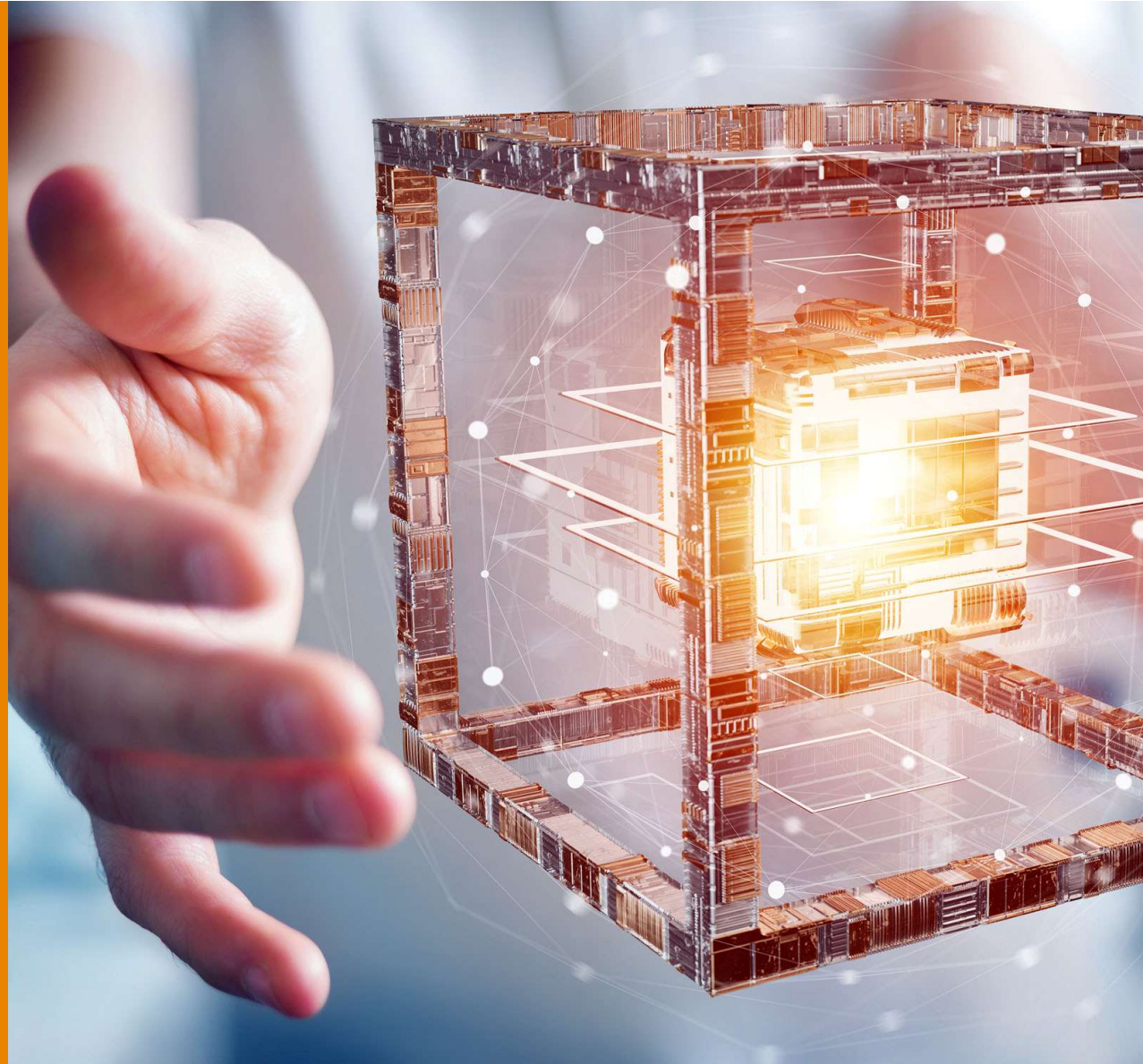


Introduction TE Connectivity KISSLING Products

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Field Application Engineer
October 2022

EVERY CONNECTION COUNTS



SWITCHES

- IP65 to IP67 (**IP6K9K**) sealing
- Optional integrated control functions
- Optional integrated electronic controls
- **Robust** design
- Long (extended) life



