



Wire and Cable

Heat-shrink Tubing

Non-shrink Tubing

Braided Sleeving

Screening Braids

Moulded Parts

Terminals and Splices

Wire and Cable Markers

Accessories

Connectors

Backshells

Bonding Leads

Metal Braids

## **Relays and Contactors**

Switches and Grips

Adhesives and Tapes

Application Equipment

Added Value Services

### Military / Aerospace Relays



### High Performance Relays



### Contactors



## High-Performance Power Management Designed for Reliable Operation in Extremes of Temperature, Shock, Vibration and Altitude

The following pages provides an overview of our relays and contactors range. Products include hermetically sealed MIL Qualified, Electro-mechanical relays such as T05; Half Crystal can 1A to 10A; Mid Range relays 5A to 50A and Time Delay Relays, as well as a high current and high voltage range of relays and contactors, up to 1000 amps and 70kV voltage isolation.

Many of our relays are specifically designed for operation in extremes of temperature, shock, vibration and altitude being qualified to numerous standards:

#### Military

Specifications such as M39016; M28776; M83536; M6106; M83726; M28750 and associated DSCC drawings.

#### Aerospace

Specifications such as Airbus ASNE and NSA relays and relay sockets, Boeing BACC, MIL Spec, M83536, M6106, M83726, M12883.

#### Brands

Agastat, TE, Kilovac, Hartman, Deutsch, CII, Leach, Babcock, Teledyne, Kissling, Finder and many others.

This section of the catalogue is a brief overview of what is available, for more information please contact us.

### MINIATURE

T05 single and double pole	MIL-PRF-39016, MIL-PRF-28776	page 424
.100 Grid	MIL-PRF-39016/17, /18 & 19	

### HIGH FREQUENCY

High frequency, low signal	HF Microwave Series	page 425
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### CRYSTAL CAN

Full and Half Size	MIL-PRF-5757, MIL-PRF-39016	page 426
Fifth size	MIL-PRF-39016/13, /37 & /38	
Latching versions	MIL-PRF-39016	
Radio frequency		

### MID RANGE

5 to 50 amps	MIL-PRF-83536 and MIL-PRF-6106	page 427
Latching types	MIL-PRF-83536 and MIL-PRF-6106	

### TIME DELAY

Mid range TD2	MIL-PRF-83726	page 428
Sensing relays	MIL-PRF83726 and others	
Electro-Pneumatic	Miniature, Industrial and Nuclear qualified	

### HIGH VOLTAGE Contactors

Aerospace and Electric vehicles	AS9100 and AIAG QS9000	page 429
Military Aerospace and Marine	MIL-PRF-6106 from 200A to 1000A	

### SOLID STATE

Solid state relays/contactors	MIL-PRF-28750 and DSCC	page 430
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### HIGH PERFORMANCE

Mass Transit	EN61373 and EN50155	page 431
Industrial and Motorsport		

### SOCKETS

	MIL-DTL-12883	page 432
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### CUSTOM

	Obsolescence service DSCC approved	page 433
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# Relays and Contactors

## Miniature

### Low Signal Relays

1 Miniature low signal relays are designed  
2 to perform under the most demanding  
3 environmental conditions in military, aerospace  
4 and commercial applications. Stocked signal  
relays are rated at 1 Amp, all ratings available  
in a variety of packaging sizes, mounting  
configurations and termination options.  
Standard and sensitive coils are available with  
optional diode suppression.

#### Features & Benefits

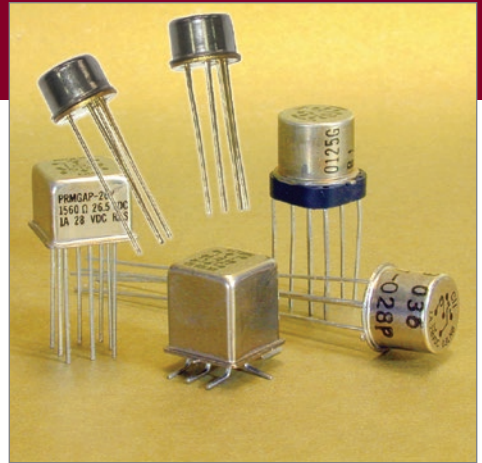
- Miniature hermetically sealed relays
- Non latching
- Through-hole and gull-wing surface mount terminals
- High frequency models capable of switching up through 6 GHz
- Excellent isolation, insertion loss
- Shock and vibration resistant
- MIL-PRF-39016 and MII-PRF-28776 qualification products available
- Low level, to 1 Amp switching

#### T05 CAN MINIATURE – SPDT and DPDT

5 A series of ultra miniature relays constructed  
6 in a transistor style case, providing superior  
7 performance and established reliability  
8 patterns. This series is available in a variety of  
sensitivities, contact configurations and hybrid  
versions to provide a most versatile element to  
the circuit designer.

