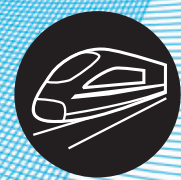


The Supplier
of Choice
for Electrical
Harnessing
Components
and Associated
Products



Rail Products

Harnessing Components and Associated Products



APPROVALS

EN 45545-2

EN 50306

DIN 5510-2

BR1326

SAE-AS81765/1

LUL E1042:A6

BS6853 [1999]

UNI CEI 11170-3

EN 50155

Commitment to customer service and quality, providing innovation, technical support and cost effective solutions

HALOGEN FREE

LFH Low Fire Hazard

RoHS compliant

The Supplier of Choice for Electrical Harnessing Components and Associated Products



Wire and Cable

High performance signal and power wire and cable for demanding harsh environments. Range covers primary wire, screened and jacketed multicore.



Screening Braid

High performance EMI/EMC screening braids, including lightweight high strength copper alloy versions. Over-braiding service also available for customer specials.



Connectors

MIL-DTL-5015 and MIL-DTL-38999 connectors, plus Deutsch DT, DRC, HDP20 and HD30 Series connectors. Plus ruggedised RJ45, USB and Quadrx.



Multicore Cables

Custom and specialist cables, that are perfect for prototypes, pre-production cables, and ongoing production requirements.



Moulded Parts

Zerohal heat shrink moulded parts and transitions are available in a wide range, including 'micro-boots' and 'Instalite' lightweight boots.



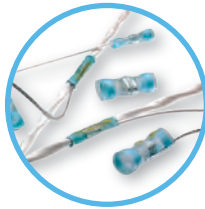
Backshells

Collection of both screened and unscreened backshells including memory ring and constant force spring versions. Plus protective dust caps.



RF and Data Cables

Cat7 rail networking cable offering 10Gbps. Lightweight and ruggedised Ethernet, quadrx and USB. Coaxial/Triaxial cable for video, navigation and communication.



Terminals and Splices

Interconnection and termination devices offer a single step, easy to use method of producing high quality wire splicing, solder, crimp and sealing.



Relays and Contactors

A comprehensive relay and contactor inventory, for rail applications. Designed for use in extremes of temperature, shock and vibration.



Heat Shrink Tubing

LFH and halogen free performance tubing for harsh environments and tough commercial applications. Range includes choice of colours and high temperature.



Accessories

Everything to bundle, route and manage wiring assemblies and harnesses. High performance cable ties in a variety of materials for various applications and harsh environments.



Switches and Grips

Range of switches, grips and joysticks, from ruggedised industrial to fully aerospace approved switches and switch panels/subsystems.



Non Shrink Tubing

Suitable for where use of heat guns is not possible or not required. Includes Neoprene, Polyolefin, Silicone, PTFE and PVC materials.



Bonding Leads

Metal braid earth bonding leads, braids and flexible power shunts. High expansion braids and bespoke customer designs a speciality.



Adhesives and Tapes

Including epoxy adhesives up to 350°C and ceramic adhesives up to 3000°C, plus potting compounds and putties. Hot melt and polyimide tapes.



Braided Sleeving

Both wraparound and expandable products offering protection against heat, abrasion, fluids, chemicals and electrical interference.





Range of high performance wire and cable that meets the demanding requirements of European Rail standard EN50306 (100E wire).

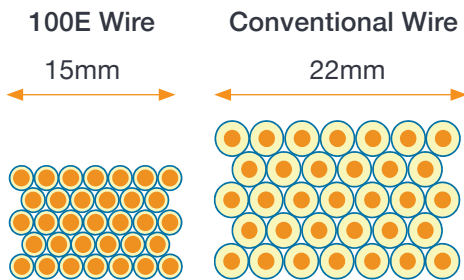
Characteristics include being extremely flexible, tough and resistant to a variety of fluids meeting the limited fire hazard requirements. Insulation materials are mechanically strong and durable whilst being smaller and lighter. Zero Halogen, light weight wire and cable for signal and equipment wire for low voltage applications. The construction is a dual wall combination of formulated polymer blends. Developed to meet demanding specification requirements, whilst maintaining the desirable features of small size, lightweight, flexibility and non-wrinkling.



100E Product Features

- Zero halogen, thin wall, high temperature
- Small size and lightweight
- Excellent handling and flexibility
- Outstanding resistance to oils, plus scrape abrasion and cut through.
- Voltage rating: 300V and 750V.
- Conductor cores 0.5mm² to 2.5mm².
- Continuous operating temperature:
Wire: -55°C to +125°C
Cable: -30°C to +105°C
- Dual wall construction

50% Volume Reduction
30% Weight Reduction
Compared to conventional wire



35 x 1mm² wires > 50% reduction in bulk of wiring and > 30% reduction in the weight of wiring

Conventional cables use filled soft polymer insulations, which by the nature of the insulation have to be thick wall. 100E wire uses engineered polymers to greatly reduce wall thickness by ~5 times.



100E Wire Approvals

EN50306-2 Thin wall single core wires, 300 volts.

EN50306-3 Single core and multi-core cables (pairs, triples and quads) screened and thin wall sheathed.

EN50306-4 Multi-core and Multi-pair cables standard wall sheathed, screened or unscreened (thicker outer jacket).

Custom designed cables (specials). Due to the potential number of parts possible, these will be created as EPD cables. Rail specifications EN50306-4 multi-core and multi-pair cables are standard wall sheathed.

- Unscreened, sheathed for either exposed or protected wiring (0.5mm² to 2.50 mm², number of cores from 2 to 48). Conforms with table 1 of EN50306-4 (Class 1P or 1E)
- Screened, sheathed for either exposed or protected wiring (0.5mm² to 2.50 mm², number of cores from 2 to 8). Conforms with table 3 of EN50306-4 (Class 3P or 3E)
- Screened, sheathed for either exposed or protected wiring (0.5mm² to 1.50 mm², number of cores from 2 to 7). Conforms with table 3 of EN50306-4 (Class 5P or 5E)



100E Fire Hazard Properties

Test	Method	Result
Flame Propagation, single cable	IEC 60332-1-2	Charring confined 50-540mm
Flame Propagation, bunched Cable (d ≥ 12mm)	IEC 60332-3-24	Max. burn length 2.5m
Flame Propagation, bunched Cable (>6mm/<12mm)	EN 50305 Clause 9.1.1	Max burn length 2.5m
Flame Propagation, bunched Cable (d ≤ 6mm)	EN 50305 Clause 9.1.2	Max burn length 1.5m
Smoke Testing	EN 61034-2	3m cube 90% min. transmittance
Toxicity	EN 50305 Clause 9.2	Index max.6
Fluorine Content	IEC 60684-2 CI 45.2	<0.1% Fluorine
Evolution of HCL	EN 60754-1	<0.5% HCL
Acid Gas Emission	EN 60754-2	pH >4.3 conductivity <10µS/mm

Power Cable

Zero Halogen, Low Smoke Power cable



CK0226 Rail Cable is EN45545-2 rail approved Zero Halogen Power Cables, available as 750V/1300V or 1800V/3300 rated.