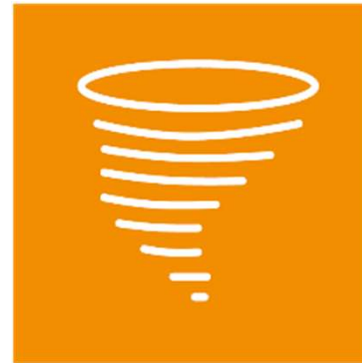
CONTACTORS

- From 50A ... to 1000A
- DC power switching under load
- **12V – 800VDC** continuous DC power with 100% duty cycle
- Broad product line
 - monostable
 - bi-stable
 - with/ without electronics
 - **without gas filling**



OUR SOLUTIONS

- Robustness and durability
- Our products are resistant to:

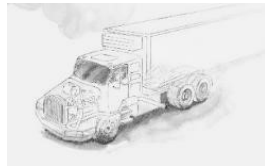


INDUSTRIES

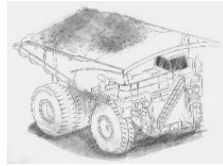
Bus



Truck



Off-Highway



Aviation



Military



Marine



Power distribution

Battery – Management

E-Mobility



Industry Automation



Motor applications

Safety switches

Rail



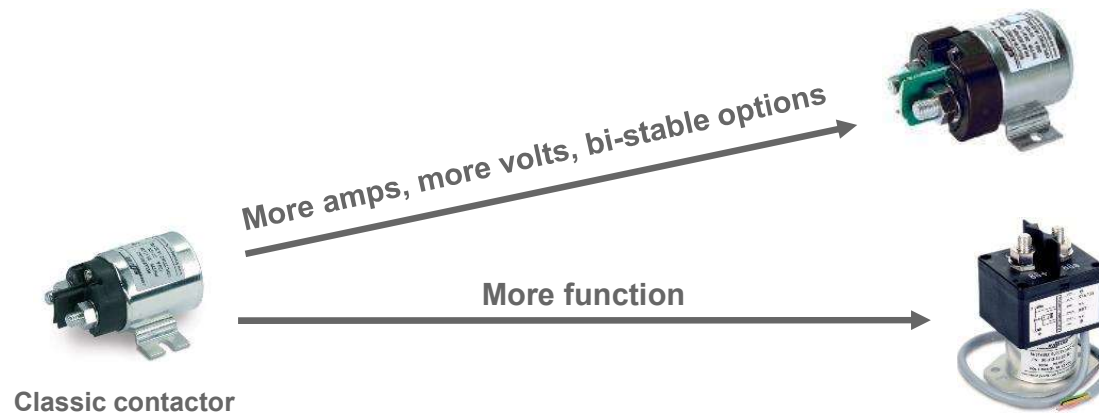
Control panels & switches

RELAY & CONTACTOR



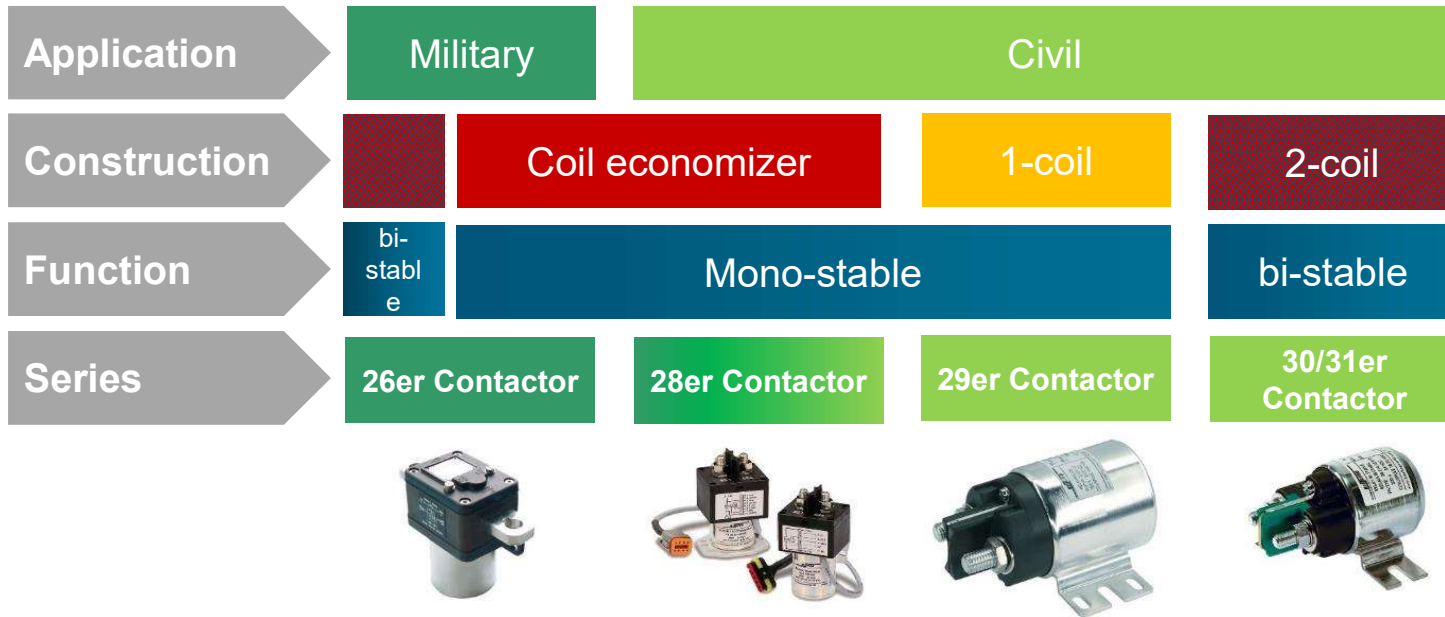
RELAY & CONTACTOR

1. Low-priced standard components will experience increasing price pressure
 - Not just the automotive industry
 - Higher performance range is the important success factor
2. Shaping the trend: shifting from **standard** to **intelligent** products



RELAY & CONTACTOR

The classification and typing (series) of KISSLING Contactors take place according to the technical application, technical design/ concept and function. Special series or series-enhancing solutions are also available, e.g. high-voltage solutions, integration of electronics (smart Contactor) and special applications.



* The illustration shows the general guiding principle, exceptions are possible

SWITCHES

Power – Switches

Battery disconnectors (series 35)
Safety switch (series 24)

Control – Switches

Rotary switch (series DS)
Push Button switch (series TS)
Toggle switch (series 07/08/09)
Micro switch
Plunger switch (series 44)
Inductive proximity switch (series L)



BATTERY DISCONNECT

Technical Data

- Manually operated isolating switch
