ELECTROMECHANICAL COMPONENTS GUIDE
ELECTROMECHANICAL COMPONENTS

Product areas of well-known history, with great developments and enormous innovation leaps. Today’s and future applications need speedy and reliable data, signal and power transfer and consistent energy sources.

Continuous adaptation to innovations and market needs put this product division in leading positions in the field of Interconnect, Electromechanics and Batteries. Explore our resources to stay up to date with its trends, technologies and technical expertise.

Rutronik is one of the world’s leading broadline distributors with a product portfolio including semiconductors, passive and electromechanical components as well as embedded boards, storage & displays, and wireless products. On a permanent basis, 28 billion components are available for Rutronik’s customers. For five decades, the independent family-owned company has been committed to sustainable growth with a focus on high-growth future markets.

On the Podium of the “Distributor of the Year” Awards
In the 2023 election of the B2B trade magazine “Elektronik”, Rutronik was once again able to convince the readers: In its 50th anniversary year, the company is particularly pleased to be ranked first as Distributor of the Year in the range of “Volume Distributors”. Rutronik was able to achieve even more outstanding results in the categories “Supply Chain Performance”, “Digitalization” and “Sustainability”. The magazine’s editors call the annual reader’s choice “an established indicator of distributor success”.

According to the magazine, 2022 was once again a special year for distribution, at least when sales are considered. As a result of the changes in the industry, distributors now offer more than just logistics and delivery processing, with their portfolio including consulting, maintenance, and other additional services. This is why in the readers’ choice awards for “Distributor of the Year”, the distributors were also judged based on different categories.
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#### Franchise Situation

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*1 Amphenol CS in Asia too  "2 Molex dedicated countries*
Electric Vehicle, Circular and PCB Connectors

**SurLok Plus Connectors**
- DC current rating up to 500 A
- DC voltage up to 1000 V (@105°C), 1500 V optional (@125°C)
- Operating temperature range -40°C to +105°C (+125°C optional)
- Single wire connection, 90° and 180° plug orientation
- Field installable plug, molded cable assembly
- 3.6 mm to 14 mm contact diameter, 16 to 85 mm² cable diameter
- Different color coding (available in black, red and orange color)
- Quick lock and press-to-release design, HVIL optional
- Waterproof - IP67 mated, IP2X unmated (IP6K9K optional)
- EMI shielding (optional), 360° rotating plug optional

**Minitek® Per Connectors**
- Wire-to-wire and wire-to-board configurations
- 2 to 24 circuits for dual row and 2 to 12 circuits for single row
- Current rating up to 5 A per contact
- Current rating up to 9 A per contact
- Voltage Rating 600 Vrms
- Large variety of receptacles and cable assemblies available
- Ruggedized design for tough location
- Audible and tactile feedback
- Operating temperature range -40°C to +105°C
- Blind mating interface (BMI) option
- Glow wire compliant option
- Terminal Position Assurance (TPA) products

**Powerlok™ HVIL Connectors**
- DC voltage rating up to 1000 V
- DC current rating from 70 to 500 A and 20 to 750 A
- Operating temperature range -40°C to +125°C
- 90° and 180° plug
- Automatic secondary lock
- Different color coding
- Waterproof - IP67/IP69K mated, IP2X unmated
- EMI shielding
- HVIL = high-voltage interlock

**Excel|mante CC - AC Couplers for EV Side**
- Compliant with IEC 62196-2 standard 2-II a
- Compliant with IEC 61851-1
- No-of-contact 4 position for power, 1 position for PE, 2 position for signal
- Current rating 32 A for power
- Voltage rating up to 1000 VDC
- Operating temperature range -40 to +125°C
- Waterproof - IP68/IP69K mated, IP2X unmated
- Waterproof - IP65 mated
- More than 10,000 mating cycles
- Protection cap available
- Automatic secondary lock
- Insulation resistance >100MΩ (DC 500 V)

**X-Lok Push Lock Connectors**
- Push and lock design
- Various sealing caps
- Large variety of receptacles and cable assemblies available
- Ruggedized design for tough location
- Audible and tactile feedback
- Waterproof IP68 mated
- Operating temperature range -40°C to +105°C
- Up to 1,000 mating cycles
- Easy-grip design

