IP&E News

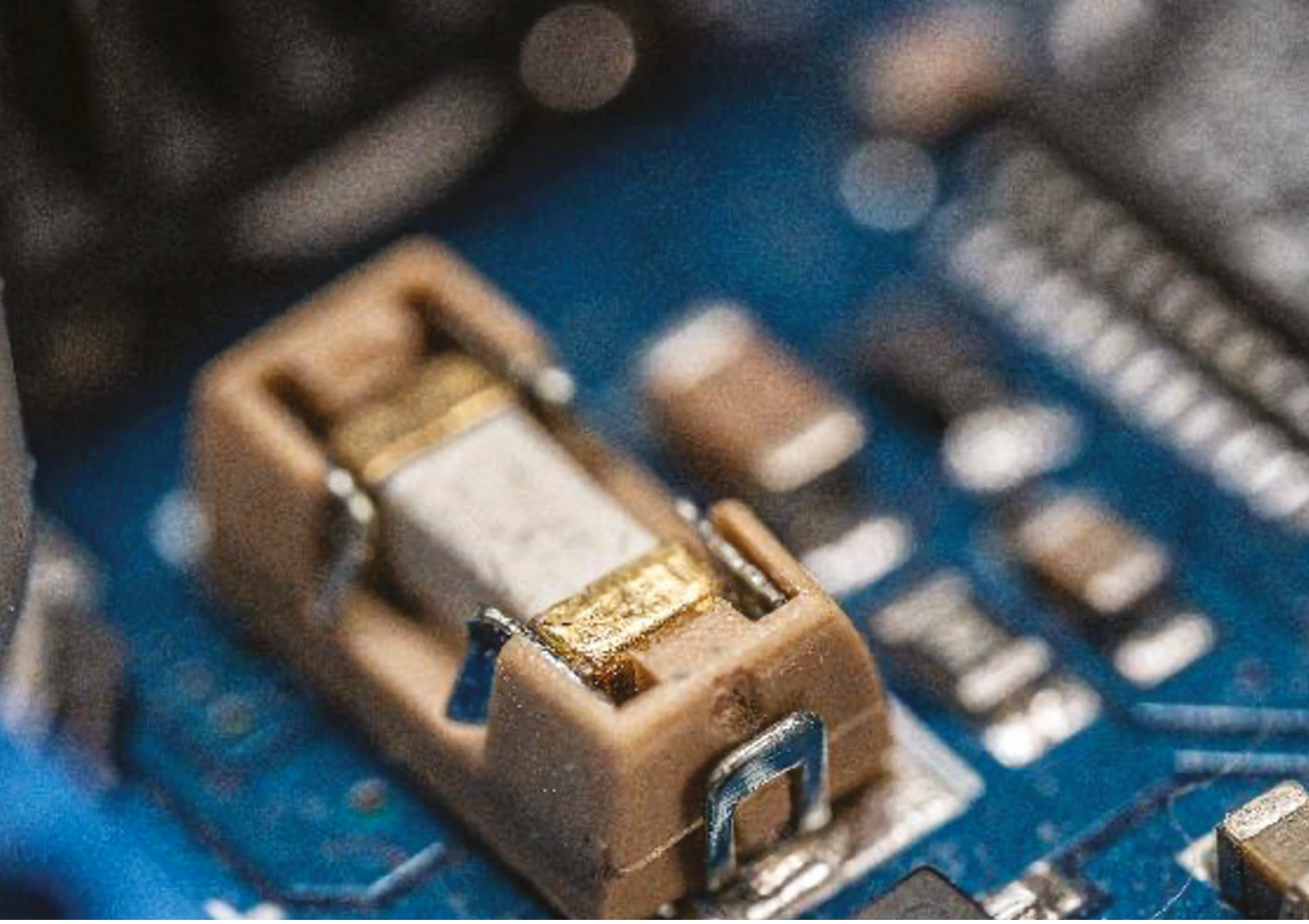
2nd Quarter 2022

At Arrow, we understand what you're facing. In fact we're facing it with you. Partner with us, and you'll get access to proven, best-inclass technology that Satisfies your customers needs for efficient, affordable, future-proof solutions.

IP&E by Arrow
Providing components for success

Components – EMEA

Content



What's the story behind Circuit Protection? 2nd Part

Essentially, circuit protection covers the protection of electronic assemblies and devices against overvoltage, overcurrent and overtemperature. Circuit protection components do not usually have device functions. Ideally, they should not even influence them. The goal of a good circuit protection concept is to protect the assembly or device from as many influences as possible. The right choice of protection elements can create very effective and cost-efficient solutions, so the functional and normative requirements for the devices are fulfilled. *Author: Mathias Nitzsche, Technologie Field Application Engineer, FAE PEMCO, Arrow*

You will find on the next pages the second part of the 3 topics of Circuit Protection. We started with overvoltage in the last issue. Overtemperature will follow in the next issues.

Overcurrent protection

Overcurrent protection of power lines and devices is a fundamental requirement for every electrical installation. The protective function is to interrupt the current flow if it exceeds a defined value for a given time. The current flow can be interrupted permanently or only temporarily.

Just like an overvoltage, an overcurrent leads to the destruction of electrical components. However, overcurrents are rarely introduced into the system from the outside, but rather occur as a result of internal faults or impermissible operating parameters.

Differences between overvoltage protection and overcurrent protection
A fundamental difference between overvoltage protection and overcurrent protection is the type of protection and the effective range. Overvoltage protection limits the voltage to a defined value. The function of the unit remains unaffected. Overcurrent protection disconnects the circuit and the appliance function is lost. With overvoltage protection, the components behind the protective element are protected. With overcurrent protection, they are also protected in front of it. The fuse can be used for two functions, on the one hand for device protection and on the other hand for line protection.

For example, the fuse in the domestic distribution cabinet does not serve to protect the connected devices, but rather the electrical system up to the socket. The fuse in a meter takes over the device protection function. The device protection function is usually realised by combinations with other components.

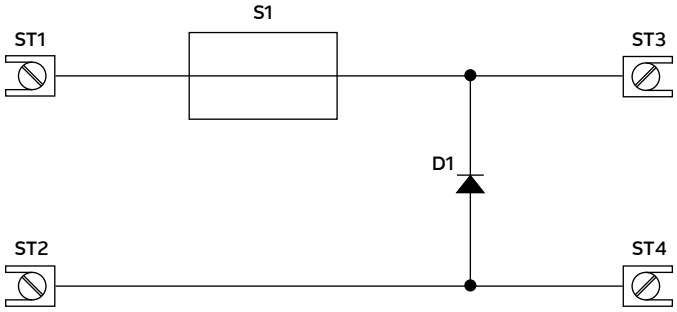


Figure 1

Figure 1 shows a simple reverse polarity protection. Operating voltages with the wrong polarity lead to a short circuit, which triggers the fuse. Alternatively, a unidirectional TVS diode can be used. In this case, the fuse is also triggered by impermissibly high operating voltages.

For higher power or AC voltage applications, MOVs, GDTs or thyristors are used here as a clamping circuit (crowbar).

Regardless of whether the fuse is used for line or device protection, in both cases parts of the electrical circuit are protected against overload.

