

ALTERNATING RELAYS

SPDT & DPDT



- u For duplex loads
- u Can be used with one or two Control Switches
- u Control voltages of 12, 24, 120 & 240V AC
- u Compact plug-in design utilizing industry-standard 8 or 11 pin octal socket
- u 10A SPDT or DPDT Output Configuration
- u Optional low profile selector switch to lock in one sequence
- u 2 LED's indicate load to energize next

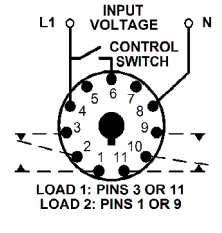
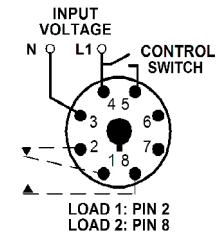


Alternating Relays are used in special applications where the optimization of load usage is required by equalizing the run time of two loads. This alternating action is initiated by a control switch, such as a float switch, manual switch, timing relay, pressure switch, or other isolated contact. Each time the initiating switch is opened, the output relay contacts will change state, thus alternating the two loads. Two LED indicators show load to energize next.

The Alternating Relays listed on this page can be used with one or two control switches & are available in either SPDT or DPDT output configurations (see "Typical Installations" on Page 43 for more information). For products with DPDT Cross-Wired output configurations to be used with one, two or three control switches, see Page 44.

Each version is available with an optional three position selector switch. This allows the unit to alternate the two loads as normal, or lock the relay to one load or the other. By locking the Alternating Relay to one load, the other load can be removed for service without rewiring the first load for continuous operation. The selector switch has a low profile to prevent any accidental changes in status.

OUTPUT CONTACTS	CONTROL VOLTAGE	PRODUCT NUMBER	WIRING/SOCKET ⁿ
SPDT w/o Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A6 ARP024A6 ARP120A6 ARP240A6	8 Pin Octal 70169-D DIAGRAM 17
SPDT w/ Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A6R ARP024A6R ARP120A6R ARP240A6R	8 Pin Octal 70169-D DIAGRAM 17
DPDT w/o Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A2 ARP024A2 ARP120A2 ARP240A2	11 Pin Octal 70170-D DIAGRAM 18
DPDT w/ Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A2R ARP024A2R ARP120A2R ARP240A2R	11 Pin Octal 70170-D DIAGRAM 18



ⁿ See Pages 81 & 82 for **Sockets & Accessories**.



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ALTERNATING RELAYS

SPDT & DPDT

Application Data & Dimensions

Application Data

Voltage Tolerances: +10%/-15% of control voltage at 50/60Hz.

Load (Burden): Less than 3VA

Output Contacts:

10A @ 240V AC/30V DC,
1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240VAC (N.C.)

Life:

Mechanical: 10,000,000 operations
Full Load: 100,000 operations

Temperature: -28° to 65°C (-20° to 150°F)

Transient Protection: 10,000 volts for 20 microseconds

Indicator LED's: 2 LED's marked LOAD A and LOAD B

Optional Selector Switch Settings:

LOCK LOAD A
ALTERNATE
LOCK LOAD B

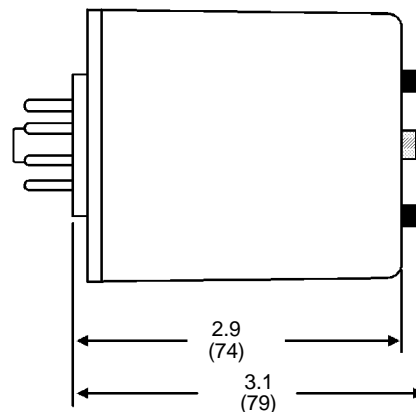
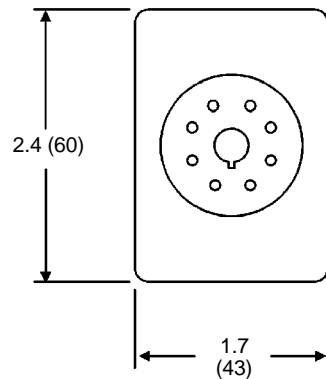
UL File #E109466 File #LR45565



Low Voltage &
EMC Directives
EN60947-1, EN60947-5-1

UL LISTED
IND. CONT. EQUIP.
5017
with
appropriate
socket
File #E109466

Dimensions



All Dimensions in
Inches (Millimeters)

Typical Installations

In the initial off state (Figure A), the Control Switch is open, the Alternating Relay is in the LOAD A position, and both loads (M1 & M2) are off. The red LED marked "LOAD A" is ON. When the Control Switch closes, it energizes Load M1. As long as the Control Switch remains closed, Load M1 remains energized. When the Control Switch opens, Load M1 is turned off and the Alternating Relay toggles to the LOAD B position. The red LED marked "LOAD B" glows. When the Control Switch closes again, it energizes Load M2. When the Control Switch opens, Load M2 is turned off, the Alternating Relay toggles back to the LOAD A position, and the process can be repeated again. On relays with DPDT contacts, two pilot lights can be used for remote indication of LOAD A or LOAD B status.