**USB-C Connectors & Card Holders**

**USB-C Connectors**
- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed)
- Supports up to 5 A current
- Plug and receptacle
- Waterproof - IP68 mated, IPX2 unmated
- 16 circuits version (480 Mbps data rates), 24 circuits version
- Up to 10,000 mating cycles
- Enhanced side wall of middle plate stabilizes contact performance

**Memory Card Holders**
- Several types and sizes
- SIM Card (mini, micro, nano)
- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection

**SD, microSD, SD, microSD Express, SD Express**
- Various card types
- High reliability
- USB4, USB4 Gen 4 speed
- Hinged, push-push, push-pull
- UHS-I, UHS-II, SD express
- Space-saving design, (ultra)-thin card
- High reliability, w/ and w/o detect function
**Automotive Connectors**

**MA01 Series – Floating Connector for Automotive**
- 0.635 mm pitch
- Floating (X,Y ±0.8 mm movable)
- Integrated absorbing misalignment
- High contact reliability
- Current rating 0.5 A, voltage rating 50 VAC
- Operating temperature range up to 125°C
- Mating guide alignment
- Dual contact structure high contact reliability
- Low removable force rolled surface connection
- PCIe-Gen3 compliance high speed transmission (equivalent to 8.0 Gbps)
- Integrated absorbing misalignment
- High contact reliability
- Current rating 0.5 A, voltage rating 50 VAC
- Operating temperature range up to 125°C
- Mating guide alignment
- Dual contact structure high contact reliability
- Low removable force rolled surface connection
- PCIe-Gen3 compliance high speed transmission (equivalent to 8.0 Gbps)
- Easy-to-to use/ automation assembling

**KW1/KW02 Series – CHAdeMO compatible EV Charging Plug**
- Compatible with CHAdeMO, V2H Guideline 2.1
- No of contacts 2 position for power, 8 position
- Current rating 125 A for power
- Voltage rating 500 VDC
- Operating temperature range -30°C to +50°C
- Durable and highly weather resistant
- More than 10,000 mating cycles
- Intuitive and easy operability
- An emergency cover enables maintenance on-site if necessary
- CE certified and UL recognized

**KW04 Series – Type-2 compatible Charging Plug**
- Compatible with Type-2 CCS electric vehicle fast charging standard
- No of contacts 2 position for power, 1 position for PE, 2 position for signal
- Current rating 150 A / 200 A for power
- Voltage rating 1000 VDC
- Products with rated currents of 150 + 200 A are available
- Operating temperature range -30°C to +50°C
- Waterproof protection of live parts inside the Connector
- 10,000 mating cycles
- Temperature sensor available
- Structure with replaceable engagement area
- Insulation resistance 5 mega ohm min. (1,000 V DC apply)

**MX06 Series – Automotive Cable-to-Cable/ Cable-to-PCB Connectors**
- 0.64 mm tab size
- Pitch 2.54 mm
- 1 row with 2, 3, 4, 6 ways - 2 rows under development
- Waterproof - IPX7 mated
- Operating temperature range -40°C to +125°C
- Wide wire range 0.13 to 1.0 mm²
- Temperature sensor available
- Robust coding key
- Pre-lock front TPA/Secured Kojiri prevention
- Mechanical lock mechanism prevents incomplete mating with a click feeling
- Inline, RA and 180° PCB, panel mount, clip stawage

**MX44 Series Waterproof Board-to-Cable Connectors**
- Compact Waterproof Automotive Connector
- Operating temperature range -40°C to +125°C
- 3.5 mm pitch, 1 row, 2, 4 and 6 positions 3 Amps
- Waterproof min. 98 kPa (initial)
- Vibration proof 30 G (50 to 1,000 Hz) each pole/ 3 hours
- High volume in automotive and metering business
- Each contact separately waterproof
- Socket contact is a box type which is strong against external force

