

se	Features	• Micro Reed	• AC Line Voltage Micro Reed	• High Power Micro Reed	• Close Differential Micro Reed	• General Purpose Close Differential Micro Reed	• General Purpose Micro Reed	• General Purpose Micro Reed	• Lowest pull-in sensitivity • High switching speed • High breakdown voltage			• Stable, low contact resistance • Suitable for dynamic measure		• High Voltage Switching • High Breakdown Voltage	• High Switching Capability • High Breakdown Voltage		• High Power Micro Reed	• Ultra High Power Micro Reed	• High Power
		Supplier	Coto	Coto	Coto	Coto	Coto	Coto	Coto	Comus	Comus	Comus	Comus	Comus	Comus	Comus	Coto	Coto	OKI
	Type	RI-23	RI-21	RI-25	RI-26	RI-06	RI-03	RI-01B	GC2322	GC2315	GC2314	GC2722	GC2717	GC3723	GC3717	RI-46	RI-48	ORD2210	
	Contact Form	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	
	Contact Material	Plated Ru	Plated Ru	Sputtered Ru	Sputtered Ru	Ru	Ru	Ru	Rh	Rh	Rh	Rh	Rh	Rh	Rh	Sputtered Ru	Sputtered Ru	Rh	
Switching Capacity	Max. W/VA	10	10	25	20	10	10	10	10	10	10	12	10	40	40	40	70	DC50W / AC70	
Switching Voltage	Max. VDC/AC	200	200	200	200	200	200	200	150	400	400	230	500	230	400	250	250	DC200 / AC1	
Switching Current	Max. A	0.5	0.5	1.0	1.0	0.4	0.5	0.5	0.5	0.5	0.5	1.0	0.5	2.0	2.0	1.0	1.0	DC1.0 / AC0.	
Carry Current	Max. A	2.75	2.75	3	1.75	2.5	2.5	1.25	1.0	1.0	1.0	2.0	1.0	3.0	3.0	3	2.25	2.5	
Breakdown Voltage	Min. YDC	200	225	200	275	200	200	200	200 (PI≥15)	350 (PI≥15)	500 (PI≥15)	400	1300	200 (PI≥30)	500 (PI≥30)	300	400	250min.(PI≥2)	
Contact Resistance	Max. mOhms	100	100	100	110	150	120	100 ²	150	150	150	100	100	100	100	90	90	100	
Insulation Resistance	Min. Ohms	10 ¹²	10 ¹²	10 ¹²	10 ¹²	10 ¹²	10 ¹²	10 ¹²	10 ¹⁰	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹²	10 ¹²	10 ¹¹	
Pull-in Sensitivity	AT	8 - 70	8 - 70	8 - 70	14 - 52	6 - 32	6 - 52	6 - 32	10 - 35	10 - 35	10 - 35	20 - 50	20 - 50	15 - 50	15 - 50	10 - 70	15 - 70	15 - 60	
Drop-out Sensitivity	AT	4 - 32	4 - 32	4 - 32	70 - 80%	65 - 75%	3 - 36	3 - 27	5 Min.	5 Min.	5 Min.	5 Min.	5 Min.	15 Min.	15 Min.	4 - 22.5	8 - 32	7 Min.	
Operate Time	Max. ms	0.25	0.25	0.25	0.3	0.3	0.25	0.25	1.0	1.0	1.0	2.0	2.0	2.0	2.0	0.35	0.35	0.6	
Bounce Time	Max. ms	0.15	0.1	0.15	0.03	0.15	0.15	0.15	0.2	0.2	0.2	0.5	0.5	0.5	0.5	0.15	0.15	0.5	
Release Time	Max. ms	0.07	0.07	0.07	0.03	0.07	0.07	0.07	0.05	0.05	0.05	0.10	0.10	0.10	0.10	0.03	0.03	0.05	
Resonant Frequency	Typ. Hz	5500	5500	5100	5500	5500	5500	5500	5000	5000	5000	2900	2900	4200	4200	3200	3200	2500	
Operating Frequency	Max. Hz	170	100	50	125	170	170	100	200	200	200	200	200	300	300	125	125	500	
Vibration (10-1000Hz)	g	10	10	10	10	10	10	10	35	35	35	35	35	35	35	10	10	20	
Shock (11ms)	g	150	150	150	50	150	150	150	50	50	50	50	50	50	50	500	500	30	
Capacitance	Typ. pF	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.2	0.2	0.5	
Operating Temp. Range	Deg. °C	-55 +125	-55 +125	-55 +125	-55 +125	-55 +125	-55 +125	-55 +125	-40 +125	-40 +125	-40 +125	-40 +125	-40 +125	-40 +125	-40 +125	-55 +125	-55 +125	-40 +125	
Test Coil	Type	PSC	PSC	PSC	PSC	PSC	PSC	PSC	I035	I035	I035	I700	I700	I700	I700	PSC	PSC	O229	