Halogen free cable with good oil resistance and resistance to water, making them ideal for the Rail Market, where its low fire hazard, halogen free performance, plus the advantage of flexibility are key to a successful installation.

CK0226 Product Features

- Zero halogen
- Small size and lightweight
- Excellent handling and flexibility
- Outstanding resistance to oils, plus scrape abrasion and cut through.
- Voltage rating: 750V/1300V or 1800V/3300
- Conductor cores 1.0mm² to 400mm².
- Temperature rating: -25°C up to +105°C.
- Dual wall construction

Approvals & Declarations

EN4545-2 and DIN 5510-2

Voltage Rating

- ZHPCG-15 750/1300V
IEC Class 5 - Flexible cable
- ZHPCG-35 1800/3300V
IEC Class 5 - Flexible cable
- ZHPCG-36 1800/3300V
IEC Class 6 - Very flexible cable

Colours

- Standard jacket colour black
- Colours on request



CK0226 Fire Hazard Properties

Test	Method	Result
Flammability small scale	IEC 60332-1-2	Charring confined to between 50mm and 540mm
Flammability large scale	Clause 9.1.2 EN50305	Max. burn length 1.5m
Smoke large scale	EN 61034-2	3m cube box 90% min. transmittance
Toxicity	Clause 9.2 EN50305	Index max. 6



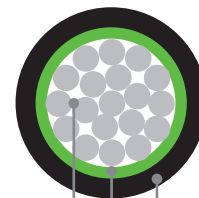
Part number example...

ZHPCG - 35 - 16.0 - 0 CK0226

Part Numbering example



- Denotes Rail**
- Jacket Colour**
0 = Black, standard colour
- Conductor Size**
1.0mm² to 400mm²
- Conductor Type**
5 = IEC Class 5 flexible
6 = IEC Class 6 very flexible
- Voltage rating**
1 = 750/1300 V
3 = 1800/3300 V
- Product Family**
ZHPCG 15, 35 or 36



- Outer Jacket**
Black Zerohal[®]
- Insulation**
Flexible Polyolefin containing no added halogens
- Conductor**
Flexible tin plated copper special class 5 to IEC 60228

CAT 7



CAT 7 LSZH is a NEW high performance networking cable for railway Ethernet applications. This NEW cable reaches data rates up to 10Gbps, expanding design capabilities into broader bandwidth Ethernet applications.

The enhanced design enables designers to balance performance requirements with installation time, lowering costs and assuring system performance.

Currently Cat5e is the predominant cable type used in the Rail Industry but with ever increasing data rate demands this technology allows future proofing to be built in whenever cables are installed or replaced.

CAT7 Electrical Characteristics - Finished Cable

Characteristic	Value
Nom. mutual capacitance	≤ 56pF/m (@1kHz)
Pair-ground capacitance unbalance	≤ 160 pF/100m
Nominal velocity propagation	65%
Max. delay skew	25 ns/100m
Max. conductor DC resistance	57.4 Ω/km (@20°C) - 22 AWG 90.9 Ω/km (@20°C) - 24 AWG 145 Ω/km (@20°C) - 26 AWG
Max. conductor resistance unbalance	2%
Min. insulation resistance	5000 MΩ·km
Max. operating voltage - UL	300 V

Description

- Obtain data rates of up to 10Gbps.
- Expand design capabilities for broader bandwidth Ethernet connections with increased speed.
- Stranded conductors for flexible cable application use.
- Improve EMI shielding effectiveness, prevent external interference to signals and reduce noise
- High performance rail approved to EN45545-2

Applications

- Railway CCTV/Passenger Information.
- Trackside control cabinets.
- Industrial Switches, routers, servers and hubs.
- Entertainment systems.
- Sensor Systems.
- Video link.
- Sensor Systems.



Additional Products

Our extensive product range also includes other high performance cables that may be of further interest. Please contact us for additional details



RF Coaxial

Up to 80% lighter than equivalent RG cables, with tighter bend radius. Meets FAR Part 23 and 25 appendix F, plus MIL-C-17 as applicable).



High Speed Data

Cable markers and identification in a range of styles and materials including heat-shrink, tie-on, wrap-around and self adhesive. Plus software and printers.



Performance Wire

TE Connectivities range of Spec 44, 55 and 99 wire and cable, offering cross linked PVDF, ETFE and modified polyester insulation respectively.



VIDEO Coaxial

Up to 70% lighter than equivalent RG cables, with tighter bend radius. Meets FAR Part 23 and 25 appendix F, plus MIL-C-17 as applicable).



Microwave Cables

Everything to bundle, route and manage wiring assemblies and harnesses. High performance cable ties in a variety of materials for various applications and harsh environments.



Custom Multicore

Custom and specialist cables, that are perfect for prototypes, pre-production cables, and ongoing production requirements.

Protective Tubing

Low Fire Hazard and Zero Halogen



ZH150

HALOGEN FREE

LFH
Low Fire Hazard

RoHS
compliant

Zero Halogen • 150°C Operating Temp

INSTALITE ZH-150 tubing is the first heat shrinkable tubing to combine high-temperature and zero halogen properties in a lightweight material. Offering excellent fluid and chemical resistance, very flexible and abrasion resistant. Available in black only

Operating Temperature

- From -75°C to +150°C

Installation

- Minimum shrink temperature +150°C
- Minimum full recovery +175°C

Inside Diameter		Wall Thickness	Pack Size	Part Number
Supplied (mm)	Recovered (mm)	Nom. Recovered	Spools	ZH150
3.0	1.5	0.70 mm	150m	ZH150-3/1.5-0-SP
5.0	2.5	0.75 mm	150m	ZH150-5/2.5-0-SP
8.0	4.0	0.80 mm	75m	ZH150-8/4-0-SP
12.0	6.0	0.90 mm	75m	ZH150-12/6-0-SP
18.0	9.0	1.00 mm	75m	ZH150-18/9-0-SP
24.0	12.0	1.10 mm	75m	ZH150-24/12-0-SP
40.0	20.0	1.30 mm	30m	ZH150-40/20-0-SP
50.0	30.0	1.50 mm	30m	ZH150-50/30-0-SP



DR-25 Heat Shrink

A cross linked elastomeric material, for long term heat resistance. Ideally suited for high performance wiring harnesses. Abrasion and diesel resistant.



ATUM Heat Shrink

An adhesive lined heat shrinkable tubing that, when heated melts and flows to form an environmental barrier to prevent moisture penetration. UL E85381 600v



RP48-Heat Shrink

High 4:1 shrink ratio polyolefin tubing offering excellent mechanical, chemical and electrical protection characteristics. UL E35586 600v

Zero Halogen • Medium Wall Tubing

A thicker wall, flexible tubing with excellent fire safety characteristics, combined with low smoke emission, halogen free and good mechanical and fluid resistance.

