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# Industrial Relays

O/E/N India Limited, Vyttila, Cochin – 682019, Kerala, India

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An ISO 9001, IATF 16949, AS9100D, ISO 14001 & ISO 45001 Company





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# Pioneers & Largest Manufacturer of Relays & EV-EVSE Contactors in India

O/E/N India Ltd was incorporated in 1968 as a Joint Venture with Oak Industries Inc of USA Pioneers in the manufacture of professional grade electro mechanical components, including Relays, Switches and custom built products for the Indian electronics industry.

## Technology Strengths

- ◆ Contemporary Tool & Mould design, State of the art Moulding, Stamping & Plating facilities.
- ◆ Design and commissioning of Semi-automated and fully automated assembly lines.
- ◆ Modern Test laboratory with latest equipments for Testing and Validation.
- ◆ Complete Quality-Control system.

State-of-the-art vertically integrated manufacturing facilities in Kochi, Kerala, and in Pune, Maharashtra, covering over 31,000 squaremeters within-house Tool Room, Fabrication Shop for pressed and moulded parts, Plating and Finishing plants, Test Facility etc.

## Segments We Serve:

- ◆ **Automotive**
- ◆ **Industrial Control & Automation**
- ◆ **Railways**
- ◆ **Power & Smart Grid**
- ◆ **EV-EVSE**
- ◆ **Renewables**
- ◆ **Lighting Control**
- ◆ **HVAC**
- ◆ **IOT/ Smart Homes**



Kochi Plant



MIDC Pune Plant





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REGULATIONS



REQUIREMENTS

COMPLIANCE



POLICIES



STANDARDS



RULES

# Approvals

- ◆ ISO 9001 Certified :  
Quality Management System
- ◆ IATF 16949 Certified :  
Automotive Relay Manufacturing
- ◆ ISO 14001 Certified :  
Environmental Management
- ◆ ISO 45001 Certified : Occupational Health &  
Safety Management (OHSAS)
- ◆ AS 9100D : Design & Manufacturing for Aerospace
- ◆ Industrial Relays/Products are separately  
approved to UL / CSA / VDE / CE or others as  
applicable.
- ◆ Specific Relays also conform to the relevant IEC  
standards like IEC 61810-1-1, IEC 60255-27 etc.
- ◆ Consistently Audited by Leading  
International & Domestic Automotive OEMs.



ISO 9001:2015



IATF 16949:2016



ISO 14001:2015



ISO 45001:2018



## Committed to Environment

O/E/N Industrial relays conform to the requirements as per the EU directive of Restriction of Hazardous Substances 2015/863,2011/65/EU.





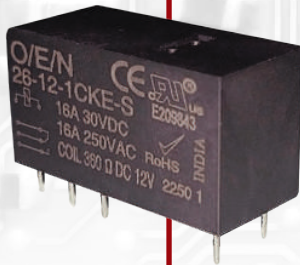


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# Relays For Electronics

## PCB Mountable Relays

### Series 26



E-catalogue

- ◆ Low Height 15.9mm
- ◆ International Standard Foot Print
- ◆ SPST, SPDT, DPDT versions
- ◆ Compact High Performance
- ◆ Sealed
- ◆ Rated upto 16Amps @ 230VAC/24VDC
- ◆ UL Approved
- ◆ Typical Applications: Relay Cards, Elevator/ Escalator Controls, Home Appliances

### Series 57



E-catalogue

- ◆ International Standard Foot Print
- ◆ Compact High Performance
- ◆ SPST, SPDT, DPDT versions
- ◆ Rated up to 6Amps @230VAC/24VDC
- ◆ Dust protected Version
- ◆ Transparent cover
- ◆ Typical Applications: PLCs, Timers, Elevator/ Escalator Controls

### Series 58



E-catalogue

- ◆ International Standard Foot Print
- ◆ Compact High Performance
- ◆ SPST, SPDT, DPDT versions
- ◆ Rated up to 16amps@230VAC/24VDC
- ◆ Dust protected/ sealed Version
- ◆ Sockets available
- ◆ Typical Applications: Relay Cards, Timers, Genset Control Cards





