



Application Alley

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RF Receivers - Reed Relays

RF Receivers (electronic listening devices) Are Ideally Suited For Using RF Reed Relays



Custom
Engineered
Solutions for
Tomorrow

Introduction

With the continuous worldwide threat of terrorism, most countries need to be monitoring all electronic communication on a 24/7 basis. Most of this is done with electronic receivers scanning all the RF ranges where potential communication may take place. RF switches are needed to switch from scanner to scanner without affecting the very small signals that are potentially being received. Using RF semiconductors can be very expensive and suffer from inter modular distortion, while electromechanical relays are large, bulky and expensive. Standex-Meder's continually advancing RF reed relays are ideally suited for this application.

Dimensions (mm)

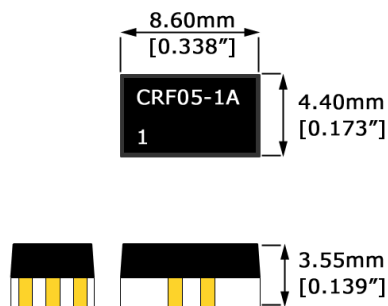


Figure 1. CRF physical layout

Electronic Receivers Use Reed Relays

Today terrorism is the most feared subject in the world. Monitoring world communications can act as a deterrent by supplying potential early warnings preventing potential calamities about to occur. Having sophisticated electronic scanning receivers that have the ability to scan large frequency bands in an efficient manner is a key requirement. To cover these wide frequency ranges RF switches must be employed having the ability to carry the wide range of frequencies without adding any distortion. The main job of the switches is to switch in different filters, which in turn pick off different frequency ranges to

analyze. In these cases the RF signal strength is very small; the frequencies range from DC up to 20 GHz and they need to be scanned continuously, requiring a flat insertion loss over the entire frequency range. Furthermore, minimal circuit resistance is needed so that the small signals received are not lost.

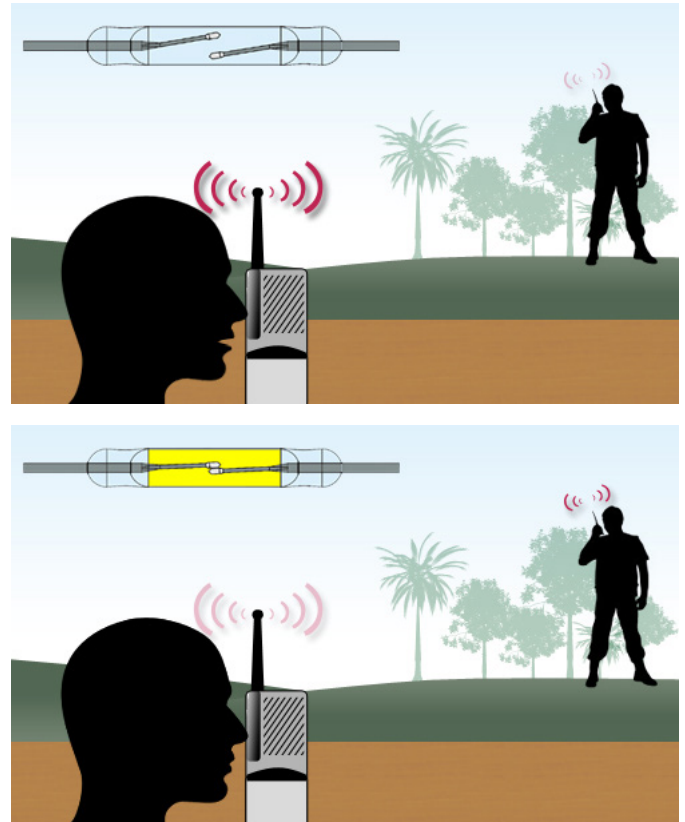


Figure 2. RF signal is received signaling a high terror alert.

Features

- High reliability
- Ideal RF characteristics
- Ideal for carrying fast digital pulses with skew rates less than 20 picoseconds.
- Ability to carry RF signals from DC up to 20 GHz (SRF)
- 50 Ω characteristic impedance
- Switch to shield capacitance < 0.5 picofarads
- Dielectric strength across the contacts 200 volts

- Contacts dynamically tested
- Surface mounted
- Very low profile
- BGAs available
- Rugged thermoset over-molded packaging
- Qual-shield arrangement
- Dielectric strength across the contacts 200 volts