**DX07 USB-C Connectors**
- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed), else Gen 3
- Supports up to 5 A current
- Plugs, receptacles and harnesses
- Waterproof receptacle - IPX7 or higher mated
- 16 circuits version (480 Mbps data rates), 24 circuits version
- Up to 10,000 mating cycles
- 14 pins single-row SMT type (enough to fulfil USB 2.0)
- 24 pins dual-row SMT type saves space on the PCB
- pure and hybrid mounting type available

**SF15 / ST19 Memory Card Holders**
- SD (Full-Size), microSD, 3-in-2 type
- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection
- Small footprint, low height, low profile, w/o and w/ detect switch

**USB-C Connectors & Card Holders**

**KW01/KW02 Series – CHAdeMO compatible EV Charging Plug**
- Compatible with CHAdeMO, V2H Guideline 2.1
- No of contacts 2 position for power, 8 position
- Current rating 125 A for power
- Voltage rating 500 VDC
- Operating temperature range -30°C to +50°C
- Durable and highly weather resistant
- More than 10,000 mating cycles
- Intuitive and easy operability
- An emergency cover enables maintenance on-site if necessary
- CE certified and UL recognized

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- SD (Full-Size), microSD, 3-in-2 type
- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection
- Small footprint, low height, low profile, w/o and w/ detect switch
PCB Connectors and Antennas

**DuraClik 2.00 mm Wire-to-Board Connector System**
- Voltage rating up to 125 V
- Current rating up to 3.0 A
- Contact retention to housing up to 50 N (ISL Version)
- Operating temperature range: -40°C to +125°C
- 2.00 mm pitch
- Compatible with JST -> LV214
- Secure PSB retention for anti-vibration resistance (100 N per 2 nails)
- Inner positive lock
- Terminal position assurance (TPA)
- Independent secondary lock

**Easy-On FFC FPC Connectors 0.50/1.00 mm double contact**
- Voltage rating up to 50 V
- Current rating up to 0.5 A
- Wide range of circuit sizes 4-80
- Operating temperature range: -40°C to +125°C
- 0.5 mm/1.00 mm pitch
- Molex series 522xx, 524xx, 525xx, 526xx, 527xx, 541xx
- Cable locking
- Ultra-low-profile feature
- Ensures a clean mating interface and provides superior contact reliability

**5G External Antennas**
- Frequency 698-960MHz, 1.71-2.69GHz, 698-960MHz, 4.2GHz, 4.4-5GHz
- RF Power (Watt) 2.0
- Impedance (Ohms) 50
- Size (mm): 171.50 by 19.40 (straight), 151.00 by 19.40 (folded)
- High efficiency and peak gain for all major cellular bands
- Antenna Connectors in straight and folded modes
- Antenna Connectors with SMA-J and RP-SMA-J mounting options
- Multi-protocol solution that supports GSM, CDMA, UMTS, LTE, 5G NR
- Hinge joint allows 90° rotation on the vertical plane
- SMA-J Connector allows 180° rotation on the horizontal plane

**Micro-Fit Connector System**
- Wire-to-wire, wire-to-board configurations
- Single and dual-row
- Voltage rating 600 V
- Current rating up to 12.5 A per contact max
- Pitch 3.00 mm
- 2 to 24 loaded circuits; single and dual row
- Micro-Fit blind mate interface (BMI) system available
- Operating temperature range: -40°C to +105°C
- Compact pitch

**Micro-Fit TPA Plug and Receptacles**
- Single-row, wire-to-wire and wire-to-board configurations
- 2 to 7 circuits, also available for 8 to 12 circuits
- Max. voltage rating 600 V
- Current rating from 5 to 10 A
- Terminal Position Assurance with integrated secondary lock
- Compatible with all existing Micro-Fit 3.0 headers and plugs
- Reduces assembly errors that result in terminal back-outs
- Fully isolated contacts on each side of the interface

**Micro-Fit D-Sub Connectors**
- Power and Signal
- Standard / High-Density / Mixed Layout / Backshells / Hoods
- Current 5.0, 7.5, 40.0 A
- Waterproof - IP67 mated, IP20 unmated
- Coaxial, High Power, High Voltage contacts
- Machined, Pneumatic, Stamped Crimp contacts
- Still a reliable solution in a broad range of applications and various industries
- Time-tested for signal transmission, communications, power distribution
- Readily available in a wide variety of materials and plating combinations