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## PCB Mountable Relays

### Series 48



E-catalogue

- ◆ International Standard Foot Print
- ◆ Compact High Performance
- ◆ DPST & DPDT Versions available
- ◆ Dust Protected/ Sealed
- ◆ Creepage distance 8 mm
- ◆ High Contact Gap
- ◆ Rated upto 10Amps @ 230VAC/24VDC
- ◆ UL Approved
- ◆ Typical Applications: Industrial Electronics, PLCs, Timers, UPS, Home Appliances

### Series 45



E-catalogue

- ◆ Miniature Relays 13.8mm Height
- ◆ SPST & SPDT versions
- ◆ Opaque cover
- ◆ High coil resistance & low coil power consumption
- ◆ 5 Amps at 230VAC/24VDC
- ◆ 1200 VRMS Dielectric Strength
- ◆ Typical Applications: Home/ Office Automation, IOT Applications

### Series 55H



E-catalogue

- ◆ Direct PCB Mountable
- ◆ 1 Form A Contacts
- ◆ Spaded Terminal for Power Output
- ◆ Widely used in Aircon cards
- ◆ Rated upto 25A at 230VAC/24VDC
- ◆ Typical Applications: Home Appliances, Aircons, Industrial Electronics

### Series 65



E-catalogue

- ◆ International standard Foot print
- ◆ High Sensitivity Low Profile
- ◆ High Capacity
- ◆ Maximum continuous current upto 15A
- ◆ Switching 10Amps @ 230VAC/ 24VDC
- ◆ 1HP Motor Load + 500W Lamp Load for 20K Operations
- ◆ Sealed
- ◆ Typical Applications: UPS, Home Appliances, Office Automation, Security Systems





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## PCB Mountable Relays

### Series 3572



- ◆ Direct PCB Mountable
- ◆ High performance
- ◆ Suitable for various loads
- ◆ Immersion cleanable version available
- ◆ Heavy duty, 45Amps/12VDC
- ◆ 30Amps (Fan)/12VDC for 100K opns
- ◆ SPST & SPDT versions available
- ◆ Typical Applications: Security Systems, Direction Indicators, Body Controllers



E-catalogue

### Series 67



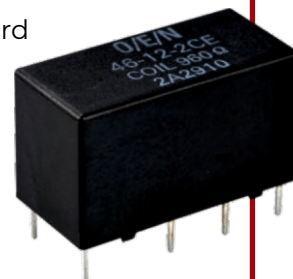
E-catalogue

- ◆ 2 to 8 Form C Contacts
- ◆ Power adjusted and sensitive adjusted
- ◆ Epoxy Sealed version with Nitrogen back filled
- ◆ Metal can cover
- ◆ Widely used in Defence applications
- ◆ Direct PCB type, Panel/Socket mountable
- ◆ Typical Applications: Defence, Space, Railway, Nuclear Power, Timers & Controls



### Series 46

- ◆ International standard foot print
- ◆ Small size
- ◆ Light weight
- ◆ High sensitivity
- ◆ Rated upto 2 Amps
- ◆ Low power consumption
- ◆ Sealed
- ◆ Typical Applications: Telecommunications Equipments, Security Systems



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# Relays for Industrial control & Automation

## DIN Rail & Panel Mountable Relays



### Series 31 (1R/2R)

- ◆ Compact High Performance
- ◆ 2 Form C & 3 Form C Contacts
- ◆ 10 Amps @ 230VAC/24VDC
- ◆ Free Wheeling Diode Optional
- ◆ LED Indication Optional
- ◆ Typical Applications: Power Automation Panels, Industrial Panels, CMRs



E-catalogue

**Signal level to High Power rating relays having multiple contact configurations for every application..**

### Series 31 (3R/4R)

- ◆ Compact High Performance
- ◆ 2 Form C & 3 Form C Contacts
- ◆ Rated for 10Amps at 230VAC/ 24VDC
- ◆ Free Wheeling Diode Optional
- ◆ LED Indication Optional
- ◆ Typical Applications: Power Automation Panels, Industrial Panels, CMRs



