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# Cannon, VEAM, BIW

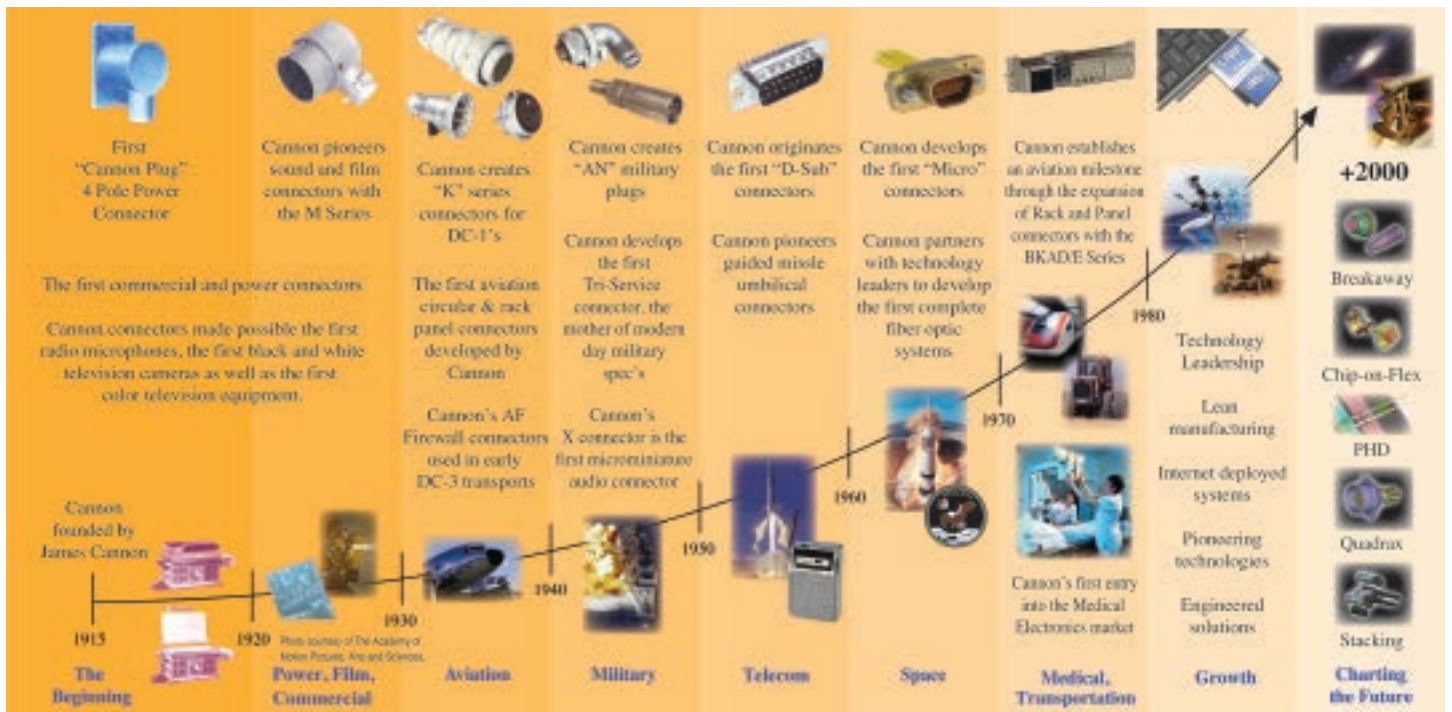
## A Historical Achievement of Technology Leadership

### Defining and Championing Innovation

Showcasing a portfolio of creativity, ITT's "Engineered For Life" execution embraces products which have become ubiquitous in a broad collection of markets including: Military/Aerospace, Civil Aircraft, Industrial Instrumentation, Medical, Oil & Gas, Energy, Transportation, Telecom/Handset, Computer, Consumer, and Automotive.

ITT's rich interconnect history embraces contributions to both technological breakthroughs and social movements. With one of the industry's broadest product offerings, ITT's interconnect products have supported:

- Every Free World space mission, bringing the universe to our doorstep.
- Motion picture, radio, and television equipment, serving laughter and entertainment to millions.
- Commercial and military communications systems, linking the voices of the world.
- Computerized tools, reshaping the information highway.
- Aircraft, rapid transit, and automobiles, mobilizing our expanding society.
- Oil and natural gas production, powering the world's economies.
- Agricultural equipment, attacking the roots of world hunger.



# ITT Interconnect Solutions

ITT Interconnect Solutions is a division of the multi-national ITT Corporation, a \$11.6 billion dollar global enterprise representing the brands Cannon, VEAM, and BIW. Our connector portfolio remains the most extensive in the industry offering the most reliable and cost effective range of interconnect solutions. These innovations have enabled ITT to provide products and technologies to such markets as:

- Automotive
- Computer/Consumer
- Industrial/Instrumentation
- Military/Aerospace
- Oil Fields
- Telecom/Handset
- Transportation

When you specify a Cannon, VEAM or BIW connector, you can rely on a product designed, developed, and manufactured to the highest quality and reliability standards. This tradition of excellence is based on ITT's corporate culture of operating its businesses under the principles of Six Sigma. At ITT, Six Sigma is not just a quality philosophy but a complete corporate culture that drives the entire business. Our Value Based Management and Value Based Product Development systems are two cornerstones that allow for the development of both leadership and product engineering principles, ensuring the correct industry leading products are developed to the accepted market driven lead times. These principles have allowed ITT to become the market leader in all of our business portfolios.

## Six Sigma Manufacturing

ITT operates manufacturing facilities in the United States, Germany, Italy, Mexico, China, Japan and the UK, all of which have particular product area strengths allowing ITT to offer a truly global footprint to our customers. Our facilities are world class and accommodate full vertical integration utilizing the latest manufacturing technologies including: automated and robotic machining centers, Super Market manufacturing cells, Kanban pull systems, and automated electrical, mechanical, and optical test and inspection equipment. The combination of our manufacturing strength and our

advanced manufacturing facilities allows ITT to offer products at market driven prices. Our capabilities, especially in robotics, computerized precision tooling, Kaizen Project Management, Six Sigma tools, and testing, give ITT the most optimized global manufacturing footprint in the interconnect industry.

## The Custom Difference

As the industry leader in harsh environment interconnect applications, ITT's world class engineering teams will work directly with our customers to design and develop cost effective solutions for their applications. In many cases we may modify one of our standard designs to ensure a highly reliable solution where timing is critical. Yet, in those cases where a complete custom interconnect solution is required, ITT will work with our customer's Engineers to design an interconnect solution which will be cost effective yet highly reliable. As professional consultants, our Engineering teams will provide a thorough systems and mechanical analysis of any proposed solution. These analyses provide our customers with sophisticated electrical signal and mechanical characterizations to determine the best solution for their application.

## RoHS Compliance Information

ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon, VEAM, and BIW connector product portfolios to meet the requirements of European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances initiative. As appropriate, specific Cannon, VEAM, and BIW products may be ordered with an R prefix number which insures our customers will receive RoHS compliant parts for their commercial electronics applications and equipment. Since most RoHS hazardous substances center around specific metal plating and lead solder coatings, ITT's products for RoHS compliance are available in the following plating finishes: electroless nickel, stainless steel, Anodize over aluminum and Gold plating. It should be noted that gold plating would be recommended as the replacement for tin-lead solder when ordering board mount connectors.



PowerLock Applications

The VEAM PowerLock connector series for field installation power distribution systems offers the ultimate in safety and reliability under the most severe operating conditions.

PowerLock is available in four standard formats which allow complete hook up through the standard daisy chain principle. There are two Source connectors, one for panel mounting and one for cable attachment. These are identified as Panel Source and Line Source. The other two types are Drain connectors. These connectors are identified as Panel Drain and Line Drain.

Typical applications for PowerLock include three phase motors, generators, load banks, lighting distribution panels and in-house supplies. PowerLock connectors serve a very diverse industry base which includes outdoor concerts, carnivals, sporting events, television outdoor broadcast, theatres, electricity supply companies and many heavy industrial environments such as construction.



*Reliable connections for field installation power distribution systems such as mobile generators.*



*Wind turbine and alternative energy power transfer systems.*





*We offer a wide variety of devices for electricity supply companies.*

*Fuse carriers with integrated PowerLock connectors provide a safe and efficient connection to a power distribution board.*



*Insulated rotary clamps provide a compact connection to a slotted busbar.*



*Insulated G-Style clamps for direct connection to a live low voltage busbar.*

***In addition to our PowerLock series, we also offer these connectivity solutions:***

### ***Harsh environments***



**Cannon APD**

In-line and bulkhead connectors resistant to harsh environmental conditions (contaminants, vibration and shock).



**Cannon CA-Bayonet**

Signal and power connectors with exceptional sealing against the ingress of fluids and will withstand the effects of high vibrations.

### ***Audio***



**VEAM CIR-LK**

Quick coupling and uncoupling. High impact heavy duty coupling mechanism. Bayonet connector for audio applications, 4 to 53 channels.

### ***Entertainment & Lighting***



**VEAM TOURLOCK**

Intermateable connectors with CIR-LK series, higher resistance to the physical shocks and tearings. IP67 protection.



**VEAM VSC**

Heavy duty ribbed coupling ring. Extended female ground contacts for first mate, last break. Threaded circular 19-pin connector with replaceable crimp or solder contacts.

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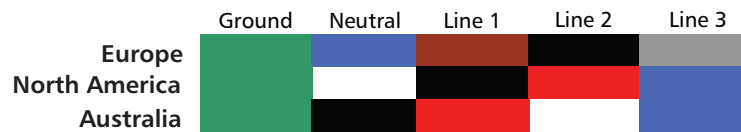
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ITT Veam PowerLock connectors are plastic bodied single pole electrical connectors used in high current applications. For use in single and polyphase power distribution systems up to 660 amps, the range includes panel and cable mounted connectors, and associated accessories. PowerLock connectors are moisture and impact resistant and feature insulated contact tips to prevent accidental touching of electrically live parts. Typical uses include 3 phase motors, generators, wind turbines and power distribution boards in a wide variety of applications.



PowerLock connectors are easy to terminate to copper cable using either industry standard crimp tools or set-screw contacts. The silver plated contacts are available in 2 continuous current ranges, those with brass contacts are suitable for use up to 400 amps and those with copper contacts up to 660 amps.