**SD, microSD, Combo Sockets**
- Push-push, push-pull, eject, hinged
- UHS I and UHS II compatible
- Low-profile design, compact size and low-profile height

**USB-C Connectors & Card Holders**

**USB-C Connectors**
- Reversible plug - insertion in the right side up or upside down orientation
- USB4 receptacle up to 40 Gbps (USB4 Gen 4 speed), else Gen 3
- Supports up to 5 A current
- Plug and receptacle
- Waterproof receptacle - IP67 up to IP*8 mated
- 16 circuits version (480 Mbps data rates), 6 circuits version (power only)
- Up to 10,000 mating cycles
- Mid-plate “tongue” design - helps ensure high reliability

**USB-C Connectors & Card Holders**
- Several types and sizes
- SIM Card (mini, micro, nano)
- Correct orientation of SIM card
- Card polarization feature
- Lock structure and card detection

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Committed to excellence

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# Electromechanical Relays

## Power Relays

**Applications**
- Fans (motors)
- Door motors
- Contact loads
- Pump motors
- Heater element
- Lighting applications
- Smart meter
- White goods
- EV-Charging

**Focus Series**
- Hongfa: HF118F, HF115F
- OMRON: G2RL2, G5Q

## Latching-Relays

A latching electromechanical relay maintains its position after it gets actuated. It remains in its last position when the drive is removed.

**Focus Series**
- Hongfa: HF115L
- OMRON: G6B

## Automotive Relays

**Applications**
- Automotive body control
- Motor control
- Security control
- Driving information collection
- Convenience

## Signal Relays

**Features**
- Compact and light weight
- SMT and THT types available
- Low power consumption
- Available in different voltage and current ranges
- Everwhere where detection of mechanical movements is needed

**Focus Series**
- Hongfa: HF4D
- OMRON: G6K

## Our Linecard – Electromechanical Relays

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<tr>
<th>Supplier</th>
<th>Finder</th>
<th>Fujitsu</th>
<th>Hongfa</th>
<th>Nexum</th>
<th>NF-Forward</th>
<th>Omron</th>
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Reed and MOSFET Relays

MOSFET -Relays

Features & Benefits
- Small size
- High current switching
- Low CoR
- High speed switching
- Low power consumption
- High isolation input/output

Applications
- Communication equipment
- Security equipment
- Test and measurement equipment
- Industrial equipment
- Gambling machine
- Ticket machine

Focus Series
- Omron: G3VM
- Littelfuse: CPC1017

Reed-Contacts

Features & Benefits
- Free from contamination
- Safe to use in harsh industrial and explosive environments
- Hermetically sealed
- Are immune to electrostatic discharge (ESD)

Applications
- Proximity sensing
- Security alarm sensor
- Level sensor
- Flow sensor
- Pulse counter
- Fasten seatbelt

Focus Series
- Comus/Coto: RI80SMD

RedRock – Magnetic Sensor Based on TMR Technology

Features
- 0.3 to 4 V op. voltage
- Zero hysteresis
- 1.5 mA low current
- Omnipolar sensitivity
- Continuous operation
- Different polarities

Applications
- Proximity detection
- Rotary sensing
- Fluid level detection
- Door/Lid closure detection
- Portable medical devices
- Motor controllers
- Consumer electronics

Timer Relays

Applications
- Lighting Control
- Air Conditioner
- HVAC systems
- Automotive
- Industrial

RedRock – Magnetic Sensor Based on TMR Technology

Timer Relays

Applications
- Lighting Control
- Air Conditioner
- HVAC systems
- Automotive
- Industrial

Electric Vehicle Charging Products

PSR-Series
- EV-charging: Mode 4
- Voltage range: AC 550-1,300 V / DC 500-1,000 V
- Ampere range: 40-2,000 A