- 1 or 2 pole versions available
- Operating conditions -40°C to +85°C
- Continuous current 200A – 1.000A (depending on the version)
- Voltages 12V – 450V
- Suitable for HV applications up to 1500V

Customer advantages

- Battery disconnect under load (unlimited)
- Meets the highest sealing requirements
- High resistance to mechanical influences and vibrations
- Variable or scalable mounting options
- Safety in the vehicle service by so-called "LOCK" options

Typical Applications

- Battery shutdown in vehicle, railway and aviation applications
- Theft protection or protection against unauthorized use of the vehicles or equipment by removable or lockable control elements



SAFETY SWITCHES

Technical Data

- Manually operated isolating switch
- Operating conditions -30°C to +70°C
- Continuous current 300A
- Voltages 12V - 80V
- Emergency stop switch according to EN 60497

Customer advantages

- Battery disconnect under load (unlimited)
- Meets the highest sealing requirements
- High resistance to mechanical influences and vibrations
- Variable or scalable mounting options
- Customized designs (shape) and coloring possible

Typical Applications

- Battery shutdown in vehicle, railway and industrial applications
- Lifting trucks



PUSH BUTTON SWITCH (SAFETY)

Technical Data

- Manually operated emergency stop switch
- Resting emergency function with unlocking
- Variable switching functions (NC / NO / contact - changeover contact)
- Operating conditions -40 °C to +85°C
- Continuous current 10mA - 10A
- Voltages 9V - 24V - 32V

Customer advantages

- Meets the sealing requirements IP67 (IP6K9K)
- Special versions with pre-assembled wiring harness, customer-specific electrical interface and "Hot Melt" sealing
- High resistance to mechanical influences and vibrations
- Optional "LOCK" function