E-catalogue



### Series 31H

- ◆ Compact High Performance
- ◆ 2 Form C, 1A+1B & 1 Form Z Contacts
- ◆ Rated upto 10A/220VDC
- ◆ Free Wheeling Diode Optional
- ◆ LED Indication Optional
- ◆ Type Tested for IEC 60255-5 Compliance
- ◆ Typical Applications: Power Automation Panels, Industrial Panels, CMRs, HDRs



E-catalogue



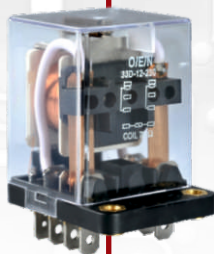


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## DIN Rail & Panel Mountable Relays

### Series 33

- ◆ Rated 30A@230VAC
- ◆ Up to 3 form C contacts
- ◆ Dust protected
- ◆ LED indication (optional)
- ◆ Free Wheeling Diode (Optional)
- ◆ AC Version available
- ◆ Typical Applications:  
Power Automation Panels,  
Industrial Panels, CMRs



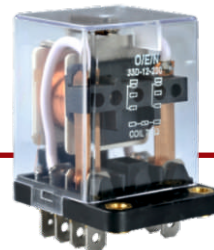
E-catalogue

### Series 33H

- ◆ Rated upto 20Amps@220VDC
- ◆ 2 Form C & 1 Form Z Contacts
- ◆ Dust protected
- ◆ LED indication (optional)
- ◆ Free Wheeling Diode (Optional)
- ◆ AC Version available
- ◆ Test Button Version available
- ◆ Typical Applications:  
Power Automation Panels,  
Industrial Panels, CMRs, HDRs



E-catalogue



### Series 85

- ◆ Rated Upto 16A
- ◆ Lockable Test Button (optional)
- ◆ Mechanical Indication
- ◆ LED/ Free Wheeling Diode/ Polarity Protection
- ◆ Space Saving DIN Rail Mountable Socket
- ◆ Type Tested For IEC 60255-27 Compliance
- ◆ UL Approved
- ◆ Typical Applications: Building Automation,  
Power Automation Panels, Industrial  
Panels, CMRs



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## DIN Rail & Panel Mountable Relays

### Series 85H

- ◆ Heavy Duty (H Version) Rated Upto 5amps@220VDC
- ◆ LED/ Free Wheeling Diode Module Available
- ◆ Space Saving DIN Rail Mountable Socket
- ◆ Type Tested For IEC 60255-5 Compliance
- ◆ Typical Applications: Power Automation Panels, Industrial Panels, HDRs



E-catalogue

### Series 87

- ◆ Compact Relay
- ◆ Lockable Test Button
- ◆ LED, Free Wheeling Diode
- ◆ DIN Rail Mountable
- ◆ IEC 60255-27 Compliant
- ◆ Available in DPDT – 12A , 3PDT – 10A & 4PDT – 6A
- ◆ Typical Applications: Building Automation, Power Automation Panels, Industrial Panels, CMRs



E-catalogue

### Series 105

- ◆ Slimmest Relay 6mm Width
- ◆ Rated for 6A at 250VAC/ 24VDC
- ◆ 1 Form C Contacts
- ◆ DIN Rail Mountable Socket with LED, Free Wheeling Diode
- ◆ Typical Applications: Building Automation, Power Automation Panels, Industrial Panels, CMRs