But why do they need to be protected at all?
This question is basically quite simple to answer. Every conductor, be it a cable or a conductor track on a circuit board, has a certain current-carrying capacity. This indicates how much current can flow without the conductor heating up too much. If the value is exceeded, too much heat is generated. As a result, the conductor is damaged or destroyed. This must be prevented.

A fuse does not trip abruptly every time the nominal current value is exceeded. The behaviour of the fuse in case of overcurrents is called characteristic. This time-current characteristic (Average Time Current Curves) indicates the time dependence of the overcurrent until the fuse blows.

Another way to classify a fuse is the melting integral. Here, the square of the current is integrated over time. This results in an amount of energy that can pass through the fuse in the event of a fault. From this, for example, together with the resistance and the component values, a temperature increase can be determined. Furthermore, magnetic forces that occur in the event of a fault can be determined. This is particularly important in line electronics so that busbars are not deformed or torn out of their fastenings in the event of a fault. The melting integral of the fuse should be smaller than that of all components in the circuit. This ensures that the fuse is triggered and no components are destroyed.

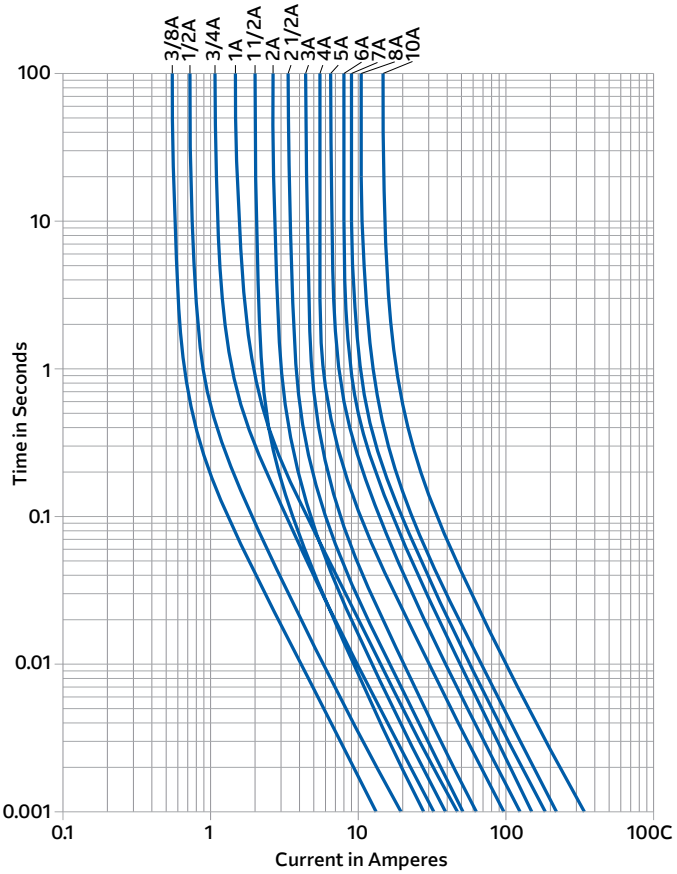


Figure 2 | Source: Littlefuse Axial Lead & Cartridge Fuses Factsheet, 2019

Different fuse types
The fuse is probably the best known and most commonly used. This creates a defined weak point in the circuit. As the current flow increases, it heats up more and more. If the heat is great enough, the conductor in the fuse melts and thus interrupts the circuit.

Other fuses are so-called self-resetting fuses (Polymeric Positive Temperature Coefficient - PPTC). Here, the fuse consists of a conductive polymer. If a current flows through the component, the internal structure changes due to thermal effects. Above a certain value, an avalanche-like effect sets in and the component suddenly becomes highly resistive. The current flow is not completely interrupted, but a residual current is produced that is far below the operating current. Due to the residual current and the associated self-heating, the fuse remains in this high-resistance state until the circuit is completely disconnected or switched off. After cooling down, the component is low-resistance again and ready for operation.

Furthermore, there are overcurrent circuit breakers and device circuit breakers. These are based on a bimetal contact that heats up when current flows. If the current flowing through the circuit breaker is too high for a longer period of time, the heating of the bimetal leads to the disconnection of the circuit. After cooling down, the switch can be reset.

The circuit breakers from domestic distribution boxes are circuit breakers that are equipped with another magnetic trip. If the current rises abruptly, for example in the case of a short-circuit, a quick disconnection is brought about by magnetic forces. This improves the tripping characteristics of these circuit breakers.

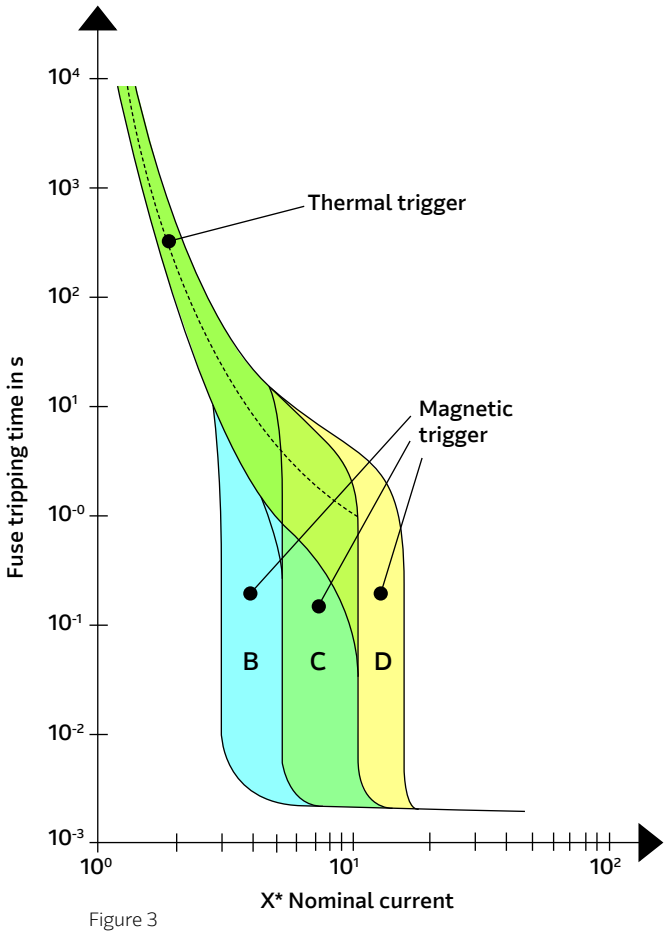


Figure 3

Fuses disconnect the circuit when tripped. However, care must be taken to avoid arcing, especially with DC voltage in conjunction with fuses or circuit breakers. An ignited arc would bridge the fuse and thus render the protective function ineffective. Special DC fuses used in PV systems as well as battery systems prevent this. Circuit breakers have integrated magnetic extinguishing devices that extinguish the arc.

A rough overview of the properties of the individual fuse types:

	Fuse	Circuit breaker	PPTC
Dielectric strength	>10kV	<4kV	<1kV
Current carrying capacity	< 2kA	<100A	< 40A
Separation	galvanic	galvanic	non-galvanic
Range of application	AC + DC	AC + DC	DC typical
Multiple use	No	Yes	Yes

The area of application as well as the external conditions set certain limits in the choice of means. Choosing the right fuse is a balance between protective function, reliability, and insensitivity to interference.

