



# IP&E News

4<sup>th</sup> Quarter 2024



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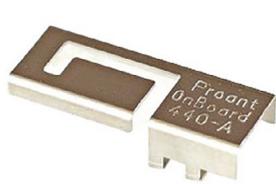
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IP&E  
Technologies  
for Smart  
Buildings

Focus IP&E technologies for Smart Building design:	
	<b>AC/DC and DC/DC power supply modules</b> , from DIN-rail and panel mount to PCB mount, covering few watts to several kW to provide power to lighting and all smart building sub-systems.
	<b>Contactors (DC) and relays (AC)</b> , panel mount or PCB mount.
	<b>Thermal management</b> (fans and heatsinks).
	<b>Power transformers</b> , particularly high-frequency and high-power transformers are becoming increasingly relevant with the growing use of Silicon Carbide (SiC) MOSFETs in high power inverters.
	<b>DC-link capacitors</b> , used for the power conversion stages of power conversion or motor driven applications (e.g: elevators or HVAC).
	<b>Filter inductors and EMI filters</b> , used to filter out high-frequency noise and to suppress electromagnetic interference from noisy applications.
	<b>High power fuses and other circuit protection devices</b> (over-voltage, over-temperature, over-current)
	<ul style="list-style-type: none"> <li>• <b>Current sense resistors</b> to measure current levels.</li> <li>• <b>High power / pulse resistors</b> for load dump.</li> </ul>
	<b>Switches</b> , for example detection switches, to monitor open doors etc.
	<b>Interconnect</b> <ul style="list-style-type: none"> <li>• <b>Board to Board, IO connectors and headers</b>, mainly used for communication.</li> <li>• <b>Terminals blocks and crimp terminals</b> for grid connection.</li> </ul>
	<b>Antennas</b> for all forms of wireless communication, from LTE/5G to WiFi or Bluetooth.
	<b>Cable assemblies and I/O connectors</b> Standard cable assemblies and connectors for Power and Signal transmission.
	<b>Batteries and battery packs</b> , rechargeable for higher power applications, and primary button or cylindrical Lithium cells for IoT/sensors.

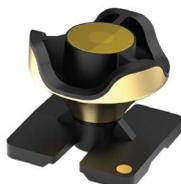
You can find in this issue:



Abracon – Stamped Metal PIFA Antennas



Bel – Reliable ICMs for Smart Buildings



KyoceraAVX – Revolutionary LDS antenna for UWB



Littelfuse C&K – Littelfuse Switches for Elevators



Panasonic – New Amorton: Style and Efficiency



ZF – ZF Energy Harvesting for Smart Buildings



# Stamped Metal PIFA Antennas

Abracon's stamped metal antennas provide high-performance solutions for wireless connectivity in smart building applications.

## Applications

- IoT, M2M
- Telemetry
- Wireless Remote Control
- Personal Area Networks (PAN)
- Industrial/Commercial Equipment
- 2.4/5 GHz - Wi-Fi/ BT/BLE/ZigBee/ISM Applications
- Remote Technology / Monitoring
- Network Devices
- Consumer Tracking
- Smart Home
- Smart Wearables

Abracon's OnBoard stamped metal antennas support Planar Inverted F Antenna (PIFA) technology, offering a low-cost solution using stamped metal. Supplied on Tape and Reel, they ensure robust wireless connectivity without the need for reserved PCB space. Components can be placed underneath without affecting performance. These antennas feature an omnidirectional radiation pattern, mixed polarization, and high radiation efficiency, making them ideal for protocols like Bluetooth, Wi-Fi, Cellular (2G, 3G, 4G), and GNSS. They're a space-saving, efficient choice for enhancing wireless applications.

## Features

- Ultra-Compact Designs
- Surface Mount Designs
- Extended Operating Temperatures
- Linear Polarization
- Durable-Shelf life of up to 10 years
- Low Loss Material

## Orderable at [arrow.com](https://arrow.com)

- [PRO-OB-536](#)
- [PRO-OB-440](#)
- [PRO-OB-607](#)
- [PRO-OB-430](#)
- [PRO-OB-572](#)
- [PRO-OB-471](#)



Part Number	Frequency Range	Peak Gain (dBi)	Package Size (mm)	Key Features	Associated Evaluation Boards
PRO-OB-536	2.4 + 5 GHz	2.7	14.2 x 6.6 x 2.5	Compact, efficient ( $\eta > 44\%$ ), extended operating temperature	PRO-EB-550 PRO-EB-575
PRO-OB-440	02. Apr	4.9	13.75 x 5.23 x 3.5	compact, low loss material, highly efficient ( $\eta > 65\%$ )	PRO-EB-450
PRO-OB-607	02. Apr	-0.6	9.9 x 4.3 x 2.0	ultra compact, low-profile of 2 mm; linear polarization; double-shelf life of up to 10 years	PRO-EB-609
PRO-OB-430	GNSS	0.7	12.50 x 12.43 x 3.33	Supports upper GNSS Bands, GPS/GLONASS/BeiDou/Galileo; compact, low-profile of 3mm; Linear Polarization, Efficiency $> 55\%$ ; Durable-Shelf life of up to 10 years	PRO-EB-453
PRO-OB-572	791 - 960, 1710 - 2170	2.2	50 x 25 x 10	Support NB -IoT Bands: 791~960 MHz +; Profile of 10 mm; Linear Polarization; Efficiency $> 50\%$ ; Durable-Shelf life of upto 10 years	PRO-EB-575
PRO-OB-471	868/915 (+2400 MHz)	2.4	34 x 11.5 x 4.9	Supports 868 MHz or 915 MHz; Profile of 4.93 mm; Linear Polarization; Efficiency $> 50\%$ ; Durable-Shelf life of up to 10 years	PRO-EB-472 PRO-EB-476

# Reliable High-Density Solution

Double row, mezzanine connector system with surface-mount solder tails

## Applications

- Consumer: Digital Video Camera
- Industrial: Measurement Equipment, Mobile Payment Device, Point of Sales Equipment, Portable Industrial Terminal, Surveillance Camera
- Medical: Medical Device



Amphenol's BergStak® 0.5 mm is a comprehensive and versatile board-to-board solution designed for reliable and high-density applications. The unique design of scoop-proof housing ensures terminals are not damaged during mating. BergStak® 0.50 mm connectors are ideal for applications in the Consumer: Digital Video Camera; Industrial: Measurement Equipment, Mobile Payment Device, Point of Sales Equipment, Portable Industrial Terminal, Surveillance Camera; Medical: Medical Device.