HFE82V-150C-Series
- EV-charging: Mode 4
- Coil voltage: 12 / 24 VDC
- Max. switching V/C: 750 VDC/150 A
- Operating temperature: -40 to +85°C

JLLS-Series
- EV-charging: Mode 2 / 3 / 4
- Voltage range: AC 300 V / DC 500-1,000 V
- Ampere range: 1-1,200 A

FTR-K1/K5-Series
- EV-charging mode: 1/3/4, AC-side circuit
- Coil voltage: 12 / 24 V
- Max. switch. Voltage / Carry Current (NO side): 277VAC/20A (FTR-K1) / 277VAC/40A (FTR-K5)
- Operating temperature: -40 to +105°C
- RTIII available

G6B-Series
- EV-charging: OBC
- Voltage range: 380 VAC
- Ampere range: 5 A

HVC500B-24S-Series
- EV-charging: Mode 4
- Voltage range: DC 900 V
- Ampere range: 500 A

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Suppliers

Our Linecard – Fuses

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<th>Suppliers</th>
<th>Eaton</th>
<th>Littelfuse</th>
<th>Schurter</th>
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<td>Subminiature Fuses</td>
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<td>SMD Fuses</td>
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<td>Resettable Fuses</td>
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<td>Fuseholders</td>
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<td>High Voltage Fuses</td>
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</tbody>
</table>

SMD Fuses

Features & Benefits
- Numerous current ratings
- High rated voltages
- High breaking capacity
- Super-quick-acting (FF), quick-acting (F) and time-lag (T) versions
- Precise, low power dissipation, resistant to vibrations and pulses

Applications
- Secondary protection on SMD PCBs
- Industrial electronics
- Smart meters
- Battery protection
- Sensors
- Lighting
- Mobile devices
- Semiconductor protection

Focus Series
- Schurter: UMT260
- Littelfuse: 154 and 454 series

Surface Mount PPTC Devices

Features and Benefits
- Size from 0603 - 3729
- Hold Current 0.04 - 7 A
- Max Voltage 6 - 250 V
- Max Fault Current 3 - 100 A
- LowRho Version for 0402-2920
- Also with AECQ

Applications
- Automotive
- Telecommunication
- Industrial / consumer
- General electronics
- Computers & peripherals
- Game console port protection

Radial Ledared PPTC Devices

Features and Benefits
- Hold Current 0.05-15 A
- Max Voltage 6 - 600 V
- Max Fault Current 3 - 100 A

Applications
- Automotive
- Telecommunication
- Industrial / consumer
- General electronics
- Computers & peripherals
- Game console port protection

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Our Linecard – Switches

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>Diptronics</th>
<th>C&amp;K / Littelfuse</th>
<th>Panasonic</th>
<th>Schurter</th>
<th>Omron</th>
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<tbody>
<tr>
<td>Tact Switches</td>
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<td>DIP Switches</td>
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<td>Slide Switches</td>
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<td>Pushbutton Switches</td>
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<td>Encoder Switches</td>
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<td>Toggle Switches</td>
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<td>Navigation Switches</td>
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<td>Industrial Switches</td>
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<td>Rocker Switches</td>
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<td>Detection Switches</td>
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<td>Micro/Snap-acting Switches</td>
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<tr>
<td>Rubber, Membrane, Steel Keypads</td>
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</tbody>
</table>

Franchise Situation
- Europe, Asia: Global
- Global: Europe, Europe, Europe, Asia
- Headquarters: USA, TWN, GER, JPN, JPN, CHE
- Main Production Facilities: FRA, CHN, VNM, CHN, VNM, CHN, CHN, JPN, MY, CHN, JPN, MY, CHE

DIP Switches

Features & Benefits
- Both ON/OF position applicable for soldering process
- Gold contact for high reliability
- Low profile SMD half pitch
- Positions 01-10, 12
- Actuator optional (raised/recessed)

Focus Series
- Diptronics: DNR, NDS
- C&K: SDA, RTE

Applications
- Cloud devices
- IT industry
- Industrial control field
- Security

Pushbuttons

Features & Benefits
- Available in SPST, SPDT, DPST and DPDT functions
- Momentary or lock version
- Anti-Vandal and sealed IP67 versions available for harsh environments
- Illuminated & non-illuminated