Any questions?
Please contact our specilized engineers for additional information you need.

Key Suppliers

At Arrow we focus on strong partnerships with our principals, and we want to introduce you to some of our key suppliers for the Circuit Protection product range. Arrow, together with its supplier network, can help you to identify the most suitable product for your application.

Littelfuse

At Littelfuse, our mission is to develop innovative circuit protection, power control, and sensing solutions that meet our customers' unique needs. This customer-focused philosophy has helped us become the top circuit protection brand in the world.

BOURNS®

Bourns is a global manufacturer with an expansive portfolio of Circuit Protection solutions. It covers technologies as PPTC and CPTCs, GDT, MOV, TBU®, TVS and PTVS diodes, one-time fuses, ESD and LED protectors, thermal cutoff and surge protective devices.

EATON

Eaton Bussmann® series circuit protection devices: 100 years history of complete overcurrent and overvoltage protection you rely on in consumer, industrial, medical and automotive applications.

ESKA the protection company

Eska is one of Germany's leading manufacturer for overcurrent, overvoltage and temperature protection. Our product range offers cartridge fuses, NH fuses, sub-miniature fuses, SMD fuses, resettable fuses as well as thermal cutoffs or automotive types.

SCHURTER

SCHURTER circuit protection includes fuses and circuit breakers in non-resettable and resettable versions. The products protect electric and electronic systems against overcurrent, undervoltage and overtemperature.

3M Science. Applied to Life.™

3M™ Mini Stack

Highly efficient, easy handling, less board space

The 3M™ Mini-Stack is a simple termination connector for industrial, sensor, LED, switch, and various small device connections using proven 3M IDC technology. This connector can provide a timesaving, reliable and field-installable wiring solution, while reducing the required board footprint.

As manufacturing equipment becomes increasingly automated, more electronic components, such as sensors, need to be integrated onto the control boards. This is driving a need for higher density connector options. 3M™ Mini Stack provides the connection with a simple termination process that does not create material debris or waste. The application reduces wiring time by approx. 60 % compared to crimping connectors.

Mini-Stack attributes at a glance:

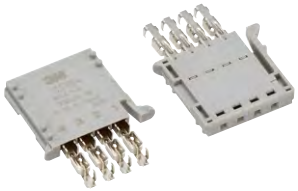
- Provides excellent wire connections in a compact form
- Compact design saves space
- No pre-treatment of wire needed with IDC technology
- Connect three or four wires simultaneously
- Integrated terminals and housing make handling easy
- Wide range of wire compatibility (AWG22-30)
- Highly reliable double IDC termination
- Handling stacked connectors as a block offers easy mating and unmating
- Enables easy field termination
- Locking system provide a reliable interconnection in demanding applications
- Saves 30 % more board space in comparison with 3M™ Mini-Clamp Connectors

Applications Area

Connector based on industry standards for industrial, sensor, LED, switch and various small device connections

Mini Stack Connectors

3M™ Mini Stack Connector Boardmount Header 3S6 Series



3M™ Mini Stack Connector Wiremount Socket 3S5 Series

3M™ Mini Stack Connector Dust Cover 3SD

Mini Stack Application Tooling

3M™ Mini Stack Connector Hand Tool 3S900

Click here or scan the QR-Code to find more information on 3M Mini Stack products inclusive Mini Stack IDC-Termination Installation Procedure in Real Time on YouTube

For more information please contact your Arrow sales representative.

Industry 4.0 – Factory Automation

Amphenol Communications Solutions provides connector solutions for driving sensors and device controls with added efficiency.

Industry 4.0 is witnessing rapid developments in factories equipped with high performing industrial computers, smart robotics, and reliable machine-to-machine communication offering enhanced flexibility with accelerated production and time-to-market. Programmable Logic Controllers and Servo Drives act as the backbone of factory automation. Amphenol provides advanced connector solutions for driving the sensors and device controls with added efficiency.

BergStak® Secure Connectors
Contains one-time-use and multi-times-use solutions. Both have a unique shield to protect signal transmission. The 3 row contact design with 1.0 mm pitch improves board surface utilization by 20 %. The family can support high-speed data transmission up to 32 Gb/s.

Orderable Series at arrow.com
- 10160298 Series
- 10160299 Series

Minitek® MicroSpeed 1.00 mm Connectors
The 1.00 mm pitch supports high-speed applications with up to 25 Gb/s. These board-to-board connectors have a shielded design that provides superior EMC performance and improved electromagnetic compatibility. The poka-yoke polarization prevents visual mismating making it ideal for industrial environments.

Orderable at arrow.com
- 2600RLF
- 3200RLF Series

ix Industrial™ IP20 Connectors
The 10 mm pitch connectors have 2-point metal latches are 25 % of the size of an RJ45 connector, and as allow much greater port density and mating security. PoE capable, data performance to Cat6A level (10GBASE-T) and feature 360° shielding through the mated pair for superior EMI protection.

Orderable at arrow.com
- ND9 Series

Single Pair Ethernet (SPE) IP20 Connectors
Robust right angle and vertical PCB mount SPE jacks mate to field terminable plugs, providing a complete shielded interface with metal latching features. Current handling up to 4A supports PoDL (Power over Data Link) capability up to 1 km.

Orderable at arrow.com
- MSPE Series

BELDEN

IO-Link Masters: M12 Power

Intelligent Communication Between Enterprise Resource Planning (ERP) and Sensor Level

As the world's first IO-Link Masters to provide multiprotocol support for PROFINET and EtherNet/IP in combination with the new M12 Power L-coded power supply connection, LioN-Power modules offer a major step forward in the miniaturization and future-proofing for intelligent industrial connectivity.

The Benefits

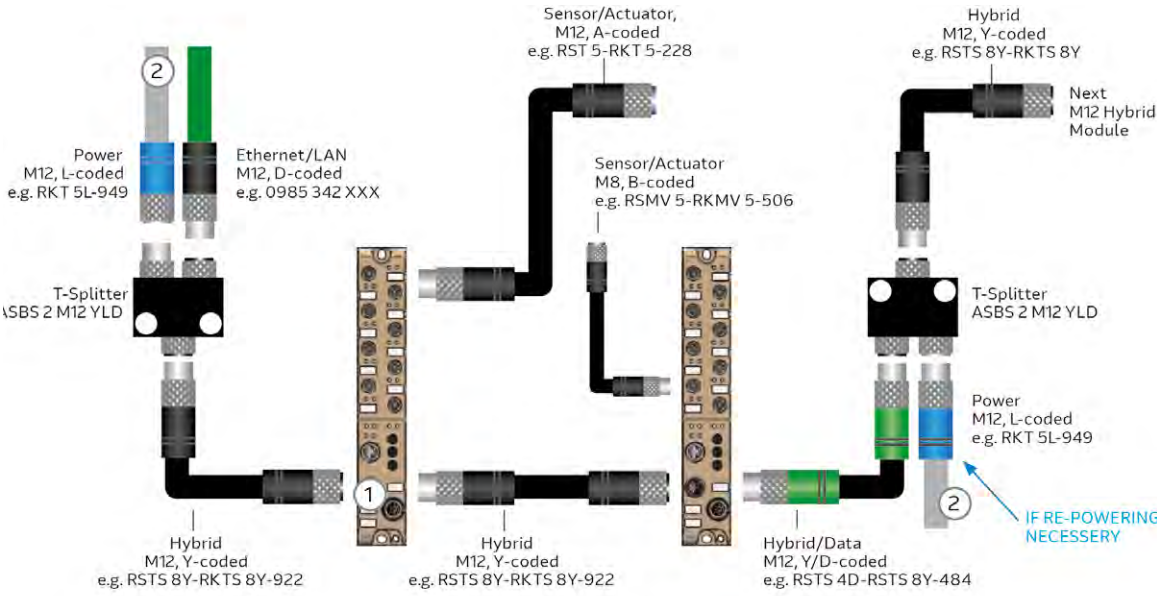
- Gain flexibility in IO-Link smart device connectivity with 4 x Class A and 4 x Class B ports as well as multiprotocol support
- Implement preventive maintenance by transmitting diagnostic data of intelligent IO-Link sensors and actuators before a failure happens
- Transmit up to 2 x 16 A per module with the industry's first IO-Link System with M12 L-coding power Connection