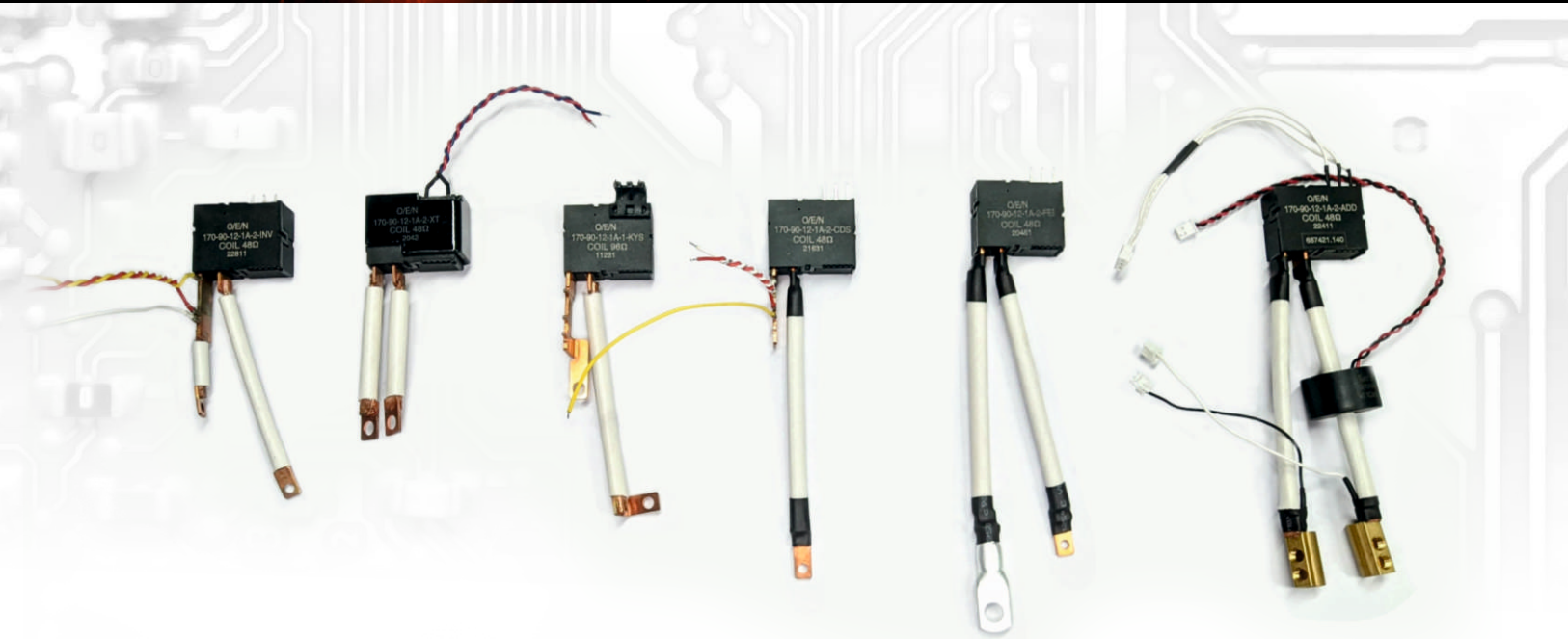




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# Energy Meter Relays

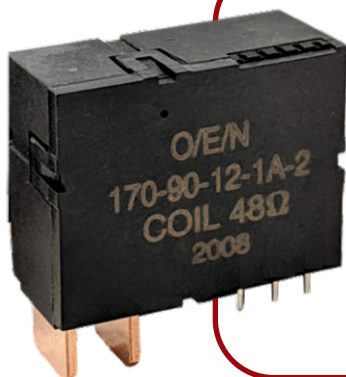
Latching Relays For Pre-Paid Energy Meters,  
Smart Meters, Smart Street Lamps



O/E/N offers Electromagnetic Latching Relays for Smart Meters. The relays are capable to withstand 5 KV Dielectric strength between coil & contacts.

Customised terminals can be made available to match any design requirements of the Energy Meter manufacturers.

## Series 170



### 90A Latching Relay -Energy Meter Relay

- ◆ Single & Dual Coil Latching Versions
- ◆ Rated for 90A
- ◆ 1 Form A/1 Form B Configuration
- ◆ Custom Terminations Available
- ◆ UC2 Compliant as per IEC 62055-31/ IS 15884:2010



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# Plug-in/Panel Mountable Relays

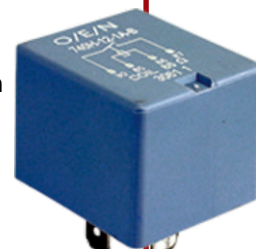
## Series 53



E-catalogue

- ◆ International Standard Foot print
- ◆ High Performance Relay with Dual Contacts
- ◆ SPST Version
- ◆ Rated for 70A
- ◆ Max Switching Current 240A
- ◆ IP67 Enclosure
- ◆ PC version available