#### MINI GRID (.100) – DPDT

9 Ideally suited to the needs of Instrumentation,  
10 data acquisition, process control,  
11 telecommunications and general purpose  
12 requirements. These models are specifically  
13 designed for high quality and reliability with  
14 versatile switching capabilities and contact  
forms.



#### T05 - SPDT and DPDT

Qualification
MIL-PRF-39016/7, /23 & /24
MIL-PRF-39016/10, /25 & /26
MIL-PRF-39016/9, /15 & /20
MIL-PRF-39016/16 & /21
MIL-PRF-28776/5
MIL-PRF-28776/4

#### 0.100 GRID - DPDT

Qualification
Mil-PRF-39016/17, /18 & /19
Mil-PRF-39016/41, /42 & /43

*Includes surface mount versions*

## High Frequency

Low Signal Relays  
Microwave



### HF Microwave Series - DPDT

#### Qualification

3 GHz, 1 Amp or less

4 GHz, 1 Amp or less

6 GHz, 1 Amp or less

The MW Series relays are noted for their improved signal repeatability and RF switching capabilities up to the 6 GHz microwave range in a hermetically sealed, sub-miniature package. Excellent signal isolation, stable insertion loss and low VSWR are provided.

Standard versions are available for applications ranging from wireless communications to precision high-speed test equipment. High performance versions are available for even more demanding environments and conditions.

These relays provide microwave frequency switching in a hermetically sealed, sub-miniature package. Both standard and high performance models are offered in 3GHz, 4GHz and 6GHz types. Nominal standard coil power is 367-500mW (model dependent) and 169-250mW for sensitive coils.

#### Features & Benefits

- Mechanical life expectancy of 10m cycles.
- Standard high performance models are available in 3 GHz, 4 GHz & 6 GHz Types.
- Standard models (MW3, MW4 and MW6) perform in temperature range from -55°C to +85°C plus withstand 10G vibration and 30G shock.
- High performance models (MW3HP, MW4HP and MW6HP) offer extended temperature ratings of -65°C to +125°C whilst providing 30G vibration and up to 100G shock environmental ratings.
- All are available with either standard or sensitive DC coils. Nominal coil power is 367-500mW (model dependent) for standard coils and 169-250mW for sensitive coils
- Signal isolation is 18dB @ 6 GHz (MW6/MW6HP, 18dB @ 4 GHz (MW4/MW4HP) and 22dB @ 3GHz (MW3/MW3HP).
- Insertion loss is 0.38dB for MW6/MW6HP; 0.27dB for MW4/MW4HP and 0.36dB for MW3/MW3HP

# Relays and Contactors

## Crystal Can

### Low Signal Relays

1 Stocked signal relays are rated at 2 Amp, up  
2 to 10 Amp versions, all available in a variety of  
3 packaging sizes, mounting configurations and  
4 termination options. Available in both latching  
5 and non-latching designs. Standard, bifilar and  
6 sensitive coils are available with optional diode  
7 suppression.

#### Key Features & Benefits

- Hermetically sealed relays
- Latching, non-latching designs and coaxial types.
- Plain case, mounting brackets or studs.
- Straight pins or solder hooks.
- Excellent isolation, insertion loss and VSWR.
- Shock and vibration resistant.
- Qualified to M5757, M39016, M27245, M27247.
- 2 to 10 Amp ratings.
- 1, 2 and 4 pole versions .

#### Full and Half Size

9 Available in a variety of packaging sizes,  
10 mounting configurations and termination  
11 options. There are both latching and non-  
12 latching designs. Standard, bifilar and  
13 sensitive coils are available with optional diode  
14 suppression.