The high impact plastic connector bodies are keyed to prevent connection errors, and color coded to suit 3 phase electrical systems that are used in the US, Europe and Australia.



\* Old UK colors available on request

Connectors for attachment directly to cable (line connectors) are supplied with a loose contact. Fitting to the cable is by either crimp or set-screw termination, the contact is then retained within the insulator body with a nylon cotter pin.

Secure coupling of a connector pair is through a bayonet lock together with a secondary locking pin. The secondary lock engages when the bayonet lock is fully turned and disconnection requires a simple release key. The secondary lock discourages tampering and reduces the risk of accidental or unauthorised disconnection. If fast disconnection is required, for an application where tampering is not a risk, the connectors can be fitted with a sliding collar that quickly unlocks the connectors.

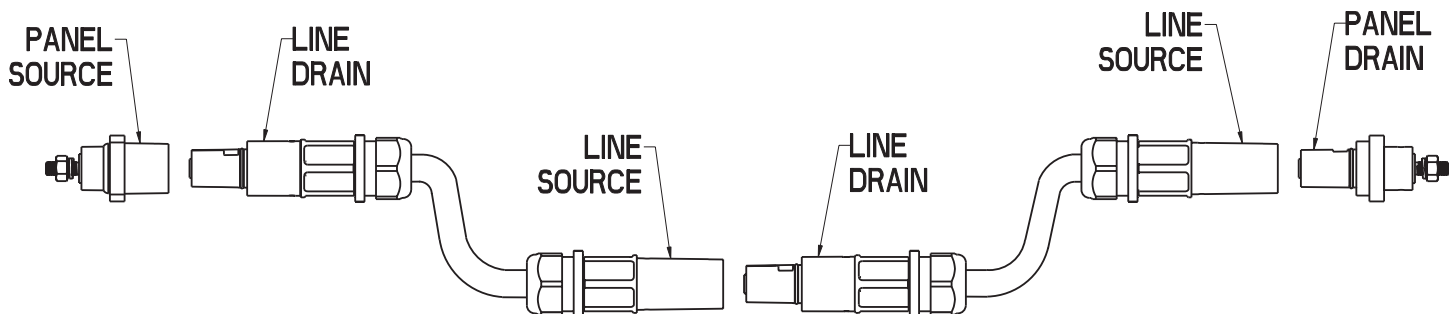
Cable connectors are fitted with cable glands to fit a wide range of cables. The cable glands, together with an interfacial seal, provide an ingress protection level of IP67 when mated.

**Features & Benefits**

- 400 amp or 660 amp continuous power ratings
- Colored and Keyed to ensure correct mating
- All connectors IP2X finger protected
- Crimp or Set-screw cable attachment
- Environmentally sealed to IP67
- Secondary lock for added security

**Typical Applications**

- Generators & Load Banks
- 3 Phase Motors
- Field Camps
- Back-up power systems
- Power distribution panels
- Outdoor events
- Wind Turbines





PowerLock connectors feature a bayonet coupling mechanism with a secondary locking pin. When a pair of connectors are mated and fully turned to engage the bayonet, the spring loaded secondary locking pin on the Drain connectors, snaps into a slot on the Source connector; a special release key is then required to uncouple the connectors.

**Coupling**



Uncoupled - Note the secondary locking pin on the right hand connector and the slot on the left hand connector.



Aligning the arrow lines up the keyways allowing the connectors to be pushed together fully compressing the locking pin.



Connectors are turned clockwise and locking pin snaps into the slot on the mating half.



Release Key  
LL0023N  
Order Code - AN389900010

**Un-Coupling**



To uncouple, the release key, LL0023N is pushed into the slot.



The release key is used to push the locking pin out of the slot.



With the release key holding the locking pin back, the connectors can now be turned counter-clockwise and uncoupled.

**Connector Descriptions**

**Source** – this the term used to describe the connector fitted with a male contact in a female housing, it is usually the connector attached to the source of the power, i.e. the ‘live’ connector, the contact is fitted with an insulated end cap to prevent accidental finger touching of live parts.

**Drain** – this is the term used to describe the connector fitted with a female contact in a male housing, this is not normally the live connector, however it does include a spring loaded insulated cap to prevent finger touching.

The Drain connector is fitted with a secondary locking pin that locks into the mating half when the 2 connectors are fully engaged. A simple release key is required to disconnect the parts.

**Line** – The line connector is the free connector fitted to a cable. Crimp or Set-Screw contacts are available for attaching the conductor.

**Panel** – Panel connectors feature a square 4 hole flange for attaching to a panel. The 4 holes are normally supplied open, however can be pre-fitted with threaded inserts to reduce mounting time.



## Electrical

Number of Contacts	Single Pole
Current Rating	400 amp or 660 amp continuous
Operating Voltage	1000V AC / 1500V DC
Test Voltage	4500V AC
Short Circuit Rating	16kA for 1s, 34kA peak
Insulation Resistance	>5000 Mohm
Electrical Protection	IP2X Finger touch protected
Contact Resistance	<0.1 mOhm

## Mechanical

Contact Material	Brass (400 amp) or Copper (660 amp), Silver Plated
Housing Material	High Temperature Thermoplastic
Locking	Bayonet with secondary locking pin
Mating Cycles	500
Contact Type	Set Screw (400 amp) or Crimp (660 amp)
Contact to Housing Retention	Nylon Cotter Pin
Cable Retention	Cable gland nut
Vibration	10-2000Hz/15g

## Environmental

Operating Temperature	-30°C to +125°C (-22°F to +257°F)
Ingress Protection	IP67 when mated
Flammability	UL94-V0
RoHS	Compliant

## Listing and Approvals



PowerLock connectors are tested and certified by VDE



Selected PowerLock products are listed by UL and approved for use in North America, for further details contact ITT, Interconnect Solutions.



PowerLock connectors are manufactured and tested as required to carry European CE marking.

**Safety Note: PowerLock connectors and related products should only be installed and handled by suitable qualified persons.**



	Body Style	Line/Phase Color	Contact Type	Cable Gland	Special Option	
<b>Example =</b>	<b>NLDFT</b>	<b>E-GN</b>	<b>L</b>	<b>C240</b>	<b>M40B</b>	<b>HG</b>
<b>Description</b>	<b>Code</b>					
Line Source	NLS					
Line Drain	NLDFT					
Panel Source	NPS					
Panel Drain	NPDFT					
Ground / Green	E-GN					
Neutral / Blue	N-BL					
Neutral / White	N-W					
Neutral / Black	N-BK					
Line 1 / Brown	1-BN					
Line 1 / Black	1-BK					
Line 1 / Red	1-R					
Line 2 / Black	2-BK					
Line 2 / Red	2-R					
Line 2 / White	2-W					
Line 3 / Grey	3-GY					
Line 3 / Blue	3-BL					
Use with NLDFT & NPDFT	L	NPDFT & NLDFT only				
Leave blank for NLS & NPS						
Crimp 300mm <sup>2</sup> copper cable*	C300	NLS & NLDFT only				
Crimp 240mm <sup>2</sup> copper cable*	C240					
Crimp 185mm <sup>2</sup> copper cable*	C185					
Crimp 150mm <sup>2</sup> copper cable*	C150					
Crimp 120mm <sup>2</sup> copper cable*	C120					
Crimp 107mm <sup>2</sup> copper cable*	C107					
Crimp 95mm <sup>2</sup> copper cable*	C95					
Crimp 70mm <sup>2</sup> copper cable*	C70					
Crimp 50mm <sup>2</sup> copper cable*	C50					
Crimp 35mm <sup>2</sup> copper cable*	C35					
Set Screw 120 mm <sup>2</sup> (See Note)	S120					
M12 Threaded post 400amp	T4	NPS & NPDFT only				
M12 Threaded post 660amp	T6					
M12 Threaded hole 400amp	H4	NPS only				
M12 Threaded hole 660amp	H6					
Gland nut 15-23mm Ø	M40S	NLS & NLDFT only				
Gland nut 19-28mm Ø	M40A					
Gland nut 22-32mm Ø	M40B					
Gland nut 30-38mm Ø	M50					
Sliding Collar (Source only)	SC					
Hand Grip (Line only)	HG					
No Flange (Panel only)	NF					
M6 threaded insert front	M6F					
M6 threaded insert rear	M6R					
Release Key						
Order Code -AN389900010						

**⚠ WARNING**

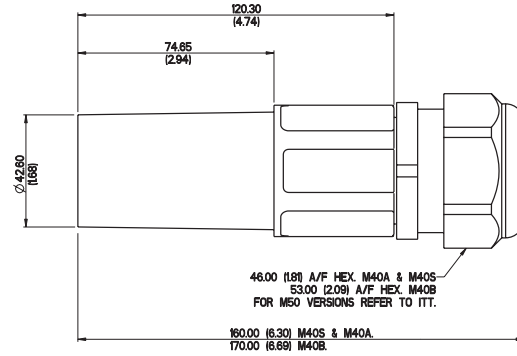
**IMPORTANT SAFETY INFORMATION**

Standard PowerLock and SnapLock contact are copper based contacts, they should not be used for direct termination onto aluminum cables as galvanic corrosion and overheating can occur. If you intend to use aluminum cables please contact ITT for advice on alternatives to the standard copper contacts.

**NOTE –**  
When using S120 contact with smaller cables, a reduction kit is required. Each kit contains a series of sleeves to suit the cable size.

Cable size	Kit order code
95mm <sup>2</sup> cable	A3099000100
70mm <sup>2</sup> cable	A00602825
50mm <sup>2</sup> cable	A00602831
35mm <sup>2</sup> cable	A00602840
25mm <sup>2</sup> cable	A00602830

\* For aluminium cable, please contact ITT Veam / Cannon or our local distributor



Line Source is the connector with a male contact which is normally connected to the source of the power. The contacts are fitted with a plastic end cap that prevents accidental finger touching of live parts of the connector and meets IP2X requirements. Different contacts are available to suit cable conductors from 25 mm<sup>2</sup> to 300 mm<sup>2</sup>.

Connectors rated either 400 amp or 660 amp, can be fitted to a wide range of copper cables, and to aluminium cables on request.