## Series 74



E-catalogue

- ◆ International Standard Footprint
- ◆ SPST & SPDT Version
- ◆ Rated for 40A
- ◆ Max Switching Current 120A
- ◆ IP 67 Enclosure

## Series 84

- ◆ International Standard foot print
- ◆ Dual contact
- ◆ IP 67 Enclosure
- ◆ Rated for 100A
- ◆ Continuous Carry Current 80A
- ◆ UL 94 Grade Plastics
- ◆ Shrouded coil terminals



E-catalogue



## Series 84EH

- ◆ International Standard Footprint
- ◆ IP67 Enclosure
- ◆ Rated for 200A
- ◆ Screw Type Termination for Contacts
- ◆ UL94 Grade Plastics
- ◆ Max Switching Current 700A
- ◆ Shrouded Coil Terminals



E-catalogue







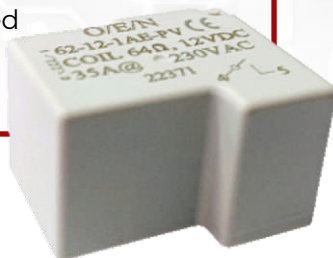
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# EV-PV Relays

## Relays for EV Infra & Photo Voltaic Applications

### Series 62 PV

- ◆ International Standard foot print
- ◆ Continuous current rating up to 35A @230VAC
- ◆ Complies to VDE 0126 for PV applications
- ◆ 1.8mm Contact Gap
- ◆ Dust protected/Sealed



### Series 63

- ◆ Upto 40A Switching
- ◆ High performance
- ◆ Spaded terminals for power output
- ◆ Continuous current rating up to 40A @240VAC/24VDC
- ◆ High reliability
- ◆ Sealed



E-catalogue

High power PCB relays suitable for PV inverter applications for residential and smaller commercial/roof-top solar systems available. The relays are with higher contact gap to ensure trouble free operations specific for this application.

Also HVDC relays/ Contactors required for higher power systems (used on the input side of the inverters for DC Power isolation or cutoff) are under final stages of development.

### Series 68



- ◆ International Standard foot print ◆ Compact high performance
- ◆ Direct PCB type ◆ 8A@ 230VAC/28VDC ◆ Dust Sealed
- ◆ Higher Contact Gap - 1.5mm ◆ Faster Operate/ Release Time
- ◆ TV5 Rated (111A Inrush, 7.5A Steady State through NO contact - 25000 Operations) ◆ UL/ VDE certifications



E-catalogue



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## EV-PV Relays

### Series 53H

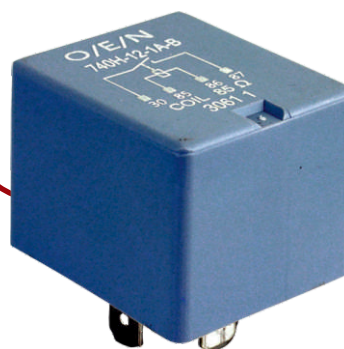
- ◆ International Standard Footprint
- ◆ SPST Version
- ◆ Rated for 50A @ 60 VDC
- ◆ High Voltage Switching upto 145VDC
- ◆ Max Switching Current 150A
- ◆ IP67 Enclosure
- ◆ PCB Version available



E-catalogue

### Series 74H

- ◆ International Standard Footprint
- ◆ SPST & SPDT Version
- ◆ Rated for 25A @ 36VDC
- ◆ High Voltage Switching upto 110VDC
- ◆ Max Switching Current 120A
- ◆ IP 67 Enclosure



E-catalogue

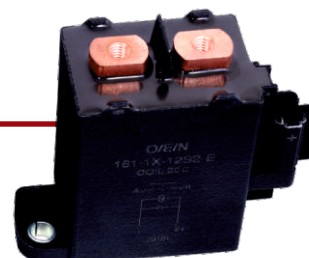
### Series 160 EV Contactor

- ◆ Contact Rating of 250A at 450VDC
- ◆ Limiting Continuous Current 250A @ 85 Deg. C
- ◆ Maximum Short Circuit Current of 6000A
- ◆ With Economiser



