (mm)	N/E bar size[1] (mm)	Bushing cable cross section[1] (mm^2)	Earth cable cross-section[1] (mm^2)	Incoming isolator (A)
100-300	30 x 10	38.1 x 6.35	185	95	630
500	50 x 10		2x 150	185	1000
750	80 x 10	50 x 10	2x 240	240	1600
1000	100 x 10	80 x 10	3x 240	2x 240	2000

Standard dimensions: pad mounted, bolted frames, Type LVF

Frame width (mm)	Service panel width (mm)	Max number of feeders[2]		Height (mm)
		With service panel	Without service panel	
600	195	4	6	985 / 1135 / 1500
700		5	7	
800		6	8	
900		7	9	
1000		8	10	
1200		10	12	

Contact Hiko Power Engineering for more information

Options

DIN-style switchgear (EFEN or third-party brand)
Street lighting and other auxiliary supplies
MDI's / metering / monitoring
Other switchgear or controlgear

Notes

1. Other cross sections available on request
2. DIN2/3 fuse-switch-disconnects (max 630 A), pitch 100 mm; alternatively 2x DIN00 (max 160 A), pitch 50 mm

Other literature available on request

Test reports, drawings, installation instructions, O&M guidelines

EFEN

“The GridKey monitoring system and analytics are designed to be highly configurable and offer flexibility."

Low Voltage Network Monitoring

Gridkey MCU318 Metrology and Comms Unit **14**

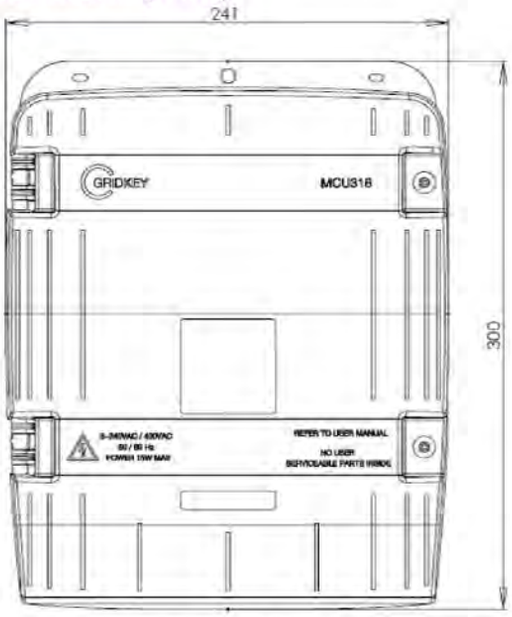
GridKey SlimSensor **16**

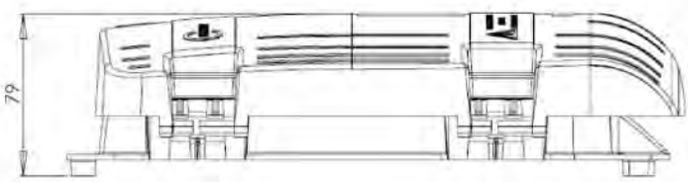
GridKey Data Centre **18**

GridKey MCU318 Metrology and Comms Unit

Unlocking the smart grid - A collaboration between Lucy Electric and Sentec

Dimensions (mm)





Why Choose the GridKey MCU318?

GridKey is a custom designed continuous monitoring solution for low voltage (LV) networks. It consists of a number of current sensors on each feeder together with voltage taps, connected to a Metrology and Communications Unit (MCU) which processes the sensor data and generates and logs substation loading and condition parameters.

This information is relayed to a remote data centre where the data is securely stored. Substation performance and feeder cable condition can be analysed, enabling access graphically via our customer web portal.

The GridKey MCU318 LV monitoring system is designed for purpose, offering a flexible and highly configurable information system with the following benefits:

- Safe and easy retrofit solution for installations indoors and out – lightweight and compact with no interruption of customer supply
- Built to be weather resistant– IP54 rated, meeting relevant electrical standards for external and internal substation use
- When used with SlimSensor modified Rogowski sensors the system provides class 2 metering accuracy – on three phases of up to 6 feeders
- Comprehensive reporting of substation feeder and calculated busbar parameters, giving better information to drive evidence-based decision making for grid management
- Compact design allows the system to be fitted internally within LV cabinets reducing the risk of theft or vandalism. A built-in GPRS modem and antenna provides reliable communications
- A secure Wi-Fi connection to the unit is provided to allow configuration and testing whilst installing
- For some countries GridKey are able to supply a cost effective roaming SIM card, however any SIM card can be fitted during manufacture for the customer's chosen mobile network(s). These can be soldered directly onto the PCB to improve security and reliability.

The customer can choose to configure and generate alert messages that would be sent via the data network system for multiple grid measurement states, for example to provide indications and warnings of any over voltage or power phase imbalance conditions.

The information and alerts provided enable network managers to make evidence-based decisions and plan effectively for future preventive maintenance and capital expenditure

GRIDKEY

The Metrology and Communications Unit

The MCU318 continuously and accurately measures and calculates a wide range of grid condition data including:

- Busbar min / max / averaged voltages
- Minimum, maximum and rms current and phase angle for individual phases per feeder
- Active and reactive powers per feeder
- Stores calculated values and alarms for up to 180 days.

The MCU318 is fully configurable at installation time via a Wi-Fi link with a laptop. Parameters that can be set include:

- Substation identification and location information
- Feeder connections used
- Reporting intervals and alert message settings
- Measurement parameters.

At any point in operation, the data reporting and alert messaging settings for each MCU can be individually re-configured remotely via its network interface. The operator can select the MCU measurement reporting interval from 1 minute, 10 minute or 30 minute periods as needed.

Metrology

Measurement Standards	Class 2 in accordance with EN 62053-21
Electrical Safety Standards	EN 61010-1: 2010, with corrigendum May 2011 EN 61010-2-030: 2010
Over voltage	300 V rms Category IV, pollution degree 3
Current measurement range	Accurate up to 720 A AC per feeder phase No damage at any over-current condition
Operating voltage and measurement range	230V AC + 15%, -20% rms Phase to Neutral
Line frequency	50Hz (nominal)

Protection, Environmental & Compatibility

IP Rating	IP54
Electromagnetic compatibility	EN 61000-6-2 immunity EN 61000-6-4 Emissions
Surge protection	IEC61000 6kV
Operating temperature range	- 20°C to 55°C (<93% RH, non-condensing)
Storage temperature range	- 25°C to 70°C
Altitude	Up to 2000m

Mechanical

Size (h x w x d)	300mm x 245mm x 80mm
Weight	1.35 kg
IP category	IP54 IEC 60529
Impact	EN 62262 IK06
Power	Power from single phase only, 6W typical, 11W maximum (GPRS enabled)
Communications interfaces	GSM/GPRS quad band 850/900/1800/1900 MHz Any network SIM can be provided by customer

GridKey SlimSensor

Unlocking the smart grid - A collaboration between Lucy Electric and Sentec

Why choose the GridKey SlimSensor?

The GridKey system includes a family of high-accuracy current sensors that are quick and easy to install without the need to disconnect power.

With the Monitoring and Control Unit (MCU) the sensors form part of the innovative GridKey Low Voltage Substation Monitoring System. GridKey will revolutionise substation monitoring, providing continuous real time data on all feeder cables and is designed to connect LV monitoring to the Smart Grid.

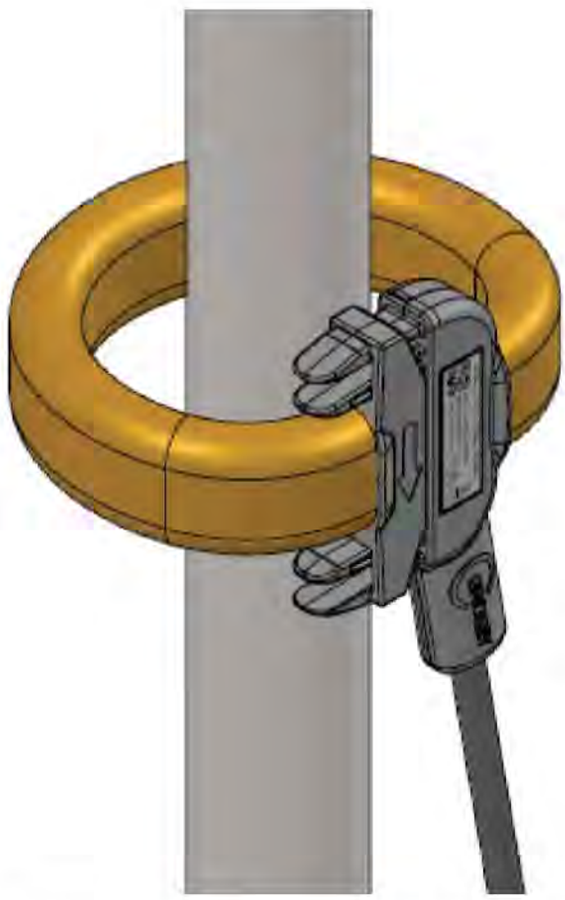
GridKey SlimSensors are rugged enough to survive 20 years of continuous use indoors or outdoors (IP65) and provide up to Class 1 metrology accuracy. With a unique footprint suitable for installation in most substation locations, Sensors are available with cable lengths of 2m, 4m and 6m to accommodate most common installations. Our SlimSensor is the most accurate flexible current sensor of its type.

Easy to fit and compact – Custom-designed for monitoring LV substations. Fitting our sensors is straightforward and quick; the flexible geometry and small size mean substations, where access is restricted and more traditional sensor technologies are problematic, can now be instrumented efficiently. The sensor clips around the conductor with no need to disconnect supply, saving time, cost and customer inconvenience. Fitting is carried out without the need for tools or extensive training and typical installation time is less than 1 minute per sensor. The SlimSensors are specifically designed to fit on tightly-packed feeder cables, requiring only 14mm of cable separation.

Robust and durable – Our sensors will continue to operate in conditions where other sensors fail, such as fault currents and in external locations.

Based on a proprietary technology, and using proven low-cost manufacturing processes, the sensors will continue to perform accurately throughout their lifetime. The unit is sealed and fully weatherproofed to operate for 20 years inside a substation or on a pole-mounted install.

No calibration or maintenance – Once fitted, there is no need for further site visits. The GridKey system produces accurate current data in all conditions, is tolerant of interference from adjacent current sources, and unlike some alternatives, is insensitive



to the position of the sensor around the conductor. It produces accurate readings up to 2000A, providing valuable data for use in diagnosis and root cause analysis of overload and catastrophic failures.

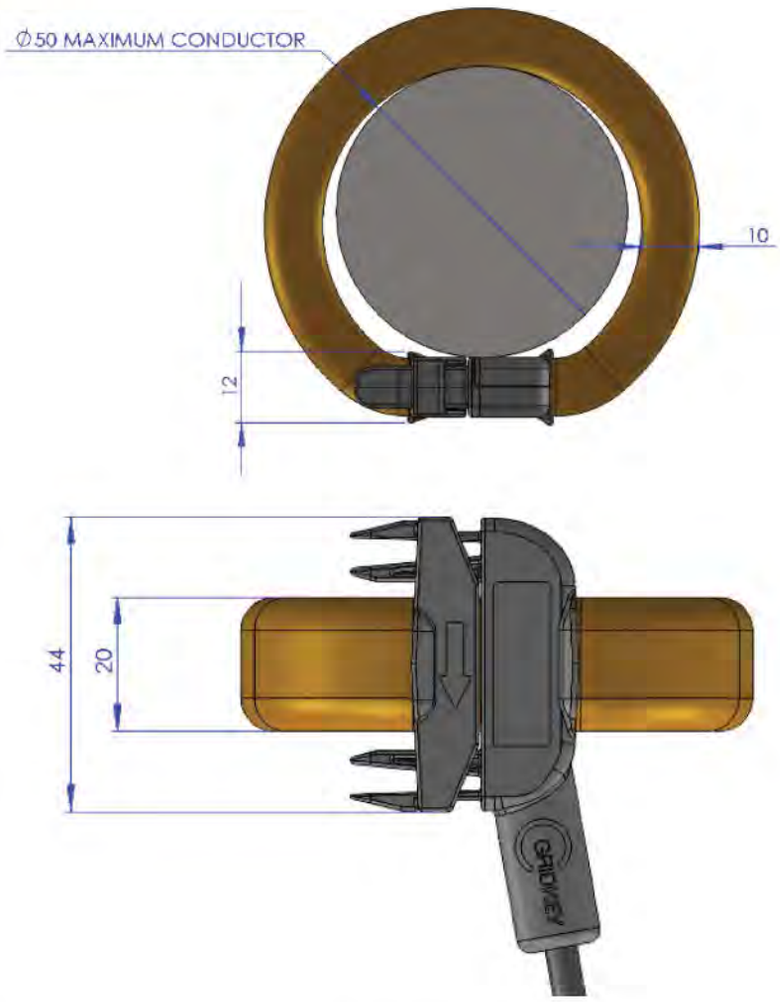
The GridKey SlimSensor

Our sensors' key features and benefits:

- Quick and easy to fit – one-handed installation on tightly packed cables.
- Designed for retrofit and live fit.
- Low cost of installation and ownership – no calibration, no maintenance required.
- Most accurate flexible current sensor; not position sensitive, no cross-coupling.
- Robust, durable – designed for 20 years continuous indoor or outdoor life (IP65).
- Monitor all feeder cables simultaneously.

GRIDKEY

Dimensions (mm)



Metrology

Measurement Standards	IEC Standard 60044-8
Electrical Safety Standards	BS EN 61010-1: 2001, BS EN 61010-2-032: 2002
Sensor Type	Type B sensor as defined in BS EN 61010-2-032:2002, Category IV, Pollution degree 3
Accuracy Class	Class 1 (calibrated), Class 2 (uncalibrated)
Rated current	600 A
Maximum current	2000 A
Output Strength	150 mV ac at rated current
Line Frequency	50 Hz

Protection, Environmental & Compatibility

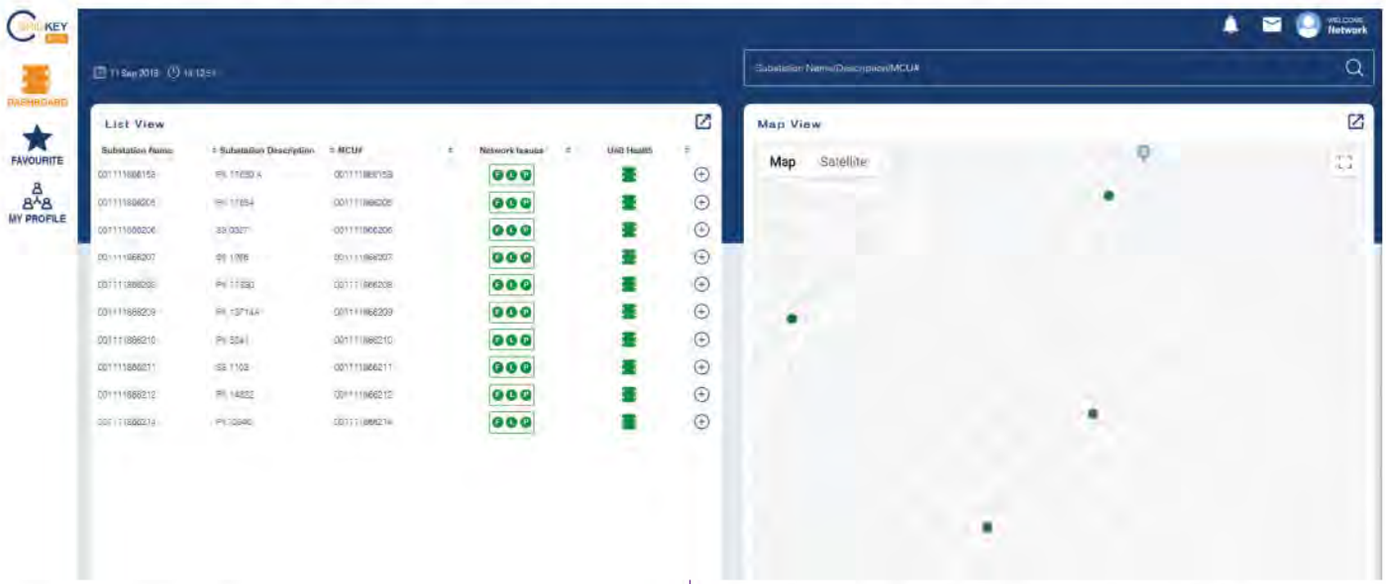
Surge protection	IEC61000 6 kV
Operating temperature range	- 20°C to 55°C (<93% RH, non-condensing)
Storage temperature range	- 25°C to 70°C
Altitude	Up to 2000 m

Mechanical

Minimum required clearance between conductors	14 mm
Cable Length	2 m, 4 m, 6 m
Aperture	50 mm maximum conductor diameter
Weight	N/A
IP category	IP65 IEC 60529

GridKey Data Center

Unlocking the smart grid - A collaboration between Lucy Electric and Sentec



Introduction

Increasingly Network Operators are adding automation and monitoring systems to their networks to increase efficiency, manage distributed energy sources and to restore faults more quickly. As a result, the amount of data being generated and collected by companies is increasing exponentially.

One example of this is Low Voltage monitoring which allows companies to view what is happening on the last mile of their network. Lucy Electric's LV monitoring system, GridKey, has alone generated over 100 billion data points to date. To be meaningful and valuable this data needs to be stored, analysed and presented in a way that is actionable and easy to understand.

Data analytics is a very specialised area and many companies do not have the capabilities or capacity

to manage this activity. To address this challenge the GridKey team has developed its own Data Centre which delivers a high integrity solution for effective data management.

Data storage and management

To manage and safely store the volume of data collected we use a NoSQL database technology similar to that used by Amazon, Google and e-Bay. The design of the database balances data 'read and write' – ensuring that no data is lost when the units report and balancing this with the ability to read the data to allow the analytics to operate.

