

THE GLOBAL EXPERT  
IN **SOLID STATE RELAY**  
TECHNOLOGY



■ CN Series SSRs



■ Accessories



■ Assemblies



# **crydom**<sup>®</sup>

**CN Series SSRs & Assemblies**

# crydom<sup>®</sup>

Crydom, a company of Custom Sensors & Technologies (CST) and **global expert in Solid State Relay Technology**, has a distinguished record of providing high quality, world class Solid State Relay and Control Products for a variety of heating, lighting and motion control applications. Crydom products, coupled with **unparalleled technical support, timely delivery and competitive pricing**, provide Crydom's clients with the innovative products and support necessary to succeed in today's competitive and fast paced global markets.

Crydom's extensive selection of standard off-the-shelf products is constantly being updated and expanded through its continuous improvement and aggressive new product development programs. Utilizing state of the art designs, materials and technology, Crydom offers a wide range of AC and DC output SSRs in industry standard Panel Mount, PCB Mount

and DIN Rail packages, all **meeting global safety and standards agency requirements** such as CE, RoHS, UL, IEC, etc.

Bolstered by four decades of Solid State Relay operations experience, Crydom also specializes and encourages **adapted and fully custom-designed SSR products** for nearly any application where unique specifications and optimized performance are critical for success.

Crydom's modern purpose-built **100,000 square foot manufacturing facility** houses all aspects of its ISO certified operation including Design and Development Engineering, Manufacturing Operations and Quality Assurance, Customer Service, Finance, Marketing and General Management, permitting close coordination of all aspects of Crydom's activities. Applications Engineering

and Sales support are both performed in the field to provide Crydom's Customers with the unparalleled technical and commercial support.

Following rigid design guidelines and standards, Crydom products have set the bench mark for SSR performance and reliability world wide. In addition to **award winning designs**, Crydom has acquired an impressive list of **patents** related to SSRs and Solid State Controls, while continuing to develop new circuit and technology-related inventions as part of **extensive R&D programs**.

To learn more about Crydom SSR technology and products, or how an alliance with Crydom can contribute to the success of your project, visit **www.crydom.com** or contact your authorized Crydom Distributor or Crydom Customer Service Representative today.



[www.crydom.com](http://www.crydom.com)

## SOLID STATE RELAYS, DIN RAIL MOUNTED SOCKETS AND SSR ASSEMBLIES

### CN Series SSRs

The 5 mm wide single-in-line relay package has become an industry standard where compact low cost control functions are required. Crydom Solid State Relays can now meet this requirement and complement or replace existing electromechanical relay functions offered in this configuration for either printed circuit board mounting or socket mounting including DIN rail applications.

The CN series offers several different input and output configurations for both AC and DC applications. Designed to be socket or pcb mounted, the CN series of SIP type solid state relays offer performance and reliability in the industry standard 5 mm relay package, making them ideal for many control applications historically serviced by less reliable EMRs.



### Accessories

Joining Crydom's existing DRS sockets is the DRSCN series which are designed to accept the industry standard 5 mm relay package. The DRSCN sockets allow for easy installation and removal of the CN series SSRs and any other control component offered in the 5 mm industry standard package. Mounting on standard 35 mm DIN rail, the DRSCN sockets are 6.2 mm wide and include convenient wire termination for field wiring and a LED input status indicator. Marker strips are also available to facilitate control point identification.



### DRACN Series Assemblies

Combining Crydom's CN series SSRs and DRSCN sockets, Crydom offers the DRACN series of ready to use SSR assemblies. DRACN Assemblies come from the factory with the SSR matched and installed in the correct socket simplifying both the selection and assembly processes. Specifications for the assemblies precisely match those of the selected companion CN series SSRs.

For more information, technical support or questions about adapted SSRs, Sockets or Assemblies, contact your local Crydom Distributor, Local Sales Representative, or Crydom Regional Sales office, or visit [www.crydom.com](http://www.crydom.com).