To eliminate any bounce condition of the Control Switch, the addition of a second switch (OFF) along with two auxiliary contacts is recommended as shown in Figure B.

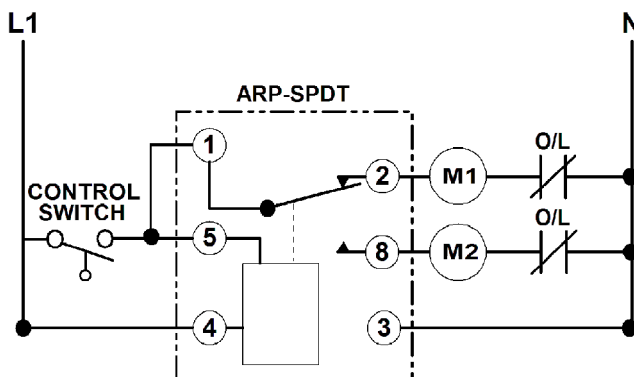


Figure A

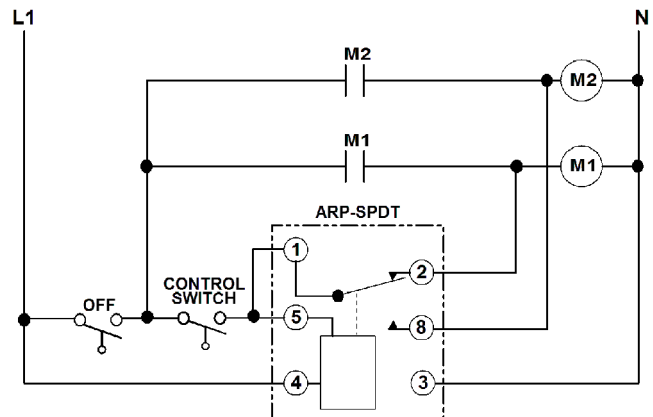


Figure B

ALTERNATING RELAYS

DPDT Cross-Wired



- u For duplex loads
- u 10A DPDT Cross-Wired Output Configuration when additional capacity is required
- u Can be used with two or three Control Switches
- u Control voltages of 12, 24, 120 & 240V AC
- u Compact plug-in design utilizing industry-standard 8 pin octal socket
- u Optional low profile selector switch to lock either load ON first
- u 2 LED's indicate load to energize first



Alternating Relays with DPDT cross-wired outputs are used in applications requiring both (a) the optimization of load usage by equalizing the run time of two loads and (b) additional capacity in case of excess load requirements. This alternating action is initiated by a control switch, such as a float switch, manual switch, timing relay, pressure switch, or other isolated contact. Each time the initiating switch is opened, the output relay contacts will change state, thus alternating the two loads. Two LED indicators show the load to energize first.

Alternating Relays with DPDT cross-wired output configurations can be used with two or three control switches. See "Typical Installations" on Page 45 for more information. For products with SPDT or DPDT output configurations, see Page 42.

An optional three position selector switch is offered. This allows a DPDT cross-wired unit to alternate the two loads as normal, or lock the relay to always operate the same load first each time. In this manner, a load that has fewer hours of operation than the other load could be used more often in an effort to eventually balance the run time of both loads.

OUTPUT CONTACTS	CONTROL VOLTAGE	PRODUCT NUMBER	WIRING/SOCKET ⁿ
DPDT CROSS-WIRED w/o Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A3 ARP024A3 ARP120A3 ARP240A3	8 Pin Octal 70169-D
DPDT CROSS-WIRED w/ Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A3R ARP024A3R ARP120A3R ARP240A3R	
DPDT CROSS-WIRED w/o Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A5 ARP024A5 ARP120A5 ARP240A5	8 Pin Octal 70169-D
DPDT CROSS-WIRED w/ Selector Switch	12V AC 24V AC 120V AC 240V AC	ARP012A5R ARP024A5R ARP120A5R ARP240A5R	

ⁿ See Pages 81 & 82 for **Sockets & Accessories**.



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ALTERNATING RELAYS

DPDT Cross-Wired Application Data & Dimensions

Application Data

Voltage Tolerances: +10%/-15% of control voltage at 50/60Hz.

Load (Burden): Less than 3VA

Output Contacts:

10A @ 240V AC/30V DC,
1/2HP @ 120/240V AC (N.O.), 1/3HP @ 120/240VAC (N.C.)