Operating Temperature

- From -30°C to +105°C

Installation

- Minimum shrink temperature +80°C
- Minimum full recovery +121°C



ZHTM

RAIL
BR1326A
Approval

Inside Diameter		Wall Thickness	Pack Size	Part Number
Supplied (mm)	Recovered (mm)	Recovered (mm)	Spools	ZHTM
3.0	1.5	0.70 mm	60 m	ZHTM-3/1.5-0-SP
5.0	2.5	0.75 mm	60 m	ZHTM-5/2.5-0-SP
8.0	4.0	0.80 mm	60 m	ZHTM-8/4-0-SP
12.0	6.0	0.90 mm	30 m	ZHTM-12/6-0-SP
18.0	9.0	1.00 mm	30 m	ZHTM-18/9-0-SP
24.0	12.0	1.10 mm	30 m	ZHTM-24/12-0-SP
40.0	20.0	1.30 mm	30 m	ZHTM-40/20-0-SP
50.0	30.0	1.50 mm	30 m	ZHTM-50/30-0-SP

Protective Tubing

Low Fire Hazard and Zero Halogen



Zero Halogen • Colours

The ZHT Series is a thin wall heat-shrinkable tube available in a range of colours. Specifically designed for railway, transportation, marine, offshore and construction markets.

Operating Temperature

- ZHT from -30°C to +125°C
- ZHT-BR from -40°C to +135°C

ZHT is LUL approved - Complies with LU Standard 1-085 'Fire Safety Performance of Materials' (as a 'minor use' item). Can also be supplied as UL approved. Please specify if UL approval is required on order, together with adding suffix '-UL' to the part number.*

ZHT-BR is approved to BR 1326A.

ZHT-BR



Inside Diameter		Wall	Pack Size	Part Number	
Supplied	Recovered	Recovered	Spools	ZHT	ZHT-BR
1.2 mm	0.6 mm	0.45 mm	150m	ZHT-1.2-#	-
1.6 mm	0.8 mm	0.43 mm	150m	ZHT-1.6-#	ZHT-BR-1.6-#
2.4 mm	1.2 mm	0.51 mm	150m	ZHT-2.4-#	ZHT-BR-2.4-#
3.2 mm	1.6 mm	0.51 mm	150m	ZHT-3.2-#	ZHT-BR-3.2-#
4.8 mm	2.4 mm	0.51 mm	150m	ZHT-4.8-#	ZHT-BR-4.8-#
6.4 mm	3.2 mm	0.65 mm	75m	ZHT-6.4-#	ZHT-BR-6.4-#
9.5 mm	4.8 mm	0.65 mm	75m	ZHT-9.5-#	ZHT-BR-9.5-#
12.7 mm	6.4 mm	0.65 mm	75m	ZHT-12.7-#	ZHT-BR-12.7-#
19.1 mm	9.5 mm	0.75 mm	30m	ZHT-19.1-#	ZHT-BR-19.1-#
25.4 mm	12.7 mm	0.90 mm	30m	ZHT-25.4-#	ZHT-BR-25.4-#
38.1 mm	19.0 mm	1.00 mm	30m	ZHT-38.1-#	-
50.8 mm	25.4 mm	1.15 mm	30m	ZHT-50.8-#	-



Colours Available



ZHT & ZHT-BR supplied in spools. Plus ZHT-BR can be supplied in smaller boxed packs. *Please note when ordering 'UL' approved ZHT tubing, MOQ's and longer lead times may apply.

Zero Halogen • Cold Applied Tubing

This limited fire hazard polyolefin sleeving is halogen free, making it ideal for protecting wire and cables in areas where smoke and fume emissions must be minimised. Supplied on 100m continuous reels. Low smoke, low toxicity and zero halogen. Can be stretched 5x in fitting and 2x in use.

Vertical burn test pass: UL 1581 • Smoke density pass: ASTM E-662 • Oxygen index: 37% ISO 4589-2

Operating Temperature From -25°C to +90°C

Colours Available

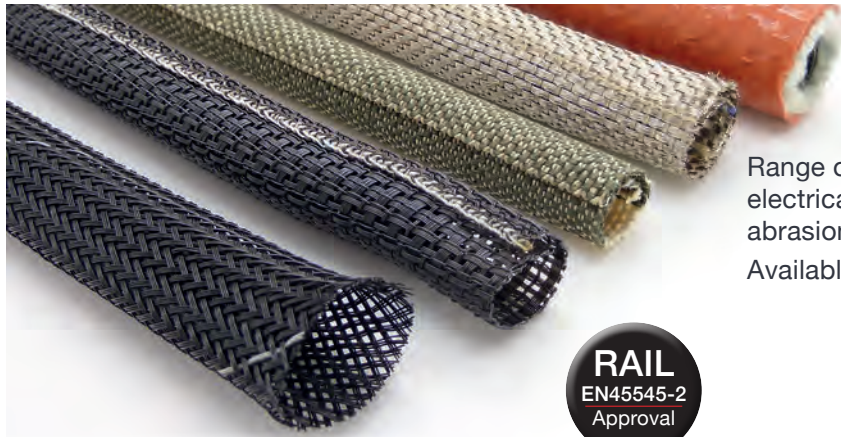


Internal Ø	Std Wire Size	Pack Size	Part Number
As Supplied	mm ²	Spools	LFH CY-ZH
1.5 mm	-	100 m	CY1.5-ZH-Colour
2.0 mm	-	100 m	CY2.0-ZH-Colour
3.0 mm	0.5 - 0.75	100 m	CY3.0-ZH-Colour
4.0 mm	1.5 - 2.5	100 m	CY4.0-ZH-Colour
5.0 mm	2.5 - 4.0	100 m	CY5.0-ZH-Colour
6.0 mm	6.0	100 m	CY6.0-ZH-Colour
8.0 mm	10.0	100 m	CY8.0-ZH-Colour
10.0 mm	16.0	100 m	CY10.0-ZH-Colour
12.0 mm	35.0	100 m	CY12.0-ZH-Colour



Braided Sleeving

Mechanical, Thermal and EMI Protection



Protective Expanding Sleeve Wraparound and Push-Fit

Range of protective sleeving, providing protection for electrical harnesses, hoses and pipes against heat, abrasion, chemicals fluids and electrical noise. Available in a wide variety of constructions and sizes.



Mechanical and Abrasion Protection		Type	Description
	Expando® TCP V0	Tubular	Expandable braid (1:2) with strong mechanical protection, with low toxicity and smoke-emission.
	Roundit® 2000 FR	Wrap	Rail approved self-wrapping sleeve with good mechanical protection; Excellent cut through and abrasion resistance.
	Roundit® 2000 V0	Wrap	Self-wrapping sleeve with high mechanical protection; Highly flame retardant (UL94 V0) with low toxicity and smoke emission.
Fire and Thermal Insulation		Type	Description
	Thermotubix	Tubular	Expands readily to go over fittings and couplings. Protects from molten splash and welding sparks.
	ThermoJacket® S	Tubular	Braided fibreglass with a coating which adds rigidity and reduces the likelihood of end fray. Resists most acids and alkalis and is unaffected by most bleaches and solvents.
Electromagnetic Shielding		Type	Description
	Roundit® 2000 V0 EMI	Wrap	Self-wrapping metal solution; flexible and easy to install providing high performance EMI shielding of Ro max = 6mΩ and Lt = 1.2 nH.
	Roundit® 2000 EMI FMJ	Wrap	Self-wrapping metal solution, with 95% optical coverage; flexible and easy to install providing very high performance EMI shielding of Ro max = 5.5mΩ and Lt = 0.6nH.