#### Fifth Size

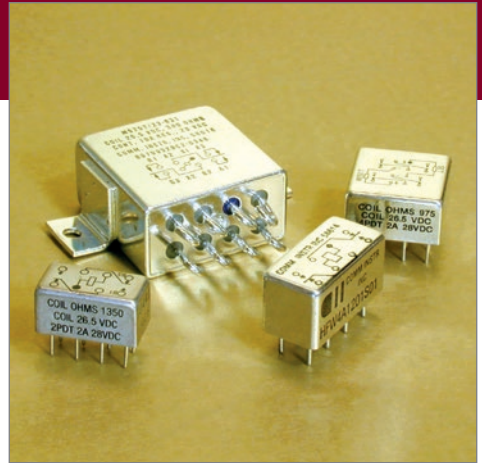
12 The .150 Grid-space relay, saves space in  
13 electronic packaging, with low profile designs  
14 at only 8.12mm high. The pin spacing allows  
15 you to insert the relay with no intermediate  
16 pin spreaders as well as meeting applicable  
17 military specifications. Fifth size relays offer  
18 internal diode for coil transient suppression and  
19 transistor driven models are available.

#### Magnetic Latching

Versions of crystal can relays.

#### Radio Frequency

Available as half and full size crystal can relays,  
supplied with coaxial leads.



#### Full Size and Half Size

Qualification
MIL-R-5757/10 an /23
MIL-PRF-39016/6 and /22
MIL-PRF-39016/6
MIL-PRF-39016/45
MIL-PRF-39016/40

#### Fifth Size

Qualification
MIL-R-39016/13, /37 & /38

#### Latching

Qualification
MIL-PRF-39016/45
MIL-PRF-39016
MIL-PRF-39016/32

#### Radio Frequency

Description
80 watts full size
80 watts half size

## Mid Range

Low Signal Relays

Aerospace and Military Applications



### Mid range 5 to 50 Amps

Qualification
MIL-PRF-83536/1 and /2
MIL-PRF-83536/5 and /6
MIL-PRF-83536/9 and /10
MIL-PRF-83536/15 and /16
MIL-PRF-83536/32 and /33
MIL-PRF-83536/36 and /37
MIL-PRF-6106/19
other MIL-PRF-6106

### Latching Type

Qualification
MIL-PRF-83536: 2PDT, 5A
MIL-PRF-83536: 2PDT, 10-15A*
MIL-PRF-83536: 4PDT, 10-15A*
MIL-PRF-83536: 3PDT, 25A
MIL-PRF-83536: 4PDT, 12A
MIL-PRF-6106: 1PDT, 25A
MIL-PRF-6106: 3PDT, 25A

\*Also available in track mount versions

Mid Range relays offer critical size and weight savings in aircraft applications by providing efficient power switching in a compact package. Relays vary in size from the compact 5 amp package up to a 50 amp version in a 25mm<sup>3</sup> enclosure.

The balanced force design with permanent magnet drive, provides the benefit of consistently high contact pressure, reduced bounce and less arcing leading to extended contact life. A variety of coil options are available which allow for AC or DC control.

Terminal styles include socket pins, solder pins and solder hooks. Each series comes with a variety of mounting options.

### Key Features & Benefits

- Balanced force design with permanent magnet drive.
- 5 to 50 Amp ratings, within 25mm<sup>3</sup> package.
- 1 to 6 pole versions.
- Terminal styles include socket pins, solder pins and solder hooks.
- Hermetically sealed and welded construction.
- Shock and vibration resistant.
- M83536 and M6106 qualified products.

# Relays and Contactors

## Time Delay

### M83726 and other

M83726 series time delay relays are available for delay on operate, or delay on release operation and can be supplied as fixed or resistor adjustable types. These products consist of solid state timing circuits controlling two Form C (DPDT) output contacts rated 10 amps. The internal timing circuit uses R/C controlled oscillator with a programmable digital pulse counter, gating a semiconductor switch to operate the relay. Timing is independent of whether the controlling voltage is a ramp or step function. For adjustable models the user specifies a one decade range in seconds, this range is programmed internally at the time of manufacture.