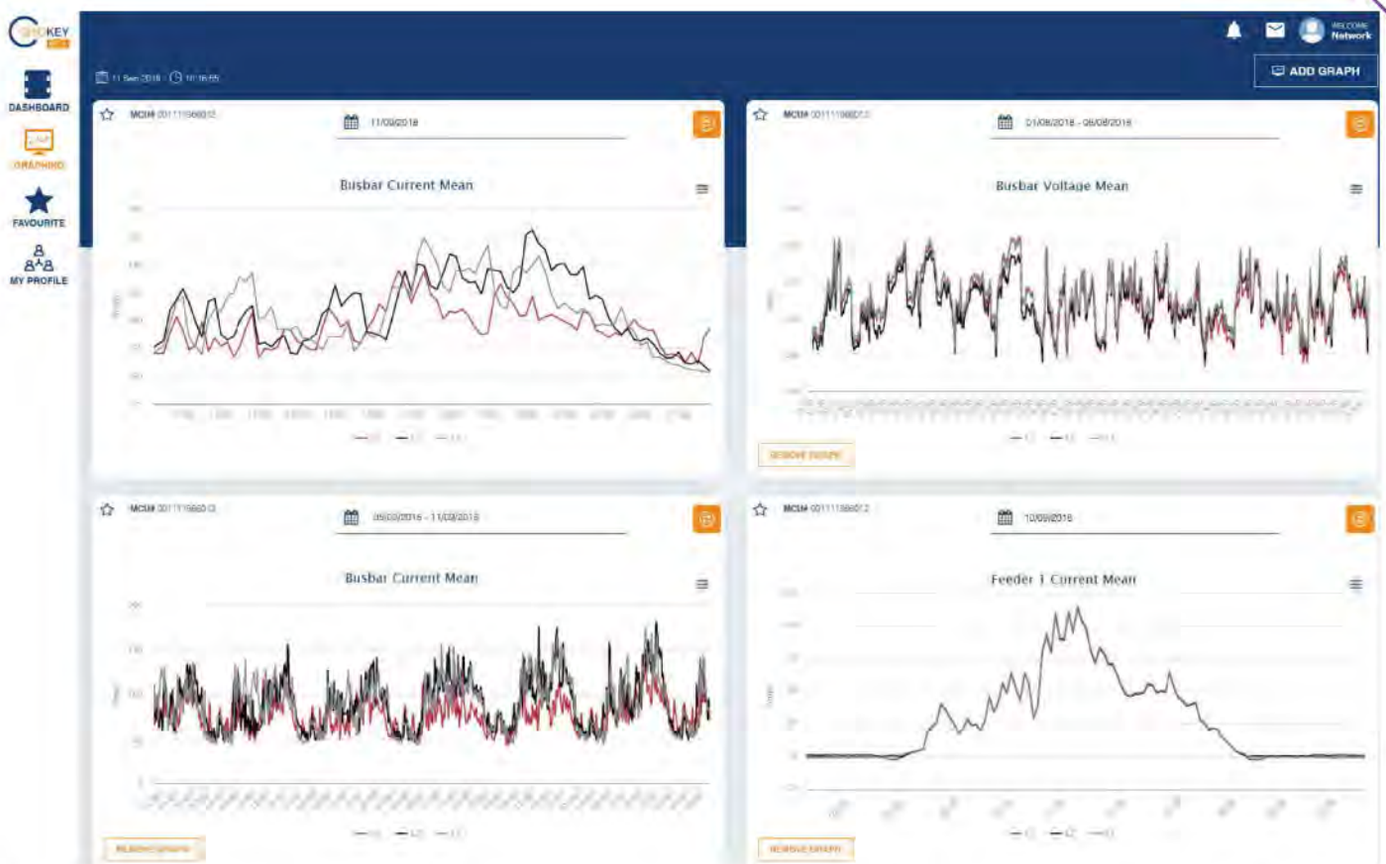
The GridKey Data Centre uses a variety of techniques to ensure this balance is maintained, including pre-processing to store the data in different forms as well as the raw data. It can manage in excess of 10,000 systems, reporting simultaneously without losing any data.

Analytics and alarms

A powerful analytics engine has been included in the Data Centre, carefully integrated with the NoSQL data storage. A series of analytics are in development – using both the data collected as well as monitoring the health of the GridKey units. Further packages are planned around the four themes of actionable information:

- Faults – detection of faults, assistance in determining the cause and potentially predicting faults before they happen
- Losses – calculation of losses caused by phase imbalance and harmonic content, with the ability to identify energy theft when combined with data from domestic and commercial meters
- Power Quality – supporting compliance with statutory requirements for voltage control and harmonic content
- Planning – helping network operators safely maximise the use of their assets allowing for changing load profiles from low carbon technologies and to manage replacement or reinforcement of assets.

GRIDKEY



Graphical User Interface (GUI)

Displaying information in an intuitive way is essential. Learning from best practice in other sectors such as web design, the team have developed a highly visual user interface that presents data in clear, simple and easy-to-read screens. This facilitates decision-making and allows users to quickly see business and safety-critical information.

The GUI can be customised to business needs and the user's role and personal preferences.

Key facts:w

- It is a web-based solution so runs on any computer/tablet/phone with a wide variety of browsers
- It displays information in a wider variety of ways – from a top down overview of all the monitoring systems reporting through to detailed analysis of the raw data of specific units.

Hosting

To improve resilience and protect against hardware failures we have created a four-core system hosted on the cloud with a number of data protection features:

- A high integrity solution that ensures collected data is safe against a number of scenarios
- A safety back up regime – both locally and off-site to allow full disaster recovery
- Hosted on Amazon Web-Services based in Ireland.

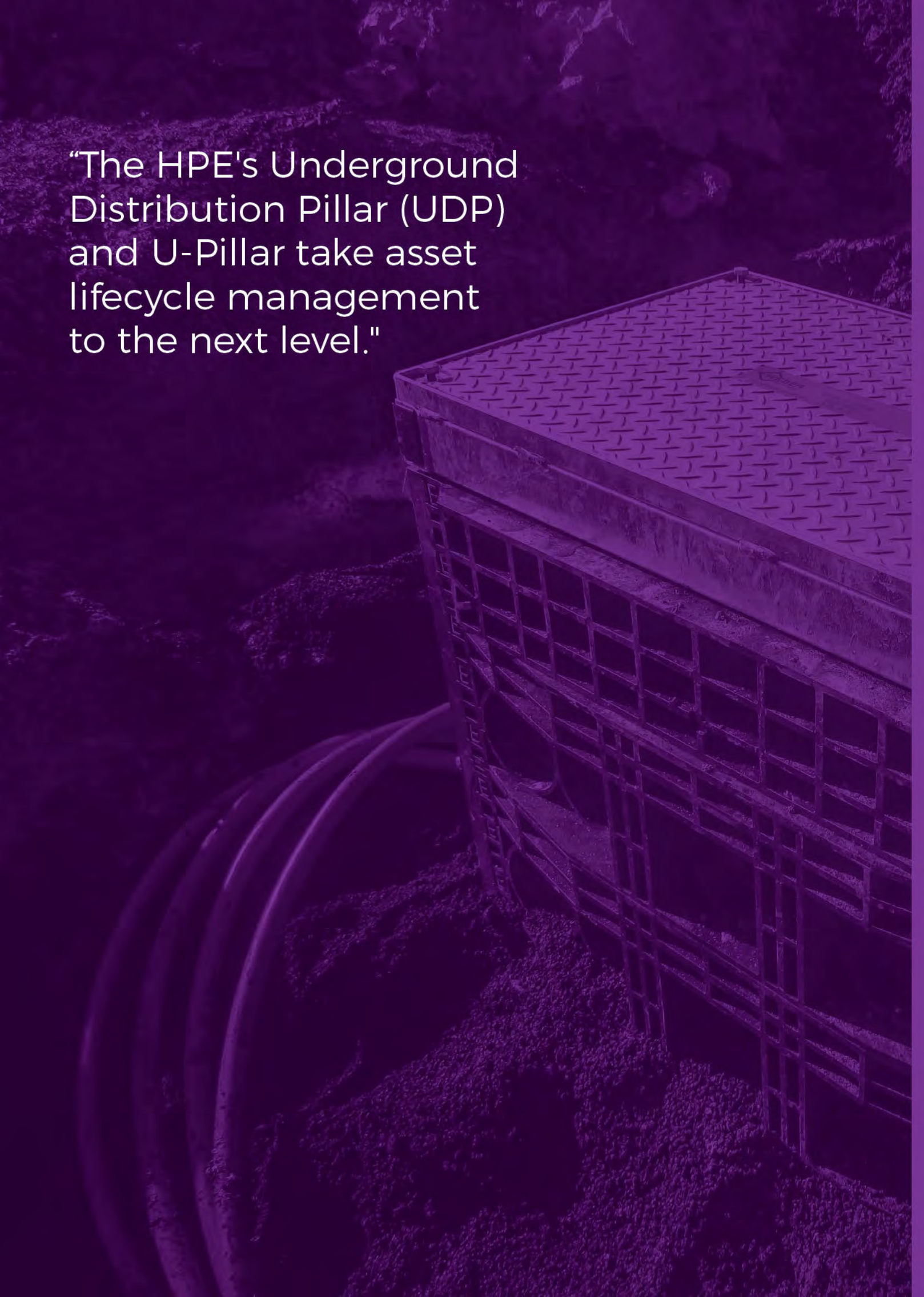
Security

Security of both the complete system and the data has been designed in from the start. We use a number of methods to ensure that the system cannot be compromised by unauthorised personnel either through the GridKey unit communications or through the web interface. The Amazon cloud solution is verified to ISO270000 and our cyber security measures have also been independently verified.

Data from individual customers is managed into separate accounts and can only be accessed by verified users. Varying levels of administration rights ensure that data access levels, by user, can be controlled within the Data Centre.

Integration with other systems

The GridKey Data Centre has been designed to integrate with other systems – both accepting and passing data and information to third party systems. The system integrates with a wide range of sources including internet and real devices with outputs managed through an OpenAPI interface.


“The HPE's Underground Distribution Pillar (UDP) and U-Pillar take asset lifecycle management to the next level."

Underground Network and Service Boxes

UDP In-Ground Distribution Boxes **22**

U-Pillar Underground Service Connection Boxes **24**

Langmatz Modular Structural Pits and Equipment Vaults **26**

UDP In-Ground Distribution Boxes

Secure, watertight underground distribution link switches and services up to 400 A

The Hiko UDP uses industry standard fusegear / switchgear and Langmatz structural pits to provide a safe, robust, reliable, flexible and future-proof solution for underground urban distribution reticulation and service supplies up to 400 A.

Langmatz pits are made in Germany and are engineered for a lifetime of over 40 years. Their use of structural foamed polycarbonate (SFPC) in a honeycomb modular design delivers outstanding performance under dynamic and static load conditions. The SFPC material is extremely strong, heat resistant, flame retardant and resistant to solvents including petrol, diesel and oil. It has been shown by independent testing to be completely non-toxic to ground water.

The UDP is available with lids rated to AS3996 Class B for footpaths and driveways right up to Class E for application in carriageways.

Installation is facilitated by the SFPC pit elements, which can be easily separated into layers and reconnected if required, and by the provision of tool-free conduit knock outs and an adjustable lid height.

The design of the pit eliminates the need for a concrete vault or collar, reducing time and cost on site.

Fusegear / switchgear is housed horizontally under a watertight composite "bell" which allows continuous operation even in flood conditions. Monitoring equipment can also be accommodated. In some configurations, the "bell" is hinged allowing fusegear / switchgear to be lifted up vertically for inspection and operation.

No special tools or spare parts are required.

The Hiko UDP takes asset lifecycle management to the next level: it future proofs the LV network and eliminates the risks associated with above ground pillars.

UDP In-Ground Distribution Boxes

Mechanical specifications

Specification	Test method	Requirement
Lid load class	AS 3996	Up to Class E400 (40 tonnes)
Transfer of vertical loads to ground base	DIN 1054:2005-01	min 200 kN/m²
Transfer of adjacent static and dynamic loads to ground base	DIN FB 101	Load class 2 (96 kN with area 40x40 cm using set up RStO road class)
Active ground pressure (transfer of vertical loads to pit elements)	DIN 4085	Ground types V1 to V3 acc to ATV-DVWK-A 127

Materials

Component	Material
Lid,	Cast iron, galvanised steel or composite
Bell	Composite
Frame	Hot dip galvanised steel (≥ 70 µm)
Fixings	Stainless steel 304 (1.4301)
Structural pit elements	Structural foamed polycarbonate (PC/PBT blend with 6% GRP)

Structural pit element material properties

Specification	Test method	Requirement
Density	ISO 1183	0.95 – 1.25 g/cm³
Water absorption	DIN 53495	< 0.5 %
Hardness	ISO 2039/1	90 MPa
Tensile strain at break	ISO 527	38 MPa
Elongation at break	ISO 527	12 %
Elastic modulus	ISO 527	2,000 MPa
Notched impact strength	DIN 53453	6 kJ/m² (20°C), 4 kJ/m² (-20°C)
Vicat softening temperature	ISO 306	110°C (B50 method)
Flammability	(Surface flame)	Self-extinguishing after flame is withdrawn
Groundwater compatibility	(Independent Test)	Non-toxic (no leaching of heavy metals, phenol, polycyclic aromatic hydrocarbons or BTEX)

Configurations and Dimensions (mm)

Product Code	Typical Configurations				Internal Length (mm)	Internal Width (mm)	Nominal Depth (mm)	Typical Weights (kg)				Cable Tails (mm²)
	63 / 100 A	160 A	250 A	400 A				Total (exc cable tails)	Head Frame	Lid(s)	Switchgear Assembly	
UDP03xx	2x 3P or 6x 1P	1x 3P			550	250	600	62	18	10	5	25-70
UDP04xx	2x 3P or 6x 1P	2x 3P	1x 3P		800	250	600	80	22	12	8	25-95
UDP05xx				1x 3P	400	400	700	110	18	15	30	150-240
UDP07xx			3x 3P	3x 3P	800	400	700	160	25	15	50	95-240
UDP10xx				6x 3P	800	800	700	300	40	2x 50	150	150-240

Notes

Network link box configurations, with optional bus coupler, are also available

Options

Service fuses up to 100 A or EFEN DIN-type horizontal disconnectors 160 A or 250 A. Lid type (composite, steel, steel with concrete fill / paveable) Locking and latching arrangements. Other literature available on request. Type test reports, drawings, technical data sheets, installation instructions, O&M guidelines.

EFEN Langmatz

U-Pillar Underground Service Connection Boxes

For up to 6x 63 A, 4x 100 A or 1x3-phase 160 A services

The U-Pillar is a new concept in service connections for branching networks. Building on Hiko's expertise in underground switchgear, the U-Pillar delivers a simple, robust, secure, cost effective and fully underground solution for 63 A / 100 A service fuses and 160 A DIN standard disconnects.

In the U-Pillar, fusegear is locked and protected below ground level, where it is kept clean and dry, even in flood conditions.

The unique design also provides for safe and convenient inspection and maintenance above ground level, without the need to pump out water.

Another key feature of the U-Pillar is the free movement of air around the fusegear, which eliminates concerns around operational safety and long-term reliability associated with other underground solutions that rely on so-called "waterproof" fuse housings. These typically include seals that may be vulnerable to the pressure cycling that occurs as the temperature of the service fuse varies between hot and cold. When air is drawn in, moisture condenses inside the housing, and is not expelled when the fuse heats up again. Water in contact with a fuse causes operational hazards, reduced asset lifetime, and elevates the risk of in-service failure.

The U-Pillar comes complete with water-blocked, pre-terminated flexible tails for both the incomer and service supplies, so network operators can be certain that the integrity of the asset is not compromised by water ingress via a damaged or poorly maintained service cable. And service connection contractors do not need to open the box.

The reinforced lid of the U-Pillar is extremely robust, for installation in footpaths and driveways, and is available in a range of colours.

The pit is shaped to provide structural strength and long-term stability. Materials used are benign to the environment, and resistant to engine oil, petrol and diesel.

U-Pillar Underground Service Connection Boxes

Mechanical specifications

Parameter	Test method	Requirement	Comments
Lid load class	AS3996	Class B080 (8 tonnes)	Suitable for footpaths and driveways (nominal wheel loading 2,670 kg)
Lid slip resistance	AS/NZS4586	Classification V (P5)	Represents a very low risk of slipping when wet
Colour	-	Black	Other colours available on request
Weather resistance	ASTM D2565 / ISO 4892-2	Greater than UV8	Long term UV stable
Chemical resistance	-	Engine oil, petrol, diesel	Maintains structural integrity after exposure to small and occasional spills
Flammability	UL94	HB	Very difficult to ignite without a sustained source of ignition
Thermal stability	AS/NZS4766	Pass	Melt flow index remains within ±20% after 100 days at 100°C
Temperature range	-	-40 to +60°C	Hot tarseal can be used around pit headframe

Materials

Parameter	Test method	Comments
Lid, pit	Polyolefin	UV stabilised grade suitable for external water tanks
Bell	Composite	-
Stand	Polycarbonate	-
Fusegear holders	ABS, various	-
Fixtures and fittings	Stainless steel	304, (1.4301)
Cable insulation	Thermoset elastomeric PVC	Submersible, splash resistant to petrol and oil, ozone resistant, abrasion resistant

Configurations and dimensions

Product Code	Number of services						Dimensions		Approx	Cable tail sections		In-line connectors	
	63 A		100 A		160 A		Width	Depth	weight	Incomers	Services	Incomers	Services
	1-phase	3-phase	1-phase	3-phase	1-phase	3-phase	(mm)	(mm)	(kg)	(mm²)	(mm²)	(mm²)	(mm²)
UDPHA02A1000x			1						14.4				
UDPHA02B1000x			2						15.3				
UDPHA02C1000x			3						16.2				
UDPHA02D1000x			4						17.1	25	16	10-50	10-50
UDPHA02E0630x	5								17.6				
UDPHA02F0630x	6								19.0				
UDPHA02G1600x						1			25.0				
UDPHA02H1600x					3				25.5				
UDPHA02T0630x (looping Plus 6 x 1P)	6								30.0	70	70	35-120	35-120

Options
Security bolts / internal padlock
Identification (on lid and bell)
Incomer and service cable tail lengths (0.2 m and 0.3 m as standard)[1]
Branch joint[2]
Service fuses
Street lighting and other auxiliary supplies

Notes
1. Capped incomer and water-blocked service connectors included as standard
2. Hiko product code KP8033 (Pfisterer ISICOMPACT single-shear-bolt connector and resin joint kit) for main 50-240 / branch 10-70 mm2.