Typical Applications

- Emergency switch
- Switch-off of functions or battery (if necessary via contactor)
- Protection of the charging process for HV and HEV applications (at the charging interface)



PUSH BUTTON SWITCHES

Technical Data

- Manually operated push / pressure button
- Switch with changeover functions
- 1 or 2 pole versions are possible
- Operating conditions -40°C to +90°C
- Continuous current 5A
- Voltages 9V - 24V - 32V

Customer advantages

- Meets the sealing requirements IP67 / IP6K9K
- Special versions with pre-assembled wiring harness, customer-specific electrical interface and "Hot Melt" sealing
- High resistance to mechanical influences and vibrations
- Optional lighting or symbolism

Typical Applications

- Start / stop switch
- Switch for controlling movements
- Applications in areas with high demands on tightness and robustness (e.g. outside the cabin)



ROTARY SWITCHES

Technical Data

- Manual rotary switch
- Momentary or latching versions
- Switch with changeover functions
- 1 or 2 pole versions are possible
- Operating conditions -40°C to +90°C
- Continuous current 5A
- Voltages 9V - 24 V - 32V

Customer advantages

- Meets the sealing requirements IP67 / IP6K9K
- Special versions with pre-assembled wiring harness, customer-specific electrical interface and "Hot Melt" sealing
- High resistance to mechanical influences and vibrations
- Customized designs and coloring possible

Typical Applications

- Lift axle operation
- Switch for controlling movements
- Applications in areas with high demands on tightness and robustness (e.g. outside the cabin)



ROTARY SELECTOR SWITCH

Technical Data

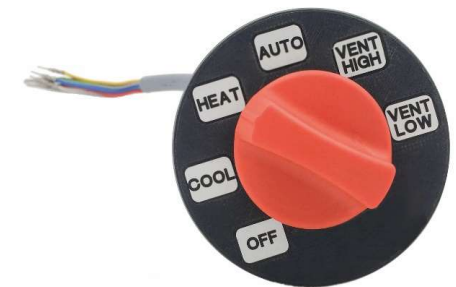
- Manually operated rotary switch with 3 to 7 fixed positions
- Operating conditions -40°C to + 85°C
- Continuous current 1A
- Voltages 9V - 24V - 32V
- Additional signal output in the actuated state
- Change of position by specific actuation (pressing and turning)

Customer advantages

- High resistance to mechanical shock and vibration according to ISO 16750
- Protection against incorrect operation by special push-turn hedging
- Customized designs (shape) and coloring possible
- Additional lighting of the rotary knob is possible

Typical Applications

- Shift of driving modes for all-wheel drive vehicles (Rear / Crab / All)
- Switching of various functions with increased demands on robustness
- Used in construction machines, off-highway trucks, military or special applications



PLUNGER SWITCHES

Technical Data

- Function available as NC or NO contact
- Connections according to ISO 15170-1 or round plug
- Ambient temperature -40°C to +150°C

Customer advantages

- Extremely robust switching mechanism – up to 2 million switching cycles possible
- Very high resistance to vibration and temperature
- Oil resistant to most gear oils
- Electronic, wear-resistant switching mechanism (> 4 million switching cycles possible)

Typical Applications

- Commercial vehicles for the position detection of components or as limit switches
- Transmission applications (drive and transfer case), drive train (preferably in axles)
- Steering systems



POSITION SWITCH

Technical Data

- High precision position sensor based on plunger switch
- 3D measurement of the magnetic field change
- Position indication via PWM signal or SENT (programmable)
- Sensing accuracy 1.5% full scale

Customer advantages

- At least 4 million switching cycles possible
- Very high vibration and temperature resistance
- Adaptable to specific customer requirements (design)
- Sealed according to IP 67 (IP6K9K)

Typical Applications

- Camshaft sensing
- Transmission applications



TOGGLE SWITCHES

Technical Data

- Operating conditions -55°C to +85°C
- Corresponds to VG 95 318 and IEC 1020 (version with metal lever)
- Thermoset / thermoplastic housing

Customer advantages

- Very high sealing IP67 (IP6K9K), thus no further sealing device is needed
- Optional bellows and safety covers can be installed
- Various, also customer-specific control levers available or feasible
- Improved ergonomics when operated under difficult conditions (e.g. with gloves)

