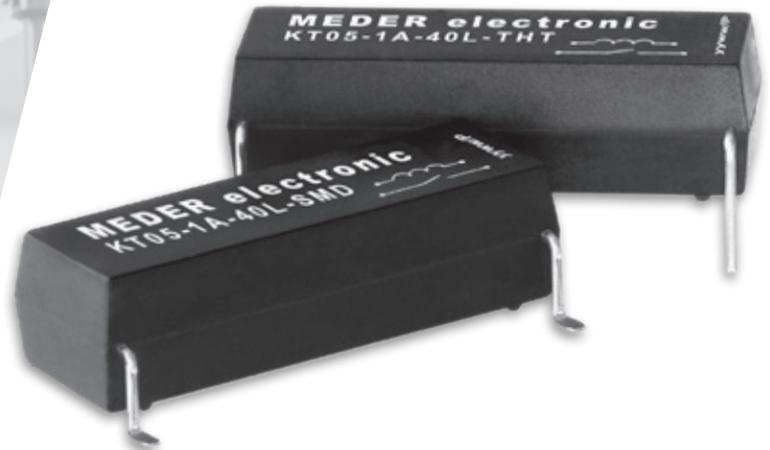




 **Standex**  
*Electronics*  
PARTNER | SOLVE | DELIVER®

## Reed Relays & Optocouplers

PRODUCT LINE BROCHURE



# Standex | Smart.

Partner, Solve, Deliver® “Solving your complex problems is why we exist.”



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# ABOUT STANDEX

Customer Focused Engineering Solutions. “Innovating for more than 50 years.”

The Standex Electronics business, a division of Standex International Corporation (NYSE:SXI), has been providing solutions through high-performing products since the 1950’s. Through growth, acquisition, strategically partnering with customers, and applying the latest engineering designs to the needs of our ever-changing world, Standex Electronics technology has been providing quality results to the end-user. The approach is achieved by partnering with customers to design and deliver individual solutions and products that truly address customers’ needs.

Standex Electronics is headquartered in Fairfield, Ohio, USA, Standex Electronics has eleven manufacturing facilities in seven countries, located in the United States, Germany, China, Mexico, the United Kingdom, Japan, and India.



That's **Standex** | Smart.

[standexelectronics.com](http://standexelectronics.com)

## WHO WE ARE / WHERE WE PLAY

Powerfully transforming. "When failure is not an option, designers of critical electronic components rely on Standex and their decades of experience."



Standex Electronics is a worldwide market leader in the design, development and manufacture of custom magnetics and power conversion components and assemblies. Our work, growth, and dedication to providing reliable high-quality products through our engineering and manufacturing expertise go beyond products we ship.

We offer engineered product solutions for a broad spectrum of product applications in all major markets, including but not limited to:

- Aerospace & Military
- Alternative Energy
- Automotive (EV) & Transportation
- Electric Power & Utilities
- Medical
- Smart Grid & Metering
- Industrial & Power Distribution
- Test & Measurement
- Security & Safety
- Household & Appliances
- Mining & Intrinsically Safe

Our values and what we believe align to the partner, solve, and deliver® approach. We produce parts but we are more than that. Connecting with your team as a strategic partner, listening to your challenges, and arriving at ways to solve your complex problems through our solutions are why we exist. We have custom capabilities that address your needs. Our team leverages our dynamic and diverse engineering expertise and other resources such as our global facilities for logistics and production.



Standex Electronics has been innovating for over 50 years by developing new products, partnering with customers, and expanding our global capabilities. We have also grown our global reach and local touch through synergistic acquisitions.

1960 National Transistor  
1969 Paul Smith Company

1960

1971 Comtelco  
1973 Underwood Electric  
1974 Van Products

1970

1998 ATR Coil /  
Classic Coil Winding

1990

2001 ATC-Frost Magnetics  
2002 Cin-Tran  
2003 Magnético /Trans America  
2004 Lepco  
2008 BG Laboratories

2000

2012 Meder Electronic  
2014 Planar Quality Corp.  
2015 Northlake Engineering, Inc.  
2017 OKI Sensor Device Corp.  
2018 Agile Magnetics  
2020 Renco Electronics, Inc.

2010



**NORTHLAKE ENGINEERING®**  
A STANDEX ELECTRONICS COMPANY



# OUR CAPABILITIES



**IATF 16949**  
CERTIFIED



## MANUFACTURING

Automated Optical Inspection (AOI)  
Auto AT Switch Sorting  
SMT Line with Pick & Place & Reflow  
Reed Switch Manufacturing  
Reed Relay Design & Manufacturing  
Automatic CNC Winding & Termination  
Bobbin, Layer, & Self-Supporting Winding  
Thermoplastic & Thermoset Overmolding  
Wave & Selective Soldering  
Low Pressure (Hot Melt) & Injection Molding  
Potting - 2 Component  
Reflow Oven – Multiple Zone Convection  
Stainless Steel, Metal & Plastic Fabrication  
Lean Manufacturing Principles  
Complete, In-House Machine Shop

## ENGINEERING

3-D Magnetic Sensor Mapping  
3-D CAD Modeling & 3-D Printing  
Electronic sensor engineering  
Circuit Design and PCB Layout  
Mechanical Design & Packaging  
Rapid Prototyping  
Magnetic Simulation Software  
Mechanical, Thermal & FEA Analysis  
Plastic Mold Flow Simulation  
APQP Project Management

## QUALITY & COMPLIANCE

AS9100, ISO9001 & IATF16949 Certifications  
ITAR Compliance  
Automotive Core Tools  
RoHS, REACH, UL, ATEX & IECEx, VDE, Vds

## TESTING & LAB CAPABILITIES

High Voltage / Partial Discharge Testing  
Specialized Lab Testing Equipment: Network Analyzers, Nanovoltmeters, Gauss / Teslameters, Fluxmeters, Picoammeters  
Full Load & Temperature Rise Testing  
2-D / 3-D Microfocus X-ray Inspection  
Digital Microscopic Inspection  
Burn-In & Life Testing  
Thermal Shock & Temperature Cycling  
Humidity, Salt Fog, & Solderability  
Moisture Resistance & Seal Testing

# REED RELAY SOLUTIONS

Customer Focused  
Engineering  
Solutions

## high frequency

- Ability to carry RF signals from DC up to 7GHz
- Internal coaxial shields for 50  $\Omega$  impedance
- <0.3pF typical capacitance across open switch



## high voltage & isolation

- Up to 10kVDC switching
- Up to 15kVDC isolation
- Switching currents up to 3 amps and carry currents up to 5 amps



## high density

- Small thru-hole and SMT packages for closely stacked matrices
- Multiple pole packages for reduced material handling
- High voltage and high carry currents in standard packages



## intrinsically safe

- ATEX/IECEX approved relays and optocouplers
- High isolation and non-arcing
- ATEX relays used for galvanic separation



## low thermal

- Thermal offset <1 $\mu$ V
- Insulation resistance >10<sup>12</sup> $\Omega$
- High voltage isolation up to 1.5kVDC



## general purpose

- Hermetically sealed reed switch technology
- Multitude of package sizes in SMT and thru-hole
- Long life expectancy and high insulation resistance



## relay modules

- 4-8 pole relays in single package
- Built-in relay drivers and shift registers
- Up to 4GHz RF signals



## Our Approach

### **PARTNER** // TEAMWORK

Dig deep into the customer's project and develop relationship through our thought leadership, expertise, team, and global footprint.

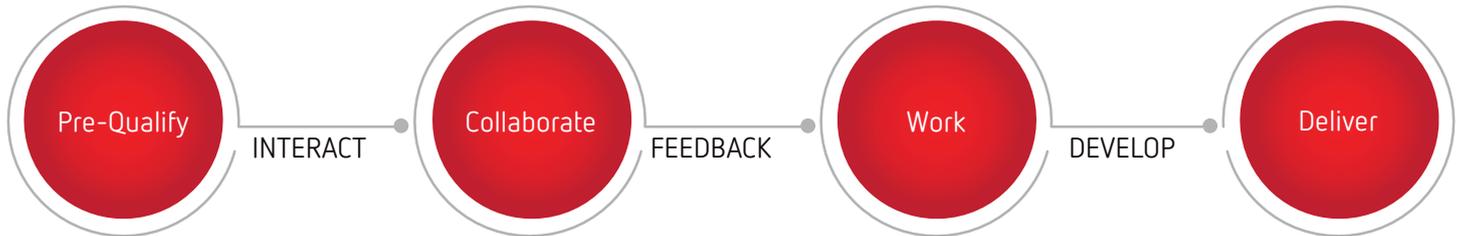
### **SOLVE** // UNDERSTAND

Capabilities, lab, size, shape, power management, ranges, frequency, and more around how our capabilities can provide efficient, productive, designs & products.

### **DELIVER** // QUALITY

Help customers win through our diverse products, dynamic capabilities, reliable high-quality magnetics solutions, and customer driven innovation and service.