The 400 amp connectors use a standard set-screw contact suitable for 120mm<sup>2</sup> conductors; when using smaller conductors a range of reduction sleeves are available to order separately that can be used with cables down to 25mm<sup>2</sup>, see page 11 for further information.



660 amp contacts are crimped using industry standard crimping tools and dies, a range of contacts are available to suit cables from 35mm<sup>2</sup> to 300mm<sup>2</sup>

Cable glands meeting IP67 requirements are fitted to the connectors, 4 sizes are available that cover a range of cables with outside diameters from 15mm to 38mm. When selecting the M50 gland, please note that this is supplied with an adaptor (not shown above) that steps the connector up from M40 to M50.

A Sliding Collar can be factory fitted to the source connector which allows a pair of connectors to be disconnected without the use of a separate release key.

Rubber hand grips are available that fit over the ribbed section of the main insulator body, these grips assist with the handling of the connectors when being used in difficult conditions.



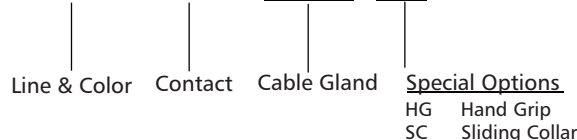
Order suffix = SC



Order suffix = HG

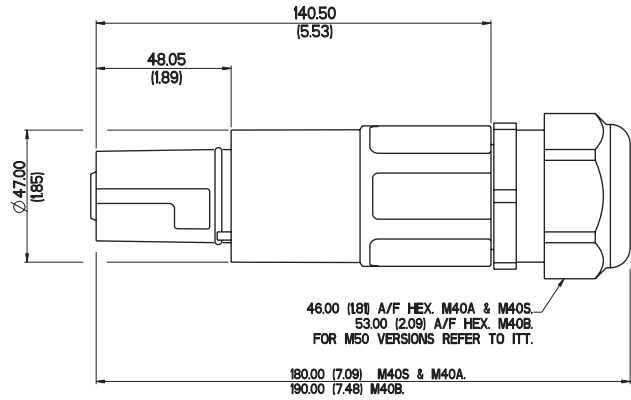
Ordering information – see page 11 for full details of the options available

**NLS - X - XX - XXXX - MXXX - XX**



Example part number:  
NLS-1-BN-S120-M40A





Line Drain is the connector with a female contact which is not normally the live part, however they are fitted with a spring loaded plastic cap that prevents accidental finger touching of the contact, and the connector meets IP2X requirements. Contacts are available to suit cable conductors from 25mm<sup>2</sup> to 300mm<sup>2</sup>.

Connectors rated either 400 amp or 660 amp, can be fitted to a wide range of copper cables, and to aluminium cables on request.

The 400 amp connectors use a standard set-screw contact suitable for 120mm<sup>2</sup> conductors; when using smaller conductors a range of reduction sleeves are available to order separately that can be used with cables down to 25mm<sup>2</sup>, see page 11 for further information.



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Cable glands meeting IP67 requirements are fitted to the connectors, 4 sizes are available that cover a range of cables with outside diameters from 15mm to 38mm. When selecting the M50 gland, please note that this is supplied with an adaptor (not shown above) that steps the connector up from M40 to M50.

Rubber hand grips are available that fit over the ribbed section of the main insulator body, these grips assist with the handling of the connectors when being used in difficult conditions.

The drain connector is fitted with a secondary locking pin. When a pair of connectors are mated, the secondary locking pin engages with a slot in the source connector that prevents the connectors from being uncoupled without the use of a special release key, or when the source connector is fitted with a sliding collar.

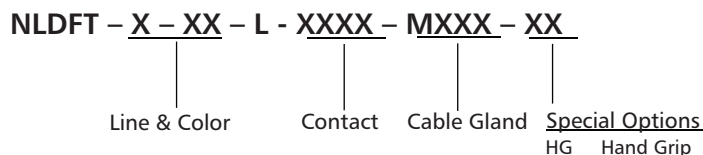


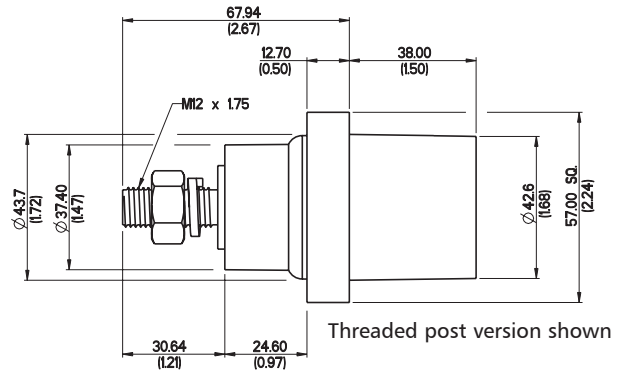
Order suffix = HG

Ordering information – see page 11 for full details of the options available



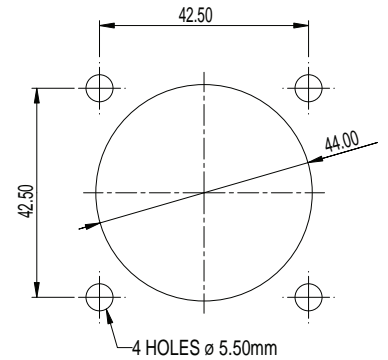
Example part number:  
NLDFT-2-BK-L-C185-M40B





Panel Source connectors are supplied fully assembled with the male contact having an M12 threaded post, with nut and spring washer for connection to a standard cable lug, or M12 threaded hole for fixing with a bolt. These connectors are rated either 400 amp (T4 / H4) or 660 amp (T6 / H6).

The standard connector is mounted to a panel through 4 fixing holes on the flange, panel cut-out details are shown on the right. As an alternative, the flange holes can be pre-fitted with M6 threaded inserts for either front or rear fixing, add suffix M6F for front fitting or M6R for rear fitting (rear mounting may obscure the product label, maximum panel thickness 4mm).



Panel Cutout

Neoprene Gaskets to seal the flange against a panel are available to order separately, order part number A2499001150.

If required, the connector can also be supplied without a flange (special option suffix – NF).



A Sliding Collar can be fitted to the source connector which allows a pair of connectors to be disconnected without the use of a separate release key.

Order suffix = SC



Threaded Insert

Ordering information – see page 11 for full details of the options available

Example part number:  
NPS-N-BL-T4

NPS – X – XX – XX – XX

Line & Color

Contact

Special Options

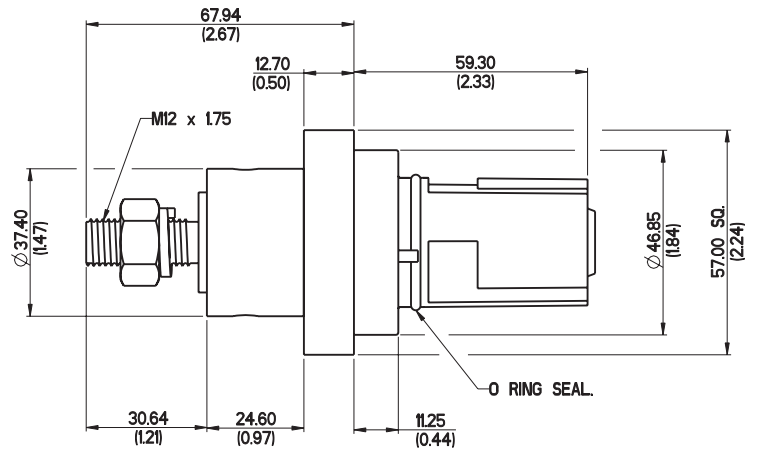
- M6F M6 threaded insert front mounting
- M6R M6 threaded insert rear mounting
- NF No Flange
- SC Sliding Collar



Gasket

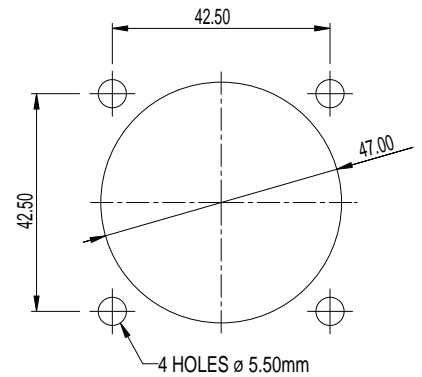
Panel connectors can also be supplied with an un-assembled crimp or set-screw contact. In this case the contact is fitted to the cable, and must be assembled to the insulator body before the fully assembled connector is fitted to the panel. This is a non-standard option, please contact your supplier for further information.





Panel Drain connectors are supplied fully assembled with the female contact having an M12 threaded post, with nut and spring washer for connection to a standard cable lug. These connectors rated either 400 amp (T4) or 660 amp (T6). This connector is fitted with the secondary locking pin for secure connections, see explanation on Line Drain page 13.

The standard connector is mounted to a panel through 4 fixing holes on the flange, panel cut-out details are shown on the right. As an alternative, the flange holes can be pre-fitted with M6 threaded inserts for either front or rear fixing, add suffix M6F for front fitting or M6R for rear fitting (rear mounting may obscure the product label, maximum panel thickness 4mm).



Neoprene Gaskets to seal the flange against a panel are available to order separately, order part number A2499001150.



Gasket

If required, the connector can also be supplied without a flange (special option suffix – NF).



Threaded Insert

Ordering information – see page 11 for full details of the options available

**NP**DFT – X – XX – L – XX – XXX

Example part number:  
NP DFT-3-BL-L-T6

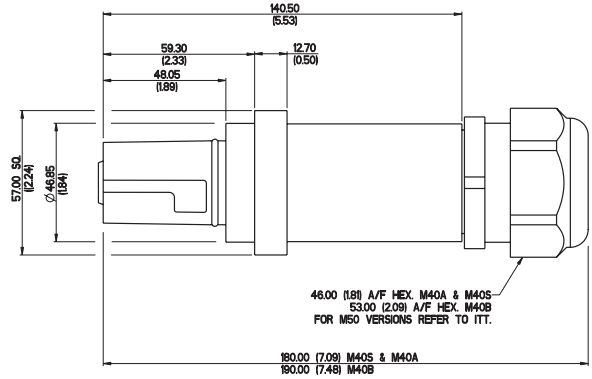
Line & Color

Contact

Special Options

- M6F M6 threaded insert front mounting
- M6R M6 threaded insert rear mounting
- NF No Flange

Panel connectors can also be supplied with an un-assembled crimp or Set-Screw contact. In this case the contact is fitted to the cable, and must be assembled to the insulator body before the fully assembled connector is fitted to the panel. This is a non-standard option, please contact your supplier for further information.