Specifications (@ 20°C) CRF Series

| | Min | Typ | Max | Units |
|---|------|-----|------|-------|
| Coil characteristics | | | | |
| Coil resistance | 135 | 150 | 165 | Ω |
| Coil voltage | | 5.0 | | V |
| Pull-In | | | 3.75 | V |
| Drop-Out | 0.85 | | | V |
| Switch characteristics | | | | |
| Contact rating | | | 10 | Watts |
| Switching voltage | | | 170 | V |
| Switching current | | | 0.5 | Amps |
| Carry current | | | 0.5 | Amps |
| Static contact resistance | | | 250 | mΩ |
| Dynamic contact resistance | | | 250 | mΩ |
| Dielectric from voltage across the contacts | 210 | | | V |
| Dielectric from voltage coil to contacts | 1500 | | | V |
| Insertion Loss (@ the -3 dB down point) | | | 7 | GHz |
| Operate time | | | 0.1 | msec |
| Release time | | | 20 | μsec |
| Operate temp | -10 | | 100 | °C |
| Storage temp | -55 | | 125 | °C |



Applications

- Ideal for use in electronic receivers particularly when scanning from DC up to 20 GHz.
- Any applications where frequencies up to 20 GHz are involved.

Semiconductors switches create a problem

when switching in the filters, producing inter modular distortion. This has to be dealt with by adding more circuitry and cost. Electromechanical relays can potentially do the job, but are very large and costly. Standex-Meder's RF reed relays are ideal for this application. The CRF series has a flat insertion loss up to 7 GHz; and the new SRF series has a flat insertion loss out to 20 GHz; both of which, add no distortion and maintain a low contact resistance. They have also been tested with one milliwatt of RF power for over 2.5 billion operations with fault free operation.

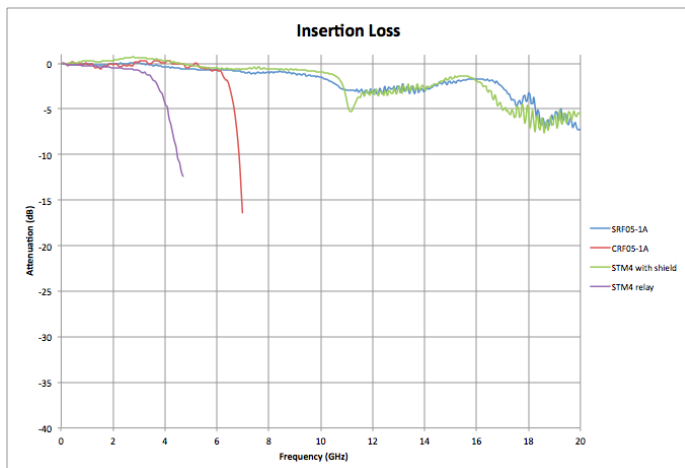
Surface Mount RF Reed Relay Series

| Series | Dimensions | | | Illustration |
|--------|------------|-----|--------|---|
| | W | mm | inches | |
| SRF | | 4.0 | 0.157 |  |
| | H | 3.2 | 0.126 | |
| | L | 7.5 | 0.295 | |
| CRF | | 4.4 | 0.173 |  |
| | H | 3.5 | 0.137 | |
| | L | 8.6 | 0.338 | |

Standex-Meder's reed relays use hermetically sealed reed switches that are further packaged in strong high strength thermoset molding compound, and can therefore be subject to various environments without any loss of reliability.

The reed relay is an excellent choice because it can operate reliably over a wide temperature range, and represents an economical way to carry out billions of switching operations.

Insertion Loss



Find out more about our ability to propel your business with our products by visiting www.standexmeder.com or by giving us a hello@standexelectronics.com today! One of our brilliant engineers or solution selling sales leaders will listen to you immediately.

About Standex-Meder Electronics

Standex-Meder Electronics is a worldwide market leader in the design, development and manufacture of standard and custom electro-magnetic components, including magnetics products and reed switch-based solutions.

Our magnetic offerings include planar, Rogowski, current, and low- and high-frequency transformers and inductors. Our reed switch-based solutions include Meder, Standex and OKI brand reed switches, as well as a complete portfolio of reed relays, and a comprehensive array of fluid level, proximity, motion, water flow, HVAC condensate, hydraulic pressure differential, capacitive, conductive and inductive sensors.

We offer engineered product solutions for a broad spectrum of product applications in the automotive, medical, test and measurement, military and aerospace, as well as appliance and general industrial markets.

Standex-Meder Electronics has a commitment to absolute customer satisfaction and customer-driven innovation, with a global organization that offers sales support, engineering capabilities, and technical resources worldwide.

Headquartered in Cincinnati, Ohio, USA, Standex-Meder Electronics has eight manufacturing facilities in six countries, located in the United States, Germany, China, Mexico, the United Kingdom, and Canada.

For more information on Standex-Meder Electronics, please visit us on the web at www.standexmeder.com.

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