Features				• Vacuum High Power • High Breakdown Voltage	• High Breakdown voltage • High Switching Power	• High Switching current	• High Switching current • High Breakdown voltage	• High Breakdown voltage • High Switching capability	• High Breakdown voltage • High Switching capability	• High Switching voltage • High Switching capability	• High Switching voltage • High Switching capability	• General purpose reed switch	• High Switching current • High Breakdown voltage • Vacuum Technology			• Micro Changeover Switch	• Economical change-over switches			• High capability/size ratio • High Power Change-over Switch		• High Switching capability • High Breakdown voltage	• High Switching capability
Supplier				OKI	OKI	Comus	Comus	Comus	Comus	Comus	Comus	Comus	Comus	Comus	Comus	Coto	Comus	OKI	Comus	Comus	Comus	Comus	
Type				ORD2210V	ORD229	GC3823	GC3817	GC1513	GC1517	GC1523	GC1525	HBS-7KVCDC	HBS-10KVCDC	HBS-15KVCDC	RI-90	GC3525	ORT551	GC3336	GC3436	GC1917	GC1625		
				A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	
Contact Form				Rh	Rh	Rh	Rh	Rh	Rh	Rh	Rh	A	W	W	W	Ru	Rh	Rh	Rh	Rh	Rh	Rh	
VA	Switching Capacity	Max.	W/VA	100	DC50 / AC70	60	60	120	30	120	80	50	50	50	5	5	3	20	20	60	60		
50	Switching Voltage	Max.	VDC/AC	DC350 / AC300	DC350 / AC300	230	400	1500	1500	250	250	5000	7500	10000	175	100	30	150	150	400	230		
7	Switching Current	Max.	A	DC1.0	DC0.7 / AC0.5	3.0	3.0	3.0	1.0	3.0	1.3	3.0	3.0	3.0	0.4	0.5	0.2	1.0	1.0	1.0	1.0		
	Carry Current	Max.	A	2.5	2.5	4.0	4.0	5.0	2.0	5.0	2.0	5.0	5.0	5.0	0.5	1.0	0.5	2.0	2.0	2.0	2.0		
0	Breakdown Voltage	Min.	VDC	1000min.	500	400 500 (PI≥50)	850 1000 (PI≥50)	1500 3000 (PI≥75)	1500 3000 (PI≥75)	500 800 (PI≥75)	500 800 (PI≥75)	7000	10000	15000	200	200	200min.(PI≥20)	200	200	750 1000 (PI≥50)	400		
	Contact Resistance	Max.	mOhms	100	100	100	100	100	100	100	100	100	100	100	120	150	100	150	150	100	100		
	Insulation Resistance	Min.	Ohms	10 ¹⁰	10 ¹⁰	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹¹	10 ¹⁰	10 ¹⁰	10 ¹⁰	10 ⁹	10 ⁹	10 ⁹	10 ⁹	10 ⁹	10 ⁹	10 ⁹		
	Pull-in Sensitivity		AT	20 - 60	20 - 60	30 - 70	30 - 70	60 - 95	60 - 95	30 - 95	30 - 95	90 - 170	90 - 200	120 - 200	15 - 40	15 - 50	10 - 30	15 - 30	15 - 30	40 - 100	80 - 120		
	Drop-out Sensitivity		AT	7 Min.	6 Min.	15 Min.	15 Min.	30 Min.	25 Min.	30 Min.	25 Min.	40 Min.	40 Min.	40 Min.	5 Min.	8 Min.	4 Min.	5 Min.	5 Min.	20 Min.	20 Min.		
	Operate Time	Max.	ms	0.6	0.6	2.5	2.5	3.5	3.5	3.5	3.5	1.8	1.8	1.8	2.5	1.5	1.0	2.0	2.0	4.0	4.0		
	Bounce Time	Max.	ms	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.8	1.8	1.8	0.3	0.6	1.5	0.6	0.6	0.5	0.5		
	Release Time	Max.	ms	0.05	0.05	-	0.10	0.2	0.2	0.2	0.2	0.5	0.5	0.5	1.0	0.5	0.5	0.5	0.5	0.15	0.10		
	Resonant Frequency	Typ.	Hz	2500	2500	2400	2400	900	900	900	900	-	-	-	TBD	-	6000	-	-	-	-		
	Operating Frequency	Max.	Hz	500	500	200	200	100	100	100	100	5	5	5	100	250	200	250	250	100	100		
	Vibration (10-1000Hz)		g	20	20	35	35	35	35	35	35	35	35	35	-	35	20	20	20	35	35		
	Shock (11ms)		g	30	30	50	50	50	50	50	50	40	40	40	-	50	30	50	50	50	50		
	Capacitance	Typ.	pF	0.5	0.5	0.5	0.5	0.8	0.8	0.8	0.8	0.5	0.5	0.5	0.8	1.5	1.5	0.8	0.8	1.0	1.0		
5	Operating Temp. Range	Deg.	°C	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-55 + 125	-55 + 125	-55 + 125	-55 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125	-40 + 125		
	Test Coil	Type		0229	0229	1800	1800	1500	1500	1500	1500	NARM RS-421-A-III or EN 119000 No.16	NARM RS-421-A-III or EN 119000 No.16	NARM RS-421-A-III or EN 119000 No.16	PSC	1035	0551	1035	1035	1500	1500		

Actuation of Reed Switches with a Permanent Magnet (Examples of switching with the use of a moving magnet.)