Markets & Applications

- Process Visualization
- Valve Integration
- Machine Building
- Packaging
- Simplifying analog sensor connections

Click here or scan the QR-Code to find the products on arrow.com

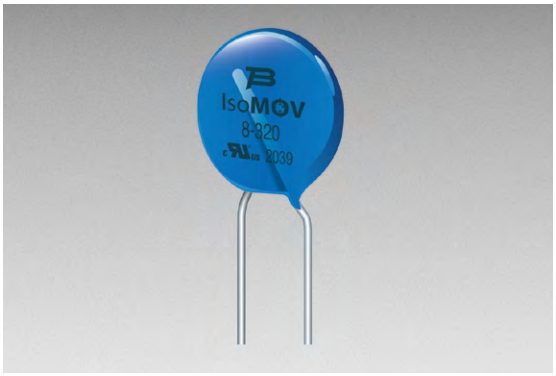
Connection Guide



IO-Link EtherNet/IP Multi-PROTOCOL PROFINET

BOURNS®

Award Winning IsoMOV™ Protectors



Bourns® IsoMOV™ Series Hybrid Protection Component has been chosen Passive Product of the Year by Electronic Products.

Bourns® IsoMOV™ hybrid overvoltage surge protectors, with their integrated gas discharge tube structure and extended temperature range, promise better reliability and longer life in certain harsh environments. The IsoMOV™ component family continues Bourns' legacy of quality, innovation and design in overvoltage surge arrestors and sets a new standard of robustness in each size class.

The lineup includes three series of devices; Model IsoM3, IsoM5 and IsoM8. With nominal surge ratings of 3 kA, 5 kA and 8 kA, these revolutionary new protectors offer performance usually found in larger traditional MOV devices. Using proprietary computer-aided design techniques to model performance, Bourns engineers have combined its revolutionary EdgMOV™ technology, which greatly reduces typical MOV edge failures, with a unique integrated structure to create a device with the equivalent function of a discrete MOV and GDT in series. The result is a familiar radial disc MOV package that is only slightly thicker and of substantially smaller diameter than similarly rated conventional devices.

Compared to conventional MOV devices, the IsoMOV™ hybrid protectors feature much lower leakage across their extended temperature range resulting in an extended product life as leakage currents are known to age MOV devices. The series combination of MOV and GDT devices is also tolerant of AC line voltage swells. Additionally, the combination yields a device with low capacitance. This means low insertion loss making this new series an ideal solution for the protection of industrial communications, power line communications and high-speed information and communication technology (ICT) equipment.

Features & Benefits
- Space saving solution
- Enhanced reliability over long life
- Reduced down time and service cost
- Enhanced surge ratings
- Increased voltage protection
- Ring wave tolerant
- Suitable for exposed circuits
- Low leakage current
- Low capacitance
- AC voltage ratings: 175 V–555 V
- Normal surge ratings: 3 kA–5 kA–8 kA
- UL 1449 Type 4 CA listed

Applications
- Critical AC power applications
- White goods
- Motor drives
- AC inverters
- LED lighting and signage
- Surge Protective Devices (SPDs)

Orderable at arrow.com
- IsoM3
- IsoM5
- IsoM8

HellermannTyton

EVO Series Cable Tie Tools

EVO7i – Precise tensioning and cutting of plastic ties with repeatable quality
Designed for durability and comfort, the EVO7i is a robust yet lightweight cable tie gun. It is ideal wherever large volumes of plastic cable ties up to 4.8 mm wide are processed.

Overtightening of cable ties can result in damage to bundles. That's why the tool is calibrated with 33 settings between 20 N and 165 N.

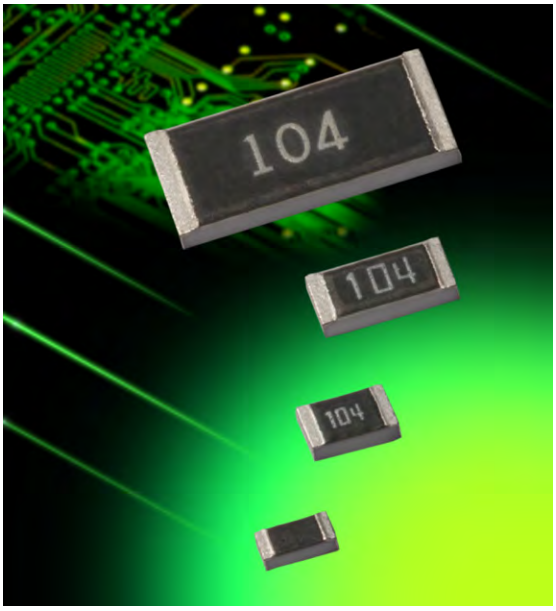
The EVO7i locks the strap before it is cut off flush behind the head. The results are the elimination of jarring that can lead to repetitive stress injuries, no stretching of the tie, and excellent blade life.

EVO cut – Safe removal of ties without damaging critical harnesses
There is an inherent risk of damage to cable insulation when cable ties are removed using side cutters.

The unique EVO cut helps ensure the integrity of wiring and cables in critical systems whenever ties need to be removed for maintenance. The lightweight hand tool is suitable for removing plastic cable ties of different sizes on both flexible and rigid bundles.

Orderable at arrow.com
- EVO7iSP-MET/PL-BK
- EVO7i-MET/PL-BK
- SP EVO7i Blade Kit-ST-MIX
- EVOcut-BK

High Voltage Thick Film Chip Resistors



KOA's high voltage chip resistor HV73 achieves max. working voltages up to 4 x higher than general-purpose standard types.

Using high voltage resistors instead of a string of standard parts means that fewer parts are used in voltage detecting circuits and less PCB space is needed.

Excellent heat and moisture resistance are ensured by the use of metal glaze thick film. The special coating and trimming insulation ensures that higher voltages can be applied at operating temperatures up to +155 °C.
The higher critical resistance allows a higher voltage at higher resistance values.