## Our Custom Solutions Process



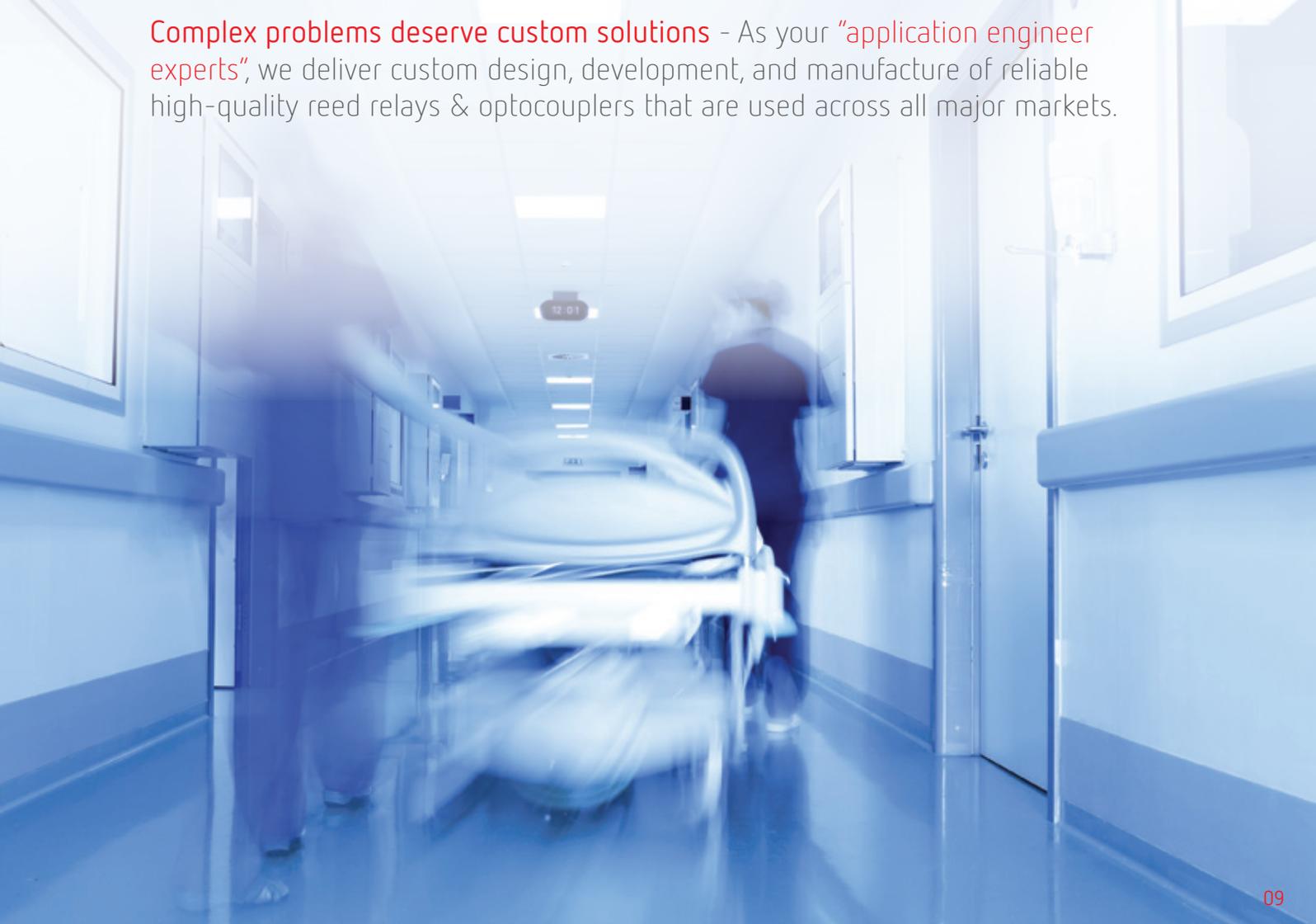
- Understand Application
- Define Design Targets
- No. of Switches & Form (A,B,C,E)
- Coil Voltage
- Max Voltage, Power, & Current
- Hot or Cold Switching
- Life Expectancy Requirements
- Isolation Requirements
- Impedance Limitations
- Temperature Range

- Certifications & Standards
- Open Engineering Team Dialogue
- Footprint, Special Pin-Outs
- Optimize Efficiency
- Electrical Modeling
- Preliminary Design Approval
- Identify Custom Components
- Creepage & Clearance Distances
- Generate Print & Quotation

- Final Design Approval
- Generate BOM
- Order Material
- Queue Samples
- Sample Build
- Test & Report
- Application Testing
- Feedback
- Repeat As Needed

- Production Order
- APQP
- FAI
- DFMEA & PFMEA
- Line Audit
- PPAP
- Delivery
- Sustaining Engineering

**Complex problems deserve custom solutions** - As your "application engineer experts", we deliver custom design, development, and manufacture of reliable high-quality reed relays & optocouplers that are used across all major markets.



# Standex | Strong.

## REED RELAY TECHNOLOGY

“Fast switching in the hundreds of microseconds and long life capability that surpasses electromechanical relays.”

The Standex Electronics brand “MEDER electronic REED RELAYS” came as the result of the 2012 acquisition of MEDER electronic in Germany, where the production of high quality reed relays originated. Reed relays and reed sensors both use the reed switch as the heart of their switching mechanism. Therefore, all the features associated with Standex Electronics’ reed switch technology are captured in MEDER electronic reed sensors and MEDER electronic reed relays. New applications continue to arise at a significant pace for both products because of the reed switch’s unique switching capability.

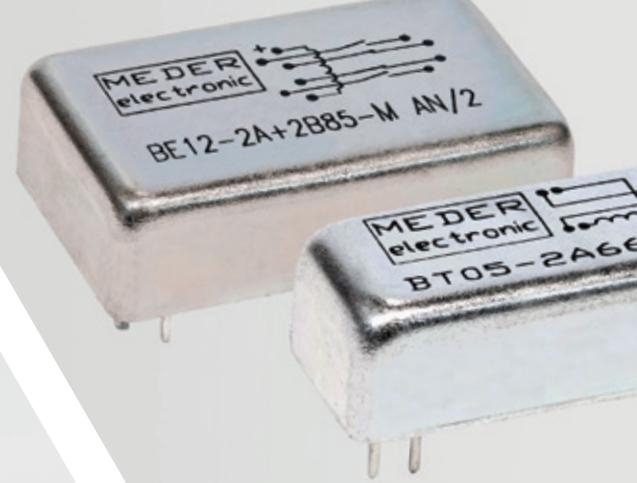
Standex Electronics is the world’s largest manufacturer of reed switches (>700M/yr) with >50% market share offering the most comprehensive listing of reed switches that cover the majority of low power switching requirements. Because reed switches are hermetically sealed (glass to metal seal) they are impervious to almost all environments. This opens up a vast number of applications where they are the only technology capable of meeting specific requirements where certain mechanical switches and semiconductor switches are environmentally limited.



# MEDER electronic

REED RELAYS

A STANDEX ELECTRONICS BRAND



That's **Standex** | Strong.

[standxelectronics.com](http://standxelectronics.com)

## STANDEX ELECTRONICS UNIQUE ADVANTAGES

Global leader in reed relay manufacturing and world's largest reed switch manufacturer >50% market share

- Unique flat blade switches 4mm & 10mm for SMD processes
- High voltage vacuum version now available
- Highest industry quality and manufacturing volume
- Suitable for high-reliability automotive & ATE
- Long life expectancy, wider product range with form C, high voltage, etc.
- Most reliable in the market

In-house life testing capabilities

- Unique, proprietary life cycle testing technology
- Monitors and analyzes each cycle in real time
- Adjustable loads, from 1 milliwatts up to 100 watts
- Speeds of 100 hertz, 100 times per second

## ELECTRICAL & MECHANICAL BENEFITS

Long life, billions ( $10^9$ ) of operations (load dependent)

Multi-pole configurations up to 8 poles

Form A, B, C, and E versions

Stable low contact resistance <150 m $\Omega$

High insulation resistance > $10^{14}$   $\Omega$

Ability to switch up to 10,000 VDC

Breakdown voltages and dielectric strength up to 15kVDC

Carry currents up to 5 Amps continuous (10 Amps pulsed)

Withstand shocks to 100g, vibrations 50-2,000Hz at 20g

Hermetically sealed switches

Operate times in the 500 $\mu$ s to 3 ms range

Suitable for high density matrix assembly

Wide array of coil resistances

Large assortment of package styles and pin-outs

AEC-Q200



RoHS



### OUR PRODUCTS ARE RECOGNIZED\*

Tested in accordance with AEC-Q200

In compliance with UL, CSA, EN60950, VDE, BABT 223ZV5,

ATEX & IECEx, RoHS, REACH (\*not applicable to all products)



“Reed Relays are making headway in some of the most demanding applications and emerging markets.”



We offer engineered reed relay solutions for a broad spectrum of product applications in all major markets. Battery charging, electric vehicles, solar inverters, medical, and test and measurement markets are just some of the areas where reed technology is gaining ground.