Other literature available on request
Test reports, drawings, technical data sheets, installation instructions, O&M guidelines, FMEA

Scan this QR code to watch the U-Pillar video animation.

Langmatz Modular Structural Pits and Equipment Vaults

Adaptable and robust solutions for underground services

Langmatz modular pits are made in Germany and are engineered for a lifetime of over 40 years.

The use of structural foamed polycarbonate (SFPC) in a honeycomb modular design delivers outstanding performance under dynamic and static load conditions. The SFPC material is extremely strong, heat resistant, flame retardant and resistant to solvents including petrol, diesel and oil. It has been shown by independent testing to be completely non-toxic to ground water.

Langmatz modular pits withstand all foreseeable environmental conditions, including extreme temperatures, rain, salt, petrol and oil.

They also withstand all foreseeable mechanical conditions, including vertical and horizontal static and dynamic forces from trucks and accelerating / decelerating traffic.

Lids are available from AS3996 Class B80 for footpaths and driveways up to Class E400 for application in carriageways. Lids can be cast iron, galvanised steel, composite or paved.

The pit design eliminates the need for a concrete vault or collar, reducing time and cost on site. The head frame can also provide for a height adjustable lid.

The modular design of the pit components provides for a huge range of applications, including building over existing services. Pit components are available in a range of lengths from 250 mm to 2200 mm.

Installation is made easy by the SFPC pit elements, which can be easily separated into layers for manual handling and reconnected as required. No tools are required, thanks to the design of the modular blocks and the provision of tool-free conduit knockouts.

Langmatz modular pits are used in huge numbers worldwide for a wide variety of applications, including electricity (for LV distribution, service connections, pop-up power supplies, cable jointing and cross bonding boxes) telecoms, water, gas and control gear.

Modular Structural Pits and Equipment Vaults

Materials

Component	Material	Comments
Pit components	Structural foamed polycarbonate	
Pit component connectors (dowel pins)	Polypropylene	
Head frame	Hot-dip galvanised	>70 µm
Fixings	Stainless steel	304 grade
Lid	Composite / cast iron / galvanised steel / paved	

Available sizes

Length[1,2] (Internal)	Height (layers)			Height (head-frame support layer)		Height (head frame) for lid type		
						Composite	Cast iron, galvanised steel	Paved
250	70	151	250	66	140	105	95	As required
400		220	580	-				
650								
800			-			-		
1165								
1400								

Notes
1. Other sizes available on request up to 2,200 mm length
2. External length add 100 mm (nom)

Other literature available on request
Test reports, drawings, installation instructions, O&M guidelines
For ordering codes and for more information contact your Hiko Power Engineering representative

Langmatz

Disconnects and Fuses

EFEN LV Vertical Fuse Switch Disconnects **29**

EFEN LV Horizontal Fuse Switch Disconnects **32**

Fuse Switch Disconnects for LV Overhead Lines **36**

EFEN NH Low Voltage High Rupturing Capacity Fuses and Solid Links **38**

Connections, Spare Covers, CTs and Other Accessories **40**

EFEN LV Vertical Fuse Switch Disconnects

EFEN E3 Disconnector is the next practicable step in LV network safety

Closed

Open

Visual Break

Isolating electricity supply at distribution substations can be made safer with the latest generation of EFEN disconnectors.

The new E3 disconnector keeps live terminals fully shrouded from touch at all times.

In the open position the E3 disconnector holds the disconnected fuse under its cover, which maintains an IP2x barrier preventing finger touch of either source or load terminal. With distributed generation on the rise and more connected solar feeding into the LV network from residential and commercial premises, a fully shrouded approach better protects operators by eliminating the risk of exposed live fuse terminals.

In the E3 disconnector the whole fuse is withdrawn in a parallel direction by levering the manually dependent switch in a way that opens both terminals of each fuse blade at the same time. This halves the arc voltage by creating two smaller arcs – one at each terminal.

E3 disconnectors also manage heat more effectively, reducing the risk of over-heating. Heat build-up is minimised by improved housing ventilation and busbar design.

The improved design also delivers improved switching capacity with non-resistive loads, and higher short-circuit rating for improved performance in fault conditions.

The versatile range includes both simultaneous three phase switching as well as individual single phase switching from 100 A to 630 A. E3 disconnectors are available as either 1000 A or 2000 A isolators with knife links in place of fuses.

Other ratings are available on request, including parallel arrangements. Rear-connect and side-connect configurations are also available.

LV Vertical Fuse Switch Disconnectors

E3 Fuse Switch Disconnectors: characteristics and ratings

For Fuse-Links ACC. TO DIN 43620/1		Unit Size	00/100 000/00	00/185 000/00	2 2	3 3
Rated Operational Current L_e	400V	A	160	160	400	630
	500V	A	160	160	400	630
	690V	A	160	160	315	500
Conventional Free Air Thermal Current I_{th}		A	220	220	400	630
Rated Operational Voltage U_e		V	690	690	690	690
Rated Insulation Voltage U_i		V	1000	1000	1000	1000
Rated Impulse Withstand Voltage U_{imp}		KV	8	8	12	12
Rated Conditional Short Circuit Current	400V	KA	100	120	120	120
	500V	KA	100	120	120	120
	690V	KA	100	100	100	100
Utilisation Category VDE 0660 T107/EN/IEC 60947-3	400V		AC-23B	AC-23B	AC-23B	AC-23B
	500V		AC-22B	AC-22B	AC-22B	AC-22B
	690V		AC-22B	AC-22B	AC-21B	AC-21B
Mechanical Durability		Cycles	1400	1400	800	800
Electrical Durability		Cycles	200	200	200	200
Type Of Protection ACC. DIN/EN 60529/VDE 0470 T1		IP	30	30	20	20
Maximum Power Dissipation Of The NH Fuse-Links		W	12	12	34	48
Total Power Loss At I_{th} (without fuse links)		W	20	22	56	111
Degree Of Pollution			3	3	3	3
Overvoltage Category			IV	IV	IV	IV
Rated Frequency		Hz	50-60	50-60	50-60	50-60
Weight Without NH Fuse-Links		KG	1.30	2.00	95-240	70-150

E3 Isolators: characteristics and ratings

Size		Description	Unit	1000A	2000A
Rated Operational Voltage		U_e	Vac	690	690
Rated Operational Current		I_e	A	1000	2000
Rated Insulation Voltage		U_i	Vac	1000	1000
Rated Impulse Withstand Voltage		U_{imp}	kV	12	12
Rated Frequency		I_{cw}	Hz	5-60	5-60
Rated Withstand Short Circuit Current			kA	15 25*	22 40*
Utilisation Category AC	400 V			AC-22B	AC-22B
	500 V			AC-21B	AC-21B
	690 V			AC-21B	AC-21B
Mechanical Durability - Cycles			N	800	600
Electrical Durability - Cycles			N	200	200
Maximum Power Dissipation Without Fuse Links			W	270	540
IP Protection (With Front Lid Open)		IP		20	20
Degree Of Pollution				3	3
Overvoltage Category				IV	IV
Material		All Material Conforms To RoHS			

*With Handle Lock

E3 Fuse Switch Disconnects and Isolators

Product Code	Din Size	Function	Current rating	Busbar pitch	Nominal width
			(A)	(mm)	(mm)
EFV00160H100	00	Fuse switch disconnect	160	100	50
EFV00160	00	Fuse switch disconnect	160	185	50
EFV2400	2	Fuse switch disconnect	400	185	100
EFV3630	3	Fuse switch disconnect	630	185	100
EFV3800	3	Fuse switch disconnect	800	185	100
EFV3910C	3	Fuse switch disconnect	910	185	100
EFV31000	3	Switch disconnect[1]	1,000	185	100
EFV31250D	2x3	Fuse switch disconnect	1,250	185	200
EFV31600D	2x3	Fuse switch disconnect	1,600	185	200
EFV31820D	2x3	Fuse switch disconnect	1,820	185	200
EV32000D	2x3	Switch disconnect[1]	2,000	185	200
EFV41600	4	Fuse switch disconnect	1,600	185	150

Optional configurations and accessories

Product Code	Cable clamps	Cable connection adaptors		Three phase single throw handle	Low profile handles	Busbar connections				CT's
	V-Clamps	Extended	Compact			Rear	Side (Left)	Side (Right)	Bus coupler	
EFV00160H100										
EFV00160										
EFV2400										
EFV3630						R	SL	SR		
EFV3800										
EFV3910C										
EFV31000	V		C	P	L				B	
EFV31250D		E								250/400/ 600/800
EFV31600D										
EFV31820D										
EFV32000D										
EFV41600										

Examples
EFV00160A: fitted with adaptor to fit 100 mm DIN2/3 spacing
EFV00160V: 160A DIN 00/185 fuse-switch-disconnect with V-clamps
EFV3630VP600: 630A DIN 3 fuse-switch-disconnect with V-clamps, low single throw handle and 600:5 CTs

Notes
1. Switch disconnects (isolators) are supplied complete with knife switches

Also available
Fuse links
Solid copper (knife) links
CTs with non-standard ratings and for external mounting
LV switchgear assembly frames, cabinets and underground pits

Other literature available on request
Type test reports, drawings, technical data sheets.

EFEN

EFEN LV Horizontal Fuse Switch Disconnects

The best of both worlds with EFEN SILAS and IN Series

Horizontal fuse switch disconnects provide an alternative mounting and connection method to vertical disconnects, for example for single circuit supplies and for the safe and cost effective upgrade or replacement of earlier generations of fuse switches.

The EFEN SILAS range has been used successfully in New Zealand for 30+ years and is now complemented by the EFEN IN series.

Both the SILAS and IN series use the widely available and economic DIN blade fuse cartridges, and offer an excellent level of operator safety thanks to their AC22B switching capacity.

Both may be used in AC or DC applications, as specified by their ratings.

The SILAS range is designed for independent mounting for single switch protection applications by virtue of its terminal covers. These features are ideally suited to solar applications or wherever battery protection is required in an internal installation.

SILAS is also suitable for multiple feeder mounting on busbars with ratings from 160 A to 630 A.

The EFEN IN series of switches is available from 160 to 1,600 A and is a more compact design. Cable covers are supplied: these can be removed for use in applications where a protective enclosure is used. Its compact size makes the IN ideal for network pillar applications.

Sizes 00, 1, 2 and 3 of the IN series and sizes 1, 2 and 3 of the SILAS series have the added advantage of phase protection barriers moulded into the base.

Horizontal Fuse Switch Disconnects and Isolators: characteristics and ratings according to IEC 60947-3

IN series		DIN size	000/00	1	2	3	4A
Rated operational current, I_e	690 V	A	160	250	400	630	1,250 1,600
Conventional free-air thermal current I_{th}	690 V	A	160	250	400	630	1,250 1,600
Rated operational voltage, U_e		V	690	690	690	690	690
Rated insulation voltage, U_i		V	800	800	800	800	800
Rated impulse withstand voltage, U_{imp}		kVpk	8	8	8	8	8
Rated conditional short circuit current	400 V	kA	100	100	100[1]	100	50
(when protected with NH fuse-links)	690 V	kA	50	50	50	50	50
Utilisation category	400 V		AC-22B	AC-22B	AC-22B	AC-22B	AC-22B
	500 V		AC-22B	AC-22B	AC-22B	AC-22B	AC-22B
	690 V		AC-21B	AC-21B	AC-21B	AC-21B	AC-21B
	440 Vdc[2]		DC-21B	DC-21B	DC-21B	DC-21B	DC-21B
Mechanical service life		Cycles	1,600	1,600	1,000	1,000	600
Permissible ambient temperature		°C			-25 to +55		
Degree of protection to IEC 60529					IP3X		
Maximum permissible power dissipation of the NH fuse-links		W	12	23	34	48	115 140
Weight without fuse links		kg	0.5	2.0	3.3	5.3	14.0

SILAS Series		DIN size	000/00	1	2	3
Rated operational current, I_e	690 V	A	160	250	400	630
Conventional free-air thermal current I_{th}	690 V	A	160	250	400	630
Rated operational voltage, U_e		V	690	690	690	690
Rated insulation voltage, U_i		V	1,000	1,000	1,000	1,000
Rated impulse withstand voltage, U_{imp}		kVpk	8	8	8	8
Rated conditional short circuit current (when protected with NH fuse-links)	690 V	kA	80	80	50	80
Utilisation category	400 V		AC-23B	AC-23B	AC-23B	AC-23B
	500 V		AC-22B	AC-22B	AC-22B	AC-22B
	690 V		AC-21B	AC-21B	AC-21B	AC-21B
	220Vdc		DC-22B	DC-21B	DC-21B	DC-21B
	440 Vdc		Note[3]	DC-21B	DC-21B	DC-21B
Mechanical service life		Cycles	1,600	1,600	1,000	1,000
Permissible ambient temperature		°C	-25 to +55			
Degree of protection to IEC 60529			IP3X			
Maximum permissible power dissipation of the NH fuse-links		W	12	23	34	48
Weight without fuse links		kg	0.8	2.2	3.6	4.1

Notes

1. With pilot tool
2. When equipped with L1 and L3 with two poles; 1-pole Ue = 220 Vdc
3. Please enquire

Tightening torques for terminals and busbar mounting

IN series	DIN size	000/00	1	2	3	4A
Multiple use screw terminal	Nm	14	32	32	32	32/56
Pressure plates with bolts / prism clamps		4	8	14	14	-
Busbar mounting		6	10	10	14	-

SILAS Series	DIN size	000/00	1	2	3
Multiple use screw terminal	Nm	12	20	20	20
Pressure plates with bolts / prism clamps		3	6	8	8
Busbar mounting		3	6	8	8
Box clamps		5	12	20	20

Conductor application ranges

IN series	Conductor type		Cross section	000/00	1	2	3	4A
Multiple use screw terminal	-	-	-	M8	M10	M10	M10	M12/M16
Pressure plates with bolts	CU	RE	mm²	1.5-16	1.5-16	-	-	-
		RM/SM		2-25	6-50	6-70	6-70	
Pressure plates with bolts and prism clamps	CU/AL	RE/RM/ SE/SM		2.5-70	70-150	70-240	70-240	-
Flat conductor (max W x H)	-	-	mm	10x6	16x15	21x15	21x15	-

SILAS series	Conductor type		Cross section	000/00	1	2	3
Multiple use screw terminal	-	-	-	M8	M10	M10	M10
Pressure plates with bolts	CU	RE	mm²	6-50	70-150	-	-
		RM/SM		6-25	6-50	6-70	6-70
Pressure plates with bolts and prism clamps	CU/AL	RE/RM/ SE/SM		6-70	70-150	120-240	150-300
Box clamps	CU	RE/RM		2.5-95	35-150	95-300	95-300
		RE/RM		-	50-150	120-300	120-300
	AL	RE/RM		-	35-150	95-300	95-300
		RE/RM		-	50-150	120-300	120-300
Flat conductor (max W x H)	-	-	mm	-	15x20	20 x 32	20 x 32

Horizontal Fuse Switch Disconnects and Isolators: product selection table and dimensions

Product code	Type	DIN size	Current rating (A)	Configuration	Mounting system	Optional V-clamps[1]	Nominal height (mm)	Nominal width (mm)	Nominal depth (mm)
EFH00160	IN	00	160	Three phase single throw	Base plate	Yes	156	106	90
EFH1250		1	250				270	184	110
EFH2400		2	400				281	210	127
EFH3630		3	630				289	250	132
EFH41600		4A	1,600			No	330	378	233
EF00160S		00	160	Single phase		Yes	200	50	95
EF1250S		1	250				284	100	142
EF2400S		2	400				284	100	142
EF3630S		3	630				284	115	142
EF41600S		4A	1,600			No	330	126	233
EF2400SB		2	400		Busbar	Yes	284	100	142
EF3630SB		3	630				284	115	142
WE500	SILAS	00	160	Three phase single throw	Base plate	Yes	194	106	80
WE510		1	250				306	184	110
WE520		2	400				306	210	130
WE530		3	630				306	250	130

Notes

1. add "V" suffix to product code to specify V-clamps.

Also available

Fuse links
Solid copper (knife) links
LV switchgear assembly frames, cabinets and underground pits
Other literature available on request
Type test reports, drawings, technical data sheets

EFEN

Fuse Switch Disconnects for LV Overhead lines

For up to 160 A and 400 A in-line fused switching and for 16 A tap off connections

Pfisterer DIN standard fuse switch disconnects for Low Voltage are designed for bare wire or ABC overhead line sectionalising applications.

The fuse switch disconnect housings are manufactured from weatherproof UV and ageing resistant reinforced polymer.

Contacts are tin plated copper (DIN00) or silver plated copper (DIN1/2). Terminals are fully insulated and made from high grade aluminium alloy, suitable for use with either aluminium or copper conductors on either side.

Both the DIN00 and DIN1/2 size fuse switch disconnects can be mounted on poles, crossarms or other structures. Mounting brackets are available for single and triple pole plus neutral configuration. Brackets can be fabricated or modified to suit individual requirements.

The 16 A fuse protected tap-off is also fully insulated and can be used on ABC systems using an insulation piercing conductor and on bare overhead conductors, if the terminal bolt is stripped.