EMI Highlights

Electromagnetic interference (EMI) can cause adverse effects on electronic components and equipment leading to operational malfunctions. Proper shielding and grounding of electromagnetic sensitive components can effectively eliminate this occurrence.

Our EMI shielding products, provide excellent shielding properties with the added benefit of abrasion or thermal protection.

All EMI protective sleeves offered on these page are RoHS compliant and Halogen Free...

Roundit® 2000 V0 EMI

Wrap-around sleeving designed for high performance EMI shielding of wire and cable bundles.

Manufactured from UL 94 V0 rated PPS mono-filaments and nickel plated copper wires class 4 according to ASTM B-355.

The stable construction guarantees the same level of EMI shielding regardless of the diameter on which it is installed within the recommended application range.

Roundit V0 EMI has many applications in the railway, marine and electronics industries.

Braided Sleeving

Mechanical, Thermal and EMI Protection



Abrasion

Superior abrasion protection in easy-to-apply, flexible designs, both expandable and self-wrapping. Ideal for instrument panel and engine harnesses hose assemblies.

Thermal Management

Excellent thermal insulation and radiant heat protection. Innovative design expands for flanges and bends with unique material combinations and self-sealing features. Convective and radiant heat solutions for EGR tubes and exhaust systems; fuel and hydraulic lines; battery and control cables; wire harnesses; hoses and tubing.

Electromagnetic Shielding

Lightweight, durable and easy to install products. That incorporate a specially-designed yarn and wire technology combine for exceptional performance. Addresses growing concerns for engine and instrument panel harnesses; power and battery cables; and starter assemblies.

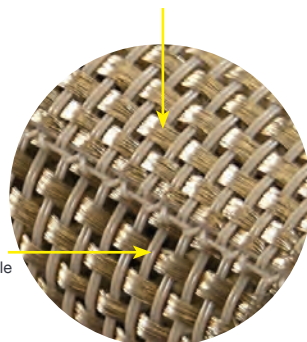
The products listed below are a selection from our range that are all EN 45545-2 approved, for other products many of which are aerospace and military approved please contact us.

Approvals	Temp. Range	Flammability	Construction	Size	Colour
EN 45545-2	-50°C to +150°C	NF16101 - 16102 DB DIN 5510 & 54837 ASTM E-662 & ASTM E-162	Polyester	4 to 75mm	Black with Grey tracer or Grey with Black tracer
EN 45545-2	-50°C to +150°C	NF16101 - 16102 DB DIN 5510 & 54837 ASTM E-662 & ASTM E-162	Polyester	5 to 50mm	Black with White tracer
EN 45545-2	-50°C to +150°C	NF16101 - 16102 DB DIN 5510 & 54837 ASTM E-662 & ASTM E-162	Polyester	5 to 50mm	Black with broad white tracer

Approvals	Temp.	Flammability	Construction	Size	Colour
EN 45545-2	-54°C to 260°C	ASTM D-350 B and NF 16101-16102. Fire protection to +1100°C (15min)	Thick wall fibreglass sleeve coated with silicone rubber	8 to 100mm	Red
EN 45545-2	-55 to +540°C	DB DIN 5510 & 54837	Braided fibreglass with coating	6 to 102mm	Ivory

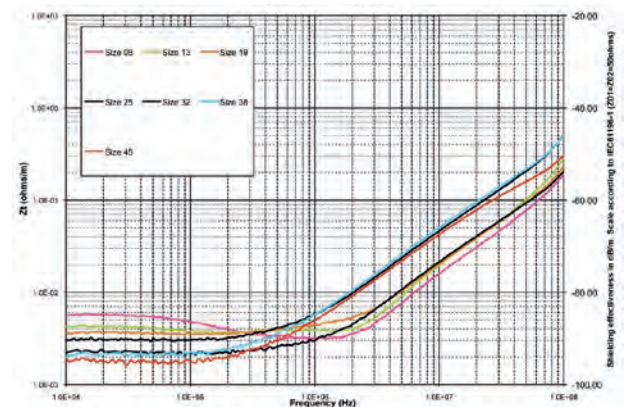
Approvals	Temp.	Flammability	Construction	Size	Colour
EN 45545-2	-50°C to 200°C	NF 16101-16102	Ni plated Cu combined with PPS mono-filaments	8 to 45mm	Light Grey
EN 45545-2	-65°C to 200°C	FAR Part 25 § 853 NF 16101-16102	Ni plated Cu combined with PPS mono-filaments	5 to 38mm	Light Grey

Nickel-plated copper strands are woven to provide high conductivity and ensure EMI shielding.



PPS mono-filaments ensure a highly flexible assembly

Transfer Impedance Measurement - Roundit 2000 V0 EMI



Metal Braids

Screening Braid



EMI Screening Braid

Our extensive range of metal screening braids is a cost effective solution for shielding wire bundles from electromagnetic interference (EMI/EMC).

In many applications cable screening is important to either minimise cross-talk within the cable or prevent internal or external sources of interference. With the range below offering a solution to multiple applications.

Product	Description	Coverage	Temp.	Construction	Size mm	Approvals
Raybraid® 90,	Tubular metal braid for electrical screening of wire bundles.	Min. 90% optical coverage	90 up to +150°C	Tinned Cu	3.0 to 30.0	-
Raybraid® 101 & 103	Tubular metal braid for electrical screening of wire bundles,	Min. of 93% up to 99% optical coverage	101 up to +150°C 103 up to +200°C	101 Tinned Cu 103 Ni plated Cu	3.0 to 30.0	-
InstaLite® 101 & 103	Lightweight metal alloy braid that is 50% lighter than traditional copper braid.	Min. of 85% up to 96% optical coverage	101 to +150°C 103 to +200°C	101 Tinned Cu alloy 103 Ni plated Cu	3.0 to 20.0	-
CSB	Commercial grade metal braid for electrical screening.	Min. 90% optical coverage	up +150°C	Tinned Cu	3.0 to 30.0	-
HBT90 & HBT99	Tubular metal braid for electrical screening, approved to VDE standard.	Min. of 93% up to 99% optical coverage	90 to +150°C 99 to +260°C	90 Tinned Cu 99 Ni plated Cu	3.0 to 30.0 3.0 to 40.0	VG96936-10 in applicable sizes

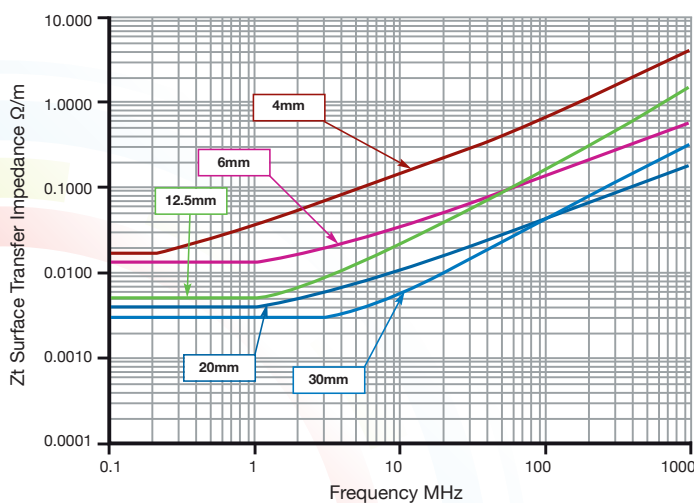
For lightweight applications the use of InstaLite 101 or 103 is recommended.