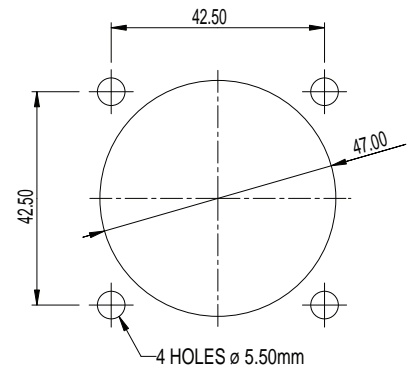
Panel Drain connectors (SKPP) can be supplied with a backshell to provide a watertight fitting to the cable.

These connectors are supplied with a loose female contact that is fitted to the cable before being assembled into the connector housing.

Connectors rated either 400 amp or 660 amp, can be fitted to a wide range of copper cables, and to aluminium cables on request.

This connector is fitted with the secondary locking pin for secure connections, see explanation on Line Drain page 13.

The standard connector is mounted to a panel through 4 fixing holes on the flange, panel cut-out details are shown on the right. As an alternative, the flange holes can be pre-fitted with M6 threaded inserts for either front or rear fixing, add suffix M6F for front fitting or M6R for rear fitting (rear mounting may obscure the product label, maximum panel thickness 4mm).



Neoprene Gaskets to seal the flange against a panel are pre-fitted to this style.

Ordering information – see page 11 for full details of the options available

**NP**DFT - **X** - **XX** - L - **XXXX**SKPP - **MXXX** - **XX**

Line & Color

Contact

Cable Gland

Special Options

M6F

M6 threaded insert front mounting

M6R

M6 threaded insert rear mounting

Example Part Number: NP DFT-E-GN-L-SI20SKPP-M40A





A PowerLock Box is a 3 phase high power connecting unit, used as a termination point for power cables. The boxes include a number of safety features to prevent incorrect connection and disconnection. All PowerLock devices are 'keyed' to eliminate the possibility of connecting with the wrong line, and color coded to suit international 3 phase standards.

Anywhere that you are unable to rely on a public utility power source, a PowerLock Box can provide a connection point for a mobile generator, into your low voltage (1500 volt DC) network.

### Features and Benefits

- Connect with standard 'Powerlock' connectors
- Sequential connecting ensures Ground/Earth is connected first
- 400 amp & 660 amp continuous current options
- Color coded to suit European, North American, and Australian 3 phase standards
- Source and Drain (Power out or Power in) options
- All ports 'keyed' to prevent incorrect con
- Sealed Security lid optional
- IP2X Finger protected
- Lock to prevent interference
- 19" x 2U rack mounting or flange mount
- Environmentally sealed connector ports to protection level IP65

### Typical Applications

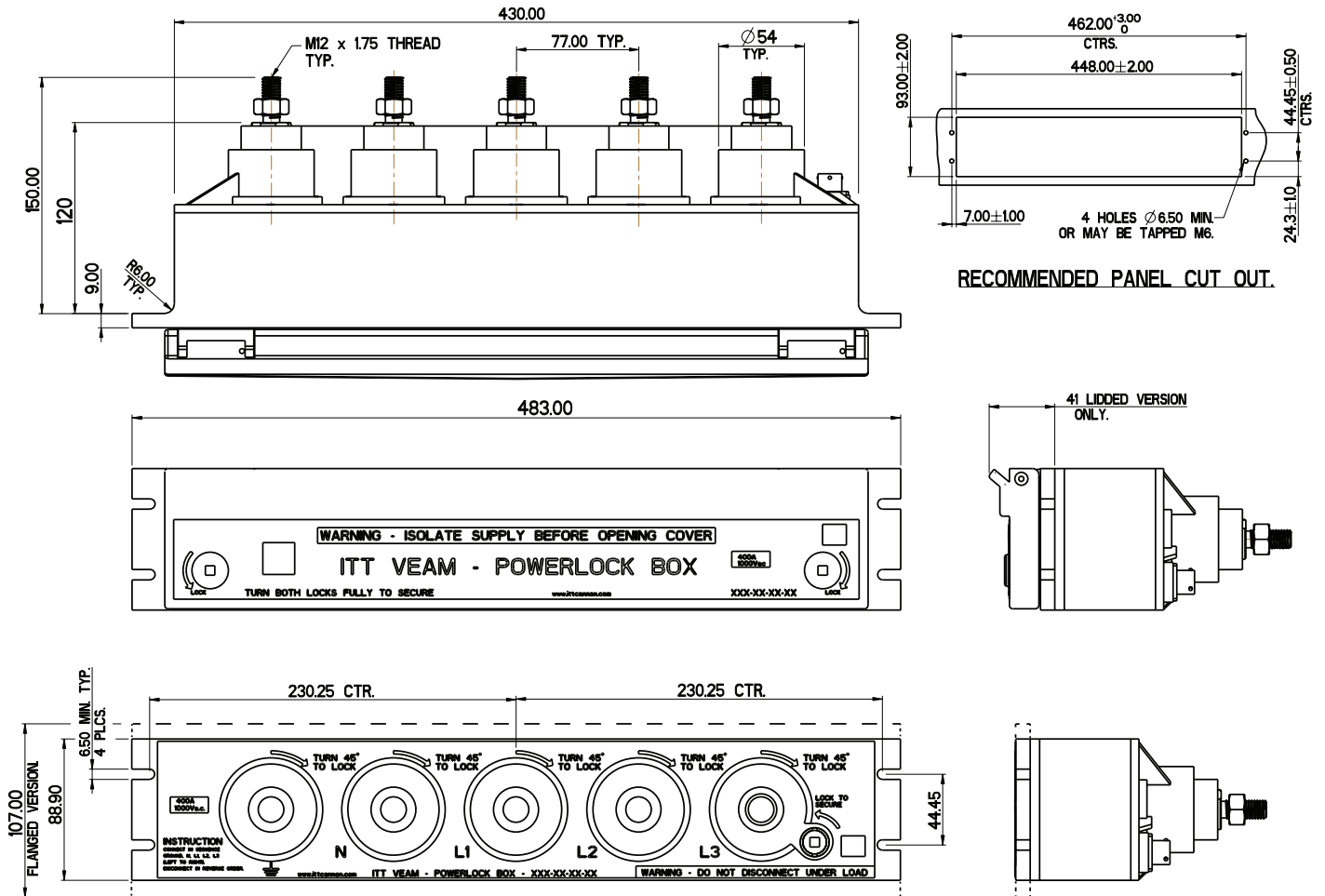
- Mobile Generators
- Power for field camps
- Hospitals
- Outdoor events
- Welding equipment
- Barrack blocks
- Dockside power plant
- Data and Intelligence centers



- Bring in a generator during an emergency, connect to a PowerLock Box, and you are quickly up and running again
- Whenever you need a flexible source of low voltage power, with a PowerLock Box installed, you have a safe and secure connection point.

Technical Overview

The PowerLock Box is designed for use in high current applications and offers many safety and security benefits when compared with a set of individual connectors.



Performance

Current rating	400 amp or 660 amp continuous
Voltage rating	1000V AC / 1500V DC
Contact material	Brass (400 amp) or Copper (660 amp), silver plated
Housing material	High temperature thermoplastic
Endurance	500 connection cycles
Environmental protection of connector ports	Un-lidded version IP65 when connectors are fitted Lidded version IP65 with lid locked or when connectors are fitted
Electrical protection	IP2X (finger safe)
Flammability rating	UL94-V0
Operating temperature	-30°C to +85°C
Color coding	European, North American & Australian 3 phase colour coding
RoHS & WEEE	Compliant
Safety notice	The PowerLock Box should only be installed and operated by suitably qualified persons





The PowerLock Power Distribution Cabinet has been designed and tested to conform to the requirements for CE marking by implementing the requirements of the Low Voltage Directive (LVD) 73/23/EEC which is implemented as the Electrical Equipment (Safety) Regulations 1994.

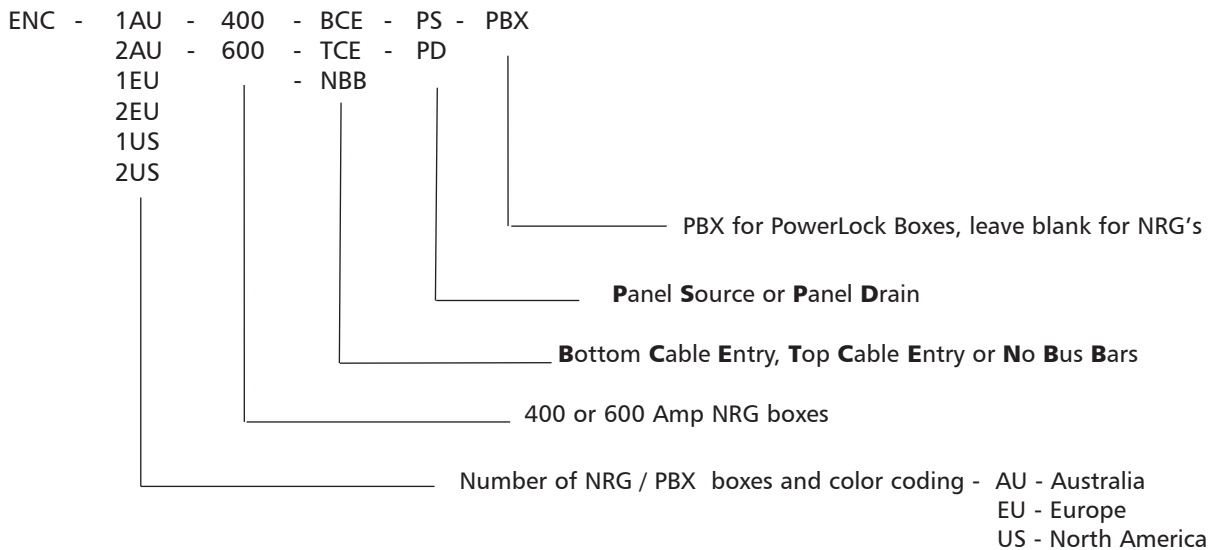
It complies with the following specifications: BS EN 60439-1:1999, BS EN 60439-5:1996 and IEC 60529:1992

The cabinet is fitted with either 1 or 2 NRG or PowerLock Box sequential units rated at 400A or 600A. These units allow safe connection in the correct sequence of PowerLock connectors (Ground, Neutral, Phase 1, Phase 2, Phase 3). The unit incorporates a key lockable switch which can be connected to auxiliary safety circuits. Once locked, it prevents unmating of the system by unauthorized personnel.