## CN Series SSRs AC & DC Output

- Mini SIP SSRs
- Ratings 24 VDC @ 3.5 A, 48 VDC @ 100 mA and 240 VAC @ 2 A
- DC Control 5, 24 and 60 V
- IP67-protected fully encapsulated
- PCB mounted or installs in DRSCN Series sockets
- UL & cUL recognized, UL 100 K cycle extended endurance tested, CE & RoHS compliant

### OUTPUT SPECIFICATIONS FOR ALL MODELS (A)

	CN024Dxx	CN048Dxx	CN240Axx
Operating Voltage	0-24 VDC	0-48 VDC	24-280 VAC (47-63 Hz)
Maximum Load Current @ 40°C (B)	3.5 A	100 mA	2 A
Minimum Load Current [mA]	1	1	70
Maximum Blocking Voltage	30 VDC	60 VDC	600 VAC
Maximum Surge Current	9 A (10 ms)	300 mA (10 ms)	120/115 Apk (16.6/20 ms)
Maximum I <sup>2</sup> t for fusing (8.3/10 msec) [A <sup>2</sup> sec]	N.A.	N.A.	260/285
Typical On-State Voltage Drop @ Rated Current [V]	0.4	1.0	1.1 (peak)
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.001	0.001	4.0
Maximum PWM [Hz] (C)	500	500	N.A.
Switch Configuration	Normally Open	Normally Open	Normally Open

### INPUT SPECIFICATIONS FOR CN024Dxx (A)

	CN024D05	CN024D24	CN024D60
Control Voltage Range	3-12 VDC	15-30 VDC	38-72 VDC
Must Turn On Voltage	3 VDC	15 VDC	38 VDC
Must Turn Off Voltage	1.0 VDC	10 VDC	17 VDC
Typical Input Current	10 mA ± 10% @ 5 VDC	7 mA ± 10% @ 24 VDC	3 mA ± 10% @ 60 VDC
Typical Turn-On Time [µsec]	120	350	400
Typical Turn-Off Time [µsec]	100	80	70

### INPUT SPECIFICATIONS FOR CN048Dxx (A)

	CN048D05	CN048D24	CN048D60
Control Voltage Range	3-12 VDC	16-30 VDC	38-72 VDC
Must Turn On Voltage	3 VDC	16 VDC	38 VDC
Must Turn Off Voltage	1.0 VDC	9 VDC	10 VDC
Typical Input Current	4 mA ± 10% @ 5 VDC	5 mA ± 10% @ 24 VDC	3 mA ± 10% @ 60 VDC
Typical Turn-On Time [µsec]	20	20	20
Typical Turn-Off Time [µsec]	130	130	130

### INPUT SPECIFICATIONS FOR CN240Axx (A)

	CN240A05	CN240A24	CN240A60
Control Voltage Range	3-12 VDC	15-30 VDC	38-72 VDC
Must Turn On Voltage	3 VDC	15 VDC	38 VDC
Must Turn Off Voltage	1.0 VDC	10 VDC	30 VDC
Typical Input Current	15 mA ± 10% @ 5 VDC	6 mA ± 10% @ 24 VDC	4 mA ± 10% @ 60 VDC
Typical Turn-On Time (D)	1/2 Cycle	1/2 Cycle	1/2 Cycle
Typical Turn-Off Time	1/2 Cycle	1/2 Cycle	1/2 Cycle

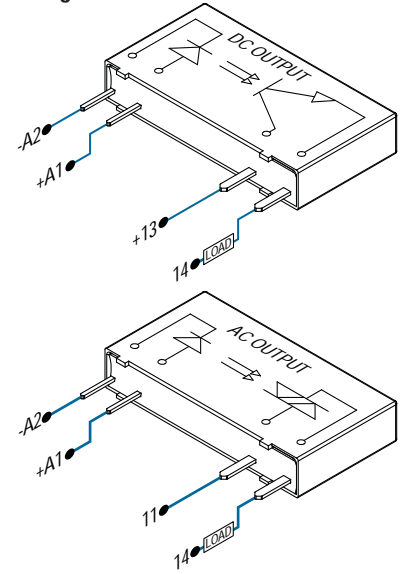
### GENERAL SPECIFICATIONS FOR ALL MODELS (E)

Parameters	
Dielectric Strength, Input/Output (F)	2.5 KV
Maximum Capacitance, Input/Output	1.5 pF
Ambient Operating Temperature Range	-20 to 80°C
Ambient Storage Temperature Range	-20 to 100°C
Weight (typical)	0.14 oz. (4.05 g)
Housing Material	UL 94 V0
Overvoltage Category	III
Pollution Degree	2
Degree of protection (Encapsulation)	IP67