#### Key Features & Benefits

- Welded hermetically sealed enclosure occupies about 16.4cm<sup>3</sup>
- Meets or exceeds electrostatic discharge Mil-STD-1686 Class Non-Sensitive

#### M83726

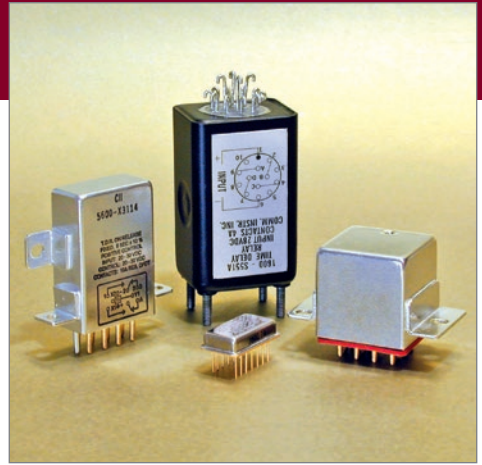
Includes delay on operate, fixed and adjustable; delay-on-release, fixed, adjustable and interval timers with relay or solid state outputs. Contact ratings range from 2 to 10A, with MIL qualification on 10A versions. Also available are MIL approved sub-miniature digital timing modules.

#### Sensing Relays

Our range also includes AC & DC voltage sensors and AC frequency and phase sensors. All are hermetically sealed, with a variety of mounting options and relay contact outputs.

#### Electro-Pneumatic Timing Relays

Relays feature high repeat accuracy over voltage and temperature extremes. Hermetically sealed designed for high shock and vibration applications, offering instant recycling with easy linear adjustment. The series features an exclusive dial head adjustment, no needle valves, with delay ranges from milliseconds to 60 minutes.



#### M83726

Qualification
MIL-PRF-83726/28 to /31
MIL-PRF-83726, 2A
MIL-PRF-83726, 10A
MIL-PRF-83726, SS
MIL-PRF-83726/13, SS
MIL-PRF-83726, Series interval and SS

#### Sensing

Qualification
Frequency sensor relays
AC Voltage sensor, relay output
MIL-PRF-83726, Phase sensor
DC Voltage sensor

#### Electro-Pneumatic

Qualification
Miniature, DPDT
Industrial Standard
Nuclear qualified







### up to 500 Amps

#### Qualification

100 to 500 Amps, 12-900 Vdc

200 Amps, 480Vac or 48 Vdc

60 Amps, 600 Vac, 3 Form A

600Vdc SPST-NO Form X

### Lightweight up to 1750 Amps

#### Qualification

MIL-PRF-6106, 200A

MIL-PRF-6106, 400A

MIL-PRF-6106, 500A

MIL-PRF-6106, 1000A

### Up to 500 Amps

These contactors offer continuous current ratings up to 500 amps at 900 Volts DC, in a very compact package. Available hermetically or environmentally sealed, with a variety of electrical configurations, power ratings, voltage ratings and mounting styles to make your electrical system more reliable and capable.

#### Key Features & Benefits

- Suitable for electric drive vehicles, aerospace, military and industrial applications.
- Small lightweight, hermetically sealed units
- Variety of contact arrangements available.
- Latching and non-latching types
- Wide range of mounting and termination styles
- One or two pole, with normally open or normally closed contacts

#### High Performance Electric Vehicle -

Designed and built in accordance with AS9100.

**Electric Vehicle Contactors** - Lightweight models designed and built in accordance with AIAG QS9000.

**Commercial Aerospace** - Designed and built in accordance with AIAG QS9000.

**Military Aerospace & Marine** - Designed and built in accordance with AIAG QS9000.

Please note that multiple configurations and AC versions are also available

#### Lightweight Contactors up to 1750 Amps

These hermetically sealed enclosures are available for the most severe environmental conditions or altitudes above 50,000 feet. Designed to meet the applicable requirements of M6106 and/or specific customer requirements.

# Relays and Contactors

## Solid State Relays

M28750

1 Products include both AC and DC versions,  
2 with output ratings up to 25A. AC relays rated  
3 at 2A, 10A & 25A feature zero voltage turn  
4 on for reduced EMI. DC relays are offered  
5 with ratings up to 2A in several miniature  
6 hermetically sealed package configurations,  
7 some with optional isolated status lines and/or  
8 short circuit protection.

### Key Features & Benefits

- Qualified to DSCC Drawing 86031, 88062, 89116, 90091 as appropriate.
- Qualified to MIL-PRF-28750/5, /6, /7, /9 & /10
- TTL & CMOS compatible input.
- Optically coupled all solid state.
- Buffered/current limited input for direct drive from CMOS or TTL logic.
- Replacements for Teledyne M92F and M93F series.