Life:

Mechanical: 10,000,000 operations
Full Load: 100,000 operations

Temperature: -28° to 65°C (-20° to 150°F)

Transient Protection: 10,000 volts for 20 microseconds

Indicator LED's: 2 LED's marked LOAD A and LOAD B

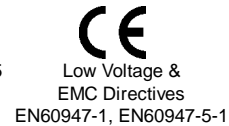
Optional Selector Switch Settings:

LOCK LOAD A (always energizes first)

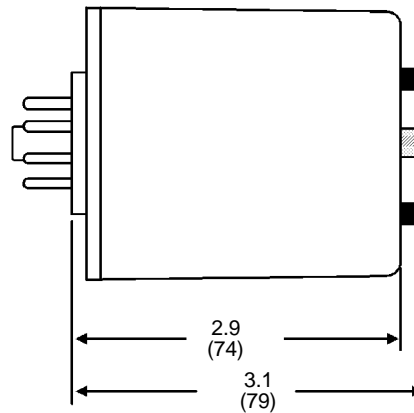
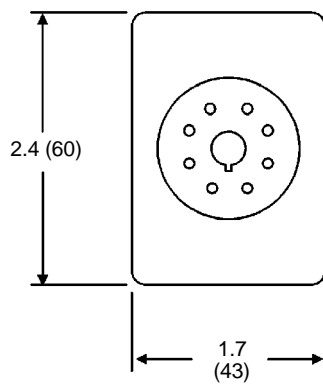
ALTERNATE

LOCK LOAD B (always energizes first)

Approvals:



Dimensions



All Dimensions in Inches (Millimeters)

Typical Installations

In the initial off state (diagram below left), both the LEAD Control Switch and the LAG Control Switch are open, the Alternating Relay is in the LOAD A position, and both loads are off. The red LED marked "LOAD A" is ON. When the LEAD Control Switch closes, it energizes Load M1. As long as the LEAD Control Switch remains closed, Load M1 remains energized. If the LAG Control Switch closes, it energizes Load M2. When the LAG Control Switch opens, Load M2 is turned off. When the LEAD Control Switch opens, Load M1 is turned off and the Alternating Relay toggles to the LOAD B position. The red LED marked "LOAD B" is ON. When the LEAD Control Switch closes, it turns on Load M2. If the LAG Control Switch closes, it will energize Load M1. When the LAG Control Switch opens, Load M1 is turned off. When the LEAD Control Switch opens, Load M2 is turned off, the Alternating Relay toggles back to the LOAD A position, and the process can be repeated again.

The diagram below right illustrates a type of operation known as "Sequence On - Simultaneously Off (S.O.S.O.)"-the two loads are energized sequentially, but remain on together until the OFF switch is opened.

In the initial OFF state, all three switches are open, the Alternating Relay is in the LOAD A position, and both loads are off. No action happens with the Alternating Relay or either load when the OFF Switch closes. When the LEAD Switch closes, Load M1 turns on. When the LAG Switch closes, Load M2 turns on. Both loads remain on as long as all three switches are closed.

When the LAG Switch opens, Load M2 remains on because the OFF Switch is still closed. When the LEAD Switch opens, Load M1 remains on because the STOP Switch is still closed. When the OFF Switch opens, both Load M1 and Load M2 are turned off simultaneously. The Alternating Relay toggles to the LOAD B position. The entire cycle is then repeated, but with Load M2 energized first followed by Load M1.

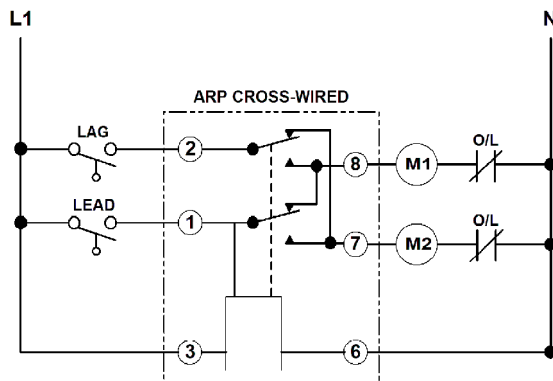


Figure A

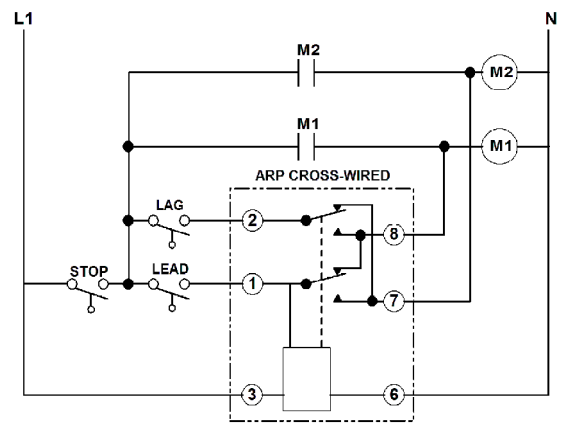


Figure B