The special resistor design allows high voltage operation with improved temperature cycling stability compared to standard resistors. The HV73V-series is AEC-Q200 tested and suitable for high reliability automotive applications.

Features and Benefits
- Thick film chip for high voltage
- 800 V working voltage in 1206 inch
- Resistance range 10 KΩ to 51 MΩ
- 0603, 0805 and 1206 inch
- ±0.5 %, ±1 %, ±2 % and ±5 %
- ±100 to ±200 ppm/K
- Operating temperatures up to +155 °C
- EU-RoHS compliant
- AEC-Q200 tested (HV73 V)
- Anti-sulfuration type also available (HV73(V)_RT)

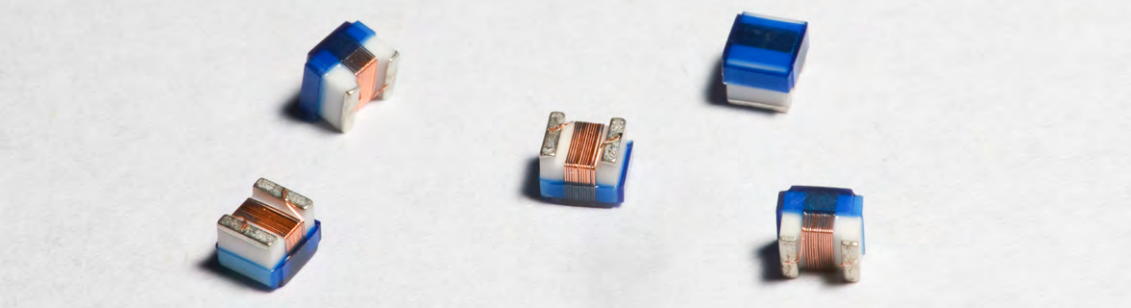
Applications
- Automotive and Industrial
- Battery module (voltage monitoring, battery management circuit)
- Inverter module (inverter circuit, DC-DC converter)
- Voltage detection circuit of chargers
- Around circuits where regenerative voltage of motor is applied
- Power supplies
- Motor control units
- Lighting ballasts
- AC adapters

The newest updated datasheets of these special flat chip resistors can always be found on the supplier website of KOA Corporation.

Orderable at arrow.com
- HV73 (high voltage)
- HV73V (high voltage, automotive)
- HV73-RT (anti-sulfuration)
- HV73V-RT (automotive, anti-sulfuration)

Laird | Steward
A DuPont Business

Wire-Wound SMD Ceramic Chip Inductor



Our innovative offering delivers high Q factor and low loss. A range of telecom, industrial, and general consumer electronics design engineers will find the inductor's high resonance frequency an aid to improving circuit performance. Particular designs needing a compact, low profile, easy to install, and reliable inductor will find it ideal, including antenna, wireless communication, multimedia applications, and more.

Features
- Surface mount
- High resonance frequency
- Narrow inductance tolerance
- Suitable for lead-free reflow soldering and RoHS compliant
- Wide range of size (EIA 0402, 0603, 0805, 1008) and inductance selection

Benefits
- Easy to install; reduce assembly failures
- Enables more compact electronic designs
- Enhances high frequency circuit performance
- Optimized for applications at extended temperature (-40 C to 125 C)

Applications
- Antenna Amplifiers
- Multimedia
- Wireless Communication Systems

Orderable at arrow.com

- IWC1008C1R0R-3G
- IWC1008DR68R-3G
- IWC1008FR10R-3G
- IWC0805DR15R-3G
- IWC0805DR10R-3G
- IWC0805E68NR-3G
- IWC0603AR27R-3G
- IWC0603CR12R-3G
- IWC0603DR10R-3G
- IWC0402AR10R-3G
- IWC0402AR12R-3G

Standard Offerings

Laird Product Series Name	Size LxWxH	Inductance	Tolerance	Rated Current	SRF
IWC0402	1.19x0.70x0.66 mm	22 – 120 nH	2.5 %	110 – 400 mA	1,000 – 2,800 MHz
IWC0603	1.80x1.12x1.02 mm	22 – 330 nH	2.5 %	100 – 700 mA	900 – 3,000 MHz
IWC0805	2.35x1.73x1.52 mm	22 – 180 nH	2.5 %	400 – 500 mA	870 – 2,600 MHz
IWC1008	2.92x2.70x2.23 mm	18 – 1000 nH	2.5 %	370 – 1,000 mA	290 – 2,500 MHz

Littelfuse
Expertise Applied | Answers Deliverec

Advanced Protection Solutions for EV

Littelfuse has recently launched two 1000 Vdc fuses (EV1K series and 828 series) ideal for EV power system applications requiring robust overcurrent protection in harsh environments.

EV1K series fuse offers these key benefits

- Rated for 1000 Vdc with interrupting rating of 30,000 A and 60–125 A nominal amperage ratings.
- Compact body size of 25 x 73 mm with end caps incorporating integrated bolt-down terminals is durable against mechanical vibration and shock, which increases product life and longevity.
- Operating temperature range from -55˚ C to 125˚ C and humidity resistance provides reliable protection in a wide variety of environments.
- Environmentally-friendly component is RoHS compliant, halogen-free, and 100 % Pb free

828 series fuse offers these key benefits

- AEC-Q200 compliant, compact 10 x 38 mm cartridge fuse with very high interrupting rating (10 KA @ 1,000 Vdc) provides superior overcurrent protection for automotive EV designs.
- End caps with integrated stand-off leads and bolt-down options eliminate the need for mounting accessories or lead-forming processes.
- Operating temperature range from -55 ˚C to 125˚C provides reliable protection in extreme temperature environments.
- Environmentally-friendly component is RoHS compliant, halogen-free, and 100 % Pb free

828 Series – High Voltage Cartridge Fuses

EV Fuse EV1K SERIES

Key Applications

- On-board chargers (OBCs)
- Battery distribution units (BDUs)
- Battery packs
- DC/DC converter
- Traction motor inverter
- Auxiliary loads

Click here or scan the QR-Code to download the "High-voltage Cartidge Fuse for Automotive-828 Series" PDF.

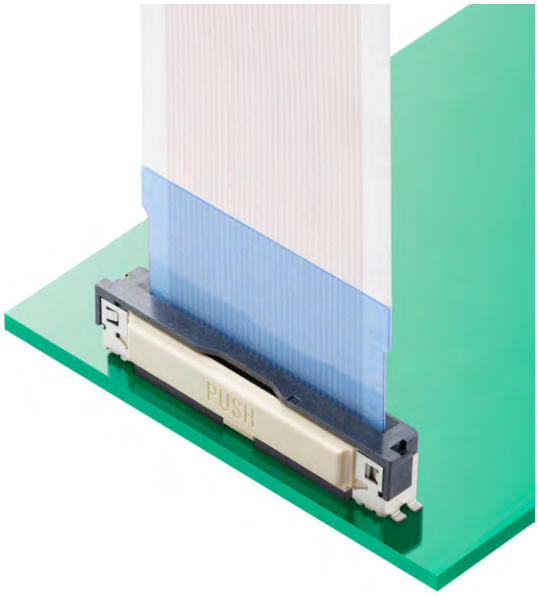
Orderable at arrow.com

- EV1K series
- 828 series

molex

Easy-On One-Touch FFC/FPC Connectors

Flat flexible cable (FFC) and flexible printed circuit (FPC) connectors are a great way to transfer large quantities of data quickly. The plugging/unplugging process for these cables, however, can be burdensome. Molex, with the new Easy-On One-Touch FFC/FPC Connector, has solved this problem! With its single-action cable insertion and instantaneous mating capabilities, it helps to eliminate mis-mating in the assembly process caused by human error. This saves time and streamlines production.