### APPLICATIONS

Automotive, Electric & Hybrid Vehicles

- Battery Management Systems
- Battery Conditioning
- High Insulation Measurement

Renewable Energy - PV Systems

- Solar Inverters
- Power Distribution

Medical Equipment

- Surgical Generators
- Automated External Defibrillators
- Isolation Functions

Test & Measurement

- Integrated Circuit Testers
- Automated & Precision Test Equipment
- Multiplexers, High Density Matrices

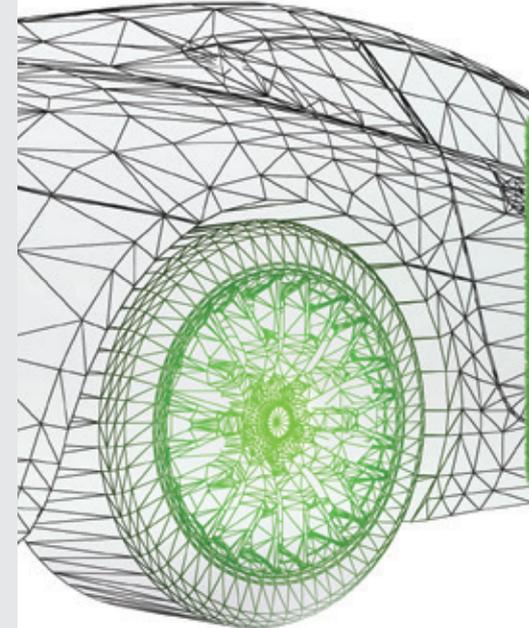
Intrinsic Safety

- Electronics, Mining, Oil & Gas Production
- Geothermal & Seismic Instrumentation

### HIGH ISOLATION MEASUREMENT

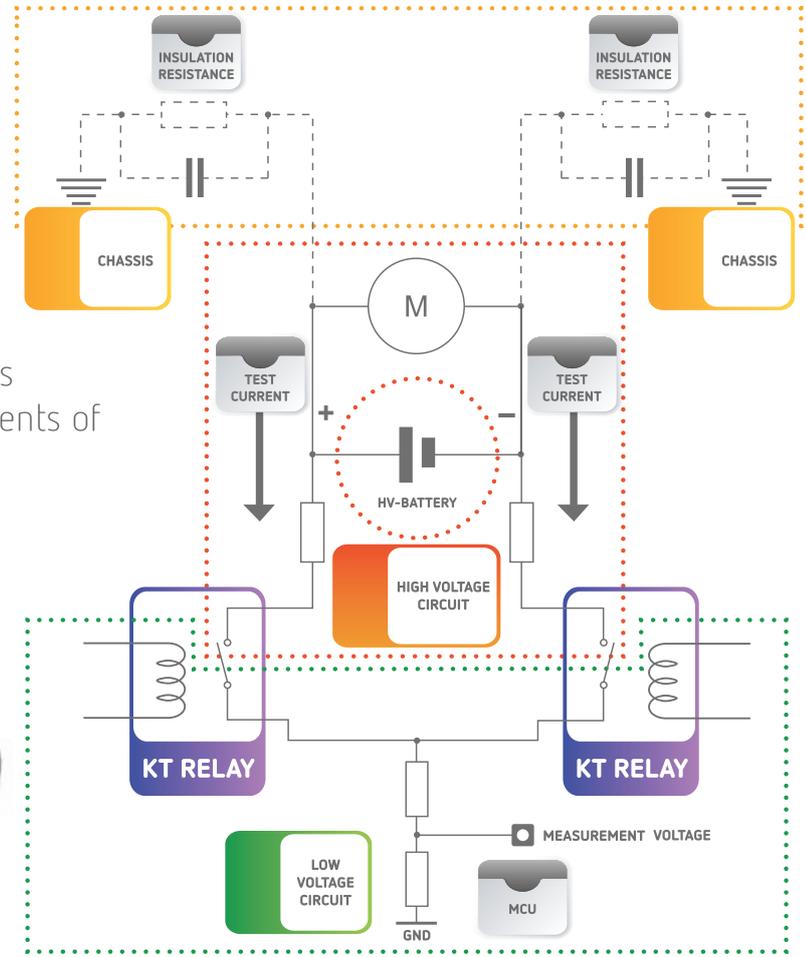
#### *KT Series (SMT/THT 30 x 11 x 9 mm)*

- Switching voltage 1kVDC
- Breakdown voltage 4kVDC
- Dielectric strength (coil-contact) 7kVDC
- Creepage distance >17mm
- Air clearance 12mm
- Ambient range -40°C ~ +100°C
- Capable of 125°C internal temperature
- Millions of operations at 800V-1kVDC
- Tested in accordance with AEC-Q200
- UL94 recognized



## KT SERIES IN BATTERY MANAGEMENT SYSTEM

“When properly designed-in, the reed relays features will stand up to the high requirements of modern electric devices very well.”



# REED RELAY SELECTION GUIDE

Complex problems deserve custom solutions - "Custom parameters for design in a large array of packages."

Reed Relays are ideally used for switching applications requiring low and stable contact resistance, low capacitance, high insulation resistance, long life and small size. For specialty requirements such as high RF switching, very high voltage switching, extremely low voltage or low current switching, Reed Relays are ideal.

Custom-made relays are designed to offer specific features and parameters, such as a latching function, very high insulation resistance, different shielding options etc., and thereby appropriately complete our product range of standard relays.

MEDER electronic REED RELAY	General Purpose			High Density Boards				
	BE	DIL	DIP	MS	SIL	UMS	CRR	RM05-8A-SP
Reed Relay Series	BE	DIL	DIP	MS	SIL	UMS	CRR	RM05-8A-SP
Package / Mounting	Potted/THT	Potted/THT	Molded/THT	Molded/THT	Molded/THT	Molded/THT	Molded/SMD	Molded/THT
Contact Form	1-5A, 2 (B,C)	1-4A, 1 (B,C), 2 (A,C)	1 (A,B,C), 2A	1A	1 (A,B,C)	1A	1A	8A + shift register
Power rating Max. (W)	100	10	10	10	10	10	10	10
Switching voltage Max. (VDC)	1000	500	500	200	500	170	170	170
Switching current Max. (A)	1.0	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Carry current Max. (A)	2.5	1.0	1.0	1.0	1.0	1.0	1.0	0.5
Breakdown voltage Min. (VDC)	2500	1000	1000	225	1000	210	210	210
Insulation resistance Min. (Ω)	10 <sup>13</sup>	10 <sup>11</sup>	10 <sup>10</sup>	10 <sup>10</sup>	10 <sup>10</sup>	10 <sup>10</sup>	10 <sup>11</sup>	10 <sup>10</sup>
Coil resistance Min-Max. (Ω)	140-8,000	500-10,000	500-2,000	280-700	200-2,000	400-500	70-150	8x500
Coil voltage(s)	5, 12, 24	5, 12, 24	3, 5, 12, 15, 24	5, 12	3, 5, 12, 15, 24	5	3, 5	5 (3.3 driver)
Options and features	Plastic/metal case Many pin-outs Up to 5 A switches	Mercury optional Int. mag shield Line sense 11kΩ coil Dielectric 4.25kVDC	Flyback diode Mercury optional IC compatible in-line Dielectric 4kVDC	Flyback diode Micro in-line	Flyback diode Mag shield	Ultra micro in-line Int. mag shield Flyback diode	Ball Grid Array (BGA) Int. mag shield Tape & Reel	Driver MAX4823 Kickback Protection, Serial Interface Compact size
Highlights & Certifications		 	 	 	 	 	  	
Ordering info on page(s)	19	19	19	19	20	20	20	20

**High Voltage & High Isolation**

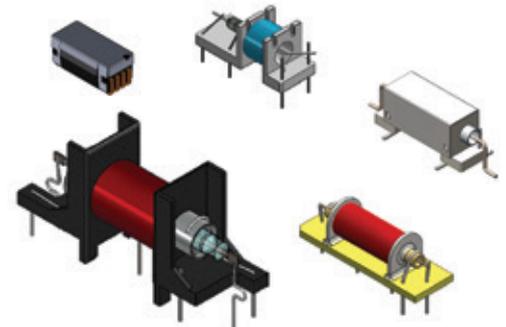
Reed Relay Series	MHV	KT	LI	SHV	BE/MRE	H	HE
Package / Mounting	Molded/SMD	Molded/SMD, THT	Potted/THT	Molded/THT	Potted/THT	Molded/Open Frame	Potted/THT, Cable
Contact Form	1A	1A	1A	1A	1A, 2A	1 (A,B)	1 (A,B) 2A, 2C
Power rating Max. (W)	10	100	100	100	100	50	50
Switching voltage Max. (VDC)	1000	1000	1000	1000	1000	10000	10000
Switching current Max. (A)	0.7	1.0	1.0	1.0	1.0	3.0	3.0
Carry current Max. (A)	1.25	2.5	2.5	2.5	2.5	5.0	5.0
Breakdown voltage Min. (VDC)	3000	4500	4500	4000	7000	15000	15000
Insulation resistance Min. (Ω)	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>11</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>13</sup>
Coil resistance min-Max. (Ω)	140	65-1,800	150-2,000	140-2,000	70-1,400	180-700	50-2,000
Coil voltage(s)	5	3, 5, 12, 24	5, 12, 24	5, 12, 24	5, 12, 24	12, 24	5, 12, 24
Options and features	Isolation 5kVDC Off-State leakage current typical 1 nA Meets creepage/clearance	Isolation 7kVDC High creepage/clearance Tape & Reel	Isolation 7kVDC High creepage/clearance	Flyback diode Int. mag shield	Plastic/metal case High creepage/clearance		Creepage distance >26mm
Highlights & Certifications	AEC-Q200 cRU US	AEC-Q200 cRU US		cRU US		cRU US	
Ordering info on page(s)	21	21	21	21	22	22	22