Raybraid offers military standards.

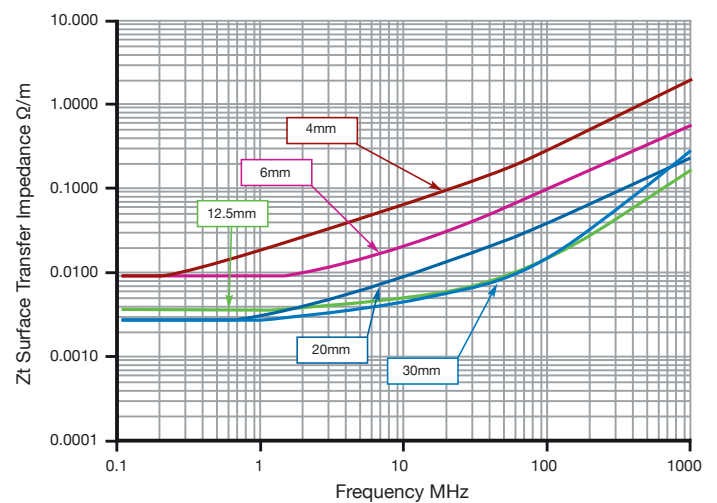
HBT99 offers very high screening performance and VG approvals.

CSB offers commercial grade screening for general applications.

HBT 90 Screening Braid - Performance



HBT 99 Screening Braid - Performance



Metal Braids

Bonding Leads and Power Shunts



Broad selection of braids are available for both standard and custom bonding leads, to suit all applications is possible, with low MOQ's and short lead times, made possible by in group manufacturing at IS-Cabletec. Our bonding leads are constructed from an extensive range of manufactured braids and ropes combined with components from a multitude of termination, insulation and identification options, resulting in bonding leads specifically tailored to meet the demands of your application.

We aim to keep the minimum order quantities low, lead times short and ensure that our product quality and customer service levels are consistently high.

Materials available include, but not limited to... Plain copper • Tin-plated copper • Nickel-plated copper • Aluminium • Stainless steel • Nickel • Silver plated copper...

Assurance of quality, IS-Cabletec is a supplier to many of the major aerospace and defence companies of Europe and an influential contributor to the development and promotion of the EN4199 European standard.

For additional information on what is possible, or should you have a particular design or application in mind please contact our sales office for details.

Bonding Leads • Flat Braids • Round Braids • Rope Braids and more....



Power Shunts

Power shunts are large cross-sectional area braided connectors, customised and designed to meet the increasing demands of power distribution applications.

They are often produced with multi-layers of flat or round braids to achieve sizes up to 1000mm² and to carry currents in excess of 400 amps.

Used as an alternative to solid bus-bars and power cable assemblies, power shunts are capable of carrying very high currents yet are flexible, robust, easy to install and cost effective.

Please contact us for details.



Moulded Parts

Heat Shrinkable Components



Low Fire Hazard, Zero Halogen

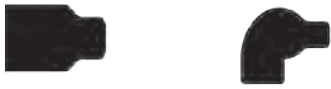
Designed for use with Zerohal cable and tubing for applications where hazard reduction in the event of fire is crucial. The material exhibits excellent fire safety characteristics plus low-smoke and low emission while retaining good mechanical and fluid resistant properties. Parts with adhesive lining provide location, sealing and strain relief of cable connector terminations and cable to cable transitions on harnesses used where there is a need to lower the risk.

Market applicable moulding compound for...

Boots • Transitions • Cable Entry Seals



Non Lipped Boots



Selection of non lipped boots for direct application on to the connector accessory thread.

Lipped Boots



Extensive range of lipped straight and right angle boots, including micro moulded for the latest connectors.

Extended Boots



Lipped extended tail boots available for both straight and right angle applications.

Transitions



Wide choice including 'T', 45°, 30°, 'Y', 1:3 and 1:4 transitions are available.

End caps



Selection of both wire and cable end seals and caps to suit wide choice of possible sizes.

Cable Entry Seals



Includes the ever popular CES and the 207W Series bulkhead feedthroughs, see opposite.

Shapes



Wide choice including 'T', 45°, 30°, 'Y', 1:3 and 1:4 transitions are available.

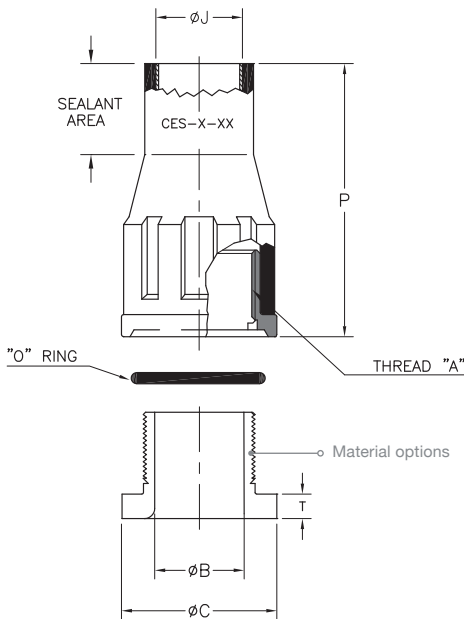
Based on heat-shrink technology, moulded parts and shapes are available in a vast range of configurations, sizes and materials, from miniature lightweight and space saving straight boots through to large multi-way harness transitions. Moulded parts can be used to seal and protect harnessing breakouts and terminations from environmental hazards, as well as providing strain relief. Material selection enables full integration and compatibility with other harness components, producing electrical systems that can be used under the most extreme environmental conditions.

- Mechanical protection
- Chemical resistance
- Electrical insulation
- Fluid and solvent resistance
- Moisture protection
- Strain relief
- Aesthetic enhancement
- Fast & efficient installation
- Pre-installed adhesives

Moulded Parts

Heat Shrinkable Cable Entry Seals

CES 1 to 5



CES Polyolefin cable entry seals provide a watertight, fume tight seal where cables enter connection boxes, bulkheads or enclosures. Threaded single part assembly CES glands are also available.