Click or scan the QR-Code to watch a short video for this range.

Features that deliver design flexibility
Often called a "one-action connector" and mating with FFCs and FPCs, the Easy-On One-Touch FFC/FPC Connector speeds up mating and instant locking in one easy step, simplifying assembly and saving both cost and time.

Achieve speed and efficiency with One Touch
Traditional FFC/FPC micro connectors require a three-step operation – opening of actuator, cable insertion and closing of actuator, which slows down assembly speed with increased labor cost and operator issues. The Easy-On One-Touch FFC/FPC Connector, with its single-action cable insertion and instantaneous mating, minimizes mis-mating caused by human errors.

Premium features for a range of applications
The connector's unique nail lock operates by hooking the FFC/FPC cable notch to the connector for secure mating while ensuring high terminal retention force. Additionally, it has a wide alignment guide, aiding easy, speedy mating of FFC/FPC cables.

The Easy-On One-Touch FFC/FPC Connector is available in both vertical and right-angle configurations for high versatility in modern applications. An operating temperature range of -40 to 125°C provides coverage for use in extreme conditions, and a circuit size range from 10 to 80 adds design flexibility.

Providing a complete interconnect solution
Premo-Flex Cable Jumpers can mate with a broad range of Molex Easy-On FFC and FPC Connectors. Available in vertical and right-angle configurations, these connectors and the Premo-Flex FFC Jumpers they mate with offer significant economic and operational value in high-speed, high-precision robotic assembly processes.

Scan QR-Code to learn more about Easy-On One-Touch FFC/FPC Connectors from Molex

www.arrow.com/en/research-and-events/articles/easy-on-one-touch-ffc-fpc-connectors

DC-DC converters

Murata offers two new ultra-wide 10:1 ratio DC-DC converters, the 250W IRH-W80 half-brick and the 150 W IRQ-W80 quarter-brick from Murata Power Solutions. Both high power density modules feature efficiency levels above 91 % with a 16 – 160 Vdc input voltage range.

Both modules are designed for embedded applications in the railway and industrial sectors. They comply with the requirements of EN50155 for shock, vibration, extreme temperatures and humidity. Typical applications include powering equipment on board trains, such as infotainment, communications and lighting, and from a wide range of battery voltages, that require a reliable DC source.

Features
- Operating temperature range of -40 °C to 100 °C
- 10:1 input voltage range: 16 V – 160 V
- Single output: 12 V, 24 V, and 54 V
- High efficiency – up to 91 %
- On/Off control (Positive or Negative logic)
- Adjustable output trim (±10 %)
- Hold Up function
- OCP function
- Thermal shutdown protection
- EVAL board available

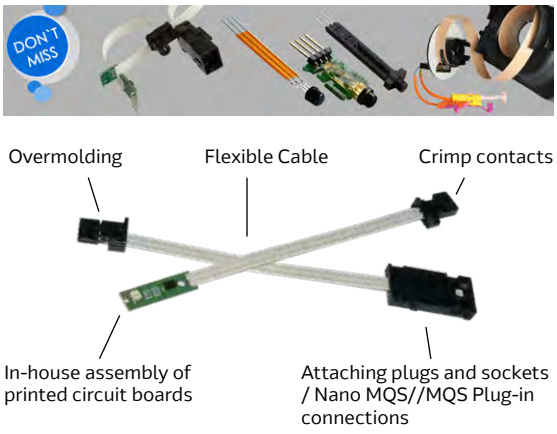
Orderable at arrow.com
- IRQ-12/12.5-W80NB-C
- IRQ-12/12.5-W80PB-C
- IRH-12/21-W80PB-C
- IRH-12/21-W80NB-C

Flexible Modules

Beyond Just The Flexible Cable – Flexible Modules from Sumida

For customers in the automotive and industrial sectors, Sumida flexible connection is mainly known as a leading manufacturer of flexible flat conductors and PCB connectors (so-called jumpers).

With its **Flexible Modules** product group, Sumida flexible connections bridges the gap between its core portfolio of flat cable production and the connection and integration of other components and functions. This opens up the possibility for customers to obtain greater added value from a single source and thus, among other things, to reduce their number of suppliers.



Capabilities
- In-house assembly of printed circuit boards
- Assembly of more complex components
- Extensive portfolio in the area of process technology, such as lasers, various welding and soldering processes, etc.

Panasonic
INDUSTRY

Polarized Power Relays: Permanent Efficiency

Nowadays, taking a responsible use of energy into consideration in all aspects of daily life has fortunately become more and more common sense – as well within the world of economy and industry. That's why the focus is also set on the energy efficient evolution of components that are used in billionfold dimensions – for example electromechanical relays.

Already half a century ago, back in the 1960s, Matsushita Electric Works started questioning the energy consumption of the offered components. Soon the company, now well known throughout the world as Panasonic, started to develop and launch a new generation of energy efficient components – long time before saving energy has become a crucial criterion in requirement specs.

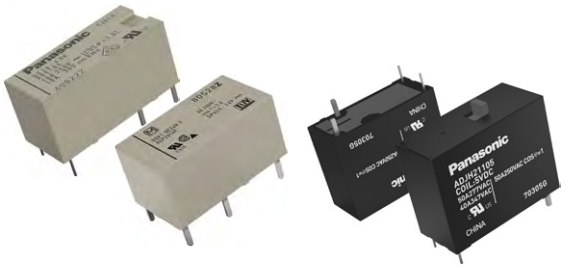
Back then, Germany based SDS Elektro's invention of a polarized R-Relay has been considered as milestone in the light of those efforts:

Due to an integrated permanent magnet, whose magnetic field overlies the one generated by the coil, much less energy is needed to switch the device. This results not only in a reduced transient response performance but also in a higher sensitivity – which in turn makes it possible to resort to significantly smaller coils and hence an overall more compact design.

Above that, there are bistable types which the ON or OFF state of relay contact can be held merely using pulse input – without any energy consumption at all. This is undoubtedly highly efficient as there will be no self-heating and therefore no coil power losses.

Currently Panasonic Industry Europe offers polarized relays for a wide set of applications in the fields of home&building, industrial or smart city automation. In addition particularly more shock and vibration resistant than their non-polarized counterparts, the main advantage of the polarized relays is to be seen in their efficiency: Within the entire switching requirement range up to 90 A, energy consumption of electromechanical relays will not only be reduced, but can be entirely eliminated.

That's good news for the environment: When thinking of the tremendous quantities of relays being in use, the difference between little power consumption and no power consumption is an extraordinary relevant one!