Focus Series
- C&K: K12, D6
- Schurter: MSM

Applications
- Elevator
- Alarm, safety & security systems
- Automotive, motorcycles
- Offroad transportation controls
Suppliers

Our Linecard – Thermomanagement

<table>
<thead>
<tr>
<th>Suppliers</th>
<th>ADDA</th>
<th>ASSMANN WSW</th>
<th>DELTA</th>
<th>INNO TAPE</th>
<th>Jamicon</th>
<th>Mechatronics</th>
</tr>
</thead>
</table>

**Franchise Situation**
- Europe (without Italy)
- Global
- Europe
- Global
- Europe
- Europe
- USA

**Headquarters**
- TWN
- GER
- TWN
- GER
- TWN
- GER

**Main Production Facilities**
- Asia
- SVK / CHN
- Asia
- GER
- GER
- Asia
- USA

**AC Fans**
- ■

**DC Fans**
- ■
  - ■

**EC Fans**
- ■

**CPU Cooler**
- ■

**Blowers**
- ■
  - ■

**Heatinks**
- ■

**Heat Contacting Foils**
- ■

**Heatpipes**
- ■

**Housing**
- ■

Fans – Standard and Customized Solutions

**DC - FAN**

**Features & Benefits**
- Standard sizes 25mm > 200mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

**Attachable Heatsinks**
- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication

**Attachable Heatsinks**
- Medical device

**Blower**

**Features & Benefits**
- Standard sizes 80mm > 172mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time
- With Bracket possible

**Attachable Heatsinks**
- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication

**EC - FAN**

**Features & Benefits**
- Standard sizes 120mm > 910mm
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

**Attachable Heatsinks**
- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication

**Attachable Heatsinks**
- Refrigerator

**Blower**

**Features & Benefits**
- Standard sizes 50mm > 97mm and 280mm > 630mm for EC Blower
- Customized requirements like connector, shrink tube, wire lengths, etc.
- Customized samples available in short time

**Attachable Heatsinks**
- Welding machine
- Frequency converter
- Inverter
- Rectifier
- Control cabinet
- Drive engineering
- Cooling system
- Ticketing machine
- Telecommunication
Heatsinks
Every electronic component generates heat, and with increasing power the heat development increases. If the heat is not sufficiently dissipated, this can lead to overheating of the device or even a complete system failure. Heat sinks take over the thermal management of electronic devices.

Standard Heatsinks
- With different mounting solutions
- With several finishing
- Wide range of thermal resistance
- Several accessories available

Customized Heatsinks
- Based on customers requirement
- With special mounting solutions
- With CNC machined
- Open sizes

Stamped CPU Heatsinks
For PGA (pin grid array), BGA (ball grid array) and other high power components. The new development series is a combination of cross-cut and finger-shaped heatsinks. Optimally used to mount the heat sink on the PCB via ‘Push Pins’. The advantage of this new heatsink design improves the air convection.

Optional
- Alternative material thickness
- Modifications of all dimensions & perforations
- Special surface treatments
- Customer made heatsink attachment methods

Cases / Housing
To effectively protect electronic components and printed circuit boards from external influences, Fischer Elektronik offers a wide range of housings. These include combination and system enclosures as well as small aluminium enclosures and enclosures with special heat dissipation properties. The range also includes accessories for enclosure technology.

Customized Solutions
- Foil size prepared based on customers requirement
- Multilayer
- Free in forms
- Samples in short time

Heat Foils
In order to avoid temperature-related failures of electronic components or systems, it is important to ensure optimal thermal management. Electronic semiconductors only remain functional for a long time if they are operated in the right temperature. In addition to the appropriate heat sink, the perfect heat conducting material also plays a key role.