## Features

- 0.5 mm double row contact
- Scoop-proof housings
- Metal hold-down option
- Locating pegs option
- 3 mm to 6 mm stack heights in 0.5 mm increments
- 10 to 80 positions in 10 position increments
- 7 mm to 8.5 mm stack heights in 0.5 mm increments
- 10 to 100 positions in 10 position increments
- Available in UL94 V0
- USCAR-2 V1 shock and vibration qualified
- RoHS compliant and lead-free

## Benefits

- High density connector
- Ensures terminals are not damaged during mating
- Higher retention force
- Eases manual assembly
- Wide range of sizes and stack heights supports different applications
- High flammability rating
- Suitable for automotive applications
- Meets environmental, health, and safety requirements

## Orderable at [arrow.com](https://arrow.com)

- [10132797-011100LF](https://arrow.com)
- [10132797-033100LF](https://arrow.com)
- [10132798-021100LF](https://arrow.com)



# PoE Solutions for Robotic Systems

Belden's PoE solutions with SPE cables, connectors and rugged PoE switches for harsh industrial environments.

Power over Ethernet (PoE) solutions play a significant role in the integration and operation of robotic systems, particularly in environments where streamlined installation, centralized control, and flexibility are required.

Single Pair Ethernet (SPE) reduces the need for separate power and data cables, enables smarter, more efficient and more flexible robotic systems by simplifying cabling, reducing costs and improving connectivity. Thinner, lighter cables are easier to route through tight spaces and moving parts, increasing robot flexibility and mobility.

SPE's high-speed data transfer capabilities are critical to enabling real-time robotic and control interactions. This enables more precise control, faster response times and the integration of advanced features such as AI and machine learning. Suitable for harsh industrial environments, SPE is ruggedly designed with high immunity to electromagnetic interference (EMI). **Lumberg Automation Single Pair Ethernet (SPE) cordsets** enable the internationally standardised, OT-controlled Ethernet to enable convergent OT/IT networks.

## Key Features

- Power-over-Data Line (PoDL)
- up to 10 Gbits/s
- T1 industrial IP20 products (M111C1E1)
- M8/M12 configurations (M212C2E2/M313C3E3)
- Metallic housing and 360-degree shielding for excellent signal integrity
- Oil and chemical resistant
- Temperature tolerant from -40 °C to +85 °C
- IEC 63171-6, Lead-free RoHS compliant



Especially in industrial and manufacturing environments, unmanaged switches are an essential part of the robotics network infrastructure. They offer reliable operation with low latency, linking robot arms, sensors, actuators and controllers within a local network without complex network configurations and without adding complexity to the network infrastructure.

**The Hirschmann OCTOPUS 8TX PoE-EEC Unmanaged Switches** are ruggedized, easy-to-use switches for areas where space is a premium.

## Key Features

- 8 configurable Fast Ethernet ports
- 7 PoE+ ports with 35 W total power
- Configuration options for QoS, Flow Control, PoE classes, etc.
- Redundant power supply
- Temperature range: -40 °C to +70 °C
- Shock and vibration resistant M12 connectors
- Protection class IP67, EN 50155, EN 50121-4, EN 45545 and e1



## Orderable at Arrow

- Series: SPEG: Lumberg Automation Single Pair Ethernet (SPE) cordsets
- Series: OCTOPUS 8TX: The Hirschmann OCTOPUS 8TX PoE-EEC Unmanaged Switches



Click here or scan QR-Code to find more information on [arrow.com](https://arrow.com)



# Reliable ICMs for Smart Buildings

High-performance Integrated Connector Modules, providing robust connectivity infrastructure for Smart Buildings in the 5G Era

Bel's ICMs are ideal for smart building applications where high-speed networking is essential.



As 5G network speeds and reduced latencies enable applications to offload computation-intensive tasks to data centers, the demand for cloud computing and data traffic is set to surge. This shift is especially significant for smart buildings, where interconnected devices rely on fast, reliable networks. In smart buildings, the need for higher port densities, greater bandwidth capabilities, and high-performance connectivity will be critical to supporting IoT devices, sensors, lighting systems, and building management technologies. The ability of 5G networks to handle these demands, both within telecom closets and in distributed networks, will power intelligent building systems and create more efficient, sustainable environments.

In this 5G-driven era, Bel's MagJack® brand Integrated Connector Modules (ICMs) ensure that smart buildings have the robust, scalable connectivity infrastructure they need. Whether it's supporting IoT devices, connecting building management systems, or enabling high-bandwidth applications, Bel's ICMs are designed to provide reliable, high-performance solutions for Ethernet requirements.

Bel offers a comprehensive range of ICMs, including Power over Ethernet (PoE) options for devices that require both power and data through a single cable, further simplifying installation and reducing infrastructure costs. Additionally, Bel's product lineup includes innovative solutions like Ethernet jacks combined with USB, providing enhanced versatility for smart buildings that require multiple communication protocols within a compact footprint.

#### Key ICM Features:

- 10/100 BT AutoMDIX
- 1 GBT (10/100/1000 BT)
- 5 GBT and 10 GBT
- Multiple LED Color Options
- Extended Temperature Range of  $-40^{\circ}$  to  $+85^{\circ}\text{C}$

By supporting fast and secure data transmission, these ICMs play a critical role in building the connected, energy-efficient smart environments of the future.

#### Orderable at [arrow.com](https://arrow.com)

- [0826-1X1T-GJ-F](#)
- [G23-21YR-112](#)
- [0826-1G1T-23-F](#)
- [SI-50170-F](#)
- [08B0-1X1T-36-F](#)



Click here or scan QR-Code to find more information on [arrow.com](https://arrow.com)

# 1-Piece Fixing Ties

One-piece fixing ties designed with integrated mounting options are ideal for saving processing time and reducing inventory.



Efficient cable management can be achieved through various methods, including holes, screws, weld studs, or panel edges. With decades of industry experience, HellermannTyton's engineers offer the safest and most efficient options for diverse application requirements. One-piece fixing ties, with integrated mounting options, save processing time and can reduce the need for multiple components.

The most popular options include **Fir Trees (for round and oval holes)**: These require low insertion effort while providing high extraction force. Discs prevent rattling, while oval fir trees prevent rotation. Standoffs add vertical space between the mounting point and the bundle, while offsets add horizontal distance.

**Arrowheads**: Although they require a more precise panel thickness than fir trees, arrowheads deliver an audible click when fully engaged. Wings help stabilise against rocking, and foam seals prevent water and dust ingress.

**Stud/bolt mounting**: Designed for heavy-duty applications, these options perform at higher pull-off forces compared to fir trees and arrowheads. They also prevent abrasion by covering the bolt or stud.