**High Voltage & High Isolation**
**High Frequency**
**Relay Module**

Reed Relay Series	HM	HI	CRF	HF	SIL RF	RM05-8A-SP
Package / Mounting	Potted/THT	Open Frame/THT	Ceramic/SMD	Potted/THT	Molded/THT	Molded/THT
Contact Form	1 (A,B)	1A	1A	1 (A,B), 2A	1A	8A + shift register
Power rating Max. (W)	50	100	10	25	10	10
Switching voltage Max. (VDC)	10000	1000	170	500	200	170
Switching current Max. (A)	3.0	1.0	0.5	1.5	0.4	0.5
Carry current Max. (A)	5.0	2.5	1.0	5.0A@30MHz	0.5	0.5
Breakdown voltage Min. (VDC)	15000	3000	210	9000	230	210
Insulation resistance Min. (Ω)	10 <sup>13</sup>	10 <sup>14</sup>	10 <sup>10</sup>	10 <sup>11</sup>	10 <sup>9</sup>	10 <sup>10</sup>
Coil resistance Min-Max. (Ω)	10-1,650	140-3,000	70-150	40-1,000	500-1,000	8x500
Coil voltage(s)	5, 12, 24	5, 12	3, 5	5, 12, 24	5, 12	5 (3.3 driver)
Options and features	Creepage distance >32mm	High Insulation Resistance	7GHz <40ps rise 10µV thermal offset Int. mag shield Coax screen Z = 50Ω	Electrostatic and mag shield	High RF 1GHz Coax screen Z = 50Ω	Driver MAX4823 Kickback Protection, Serial Interface Compact size
Highlights & Certifications			cRU US			
Ordering info on page(s)	22	23	23	23	23	20

Reed Relay Series	MRX	BT/BTS	DIP / SIL	BE
Description	<b>Intrinsically Safe</b> Relays certified for Explosive Environments and Hazardous Locations	<b>Low Thermovoltage</b> Special internal design for very low Thermal Voltage Offset between Input and Output	<b>Low Coil Consumption</b> "HR" suffix = higher coil resistance than standard, hence need a lower current	<b>Latching</b> A short coil pulse closes contacts which remain unchanged until opposite pulse is present
Package / Mounting	Molded/THT	Potted/THT	Potted/THT	Potted/THT
Contact Form	1, 2, 4 (A,B,C)	2A	1A	1E
Power rating Max. (W)	50	100	10	10
Switching voltage Max. (VDC)	375	1000	200	500
Switching current Max. (A)	0.7	1.0	0.5	0.5
Carry current Max. (A)	1.0	2.0	1	1.5
Breakdown voltage Min. (VDC)	2000	1500	200	2000
Insulation resistance Min. ( $\Omega$ )	$10^{10}$	$10^{11}$	$10^9$	$10^{11}$
Coil resistance Min-Max. ( $\Omega$ )	125-5,880	350-5,000	1,000 - 2,000	850-5,000
Coil voltage(s)	5, 12, 24	5, 12, 24	5, 12	5, 12
Options and features	Special pin-outs, ATEX and IECEx certified for Intrinsically Safe Circuits	Thermal Offset <1 $\mu$ V, Magnetic Shield Special Pinouts	Magnetic Shield, Flyback Diode	Latching, 2 Input Coils, Metal Housing Magnetic Shield
Highlights & Certifications				
Ordering info on page(s)	24	24	25	25

Reed Relay Series	NP-CL / DIL-CL	SPL
Description	<b>Current Loop</b> Sensitive relays activated by a current level in range of milliamperes	<b>Customized Design</b> - Customized and special relay designs on demand
Package / Mounting	Potted/THT	
Contact Form	1A	
Power rating Max. (W)	5	
Switching voltage Max. (VDC)	100	
Switching current Max. (A)	0.5	
Carry current Max. (A)	1	
Breakdown voltage Min. (VDC)	100	
Insulation resistance Min. ( $\Omega$ )	$10^{09}$	
Coil resistance Min-Max. ( $\Omega$ )	4-9	
Coil voltage(s)	Pull-In in mA range	
Options and features	Magnetic Shield 2 Coils Optional	
Highlights & Certifications		
Ordering info on page(s)	25	



# SOLUTIONS | Reed Relays

Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.



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1 2 3 4 5

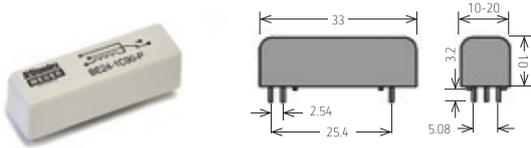
General Purpose

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  140-8,000

- Nominal Voltage: 05, 12, 24
- Contact Quantity: 1-5A, 1-2B, 1-2C
- Contact Form: A, B, C
- Switch Model: 66, 85, 90
- Housing Option: (P)lastic, (M)etal, (V) High Insulation

- Highlights
- Up to 5A Switches
  - Many Pinouts
  - Switching 1kVDC
  - Breakdown 2.5kVDC
  - High IR  $10^{11}\Omega$

\*Option (V) offers 4.5kVDC dielectric coil to contact



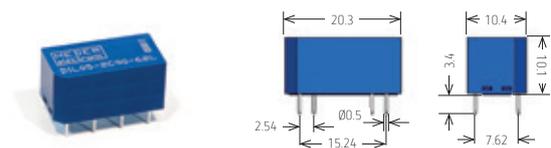
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1 2 3 4 5 6

General Purpose

Rated Power Max. 10W/500VDC/0.5A | Coil Resistance  $\Omega$  500-10,000

- Nominal Voltage: 05, 12, 24
  - Contact Quantity: 1-4A, 1B, 1C, 2A, 2C
  - Contact Form: A, B, C
  - Switch Model: 66, 75, 90
  - Pin-Out: 13, 15, 21, 51, 62, 63
  - Option: L(M), D(Q), E(R), F(S) (I)=version with magnetic shield
- \*HR = High Resistance (not available in 24V coil), CL=Current Loop

- Highlights
- Line Sense 11k $\Omega$  Coil
  - Dielectric 4.25kVDC
  - IR  $10^{11}\Omega$



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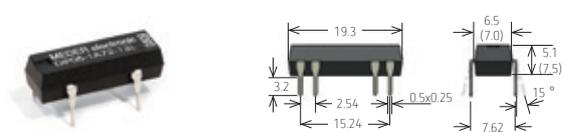
General Purpose

Rated Power Max. 10W/500VDC/0.5A | Coil Resistance  $\Omega$  500-2,000

- Nominal Voltage: 05, 12, 15, 24
- Contact Quantity: 1, 2
- Contact Form: A, B, C
- Switch Model: 72, 75, 90
- Pin-Out: 10, 11, 12, 13\*, 19, 21, 51
- Option: L(M), D(Q), E(R), F(S) (I)=version with magnetic shield

- Highlights
- Dielectric 4kVDC
  - IC Compatible in-line
  - IR  $10^{10}\Omega$

\*Breakdown voltage contact to coil 4kVDC



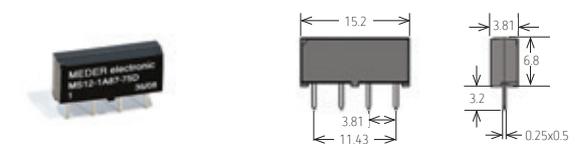
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1 2 3 4 5 6

High Density Boards

Rated Power Max. 10W/200VDC/0.5A | Coil Resistance  $\Omega$  280-700

- Nominal Voltage: 05, 12
- Contact Quantity: 1
- Contact Form: A
- Switch Model: 87
- Pin-Out: 75
- Option: L Standard, D Diode, (HR)=High Resistance coil

- Highlights
- IR  $10^{11}\Omega$





Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.

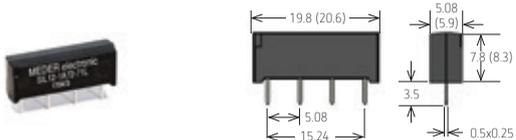
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 1 2 3 4 5 6

High Density Boards

Rated Power Max. 10W/500VDC/0.5A | Coil Resistance  $\Omega$  200-2,000

- 1 Nominal Voltage: 03, 05, 12, 15, 24
  - 2 Contact Quantity: 1
  - 3 Contact Form: A, B, C (Form C in 5V only)
  - 4 Switch Model: 72, 75, 90
  - 5 Pin-Out: 71, 73 (73 = 4kV Dielectric)
  - 6 Option: L, M, D, Q, (HR)=High Resistance coil
- L=No option, D=Diode, M=Mag Shield, Q=D+M

- Highlights
- Dielectric 4kVDC
  - IR 10<sup>11</sup>N



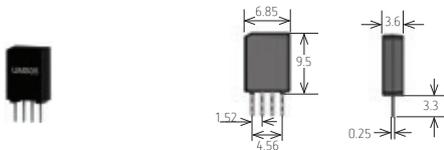
UMS 05 - 1 A 80 - 75 XXX  
 1 2 3 4 5 6

High Density Boards

Rated Power Max. 10W/170VDC/0.5A | Coil Resistance  $\Omega$  400-500

- 1 Nominal Voltage: 05
- 2 Contact Quantity: 1
- 3 Contact Form: A
- 4 Switch Model: 80
- 5 Pin-Out: 75
- 6 Option: L Standard, D Diode

- Highlights
- Internal Mag Shield
  - IR 10<sup>10</sup>N



CRR 00 - 1 A X - (250)  
 1 2 3 4 5

High Density Boards

Rated Power Max. 10W/170VDC/0.5A | Coil Resistance  $\Omega$  70-150

- 1 Nominal Voltage: 03, 05
- 2 Contact Quantity: 1
- 3 Contact Form: A
- 4 Mount: S (BGA), empty = standard
- 5 T&R Qty: empty=1,000pcs standard, 250=250pcs option

- Highlights
- IR 10<sup>11</sup>N



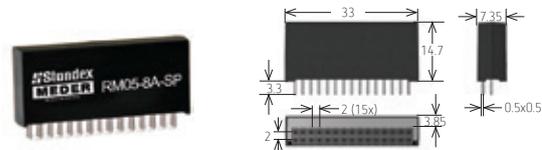
RM 05 - 8 A - SP  
 1 2 3 4

High Density Boards/Relay Module

Rated Power Max. 10W/170VDC/0.5A | Coil Resistance  $\Omega$  500

- 1 Nominal Voltage: 05
  - 2 Contact Quantity: 8 + shift register
  - 3 Contact Form: A
  - 4 Pin-out: SP=Standard in-line pin-out 2x2mm
- Driver MAX4823 Kickback Protection, Serial Interface, Compact size

- Highlights
- Relay Module
  - 8-pole RF
  - Low Profile
  - 8-channel



# SOLUTIONS | Reed Relays

Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.