The cabinet is fitted with external access and blanking panels which are designed to aid in the routing of cables both into and out of the cabinet. An information plate is fitted onto the side of the cabinet incorporating data for traceability. The cabinet door incorporates 2 door locks (triangular key type) for security. When latched, the cabinet has an IP34D environmental rating. For additional security, a padlock can also be fitted. Fixing plates are provided to enable the unit to be securely fixed during installation, prior to electrical operation.

The cabinet is fitted with generic safety signs. These signs give warning of the potential electrical hazard, together with mandatory signs regarding cabinet security and isolation. All signs supplied conform to the current requirements of the Health and Safety (Safety Signs and Signals) Regulations.

**Part Number Structure**



- Completely insulated which allows for direct connection of a generator cable to a live low voltage busbar.
- The clamp is fixed to the busbar by means of an insulated box spanner which meets the requirements of IEC 60900 (live working, hand tools for use up to 1000Vac and 1500Vdc).

A PowerLock generator input connection point is incorporated within the clamp to allow for direct connection of the generator cable end.

These devices are rated at 400A and 660A continuous. The clamps are also keyed to distinguish between phases and prevent connection errors.

The clamp head width of the 400 amp versions is 28mm, the 660 amp clamps are 45mm wide.

### G clamp - Short Extension Arm - 400 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB100-E-GN-S	078214-6404
Neutral / Blue	LVB100-N-BL-S	078214-6403
Line 1 / Brown	LVB100-1-BN-S	078214-6400
Line 2 / Black	LVB100-2-BK-S	078214-6401
Line 3 / Grey	LVB100-3-GY-S	078214-6402
Installation Tool	LVS200H	A00044028



### G clamp - Short Extension Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB200-E-GN-S	A00044S2E
Neutral / Blue	LVB200-N-BL-S	A00045S2N
Line 1 / Brown	LVB200-1-BN-S	A00045S21
Line 2 / Black	LVB200-2-BK-S	A00045S22
Line 3 / Grey	LVB200-3-GY-S	078214-6000
Installation Tool	LVS200H	A00044028

### G clamp - Long Extension Arm - 400 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB100-E-GN-E	078214-6414
Neutral / Blue	LVB100-N-BL-E	078214-6413
Line 1 / Brown	LVB100-1-BN-E	078214-6410
Line 2 / Black	LVB100-2-BK-S	078214-6411
Line 3 / Grey	LVB100-3-GY-E	078214-6412
Installation Tool	LVL200H	A00044027



### G clamp - Long Extension Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB200-E-GN-E	A00044E2E
Neutral / Blue	LVB200-N-BL-E	A00044E3N
Line 1 / Brown	LVB200-1-BN-E	A00044E31
Line 2 / Black	LVB200-2-BK-E	A00044E32
Line 3 / Grey	LVB200-3-GY-E	A00044E43
Installation Tool	LVL200H	A00044027

- Completely insulated which allows for direct connection of a generator cable to a live low voltage busbar.
- The clamp is fixed to the busbar by means of an insulated box spanner which meets the requirements of IEC 60900 (live working, hand tools for use up to 1000Vac and 1500Vdc).

A PowerLock generator input connection point is incorporated within the clamp to allow for direct connection of the generator cable end.

These devices are rated at 400 and 660A continuous. The clamps are also keyed to distinguish between phases and prevent connection errors.

The clamp head width of the 400 amp versions is 28mm, the 660 amp clamps are 45mm wide.



### G clamp - Right Angle Extension Arm - 400 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB100-E-GN-R	078214-6424
Neutral / Blue	LVB100-N-BL-R	078214-6423
Line 1 / Brown	LVB100-1-BN-R	078214-6420
Line 2 / Black	LVB100-2-BK-R	078214-6421
Line 3 / Grey	LVB100-3-GY-R	078214-6422
Installation Tool	LVS200H	A00044028

### G clamp - Right Angle Extension Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB200-E-GN-R	A00044R2E
Neutral / Blue	LVB200-N-BL-R	078214-6023
Line 1 / Brown	LVB200-1-BN-R	078214-6020
Line 2 / Black	LVB200-2-BK-R	078214-6021
Line 3 / Grey	LVB200-3-GY-R	078214-6022
Installation Tool	LVS200H	A00044028



### G clamp -Dual Extension Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVB1200-E-GN	078214-6114
Neutral / Blue	LVB1200-N-BL	078214-6113
Line 1 / Brown	LVB1200-1-BN	078214-6110
Line 2 / Black	LVB1200-2-BK	078214-6111
Line 3 / Grey	LVB1200-3-GY	078214-6112
Installation Tool	LVL200H	A00044027

- Completely insulated which allows for direct connection of a generator cable to a live low voltage busbar.
- The clamp is fixed to the busbar by means of an insulated box spanner which meets the requirements of IEC 60900 (live working, hand tools for use up to 1000Vac and 1500Vdc).

A PowerLock generator input connection point is incorporated within the clamp to allow for direct connection of the generator cable end.

These devices are rated at 660A continuous. The clamps are also keyed to distinguish between phases and prevent connection errors.

### Horizontal Clamp - Short Extention Arm - 660 amp



Line / Color	Description Code	ITT Part Number
Earth / Green	LVK600-E-GN-S	A00044S8E
Neutral / Blue	LVK600-N-BL-S	078214-6213
Line 1 / Brown	LVK600-1-BN-S	078214-6210
Line 2 / Black	LVK600-2-BK-S	078214-6211
Line 3 / Grey	LVK600-3-GY-S	078214-6212
Installation Tool	LVS200H	A00044028



### Horizontal Clamp - Long Extention Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVK600-E-GN-E	078214-6204
Neutral / Blue	LVK600-N-BL-E	078214-6203
Line 1 / Brown	LVK600-1-BN-E	078214-6200
Line 2 / Black	LVK600-2-BK-E	078214-6201
Line 3 / Grey	LVK600-3-GY-E	078214-6202
Installation Tool	LVL200H	A00044027



### Horizontal Clamp - Long Extention Arm - 660 amp

Line / Color	Description Code	ITT Part Number
Earth / Green	LVK600-E-GN-R	A00044R8E
Neutral / Blue	LVK600-N-BL-R	A00044R9N
Line 1 / Brown	LVK600-1-BN-R	A00044R91
Line 2 / Black	LVK600-2-BK-R	A00044R92
Line 3 / Grey	LVK600-3-GY-R	A00044R95
Installation Tool	LVS200H	A00044028

**Rotary Clamp / Generator Connector (FRED)**

- Compact unit incorporates a Line Source Finger Proof connector with a rotary type clamp, suitable for use on slotted Bus-bars. The handle meets the requirements of IEC 60900 (live working, hand tools for use up to 1000Vac and 1500Vdc).
- The clamp is manufactured in high conductivity material and is suitable for 660A continuous operation.
- The rotary wheel is manufactured from hardened steel which eliminates problems associated with hole elongation.
- An ergonomic fully insulated installation tool is available for fixing the clamp to a slotted bus-bar.



**Rotary Clamp / Generator Connector (FRED)**

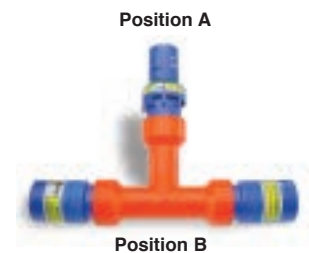
Line / Color	Description Code	ITT Part Number
Earth / Green	LVE500-E-GN	A00044055
Neutral / Blue	LVE500-N-BL	078214-6103
Line 1 / Brown	LVE500-1-BN	078214-6100
Line 2 / Black	LVE500-2-BK	078214-6101
Line 3 / Grey	LVE500-3-GY	078214-6102
Installation Tool	LVE500H	A00044054

**Insulated T-Piece Connector**

The insulated T-Piece connector allows the user the option to split one phase into two or combine two phases into one by the quickest and safest possible means.

The Input and Output connectors are color coded and mechanically keyed the same to prevent connection errors.

All connectors are IPX2 rated when un-mated and come with the Secondary Locking as standard.



**Order Information**

Position A (x1): Panel Drain Finger Proof (PDFT) or Panel Source (PS)  
 Position B (x2): Panel Drain Finger Proof (PDFT) or Panel Source (PS)  
 Phase: 1, 2, 3, N, E  
 Color: Red (R), Yellow (Y), Blue (BL), Black (BK), Green (GN)  
 Brown (BN), Grey (GY), White (W)  
 Amperage: 400 Amps (T4), 660 Amps (T6)

Version shown: APDFT-BPS-3-BL-T4





This compact unit incorporates a PowerLock generator input connection point with a rear termination area to accept solid alloy cable cores.

This enables a temporary mobile generator to be connected to an underground cable when repair work is undertaken.

The cable is excavated, cut and the PowerLock connector then fitted to the cable cores via 2 set screws. The generator cable end can then directly link into the underground cable.

After completion of the repair, the PowerLock fittings are simply removed and the main cable spliced using existing methods.



### Insulated Underground Cable Generator Connector

Line / Color	Description Code	ITT Part Number
Neutral / Blue	LVJ900-N-BL	078214-9033
Line 1 / Brown	LVJ900-1-BN	078214-9030
Line 2 / Black	LVJ900-2-BK	078214-9031
Line 3 / Grey	LVJ900-3-GY	078214-9032
Ratchet Tool	LVJ900H	A0004406H

### Insulated Overhead Line Clamp / Generator Connector

This device allows for direct connection of a generator unit to Low Voltage overhead line systems.