**EdgeClips**: Ideal for routing on existing panel edges, EdgeClips don't require a screw, bolt, or hole for mounting. Panel thickness is a crucial selection criterion, with standard sizes of 1-3 mm and 3-6 mm. Options are available to run the bundle parallel or perpendicular to the edge, above or alongside it.

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#### Orderable at [arrow.com](https://arrow.com)

- [126-03100](#)
- [157-00145](#)
- [157-00158](#)
- [157-00197](#)
- [157-00119](#)
- [157-00120](#)



# Series ULH - very small and powerful Automotive Connector

JST Deutschland GmbH presents a very compact wire-to-board crimp connector, which is mainly used in the automotive sector.



This new connector series offers a reliable connection with 2.0 mm pitch for a current up to 5A (AWG 22). Due to TPA and eCPA, this series can also be used in areas with strong vibrations.

Nevertheless, the connection is very small and compact at 3.5 mm height and 14.1 mm length.

An audible clicking sound and the special versions with electrical CPA mean that incorrect connection can be ruled out by 100 %.

The ULH series is available in gold and tin-plated versions with different key code options (color and housing key).

The header is available as SMT version.

## Specifications

- Voltage rating: 100V AC/DC
- IEC60664-1 / Pollution degree 2
- Current rating: 5A (AWG 22)
- Temp.range: - 40 °C to + 125 °C (incl. temp. rise in applying electrical current)
- Applicable wire: 0.3 / 0.35 mm<sup>2</sup> (AWG 22) / O.D. max. 1.5 mm
- Flammability: UL94V-0
- Halogen-free as per IEC61249-2-21

## Features

- Up to 4 different key codes (color and housing key)
- Locking strength min. 110 N
- TPA & eCPA
- No terminal insert direction => good harness workability
- Round terminals (composed of two parts) with 3 contact points, can be inserted into female housing from any direction

## Standards

- LV214
- USCAR-2

## Circuit Nos.

- Standard: 2, 4, 6, 8 and 10 with SMT side entry header
- Female 90° up: 2, 4, 6, 8 planning: 10
- Female 90° down: planning: 4 & 6
- eCPA type: 4, 6, 8 and 10 planning: 2

## Applications

- Head up display
- LIDAR
- Infotainment display
- DC-DC converter
- LED module front light



Click here or scan QR-Code to download full JST product overview



# Power Pulse Tolerant Chip Resistors

## Downsizing, Space Saving and High Reliability – SG73P-Series

### Applications

- Automotive electronics
- Power supplies
- Industrial electronics
- Measuring instruments
- Motor control units
- Smart meter
- Power conditioner / inverter
- etc.



KOA's SG73P-series has approx. 7 times pulse handling capability compared to standard flat chip resistors.

Due to the special resistance trimming it also allows a higher continuous power rating. This means that existing designs can be 'powered up': An SG73P device can be dropped onto the pads of a similar sized conventional part, thus increasing the power capability without changing the PCB layout. Equally in a new design a smaller SG73 device can be used saving valuable PCB space.

Due to its outstanding pulse load capability this series is suitable for protection of electronic circuits against extreme pulses and surges, for example, in IO lines and gate drive resistors. These devices are ideal for automotive, power control and smart meter applications.

### Features and Benefits

- Outstanding pulse performance
- High power
- Allows e.g. 500 W for 10  $\mu$ s in size 1210
- High component and equipment reliability
- 1  $\Omega$  ... 10 M $\Omega$ ,  $\pm$  0.5 ...  $\pm$  5 %
- T.C.R.:  $\pm$  100 ...  $\pm$  200 ppm/K
- 5 sizes from 0402 ... 1210 inch
- Operating temperatures up to + 155 °C
- EU-RoHS compliant
- AEC-Q200 tested
- Lab Kits are available
- Anti-Sulfuration type (RT) also available

The newest updated datasheets of these Anti-Pulse resistors can always be found on the [supplier website of KOA Corporation](#).

### Orderable at arrow.com

- [SG73P](#): Pulse Withstanding Precision Resistors
- [SG73P-RT](#): Pulse Withstanding Precision Resistors – Anti sulfuration



Click here or scan QR-Code to find more information on arrow.com

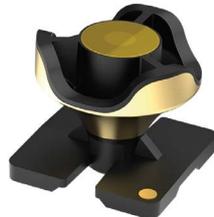


# Revolutionary LDS Antenna for UWB

The innovative UWB Tulip antenna is manufactured using LDS technology and delivers unparalleled accuracy for indoors location

## Applications

- Asset Tracking
- Smart Buildings
- Industrial Automation



In smart buildings and indoor navigation, precision is essential. Ultra-Wideband (UWB) technology has emerged as one of the most accurate solutions for real-time location tracking in complex indoor environments. UWB utilizes short radio pulses transmitted across a broad frequency spectrum, delivering centimeter-level accuracy even in challenging conditions.

This high level of precision makes it ideal for applications such as asset tracking, security, and indoor navigation in smart buildings. The performance of UWB systems, however, is highly dependent on the quality of the antenna transmitting the signal, and that's where innovations like the KYOCERA AVX Tulip Antenna make a difference.

## The Role of the Tulip Antenna in Enhancing UWB Accuracy

Polarization and phase stability of UWB signals are key parameters for the algorithms computing the position of the device. The patented KYOCERA AVX Tulip antenna, manufactured using Laser Direct Structuring (LDS) technology, directly addresses these needs with its advanced design that ensures a constant phase pattern around the antenna, which is essential for the accuracy of the UWB systems.

## Key Features and Advantages

The Tulip antenna operates in the 6.0 – 8.5 GHz frequency range. It offers an omnidirectional radiation pattern with polarization perpendicular to the PCB the antenna is mounted on and it ensures a minimum 360° phase variation and excellent group delay. This enables better system-level services, such as Angle of Arrival (AoA) and Time of Flight (ToF), further maximizing localization precision and ensuring secure communication.

## Global Support and Testing Capabilities

KYOCERA AVX offers extensive global support, with five design centers worldwide equipped with over 25 testing capabilities. Customers can receive full assistance during the pre-certification phase, benefiting from advanced services like AoA optimization. Additionally, KYOCERA AVX offers resources and online tools to assist developers in seamlessly integrating the Tulip antenna into their wireless devices.