MHV 00 - 1 A  
1 2 3

High Voltage & Isolation

Rated Power Max. 10W/1000VDC/0.7A | Coil Resistance  $\Omega$  140

- 1 Nominal Voltage: 05
  - 2 Contact Quantity: 1
  - 3 Contact Form: A
- Smallest high voltage relays up to 1kVDC switching voltage  
Meets required creepage & clearance distances acc. to IEC 60664-1, IEC 60255-27 and ISO 6469-3  
Off-State leakage current typ. 1 nA

Highlights



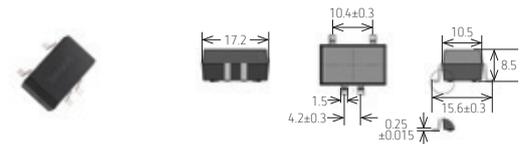
Switching 1kVDC

Breakdown 3kVDC

UL Recognized

High IR  $10^{12}\Omega$

Dielectric 5kVDC



KT 00 - 1 A - 40 X - XXX  
1 2 3 4 5 6

High Voltage & Isolation

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  65-1,800

- 1 Nominal Voltage: 03, 05, 12, 24
  - 2 Contact Quantity: 1
  - 3 Contact Form: A
  - 4 Layout: 40
  - 5 Mounting: SMD, THT
- High creepage & clearance distances

Highlights



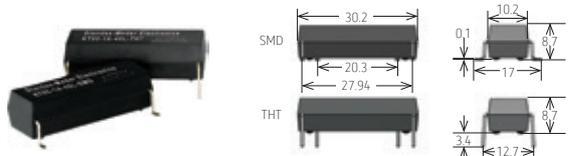
Switching 1kVDC

Breakdown 4.5kVDC

UL Recognized

High IR  $10^{12}\Omega$

Dielectric 7kVDC



AEC-Q200 Tested



UL Recognized



LI 00 - 1 A 00  
1 2 3 4

High Voltage & Isolation

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  150-2,000

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1
- 3 Contact Form: A
- 4 Switch Model: 85

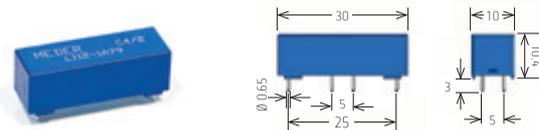
Highlights

Switching 1kVDC

Breakdown 4.5kVDC

High IR  $10^{12}\Omega$

Dielectric 7kVDC



SHV 00 - 1 A 85 - 78 XOK  
1 2 3 4 5 6 7

High Voltage & Isolation

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  140-2,000

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1
- 3 Contact Form: A
- 4 Switch Model: 85
- 5 Pin-out: 78
- 6 Option: L (Standard), D (Diode)
- 7 Breakdown Voltage: 2kVDC, 3kVDC, 4kVDC

Highlights

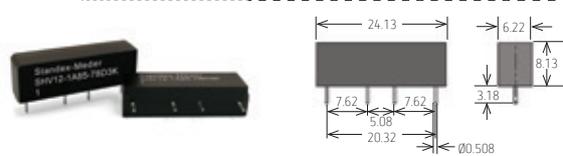


Alternative for Mercury Wetted

Breakdown 4kVDC

High IR  $10^{11}\Omega$

Int. Magnetic Shield





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BE/  
MRE 00 - 0 X 00 - X  
1 2 3 4 5

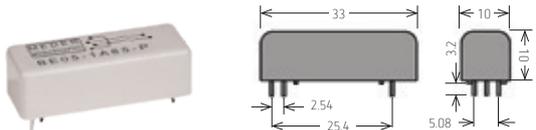
High Voltage & Isolation

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  70-1,400

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1, 2
- 3 Contact Form: A
- 4 Switch Model: 85
- 5 Housing Option: (P)lastic, (M)etal, (V) High Insulation

- Highlights
- Switching 1kVDC
- Breakdown 6kVDC
- High IR  $10^{14}\Omega$

Isolation Voltage up to 6 kVDC



HE 00 - 0 X 00 - 000  
1 2 3 4 5

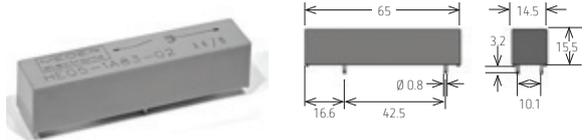
High Voltage & Isolation

Rated Power Max. 50W/10,000VDC/3A | Coil Resistance  $\Omega$  50-1,500

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1, 2
- 3 Contact Form: A, B
- 4 Switch Model: 69, 83
- 5 Pin-out: 02, 03, 150, 300 (150 and 300mm axial cables)

- Highlights
- Switching 10kVDC
- Breakdown 15kVDC
- High IR  $10^{12}\Omega$
- Leakage Dist. >26mm

Axial Wire Leads Optional



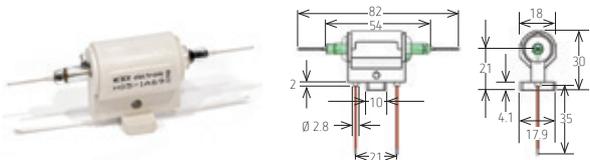
H 00 - 1 X 00  
1 2 3 4

High Voltage & Isolation

Rated Power Max. 50W/10,000VDC/3A | Coil Resistance  $\Omega$  180-700

- 1 Nominal Voltage: 12, 24
- 2 Contact Quantity: 1
- 3 Contact Form: A, B
- 4 Switch Model: 69, 83

- Highlights
- Switching 10kVDC
- Breakdown 15kVDC
- High IR  $10^{14}\Omega$



HM 00 - 1 X 00 - 000  
1 2 3 4 5

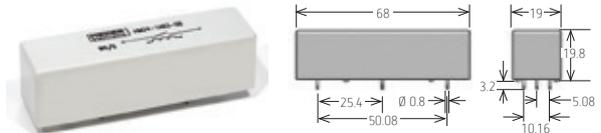
High Voltage & Isolation

Rated Power Max. 50W/10,000VDC/3A | Coil Resistance  $\Omega$  10-1,650

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1
- 3 Contact Form: A, B
- 4 Switch Model: 69, 83
- 5 Pin-out: 02, 03, 150, 300 (150 and 300mm axial cables)

- Highlights
- Switching 10kVDC
- Breakdown 15kVDC
- High IR  $10^{12}\Omega$
- Leakage Dist. >32mm

Axial Wire Leads Optional



# SOLUTIONS | Reed Relays

Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.



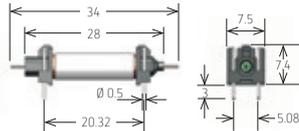
HI 00 - 1 A 00  
1 2 3 4

High Voltage & Isolation

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  140-3,000

- |                     |            |
|---------------------|------------|
| 1 Nominal Voltage:  | 05, 12     |
| 2 Contact Quantity: | 1          |
| 3 Contact Form:     | A          |
| 4 Switch Model:     | 66, 75, 85 |

Highlights  
Switching 1kVDC  
High IR  $10^{11}\Omega$



HF 00 - 1 A - 54 - 0  
1 2 3 4 5

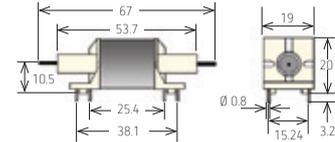
High Frequency

Rated Power Max. 25W/500VDC/1.5A | Coil Resistance  $\Omega$  40-1,000

- |                      |            |
|----------------------|------------|
| 1 Nominal Voltage:   | 05, 12, 24 |
| 2 Contact Quantity:  | 1          |
| 3 Contact Form:      | A          |
| 4 Switch Model:      | 54         |
| 5 Breakdown Voltage: | 5, 6, 8, 9 |

Complete Electrostatic and Magnetic Shielding

Highlights  
Carry current  
5A @ 30MHz  
Breakdown  
up to 9kVDC  
IR  $10^{11}\Omega$



CRF 00 - 1 A X - (250)  
1 2 3 4 5

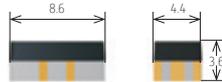
High Frequency

Rated Power Max. 10W/170VDC/0.5A | Coil Resistance  $\Omega$  70-150

- |                     |  |
|---------------------|--|
| 1 Nominal Voltage:  | 03, 05                                     |
| 2 Contact Quantity: | 1  |
| 3 Contact Form:     | A  |
| 4 Mount:            | S (BGA), empty = standard                  |
| 5 T&R Qty:          | empty=1,000pcs standard, 250=250pcs option |

