

**8 billion miles out.
There's no acceptable failure rate.**

That's why Teledyne is here.



 **TELEDYNE RELAYS**

The Preeminent Supplier of High-Reliability Relays

High-reliability relays...because in deep space there is no acceptable failure rate.

Teledyne Relays has a long history of supplying High Reliability relays for use in space bound vehicles. From the earliest deep space probes, such as Voyager I, currently 8 billion miles out in space, to the next generation of probes scheduled for the new millennium, Teledyne Relays continues to be the preeminent supplier of Hi-Reliability relays to the space market.

Teledyne Relays Hi-Reliability Specification: TR-HIREL-1

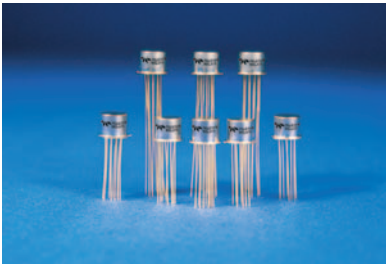
- Eliminates the need for customers to develop and maintain specifications.
- Manufacturing and Quality Assurance requirements are fully defined and documented.
- Meets the general requirements of both ESA/SCC and NASA/GSFC documents.
- Offers options for 100% Group A screening
- Offers options for 3 levels of Lot Acceptance Testing (LAT).

Teledyne Screening Document 0-40-837

NASA approved screening regimen based on NASA/GSFC S-311-P.754

HI-REL SCREENING CHECKLIST

- ✓ 100% Open Electrical Inspection
- ✓ 100% Precap Inspection
- ✓ Fully Automated Small Particle Inspection (Millipore Clean)
- ✓ Asynchronous Miss Test
- ✓ Coil Continuity
- ✓ Sine Vibration
- ✓ Random Vibration
- ✓ High/Low Run In
- ✓ (Miss Test) -65C/+125C
- ✓ Radiographic Inspection
- ✓ Mechanical Shock Test
- ✓ Thermal Shock Test
- ✓ Acceleration
- ✓ Radiographic Inspection (X-ray)
- ✓ Mechanical Shock Test
- ✓ Thermal Shock Test
- ✓ Acceleration
- ✓ Load Banks for a Variety of Life Test Load
- ✓ Serialized Printed Electrical Data
- ✓ Continuous Life Testing
- ✓ Environmental Testing
- ✓ Vertical Integration



RELAY TYPES

- TO-5 Magnetic-Latching Relays
- TO-5 Non-Latching Relays
- TO-5 Magnetic-Latching, High-Shock Relays
- TO-5 Non-Latching, High-Shock Relays
- TO-5 Non-Latching, High-Vibration Relays

Teledyne Relays now offers space-qualified microwave switches.

For information or answers to your questions, contact Dan Yracheta, Program Manager, at (323) 241-1218 or dyracheta@teledyne.com.

Teledyne Relays *T²R*[®] Program

Teledyne Relays' *T²R*[®] program was developed to provide the JAN relay user an alternate means of specifying and procuring established reliability relays. The form, fit and function of a *T²R*[®] relay is the same as that of its JAN counterpart. *T²R*[®] program requirements differ in certain regimens/tests found in both MIL-PRF-28776 and MIL-PRF-39016 that add cost but no value to the relay.

This program parallels the military specifications but not completely. The components that make up such a program are intricate and varied. It is very difficult to detail on a one-to-one basis how the two programs differ. The following page presents a table that compares the 100% screening performed on JAN relays and *T²R*[®] relays prior to shipment.

Other significant highlights of the *T²R*[®] program include:

- Two unique screening levels
- The ability to define lead finish
- Spacer pad options not allowed by the military specifications
- Ground pin options not allowed by the military specifications
- Reduced lead time
- Reduced cost

The program is fully defined for both general product requirements and detailed product requirements in the following Teledyne Relays specifications:

TR-R-1
TR-STD-1
TR-STD-2
TR-ERL-1
TR-R-1/XXX
TR Supplement

Copies of these documents are available from Teledyne Relays. We suggest that users check with Teledyne Relays from time to time to assure that they have the latest issue.