Fuse switch disconnects and tap-off connectors

Product code	Package quantity	Description	Rated operation current	Fuse size	Mounting bolts	Dimensions (mm)		
						Length	Width	Height[2]
KP2207R	1	Single pole fuse switch disconnect	160 A[1]	DIN 00	1x M8	207	65	106
KP2209	1	Single pole fuse switch disconnect	400 A	DIN 1/2	2x M8[3]	345	100	140
KP2202	25	Tap-off fuse connector[4]	2-16 A	NEOZED D01	-	-	-	-

Fuse switch disconnect technical data

Product code	In terminal		Out terminal		Rated short circuit making capacity kA	Rated short circuit withstand current kA	Protection class	Utilisation category
	Type	conductor size mm²	Type	conductor size mm²				
KP2207R	Single tunnel	6 - 95	Double tunnel	2 x 6 - 95	16	16	IP23	AC21B
KP2209		25 - 240		2 x 25 - 240				

Accessories

Product code	Package quantity	Description	Material	Mounting holes	
				Size (mm)	Distance between centres, mm
WEB002004	1	Slotted angle bracket for 1x KP2207R	2 mm stainless steel 304	9 x 20	-
WEB002014	1	Two-hole angle bracket for 1x KP2207R	6 mm hot dip galvanised steel	2x Ø14	55
KP2213	1	Angle bracket for 3x KP2209		2x Ø18	220

Notes
1. Current rating 245 A with solid links
2. Nominal, excluding mounting bolts and pulling handle
3. Distance between centre lines 60mm
4. For branch conductor 1.5-6mm²

Other literature available on request
Test reports, drawings, installation instructions

PFISTERER

EFEN NH Low Voltage High Rupturing Capacity Fuses and Solid Links

For horizontal and vertical disconnects

NH stands for "low voltage high rupturing capacity" (from the German: Niederspannungs Hochleistungs Sicherungen). NH fuses have a breaking capacity generally exceeding 100 kA, which covers virtually all the short-circuit currents expected to be encountered in low voltage systems.

The NH fuse system is used worldwide, and comprises fuses, solid links, fuse bases and fuse switch disconnects. NH fuses are designed to be used by authorised persons, and as such their design does not provide inherent protection against electric shock; instead, the fuse switch disconnect provides this protection. EFEN SILAS and IN series horizontal disconnects are fully compliant in this regard and EFEN E3 vertical disconnects deliver best practice, with fully shrouded source and load contacts, even in the open position.

NH fuses and links sizes 00, 1, 2, 3 and 4a for which fully standardised bases are available.

There is no minimum operating voltage that must be observed for NH fuses, and they are designed to operate with AC systems from 45-62 Hz.

For most distribution line and cable applications, NH fuses with utilisation category gG are specified. These have full-range breaking capacity for general application, and have a time-current characteristic aligned to meet the current carrying capacity of insulated conductors. Hiko stocks a range of the most commonly used sizes of gG fuses. Other specialised fuses with different operating characteristics are also available.

Product selection table: fuse links

NH size	Product code	Rated current A
00	WEF00006	6
	WEF00010	10
	WEF00016	16
	WEF00020	20
	WEF00025	25
	WEF00035	35
	WEF00040	40
	WEF00050	50
	WEF00063	63
	WEF00080	80
	WEF00100	100
	WEF00125	125
	WEF00160	160
1	WEF1040	40
	WEF1050	50
	WEF1063	63
	WEF1080	80
	WEF1100	100
	WEF1125	125
	WEF1160	160
	WEF1200	200
	WEF1250	250

Product selection table: fuse links

NH size	Product code	Rated current A
2	WEF2050	50
	WEF2063	63
	WEF2080	80
	WEF2100	100
	WEF2125	125
	WEF2160	160
	WEF2200	200
	WEF2250	250
	WEF2315	315
	WEF2355	355
	WEF2400	400
3	WEF3315	315
	WEF3355	355
	WEF3400	400
	WEF3500	500
	WEF3630	630
	WEF3800	800
4a	WEF4800	800
	WEF41000	1000
	WEF41250	1250
	WEF41600	1600

Product selection table: solid links

NH size	Product code	Rated current A
0	WEFS0	160
1	WEFS1	250
2	WEFS2	400
3	WEFS3	630
4a	WEFS4	1600

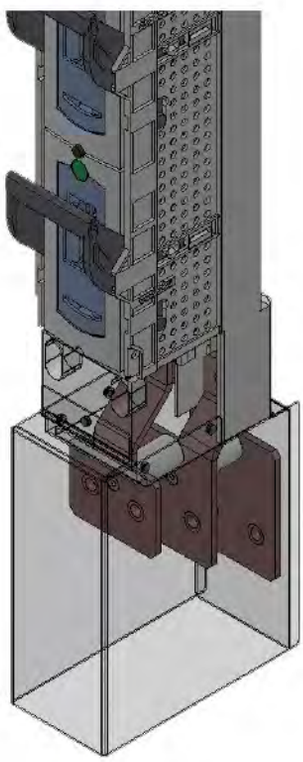
Notes
Fuse links are rated for use up to 500 Vac

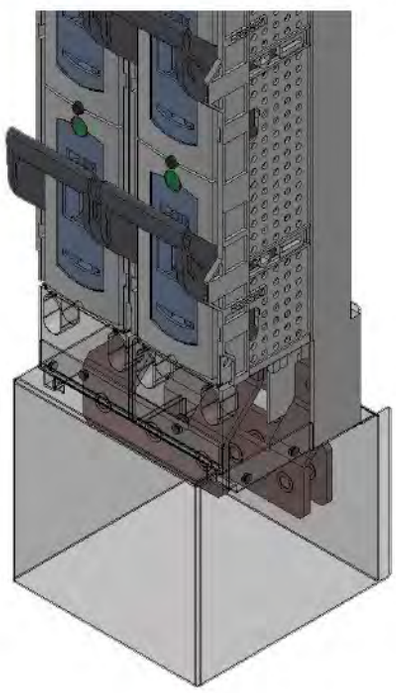
Other literature available on request
Test reports, technical data sheets

EFEN

Connections, Spare Covers, CTs and Other Accessories

For EFEN E3 vertical disconnects





Hiko provides a range of accessories to make the latest generation of EFEN E3 vertical fuse switch disconnectors even more versatile.

Connections

Connection plates have been specially designed to enable the connection of large cross section cables and multiple cables. These are typically ordered with the EFEN E3 disconnector as a complete assembly. The "compact single" connection is available as a retrofit kit.

Side entry tags are available for either the left or the right-hand side of the EFEN E3 disconnector.

Hiko also engineers bespoke connection solutions for individual customer requirements.

Spare covers

Connection plates are provided complete with covers; spare covers are available if required.

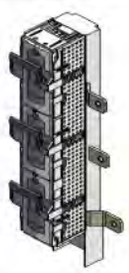
Current transformers

The EFEN E3 disconnector product line includes a specially designed range of Class 1 CT's that fit neatly onto the busbar connection tags, without increasing external dimensions.

Other accessories

The range of accessories available also includes: V-clamps, for cable connection without compression crimping; mounting brackets to provide attachment points on the side of the EFEN E3 disconnector; handle clips to identify a particular circuit such as the incomer; and CT cable covers, to protect the special CT wiring behind the disconnector.

Disconnect connection variants (pre-assembled)

Image	Disconnect types	Suffix[1]	Description	Rating (A)	Max conductor size (mm^2)	Extended length to bottom connection centre line (mm)
	EFV2400 EFV3630 EFV3800 EFV31000	C	Compact single Also available as an accessory Hiko code EFA0005	1000	2x 300	103
	EFV31250 EFV31600 EFV32000	CD	Compact dual	2000	3x 630	114
	EFV2400 EFV3630 EFV3800 EFV31000	E	Extended single	1000	1x 630 or 2x 300	158
	EFV31250 EFV31600 EFV32000	ED	Extended dual	2000	3x 630	169
	EFV2400 EFV3630 EFV3800 EFV31000	SL	Side entry tags (left)	1000	-	-
		SR	Side entry tags (right)	1000	-	-

Disconnect accessories

Image	For use with	Product code[2]	Description
	EFV2400 EFV3630 EFV3800 EFV31000	EFA0014	V-clamp Connector set
	EFV2400 EFV3630 EFV3630 EFV3800 EFV31000 EFV31250 EFV31600 EFV32000	EFA0005	Compact connection kit (set of 3x modified covers, brackets and bolts)
		EFA0013	Angle bracket (set of 4x for attachment points in the side of disconnects)
		EFA0006	Red handle clips (for identifying incomer)
		EFA0001	CT cable holder (clips on to the back of the disconnect)

Spare covers[3]

Image	For use with disconnect types	Product code[2]	Description
	EFV3630 EFV3800 EFV31000	EFA0007	Standard E3 terminal cover
		PC023	Front cover for compact single
	EFV31250 EFV31600 EFV32000	PC027	Front cover for compact dual
	EFV3630 EFV3800 EFV31000	PC021	Front cover for extended single
	EFV31250 EFV31600 EFV32000	PC024	Front cover for extended dual

Current transformers

Image	For use with disconnect types	Suffix[1]	Product Code[2]	Description	Rating[4,5] I_n (A) : I_{cn} (A)	Burden VA	Accuracy class
	EFV2400 EFV3630	250	EFCT250	Current transformer	250:5	5	1
	EFV3800	400	EFCT400		400:5		
	EFV31000 EFV31250	600	EFCT600		600:5		
	EFV31600 EFV32000	800	EFCT800		800:5		

Notes

1. When ordered as part of a disconnect assembly
2. When ordered separately as a component
3. Contact Hiko for installation guidelines
4. Rated continuous current 1.2x I_n; rated short-time thermal current I_{th} = 60x I_n (max 50 kA); rated dynamic current 2.5x I_{th} (max 120 kA)
5. Highest equipment voltage U_m = 720 V; rated ac withstand voltage 3 kVrms

Other literature available on request

Type test reports, drawings, installation instructions

Cable Joints and Terminations

Pfisterer ISICOMPACT LV Branch Joints **44**

NKT CB/CC Screened T-Connectors **46**

NKT CPI Inner Cone Connectors **50**

NKT Fluid-Filled MV/HV Cable Accessories **52**

NKT MV Cable Joints and Terminations **54**

Pfisterer ISICOMPACT LV Branch Joints

Four safe and secure tap connections with one single shear bolt

Tapping off low voltage electricity supplies to premises has become safer, faster and easier with new Pfisterer ISICOMPACT connectors.

With just one shear bolt in the new Pfisterer ISICOMPACT connector it's now possible to clamp and connect all conductors with the right torque for a guaranteed connection. Pfisterer developed the new ISICOMPACT L30 and L40 single bolt connectors which are ideally suited to New Zealand cables. Unlike ring connectors the new ISICOMPACT units do not require insulation to be stripped from the branch conductors.

Once the ISICOMPACT moulded plastic body is assembled around the main cables and the four cores are locked in position, the service cable cores are simply aligned and inserted into their clamping apertures fully sheathed. There are no exposed live parts.

A single shear bolt then clamps all cores in unison. The bolt shears off when the right torque is reached for the teeth to penetrate all the stranded conductors, locking the joints securely and making sure of a successful connection every time.

With a plastic body encasing the metal clamping system and no cores having to be stripped of their insulation, the new ISICOMPACT connectors take risk out of live work and speed up installation times.

Pfisterer LV Branch Joints incorporate the ISICOMPACT connector inside hinged polycarbonate shells filled with resin. Two generously dimensioned shells sizes are available, designed to accommodate a wide range of cable sizes and types, including large branch cross sections and armour cables requiring earthing and short circuit continuity kits. The shells are filled with polyurethane hard resin, or polybutadiene soft resin, which allows the joint to be re-entered if required.

LV Branch Joints: connectors

Product code	Connector type	Description	Main	Branch
			mm² (sector stranded)	
KP1533	ISICOMPACT L30	Single shear-bolt ring connector	50–240	10–70
KP1534	ISICOMPACT L40	Single shear-bolt ring connector	95–240	70–150

Complete LV branch joint kits

Product code	Connector type	Shells size	Resin type	Container	Main	Branch
					mm² (sector stranded)	
KP8013	ISICOMPACT L30	140/420	PUR	Can	50–240	10–70
KP8023			PBD FLEX			
KP8033			PUR	Bag		
KP8043			PBD FLEX			
KP8053		160/500	PUR	Can		
KP8063			PBD FLEX			
KP8073			PUR	Bag		
KP8083			PBD FLEX			
KP8014	ISICOMPACT L40	140/420	PUR	Can	95–240	70–150
KP8024			PBD FLEX			
KP8034			PUR	Bag		
KP8044			PBD FLEX			
KP8054		160/500	PUR	Can		
KP8064			PBD FLEX			
KP8074			PUR	Bag		
KP8084			PBD FLEX			

Resin and shells kits (without connector)

Product code	Shells size	Resin type		Application notes
KP8101	140/420	PUR	Can	Accommodates either L30 or L40 ISICOMPACT connector
KP8102		PBD FLEX		
KP8103		PUR	Bag	
KP8104		PBD FLEX		
KP8105	160/500	PUR	Can	Can be used to accommodate armour cables requiring earth and short circuit continuity kit.
KP8106		PBD FLEX		
KP8107		PUR	Bag	
KP8108		PBD FLEX		

Notes

Shell sizes are given as diameter/length
Max cable diameters: 140/420: main 60 mm, branch 45 mm; 150/600: main 65 mm, branch 50 mm
PUR = Polyurethane (hard resin)
PBD FLEX = Polybutadiene (soft resin)
ISICOMPACT L30 and L40 connectors can be used with aluminium or copper cable: solid, stranded or fine stranded; application ranges and cable types are the subject of continuous development, therefore for guidance consult your Hiko representative.

Other literature available on request

Type test reports, materials safety data sheet, installation instructions

PFISTERER

NKT Screened Elbow Connectors for Type C Interfaces

NKT product type CB

NKT manufactures a wide range of cables and cable accessories and is the leading supplier of medium voltage screened connectors across much of Australasia.

NKT was the first to manufacture silicone rubber cable terminations and now has 50 years' experience, in applications up to 400 kV.

The CB range of screened T-connectors are made of silicone rubber for connecting to medium voltage switchgear, RMU's and transformers fitted with Type C bushings according to EN 50180/50181.

The silicone rubber grade used in CB connectors is durable, UV and ozone resistant, waterproof, non-flammable, self-extinguishing and heat resistant.

Together with its excellent mechanical and electrical properties, this makes it the preferred material for 11-33 kV screened connectors.

In addition to offering high quality electrical insulation and superior corona and tracking resistance, the elasticity of silicone rubber facilitates a wide application range for each CB size. So, one product can be used for many different conductor cross-sections.

The Type C bolted connection type is secure and safe and is very widely used, with sizes available up to 1000 mm^2. Installation is straightforward and fast, requiring no special tools.

The outer screen is a fully bonded conductive layer specially developed by NKT for long term reliability. Operation is maintenance free.

Coupling Connectors (CC range) are available for each screened T-connector.

Screened connectors for interface Sizes A, B and F are also available.

NKT screened connectors for Type C interface

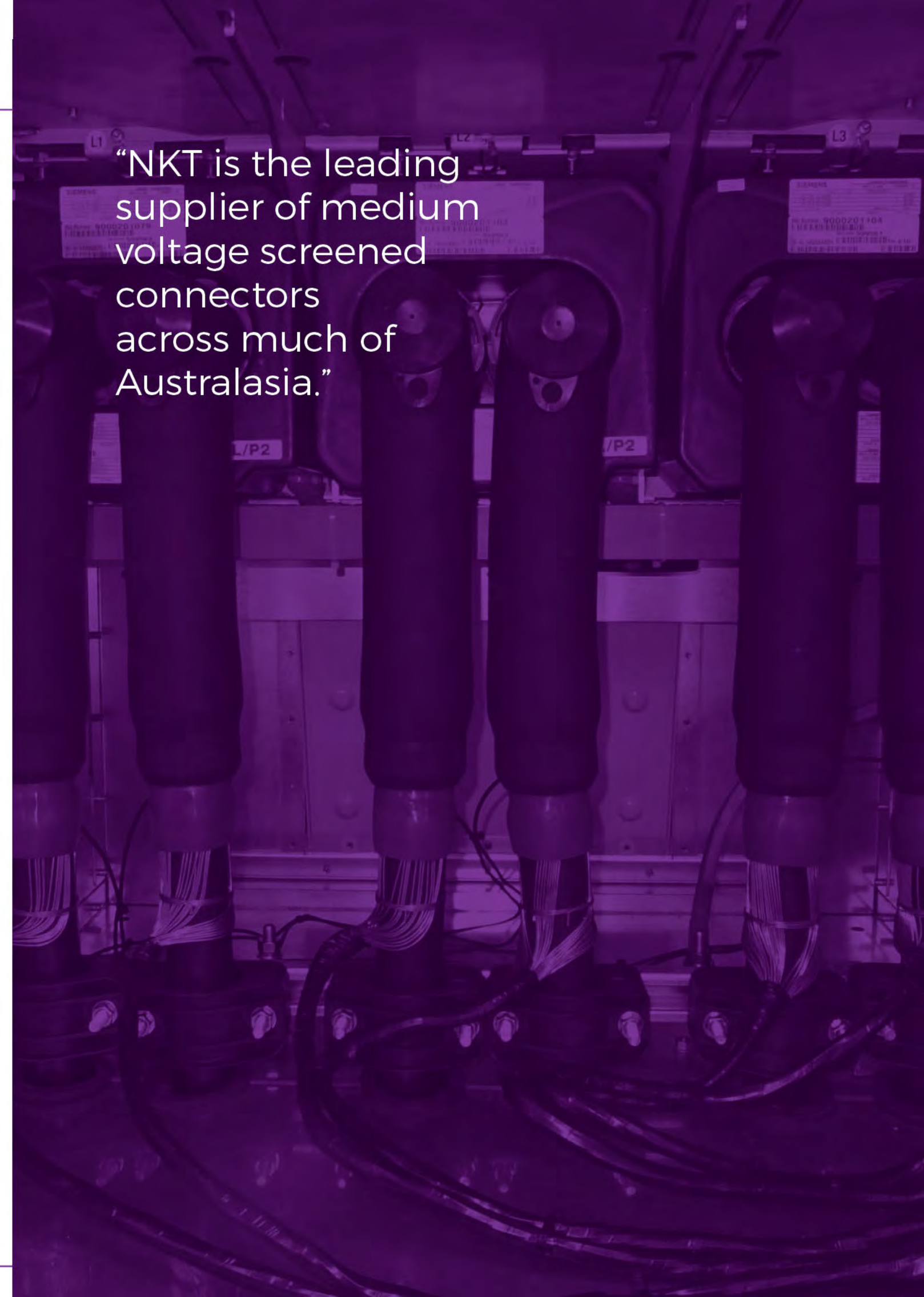
Product Code	System Voltage			Application range				Dimensions	
	11kV	22kV	33kV	Cross section[1], mm		Insulation diameter, mm		Approx length[2]	Approx depth[3]
T-connector				Min	Max	Min	Max	mm	mm
NKT2632142HNZ	✓			25	95	12.7		245	190
		✓			70		25.0		
NKT2632143HNZ	✓			95	300	17.0			
NKTCB12630N6	✓			400	500	28.9	40.0	385	
NKT2632145HNZ		✓		95	300	21.2	34.6	245	190
NKTCB241250P7	✓	✓		400	630	34.0	45.6	385	
NKT2633116HNZ			✓	25	35	17.0	24.3	245	190
NKT2633117HNZ			✓	50	150	21.2	33.6		
NKT2633120HNZ			✓	150	300	28.9	40.0		
NKT2633133HNZ			✓	300	400		44.0		
NKTCB361250N7			✓	400	500	34.0	45.6	385	190
NKTCB361250P8			✓	400	630	39.1	51.0		
NKTCB421250R8			✓	630	800			440	200
NKTCB421250S9			✓	630	1000	45.5	57.8		