Highlights  
**CRUS**  
7GHz >40ps rise  
Coax screen Z = 50 $\Omega$

Low thermal  
offset 10 $\mu$ V typ.  
IR  $10^{11}\Omega$



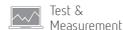
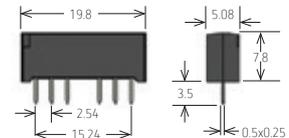
SIL 00 - 1 A 72 - 74 X  
1 2 3 4 5 6

High Frequency

Rated Power Max. 10W/200VDC/0.4A | Coil Resistance  $\Omega$  500-1,000

- |                     |                         |
|---------------------|-------------------------|
| 1 Nominal Voltage:  | 05, 12                  |
| 2 Contact Quantity: | 1                       |
| 3 Contact Form:     | A                       |
| 4 Switch Model:     | 72                      |
| 5 Pin-Out:          | 74                      |
| 6 Option:           | L (Standard), D (Diode) |

Highlights  
**CRUS**  
1GHz RF  
Coax screen for  
Z=50 $\Omega$   
Impedance





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MRX 00 - 0 X 00  
1 2 3 4

Special - Intrinsically Safe

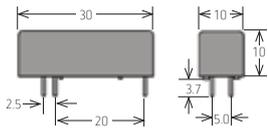
Rated Power Max. 50W/375VDC/0.7A | Coil Resistance  $\Omega$  125-5,880

- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 1, 2, 4
- 3 Contact Form: A, B, c
- 4 Switch Model: 66, 85, 90

Highlights



Breakdown 2kVDC



BT/ 00 - 2 A 00  
1 2 3 4  
 BTS

Special - Low Thermal

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  350-5,000

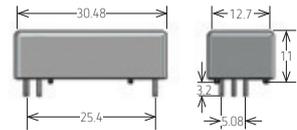
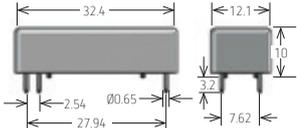
- 1 Nominal Voltage: 05, 12, 24
- 2 Contact Quantity: 2
- 3 Contact Form: A
- 4 Switch Model: 66, 75, 45 (BTS)

Highlights

Switching 1kVDC

Breakdown 1.5kVDC

Thermal Offset <math><1\mu V</math>



# SOLUTIONS | Reed Relays

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DIP / 00 - 0 X 00 - 00 XHR  
SIL 1 2 3 4 5 6

Special - Low Coil Consumption

Rated Power Max. 10W/200VDC/0.5A | Coil Resistance  $\Omega$  1,000-2,000

- 1 Nominal Voltage: 05, 12, .....
  - 2 Contact Quantity: 1 .....
  - 3 Contact Form: A .....
  - 4 Switch Model: 72 .....
  - 5 Pin-Out: DIP = 12, 13, 51, SIL = 71 .....
  - 6 Option: L (M) = Standard D, (Q) = Diode (I) = Magnetic Shield .....
- Coil power consumption 25 - 72 mW

Highlights

IR 10<sup>9</sup>Ω

Breakdown  
200VDC

Magnetic  
Shield

Diode



\*For dimensions refer to the standard DIP (p19) and SIL (p23) section

BE 00 - 0 X 00 - X  
1 2 3 4 5

Special - Latching

Rated Power Max. 100W/1000VDC/1A | Coil Resistance  $\Omega$  500-800

- 1 Nominal Voltage: 05, 12, 24 .....
- 2 Contact Quantity: 1E, 2A+2B .....
- 3 Contact Form: (A+B), E .....
- 4 Switch Model: 66, 85 .....
- 5 Housing Option: (M)etal .....

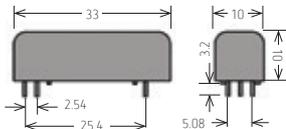
Highlights

Latching

Switching  
500V

Breakdown  
2kVDC

IR 10<sup>12</sup>Ω



NP-CL/ 1 A 00 - 0000 - 000  
DIL-CL 1 2 3 4 5

Special

Rated Power Max. 10W/200VDC/0.5A | Coil Resistance  $\Omega$  4-18

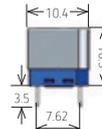
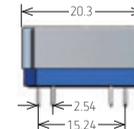
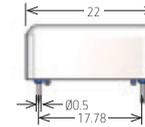
- Pull-In in mA range .....
- 1 Contact Quantity: 1 .....
  - 2 Contact Form: A .....
  - 3 Switch Model: 66, 81 .....
  - 4 Coil Resistance: 4/4, 9, 10, 15, 18 .....
  - 5 Pin-Out: DIL = 13, 15, 18 NP = 210, 213, 218 .....
- Standard Pull-In Current = 15 mA

Highlights

Magnetic Shield

2 Coils Optional

Current Loop  
Relays  
Activated by  
small current



# OPTOCOUPLER SELECTION GUIDE

“Optocouplers Handle Hazardous Environments And Meet ATEX Intrinsically Safe Requirements.”

Often times electronic equipment is required to carry out certain functions in potentially explosive atmospheres. To prevent potential ignition of the explosive atmosphere via a spark or arc in these environments, all components must be selected very carefully. Components meeting these requirements are generally referred to as intrinsically safe. These components must be tested such that they will not become an ignition point when subjected to short circuits or adjacent component failures. They must also switch to a defined state when subjected to overload conditions. Our 522-03-i, 525-03-0-i, 535-04-0-i, and 567-70-i Optocoupler and MRX reed relay series (page 24) are all ideal for this environment.

Optocoupler Series	Intrinsically Safe				Special		
	522	525	535	567	521	528	530
Description	Small housing with creepage distance of 12 mm and Isolation 4000VDC	Compact housing with creepage distance of 14.5 mm and Isolation 4000VDC	Optocoupler with Darlington Output and Current Transfer Ratio of 300%	Optocoupler with Schmitt Trigger as Output ensures transmission frequency up to 2MHz	Stable Optocoupler with a higher creepage distance of 25.4 mm and Isolation 6,000VDC	Two Optocouplers integrated into one housing with high Isolation of 10,000VDC	Slim housing with extra high Isolation from 10,000 to 22,000VDC
Output	Transistor	Transistor	Darlington	Schmitt Trigger	Transistor	Two transistors	Transistor
Package / Mounting	Potted/THT	Potted/THT	Potted/THT	Potted/THT	Potted/THT	Potted/THT	Potted/THT
Isolation Voltage Input/Output Min. (VDC)	4,000	4,000	4,000	4,000	6,000	10,000	10,000 - 20,000
Creeping Distance, Air Path I/O Min. (mm)	12	14.5	14.5	14.5	24.5	42	34
Current Transfer Ratio Ic/If (If = 10mA) Min. (A)	0.5	0.5	3.0	-	0.5	0.9	0.5
Transmission frequencies up to (KHz)	85	50	2	500	50	50	50
Insulation resistance input /output up to (Ω)	10 <sup>12</sup>	10 <sup>12</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>13</sup>
Ambient Temperature (°C)	-40 to 85	-40 to 85	-40 to 85	-20 to 85	-40 to 85	-40 to 85	-40 to 85
Options and features	Small size	Small size	High current transfer ratio	Fast switching time	High creepage distance	Two optocouplers in one housing	Extra high voltage isolation
Highlights & Certifications	  	 	  	 			
Ordering info on page(s)	28	28	29	29	30	30	31



**Important Notice:** The scope of the technical and application information included in this catalog is necessarily limited. Operating environments and conditions can materially affect the operating results of Standex Electronics products. Users must determine the suitability of any Standex Electronics component for their specific application, including the level of reliability required, and are solely responsible for the function of the end-use product.



### TYPICAL OPTOCOUPLER FEATURES

- Galvanic separation between input & output circuits
- Analog & digital signal transfer is possible
- Marginal coupling capacities between input & output
- Minor output delay times compared to relays
- Long life due to non-abrasive mechanical wear
- Isolation resistance between input & output up to  $10^{13}\Omega$
- Magnetic fields do not impact operation
- A photodiode makes very short cycle times (microseconds) possible, with up to 500 KHz
- Isolation voltage between input & output up to 22 kVDC
- Able to invert the output signal during transfer
- Lifetime factor increased by a factor of 10, if the LED is used with < 50% of the nominal current
- Resistant against voltage drop
- ATEX & IECEx certified

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## 522

### Intrinsically Safe

Insulation resistance input /output up to  $10^{12} \Omega$ , Transmission frequencies up to 85KHz

Turn On/Off Time ( $\mu\text{sec}$ )	5.5/4.2
Collector-Emitter Voltage Max. (VDC)	32
Forward Voltage $U_f$ max. (VDC)	1.5
DC Forward Current $I_f$ max. (mA)	75
Emitter Power Dissipation $P^{\text{tot}}$ max. (mW)	170
Collector Power Dissipation $P^{\text{tot}}$ max. (mW)	100
Output	Transistor
Isolation Voltage Input/Output Min. (VDC)	4,000
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	12
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	0.5

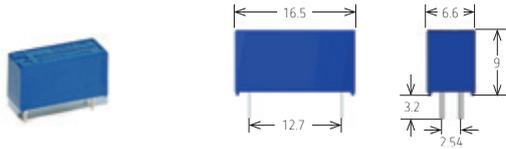
Highlights



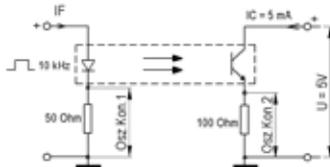
Protection: II(1)G  
[Ex ia Ga] IIC



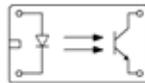
Small Package



Test Circuit



Layout (Top View)



## 525

### Intrinsically Safe

Insulation resistance input /output up to  $10^{12} \Omega$ , Transmission frequencies up to 50KHz