The unit consists of an insulated Line Clamp, 3 meters of 50mm<sup>2</sup> flexible copper cable and a PowerLock generator input cable, other lengths are available upon request.

The methods of connection is:

1. The copper or alloy overhead wire is cleaned to ensure good connection points.
2. The clamp is hooked onto the wire and tightened via the insulated clamp body.
3. The flexible cable is then strapped to the pole.
4. At the cable end, a PowerLock generator connection point is provided for connection of the generator cable.

The generator connection point offers all standard safety features associated with the PowerLock range, such as keys to distinguish phases, IP67 sealing and individual phase color coding.



### Insulated Overhead Line Clamp

Line / Color	Description Code	ITT Part Number
Neutral / Blue	LVF600-N-BL	078214-6303
Line 1 / Brown	LVF600-1-BN	078214-6300
Line 2 / Black	LVF600-2-BK	078214-6301
Line 3 / Grey	LVF600-3-GY	078214-6302

The Multi-Converter enables any user to easily convert lugged cable to PowerLock within minutes ensuring all safety and security of basic PowerLock connector series. A PowerLock connection point is incorporated within the unit to allow for direct connection of the generator cable end.

Available in both Source and Drain formats, this device assures the correct connection whether it be PowerLock or Lug to maximize cable management.



**Cable Lug Converter - Source and Drain - 660 Amp**

Line / Color		ITT Part Number		ITT Part Number
Earth / Green	Source	078214-9055	Drain	078214-9065
Neutral / Blue	Source	078214-9053	Drain	078214-9063
Line 1 / Brown	Source	078214-9050	Drain	078214-9060
Line 2 / Black	Source	078214-9051	Drain	078214-9061
Line 3 / Grey	Source	078214-9052	Drain	078214-9062
Tightening Tool		274-7630-000		274-7630-000

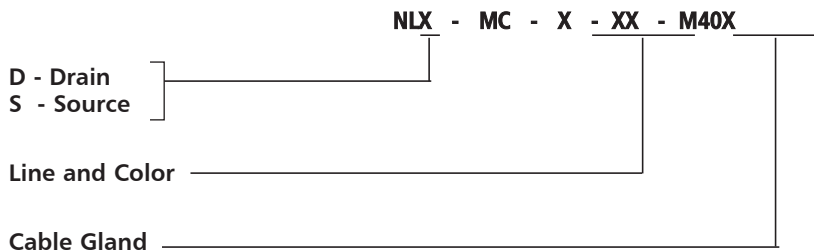
**Cable Lug - Mini Converter - 400 Amp**

The Mini Converter enables smaller cables with a cable lug to be converted to a PowerLock connection.

The lug is simply attached directly to the PowerLock connector with a bolt termination, and the contact assembled into the insulated body.

This termination is suitable for smaller cables up to 400 amps in either Source or Drain configuration.

Ordering information - see page 11 for full line color and cable gland selection.

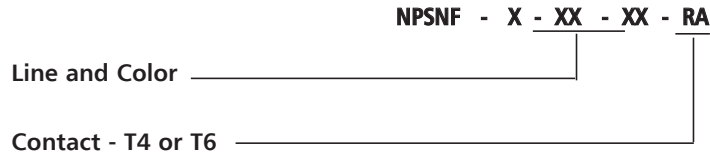




These devices allow for the conversion of PowerLock plug and socket system to a standard nut and bolt fixing.

The units are simply connected to the PowerLock line connectors and locked to avoid accidental disconnection.

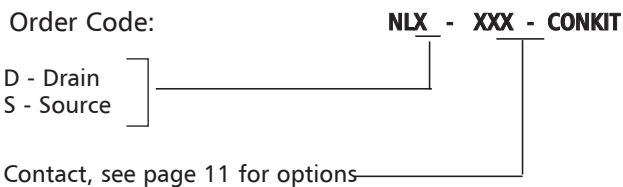
Ordering information - see page 11 for full line color and color selection.



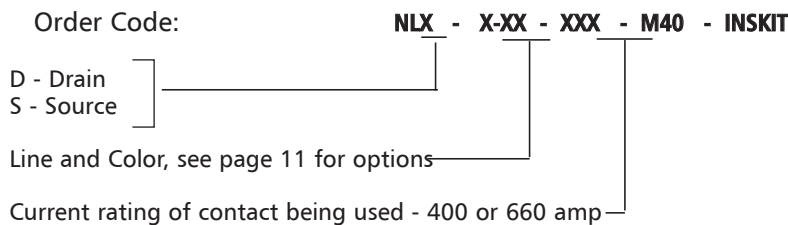
**Miscellaneous Parts and Accessories**

PowerLock Release Key - L0023N	AN389900010	S120 Cable Sleeve	AN3099000200
PowerLock Box Key	201-7535-000	Secondary Lock Kit	A00900100
NRG Box Key - Pack of 3	AN0000006	PowerLock Box Replacement Signal Connectors	320-7744-000
Hand Grip	317-7671-000		
Gasket for PowerLock Panel mount	A2499001150		
Cotter Pin NLDFT	A3299000500		
Cotter Pin NLS	A3299000550		
Cotter Pin NPFT and NPS	A3299000100		
Reduction Sleeves	See page 11		
Gland nut M40S - PowerLock	368-7514-000		
Gland nut M40A - PowerLock	368-7514-001		
Gland nut M40B - PowerLock	368-7514-002		
Gland nut M50 - PowerLock	368-7515-000		
Gland nut 25S - Snaplock	5S1699000100		
Gland nut 25L - Snaplock	AS1699000200		
M40 to M50 adaptor	368-7516-000		

**Contact Kits** - all contact kits contain a fully assembled contact and replacement cotter pin.



**Insulator Kits** - all insulator kits contain a fully assembled insulator and replacement cotter pin. Kits only available for M40 size insulators.



When not mated, the connector interface can be protected by using a sealing cap. Two types of cap are offered, a simple soft plastic cap providing IP53 protection and an environmentally sealed rigid plastic cap with IP67 protection and the secondary lock feature, these are color coded to suit the parent connector.



All caps are fitted with a cord lanyard for securing to it's parent connector. Cable connectors have a loop in the cord to fit around the cable gland, it is necessary to specify the cable gland size in the part number when ordering to ensure the correct size loop is supplied. Caps for panel connectors have an M6 ring terminal on the end of the lanyard.

Caps not only offer protection against ingress of moisture and dirt into the interface of the PowerLock connector, they also offer a degree of protection against mechanical damage that can be caused when connectors on cables are being handled and transported.

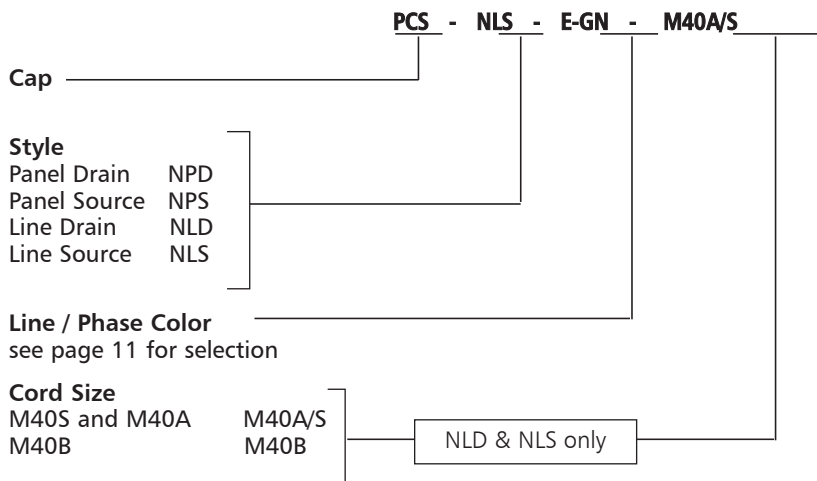
**IP53 Protection Caps**



Description	Order Code
Panel Drain	PCPD-5
Panel Source	PCPS-5
Line Drain with M40S and M40A gland	PCLD-5-M40A/S
Line Drain with M40B gland	PCLD-6-M40B
Line Source with M40S and M40A gland	PCLS-5-M40A/S
Line Source with M40B gland	PCLS-6-M40B

**IP67 Protection Caps**

**Ordering Information**



Cap for Drain Connectors



Cap for Source Connectors



JW4ST (3.625" / 92mm pitch) fuse carrier was developed to provide a safe and efficient means of connecting a mobile generator supply cable to fully shrouded or non-shrouded distribution boards. The unit complies with the requirements of EATS 37.2.

The generator cable (when fitted with PowerLock Line Drain cable coupler) can be plugged directly into the Fuse Carrier and used to feed either the Low Voltage bus-bar or feeder circuit.

The fuse generator connector is finger proof to avoid accidental touching of live elements.

The input connectors are color coded and mechanically keyed to prevent connection errors. Line 1 units will only accept a Line 1 generator connector.

The integral generator connector also accepts generator connectors with the patented secondary locking device which eliminates the potential of accidental disconnection under load conditions.

Because this unit is direct replacement for the existing standard JW4ST fuse unit, it offers a safe, fast and cost effective method of upgrading existing distribution boards to have generator input points. It is not necessary to make any modifications to the cabinet other than remove an existing fuse way and replace with the JW4ST system.

### JW4ST Fuse unit with PowerLock Connection point (JS)



Line / Color	Description Code	ITT Part Number
Neutral / Blue	LVD400-N-BL	078214-9013
Line 1 / Brown	LVD400-1-BN	078214-9010
Line 2 / Black	LVD400-2-BK	078214-9011
Line 3 / Grey	LVD400-3-GY	078214-9012

JW4ST82 (3.25" / 82mm pitch) fuse carrier was developed to provide a safe and efficient means of connecting a mobile generator supply cable to fully shrouded or non-shrouded distribution boards. The unit complies with the requirements of EATS 37.2.

The unit accept standard BS88-5 fuses (not supplied).

The JW4ST82 fuse unit also offers the ability to make a direct connection to many pole mounted transformer fuse units.