Accessories for NKT screened connectors

Product code	Description	Max system voltage kV	Notes
NKTCBEAS630	End plug for C type connectors	33	Fits into front of T-connector (in place of bushing)
NKTCBC40630M12	End cover for C-type bushings, M12 thread		Fits onto bushing in place of T-connector
NKTCBC40630M16	End cover for C-type bushings, M16 thread		Fits onto bushing in place of T-connector
NKTCBE20M12	Earthing plug for NKTCB12/24/36630 connectors		Fits into back of T-connector to provide earthing point (20 mm dia)
NKTCBE20M16	Earthing plug for NKTCB36/421250 connectors		
NKTCBPAKM12	Test adaptor for NKTCB12/24/36630 connectors		Fits into back of T-connector to provide test point for AC, DC, VLF testing
NKTCBPAKM16	Test adaptor for NKTCB36/421250 connectors		
NKTPASTE	Assembly paste (60 g tube)	-	Always use the correct assembly paste
NKTTBOLT12	Threaded bolt for NKTCC12/24/36630 coupling connectors	33	Single piece
NKTTBOLT16	Threaded bolt for NKTCC36/421250 coupling connectors	33	Single piece
NKTCBBPLUG24M12	NKT M12 insulating plug for CB24-630	22	Set of three
NKTCBBPLUG36M12	NKT M12 insulating plug for CB36-630	33	Set of three
NKTCBBPLUG36M16	NKT M16 insulating plug for CB36/42-630(1250)	33	Set of three

Notes
1. Maximum size is for AL or CU RMV conductor
2. From bushing centre line to end of stress cone
3. From mounting face to back plug cover
4. Uc = 6 kV / U = 10 kV / Um = 12 kV
5. Uc = 12 kV / U = 20 kV / Um = 24 kV
6. Uc = 18 kV / U = 30 kV / Um = 36 kV
7. Uc = 20,8 kV / U = 36 kV / Um = 42 kV
8. AC withstand 15 min
9. From mounting face to end of arrester (excluding earth stud)
10. Surge arresters also available

NKT



“NKT is the leading supplier of medium voltage screened connectors across much of Australasia.”

NKT CPI Inner Cone Connectors

Easy to install, range-taking MV switchgear connections for EN 50180/50181 Sizes 2 and 3

NKT manufactures a wide range of cables and cable accessories and is the leading supplier of medium voltage screened connectors across much of Australasia.

NKT was the first to manufacture silicone rubber cable terminations and now has 50 years' experience, in applications up to 400 kV.

CPI is a screened inner cone cable connector made of silicone rubber for connecting to medium voltage switchgear, RMUs and transformers fitted with bushings Size 2 or 3 according to EN 50180/50181.

The silicone rubber grade used in the CPI is durable, UV and ozone resistant, waterproof, non-flammable, self-extinguishing and heat resistant. Together with its excellent mechanical and electrical properties, this makes silicone rubber a preferred material for 11-33 kV inner cone connectors.

In addition to offering high quality electrical insulation and superior corona and tracking resistance, the elasticity of silicone rubber facilitates a wide application range for each CPI. So, one product can be used for many different conductor cross-sections.

This connection type delivers a compact and reliable in-line interface with XLPE and EPR cables.

Installation is straightforward and fast thanks to the design of the CPI. The unique shear-bolt connector simplifies assembly and provides assurance of correct fit; the multi-range stress cone allows realistic cable preparation tolerances; the unique connector casing eliminates the requirement for special tools.

The outer screen is a fully bonded conductive layer. The cable screen can be tested without disassembly. Operation is maintenance free.

NKT inner cone connectors for Size 2 and Size 3 interfaces

Product Code	Interface type	Continuous nominal current, A	Application range							Dimemsions
						Cross Section[1], mm²		Insulation diameter, mm		Approx length[2]
			11kV	22kV	33kV	Min	Max	Min	Max	mm
NKT2647151			✓			35	70	12.7	19.2	
NKT2647152			✓	✓	✓	95	120	17.0	24.3	
NKT2647153			✓	-	-	120	185	17.0	24.3	
NKT2647154			-	✓	✓	50	120	21.2	33.6	190
NKT2647155	2	800	✓	✓	✓	120	185	21.2	33.6	
NKT2647156			✓	✓	-	240	300	21.2	33.6	
NKT2647157			-	-	✓	150	185	28.9	40.0[3]	
NKT2647158			-	✓	✓	240	300	28.9	40.0[3]	
NKT2647251HNZ			-	✓	✓	95	120	21.2	33.6	
NKT2647252HNZ			✓	✓	✓	120	185	21.2	33.6	
NKT2647253HNZ			✓	✓	-	240	300	21.2	33.6	
NKT2647254HNZ			-	-	✓	150	185	28.9	37.8	
NKT2647255HNZ			-	✓	✓	240	300	28.9	37.8	195
NKT2647256HNZ	3	1250	✓	-	-	400	500	28.9	37.8	
NKT2647257HNZ			-	-	✓	300		34.0	45.6	
NKT2647258HNZ			✓	✓	✓	400	630	34.0	45.6	
NKT2647259HNZ			-	-	✓	630		39.1	51.0	
NKT2647260HNZ			✓	✓	✓	800[4]		39.1	51.0	
NKT2643798			✓	✓	-	800		45.5	57.8	300
NKT2643799			-	✓	✓	800[5]		45.5	57.8	

Notes

1. For round stranded conductors, designation RM
2. From mounting face to end of stress cone
3. Three core cables 44.0 mm
4. Fits 800 mm2 round solid, designation RE
5. Max conductor diameter 36 mm (fits 1000 mm2 round solid, designation RE)

NKT accessories for inner cone connectors

Product code	Description	Max system voltage kV	Notes
NKTFPI2	Final plug for Size 2 (set of 3)	42	Insulating plug for equipment interface
NKTFPI3	Final plug for Size 3 (set of 3)	52	Insulating plug for equipment interface
NKTPASTE	Assembly paste (60 g tube)	-	Always use the correct assembly paste

NKT Fluid-filled MV/HV Cable Accessories

Joints and terminations for pressurised oil and gas cables up to 170 kV

NKT is a world leader in the specialised field of MV / HV fluid-filled cable accessories.

Through their own in-house expertise, supplemented over the years by acquisitions such as CCC and Ericsson Power Cables, NKT has built an unparalleled reputation in the design, manufacture and application engineering of joints and terminations for gas and oil-filled sub-transmission and transmission cables.

To support network asset managers, engineers and operators, NKT has developed unique expertise in the installation and servicing of fluid-filled cable accessories, as well as measuring and testing, training, on-site auditing, documentation and archiving.

In Australasia, NKT maintains a team of highly qualified and globally experienced cable jointers licenced up to 400kV on both fluid-filled and XLPE cable systems. Activities include:

- Installation of joints, terminations, optical fibres and oil pressure equipment
- Oil filling and pressurising
- Monitoring systems and leak detection
- Turnkey solutions.

An extensive reference list is available on request.

Product line summary

Accessory type	Maximum voltage kV	Maximum cable size mm²
Outdoor terminations	145	1200
GIS and transformer terminations		800
Single core through joint	170	1200
Three core straight through joint	145	630
Single core stop joint	145	800
Three core transition joint	170	Oil: 1200 XLPE: 2500
Single core transition joint		
Trifurcating box	-	-

Installation of NKT 33 kV sub-transmission transition joints in New Zealand:

XLPE cable end

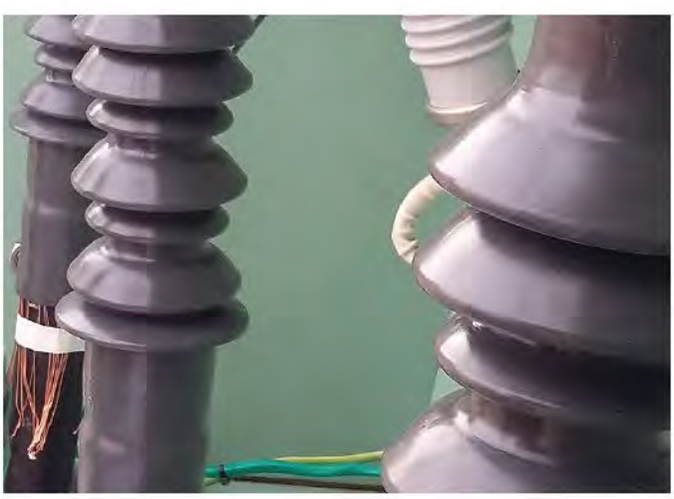
Oil cable end

Notes
Other cross sections may be available on request

Other literature available on request
Test reports, drawings, installation instructions

NKT Cable Joints, Terminations and Connectors

Safe and easy connection of power cables with NKT cable accessories



Manufacturing and developing power cable accessories from 1kV to 550 kV is core business for NKT.

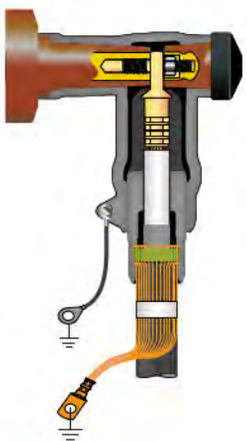
With the joined forces of Kabeldon and NKT cables under the new common brand NKT, we provide an even wider product range, long experience in design and manufacturing of accessories and excellent service.

The NKT range of cable joints, terminations and connectors continues to grow as a result of both acquisition and ongoing investment in manufacturing processes, materials and product development.

In addition, NKT offers a complete solution for transmission system applications, including push-on composite and porcelain dry-type and oil-filled terminations, cable joints and switchgear / transformer connectors up to 400 kV and above.

The design of NKT accessories is based on expertise in managing electrical, mechanical and thermal properties. NKT's extensive materials experience is backed up by the use of finite element modelling. Depending on the application, designs involve geometrical / capacitive, resistive and refractive field control.

Cable accessories for power distribution from 1 kV to 42 kV



Outer Cone Connectors

Connectors for GIS for interface A, B, C, E and F.

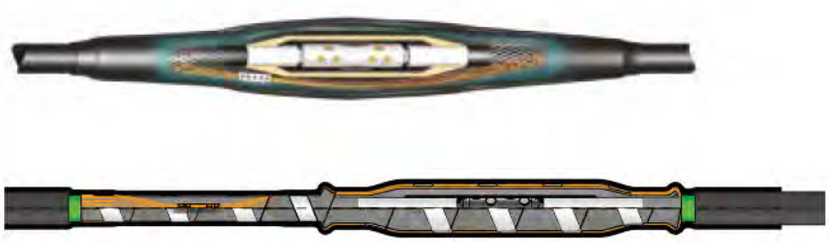
Suitable coupling connectors and surge arresters.

Inner Cone Connectors

Plug in connectors for bushing size 2 and 3 and suitable surge arresters.

Terminations

Push on and cold shrink terminations for indoor and outdoor.

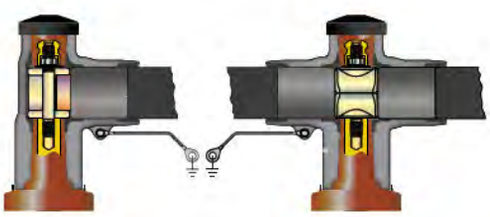


Joints

Push on and cold shrink straight joints.

Branch joints.

Transition joints for PILC cables.



OEM Busbar system from 24 kV to 72.5 kV

Adapter for interface C and F.

Busbar connections up to 2500 A

Customized interconnections.

Cable accessories for power distribution from 52 kV to 550 kV

GIS/Transformer Terminations

Dry plug-in cable terminations.

Oil filled plug-in cable terminations.

Outdoor Terminations

Flexible cable terminations.

Oil filled cable terminations.

Termination with porcelain or composite insulator.

Joints

One or three pieces straight joints with or without cross bonding.

Low Pressure Oil filled Accessories

Joints and terminations.

Network Fittings and Accessories

Bowthorpe HD Series Line Taps	**58**
REBAr Earth Bonding Anchor	**60**
Pfisterer SICON Stepless Shear Bolt Connectors	**62**
Polaris PTLIH Ground Mounted Transformer Connectors	**64**
Polaris PSMTL Transformer Connectors	**66**
LV Protective Caps	**68**
IPCs, PG Clamps and Other Clamps for Overhead Lines	**70**

BOWTHORPE HD Series Line Taps

The original New Zealand line tap tried and trusted by overhead lines engineers and line mechanics since 1959

The safe and reliable operation of electricity distribution lines depends on the quality of overhead line fittings.

Over the years, BOWTHORPE HD Series Line Taps have earned an enviable record for robustness and reliability in New Zealand and overseas.

BOWTHORPE HD Series Line Taps have been used extensively across New Zealand electricity distribution networks since 1959. They have a long-term trouble-free record in a wide variety of operating conditions.

They have also proven themselves to provide an inexpensive and lasting solution. They can be quickly and easily installed (and removed) without the need for special tools.

BOWTHORPE HD Series Line Taps are made in New Zealand from a particular grade of brass extrusion also made in New Zealand. Every step of the manufacturing process, including the metallurgy, extrusion, machining, tinning and assembly, is critical to the performance of the product. Exacting quality control procedures are applied throughout to provide assurance that BOWTHORPE HD Series Line Taps conform to specification and can be relied on during installation and in service.

This also allows relatively high torque settings to be specified to provide assurance of correct installation time after time without damaging the conductor.

Five sizes cover all conductors from 4 – 120 mm2.

BOWTHORPE HD Line Taps have been type tested for 1,000 hours of heat-cycling, to the latest version of BS 3288.1.

Note: all genuine BOWTHORPE HD Series Line Taps are marked with the name "BOWTHORPE"

BOWTHORPE HD Series Line Taps

Type	Product code	Pack Quantity	Cross Section, mm²		Application Range Diameter, mm		Diameter, mm		Recommended Torque Setting, Nm	
			Min	Max	Min	Max	Min	Max	Min	Max
HD9	BL500	500	4	7	2.7	4.0	7 / 0.91	7 / 1.12	5	7
HD10	BL510	200	10	16	3.8	5.8	7 / 1.32	7 / 1.75	12	15
HD12	BL520	150	16	25	4.3	6.6	7 / 1.63	7 / 2.14	14	18
HD12A	BL530	100	16	35	5.3	8.1	7 / 1.70	19 / 1.63	25	30
HD13	BL540	50	25	50	6.6	10.1	7 / 2.11	19 / 1.83	40	45
HD14	BL550	50	35	70	7.3	11.1	19 / 1.53	19 / 2.14	60	65
HD15	BL565	25	50	95	8.8	13.4	19 / 1.75	37 / 1.83	100	110
HD18	BL575	25	70	120	10.5	16.1	19 / 2.11	37 / 2.11	100	110

Palms for HD Series Line Taps

Type	Product code	Description
HD10P	BL760	For HD10 Line Tap
HD12P	BL765	For HD12 Line Tap
HD12AP	BL770	For HD12A Line Tap
HD14P	BL775	For HD14 Line Tap
HD12APTH	BL900	Braised palm for HD12A Line Tap
HD12A&P	BL920	Palm assembly with HD12A Line Tap

HD Series Line Taps variants

Type	Product code	Description	Thread Size
HD12TC	BL610	HD12 with drilled and tapped head	5/16" Whit
HD12ATC	BL620	HD12A with drilled and tapped head	3/8" Whit
HD12ATCS	BL680	HD12A with attached stud and nut	3/8" Whit

Pole-mounted earth and neutral bars for HD Series Line Taps

Type	Product code	Description
ETB/3	BL740	Earth bar for 3x HD12A Line Taps
ETB/4	BL741	Earth bar for 4x HD14 Line Taps
ETB/312	BL742	Earth bar for 6x HD14 Line Taps
ETB/4WAY	BL743	Earth bar for 4x HD12A Line Taps
A6134	BL779	Neutral bar with 4x M8 bolts tapped

Other literature available on request

Type test reports, drawings

BOWTHORPE

REBAr Earth Bonding Anchor

For retrofit earthing of hollow spun concrete pole reinforcing cage.

The REBAr provides a secure means of bonding the internal reinforcing cage of older hollow spun concrete poles to the external copper cable earthing system.

The REBAr is a stainless steel ferrule suitable for retrofitting onto poles that have external earthing leads fitted from the crossarms down to a driven earthing pin. It is fixed to the reinforcing cage under the pole cap and bonded via a bonding lead to the top crossarm earthing point.

Three grub screws are supplied for fixing to the reinforcing cage, and a stainless steel bolt and Belleville washer supplied for attaching the bonding lead.

A work procedure is available developed in conjunction with Linetech Consulting.

REBAr Earth Bonding Anchor

Short circuit current rating
10 kA x 0.5 s

Requirement
One anchor per pole

Product code
FECHR044458

Materials

Grub screws	M10 x 10 stainless steel
Attachment bolt	M12 x 40 stainless steel
Belleville washer	M12 stainless steel
Anchor body	Stainless steel 304

Other literature available on request
Installation instruction (Linetech Consulting work procedure LWM 542) Drawing

Pfisterer SICON Stepless Shear Bolt Connectors

The cable connector system for voltages up to 36 kV

Terminals, connectors and cable lugs using screw technology have been on the advance for years, and with good reason.