- SAE-AS81765/1 Type 1
- Temperature rating -55°C to 90°C



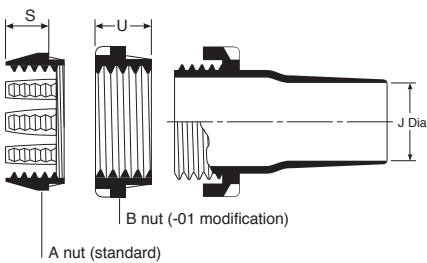
Product Dimensions Selection Table

Supplied Dim'		Dimensions After Recovery					
Dimension	J	J	"A Thread"	B ±0.5	C Ref.	P Ref.	T Ref.
Part Number							
CES-1-xx	12.7	4.07	1"-12 UNF	19.05	35.56	62.23	5.34
CES-2-xx	19.05	6.35	1"-12 UNF	19.05	35.56	62.23	5.34
CES-3-xx	30.48	12.7	1 3/8"-12 UNF	27.94	48.26	90.17	7.88
CES-4-xx	40.64	19.05	2"-8 UN	39.62	68.58	97.79	7.88
CES-5-xx	70.48	35.06	3 3/8"-8 UN	73.66	104.14	190.50	7.88

All dimensions in mm unless otherwise stated.

Where xx = Screw Gland Material Options

Material	Material Description
n/a	Standard black nylon material, omit the last two X's in the part number
AL	Al 6061-T6 with finish of hard anodize per MIL-A-8652F, Type III, Class 2, black
SS	Stainless Steel type 316, with finish of passivate per ASTM-A967

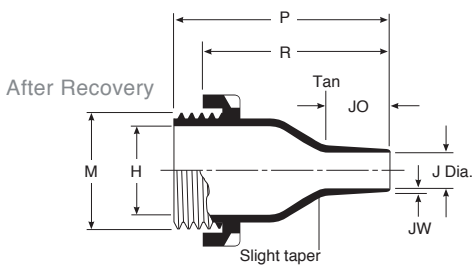


207W Feedthroughs provide an effective pressure seal when used with cables passing from pressurised to non-pressurised areas. Also provide excellent strain relief and bulkhead abrasion protection.

Ordering Information

- Standard colour Black (0).
- Packaged individually
- When ordering specify the product name, size, material, coating and modifications required, as per Part Number System.
- Adhesive coating is optional. If added the entry diameter will be reduced by nominal 1.5mm.

207W213 to 256



Part number example: 207W234-100-01/180-0

Halogen Free, polyolefin feedthrough (-100), with nut 'B' modification (-01), hot melt polyolefin adhesive (/180) and colour black (0).



Product Dimensions Selection Table

Dimensions as Supplied			Dimensions After Recovery								Weight
Dimension	H	J	H	J	M Thread	P ±10%	R ±10%	S ±20%	U ±10%	JO ±10%	
Part Number											
207W213-100*-180-0	13.2	6.6	6.6	3.6	46.2	30.5	15.7	1.52	1.02	1.02	2.3g
207W223-100*-180-0	26.9	13.2	13.2	6.9	93.2	57.2	33.0	2.54	1.52	1.52	16.2g
207W234-100*-180-0	38.6	19.3	18.8	9.7	135.1	88.9	45.7	3.05	1.78	1.78	38.3g
207W245-100*-180-0	55.6	26.9	25.4	12.4	192.0	121.9	71.1	4.57	3.05	3.05	143g
207W256-100*-180-0	91.4	45.7	54.6	27.4	390.4	254.0	127.0	7.11	4.57	4.57	862g

All dimensions in mm unless otherwise stated. Weight is based on polyolefin part

Terminals and Splices

Range Overview



Repeatable and Consistent Quality,
Inspectability, Convenience and Speed.



A single step easy to use method of producing high quality wire splicing, solder crimp and sealing in one simple operation. Ideal for industrial applications, through to the high performance demands of the Aerospace, Defence and Motorsport markets.

These dependable wire and cable termination products provide solutions for hundreds of wire and cable interconnect requirements. Products are housed inside transparent heat-shrinkable insulation sleeves, which provide inspectability and can provide various levels of environmental protection.

Many termination products incorporate a fluxed solder preform component, which offers a highly controlled soldering process, or incorporate controlled crimping to provide high reliability joints on the widest variety of conductor types and platings.

Wire to Wire Splices,
Solder and Crimp
Shielded Terminators
and Splices
Heat Shrinkable Crimp
Terminals
Coaxial Terminators
and Splices

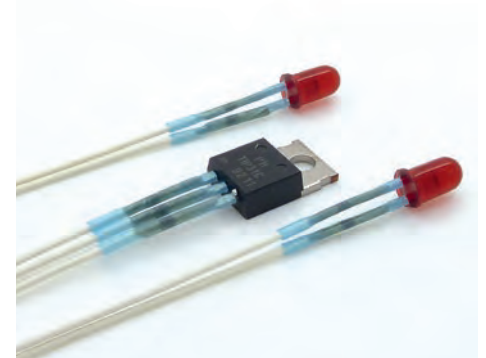
Shielded Solder Contacts

D-602 Series



Pin / Post Termination

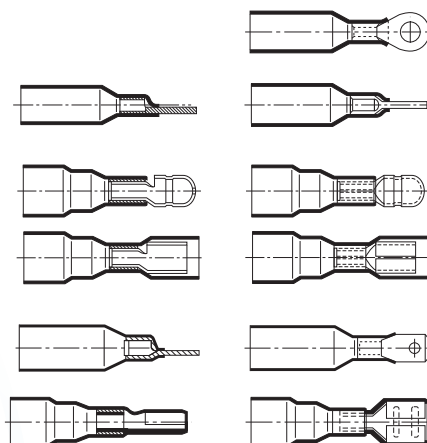
B-155-1500 Series



DuraSeal Crimp Terminals

Protect against water, condensation, salt and corrosion. Their tough heat shrinkable nylon tubing resists abrasion and cut through damage, provides strain relief and protects against vibration damage. Quick and easy to install using a crimp tool and a heat source.

UL and CUL 91J4, file E87681 | Lloyds 65 247 HH 02-93
UL and CUL E157833 (B106-3 & B106-4 series)



Crimp Terminals

B-106 Series



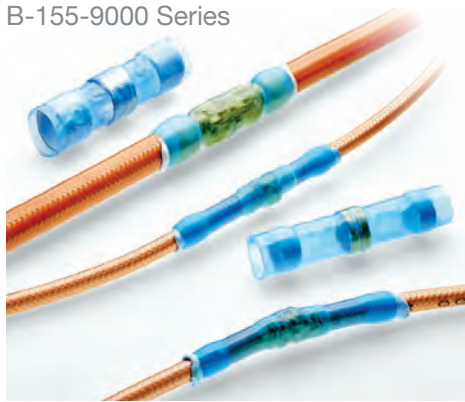
Terminals and Splices

Range Overview



Solder Splice

B-155-9000 Series

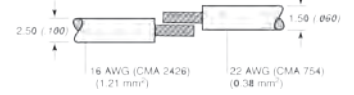


The SolderSleeve offers crimp free sealed wire to wire splicing. In a single step process they solder, insulate, encapsulate and strain relieve wire to wire splices, in a range of sizes ranging from B-155-9001 to B-155-9005 part numbers
RoHS, polyolefin.



