Application Alley

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Cable Testing - Reed Relays

Cable Testers or Electronic Harness Testers Use Reed Relay Matrices

Standex MEDER ELECTRONICS

Custom Engineered Solutions for Tomorrow

Introduction

An essential ingredient to any electronic system is its cable harness. These harnesses are made up of, in most cases, many individually coated copper wires routed to several different locations. Some of the individual lengths can cover several meters, while collectively, they may cover several kilometers. During the harnessing process, the wires can become scraped, kinked, knotted, and or partially severed. For electronic systems to have long reliably lives, making sure their cable harnesses have no flaws is essential. To verify the harnesses are flawless, cable testers are employed. Here the designers have chosen a matrix of high voltage reed relays to test each wire to all other wires using several 1000 volts.

Dimensions (mm)

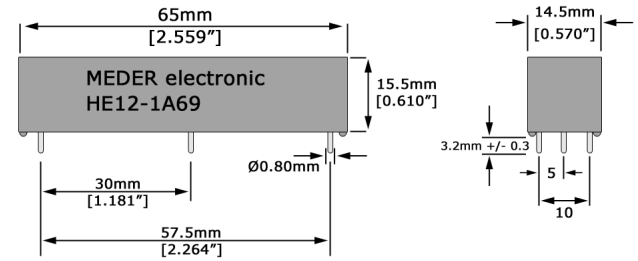

Figure 1. HE physical layout

Reed Relay Matrices are Reliably Used in Cable Testers or Electronic Harness Testers

Any instrument, vehicle, or installation that has electric or electronics carrying an assortment of voltages and currents will have a cable network or harness needed to carry out their objective. A single automobile can have 100s of meter of cable running throughout the vehicle. A single new airliner has many thousands of meters of cable running throughout it as well. More and more electronics are being continually added to these modes of transportation, requiring still more cabling. Particularly, in the case of an airliner, these harnesses must meet the rigors of flight. Here, very high and very low temperatures are involved in a high shock and a continual vibrating environment. Any nick, scrap, partially cut, or knotted wire could prove to be a disaster if the partially cut wire fully breaks and opens; or a scrap in a wire ends up shorting to the air frame. Testing these cable harnesses with high voltage from each wire to all other wires has been a proven approach to eliminate potential cable shorts. And applying high current through the wires has allowed one to check the possibility of a partially cut wire.

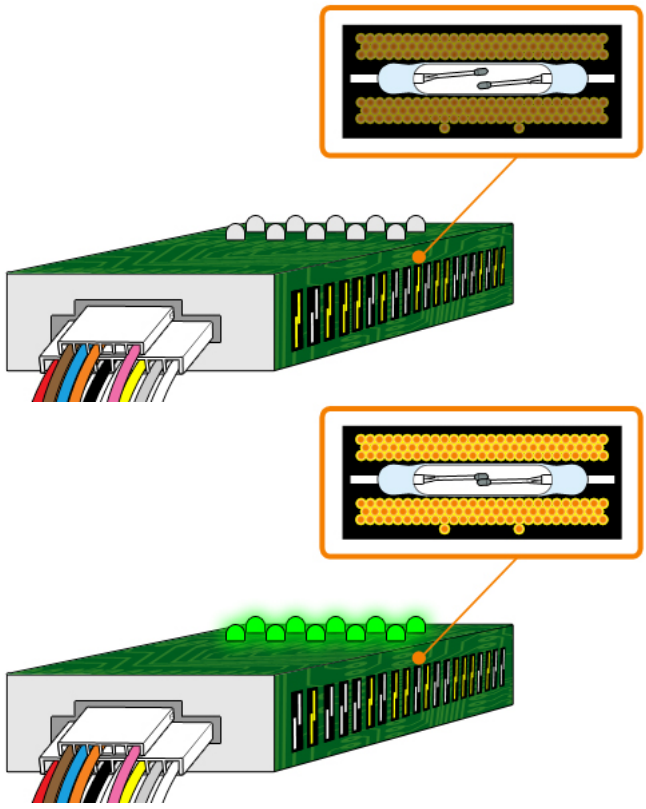

Figure 2. Reed Relay Matrix switching on/off while testing cable harness.

Features

- Ability to Switch up to 10,000 Volts
- Ability to withstand up to 15,000 volts across the contacts
- Contacts dynamically tested
- Several hundred million operations

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- Ability to hold off 15,000 volts between switch to coil
- Multiple switching configurations available
- Three different package configurations
- Several mounting options, including pins outs and insulated leads
- High insulation resistance greater than 10^{12} Ohms

Applications

- Ideal for use in testing cables and cable harnesses in cable test equipment
- Ideal for use in factories that make cables and harnesses and make their own specialized test equipment. This could be in the electronic industry, in the auto industry and the airline industry.

Specifications (@ 20°C) HE Series

	Min	Typ	Max	Units
Coil characteristics				
Coil resistance	45	50	55	Ω
Coil voltage		5.0		V
Pull-In			3.5	V
Drop-Out	0.85			V
Switch characteristics				
Contact rating			100	Watts
Switching voltage			7500	V
Switching current			3.0	Amps
Carry current			6.0	Amps
Carry current max. for 5ms			10.0	Amps
Static contact resistance			150	mΩ
Dynamic contact resistance			200	mΩ
Dielectric from voltage across the contacts	10,000			V
Dielectric voltage between contacts and coil	10,000			V
Operate time			3.0	msec
Release time			1.5	msec
Operate temp	-20		70	°C
Storage temp	-30		100	°C

*Coil parameters will vary by 0.2% /oC

In both of the above failure instances, high voltage reed relays have worked well in a matrix configuration. Standex-Meder's line of high voltage reed relays, not only offers the high voltage requirements, but also includes the ability to carry high currents up to 15 amps on a continuous 100% basis. This gives cable test designers the ability to select one component to carry out the two diverse functions. Short duration pulsed currents can be even higher. Standex-Meder's high voltage reed relays can switch up to 10,000 volts, standoff 15,000 volts across the contacts, and standoff 15,000 volts from the relay coil to the contacts. Standex-Meder has three packages to choose from, all of which, allow for multiple switches, normally open and normally closed contacts, different pins configurations, and high voltage lead wire for 'sky wiring'.

Standex-Meder's reed relays use hermetically sealed reed switches that are further packaged in strong high strength plastic, 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.

High Voltage / Current Reed Relay Series

	Dimenstions	mm	inches	Illustration
Series				
HE	W	14.5	0.570	
	L	15.5	0.610	
	H	65.0	2.559	
HF	W	19.0	0.748	
	L	20.0	0.787	
	H	53.7	2.114	
HM	W	19.0	0.748	
	L	19.8	0.780	
	H	68.00	2.677	

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.