The special design feature of the SICON shear bolt connectors is that there are no predetermined break points in the thread. This provides for optimal load-bearing capacity for each range of cross sections. The bolt always breaks at the surface of the clamp body, so there are no protrusions and nothing has to be filed down to make the sleeve fit. Fitting requires a simple tool – literally with a flick of the wrist.

Offering a large clamping range, SICON shear bolt connectors feature a compact design with rounded edges and flat transitions suitable for slide-on and shrink sleeves.

They are contact technology type-tested to IEC 61238-1 and proven in joint tests to HD 629 and in 18-month endurance test.

The SICON system features aluminium alloy connectors, steel threaded studs, brass shear bolts and plastic centring sleeves and the family includes branch connectors, inline connectors and cable lugs.

An overview of SICON system benefits:

- Nothing protrudes, and nothing has to be filed down.
- Full utilisation of the thread loading for any size of conductor.
- No special tools needed.
- Smooth breakage of the shear bolt simplifies tightening.
- The remains of the bolt stay with the tool and can be disposed of safely.

Selection table for SICON stepless shear bolt connectors

	Product code	Application range, mm²						Palm bore diameter	Wrench size (A/F)	Number of bolts	Dimensions		
		Round stranded, RM		Sector stranded, SM		Rounded compacted, RMV					Length	Outer Diameter	Inner Diameter (Bore)
		min	max	min	max	min	max	mm	mm		mm	mm	mm
Branch connectors													
	KP1165	50	185	50	150	50	240	-	6	6	162	68/33	20
		70	240	70	240	70	300	-			158	71.5/35	22
In-line connectors													
	KP1185	10	95	35	70	10	95	-	5	2	65	24	13
	KP1160	25	150	35	120	25	150	-			68	28	16.3
	KP1200	25	150	35	120	25	150	-		4	102		
	KP1205	50	185	50	240	50	240	-	6		126	33	20
	KP1210	50	240	50	240	50	240	-				35	21
	KP1215	95	300	95	240	95	300	-					22
	KP1235	70	240	70	240	70	300	-	8		140	38	24
	KP1240	185	400	185	300	185	400	-			170	42	26
	KP1220	300	630	300	400	300	630	-			230	52	33.3
Lugs													
	KP1225	10	95	30	70	10	95	13	5	1	70	24	13
	KP1180	25	150	35	120	25	150			2	91	28	16.3
	KP1181	25	150	35	95	25	150	16.5					
	KP1190	50	240	50	150	50	240	13	6		115	33	20
	KP1191	50	240	50	150	50	240	16.5					
	KP1155	95	300	95	240	95	300	13	8		120	38	24
	KP1156	95	300	95	240	95	300	16.5					
	KP1231	185	400	185	300	185	400	13		3	138	42	26
	KP1233	185	400	185	300	185	400	16.5					
	KP1194	300	630	240	400	300	630	13			180	52	33.3
	KP1195	300	630	240	400	300	630	16.5					

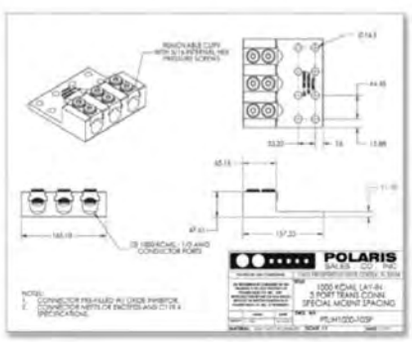
Notes

All SICON connectors listed have oil-stops
Cable sections in accordance with EN 60228 (VDE 0295)
Central screw-type cable lugs and other versions on request.

PFISTERER

Polaris PTLIH Ground Mounted Transformer Connectors

Heavy duty connectors with bolted lay-in cable clamps



Polaris PTLIH transformer connectors are application engineered for the New Zealand market to provide a secure, reliable and cost-effective means of connection for ground mounted transformers.

Polaris PTLIH transformer connectors are manufactured from high-strength 6061-T6 aluminium alloy to provide premium electrical and mechanical performance. They are dual rated for copper and aluminium conductors.

No cable lugs are required, reducing tooling and installation costs and electrical losses.

The lay-in cable cleats make connection quick and convenient, especially with large cable cross sections.

By using torque-setting set screws, Polaris PTLIH connectors are re-enterable, enabling the connection of additional cables, or different cable cross-sections.

The range-taking design minimises inventory requirements; three sizes cover transformer ratings from 200 – 1500 kVA.

Polaris PTLIH connectors meet or exceed ANSI C119.4 Class A, which specifies connectors for use between aluminium-aluminium or aluminium-copper conductors used in electricity distribution networks.

Polaris PTLIH Heavy-Duty Transformer Connectors with Lay-In Cable Clamps

Connector Selection	Part Number	Cable Ports	Mounting Holes	Rating A	Minimum Conductor mm²	Maximum Conductor mm²
	PTLIH 600PNZB	1	0	600	35	300
	PTLIH 600PNZB		2		35	300
	PTLIH 60052PB	2	0	1200	35	300
	PTLIH 1000102PB				70	500
	PTLIH 60052P		4		35	300
	PTLIH 1000103PB	3	0	2400	70	500
	PTLIH 1000103P		8			
	PTLIH 1000104PB	4	0			
	PTLIH 1000104P		8			

Other sizes are available on request

Connectors and cover kits

Part Number	Application	Colour
50750HK5	For connectors with 1–2 cable ports	Black (UV Stabilised)
50750HK9	For connectors with 3–4 cable ports	

Tightening torques

Conductor Size mm²	Set Screw Torque Nm	Palm Bolt Size	Bolt Torque Nm
35 - 120	28	M12	68
185	38		
300	41		
400 - 500	51		

Options

Oxide inhibitor provided as standard, can be omitted if required
Anodised set screws
Tin plated connectors
Other sizes available on request

Polaris PSMTL Transformer Connectors

Bolted connectors for ground mounted and pole mounted transformers

Polaris PSMTL transformer connectors are application engineered for the New Zealand market to provide a secure, reliable and cost-effective means of connection for pole-mounted and small ground-mounted transformers.

Polaris PSMTL transformer connectors are manufactured from high-strength 6061-T6 aluminium alloy to provide premium electrical and mechanical performance. They are dual rated for copper and aluminium conductors.

Connection is either by slip-fit and set screw onto the transformer bushing stud or bolted directly to the bushing palm. No cable lugs are required, reducing tooling and installation costs and electrical losses.

By using torque-setting set screws to secure the conductors, Polaris PSMTL connectors are re-enterable, enabling the connection of additional conductors, or different conductor cross-sections.

Polaris PSMTL connectors meet or exceed ANSI C119.4 Class A, which specifies connectors for use between aluminium-aluminium or aluminium-copper conductors used in electricity distribution networks.

An insulating cover is available that provides protection against accidental flashover.

Polaris PSMTL Transformer Connectors

Connector Selection	Part Number	Cable Ports	Mounting Holes	Rating A	Minimum Conductor mm²	Maximum Conductor mm²
	POL82	2	2	200	16	120
	PSMTL 3504PH	4	4	400		
	PSMTL SC3504P					

Other sizes are available on request

Insulating cover

	Part Number	Application	Colour
	613504H	For connectors with 2–4 cable ports	Black (UV Stabilised)

Tightening torques

Conductor Size mm²	Set Screw Torque Nm	Connection Type	Bolt Torque Nm
16–25	14	Threaded Stud (Slip-fit 5/8" 11)	42
35–120	28	Bushing Palm (M10 bolt)	35

Options

Oxide inhibitor provided as standard, can be omitted if required
Anodised set screws
Tin plated connectors
Transparent covers to facilitate inspection / audit (not UV-stabilised)
Other sizes available on request

Other literature available on request

Type test reports, drawings

LV Protective Caps

For transformer bushings and other applications

The Hiko LV Protective Cap provides a cost effective and convenient way to protect LV bushings and other live metalwork from accidental contact.

LV Protective Caps are quick and simple to install, compared to other methods, such as using PVC tape. In addition, as a factory-made moulding, with defined wall thickness and materials characteristics, they provide greater assurance of safety than ad-hoc methods.

The caps are supplied as a set of four, in standard colours, to provide a clear visual indication to phase identification.

They are designed so that one size fits most New Zealand bushing types and sizes. LV Protective Caps can also be modified to fit different cable entry positions.

Technical data

Parameter	Notes
Material	PVC
Operating temperature	-40 °C to +120 °C
Dielectric strength	20 kV/mm

Product dimensions

Product code	External Length (mm)	Opening			Inner End		
		Width (mm)	Height (mm)	Length (mm)	Width (mm)	Height (mm)	Length (mm)
HL0004	170	86	73	80	74	47	40

Notes

Packaged as a set of four: red, white, blue, black
This product is intended not for use on medium voltage or high voltage bushings

IPCs, PG Clamps and Other Clamps for Overhead Lines

For aluminium and copper conductors

Insulation piercing connectors

Bimetallic parallel groove clamps

Bimetallic cover tap-off clamp

Parallel groove clamps

Bimetallic bow clamp

Hiko stocks a wide range of overhead line fittings. This data sheet lists commonly stocked items; other types are available on request.

Insulation Piercing Connectors (IPC's) are used to make tap off connections on low voltage insulated conductors. Hiko IPCs include shear bolts to ensure the correct tightening torque is applied during installation.

Parallel Groove (PG) Clamps are used to connect aluminium and ACSR conductors. **Bimetallic PG Clamps** connect aluminium or ACSR main conductors with copper tap-off conductors.

Hiko PG clamps and bimetallic PG clamps are manufactured from high strength corrosion resistant aluminium alloy (AlMgSi1/Al6082) and use hot-dip galvanised steel bolts and nuts and corrosion protected washers.

Bimetallic Cover Tap-Off Clamps connect aluminium or ACSR main conductors with copper tap-off conductors. Hiko cover tap-off clamps are manufactured from high strength corrosion resistant aluminium alloy, hot-forged metallic sheet and high strength copper alloy (CuNi2Si) and use hot-dip galvanised steel bolts and corrosion protected washers.

Bimetallic Bow Clamps connect aluminium or ACSR conductors with copper conductors. The body is made of high strength aluminium alloy with bimetallic sheet for copper tap-off; the U-bolt and nuts are hot-dip galvanised with corrosion protected washers.

Product selection table: application ranges

Product code	Description	AL	CU	ACSR	Main conductor Cross section, (mm^2)		Diameter (mm)		ACSR size	
					Min	Max	Min	Max	Min	Max
BIZ1695	Insulation piercing connector	✓	✓		16	120 BARE				
KP2190					25					
KP2197					6 BARE					
BIZ2595					25					
BIZ50150					(35)50	150				
KP1928	Bimetallic parallel groove clamp (two bolts)	✓		✓	16	70	5.1	11.7	16/2.5	70/12
KP1930					25	150	7.5	14	35/6	95/15
KP1927					35	120	6.3	15.7	25/4	120/20
KP1926	Bimetallic parallel groove clamp (single bolt)	✓			35	120				
KP1935	Bimetallic cover tap-off clamp	✓		✓	25	70			25/4	70/12
KP1937					50	150			50/8	120/20
KP2111	Bimetallic bow clamp	✓		✓	95	240	12.5	21.9	95/15	240/40
KP1950	Parallel groove clamp	✓		✓	16	70	5.1	11.7	16/2.5	70/12
KP1942					25	150	6.3	15.7	25/4	120/20
KP1960				✓	50	150	9	16	50/8	120/20

Product code	Description	AL	CU	Branch conductor Cross section, (mm^2)		Diameter (mm)	
				Min	Max	Min	Max
BIZ1695	Insulation piercing connector	✓	✓	4	35(50)		
KP2190				6	50		
KP2197				6 INS	35 INS		
BIZ2595				25	95		
BIZ50150				(35)50	150		
KP1928	Bimetallic parallel groove clamp (two bolts)		✓	6	50	2.7	9
KP1930				10		3.5	9
KP1927						3.5	12.5
KP1926	Bimetallic parallel groove clamp (single bolt)		✓	10	50		
KP1935	Bimetallic cover tap-off clamp		✓	10	70		
KP1937				25	120		
KP2111	Bimetallic bow clamp	✓		95	240		
			✓[1]	70	185		
KP1950	Parallel groove clamp	✓		16	70		
KP1942				25	150		
KP1960				50	150		

Product selection table: dimensions, other characteristics

Product code	Description	Number of bolts	Bolt size	Tightening torque Nm	End caps	Weight (g)	Box Quantity
BIZ1695	Insulation piercing connector	1	M8	shear	1	148	5
KP2190						tbc	50
KP2197						tbc	25
BIZ2595					0	172	10
BIZ50150						205	10
KP1928	Bimetallic parallel groove clamp	2	M8	23		107	50
KP1930						134	50
KP1927						155	20
KP1926		1				80	50
KP1935	Bimetallic cover tap-off clamp	2	M8	20		122	50
KP1937						178	30
KP2111	Bimetallic bow clamp	1x U-bolt	M12	80		490	18
KP1950	Parallel groove clamp	2	M8	23		91	50
KP1942			M10	46		212	50
KP1960						tbc	30

Notes
1. With insert (included)

Other literature available on request
Test reports, drawings, installation instructions

MV and HV Switchgear and Cable Link Boxes

Air Insulated Load Break Switches	**74**
Gas Insulated Load Break Switch	**76**
Electronic Sectionaliser	**78**
HV Isolating Links	**80**
Substation Disconnectors	**82**
Cable Link Boxes	**86**
Sheath Voltage Limiters	**88**

Air Insulated Load Break Switches

Side break and vertical break

12kV, 24kV, 36kV

Insulect Air Break Switches (ABS) are designed, assembled and tested in Australia. Our range is widely installed throughout distribution networks for isolation or switching applications.

12, 24, 36kV voltage rating

We have two sizes: 12/24kV and 36kV with current ratings from 630A up to 1250A.

Vertical or side break

Each variant can be configured in a side break or vertical break arrangement.

Horizontal or vertical install

The switches can be mounted in horizontal or vertical (pole top or mid pole) configurations.

Local design and testing

Designed and tested in Australia in accordance with AS 62271.102 / IEC 62271.102.

Features

Modular Design

We readily provide custom design changes to suit individual customer requirements, as well as modular or unitised factory assembly for more rapid installation.

Manual or Motorised

Available with conventional operating rod and handle, with patented hook stick actuator. Able to be fitted with motorised operation as well as remote control facilities.

Insulators

Choose from Porcelain, Silicon or Cycloaliphatic insulators.

Options

Associated earthing switch available.
Load interrupter to break up to 630 amps.

Ordering Information

- Side Break or Vertical Break
- 2/24 kV or 36 kV
- Current Rating
- Pole top or mid pole designs
- Unitised or Modular
- Operating Mechanism: manual handle, hook stick actuator, motor operation (local/remote or SCADA)
- Load Break option.

Technical specifications

	Rated Voltage *kV (rms)*	LIWV (BIL) *kVp*	Power Frequency Withstand Voltage *kV*	Continuous Current *A*	Load Breaking Capacity *A*		Short Circuit Withstand
					Air Break Switch	Load Break Switch	
Side Break	12/24	150	50	Up to 1250	15	630	25 kA / 1s
	36	170	70	Up to 1250	15	630	25 kA / 1s
Vertical Break	12/24	150	50	Up to 1250	15	630	25 kA / 3s
	36	170	70	Up to 1250	15	630	25 kA / 3s

Technical configurations

Pole Top, Side Break Switch with manual operating handle.

Pole Top, Side Break Switch with hook stick actuator.

Mid Pole, Side Break Switch with manual operating handle and associated Earth Switch.

Mid Pole, Vertical Break Switch with manual operating handle.

Gas Insulated Load Break Switch

12kV, 24kV, 36kV

Our fully enclosed, pole mounted SF6 load break switches are used extensively throughout distribution networks and are designed to be maintenance free with a long service life.

12, 24, 36kV voltage rating

The switch can be supplied in 12, 24 & 36kV voltage ratings and up to 630A breaking current.

Safer, more reliable switching

Fully enclosed, SF6 insulation and interruption provides greater reliability.

Local or remote operation

Manually operated LBS can be fitted with a remotely controlled actuator.

Insulators and leads

Choose from porcelain or polymer bushings, with factory fitted cable leads or bare terminal palms.

Features

- Stainless steel enclosure
- Easy handling and light weight
- Open/close indicator
- Maintenance free
- Low gas lockout feature
- High dielectric strength
- Superior endurance to adverse environments
- Mechanical latch holding in close position
- Pole mounting provisions
- Pressure relief vent.

Options

- IEC 61850 compatible automatic controller
- Manual mid-pole operation
- Fully dressed with cables and surge arrestors.

Ordering information

- 12kV, 24kV or 36kV
- 400amp or 630amp
- With or without leads
- Manual or Automatic (SCADA)
- Manual with mid pole actuator
- Mid pole or pole top mounting arrangement
- Surge arrester mounting above or below bushings.

Technical specifications

		12kV		36kV			
Rated Voltage	kV	12	12	24	24	36	36
Rated Frequency	Hz	50/60	50/60	50/60	50/60	50/60	50/60
Rated Normal Current	A	400	630	400	630	400	630
Rated Symmetrical Interrupting Current	A	400	630	400	630	400	630
Rated Short-Time Withstand Current, 1 sec	kA (rms)	16	16	16	16	16	16
Rated Short-Circuit Making Current	kA (peak)	41.6	41.6	41.6	41.6	41.6	41.6
Rated Power Frequency Withstand Voltage, 1 min	kA (rms)	70	70	70	70	70, 80	70, 80
Rated Impulse Withstand Voltage	kA (peak)	165	165	165	165	170, 195	170, 195
Number of Operations: Mechanical, Electrical (rated normal current)	times	5000	5000	5000	5000	5000	5000
Minimum Creepage Distance of Bushing or Supporting Insulator, from live part to ground	mm	min 600	min 600	min 600	min 600	min 900	min 900

Typical configurations

Manual operation type

- Easy operation
- Open/Close indication
- Safety interlock
- Light weight
- Maintenance free

Remote operation type

- Local/Remote switch for local field control or remote from DAS master station and substation RTU
- Dry contacts provide the local/remote switch status to the DAS master station and substation RTU
- Auxiliary output contacts are mechanically linked with the switch main contact
- Metal connector (waterproof plug-in type) for connecting control cable
- Line switch control (open/close) and status indication

insulect
VERSATILITY VIA COLLABORATION

Electronic Sectionaliser

Sectolink

12kV, 24kV, 36kV

Electronic Sectionalisers have been developed for usage on overhead distribution lines to eliminate transient faults They are typically used in conjunction with a recloser and replace the traditional dropout fuse protection.