### Series 161 EV Contactor

- ◆ Contact Rating of 150A at 150VDC
- ◆ Limiting Continuous Current 200A
- ◆ Maximum Short Circuit Current of 3500A
- ◆ With Economiser





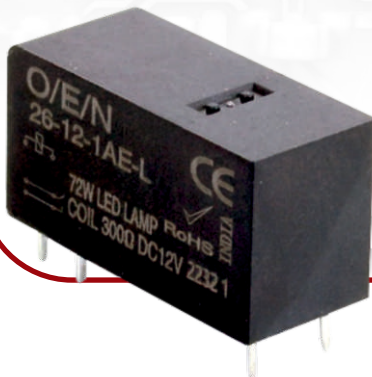


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# Relays for Lighting Control

## Series 26-L

- ◆ Direct PCB Type with **Tungsten (W) pre-contact**
- ◆ Sealed
- ◆ 5KV Dielectric Strength
- ◆ 80Amps inrush capacity
- ◆ 8Amps @ 230VAC/24VDC
- ◆ International Standard footprint



E-catalogue

Smart LED lighting systems for Home and Industrial applications demand special electro mechanical relays.

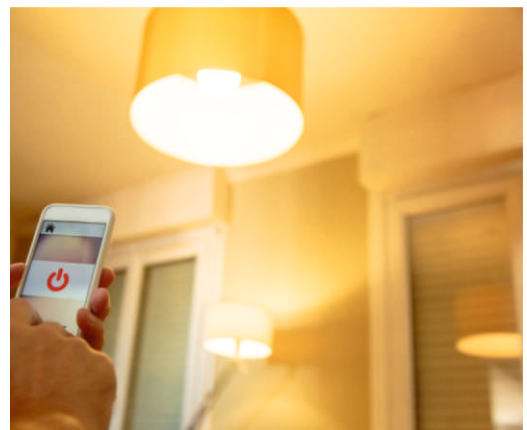
O/E/N offers relays with Tungsten pre-contact systems to combat high transients in the AC switching applications that connects capacitive circuits of the LED drivers, BLDC Fans and also ceiling fans with inbuilt LEDs.

## Series 62

- ◆ International Standard foot print
- ◆ Continuous current rating upto 40A
- ◆ Sealed
- ◆ UL approved



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# Relays for IOT/ Smart Homes

## Series 26



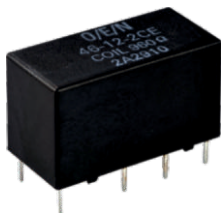
E-catalogue

## Series 45



E-catalogue

## Series 46



E-catalogue

## Series 65



E-catalogue

## Series 62



E-catalogue

O/E/N miniature PCB relays having different contact configurations are used for numerous switching applications such as controlling lighting, fan control, HVAC applications etc. Typical products are listed above and respective QR codes for E catalogues.