Orderable at arrow.com
– Series DSP, DK, DW, DE, DJ-H

	DSP		DK		DE		DW		DJ-H
Contact configuration	1A	1A1B, 2A	1A	1A1B, 2A	1A	1A1B, 2A	1A	1A	1A
Single side stable | 1 coil latching | 2 coil latching	•|•|•		•|•|•		•|•|•		•|•|•		•|•|•
AC Voltage	250 V	250 V	250 V	250 V	250 V	250 V	250 V	277 V	277 V
AC Current	8 A	5 A	10 A	8 A	10 A	8 A	8 A	16 A	50 A
DC Voltage	30 V	30 V	30 V	30 V	30 V	30 V			
DC Current	5 A	5 A	10 A	8 A	10 A	8A			
Length x with x height	20x11x10 mm		20x12.5x10 mm		25x12x12.5 mm		24x10x 18.8 mm	24x10x 15,8 mm	39x15x 30.2mm

Short Delivery Times Pancon Connectors

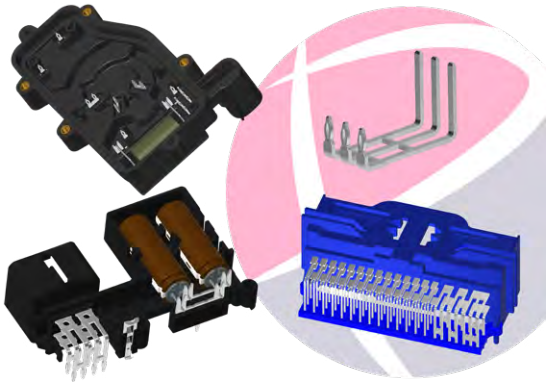
Pancon is based in Bad Homburg, Germany, and has been designing and producing electromechanical components since 1968. Our customers come from various commercial and industrial industries with a strong focus on the automotive industry. Thanks to our combined expertise in engineering and in-house production, we support our customers from design concept to full production. Production facilities located in Europe and Asia enables Pancon to be flexible in adapting to demand and changing customer requirements.

Crimp-CON
Pancon has expanded its Crimp-Con product line to serve the growing need of disconnectable crimp connectors. We can offer alternatives to known crimp connector systems. Available pitches for the Crimp-Con product family are:

- 1.00 mm
- 1.25 mm
- 1.27 mm
- 1.50 mm
- 2.00 mm
- 2.50 mm
- 2.54 mm
- 3.00 mm
- 3.96 mm
- 4.20 mm
- 5.08 mm

Board-CON
As Pancons solution for Board-to-Board connections, the Board-Con product family is an easy to configure system of male and female headers. To serve all your needs, wen can offer everything from standards to customized solutions. With a wide variety of designs and connectivity options, we can cover the following pitches:

- 0.80*1.20 mm
- 1.00 mm
- 1.27 mm
- 2.00 mm
- 2.50 mm
- 2.54 mm
- 3.50*6.00 mm
- 3.96 mm
- 5.08 mm



Both product lines are in high demand at the moment.

Pancon strives for short delivery times of about 18 weeks, with an availability of samples for testing in only about 3 weeks!

For a customer specific project on THR/SMD connection more than 500,000 units will be delivered this year.

Main features of this THR/SMD connections are:

- Through Hole Reflow
- Soldering for the components in PCB holes

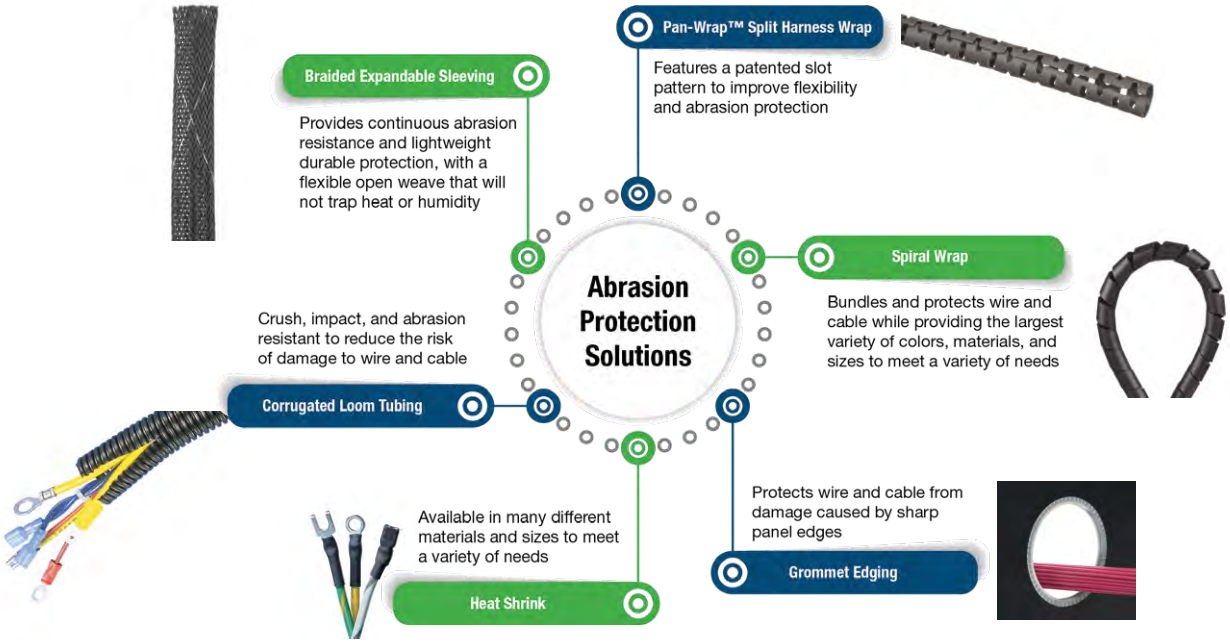
The use of advanced materials makes these terminations possible for the application of hot air soldering. This is a fast and reliable connection method even for high pin count devises.

Comparable projects are in preparation.

Please ask your Arrow representative for more information on Pancon solutions.

PANDUIT™

Innovative Abrasion Protection Solutions



Panduit™ abrasion protection products provide an economical and easy way to insulate, protect, bundle and color-code components and cable. The products are designed and manufactured to meet applicable quality standards including International, UL, Military, ISO, and Aerospace.

Pan-Wrap™ Split Harness Wrap
- Patented slot pattern provides improved flexibility & abrasion protection in any application
- Unique wall design provides for easy cable breakouts
- Considerably reduces installation time
- Large overlap accommodates a wide range of bundle diameters

Spiral Wrap
- General purpose Abrasion Protection product for Wire Harness and bundling applications
- Allows breakouts of single/multiple cables
- Multiple colors allow for easy identification of cable bundles
- Available in multiple materials
- Simple installation tool supplied in each package

Non-Shrink PVC Tubing
- Provides insulation and protection for lead wires, wire hraness assemblies, soldered joints and components in electrical and electronic equipment
- Resistant to heat and moisture

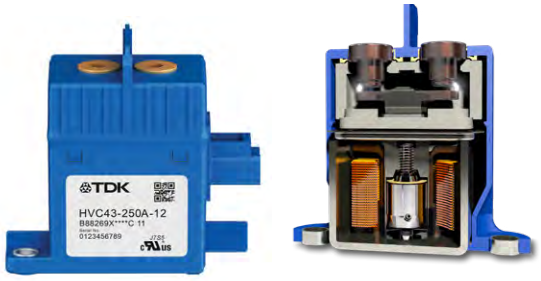
Corrugated Loom Tubing
- Economical protection for cables in wire harness applications
- Solid wall product allows complete protection of cable bundle

Braided Sleeving
- Provides continuous abrasion protection for wires, cables, hoses & tubing. - Highly flexible open weave will not trap heat or humidity
- Lightweight, durable protection
- Compliant with US and European passenger rail standards

TDK's new compact High-Voltage Contactor

HVC43 is a compact High-Voltage contactor, designed for DC emergency disconnection applications of lithium-ion batteries up to 1000 V. It completes the existing contactor-portfolio for smaller currents, with continuous currents 150 A to 250 A. The unit is available with a 6 W coil and supply voltages 12 V or 24 V.