12, 24, 36kV voltage rating

Available in two sizes of 12/24kV and 36kV with pickup current ratings from 8A up to 400A.

Simple customisation

The sectionaliser performance settings can be manually adjusted with ease.

Various mounting options

Single, double or three pole ganged mounts available with hotstick operation.

One EDO size fits all

Fits standard single venting 150kV BIL and 170kV BIL EDO mounts.

Features

Low or High current

The sectionaliser suits installation in low and high current applications such as SWER lines or rural locations.

Reclaim time

With fully customised reclaim time, the sectionaliser can be programmed at time of manufacture to suit any network and recloser protection requirements.

Ganged operation

Our custom design two and three phase mounts include a fully ganged operation ensuring sectionaliser dropout of all 3 phases and reducing any ferro-resonance problems.

Technical specifications

		12kV		36kV	
Rated Voltage	kV	12/24	36	12/24	36
Lighting Impulse	kV BIL	125/150	170	125/150	170
Frequency	Hz	50/60	50/60	50/60	50/60
Max. continuous current rating	A	250	250	24	24
Pick up current rating	A	20-400	20-400	8-24	8-24
Short time current, 1 s (rms value)	kA	10	10	2	2
Programmable counts	#	1, 2, or 3	1, 2, or 3	1, 2, or 3	1, 2, or 3
Reclaim time	#	25, 30, 125, or 180	25, 30, 125, or 180	25, 30, 125, or 180	25, 30, 125, or 180
Sensitivity of pick up current	%	+/- 10	+/- 10	+/- 10	+/- 10

Selection table

Sect No.		01	02	03	04	05	06	07	08	09	10	11	12	13
Position of Switches 1 2 3 4	# of Counts													
OFF □ ■ □ ■ ON ■ □ ■ □	1	8	32	20	40	10	60	100	100	250	24	112	20	40
OFF □ ■ ■ □ ON ■ □ □ ■	2	8	32	20	40	10	60	100	100	250	24	112	20	40
OFF □ ■ □ □ ON ■ □ ■ ■	3	8	32	20	40	10	60	100	100	250	24	112	20	40
OFF ■ □ □ ■ ON □ ■ ■ □	1	16	40	40	56	12	80	120	150	300	40	160	25	56
OFF ■ □ ■ □ ON □ ■ □ ■	2	16	40	40	56	12	80	120	150	300	40	160	25	56
OFF ■ □ □ □ ON □ ■ ■ ■	3	16	40	40	56	12	80	120	150	300	40	160	25	56
OFF ■ ■ □ ■ ON □ □ ■ □	1	20	50	50	80	16	100	140	200	350	56	224	30	80
OFF ■ ■ ■ □ ON □ □ □ ■	2	20	50	50	80	16	100	140	200	350	56	224	30	80
OFF ■ ■ □ □ ON □ □ ■ ■	3	20	50	50	80	16	100	140	200	350	56	224	30	80
OFF □ □ □ ■ ON ■ ■ ■ □	1	24	64	60	112	20	130	160	250	400	64	320	36	112
OFF □ □ ■ □ ON ■ ■ □ ■	2	24	64	60	112	20	130	160	250	400	64	320	36	112
OFF □ □ □ □ ON ■ ■ ■ ■	3	24	64	60	112	20	130	160	250	400	64	320	36	112

insulect
VERSATILITY VIA COLLABORATION

HV Isolating Links

Single phase

12kV to 72.5kV

Insulect HV Links are installed throughout distribution networks and in substations as isolation points between HV apparatus.

Wide voltage rating

The HV links range covers all voltage ratings between 12kV and 72.5kV, with current rating up to 1600A.

Three mounting configurations

The links can be mounted at 30 degrees, vertically or underslung orientations.

Load break capability

Isolating links can be fitted with Flicker blades or 630A load breaking devices.

Local design and testing

Designed and tested in Australia in accordance with AS 62271.102 / IEC 62271.102.

Features

Modular Design

We readily provide custom design changes to suit individual customer requirements and applications.

Insulators

Choose from Porcelain, Silicon or Cycloaliphatic insulators.

Options

- Latching mechanism
- Load break plus fuse holder
- Flicker horns
- Earthing stirrup.

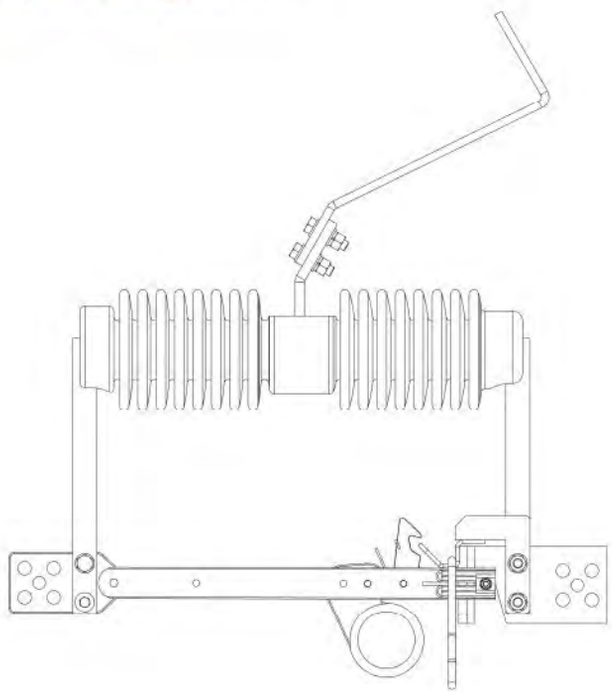
Ordering Information

- Vertical, horizontal or angled 30 degrees mounting configuration
- 12/24 kV, 36kV or 72.5 kV
- Porcelain, Cyclo or Polymer
- Current Rating
- With or without Earthing Stirrup
- Short Circuit withstand requirement.

Technical specifications

Voltage (kV)	*Rated Current (A)*	BIL (kV)	STWC (kA)	Duration (s)
12 / 24	Up to 1250	150 / 170	20 / 25	3 / 1
24	Up to 1250	200	20	3
36	Up to 1250	200	20 / 25	3 / 1
72.5	Up to 1250	325	20 / 25	3 / 1

Typical configuration



Substation Disconnectors and Earthing Switches

12kV to 145kV

Insulect Disconnectors are designed to accommodate each customer's needs and the layout of each substation. For over two decades, our disconnector and earthing switches have been 100% locally designed, built and serviced to ensure the best possible solution tailored to the needs of our customers.

Standard Design

Our disconnector range is based on a rotary double break design, with or without integrated Earthing Switch.

Horizontal or Vertical

Designed for horizontal or vertical applications and may be mounted on steel structures or pole mounted.

Manual or Motor Operated

Disconnectors are built for either manual operation or with a motor operated mechanism, for local or remote operation.

Earthing Switches

Independent single or double earthing switches can be supplied with the disconnectors.

Features & Options

Contacts

All contact surfaces are silver plated copper. Copper components other than the contact surfaces are tin plated as standard.

Flickers

The moving blades are supplied with a spring-loaded flicker to quickly extinguish residual current arcing when the switch is opened live.

Custom footprint

Insulect disconnectors can be customised to suit specific substation layouts, configurations and structure types.

Insulators

A variety of insulator types can be accommodated for each voltage level, including electrical and mechanical ratings and pollution levels.

Earthing Switches

Each disconnector can be fitted with independent earth switches where required.

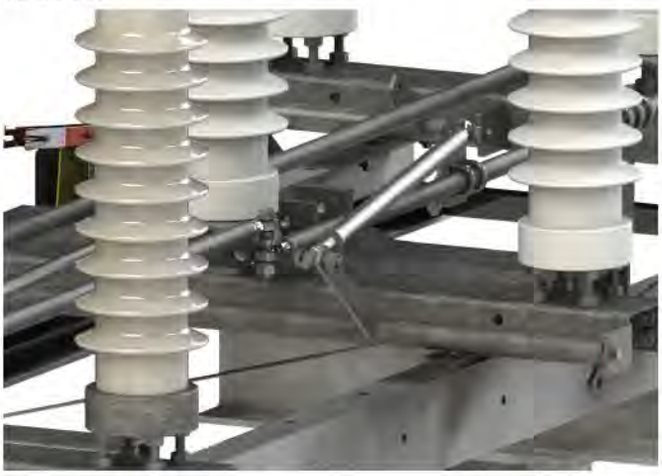
Earth switches can be supplied for one or both sides of the switch.

Interlocks

Mechanical or electrical interlocks can be provided for all disconnector models.

Mechanical interlocks prevent the earth switch operating when the disconnector is in the 'closed' position and vice-versa.

Electrical interlocks can be provided for disconnectors and earth switches that are fitted with a motor drive. It prevents the motor drive from engaging unless it is safe to do so.



Auxiliary Switches

The mechanism for each switch can be fitted with Auxiliary Switches to enable a substation control system to monitor the state of the disconnectors and earth switches.

Auxiliary switches can be supplied with more than 12 poles, depending on the control information required.

Motor Drive

For many applications it is desirable to operate switches remotely.

A motor drive eliminates the need for manual operation of disconnectors and earth switches and will enable operation when it is not safe to have a person in the switch yard. It also enables disconnectors and earth switches located at remote or unmanned sites to be operated from a remote control room when there are no local personnel available.

- IP65 rated stainless steel cabinet
- Variable speed DC motor
- The control voltage can be specified as AC or DC
- Limit switches coupled with mechanical stops prevent the output shaft over-rotating and damaging the contacts
- Protection is provided for the motor by fuses and thermal overload devices.
- An anti-condensation heater prevents moisture build-up inside the cabinet
- Positioning and mounting of motor drive components can be customised to suit user requirements.

insulect
VERSATILITY VIA COLLABORATION

Installation Services

Insulect offers a complete service for new disconnectors to get them into your network and operational.

We can customise these services to suit your network requirements, including:

- Fully assembled or kit form
- Storage and delivery
- Switchyard install and test
- Staff operational training.

Contact our team for more information on how we can tailor a service package to your needs.

Refurbishment Services

Insulect's switchgear team provide support services for asset management of disconnectors.

We assist customers in maintaining their disconnector fleet with a range of services and expert advice, to keep their fleet performing optimally.

- Site assessments
- Customer site repair and refurbishment
- Insulect service centre refurbishment.

The refurbishment services return aged disconnectors to correct operating condition, replacing all corroded, worn or damaged components.

All services are covered by warranty. Available for Insulect and AKPS branded product, as well as other manufacturer brands.

Technical Specifications

Rating, according to IEC 60694

Rated Voltage (kV rms)	Rated Lightning Impulse Withstand Voltage kV (peak)		Rated 1 Min Power Frequency Withstand Voltage kV (rms)	
	To Earth and between Poles (Common Value)	Across the insulating distance	To Earth and between Poles (Common Value)	Across the insulating distance
12	75	85	28	32
24	125	145	50	60
36	170	195	70	80
72.5	325	375	140	160
145	650	750	275	315

Normal/Short Circuit Current Rating, according to AS62271-102 / IEC62271-102

Rated Voltage (kV rms)	*Current Rating Continuous (A)*	Short Circuit Withstand Current and Duration (A/sec)	LIWV (kVp) BIL
12 / 24	600 - 2500	Up to 31.5 kA/3sec	125 kV
36	600 - 2500	Up to 31.5 kA/3sec	170 kV
72.5	600 - 2500	Up to 40.0 kA/3sec	325 kV
145	600 - 2500	Up to 50.0 kA/3sec	650 kV

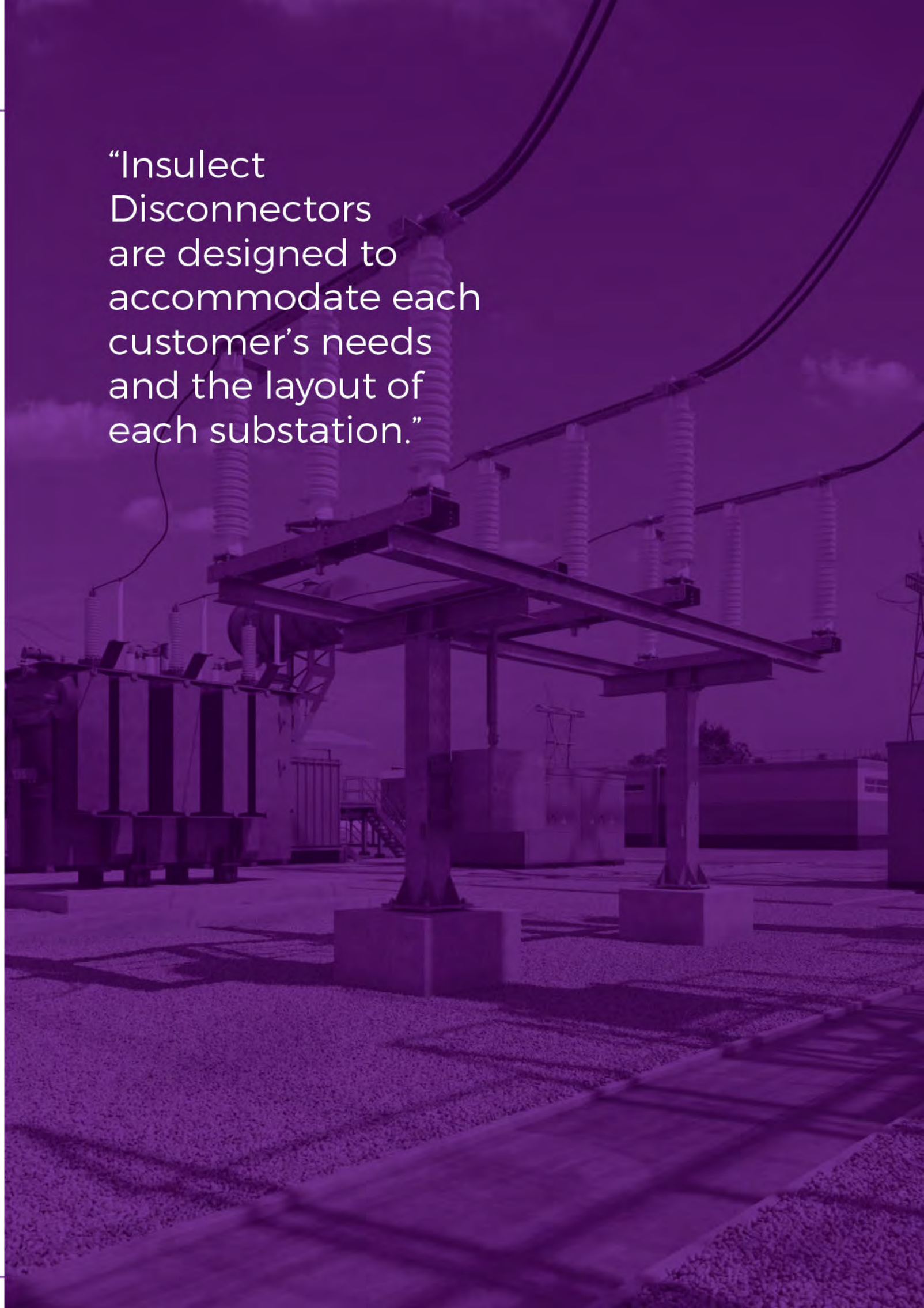
Associated Earth Switch Ratings

Voltage	Short Circuit Withstand Current	LIWV (kVp) BIL
12 / 24	Up to 31.5 kA/3sec	125 kV
36	Up to 31.5 kA/3sec	170 kV
72.5	Up to 40.0 kA/3sec	325 kV
145	Up to 50.0 kA/3sec	650 kV

Mechanical Endurance Class

AKPS Disconnectors are built and tested to M1 class mechanical endurance suitable for operating cycles of 2000 operations, as per AS 62271.102-2005 & AS 2650-2005.

insulect
VERSATILITY VIA COLLABORATION



"Insulect Disconnectors are designed to accommodate each customer's needs and the layout of each substation."

Link Boxes

High Voltage Cable Systems

Cable Sheath Earthing

Insulect link box designs use various earthing practices to minimise sheath currents and provide sheath voltage protection.

- Direct Earthing or SVL Earthing through sheath voltage limiter surge arrester
- Cross Bonding with insulation withstand between phases
- Cable Sheath Protection using metal oxide sheath voltage surge limiters (SVL's).

Common Specifications

- Link Box Mounting - Structure or Pit
- DC Withstand - 25 kV/5mins
- Pressure Withstand - 250 kPa
- Engineering Compliance - C55/4.

Link Box Ultra

ULTRA is our original Link Box design, built for demanding conditions and highest performance.

- Material 316 Stainless Steel
- Short Circuit 63 kA/1s
- Enclosure rating IP68
- Internal power arc 40 kA/0.12s
- Pressure test meter 10M.

Link Box Lite

The LITE is designed for less arduous applications and where ease of handling and install is important.

- Material 304 Stainless Steel
- Short Circuit 40 kA/1s
- Enclosure rating IP68
- Internal power arc 20 kA/0.12s
- Pressure test meter 2M.

Insulect Link Boxes ensure a weather-proof environment for connecting links, whether for earthing or cross-bonding high voltage cables.

Comprehensive link box range

Link boxes of all types for single core and concentric bonding cables.

Up to IP68 rated stainless steel enclosures

Fully tested and fully sealed stainless steel enclosures, rated at a minimum of IP68.

For above or below ground applications

Universal design to suit indoor, outdoor and in-pit installation.

Australian design and manufacture

Our link boxes have been designed, manufactured and tested in Australia for over twenty years.

Key Component Materials

- Links - Extruded copper in hard drawn high conductivity 300mm2 minimum
- Insulators - High tension porcelain, stainless steel hardware
- Stress cones - Polyurethane elastomer
- Plating - All conductors plated with ≥8µm of tin.