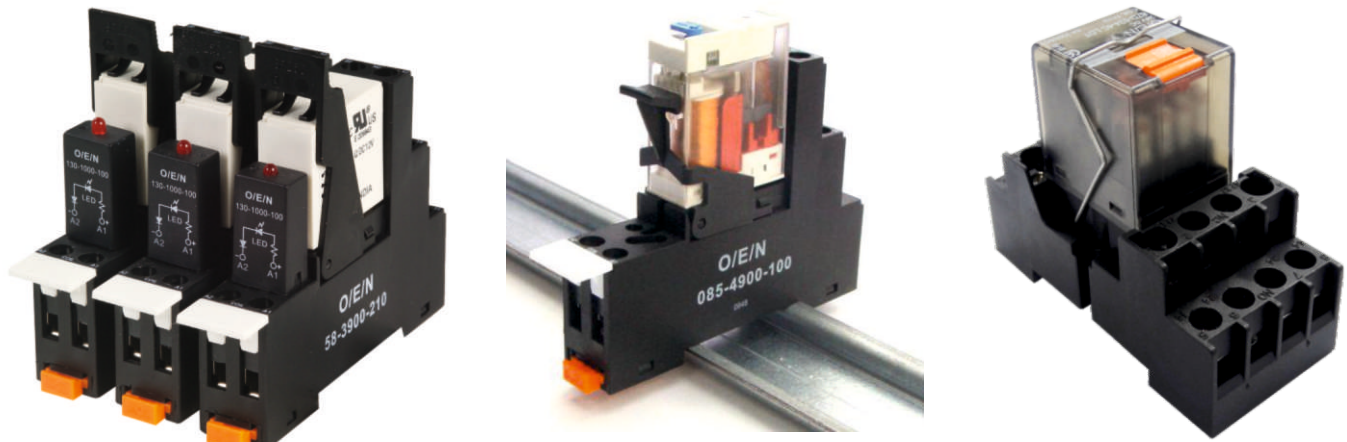




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# Sockets

## Accessories for every purpose...



O/E/N offers a full range of accessories to customize your relays and adapt them to specific applications.

DIN Rail Socket for Series 31H



DIN Rail Socket for Series 31-1R,2R & 51



DIN Rail Socket for Series 31-1R,2R & 51



DIN Rail Socket for 33 Series



DIN Rail Socket for Series 31-1R,2R & 51



DIN Rail Socket for Series 31-1R,2R & 51



DIN Rail Socket for Series 48



DIN Rail Socket for Series 85



DIN Rail Socket for Series 31H



DIN Rail Socket for Series 85



DIN Rail Socket for Series 87



DIN Rail Socket for Series 31-3R,4R



DIN rail mounting Sockets with hold down clips are available for extra security in environments with high ambient vibration and to guarantee that the relays do not become loose during transportation.

Figure shows the sockets for various types of relays. To see more Part numbers and dimensions, refer website [www.oenindia.com](http://www.oenindia.com)



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# Relay Selection Guidelines

## Choosing the right relay ...

Relays come in a variety of form factors, ratings, styles and technologies. Depending on the application, often only one relay type may be suitable, while in many cases, multiple relay types may be appropriate. By understanding the features, strengths and weaknesses of different relays on offer you should be able to pick the one that is best suited for the job at hand. Prime considerations in selecting an electro mechanical relay for your application can be summarized as follows:

Key Aspects	Selection Criteria/Recommendations
Contact Configuration	Consider switching requirements and select a relay that suits the circuit design, appropriate switching combinations like number of contacts (Single Pole, Double, Triple or Four Poles going up to Eight poles); Contact Form (Changeover, Normally Open, Normally Closed, Double Make, Make Before Break or other forms); size and style of terminations; and so on, can offer flexibility in selecting the optimum product solution.
Contact Rating (Power to be handled)	An easy way to determine the power handling capability of a relay is to multiply the rated Volts times the rated Amps. This will be usually specified in the product catalogues in terms of two ratings: AC and DC. It should be ensured that the calculated AC volt amps or the DC watts as applicable in the application should never exceed these ratings and, in fact, a factor of safety should be reckoned.
Types of mounting/ space requirements	Relays are available with direct solder terminals, PCB terminals, panel mountable option, etc. Optionally, relays can be supplied with sockets or bases (panel mountable sockets with solder terminals or PCB mountable sockets).
Environmental Conditions/ ambient temperature in which the relay has to operate	Environmental conditions of the application determine whether to use sealed relays, unsealed relays, relays with fire resistant plastics, etc. Relays to be operated in hazardous conditions may have to be sealed or fire resistant or able to withstand vibrations or a combination of them.
Contact Material	This is a very important factor since different contact materials (like AgNi0.15, AgNi 90:10, AgSnO <sub>2</sub> , AgSn2I2O <sub>3</sub> , AgCdO, etc.) have different endurance capabilities under different loads like AC or DC; Motor, Lamp or Capacitive, etc. Inappropriate selection of the contact material can lead to premature welds or early failures including melting/burning of the Relays and PCB tracks. It is best to check with the Company for contacts recommended by them for non standard applications.
Operate Time (Response Time to get the output)	Ensure that the relay selected operates within the response time requirements of the application.
Heating/ Power Consumption	The end application design, component spacing, PCB tracks / bus bars, enclosures, etc. should take into consideration the heat dissipated by the relays to avoid a typical failure mode due to excessive heat build up. Ideally, select the relay with the least temperature rise characteristics.





