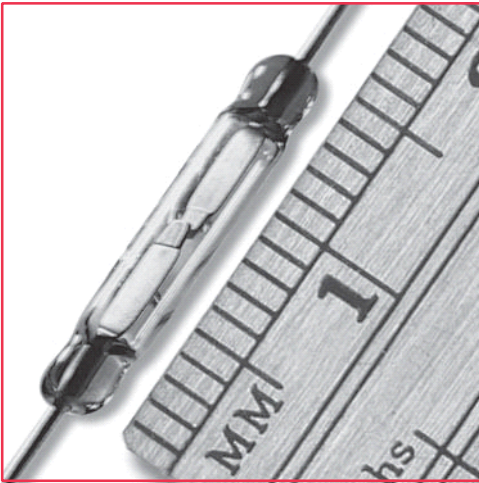


# Sensor---RI-21 Series



## RI-21 Series

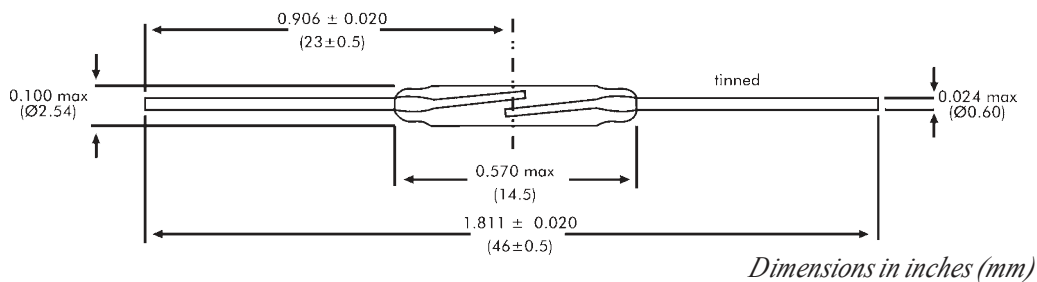
Micro dry-reed switch hermetically sealed in a gas-filled envelope. Single-pole, single-throw (SPST) type, having normally open contacts, and containing two magnetically actuated reeds.

The switch is of the double-ended type and may be actuated by an electromagnet, a permanent magnet or a combination of both.

The device is intended for use in sensors, relays, pulse counters or similar devices.

## RI-21 Series Features

- General purpose reed switch
- High breakdown voltage
- Contact layers: gold, plated ruthenium
- Superior glass-to-metal seal and blade alignment
- Excellent life expectancy and reliability



## General data for all models RI-21

### AT-Customization/ Preformed Leads

Besides the standard models, customized products can also be supplied offering the following options:

- Operate and release ranges to customer specification
- Cropped and/or preformed leads

### Coils

All characteristics are measured using the Philips Standard Coil. For definitions of the Philips Standard Coil, refer to "Application Notes" in the *Reed Switch Technical & Application Information* Section of this catalog.

### Life expectancy and reliability

The life expectancy data given below are valid for a coil energized at 1.25 times the published maximum operate value for each type in the RI-21 series.

### Noload conditions (operating frequency: 100Hz)

Life expectancy: min.  $10^8$  operations with a failure rate of less than  $10^{-9}$  with a confidence level of 90%.

### End of life criteria:

- Contact resistance  $>1\Omega$  after 2 ms
- Release time  $>2$ ms (latching or contact sticking).

### Loaded conditions (resistive load: 12V;4mA (15mA peak); operating frequency: 170 Hz)

Life expectancy: min  $10^7$  operations with a failure rate

Of less than  $10^{-8}$  with a confidence level of 90%.

### End of life criteria:

- Contact resistance  $>2\Omega$  after 4 ms
- Release time  $>0.7$ ms (latching or contact sticking).

Switching different loads involves

Different life expectancy and reliability data.

Further information is available on request.

### Mechanical Data

Contact arrangement is normally open; lead finish is tinned; net mass is approximately 190mg; and can be mounted in any position.

# Sensor---RI-21 Series

## Model Number

RI-21AAA

RI-21AA

RI-21A

RI-21B

RI-21C

Parameters	Test	Units					
<b>Operating Characteristics</b>							
Operate Rangs		AT	8-16	14-23	18-32	28-52	46-70
Release Range		AT	4-14	7.5-17.5	8-22	12-29	16-32
Operate Time-including bounce (typ.)	Energization 100AT	ms	0.1(20AT)	0.25(29AT)	0.25(40AT)	0.25(65AT)	0.25(88AT)
Bounce Time (typ)	Energization100AT	ms	0.05(20AT)	0.15(29AT)	0.15(40AT)	0.15(65AT)	0.15(88AT)
Release Time (mas)	Energization100AT	us	70(20AT)	30(29AT)	30(40AT)	30(65AT)	30(88AT)
Resonant Frequency (typ.)		Hz	5500	5500	5500	5500	5500
<b>Electrical Characteristics</b>							
Switch Power (max)		W	10	10	10	10	10
Switch Voltage DC (max)		V	200	200	200	200	200
Switch Voltage AC ,RMS value (max)		V	250	250	250	250	250
Switch Current DC (max)		mA	250	500	500	500	500
Switch Current AC, RMS value (max)		mA	250	500	500	500	500
Carry Current DC (max)		A	1	1.5	2.5	2.5	2.75
Breakdown Voltage (min)		V	225	325	375	500	650
Contact Resistance (initial max )	(energization)	mΩ	100(20AT)	100(25AT)	100(30AT)	100(40AT)	100(40AT)
Contact Resistance (intial typ.)	(energization)	mΩ	70(20AT)	70(25AT)	70(30AT)	70(40AT)	70(40AT)
Contact Capacitance (max)	without test coil	pF	0.3	0.3	0.25	0.25	0.25
Insulation Resistance (min)	RH≤45%	MΩ	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>6</sup>

### Shock

The switches are tested in accordance with “IEC 68-2-27”,test Ea (peak acceleration150G, half sinewave; duration 11 ms).Such a shock will not cause an open switch (no magnetic field present) to close,nor a switch kept closed by an 80 AT coil to open.

### Vibration

The switches are tested in accordance with “IEC 68-2-6”,test Fc(acceleration 10G;below cross-over frequency 57 to 62 Hz; amplitude 0.75 mm; frequency range 10 to 2000Hz, duration 90 minutes).Such a vibration will not cause an open switch(no magnetic field present) to close, nor a switch kept closed by an 80 AT coil to open.

### Mechanical Strength

The robustness of the terminations is tested in accordance with “IEC 68-2-21”,test Ua<sub>1</sub>(load 40N).

### Operating and Storage Temperature

Operating ambient temperature; min: -55°C; max:+125°C.Storage temperature; min: -55°C; max:

+125°C.Note:Temperature excursions up to150°C may be permissible.For more information contact your nearest Coto Technology sales office.

### Soldering

The switch can withstand soldering heat in accordance with “IEC 68-2-20”, test Tb, method 1B: solder bath at 350±10°C for 3.5 ±0.5s. Solderability is tested in accordance with “IEC 68-2-20”,test Ta, method 3: solder globule temperature 235°C; ageing 1b: 4 hours steam.

### Welding

The leads can be welded.

### Mounting

The leads should not be bent closer than 1 mm to the glass-to-metal seals. Stress on the seals should be avoided. Care must be taken to prevent stray magnetic fields from influencing the operating and measuring conditions.