## Technical Specifications

- Size: 6.40 x 6.40 x 5.58 mm
- Frequency Range: 6000 – 8500 MHz
- Assembly: SMT (Surface-Mount Technology)

## Benefits of the Tulip Antenna

- Constant phase for UWB at 360°
- On-ground antenna for flexible placement
- SMT assembly for easy integration

## Orderable at Arrow

- 9002305L0-L01K
- 9002305L0-L01-04



Click here or scan QR-Code to download KYOCERA AVX datasheet



# Littelfuse C&K<sup>®</sup> Switches for Elevators

## High-performance switches ideally suited for elevator

Elevators present product designers and engineers with unique challenges. Despite an outward appearance of style and simplicity, elevators contain a high level of mechanical and electrical sophistication. There are two main areas where design engineers need to make decisions around key components such as switches: the elevator panels and the control boards. Most modern elevators utilize momentary signal devices such as tact switches for the panel and call buttons and a variety of other switches such as toggles and DIPs on the control boards. Snap switch and Switchlock are used for door sensing and access control respectively.

C&K product portfolio includes a wide range of tactile, pushbutton, DIP, Snap, Rocker, and Switchlock switches that are ideally suited for the elevator industry. Designers appreciate the flexibility of the indoor/light-duty tactile switches such as KSC 4 TE, KSC 4, KSC 7, etc. with operating cycles that range up to 10 million. Each is available in a variety of configurations and mounting options, as well as IP67 certification.

For outdoor and heavy-duty applications, the ATP series of switches are ideal. These anti-vandal switches are available in both 19mm and 22 mm diameters. The switches use a scratch-resistant actuator, and housings are made of robust stainless steel particularly suitable for use in equipment subjected to harsh conditions or applications that require protection from vandalism. All ATP switches meet the seal protection and impact resistance ratings of IP67 and IK10 and come in a variety of illuminated LED colors and various indicators on the actuator to meet the most specific design requirements.

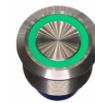
Switches such as toggles switches (ILT series) used to configure various elevator operations (such as changing from

automatic to manual operation mode) and DIP switches (RTE Series) are often used for addressing.

For door sensing Snap Acting switches such as HB Series are used and switch lock (SL Series) switches such as are used for access control.



**ATP19 Series**  
Anti-Vandal Sealed Pushbutton Switches  
[ATP19 | Arrow.com](#)



**ATP22 Series**  
Anti-Vandal Sealed Pushbutton Switch  
[ATP22 | Arrow.com](#)



**HB Series**  
Anti-Vandal Sealed Pushbutton Switch  
[HB | Arrow.com](#)



**ILT Series**  
Illuminated Toggle Switch  
[ILT | Arrow.com](#)



**KSC4 TE Series**  
Tireless Endurance Tactile Switch  
[KSC4 TE | Arrow.com](#)



**RTE Series**  
Low Profile Rotary DIP Switches  
[RTE | Arrow.com](#)



**SL Series**  
Sealed Interlock Door Switches  
[12SL4 | Arrow.com](#)  
[23SL4 | Arrow.com](#)



Click here or scan QR-Code to find more information on [ckswitches.com](#)

# New Industrial Solid-State Relays

Littelfuse solid-state relays engineered for high-frequency operations with cutting-edge technology for long term performance

In industrial and commercial settings, unexpected relay failures can lead to costly downtime and safety hazards. The SRP1 SSRs address this issue with a design focused on reliability and longevity, even in the most challenging environments.

The SRP1 Solid-State Relays incorporate these key benefits:

- **High-Endurance Design:** Provides enhanced operational reliability and extended service life, up to ~750 K life stress cycles, ensuring consistent performance even in demanding conditions. (Up to ~350 K life stress cycles for basic SRP1 relays.)
- **Versatile Performance Range:** With ratings from 10 A to 90 A at low or high voltage and the flexibility of AC or DC control, the SRP1 series caters to a wide array of power requirements. The Zero Voltage & Instantaneous (Random) turn-on options ensure precise control for various applications, enhancing efficiency and compatibility.
- **Integrated Protection & Installation Features:** Incorporates IP20 finger-safe protection and overvoltage protection, facilitating straightforward and secure installation.
- **Compliance with International Standards:** Ensures that the Solid-State Relay (SSR) has undergone rigorous testing, providing enhanced safety and product quality.



Orderable at [arrow.com](https://arrow.com)

- [SRP1 Series](#)



Click here or scan QR-Code to find more information on [littelfuse.com](https://littelfuse.com)



# Discover the new Era of Robotics

Robots are transforming manufacturing - discover connectivity solutions that are enhancing productivity and safety.

Robots are increasingly taking on some of the most repetitive, accident- and error-prone tasks. At the same time, they're affording manufacturers the opportunity to realize newfound productivity, accuracy and safety levels. As robotic systems find their way into more applications across a growing list of industries, so grows the demand for specialized connectors, cable assemblies and components.

## When Every Centimeter Matters

Responding to market demands for miniaturization, robotic manufacturers are increasingly requiring components that will deliver high performance in compact spaces. They require smaller connectors that facilitate high-speed, high-quality power transmission. As a pioneer in Single Pair Ethernet (SPE) technology, Molex has been proven to enhance robotic capabilities and intelligence with miniaturized connectors, wiring, sensors and other technologies, helping to make robots more compact for growing applications.

## Fighting Downtime with Reliability

As robotics add both speed and complexity to factory operations, manufacturers prize solutions that minimize downtime. Molex

supports production demands with ultra-rugged, high-performance easy-to-install industrial automation solutions designed to take on the toughest conditions. Component reliability translates to greater productivity and increased safety by limiting breakdowns and worker exposure to the hazards of performing repairs.

## Leveraging Robotics for Safety

To meet customer expectations while ensuring worker safety and adhere to government safety regulations, manufacturers are turning to robotic systems to take on hazardous functions, freeing humans to focus on higher-level jobs. State-of-the-art automated technologies collaborate and support operators, working side-by-side, to maintain maximum output and efficiency. Molex facilitates seamless integration of robots and humans in modern manufacturing. Molex offers solutions that extend beyond connectors, providing comprehensive communication and control capabilities that integrate with technologies while maintaining consistent quality. Together with Arrow, find your Molex solution for the robotic industry and enhancing factory productivity and safety - scan the QR code or click below to find your solution.



Click here or scan QR-Code to find more information on [arrow.com](https://arrow.com)

# Panasonic's new HE-A Relay

110A carrying capacity and 90A switching capability - the switching solution for high-load energy management applications



Panasonic Industry has introduced the HE-A power relay, designed to meet the demands of modern energy management applications, particularly in solar inverters. With an impressive carrying capacity of 110A and a switching capability of 90A, the HE-A relay offers a robust and reliable solution for various high-load scenarios.