### JW4ST Fuse unit with PowerLock Connection point (JP)



Line / Color	Description Code	ITT Part Number
Neutral / Blue	LVD401-N-BL	078214-9023
Line 1 / Brown	LVD401-1-BN	078214-9020
Line 2 / Black	LVD401-2-BK	078214-9021
Line 3 / Grey	LVD401-3-GY	078214-9022



### DIN Fuse Carrier Adaptor

This Fuse carrier adaptor was developed to provide a safe and efficient PowerLock connection to DIN fuse carrier racks which are mounted on most of the European power distribution boards. There are Full Blade and Half Blade versions available which give the user an option to select what side needs to be fed.

For part numbers and ordering information, please contact ITT VEAM / Cannon or our local distributor.

### Screw In End Cap Fuse / Pole Mounted



This device allows for direct connection of a generator cable to a 200A transformer pole mounted fuse unit. The existing fuse unit is unscrewed from the holder and replaced with the PowerLock unit, which incorporates a dummy fuse to allow for the outgoing circuit only. This enables the generator feed cable to be directly plugged into the pole mounted unit in order to feed the overhead Low Voltage transmission lines.

Line / Color	Description Code	ITT Part Number
Neutral / Blue	LVC300-N-BL	078214-9043
Line 1 / Brown	LVC300-1-BN	078214-9040
Line 2 / Black	LVC300-2-BK	078214-9041
Line 3 / Grey	LVC300-3-GY	078214-9042



The Snaplock connector series is a miniature power cable hook up system offering high current capability while maintaining minimal physical dimensions.

Snaplock offers a commercially viable option to historical hard wiring techniques. In addition, Snaplock offers improved safety characteristics through utilization of insulated bodies, sealing mechanisms, locking mechanisms and protected current carrying elements.

Snaplock connectors are available in a range of colors for simple identification of individual lines.

The contact elements are based on our proven Louvre band technology which ensures low contact resistance thus minimizing power loss, low physical insertion forces with a self wiping action, and high number of mating cycles. The male contact elements are protected by a non-conductive tip which makes physical contact with the current carrying element impossible.

The contacts are held in the insulators via a clip retention system. This allows for fast, simple assembly and good retention of the contact sets, especially where vibration is an environmental concern.



Contact termination to the cable conductor is by standard compression crimp or set-screw fixing and for panel mounting a threaded M12 post. Connectors for panel mounting and cable mounting are available. All connectors are IP67 sealed when mated through utilization of integral sealing rings and cable gland strain relief.

The speed of connection and disconnection offers great savings in equipment down time, servicing and maintenance procedures. The security of the connection is maintained by a simple but very effective locking mechanism which can be utilized as a temporary or semi-permanent lock.



The spring loaded slide lock feature shown above locks into bayonet groove on the mating half, and can be disengaged by sliding back using ones thumb. This lock feature can be made semi-permanent by sliding the retainer forward.

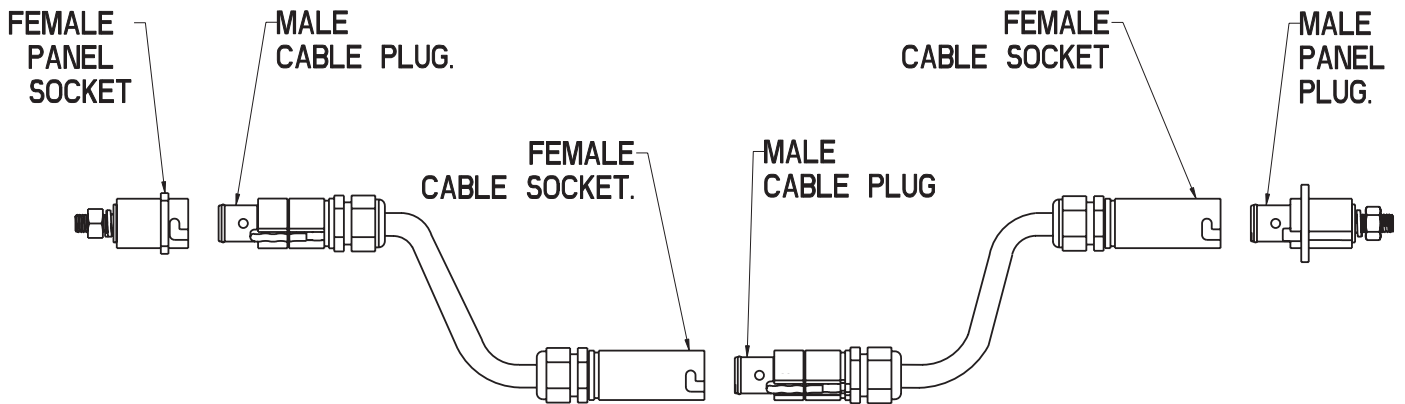
		Body Style	Contact Gender	Contact Size	Gland Nut	Body Color
<b>Example=</b>		<b>SNLM</b>	<b>P</b>	<b>C50</b>	<b>25L</b>	<b>GN</b>
<b>Description</b>	<b>Code</b>					
Panel Male - M12 post fixing	SNPM	}				
Panel Female - M12 post fixing	SNPF					
Panel Female with Cable Fixing	SNPFL					
Cable Male - cable fixing	SNLM					
Cable Female - cable fixing	SNLF					
Male Contact (pin) use with SN..M	P	}				
Female Contact (skt) use with SN..F	S					
Crimp 70mm <sup>2</sup> Copper Cable	C70*	}				
Crimp 50mm <sup>2</sup> Copper Cable	C50*					
Crimp 35mm <sup>2</sup> Copper Cable	C35					
Crimp 25mm <sup>2</sup> Copper Cable	C25					
Set-Screw 70mm <sup>2</sup> Copper Cable	S70*					
Set-Screw 50mm <sup>2</sup> Copper Cable	S50*					
Set-Screw 35mm <sup>2</sup> Copper Cable	S35					
Set-Screw 25mm <sup>2</sup> Copper Cable	S25					
Threaded Post (Panel Mount)	TP	}				
Gland nut 10-14mm Ø	25S					
Gland nut 13-18mm Ø	25L	Cable fixing versions only				
Red	R	}				
Black	BK					
Green	GN					
Blue	BL					
Brown	BN					
Grey	GY					
White	W					
Yellow	Y					

**⚠ WARNING**

**IMPORTANT SAFETY INFORMATION**

Standard PowerLock and SnapLock contact are copper based contacts, they should not be used for direct termination onto aluminum cables as galvanic corrosion and overheating can occur. If you intend to use aluminum cables please contact ITT for advice on alternatives to the standard copper contacts.

\*C50, C70, S50 and S70 contacts can only be used with gland nut 25L



Specifications and dimensions subject to change

[www.ittcannon.com](http://www.ittcannon.com)



**Electrical**

Number of Contacts	Single Pole
Current Rating	250 amp continuous
Operating Voltage	1000V AC / 1500V DC
Test Voltage	4500V AC
Dielectric Strength	4500V AC
Electrical Protection	IP2X on male connector
Contact Resistance	<0.1 mOhm

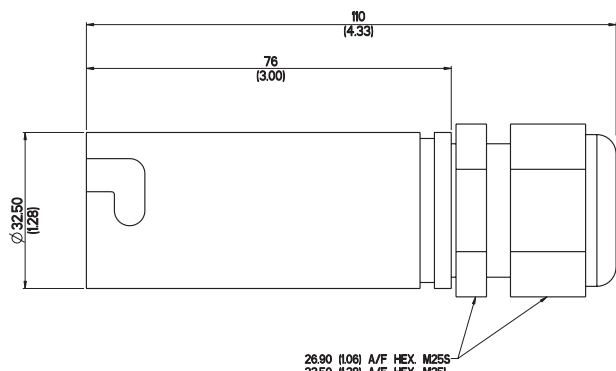
**Mechanical**

Contact Material	Brass (Set-screw) or Copper (Crimp), Silver Plated
Housing Material	High Temperature Thermoplastic
Locking	Bayonet with slide lock
Vibration	10-2000Hz/15g
Mating Cycles	500
Contact Type	Set Screw or Crimp
Contact to Housing retention	C clip
Cable Retention	Cable gland nut

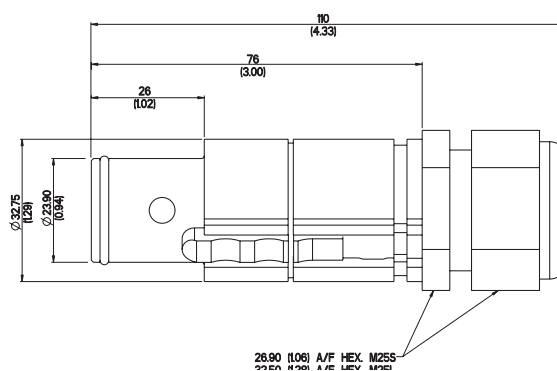
**Environmental**

Operating Temperature	-30°C to +125°C (-22°F to +257°C)
Ingress Protection	IP67 when mated
Flammability	UL94-V0

**Cable Connectors**

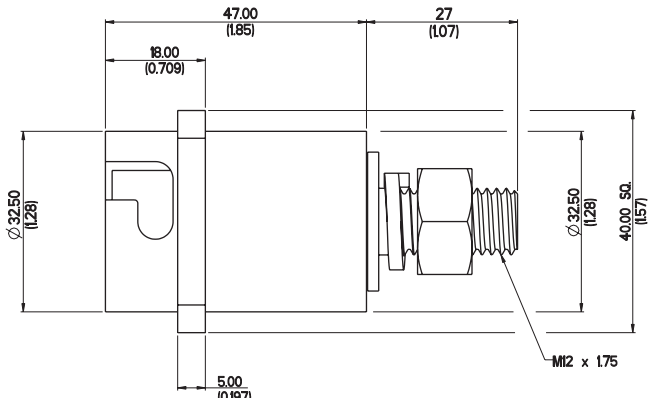


**Female Cable Socket**  
Order code-  
SNLF-S-XXX-XXX-XX



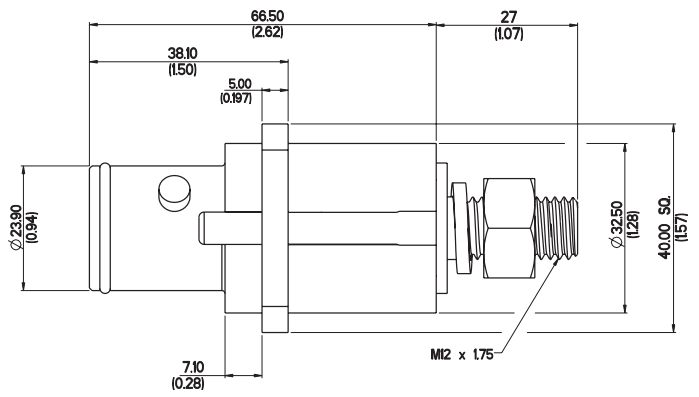
**Male Cable Plug**  
Order code-  
SNLM-P-XXX-XXX-XX

Cable connectors are available with contacts to fit a range of cables with centre conductors from, 25mm<sup>2</sup> to 70 mm<sup>2</sup>. Contacts can be specified for either crimping to cable or for set-screw fixing. Gland nuts are offered in 2 sizes to suit cable overall diameters from 10mm to 18mm.