Typical Applications

- Various switching functions in vehicles (inside and outside)
- General equipment and mechanical engineering
- Medical technology



MICRO SWITCHES

Technical Data

- Variable switching functions (NC / NO / contact - changeover contact)
- Ambient temperature -10°C to +85°C
- Continuous current 5A
- Voltage 9V to 250V

Customer advantages

- Very reliable snap switch
- Small installation space
- Durable
- Protection class IP40

Typical Applications

- Vehicle construction for position detection, flap control, path limitation, etc.
- General apparatus and mechanical engineering
- Medical technology



SPECIAL SWITCHES



Inductive Proximity Switch

- Extremely robust, high quality design
- Extremely precise and uniform switching behavior
- EMC-resistant / protection class IP67
- Different housing and mounting options
- Models for increased compressive strength up to 50 bar
- Special models for marine applications (salt and sea water resistant)



Position Switch

- Robustness according to military requirements (VG 95 318, MIL-S 8805)
- High quality silver contacts
- Protection class IP40, IP65, IP67 (model-dependent)
- Different actuator shapes and sizes available
- Available with standard connections or cable output

POWER DISTRIBUTION

POWER-PCB AND POWER DISTRIBUTION SYSTEMS



POWER DISTRIBUTION

Customer advantages:

- Reduced solution cost
 - reduced in house assembly time
 - reduced complexity
 - purchasing only one part-number
 - high reliability
- Possible use of bus bar and press-fit technologies (high power solderless connection)
- Custom tailored design
 - reduced size
 - easy access to replaceable components
 - weight advantage



POWER DISTRIBUTION

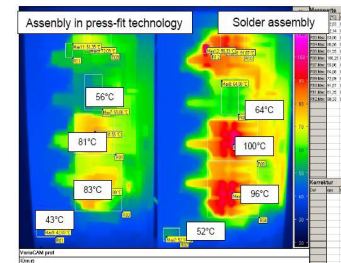
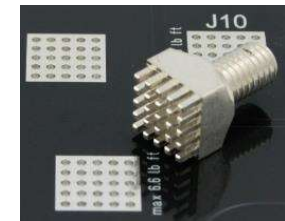
POWER	500 amps / 1000 volts	/// Advanced power management
COOLING	25% temperature reduction	/// Greatly reduced energy loss
COMPACT	50% less space required	/// 30% average cost savings
FAST	Plug-and-play systems	/// 50% average time savings
GREEN	Room temperature process	/// Very efficient, fast, low stress
RoHS	Solder-free connection	/// Zero soldering problems



POWER DISTRIBUTION

Press-Fit vs. Solder Connections :

- 90% less electrical resistance
- 25% lower operating temperatures
- 80 Newton retention force per pin
- Gas-tight, corrosion-free connection
- Elimination of pin-solder interface
- Elimination of solder-PCB interface
- No heat required during assembly
- Front and backside population
- No thermal stress of components



KISSLING ALL AROUND THE VEHICLE!

Vehicle OEM's

Battery Box:

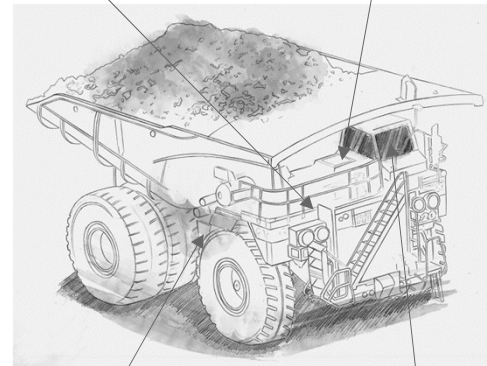
- Contactor as remote battery disconnect
- Manual Disconnect for fleet vehicles

Auxiliary equipment power:

- Contactors for HVAC, Power Lifts, etc.

Control panels

- Outside the cabin



Tier 1 & 2 Specialists

Drivetrain:

- Axle – transmission – gearbox
Manufacturers = 44 plunger switch

Hydraulic & Pneumatic Systems:

- Pressure switch manufacturers =
Microswitch

**ANY
CONNECTION
CAN CHANGE
THE WORLD**

EVERY CONNECTION COUNTS