Measuring just 33mm × 38mm × 38.8mm, the HE-A is compact yet powerful. It features a 3.6mm normally open (NO) contact gap and a unique feedback contact mechanism that stands out in the market. This latest offspring of Panasonic's HE-relay family operates with a power requirement of 1.92W, while maintaining a low holding power of ≤310mW, making it energy-efficient. The device can function effectively in a wide temperature range from -40°C to +85°C, ensuring reliability in diverse environmental conditions.

The HE-A relay boasts an impressive electrical life, capable of handling 90A at

277VAC for up to 1,000 operations, and 90A at 60VDC for an extensive 10,000 operations. Additionally, it offers a short circuit capacity of SCCR 5000Arms, enhancing its safety and performance in critical applications. A standout feature is its welding detection function, supported by a mirror contact mechanism that adheres to EN60947-4-1 standards, and is UL/C-UL and VDE approved.

This versatile relay is ideal for a range of applications beyond solar inverters, including electric vehicle (EV) charging systems and industrial automation. Its design reflects Panasonic's commitment to delivering high-quality, adaptable solutions that cater to the evolving needs of the energy management sector.

The HE-A relay exemplifies Panasonic's innovative approach to creating products that provide exceptional performance and reliability across various high-load applications.

Orderable at [arrow.com](https://arrow.com)

• [AHEA\\*\\*\\*\\*](#)



Click here or scan QR-Code for more information HE relays from Panasonic

# New Amorton: Style and Efficiency

Higher efficiency and mirror-like black surface: Panasonic Industry introduces new Amorton indoor solar cell series

## Applications

- Wireless IoT devices
- Wireless sensor nodes
- Indoor asset trackers
- Electronic shelf labels
- Remote controls
- Clocks and small electronic devices



Panasonic Industry has just unveiled its latest innovation in indoor solar cell technology – the Amorton AMG-1401C and AMG-1701C series. These advanced hydrogenated amorphous silicon (a-Si:H) solar cells mark a significant leap forward in efficiency and design, making them ideal for a range of modern applications, from IoT devices to remote controls.

The new Amorton AMG-series stands out with its sleek, mirror-like black surface, showcasing Panasonic's commitment to both aesthetics as well as performance. Additionally, the enhanced production process behind these cells has led to a 20% increase in efficiency compared to the former AM-generation, positioning the AMG-1401C and AMG-1701C among the most efficient indoor amorphous solar cells available today.

The cells are not just efficient but also compact. With external dimensions that barely exceed the active area, these solar cells offer an optimized design that reduces space and material consumption. For

example, the AMG-1401C, with its 41.4 mm x 26.1 mm size, generates up to 74.3  $\mu$ W at 200 lux, making it perfect for energy harvesting in low-light indoor conditions. The voltage range provided by the four-cell configuration of the AMG-1401C PV ensures compatibility with a wide range of power management ICs, enhancing their versatility for various electronic devices.

The AMG-1701C, with its seven-cell configuration, is primarily utilized for discrete circuit approaches. Panasonic's commitment to sustainability is evident in these solar cells, which are tailored for diverse energy-harvesting applications. The combination of high efficiency, sleek design, and cost optimization makes the Amorton AMG-series a compelling choice for businesses seeking reliable and sustainable energy solutions.

## Key Features

- 20% increased efficiency for superior performance in low-light conditions
- Ultra-thin design (1.1 mm) with optimized active area for space-saving integration
- Mirror-like black surface for enhanced aesthetics
- Compatibility with power management ICs and discrete circuits for versatile application

## Orderable at [arrow.com](https://arrow.com)

- [AMG-1401C](#)
- [AMG-1701C](#)

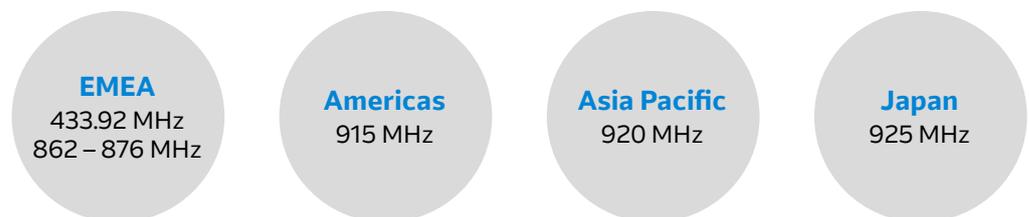


# Three new Sub-1 GHz Filters from Qualcomm Technologies

No compromises anymore: New sub-1 GHz filters in 1.1 mm x 0.9 mm package with low insertion attenuation and coexistence performance

Qualcomm Technologies supports a large product range of SAW filters for the sub-1 GHz frequency area, mainly in package sizes 3 x 3 mm and 1.4 x 1.1 mm.

This large product range covers all regional specific frequency bands



With those filters we serve the typical sub-1 GHz standards like Lora, Sigfox, Zwave, Halow, WiSun, WM-Bus, OMS but also proprietary standards.

### New sub-1 GHz filters without performance compromise

Many of our sub-1 GHz filters support a specific performance focus, e. g. on low insertion loss or high out-of band attenuation (LTE/5G coexistence). The user had to decide which performance is most important and where compromises are acceptable.

Our new sub-1 GHz SAW filters combine all these features (low insertion loss, high out-of band attenuation, LTE/5G coexistence) in a small 1.1 mm 0.9 mm package.

So, engineers don't need to worry about performance focus and package size anymore, they get the best overall performance in the small package now, combined with highest reliability.

### The new SAW filters are:

- B39871**B7589**P810 (fc = 869 MHz, BW = 2 MHz)
- B39871**B7592**P810 (fc = 866.5 MHz, BW = 7 MHz)
- B39921**B7588**P810 (fc = 915 MHz, BW = 26 MHz)

### Performance highlights per filter:

#### B7589:

Low insertion loss and coexistence performance at LTE/5G bands B20 Tx and B8 Tx (see marking in performance table).

#### B7592:

Low insertion loss and high near-by selectivity (see marking in performance table).

#### B7588:

Low insertion loss and coexistence performance at LTE/5G band B26 and B5.

**High reliability to IoT QTP:**

In addition to the high-end performance, the new filters from Qualcomm Technologies support an operating temperature of –40 to 105 °C and are qualified to IoT Qualification Test Procedure (=IoT QTP).