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# Some Relay Terminologies...

## Understanding relay specifications to get the most out of your switching system?

Relay specifications aren't simply numbers on a data sheet - the Design Engineer needs to take them seriously. Operating a relay outside the limits of its specifications can severely shorten its life and cause switching system failures and even potentially damage products down the line. With that in mind, let's look at some common relay specifications and the impact they have on switching systems.

### Life Expectancy

Relays have moving parts and operating them causes wear and stress that will eventually lead to relay failure. The Life Expectancy specification provides information on when you can expect relays to electrically or mechanically wear out.

### Maximum Switching Voltage

The Maximum Switching Voltage of a relay is the maximum voltage that can be allowed across the contacts whether the relay is open or closed. Operating a relay with high voltages present can cause arcing, and this, in turn, erodes the contacts and eventually degrades contact performance. The maximum switching voltage system specification may be lower than the relay specification.

### Cold Switching Voltage

Relays may be able to sustain higher voltages across their contacts than the Maximum Switching Voltage, provided no attempt is made to operate the relay while the signal is applied. This specification is called the Cold Switching Voltage or standoff voltage. When a switching system has a Cold Switching Voltage specification, this means that the spacing between the PCB tracks have been designed to withstand this voltage.

### Switch Current

When a relay is hot switched, the Switch Current is the maximum current that the relay can sustain when being opened or closed without suffering contact damage. The switching capacity of a relay is lower for DC loads than for AC due to the lack of zero voltage crossing, and the arc discharge lasts longer. There is also a contact material transfer phenomena when switching DC loads, which may cause contact locking/welding. Hence suitable arc suppression circuits if provided will ensure trouble free contact performance of the relays (especially when switching the DC loads).

### Carry Current

If a relay's contacts are already closed, the relay may be able to carry a higher current than the Switch Current. This is called the Carry Current. The Carry Current is normally limited by contact resistance, which causes the contacts to heat up. When a relay is carrying a current greater than the Switch Current, the relay must not be opened until the current is reduced to the level of the rated Switch Current.

### Minimum Switching Voltage

Some types of relay have a Minimum Switching Voltage that must be present for the relay to switch reliably. This is especially true for relays used to hot switch signals where contact wear can occur and expose the underlying materials. A minimum voltage is needed for the contact to ensure low contact resistance.

### Operate Time

The Operate Time specification can sometimes be confusing to users, but can be critical in precise timing situations. An application not taking into account relay closure times may mean that a particular measurement may not be captured correctly because the relay was not yet closed and carrying the signal.

### Note

In case the Design Engineer is unsure of the optimum relay solution for a non standard application it is advisable to contact the Company for assistance with the selection of the appropriate relay. In such cases samples may be tested for validation of the relay selection.



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# Notes

A light gray background featuring a faint, detailed image of a printed circuit board (PCB) with various electronic components and traces. Overlaid on this background are horizontal dashed lines, providing a guide for writing notes.



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Porur, Chennai-600 125

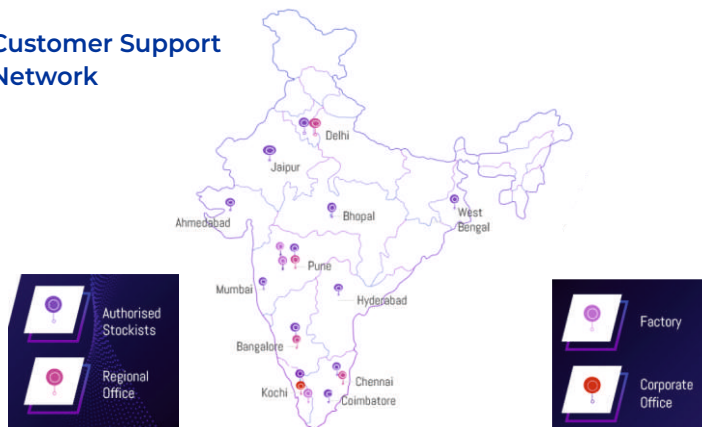
Mob: 08129594500

E-mail: oenmas@oenindia.com



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#### Customer Support Network



#### International Sales Regions