Direct Actuation:

A magnet moved perpendicularly towards and away from a Reed Switch turns it off and on once.

A magnet moved parallel to a Reed Switch operates it from one to three times.

A magnet swung towards and away from a Reed Switch operates it once.

A ring magnet moved parallel to a Reed Switch's axis operates it from one to three times.

In General:

For all Reed Switches the standard pull-in sensitivity is given in the table. Other pull-in sensitivities are available on request.

Contact Form A

Contact Form B

Contact Form B or C

Normally Closed Contact (Form B)

Normally Open Contact (Form C)

Life Expectancy:

The life expectancy of a reed switch is dependent upon the load being switched. At maximum rated loads life expectancy is approximately 10⁶ switching cycles. Lower load ratings can increase the life expectancy up to 5x10⁶ operations. The mechanical life expectancy can reach at least 10⁶ operations. Through the switching of inductive, capacitive, and lamp loads, the life expectancy is considerably reduced due to exceeding the specified maximum current.

Other Products

Dil & Sil Reed Relay

Reed relays consist of a switch and coil assembled into a housing, which could be plastic, metal or moulded. Compared with electro-mechanical relays, reed relays are smaller in size and generally have a faster response time, lower power consumption and longer life. Compared with solid state relays, reed relays have a real galvanic isolation between input and output. The leakage current and the ON-resistance is much lower. Reed relays also can offer a higher dielectric strength.

Reed Switch

Reed Switches consist of two or three ferromagnetic blades (or reeds) hermetically sealed inside a glass envelope. The construction ensures protection from the external environment. Three types are available: Form A (normally open), Form B (normally closed), and Form C (changeover). Various voltage and current switching levels are available and contact plating materials can be varied to accommodate specific types of load.

Magnetic Proximity Switch

Reed Proximity Switches are operated by a moving magnet and can be used to detect many directions of movement. When the magnet reaches the operate distance from the reed switch, the reed switch contacts will operate (open or close). Moving the magnet away will cause the reed switch contacts to switch back to their original position.

High Voltage Reed Relay

Reed relays consist of a switch and a coil fitted into a housing, which could be plastic, metal or moulded. Compared with electro-mechanical relays, reed relays generally have a faster response time, lower coil consumption, and are smaller in size. Furthermore, the switch is sealed in a dry, inert atmosphere, preventing the ingress of contaminants.

Tilt Switch

Tilt switches are used to sense movement (tilt) of a device above and below a horizontal axis. The angle through which the switch must move for proper operation (the differential angle) is measured from the point of just make to just break; it is specified as a maximum. When selecting a tilt switch, it is important to ensure that the operating mechanism can move the switch through an angle greater than the differential angle.

Rotation:

Examples of switching through rotational movement.

Indirect Actuation: Shielding

With the stationary arrangement of a Reed Switch and magnet, the contact Reeds are closed. Should the magnetic field be diverted away from the Reed Switch by a shield of ferro magnetic material placed between the switch and the magnet, the contacts will open. When the shield is removed, the contact Reeds become magnetically actuated and close.

Pull-in Sensitivity:

The given pull-in sensitivity of the Reed Switch has a test equipment tolerance of ± 2 AT.

Life Expectancy:

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Contact Form B

Contact Form B or C

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Flow Switch

The Flow Switch is designed to fit into a Tee connector within the pipe-work. The paddle section can be adjusted depending on the size of the pipe. It operates as water flows through the pipe it pushes the paddle up thus triggering the switch.

Magnet

Magnets come in various sizes, materials, and coatings. Bare Magnets can be supplied as a separate product or part of a proximity switch set consisting of switch and magnet. Coated Magnets can be supplied as a separate product, where you can select a magnet to suit your operation, or as part of a proximity switch set consisting of matching switch and magnet. Materials available are Alnico/Alcomax, Ceramic, Ferrite and Neodymium Iron Boron.

High Breakdown Switch

The HBS line of reed switches is the Comus groups answer to the market demands for a lower cost reed switch that is still capable of handling high voltage applications. The HBS line of reed switches is ideal for certain markets such as Medical applications; for example defibrillation equipment where high reliability and excellent quality is absolutely essential.

Standard Test Coils for Reed Contact Units

Configuration of test coils

Test Coil Type

EN119000

Test Coil nr.

Winding length l (mm)

Inside Coil Dia. Ø d (mm)

Outside Coil Dia. Ø e (mm)

Number of Turns

Nominal Cu-wire Diam. Ø (mm)

Nominal Resistance (Ohms)

0211

0212

0229

0551

1035

1500

1700

1800

-

PSC

nr. 1

nr. 7

nr. 13

nr. 2

-

nr. 21

nr. 12

nr. 14

nr. 16

-

10

Hybrid

A Hybrid sensor has multiple sensors and multiple processing techniques to obtain and transmit more information than one could achieve from independent sensors. Standard and custom packaging is available for protection and ease of mounting. Hybrids consist of time proven sensors combined with reaction time as little as 2ms.

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The Comus International group of companies consists of:

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