Highlights of the IoT QTP are:

**Temperature cycling**

Test conditions: –40 °C / +105 °C, 1000 cycles according JESD22 Method JA104

**Biased humidity or static humidity**

Test conditions: 85 °C / 85 % r.H., 1000h according to MIL-STD-202 Method 103

**Performance tables:**

			Part numbers	
	Frequency range	LTE bands	B39871B7592P810	B39871B7589P810
Package size [mm x mm]			1.1 x 0.9	1.1 x 0.9
Temperature range for specification			–40 to +105 °C	–40 to +105 °C
Pass band			863 – 870 MHz	868 – 870 MHz
Insertion attenuation [typ./max. dB]	863 ... 870 MHz (B7592) 868 ... 870 MHz (B7589)		2.5 / 2.8	1.8 / 2.5
Amplitude ripple [dB]	868 ... 870 MHz		0.8 / 1.3	0.5 / 1.2
Attenuation [min. / typ. dB]	50 ... 702 MHz	31, 72, 73, 87, 88	59 / 67	42 / 47
	703 ... 748 MHz	28 (Tx)	59 / 67	42 / 46
	758 ... 803 MHz	28 (Rx)	59 / 67	42 / 45
	791 ... 821 MHz	20 (Rx)	59 / 67	41 / 44
	832 ... 862 MHz	20 (Tx)	-	34 / 39
	835 ... 847 MHz	20 (Tx)	55 / 66	38 / 41
	848 ... 853 MHz	20 (Tx)	42 / 47	35 / 41
	848 ... 856 MHz	20 (Tx)	13 / 40	35 / 41
	856 ... 858 MHz	20 (Tx)	-	35 / 41
	848 ... 862 MHz	20 (Tx)	-	29 / 41
	880 ... 883 MHz	B8 (Tx)	25 / 33	27 / 44
	883 ... 892 MHz	B8 (Tx)	25 / 33	46 / 59
	893 ... 915 MHz	B8 (Tx)	48 / 52	45 / 55
	925 ... 960 MHz	B8 (Rx)	48 / 52	45 / 55
	1452 ... 1496 MHz	B32 (Rx only)	45 / 54	44 / 47
	1710 ... 1785 MHz	B3 (Tx)	50 / 58	41 / 50
	1805 ... 1880 MHz	B3 (Rx)	50 / 58	41 / 56
	1920 ... 2010 MHz	B1/B65 (Tx)	40 / 48	41 / 52
	2110 ... 2200 MHz	B1/B65 (Rx)	40 / 48	35 / 48
	2400 ... 2500 MHz	Wifi and BLE	40 / 48	35 / 48
2496 ... 2690 MHz	B41	40 / 48	35 / 44	
2500 ... 2570 MHz	B7 (Tx)	40 / 48	36 / 49	
2620 ... 2690 MHz	B7 (Rx)	40 / 48	35 / 44	

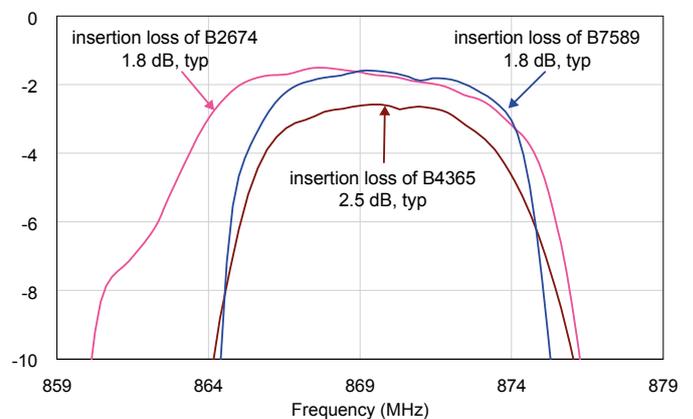
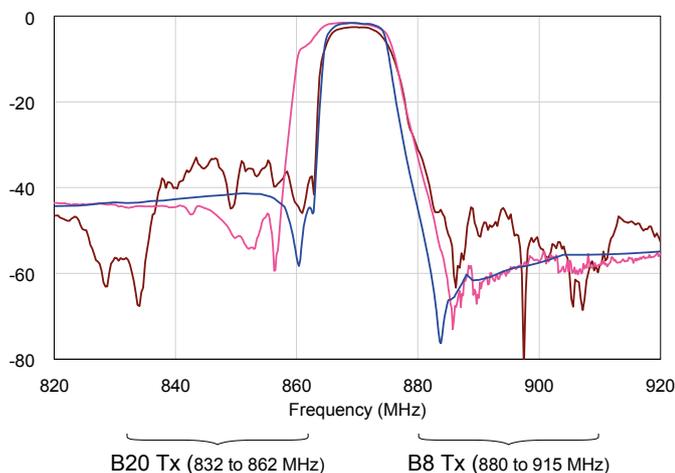
Remark: B8 Rx: 925 to 960 MHz and B8 Tx: 880 to 915 MHz, B20 Rx: 791 to 821 MHz and B20 Tx: 832 to 862 MHz

**Comparison plot:**

**Pink curve:** B39871B2674P810 filter in 1.4 mm x 1.1 mm package optimized for low insertion loss

**Brown curve:** B39871B4365P810 filter in 1.4 mm x 1.1 mm package with coexistence performance (B20 Tx and B8 Tx)

**Blue curve:** B39871B7589P810 with coexistence performance (B20 Tx and B8 Tx) and low insertion loss



Technical data subject to change. Filter specification must be taken from the respective product data sheet.



# TDK PoDL Evaluation Boards

## 10BASE-T1L Single Pair Ethernet



IIoT requires total system integration ensuring connectivity from end devices to the control room in real time data transmission. SPE will simplify networks allowing transmission ranges up to 10 Mbps over distances up to 1000 m, while supplying power simultaneously. TDK offers an extensive line-up of various inductors for 10BASE-T1L applications including common-mode chokes (CMCs), isolation inductors (ICI) and differential mode inductors (DMIs) to support Power over Data Line applications.

TDK presents different 10BASE-T1L plug and play test boards for six different power classes developed to match the following evaluation boards from Analog Devices

- [EVAL-ADIN1100EBZ](#)
- [EVAL-ADIN1110EBZ](#)

and accelerate the design and test stage.