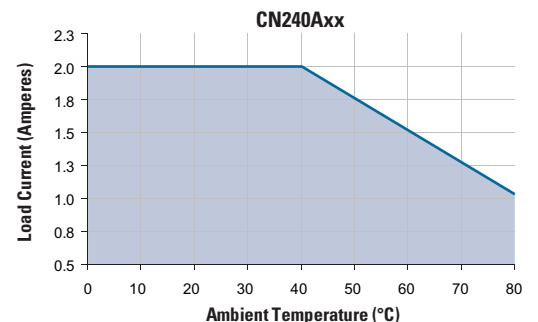
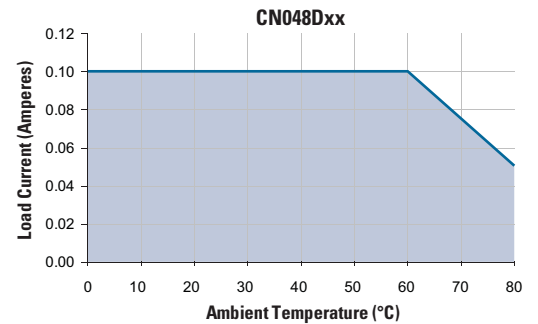
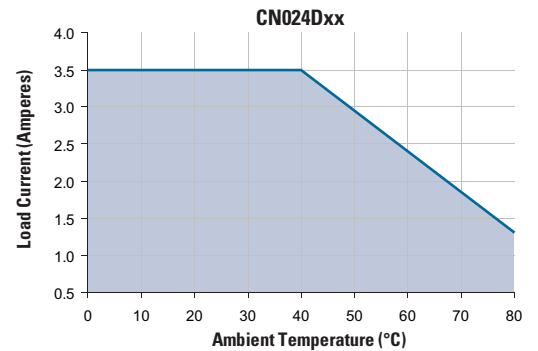
### GENERAL NOTES

- (A) All parameters at 25°C unless otherwise specified.
- (B) See derating curves for more information.
- (C) Operating frequency higher than 500 Hz will damage SSR.
- (D) Turn-on time for random turn-on version is 0.1 msec.
- (E) CN Series SSR and DIN rail socket are sold separately or together as a DRACN Series assembly.
- (F) 3.75 KV for CN048Dxx models.

### Circuit Diagrams



### Derating Curves



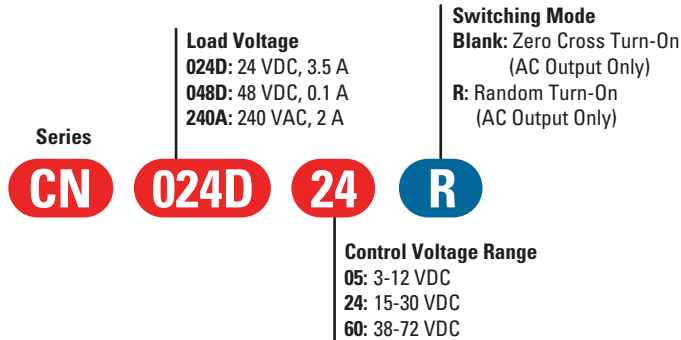
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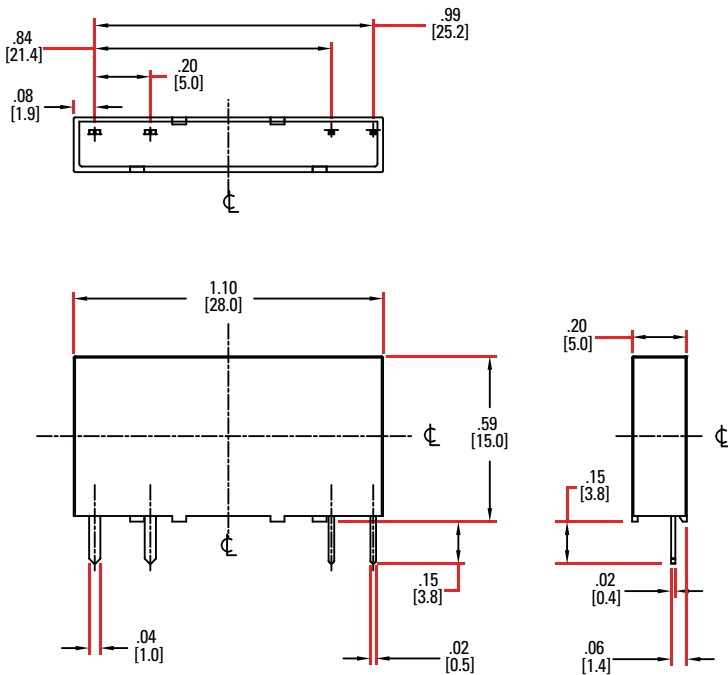
### Part Number Nomenclature



- Required for valid part number
- For options only and not required for valid part number

### Mechanical Dimensions

Tolerances: ± 0.02 in / 0.5 mm  
 All dimensions are in: inches [millimeters]



### CN Series Accessories

#### ID Marker Strips

##### CNLB, CNLN, CNL2

###### Blank Strips

Part no.: CNLB  
 A package of 10 plastic strips comprising 10 individual unprinted markers which can be placed on sockets' terminal block for easy identification during the use of multiple units.