Turn On/Off Time ( $\mu\text{sec}$ )	5.5/4.2
Collector-Emitter Voltage Max. (VDC)	32
Forward Voltage $U_f$ max. (VDC)	1.5
DC Forward Current $I_f$ max. (mA)	100
Emitter Power Dissipation $P^{\text{tot}}$ max. (mW)	170
Collector Power Dissipation $P^{\text{tot}}$ max. (mW)	100
Output	Transistor
Isolation Voltage Input/Output Min. (VDC)	4,000
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	14.5
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	0.5

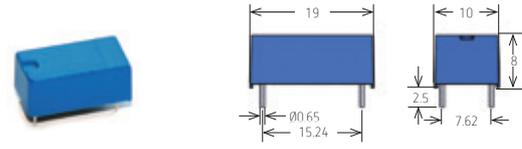
Highlights



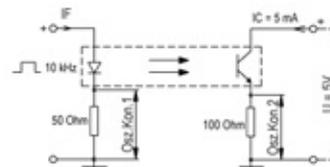
Protection: II(1)G  
[Ex ia Ga] IIC



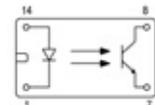
Small Package



Test Circuit



Layout (Top View)



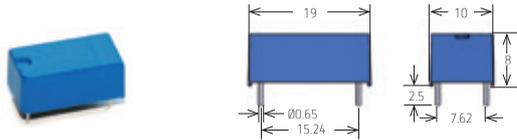
Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.

## 535

Intrinsically Safe

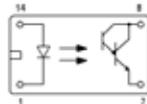
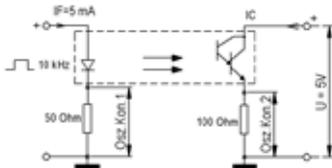
Insulation resistance input /output up to  $10^{13} \Omega$ , Transmission frequencies up to 2KHz

Turn On/Off Time ( $\mu\text{sec}$ )	19.5/212	Highlights
Collector-Emitter Voltage Max. (VDC)	32	
Forward Voltage $U_f$ max. (VDC)	1.5	
DC Forward Current $I_f$ max. (mA)	100	
Emitter Power Dissipation $P_{tot}$ max. (mW)	170	Protection: II(1)G [Ex ia Ga] IIC
Collector Power Dissipation $P_{tot}$ max. (mW)	100	
Output	Darlington	
Isolation Voltage Input/Output Min. (VDC)	4,000	
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	14.5	
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	3.0	



Test Circuit

Layout (Top View)

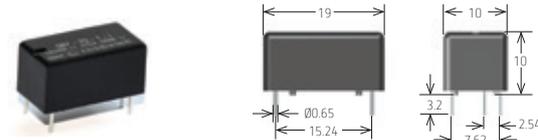


## 567

Intrinsically Safe

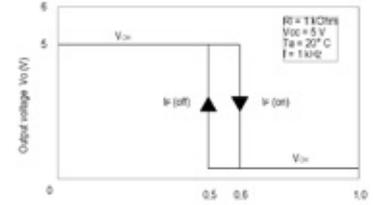
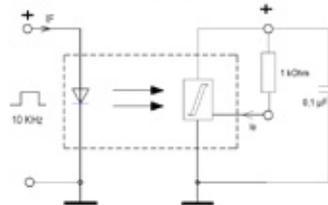
Insulation resistance input /output up to  $10^{12} \Omega$ , Transmission frequencies up to 2MHz

Turn On/Off Time ( $\mu\text{sec}$ )	0.5/0.5	Highlights
Collector-Emitter Voltage Max. (VDC)	-	
Forward Voltage $U_f$ max. (VDC)	-	
DC Forward Current $I_f$ max. (mA)	45	
Emitter Power Dissipation $P_{tot}$ max. (mW)	-	Protection: II(1)G [Ex ia Ga] IIC
Collector Power Dissipation $P_{tot}$ max. (mW)	85	
Output	Schmitt Trigger	
Isolation Voltage Input/Output Min. (VDC)	4,000	
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	14.5	
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	-	

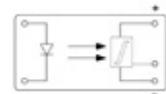


Test Circuit

Transfer Characteristics (IFT)



Layout (Top View)



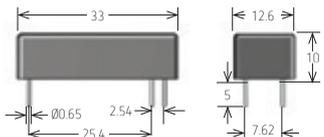
Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.

**521**

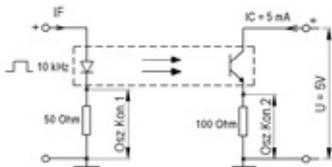
**Special**

Insulation resistance input /output up to  $10^{13} \Omega$ , Transmission frequencies up to 50KHz

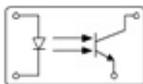
Turn On/Off Time ( $\mu\text{sec}$ )	5.5/4.2	Highlights
Collector-Emitter Voltage Max. (VDC)	32	<b>High Creepage Distance</b>
Forward Voltage $U^f$ max. (VDC)	1.5	
DC Forward Current $I^f$ max. (mA)	100	
Emitter Power Dissipation $P^{\text{tot}}$ max. (mW)	170	
Collector Power Dissipation $P^{\text{tot}}$ max. (mW)	100	
Output	Transistor	
Isolation Voltage Input/Output Min. (VDC)	6,000	
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	24.5	
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	0.5	



Test Circuit



Layout (Top View)

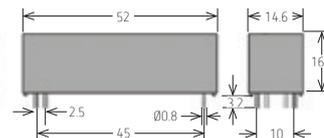


**528**

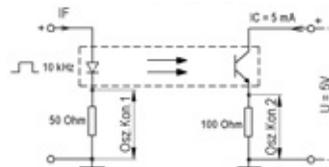
**Special**

Insulation resistance input /output up to  $10^{12} \Omega$ , Transmission frequencies up to 50KHz

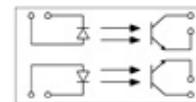
Turn On/Off Time ( $\mu\text{sec}$ )	5.5/4.2	Highlights
Collector-Emitter Voltage Max. (VDC)	70	<b>2 Optocouplers in one package</b>
Forward Voltage $U^f$ max. (VDC)	1.5	
DC Forward Current $I^f$ max. (mA)	100	
Emitter Power Dissipation $P^{\text{tot}}$ max. (mW)	170	
Collector Power Dissipation $P^{\text{tot}}$ max. (mW)	100	
Output	Two Transistors	
Isolation Voltage Input/Output Min. (VDC)	10,000	
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	42	
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	0.9	



Test Circuit



Layout (Top View)



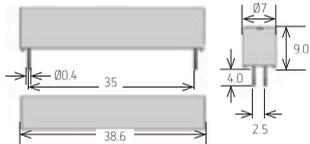
Note: All dimensions are in mm and tolerances according to ISO 2768-m. Please refer to the product datasheets on our website for full dimensions, specifications, tolerances, etc. Not all part number combinations are possible, consult the factory for more info. We reserve the right to make any changes according to technological progress or further developments.

530

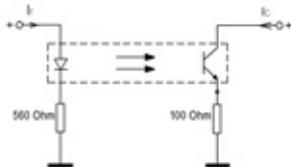
## Special

Insulation resistance input /output up to  $10^{13} \Omega$ , Transmission frequencies up to 50KHz

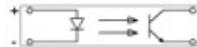
Turn On/Off Time ( $\mu\text{sec}$ )	5.5/4.2	Highlights
Collector-Emitter Voltage Max. (VDC)	32	Extra high Isolation Voltage
Forward Voltage $U_f$ max. (VDC)	1.5	
DC Forward Current $I_f$ max. (mA)	100	♥
Emitter Power Dissipation $P_{tot}$ max. (mW)	170	
Collector Power Dissipation $P_{tot}$ max. (mW)	100	
Output	Transistor	
Isolation Voltage Input/Output Min. (VDC)	10,000 - 20,000 (22,000 Option)	
Turn On/Off Creeping Distance, Air Path I/O Min. (mm)	34	
Current Transfer Ratio $I_c/I_f$ ( $I_f = 10\text{mA}$ ) Min. (A)	0.5	



Test Circuit



Layout  
(Top View)