### Features

- Boards specifically designed for different APL and IEEE 802.3cg-2019 Power Class requirements
- Attenuation according to IEEE 802.3cg-2019
- LED functional monitoring
- Single source complete inductors range for 10BASE-T1L
- High reliability components
- High current capabilities
- Low stray capacitance
- RoHS-compatible

### Orderable at arrow.com

- [B82793I\\* \(ICI Series\)](#)
- [B824\\* \(PID Series\)](#)
- [B82793R\\* \(RCM Series\)](#)

Power Class (PC) and ordering codes					
IR, typ (mA) @ 25 °C	IEEE 802.3cg-2019 PC	APL PC	Featured TDK inductors	Evaluation board no.	Ordering code
270	10	A, C	<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PID75-251M</a>	EVB-DLA-001	B82010X1100A002
460	11, 13		<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PID100-251M</a>	EVB-DLA-002	B82010X1100A003
650	11, 13		<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PID120L-251M</a>	EVB-DLA-003	B82010X1100A004
820	12, 13, 14		<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PID120H-251M</a>	EVB-DLA-004	B82010X1100A005
1200	12, 14	31	<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PID150H-251M</a>	EVB-DLA-005	B82010X1100A006
1810	15	4	<a href="#">ICI70CGI-222</a> <a href="#">RCM70CGI-471</a> <a href="#">PIS150H-471M</a>	EVB-DLA-006	B82010X1100A007

1) APL power class 3 is only supported up to 1.2 A



# MULTIGIG RT 3 and MULTIGIG RT 2-S Connectors

Data transfer rates up to 32+ Gb/s; modular design for compatibility; and multipoint contacts meet VITA vibration standards.

## Applications

- Military Electronics/ C4ISR
- Avionics
- Ground Defense
- Missile Defense
- Space

Board-to-board connectors engineered for the world's most demanding and rugged environments:

- Data transfer rates to 32+ Gb/s
- Modular design with backward interoperability
- Ruggedized multipoint contact system meets VITA vibration standards

TE Connectivity's MULTIGIG RT 2-S and MULTIGIG RT 3 next-generation lightweight, rugged, high-speed backplane connectors meet the interface dimensions for VITA 46 VPX connectors.

They are backward compatible with legacy MULTIGIG RT products and offer the same reliable interface. The new contact and wafer designs optimize signal integrity, extending data rates from 16-32+ GB/s.

## Standards and Specifications

- Application Specification: 114-163004 (MULTIGIG RT 2, RT 2-R and MULTIGIG RT 3 Signal Connectors)
- Product Specification: 108-2072 (MULTIGIG RT 3)
- Qualification Test Report: 501-544 (MULTIGIG RT 2R) and 501-134091 (MULTIGIG RT 3)
- Electrical Performance Report: 505-2 (RT 3)
- Backplane Connector Removal: 408-10127 (RT 3)
- Daughtercard Connector Removal: 408-10454 (RT 3)
- Standards and Test Reports: #204690 (VITA 72 VPX Connector Report)

## Key Features

- Fast
  - Enhanced PCB wafer and contact design supports increased bandwidth up to 32+ Gb/s
- Flexible
  - Meets interface requirements for VITA 46 connectors allowing backward compatibility with legacy VPX products
  - Customizable to meet unique application requirements
- Modular
  - Modular design enables numerous configurations by interchanging higher-speed MULTIGIG RT 3 connectors with the legacy MULTIGIG RT 2 and MULTIGIG RT 2-R connectors.
- Rugged
  - Contact design utilizes quad redundant contacts for optimum performance in shock and vibration

## Orderable at [arrow.com](https://arrow.com)

- [MULTIGIG RT 2 connectors](#)
- [MULTIGIG RT 2-R connectors](#)
- [MULTIGIG RT 2-S connectors](#)
- [MULTIGIG RT 3 connectors](#)





# ZF Energy Harvesting for Smart Buildings



Big topics of discussion within the smart building sector include sustainability, energy efficiency, low-cost systems, and convenience through flexibility. Due to the rising connectivity of smart building devices, the importance of wireless technology for data communication increases continuously. One solution to address all these topics is the wireless and battery-free energy harvesting products from ZF.

A tiny and compact generator (20.1 x 7.3 x 14.3 mm) produces enough energy by pressing the button by means of induction, so that it can reliably transmit RF commands to a paired receiver. As a wireless solution it guarantees flexibility and the possibility to retrofit easily according to individual requirements. As a battery-free solution and with a lifetime of 1,000,000 switching cycles, maintenance and disposal requirements of battery replacements can be avoided.

The ZF energy harvesting generator is available as a momentary and a bistable version and must be connected to a designed radio communication PCB adapted to the requirements of the consumer device. Various RF standards

can be used for transmission, such as KNX-RF®, EnOcean®, Bluetooth® Low Energy, right up to customer-specific requirements. The communication range varies between the protocols and frequencies used and achieves up to 30 meters indoors (for 865 MHz / 915 MHz solutions).

This environmentally friendly system has numerous advantages: You have the flexibility to install a switch without cabling in any location you want which means that there's no longer any problem with installing or retrofitting it on design surfaces such as glass, wood, or concrete. When installed, the energy harvesting switch will fulfill its function over the entire length of its service life without any maintenance or battery changes. In contrast to information transmission via cables, the self-powered wireless switch is especially attractive for building services because it's easy to retrofit. It is as flexible as its user and can – together with adapted electronics – be used in light or shutter switches, window handles, door locks or many other building automation applications.

Orderable at [arrow.com](https://arrow.com)

- [AFIG-0007](#)
- [AFIG-0010](#)



Click here or scan QR-Code to find more information on [switches-sensors.zf.com](https://switches-sensors.zf.com)