The new HVC43 is very compact and 30 % smaller and lighter than the HVC200-, HVC300- and HVC500, with 78 mm x 40.4 mm x 74.5 mm (L x W x H) in size and 300 g in weight.



HVC43 features a hermetically sealed, gas-filled ceramic arc chamber as it is well-known from our existing contactor series. It exhibits excellent arc quenching properties by pushing the arc cooling mechanism to a maximum ensuring fast and reliable arc extinguishing during disconnection of high DC current. The complete bipolar design without preferred direction of current flow allows charging and discharging through the same contactor.

Applications

- Battery Disconnect Units of commercial and passenger electric vehicles
- DC Charger up to 50 kW
- Energy Storage Systems
- DC emergency disconnection of lithium-ion batteries up to 1000 V

Features and benefits

- Up to 1000 V
- Up to 250 A continuous current
- Up to 320 A 10 min temporary overcurrent
- Contator resistance typ. 0.125 mΩ, max. 0.25 mΩ
- Bipolar design
- Hermetically sealed, gas-filled ceramic arc chamber for fast extinguishing
- Compact dimensions and only 300 g

Click here or scan the QR-Code to find the products on arrow.com

Ultra-Small Spring Fingers

Spring fingers can be used in all types of small printed circuit board (PCB) applications across multiple industries.

Product features
- Product footprint of 1.7 mm²
- The close-loop contact design can ensure reliable connection to the PCB, better normal force (0.7N min) and higher current capacity (1.5 A)
- A special anti-lifting design that can improve assembly efficiency by locking the tip of the contact within the sidewall of the spring finger, which helps prevent the contact from catching during installation
- Pick-and-place area support auto-assembly processes

Key benefits
- Prevents EMI noise and static
- Space Savings
- Superior Performance
- Improved Assembly Efficiency and Ease of Installation
- Resistance to Over Compression
- Wide Portfolio of Height and Style Options to Fit a Variety of Applications

Industries
- IoT
- Consumer Electronics
- Industrial and Production
- Medical Devices

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Click here or scan the QR-Code to find the products on arrow.com

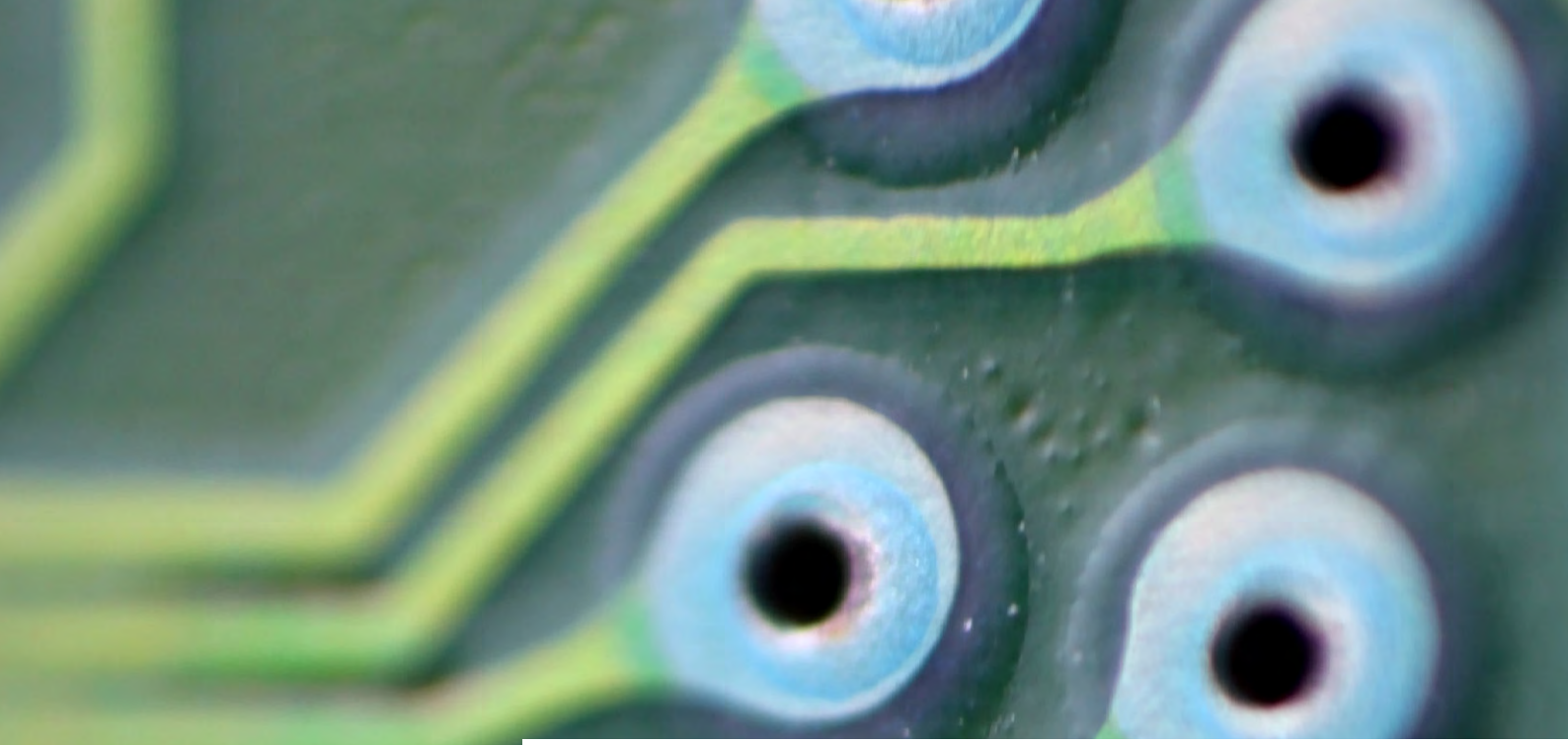
We help people connect with the tangible future.

One where new technologies, new materials, new ideas and new electronics make life not only different, but better. Not just faster, but smarter. Not just easier, but more inspired.

Where the benefits of these technologies are accessible to the many, not just the few. Customers. Corporations. Communities. Individuals. The people who need them most.

We do this by thinking and acting five years out – far ahead enough to shape the future, but close enough to make it a reality.

We're a team of builders, designers, engineers and imaginers, all bridging the gap between what's possible and the practical technologies to make it happen.



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Five Years Out