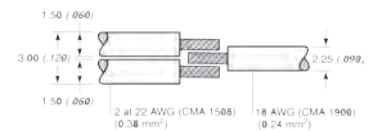
One-to-One Wire Splice

Total CMA = 3180 and Total mm² = 1.59
Part number = **B-155-9002**



Multiwire Splice

Total CMA = 3408 and Total mm² = 1.71
Part number = **B-155-9003**



Crimp Splice +125°C

D-406 Series



Crimp Splice +150°C

D-436 Series



Crimp Splice +200°C

D-200 Series



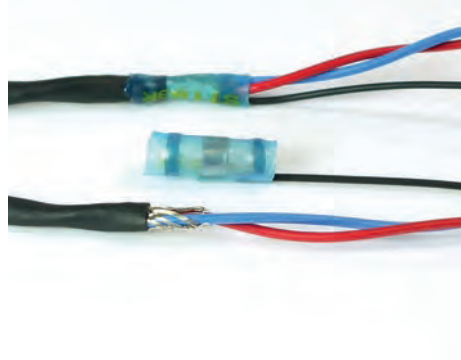
Cold Applied Crimp Splice

D-436-COLD Series



Shield Termination

B-15X-XX Series



Coaxial Cable Termination

B-155-4000 Series



Shielded & Coaxial Splices

D-150-XXXX Series



Shielded & Coaxial Splices +200°C

D-200-XXXX Series



Cable Management

Cable Ties Materials Overview and Performance



PLT Series

Low threading force and multiple locking tooth design providing strength and reliability.

Our wide range of Cable Ties and Accessories are available in a choice of materials that are self-extinguishing, halogen free and compliant with the smoke generation and toxicity requirements of the EN 45545-2 standard, falling into the classifications as shown in the table below.

Please see opposite page for sizing information on selected part numbers commonly requested. Additional sizes are available, please ask us for details.



CBR Series

Low profile design reduces overall bundle size. Outside serrations and smooth edges protect cable bundle - ideal for high vibration applications.



BT Series

Dome top design with stainless steel locking barb and smooth rounded.

	Test Method	Nylon 6.6	Weather Resistant Nylon 6.6	Heat Stabilised Nylon 6.6	Heat Stabilised Weather Resistant Nylon 6.6	Flame Retardant Nylon 6.6
Colour	-	Natural [#]	Black	Black	Black	Natural Ivory
Part Number Suffix	-	no suffix [#]	-0	-30	-300	-69

[#] Other colours are available, please see table on opposite page.

Summary of EN 45545-2 Classifications - Testing Conducted by Exova Warrington (Laboratory Approved by Railway Certification Agency)

EN45545-2 (R22)	-	HL2	HL1*	-	HL1*	HL2
EN45545-2 (R23)	-	HL2	HL2	-	HL2	HL3
EN45545-2 (R24)	-	HL2	HL2	HL2	HL2	HL3

*HL2 Classification at 0.9mm, HL1 Classification at ≤1.6mm thickness

Thermal Properties						
Maximum Continuous Temp. Use	UL 746B	85°C	85°C	115°C	100°C	100°C
Minimum Continuous Temp. Use	EN 50146	-60°C	-60°C	-60°C	-60°C	-40°C
Flammability Rating	UL 94	V-2	V-2	V-0	V-2	V-0
Low Smoke	ASTM E662	Pass	Pass	Pass	Pass	Pass
Halogen Free	IEC 60754-2	Yes	Yes	Yes	Yes	Yes
Burning Fume Toxicity	BSS-7239	Pass	Pass	Pass	Pass	Pass
Heat Deflection Temp. @ 1.8 Mpa	ASTM D648	70°C	70°C	70°C	70°C	68°C
Mechanical Properties						
Tensile Yield (psi)	ISO 527	12,000	12,000	12,000	12,000	11,000
Weathering Life Expectancy	-	1 - 2	7 - 9	4 - 5	7 - 9	1 - 2
Chemical Resistance						
Salts	-	Good	Good	Good	Good	Good
Hydrocarbons (Oils and Lubricants)	-	Excellent	Excellent	Excellent	Excellent	Excellent
Chlorinated Hydrocarbons	-	V. Good	V. Good	V. Good	V. Good	V. Good

Cable Management

Cable Ties and Accessories



PLT Series - Standard Design

Part Number	Length	Width	Thickness	Bundle Ø	Min Tensile	Pack Qty
	mm	mm	mm	mm	N	
PLT.7-M-*	79	2.3	0.8	17	80	100
PLT1M-C-*	99	2.5	1.1	22	80	100
PLT1.5I-C-*	142	3.6	1.1	35	178	100
PLT2I-C-*	203	3.6	1.1	51	178	100
PLT3I-C-*	290	3.7	1.3	76	178	100
PLT4I-C-*	368	3.7	1.3	102	178	100
PLT3S-C-*	292	4.8	1.3	76	222	100
PLT4S-C-*	368	4.8	1.3	102	222	100

BT Series - Dome Top

Part Number	Length	Width	Thickness	Bundle Ø	Min Tensile	Pack Qty
	mm	mm	mm	mm	N	
BT1M-C-*	102	2.4	0.9	23	80	100
BT1.5M-C-*	160	2.4	1.2	38	80	100
BT1.5I-C-*	155	3.6	1.0	38	178	100
BT2I-C-*	203	3.6	1.0	51	178	100
BT3I-C-*	287	3.6	1.2	76	178	100
BT4I-C-*	363	3.6	1.2	102	178	100
BT3S-C-*	305	4.7	1.3	76	222	100
BT4S-C-*	384	4.7	1.3	102	222	100

CBR Series - Low Profile

Part Number	Length	Width	Thickness	Bundle Ø	Min Tensile	Pack Qty
	mm	mm	mm	mm	N	
CBR1M-C-*	104	2.5	1.0	25	80	100
CBR1.5M-C-*	142	2.5	1.1	38	80	100
CBR1.5I-C-*	150	3.6	1.0	38	178	100
CBR3I-C-*	264	3.6	1.3	76	178	100
CBR4I-C-*	345	3.6	1.3	102	178	100
CBR3S-C-*	274	4.8	1.3	76	222	100
CBR3S-C-*	356	4.8	1.3	102	222	100