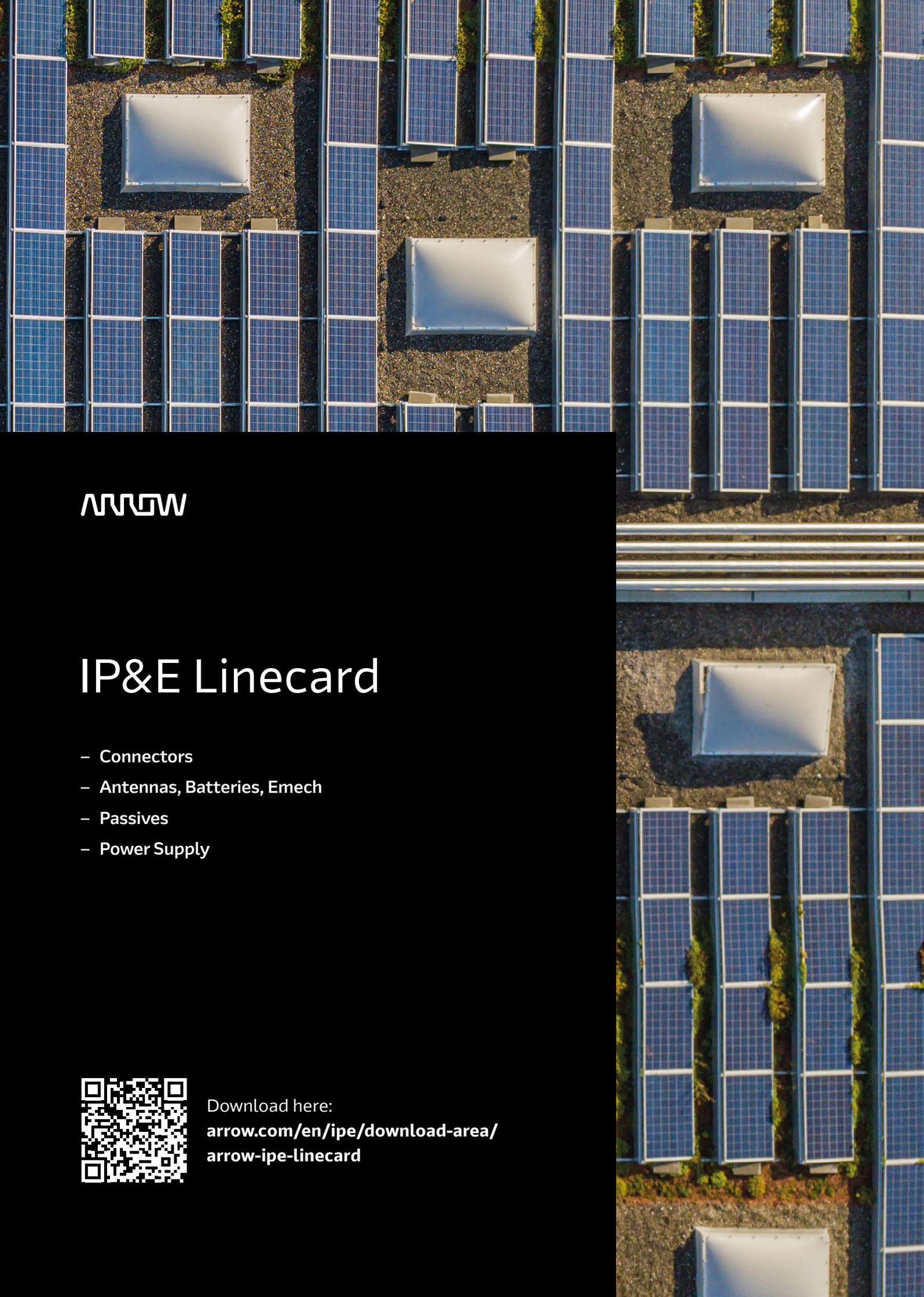


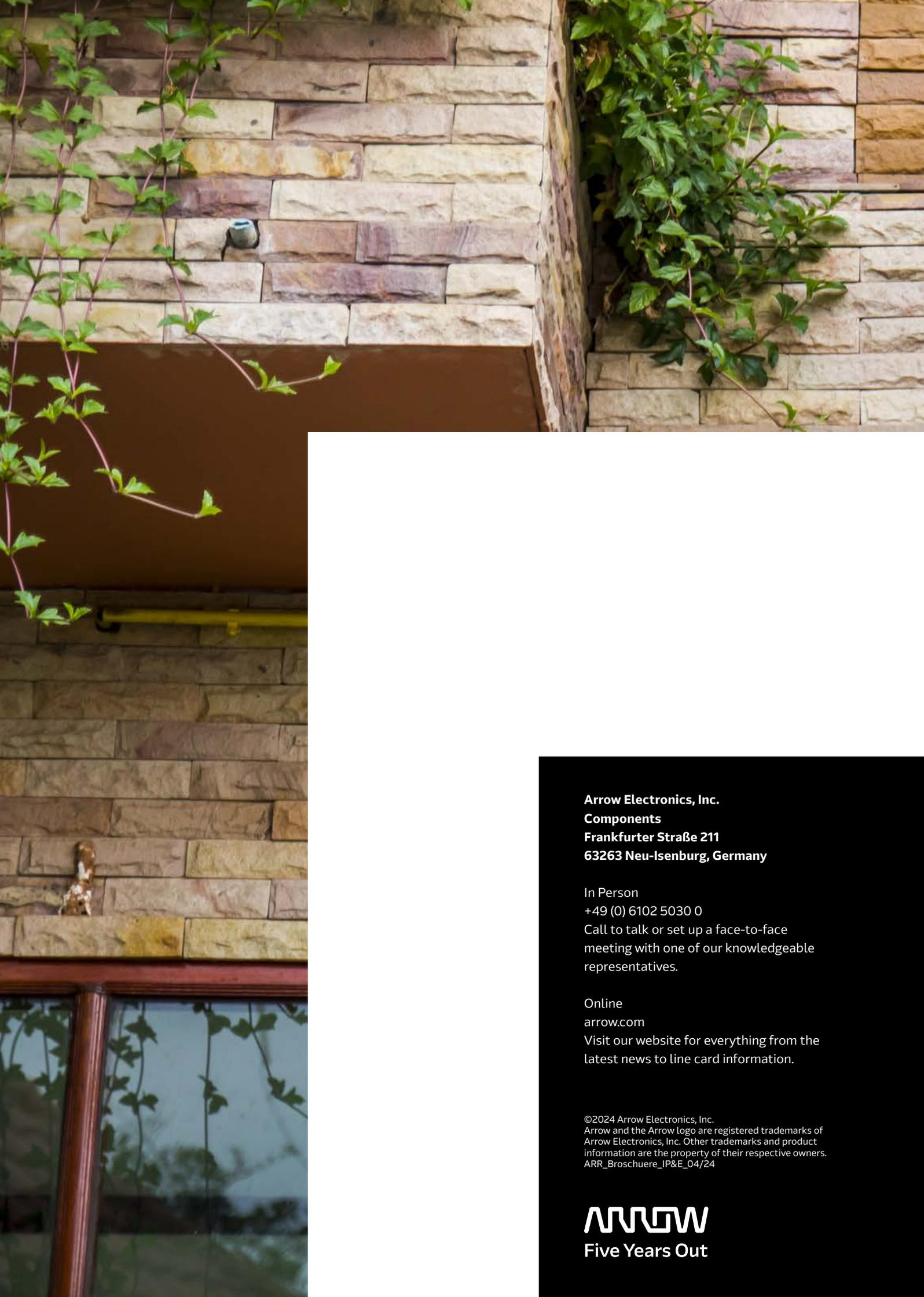
# IP&E Linecard

- Connectors
- Antennas, Batteries, Emech
- Passives
- Power Supply



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**Five Years Out**