SVL

Sheath Voltage Limiters (SVL) are an economic solution for safeguarding expensive cable installations.

They are highly reliable and effective at managing cable sheath voltage rises and the associated power flows that can result under fault conditions.
Insulect manufacture an extensive range of quality 20kA zinc oxide sheath voltage limiters (SVL's).
Voltages: 1.5kV to 9.0kV

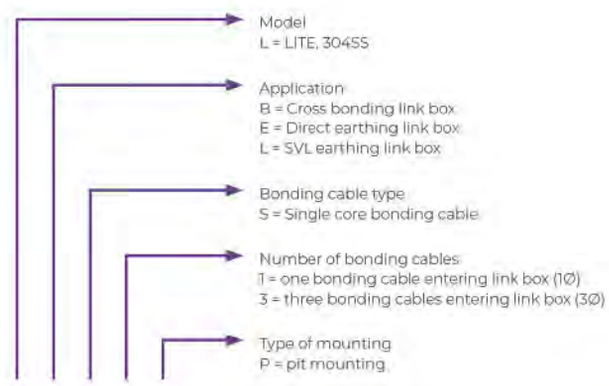
Ordering information

Use the table to build your specification and confirm your link box 5-digit Part Number. Use the diagram on the right as a guide or call us for assistance.

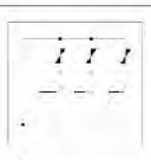
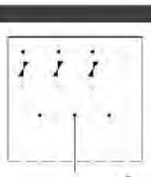
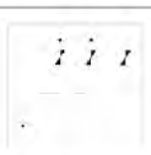
1. Select the model type - ULTRA or LITE
2. Choose the application
3. Choose single or concentric cables
4. And the number of cables
5. Choose the mounting type.

Along with your 5-digit Part Number, you will need to confirm the following:

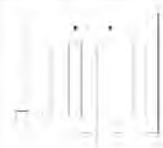
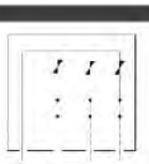
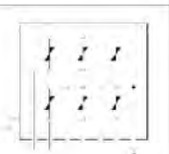
- Confirm the cable size of the bonding and earth cables
- Advise of any special requirements or modifications in detail.



Technical specifications

					LINK BOX ULTRA 316 Stainless			LINK BOX LITE 304 Stainless		
Schematic	Application	Bonding Cable (cable diameter)	SVL (optional)	Impulse Level	Short Circuit	Dimensions (mm)	Weight (kg)	Short Circuit	Dimensions (mm)	Weight (kg)
	Cross Bonding	Single Core (95-500)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W770 D670 H560	140	40 kA/1s	W770 D670 H560	115
	Cross Bonding	Concentric (95-300)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W770 D670 H560	130	40 kA/1s	W770 D670 H560	107
	Combination SVL/Direct Earthing	Single Core (95-500)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W770 D670 H560	145	40 kA/1s	W770 D670 H560	119
	Combination SVL/Direct Earthing	Concentric (95-300)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W770 D670 H560	130	40 kA/1s	W770 D670 H560	107

Technical specifications

					LINK BOX ULTRA 316 Stainless			LINK BOX LITE 304 Stainless		
Schematic	Application	Bonding Cable (mm²)	SVL (optional)	Impulse Level	Short Circuit	Dimensions (mm)	Weight (kg)	Short Circuit	Dimensions (mm)	Weight (kg)
	Direct Earthing	Single Core (95-500)	-	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W730 D560 H560	110	40 kA/1s	W730 D560 H560	90
	Direct Earthing	Single Core (95-500)	-	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W770 D670 H560	140	40 kA/1s	W770 D670 H560	115
	Direct Earthing	Concentric (95-300)	-	75 kVp Ph-Ph 40 kV Ph-E	63 kA/1s	W730 D560 H560	110	40 kA/1s	W730 D560 H560	90
	Direct Earthing	Single Core (95-500)	-	40kV Ph-E	63 kA/1s	W525 D410 H490	50	40 kA/1s	W525 D410 H490	41
	Direct Earthing	Concentric (95-300)	-	40kV Ph-E	63 kA/1s	W360 D645 H515	50	40 kA/1s	W360 D645 H515	41
	SVL Earthing	Single Core (95-500)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	-	W730 D560 H560	95	-	W730 D560 H560	78
	SVL Earthing	Single Core (95-500)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	-	W770 D670 H560	120	-	W770 D670 H560	98
	SVL Earthing	Concentric (95-300)	1.5kV to 9kV	75 kVp Ph-Ph 40 kV Ph-E	-	W770 D670 H560	125	-	W770 D670 H560	102
	SVL Earthing	Single Core (95-500)	1.5kV to 9kV	40kV Ph-E	-	W525 D410 H490	50	-	W525 D410 H490	41

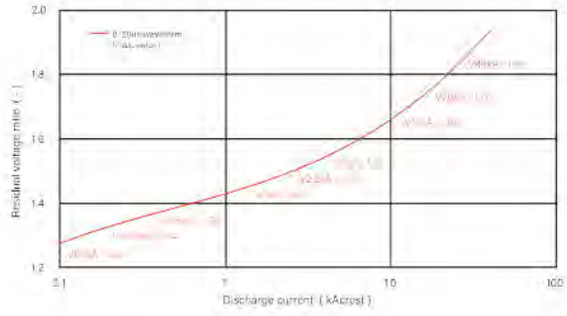
insulect
VERSATILITY VIA COLLABORATION

Technical specifications

SVL Type		TZS1.5	TZS3.0	TZS4.5	TZS6.0	TZS7.5	TZS9.0
Rated Voltage	kVrms	1.5	3.0	4.5	6.0	7.5	9.0
Maximum Continuous Operating Voltage	kVrms	1.3	2.5	3.8	5.1	6.4	7.7
Rated 8/20µs current	kA	20	20	20	20	20	20
20kA 8/20 20 shot duty cycle with power frequency voltage applied 1s/shot	kVrms	1.8	3.6	5.4	7.2	9.0	10.8
High current 4/10µs withstand	kA	100	100	100	100	100	100
Low current rectangular 2000µs duration withstand (20) shot	A	1000	1000	1000	1000	1000	1000
Energy absorption (on each of 20 shots)	kJ	5	10	15	20	25	30
Energy absorption on 2 shots before cooling	kJ	6.5	13	20	26	33	40
Maximum 8/20µs residual voltage at: 1.5kA 3kA 5kA 10kA 20kA 40kA 100kA (4/10µs)	 kV kV kV kV kV kV kV	 3.6 3.7 3.9 4.1 4.4 4.9 6.0	 7.1 7.4 7.7 8.2 8.8 9.7 12.0	 10.5 11.0 11.5 11.8 13.2 14.5 18.0	 14.1 14.7 15.4 16.3 17.6 19.3 24.0	 17.6 18.4 19.2 20.4 22.0 24.2 30.0	 21.1 22.1 23.0 24.5 26.4 29.0 36.0
Residual at 15kA 1µs current rise time	kV	4.7	9.3	14.0	18.6	23.3	28.0
Resistance at 2500Vdc	Ω	N/A	N/A	$>10^7$	$>10^7$	$>10^8$	$>10^8$
Resistance at 1500Vdc	Ω	$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^8$	$>10^8$
Temporary over-voltage (TOV) 1s withstand: from no prior load after 7kJ/kVrms of rated voltage	 kV rms kV rms	 1.9 1.8	 3.9 3.7	 5.9 5.6	 7.8 7.4	 9.8 9.3	 11.8 11.2
TOV of 5kV dc withstand time	s	∞	2	∞	∞	∞	∞
TOV of 3.5kV dc withstand time	s	∞	50	∞	∞	∞	∞
TOV of 2.5kV dc withstand time	s	2	∞	∞	∞	∞	∞
Current at 5kV dc	A	∞	3	10-4	10-5	10-5	10-5
Reference Current	mA dc	1	1	1	1	1	1
Reference Voltage (minimum)	kV dc	2.1	4.18	6.28	8.36	10.46	12.54
Mechanical robustness	-	Dropped 1.5m without internal damage					

Residual voltage ratio

Discharge Current Characteristics of Block



“Insulect Sheath Voltage Limiters' provide valuable protection to expensive cable installations. They are highly reliable and effective at managing cable sheath voltage rises and the associated power flows that can result under fault conditions.”

Tools, Measurement and Test Equipment

1000V Insulated Tools **93**

LV and MV Insulated Mats and Shrouds **94**

Hand Tools, Tool Bags and Belts **95**

Battery Powered Hydraulic Compression Tools **96**

Grips, Ratchet Hoists, Cable Pullers and Accessories **97**

Equipment Testing, Measurement and Analysis **98**

Proximity and Touch Detection **99**

1000V Insulated Tools

Practicable safety for cable jointers, line mechanics and technicians. Compliant with the latest revision of IEC/EN 60900

1000V insulated tools compliant with the current international standards provide practicable safety for users by protecting them from hazardous voltages.

Boddingtons Electrical has established a global reputation for high quality, reliability and flexibility. Boddingtons Electrical use high quality base tools with strong, precise blades and jaws, insulated with bright orange, soft PVC for comfort, ergonomics and durability. They are impact and abrasion resistant from -25˚C to +70˚C, and flame retardant to IEC 60900:2012. The manufacturing process allows for fast prototyping and tool development.

For maximum assurance, all Boddingtons Electrical insulated tools are permanently laser marked with the batch number. A lifetime warranty is available for both the tool and insulation.

As New Zealand's leading supplier of insulated tools, Hiko provides an extensive range of tools and kits from Klein Tools and Boddingtons Electrical for cable jointers, line mechanics and technicians. These are available to customers' requirements.

Hiko's range of insulated tools includes:

- Allen keys
- Connector holding tools
- Cable cutters
- Insulated hammers
- Link extractors
- Measuring tapes and rules
- Pliers
- Ratchet cable cutters
- Spanners
- Screwdrivers
- Saws
- Reversible ratchets
- Sockets and ratchets
- Tools cases
- Tool kits
- Torque wrenches
- Wedges
- Other tools available on request.

KLEIN TOOLS

boddingtonselectricalltd

"Hiko provides electrical industry professionals with tools and equipment that enable the highest levels of performance and safety."

Hand Tools, Tool Bags & Belts

Quality hand tools for electricity industry professionals

Klein Tools, established in 1857, manufactures virtually every type of hand tool used in the electrical and electricity industries. Hiko has for many years supplied Klein Tools to New Zealand electricity industry professionals, with whom they have a reputation for safety, quality, and durability.

Hiko's range of insulated tools includes:

- Allen keys
- Cable cutters
- Hammers
- Knives
- Measuring tapes
- Pliers
- Ratchet cable cutters
- Spanners
- Screwdrivers
- Saws
- Reversible ratchets
- Sockets and ratchets
- Torches, LED lamps and head lights
- Torque wrenches
- Wrenches.

Hiko also supplies a wide variety of top-quality tool bags, belts and pouches, from Klein Tools and the Taurus Leather Company, including a range designed in New Zealand for cable jointers, line mechanics and technicians.

- Reinforced backpacks and shoulder bags
- Canvas buckets
- Leather tool pouches and belts
- Tool cases (optionally laser marked)
- Tote bags.

KLEIN TOOLS

Battery Powered Hydraulic Compression Tools

Systematic innovation and expertise in electrical connections

Klauke's innovation and expertise in battery powered hydraulic crimping and cutting tools means they represent the most convenient solution for cable jointing and line mechanic applications:

- Single-handed operation
- Light weight – convenient and ergonomic for use up poles and in cable trenches
- USB and/or blue tooth data download of every operation
- Automatic retract stop on all 6 tonne and 12 tonne crimping tools, making repeated crimp connections faster and easier
- High capacity 3.0 Ah Li-Ion 18 V batteries
- Can be used live line up to 75 kV, when used in combination with insulated gloves and other appropriate protective personal equipment and other measures in line with applicable standards and regulations.
- For cutting copper, aluminium up to Ø 105 mm, ACSR and (selected tools) steel rope up to Ø 55 mm
- Professional maintenance and repair service available
- GPS tool tracking.

The Klauke product range also includes:

- Light weight battery powered hydraulic drive units for crimping and cutting up to 100 tonnes, with Intelligent Pressing System, that determines the oil pressure required for each operation and reports any deviation to the user with visual and audible warnings
- Hydraulic universal tools
- Hydraulic tool heads
- Hand operated mechanical and hydraulic crimping and cutting tools
- Hydraulic systems
- Accessories (dies, power packs, hoses, connectors, hand and foot controls).

All Klauke mechanical crimping and cutting tools are made from the highest quality materials, are rust-proof and hardened. The materials selection, design and manufacturing precision of Klauke tools give them an extremely long service life, and delivers safe and long lasting electrical connections.

For details and specifications of the full range, refer to our web page or the Hiko tools catalogue.

Klauke®
A Textron Company

Grips, Ratchet Hoists, Cable Pullers and Accessories

For overhead lines and underground cable installation

Klein Chicago™ Grips, Parallel Jaw Grips and Haven's™ Grips are used to maintain temporary tension until a conductor or cable can be permanently terminated.

They are available with different designs of jaw contours to eliminate or minimise deformation and maximise grip on aluminium, copper and ACSR conductor, covered conductor or stay wires, with maximum safe load up to 11.3 tonnes. Different locking / latching features are used to accommodate a wide variety of hooks, winches and tackle blocks, and to facilitate placement, including with a hot stick.

The Klein web strap ratchet hoist has a large, non-conductive adjuster that allows the web slack to be adjusted easily. The ratcheting mechanism and 360° rotating handle allows precise tensioning for up to 675 kg (single conductor) and 1350 kg (double conductor).

Also available from Klein: Howe Wire Tool and block and tackle packages.

Greenlee mains powered cable pullers are fast and safe to use, allowing one-person set-up and operation, delivering savings on site time and costs. A wide range of models is available, with maximum pulling force of up to 4,500 kg.

Cable pulling accessories from Greenlee include:

- Hook sheaves, base mounted sheaves
- Cable drum rollers
- Low-stretch, rot-resistant composite rope (with double braided inner core and outer jacket and green tracer)
- Swivel and rope connectors
- Grips and pulling socks
- Duct cleaning brushes and mandrels
- Cable pulling lubricant.

For details of the full range, refer to our web page,

GREENLEE. KLEIN TOOLS

Equipment Testing, Measurement and Analysis

Purpose designed for transmission and distribution network applications

HDElectric test, measurement and safety products provide safe, accurate, and critical information about transmission and distribution systems and equipment.

They can help ensure continuity of supply, expedite power restoration and facilitate safe field maintenance. HDElectric products are state of the art, robust and purpose designed for the electricity industry.

- ClearTest™ transformer testers identify internal defects on both the primary and secondary sides of de-energised transformers without disconnecting
- Hi-Test® arrester testers non-destructively test de-energised ZnO 11/22 kV surge arresters for non-visible internal breakdown
- Digital voltmeters and phasing sets deliver accurate measurement (within 1%) and phase test applications up to 80 kV
- Digital voltage indicators are single point instruments designed to read the voltage on a conductor up to 500 kV
- The Phase Rotation Meter is used to determine the leading phase of any two phases of three-phase 11/22/33 kV systems
- The 3ID three phase cable identifier identifies the correct phases on lengths of up to 1.5 km of de-energised and discharged overhead lines and underground cables
- ARCPRO 2.01 software calculates the thermal parameters of arcs, to aid in the selection of PPE by defining the potential arc hazard (as referenced in EEA Guide for the Management of Arc Flash Hazards: Tools for Calculating Arc Flash Hazards)

For details of the full range, refer to our web page.

HD ELECTRIC COMPANY

Proximity and Touch Detection

Of live or dead overhead and underground power lines

The Modiewark is a non-contact voltage tester which detects the presence of an alternating electric or electromagnetic field as both a proximity and touch device.

Its unique switching action allows for the identification of alternating currents at a distance between 200 mm and 300 mm from a voltage source from 110 V to 220 kV.

The Modiewark has been trusted by electricity industry professionals for over 40 years. Firstly, as a proximity device to determine live or dead situations and secondly as a touch device to verify the tester has physically reached the field around designated mains under test.

The Modiewark can also be used indoors, tracing voltage sources from power distribution boards and cable fault detection.

The unique Modiewark sensor allows for directional checks such as checking LV when HV is nearby. Induced voltages on isolated conductors can also be checked by adjusting the sensitivity.

Detecting distance of a 240 V single live wire is approximately 100 mm and with a bunched neutral and earth, as a flexible cable, the distance is 50 mm.

Typical uses include:

- Identifying live conductors
- Fault finding in flexible cables
- Checking equipment grounding
- Neon lighting servicing
- Tracking live wires above and below ground at URD test points
- Phasing conductors
- High frequency radiation detection.

Contact Hiko Power Engineering for ordering information.

G.L McGAVIN

End-to-end service and technical support

For over 83 years Hiko (formerly Hamer Power Engineering) has supplied the power industry with electrical equipment, components and tools.

We work closely with our customers and our international supply partners to develop and supply quality products and solutions for New Zealand's electricity networks.

Our diverse and capable team includes degree qualified electrical engineering and operations management, as well as registered electrician and test technician skills. Technical, logistical and customer management specialists are located in Auckland and Christchurch.

Our technical team's engineering expertise and experience with our applications is well known and allows us to provide robust and responsive technical support.

By working with our customers and with respected industry partners we deliver comprehensive training, installation and certification to ensure that the most current information and techniques are delivered to the end user. This approach also allows us to offer manufacturer-backed extended warranties.

At Hiko Power Engineering we deliver certainty, reliability and long-term value based on the products that we supply and on the technical support that we provide.

For further information on our products and services contact Hiko Power Engineering on **0800 473 999** or email **sales@hikopower.co.nz**

Hiko Power Engineering Limited
85a Falsgrave Street
Phillipstown
Christchurch 8011

www.hikopower.co.nz

Hiko Power Engineering Limited reserve the right to amend product details without notice.

HPE081 0421

Hiko
Power Engineering

CONTACT US

0800 473 999
sales@hikopower.co.nz
85a Falsgrave St, Phillipstown, Christchurch 8011
Unit B5, 269A Mount Smart Rd, Onehunga, Auckland 1061