# Standex | Smart.



## E-CARS & ALTERNATIVE ENERGY

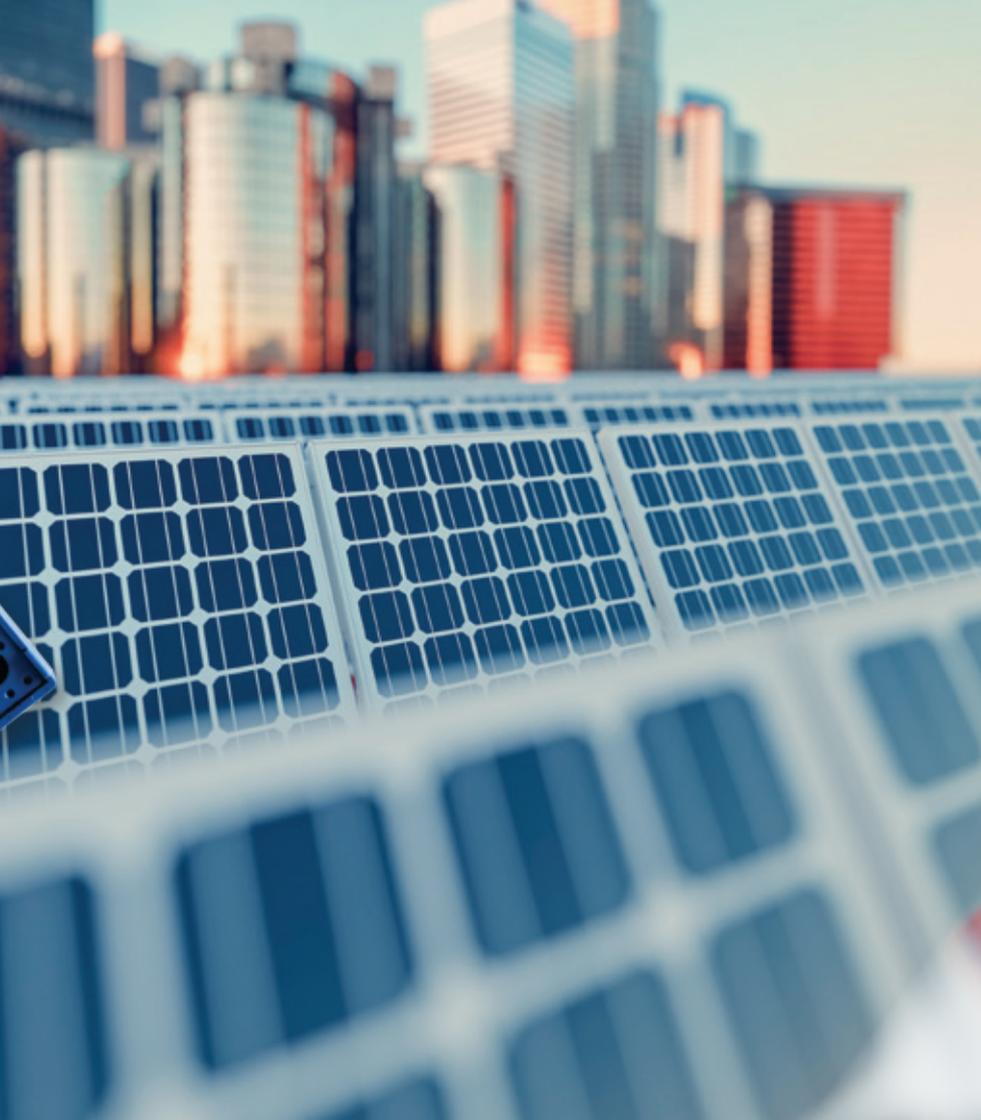
“Reliable, energy efficient, and high isolation control”

Standex Electronics reed relays meet the requirements for proper isolation control within photovoltaic systems and the internal measurement systems of electric vehicles. Especially for measuring isolation resistance across several components within a power system for solar market applications or prior to grid connection. They also assist in detecting current leaks, saving power and preventing injuries.

### GENERAL REQUIREMENTS - APPLICATION DEPENDENT

- High Isolation between control and load circuit (KT, LI)
- High Isolation across contacts (KT, LI)
- Capability of switching high voltage up to 1kVDC
- Capability of carrying very low current (leakage current detection)
- High Reliability
- Long Lifetime
- Compact Size
- High Creepage & Clearance Distance
- Following the norms IEC 60664-1, ISO 6469-3 and IEC 62109-1/2





## APPLICATIONS

- Battery Management Systems
- Solar Inverters
- Power Distribution
- Battery Conditioning
- Smart Grid

## CUSTOMER CONFIGURATIONS

- Customized nominal voltage of coil
- High coil resistance for low consumption
- THT and SMD mounting
- Life Time Testing dependent on Load
- Customized Marking

That's **Standex** | Smart.

[standexelectronics.com](http://standexelectronics.com)

# Standex | Strong.



## TEST & MEASUREMENT

### “Passing fast digital pulses with excellent Isolation”

Switching both low and high level loads, and passing fast digital pulses (picosecond range) in a 50 Ohm impedance environment, while offering excellent isolation are just a few of the features that make Standex Electronics reed relays ideally suited in Test & Measurement applications.

#### GENERAL REQUIREMENTS - APPLICATION DEPENDENT

Perfect Isolation between coil/contact and across the open switch (KT, LI, SHV, BE, HI, H, HE, HM)

Capability of switching both low and high level loads

Internal Magnetic Shield for High Density Assembly (CRF, CRR, UMS, RM, SHV, SHC)

High Reliability and Long Lifetime

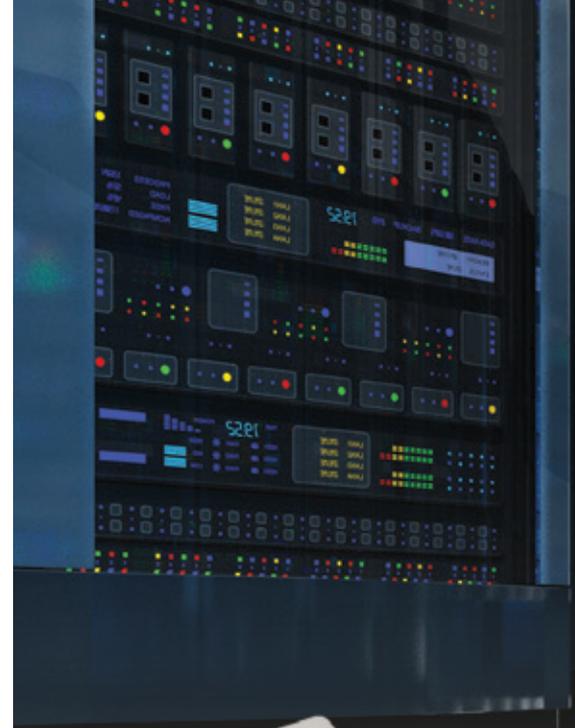
Low Leakage Currents

Fast Operation Time

High Frequency Signals (CRF, RM-4A, SIL-RF, HF)

Low Thermal Offset Voltage (BT/BTS)

Contact Capacitance 0.3 pF (CRR, CRF, UMS)





### APPLICATIONS

- Insulation Testers
- Digital Multimeter (DMM) & Oscilloscopes
- Semiconductor Testers
- Multiplexers & Data Selectors
- Matrix Switches
- Automated test Equipment
- Cable Harnesses Testers
- Embedded PCB Testers

### CUSTOMER CONFIGURATIONS

- Customized series MRE, SPL and many others
- Open designs for very high IR coil to contact >10^14
- High Creepage & Clearance Distances
- Electrostatic Screen and Magnetic Shield optional
- Switching RF signals up to 7 GHz
- Internal Magnetic Shield for High Density Assembly
- Customized coil voltage and pin-outs
- High coil resistance for low consumption
- Latching version with one or two coils



That's **Standex** | Strong.

# Standex | Smart.



## MEDICAL

“Reliably carry high voltage and frequency signals while providing vital galvanic isolation.”

Most of today's modern hospitals around the world are now equipped with new state of the art surgical operating rooms. Only reed relay technology is equipped to handle the high frequency, high current, and high voltage isolation requirements in a reliable and safe manner in medical equipment such as surgical generators and automated external defibrillators.

### GENERAL REQUIREMENTS - APPLICATION DEPENDENT

- High Isolation between control and load circuit
- High Isolation across contacts
- High Creepage & Clearance Distances
- Capable of handling high voltage
- High Reliability
- Long Lifetime
- Following the norms IEC 60601-1, IEC 61010 and IEC 60255-27





## APPLICATIONS

- HF Surgical Generators
- Automated External Defibrillators
- Isolation Functions

## CUSTOMER CONFIGURATIONS

- Open designs for very high IR coil to contact  $>10^{14}$
- Creepage & Clearance Distances on demand
- Electrostatic Screen and Magnetic Shield optional
- Magnetic Shield for High Density Assembly
- Customized coil voltage and pin-outs
- High coil resistance for low consumption

That's **Standex** | Smart.

[standexelectronics.com](http://standexelectronics.com)

# Standex | Strong.



## INTRINSICALLY SAFE

“Isolation up to 4 kVDC and non-arcing environments”

Our line of optocouplers can safely handle input/output isolation as high as 4,000 VDC that have met and been certified for the stringent requirements of ATEX. They offer insulation resistances as high as  $10^{13}$  ohms, operate in less than 10  $\mu$ sec, and creepage distances from input to output are up to 14.5 mm. (see page 26 for more info)

### GENERAL REQUIREMENTS - APPLICATION DEPENDENT

- Intended for use in Systems in Potentially Explosive Atmospheres
- ATEX certified: KIWA 18ATEX0017U (Directive 2014/34/EU), Protection: II(1)G [Ex ia Ga] IIC
- In compliance with EN IEC 60079-0 : 2018 and EN 60079-11 : 2012
- Certified: IECEx KIWA 18.0009U, Protection: [Ex ia Ga] IIC
- High Isolation Voltage between Input and Output up to 4 kVDC
- Isolation resistance up to  $10^{13}$  Ohm
- Fast Switching Time in microseconds
- High Reliability and Long Lifetime due to non-abrasive mechanical wear
- Long creepage distances
- Marginal coupling capacities between input and output
- Magnetic fields do not impact operation





## APPLICATIONS

- Electronics for Mining
- Oil & Gas Production
- Geothermal Instrumentation
- Seismic Instrumentation
- Test & Measurement
- Any Non-arcng Environment

## CUSTOMER CONFIGURATIONS

- Additional certifications on demand
- High Voltage and Isolation Resistance Extensions
- Temperature and Humidity Testing
- Size modifications on demand
- Customized Pin-outs
- Customized Laser Marking

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[standexelectronics.com](http://standexelectronics.com)



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