Thermal Conductive Material
The conductive material is responsible for promoting the thermal conductivity of the thermal path by reducing the heat transfer resistance.
- Silicone rubber insulating material for semiconductors
- Thermally conductive foil made of siliconelastomer
- Silicone-free thermal conductive foils
- High thermoconducting graphite foils
- Thermal conductive foil one-sided adhesive heat conductive foam and gel foils

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Committed to excellence
Batteries

3.7V Lithium Ion Cells (rechargeable)
- Broad range of 18650 and 21700 cells
- High Power Cells (NMC/NCA)
- Up to 40A continuous Discharge
- Up to 4500 mAh capacity
- Energy Cells (NMC/NCA)
- Long cycle life and fast charge
- High densities (Wh/kg)
- Up to 5500 mAh

3.7V Lithium Ion Cells (Primary)
- LFP cylindrical cells and modules
- Up to 4500 mAh with up to 152 Wh/kg
- Long life & High safety
- Modules for ESS and EV applications
- ESS: up to 8000 cycles
- EV: Density > 180 Wh/kg / 8000 cycles

Applications
- Medical devices
- Gardening tools
- Construction tools
- Power tools
- E-Bikes
- Pedelecs
- Escoters

Dangerous Goods Service and Expertise

Due to extremely reacting Lithium
ALL LITHIUM BATTERIES ARE DANGEROUS GOODS!

Therefore
- Regularly trained personnel
- All applicable documentation available on request
- ISO Certificates from manufactured battery type
- Product Specifications and Handling Guidelines
- UN38.3. Test Reports / Test Summaries
- Material Safety Data Sheets
- Strict adherence to DG packaging and transportation rules
- Certified dangerous goods warehouse
- Certified and audited logistic partners

Our Linecard – Batteries

<table>
<thead>
<tr>
<th>Company</th>
<th>Headquarters</th>
<th>Main Production Facilities</th>
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<tbody>
<tr>
<td>Adam Tech</td>
<td>USA</td>
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<td>Tenpower</td>
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<td>CHN, CHN, JPN, JPN, JPN</td>
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Additional technologies (e.g. Silver oxide, NiMH, Lead Acid) are available upon request.

1. Only Battery Packs incl. PCM, Side Agreement required.
2. Also available: Secondary Prismatic Cells.
3. Only Bare Cylindrical Cells for Pack Assembling Companies.

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Batteries

3V coin cells CR range (non-rechargeable)
- Long-term reliability
- Low self-discharge rate at 20°C just 1% per year
- Good pulse capability
- Stable voltage level during discharge
- Temperature range -30°C up to +70°C

Applications
- Vending machines
- Tracking & RFID
- Wearables
- Price tags etc.
- Remote Keyless Entry (RKE)
- Medical equipment
- Car keys
- Real Time Clock (RTC)

3V coin cells BR/BR-A range (non-rechargeable)
- Self discharge rate at 20°C just 0.5-1% per year
- Wide operating temperature range -40°C up to +125°C
- 22+ years of experience in production
- Outstanding long-term reliability

Applications
- Tire Pressure Monitoring Systems (TPMS)
- Electronic Toll Collection (ETC)
- Heat cost allocators, etc.
- Tracking & RFID
- Memory back-up
- Meters etc.

3V cylindrical batteries BR/CR range (non-rechargeable)
- 38+ years of experience in production
- Superior long-term reliability
- Self-discharge rate at 20°C is just 0.5% per year
- Operating temperature -40°C up to +85°C
- Stable impedance throughout battery life
- High current discharge performance

Applications
- Smoke detectors
- Car alarm
- Water & gas meters
- Heat cost allocators
- Tracking & RFID
- Medical equipment
- Security devices and systems
- Automotive

3.6V cylindrical batteries LS/LSH range (non-rechargeable)
- High energy, low power applications
- 3.6V optimized for legacy electronics
- Long shelf life
- High energy densities
- High level of safety
- High and stable operating voltage

Applications
- Smart metering
- Asset tracking
- Industrial Internet of Things (IIoT)
- Medical devices
- Security systems
- E-call
- Electronic Toll Collection (ETC)

Battery Holders

Huge variety of battery holders

Coin, horizontal
Coin, retainer
Coin, contact
Cylinder, holder
Cylinder, contact
Cylinder, clip
Find your regional Rutronik contact!

info@rutronik.com | www.rutronik.com