### Solid State

Qualification
2A, DSCC Drwg 86031
2A, DSCC Drwg 88062
2A, DSCC Drwg 89116
2A, DSCC Drwg 90091
MIL-PRF- 28750

## High Performance Relays Mass Transit, Motorsport and Industrial



### Mass Transit

#### Description

'Twilight switch'

Electronic step relay

Plug-in, 2 CO & 4 CO

Monitoring relay

Forcibly guided contacts

Modular timers

Multi voltage timers

Timer modules

### Industrial and Motorsport

#### Description

Sub-miniature DIL/PCB relays

Ultra slim PCB relays

Low profile relays

Miniature PCB relay

Safety relay (EN 50205)

Power relays

General high performance relays, for industrial applications such as Plug-in/PCB and high current motorsport high voltage applications.

#### Mass Transit

Includes relays suitable for Air conditioning; Door control systems; Train light control; Signal control; Control board; and Traffic management applications.

Relays used for rolling stock are subject to increasingly higher technical demands, such as the need for wider operating ranges; higher resistance to shock and vibration; operation over a wider range of temperature and humidity and above all, the fire resistance properties of the relay's constituent parts.

The relays and their sockets and accessories are manufactured using specific insulating materials, which satisfy the requirements of fire protection prescribed by the standard UNI CEI 11170-3 for risk levels LR1 to LR4.

- Conformity to reaction fire test to ISO 11925-2
- Smoke class F2 according to NF F 16-101 (calculated from opacity according to NF X 10-702-2 + NF X 10-702-1 and from Toxicity according to NF X 70-100-1 + NF X 70-100-2).

The resistance against random vibrations and shock of the relays, their sockets and accessories is in compliance with EN61373 standard for Category 1, Class B products. Their resistance to temperature and humidity is in compliance with the prescription of EN 50155 standard, TX class.

#### Industrial and Motorsport

Includes an overview of Plug-in / PCB relays and relay interface modules, plus coil indication and EMC suppression modules.



# Relays and Contactors

## Relay Sockets

MIL-DTL-12883



1 Relay sockets for commercial, military,  
2 airborne, ground and shipboard equipment,  
3 are manufactured to MIL-DTL-12883  
4 specifications, plus specialised requirements.  
5 Supplied in a broad range of military standard  
6 and special configurations plus styles for 2  
7 to 25 amp operations. Featuring state of the  
8 art ultrasonically bonded interfaces between  
9 the dielectric components, which eliminate air  
10 paths and provide protection against moisture  
11 and degradation.

12 The product line offers – Low Profile, Extended  
13 Height, Micro Miniature, Board Mount, Track  
14 Mount and Solder Termination relay socket  
15 options.

16 Low profile sockets are provided in all military  
17 configurations and are configured to minimize  
18 size and weight. These accept the MIL-C-  
19 39029/92 contact family.

20 Extended height sockets are configured to  
21 accept the longer MIL-C-39029/5 contact,  
22 which is standard on many cylindrical  
23 connectors and other avionic interconnect  
24 systems and allow contact standardization.

25 Sockets are available with either fixed or  
26 loose mounting studs. Studs and hardware  
27 supplied with standard QPL-listed sockets are  
28 cold rolled steel. Stainless steel is available  
29 as an alternative to specify stainless steel an  
30 “S” is added to both the QPL number and the  
31 catalogue number.

32 Relay sockets can be top or bottom mounted.

33 Relay-to-socket positive polarization is  
34 provided by specific contact configurations  
35 and/or polarizing pins, in accordance with MIL  
36 spec requirements.



Please contact our technical support team for those relays that are no longer readily available, as we can supply bespoke DSCC approved relays or contactors to suit your requirements.

We offer a complete portfolio of electro-mechanical relays, standard time delay relays, voltage, current, phase, frequency sensors and power monitors to customer's exact requirements, whether for a new application or a legacy system

Where a standard product does not meet your requirement, in many cases, we can offer custom, fit, form, functional units.

Many are designed to meet or exceed MIL-STD-202, MIL-STD-704 etc and/or are listed on the Qualified Products List (QPL), or have been tested to the requirements of MIL-PRF-24021, MIL-F-26301, MIL-R-5757, MIL-PRF-6106, MIL-PRF-83726 and MIL-V-81995.

Should you have a special enquiry please contact us

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