###### Numbered 1 to 10 Strips

Part no.: CNLN  
 A package of 10 plastic strips comprising 10 markers printed individually from 1 to 10 which can be placed on sockets' terminal block for easy identification during the use of multiple units.



###### Numbered 11 to 20 Strips

Part no.: CNL2  
 A package of 10 plastic strips comprising 10 markers printed individually from 11 to 20 which can be placed on sockets' terminal block for easy identification during the use of multiple units.



### DRSCN Series DIN Rail Mountable Sockets

#### DRSCN05, DRSCN24, DRSCN120, DRSCN240



- Sockets are fully compatible with CN series SSRs
- 6.2 mm wide
- Yellow LED status indicator
- Socket clip fits all standard 35 mm DIN rail profiles
- UL & cUL recognized, CE & RoHS compliant

### RELAY/SOCKET COMPATIBILITY <sup>(G, H)</sup>

SSR PN	DR Socket PN	Socket Input Voltage
CN024D05 CN048D05 CN240A05	➤ DRSCN05	➤ 5 VDC
CN024D24 CN048D24 CN240A24	➤ DRSCN24	➤ 24 VDC
CN024D60 CN048D60 CN240A60	➤ DRSCN120	➤ 120 VAC
CN024D60 CN048D60 CN240A60	➤ DRSCN240	➤ 240 VAC

<sup>(G)</sup> Installing a CN Series solid state relay in a socket that does not have matching input/output specifications may result in non-operation or damage to either the relay, socket or both.

<sup>(H)</sup> Maximum output rating for DRSCN Series sockets is 250 V / 6 Amps regardless of chosen SSR.



## DRACN Series Assemblies AC & DC Output

- 6.2 mm Base Terminal Block Design
- 5 & 24 VDC and 120 & 240 VAC Control Input Options
- 24 VDC @ 3.5 A, 48 VDC @ 100 mA and 240 VAC @ 2 A Operating Voltage Rating
- Factory assembled ready to use assemblies for AC and DC output
- Socket clip fits all standard 35 mm DIN rails
- IP67-protected fully encapsulated SSRs
- Yellow LED input status indicator
- UL & cUL recognized SSRs & sockets, UL 100 K cycle extended endurance tested SSRs, CE & RoHS compliant SSRs, sockets & assemblies

### OUTPUT SPECIFICATIONS FOR ALL MODELS (A)

	DRA-CN024DXX	DRA-CN048DXX	DRA-CN240AXX
Operating Voltage	0-24 VDC	0-48 VDC	24-280 VAC (47-63 Hz)
Maximum Load Current @ 40°C (B)	3.5 A	100 mA	2 A
Minimum Load Current [mA]	1	1	70
Maximum Blocking Voltage	30 VDC	60 VDC	600 VAC
Maximum Surge Current	9 A (10 ms)	300 mA (10 ms)	120/115 Apk (16.6/20 ms)
Maximum I <sup>2</sup> t for fusing (8.3/10 msec) [A <sup>2</sup> sec]	N.A.	N.A.	260/285
Typical On-State Voltage Drop @ Rated Current [V]	0.4	1.0	1.1 (peak)
Maximum Off-State Leakage Current @ Rated Voltage [mA]	0.001	0.001	4.0
Maximum PWM [Hz] (C)	500	500	N.A.
Switch Configuration	Normally Open	Normally Open	Normally Open

### INPUT SPECIFICATIONS FOR DRA-CN024DXX

	DRA-CN024D05	DRA-CN024D24	DRA-CN024D120	DRA-CN024D240
Control Voltage Range	3-12 VDC	15-30 VDC	90-140 VAC	190-250 VAC
Min. Turn-On Voltage	3.0 VDC	15 VDC	90 VAC	190 VAC
Min. Turn-Off Voltage	1.5 VDC	12 VDC	31 VAC	60 VAC
Typical Input Current [mA]	10 mA ± 10% @ 5 VDC	9 mA ± 10% @ 24 VDC	3.4 mA ± 10% @ 120 VAC	3.4 mA ± 10% @ 240 VAC
Typical Turn-On Time (D)	120 µsec	350 µsec	2 ms	3 ms
Typical Turn-Off Time	100 µsec	80 µsec	5 ms	6 ms