**Female Panel Socket**

Order code-  
SNPF-S-TP-XX



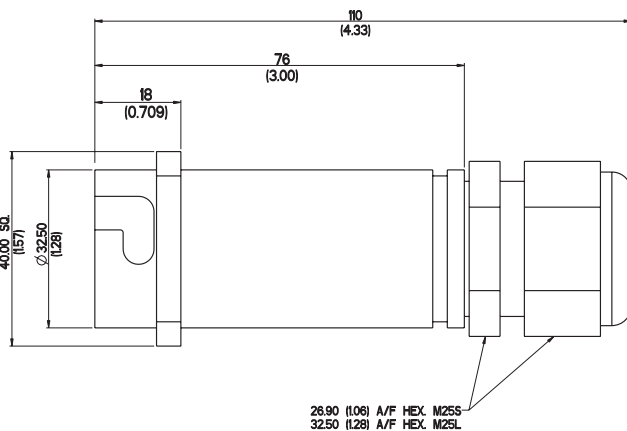
**Male Panel Plug**

Order code-  
SNPM-P-TP-XX

The standard panel connectors are mounted through 4 holes in the flange. The rear of the connector has an M12 threaded post fitted with a nut and lock washer, to take a cable fitted with a standard cable lug. Male and female connectors are available in a range of colors, and all panel connectors are fitted with a gasket.

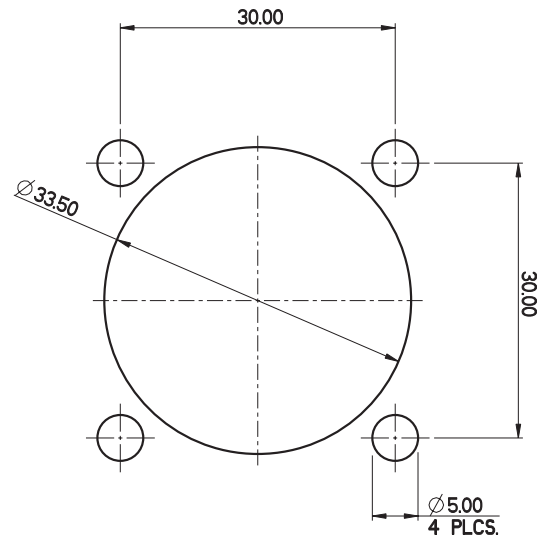
The male connector is fitted with a sliding latch to prevent accidental disconnection. This latch can be locked in place to make this a more permanent lock.

The panel female connector can also be supplied with a cable gland nut fitting, this version uses a crimped or set-screw contact, the contact size needs to be specified with this item.



**Female Panel Socket with cable fixing**

Order code-  
SNPFL-S-XXX-XXX-XX



**Panel Cut out for all versions**



Crimp Tool - C130	000V74174
Crimp Tool with Case	274-7634-000
Crimp Tool with PowerLock Dies and Case (Dies include - C50, C70, C95, C120, C150, C185, C240 and C300)	320-7732-000
Crimp Tool with Snaplock Dies and Case (Dies include - C25, C35, C50, and C70)	320-7731-000
Crimp Die C25 (30220)	995-7654-025
Crimp Die C35 (30221)	995-7654-035
Crimp Die C50 (30222)	995-7654-050
Crimp Die C70 (30223)	995-7654-070
Crimp Die C95 (30224)	995-7654-095
Crimp Die C120 (30235)	995-7654-120
Crimp Die C150 (30236)	995-7654-150
Crimp Die C185 (30237)	995-7654-185
Crimp Die C240 (30227)	995-7654-240
Crimp Die C300 (30229)	995-7654-300
PowerLock connector Release Key, L0023N	AN389900010
Snaplock contact insertion / male removal tool kit	500066100
Snaplock female contact removal tool	500066003
Snaplock Male Contact insertion/removal tool	500066002



# Product Safety and Warranty

## 1. MATERIAL CONTENT AND PHYSICAL FORM

Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.

a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.

b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

## 2. FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD

**There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionization and burning.** Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock. If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonization of insulation and tracking paths. Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

## 3. HANDLING

Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers. Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

## 4. DISPOSAL

Incineration of certain materials may release noxious or even toxic fumes.

## 5. APPLICATION

Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles. Circuit resistance and continuity check should be made to make certain that there are no high resistance joints or spurious conducting paths. Always use the correct application tools as specified in the Data Sheet/Catalog. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

### IMPORTANT GENERAL INFORMATION

(i) **Air and creepage paths/Operating voltage.** The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations.

For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.

### (ii) Temperature

All information given are temperature limits. The operation temperature depends on the individual application.

### (iii) Other important information

Cannon continuously endeavors to improve their products. Therefore, Cannon products may deviate from the description, technical data and shape as shown in this catalog and data sheets.

ITT Interconnect Solutions, a Division of ITT Corporation manufactures the highest quality products available in the marketplace; however these products are intended to be used in accordance with the specifications in this publication. Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of Cannon. Any new issue of this publication shall automatically invalidate and supersede any and all previous issues.

## Product Warranty

A limited warranty applies to Cannon products. In general, except for obligations assumed by Cannon under this warranty, Cannon shall not be liable for any loss, damage, cost of repairs, incidental or consequential damages of any kind, whether or not based on express or implied warranty, contract, negligence or strict liability arising in connection with the design, manufacture, sale, use or repair of the products. Product availability, prices and delivery dates are exclusively subject to our respective order confirmation form; the same applies to orders based on development samples delivered. Please refer to [www.ittcannon.com](http://www.ittcannon.com) (General Terms of Sale) for the complete text of Cannon's applicable Terms and Conditions, including Warranty.

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## ⚠ WARNING

### IMPORTANT SAFETY INFORMATION

Standard PowerLock and SnapLock contact are copper based contacts, they should not be used for direct termination onto aluminum cables as galvanic corrosion and overheating can occur. If you intend to use aluminum cables please contact ITT for advice on alternatives to the standard copper contacts.



## Circular/Filter/Hermetic/Fiber Optic Connectors

As a world leader in circular, filter, and hermetic connectors, ITT can leverage its design and manufacturing expertise to fit virtually any application. Our expertise includes fast positive mating for a wide range of military applications, as well as numerous sizes and contact configurations for various harsh environments. Our wide variety of fiber optic products include hybrid contacts, multi-channel, rack and panel, and hi-rel assemblies, including MIL and ARINC standard solutions. ITT can meet numerous specs, including NATO and MIL standards.

[www.ittcannon.com/circulars](http://www.ittcannon.com/circulars) • [www.ittcannon.com/filter](http://www.ittcannon.com/filter) • [www.ittcannon.com/hermetics](http://www.ittcannon.com/hermetics) • [www.ittcannon.com/fiberoptics](http://www.ittcannon.com/fiberoptics)



## D-Subminiature Connectors

Cannon invented D-sub connectors in 1952. Our family of D-Subs now includes combinations of signal, power and RF, as well as severe service sealed connectors. Cannon D-Subs are available with an extensive line of backshells and accessories and are one of the most economical shielded connector solutions available. ITT D-Sub connectors are qualified to the MIL-DTL-24308 specification.

[www.ittcannon.com/dsubs](http://www.ittcannon.com/dsubs)



## Microminiature Connectors

Developed first by Cannon in the 1960's, Interconnect Solutions microminiature connectors offer high performance and reliability with exceptional versatility. Available in rectangular, circular, and strip configurations for countless applications, many of our connectors meet or exceed applicable requirements of the MIL-DTL-83513 specification.

[www.ittcannon.com/micro](http://www.ittcannon.com/micro)



## Rack and Panel Connectors

Initially pioneered by Cannon during the 1930s, Interconnect Solutions is the world leader in rack and panel connectors, offering unmatched variety of shell configurations and insert arrangements, materials, plating, and contact options. Many of our standard and custom designs meet the stringent requirements of ARINC 600, ARINC 404 (MIL-C-81659), and MIL-DTL-83733 standards.

[www.ittcannon.com/rackandpanel](http://www.ittcannon.com/rackandpanel)



## RF Connectors

ITT Interconnect Solutions has been providing interconnect products to the Microwave and RF industry since 1963 (formerly The Sealelectro Corporation). The RF 50 & 75 Ohm product lines cover UHF band through Ku band requirements. These connectors and cable assemblies are available with a thread type, snap type, bayonet type or slide on coupling method. The frequencies range from DC to 18+ GHz.

[www.ittcannon.com/RF50](http://www.ittcannon.com/RF50) • [www.ittcannon.com/RF75](http://www.ittcannon.com/RF75)



## Transportation

The ITT ICS interconnect range includes sealed circular and rectangular connectors in metal or plastic shells. These configurations include board to cable or cable to cable/ bulkhead applications. Both signal and power contacts can be combined in various layouts. All product lines within the Transportation segment offer very low contact resistance providing maximum signal integrity.

[www.ittcannon.com/transportation](http://www.ittcannon.com/transportation)



ITT Interconnect Solutions is an international manufacturer and supplier of connectors including circular, rectangular, fiber optic, RF, power and high voltage, audio, PCMCIA, Compact Flash Card, enclosures, cable assemblies, and application specific custom solutions. The Interconnect Solutions portfolio includes the brands Cannon, VEAM, and BIW. As a worldwide leader in connector technology for nearly a century, ITT offers one of the broadest product offerings, six sigma manufacturing capability, Value Based Product Development with exceptional engineering capability, and an extensive sales, distribution, and customer support network.