* Colour and Material Selection

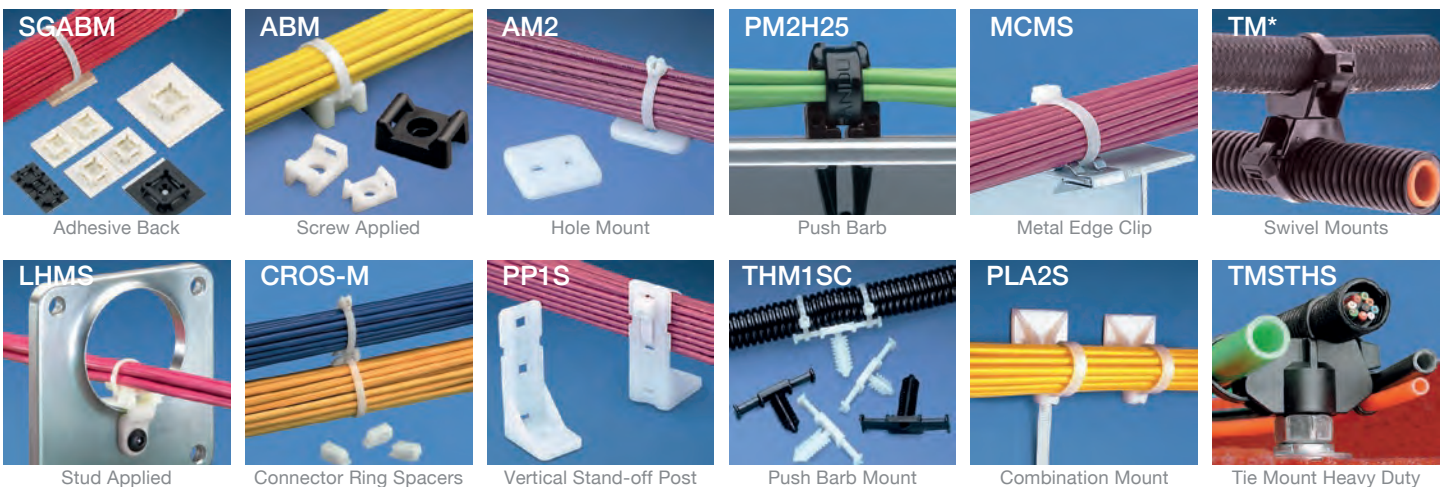
Suffix	Colour	Nylon 6.6
-	Natural	
1	Brown	
2	Red	
3	Orange	
4Y	Yellow	
5	Green	
6	Blue	
7	Purple	
8	Grey	
10	White	
14	Grey	
20	Black	
0	Black	Weather resistant
30	Black	Heat stabilised
300	Black	Heat stabilised, weather resist'
69	Ivory	Flame retardant

Alternative pack sizes of 500 and 1000 pieces also available please contact us for details.

Our range of Nylon cable ties are approved to various application standards, illustrating the quality and commitment to supply a quality product that is fit for purpose in the markets that we serve:

- UL Listed, E56854 and MH29590
- CE EN 50146
- Det Norske Veritas E-6405
- VG 95 387 - 100MS 3367F
- MIL QPL-AS23190-2

For full details please contact us.



Connectors and Backshells

MIL-DTL-38999 • MIL-DTL-26482 • MIL-DTL-5015



MIL-DTL Connectors

Fast Factory - Quick Response and Supply



MIL-DTL-38999 Series III
MIL-DTL-26482 Series II
MIL-DTL-5015



Through our supply partners we are able to offer a 'Fast Factory' quick response and turnaround supply service to our customers, for key connector styles, including...

MIL-DTL-38999 Series III • EN 3645

MIL-DTL-26482 Series II

MIL-DTL-5015

Product ranges built in the 'Fast Factory' are offered on a 2 to 3 weeks lead-time for quantities of up to 200 pieces and when required 'Fast Factory' is able to offer 48-hour production for small batches.

In addition to this, there is a low MOQ for these items with the aim of offering maximum flexibility, to help our customers supply logistics and order consolidation.

The 'Fast Factory' has its own dedicated teams. This facility serves industries such as aerospace, defence and marine and also the rail market and all customers from other industries requiring high performance connector products.

'Fast Factory' is a value added service provider for IS-Rayfast on Deutsch products to serve the European and EMEA markets. This hub and facility are capable of delivering and assembling on demand products.

Plating Finish	Cadmium	Electroless Nickel	Black Zinc Nickel	Black Zinc Cobalt	Green Zinc Cobalt
Colour	Olive Drab	Shiny Silver	Black	Black	Dark Green
Shell Continuity	2.5 mΩ	1.0 mΩ	2.5 mΩ	2.5 mΩ	2.5 mΩ
Durability	500 cycles	500 cycles	500 cycles	500 cycles	500 cycles
Temp Range °C	-65 to +175	-65 to +200	-65 to +175	-55 to +125	-55 to +125
EMI Shielding @100 MHz	>90dB	>90dB	>90dB	>80dB	>80dB
Shell Conductivity	2.5mV max	1.0mV max	2.5mV max	5.0mV max	5.0mV max
Salt Spray	500 hours	48 hours	500 hours	48 hours	96 hours
RoHS Compliant	No	Yes	Yes	Yes	No



Stocked MIL-DTL-38999 Series III Backshells and Protective Caps

Tamper proof protective caps also available



Connectors, other

Sealed and Ruggedised Commercial



RAIL
EN45545
Approval

RAIL
EN61373
Approval

RAIL
NFF16101/2
Approval

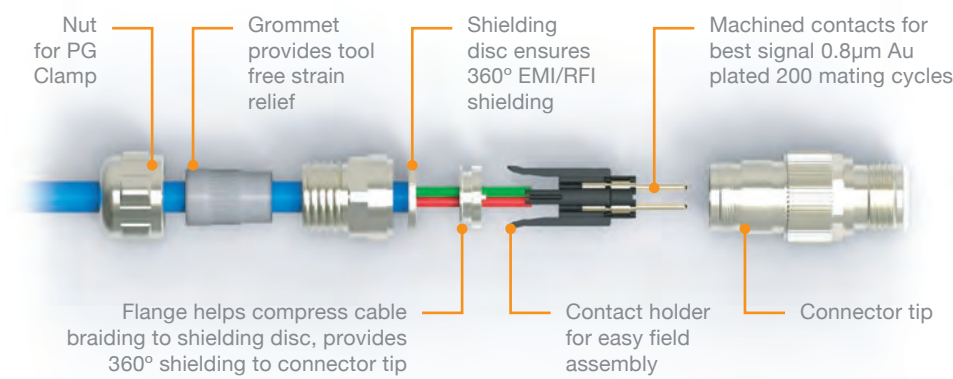


M12 PG Clamp Connector Series

Offers the Smallest Field Assembled M12 Connector on the Market



Introducing a comprehensive range of M12 rail connectors for field assembly. With 360° EMI/RFI shielding, the M12 receptacle connectors have fully shielded housings and are pre-assembled for ease of use. Range consists of both male and female connectors with D4, A5 and A8 coding. The flange system, with shielding disc and flange, along with its full metal housing, provides secure 360° shielding. It also provides a safe cable shield transfer-to-the-device solution without the risk of interruption caused by vibration or shock.



HDP20 Series

Composite thermoplastic connectors



HD30 Series

Rugged aluminum shell connectors



Features

- Vibration proof screw locking due to integral latching
- IP67 water proofing
- Data transmission characteristics: IEC 11801:2002 Class D
- Data transmission rate: up to 10Gbit/s

DT Series Family

Range of environmentally sealed connectors designed for cable to cable applications. Thermoplastic housings offer a wide operating temperature range plus silicone rear wire and interface seals allow the connectors to withstand conditions of extreme temperature and moisture, such as found in engine bays, chassis or cab applications.

Contact insertion and removal does not require any special tools, with contacts retained in a locked position by integral dielectric fingers. Secondary wedge-locks are assembled at the mating interfaces to provide proper contact positioning.



DT Series
Cable to cable applications.
Size 16 contacts.



DTM Series
Compact cable to cable
Size 20 contacts.



DTHD Series
Single power circuit
Size 4, 8 or 12 contacts.



DTP Series
Multi-pin power connectors
Size 12 contact

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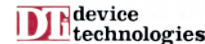


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