### INPUT SPECIFICATIONS FOR DRA-CN048DXX

	DRA-CN048D05	DRA-CN048D24	DRA-CN048D120	DRA-CN048D240
Control Voltage Range	3-12 VDC	16-30 VDC	100-140 VAC	190-250 VAC
Min. Turn-On Voltage	3.0 VDC	16 VDC	100 VAC	190 VAC
Min. Turn-Off Voltage	1.5 VDC	11 VDC	32 VAC	60 VAC
Typical Input Current [mA]	6 mA ± 10% @ 5 VDC	7 mA ± 10% @ 24 VDC	3.4 mA ± 10% @ 120 VAC	3.4 mA ± 10% @ 240 VAC
Typical Turn-On Time (D)	20 µsec	20 µsec	1 ms	2 ms
Typical Turn-Off Time	130 µsec	130 µsec	5 ms	6 ms

### INPUT SPECIFICATIONS FOR DRA-CN240AXX

	DRA-CN240A05	DRA-CN240A24	DRA-CN240A120	DRA-CN240A240
Control Voltage Range	3-12 VDC	15-30 VDC	90-140 VAC	190-250 VAC
Min. Turn-On Voltage	3.0 VDC	15 VDC	90 VAC	190 VAC
Min. Turn-Off Voltage	2.0 VDC	10 VDC	60 VAC	175 VAC
Typical Input Current [mA]	15 mA ± 10% @ 5 VDC	7 mA ± 10% @ 24 VDC	4 mA ± 10% @ 120 VAC	3.6 mA ± 10% @ 230 VAC
Typical Turn-On Time (D)	1/2 Cycle	1/2 Cycle	1/2 Cycle	1/2 Cycle
Typical Turn-Off Time	1/2 Cycle	1/2 Cycle	1/2 Cycle	1/2 Cycle

### GENERAL SPECIFICATIONS FOR ALL MODELS (E)

	Parameters
Dielectric Strength, Input/Output (F)	2.5 KV
Maximum Capacitance, Input/Output	1.5 pF
Ambient Operating Temperature Range	-20 to 60°C
Ambient Storage Temperature Range	-20 to 80 °C
Overvoltage Category	III
Polution Degree	2
Degree of protection (for SSR only)	IP67
Housing Material	UL 94 V0

### MECHANICAL SPECIFICATIONS FOR ALL MODELS

	Parameters
Weight (Typical)	31 grs (0.067 lb)
Dimensions (W x H x D)	6.1 mm x 93 mm x 80 mm
Terminals	10 mm
Max. Torque Output	5 - 7 in lb (0.56 - 0.8 Nm)
Max. Wire size Output	AWG #24-14 Solid. AWG #24-14 Stranded

### GENERAL NOTES

- (A) All parameters at 25°C unless otherwise specified.  
 (B) See derating curves for more information.  
 (C) Operating frequency higher than 500 Hz will damage SSR.  
 (D) Turn-on time for random turn-on version is 0.1 msec.  
 (E) CN Series SSR and DIN rail socket are sold separately or together as a DRACN Series assembly.  
 (F) 3.75 KV for CN048Dxx models.

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## Part Number Nomenclature <sup>(1)</sup>

**Load Voltage**  
**024D:** 24 VDC, 3.5 A  
**048D:** 48 VDC, 0.1 A  
**240A:** 240 VAC, 2 A

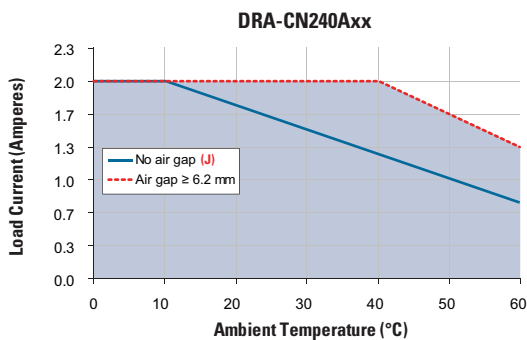
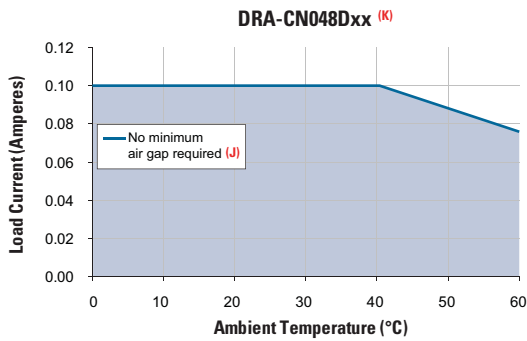
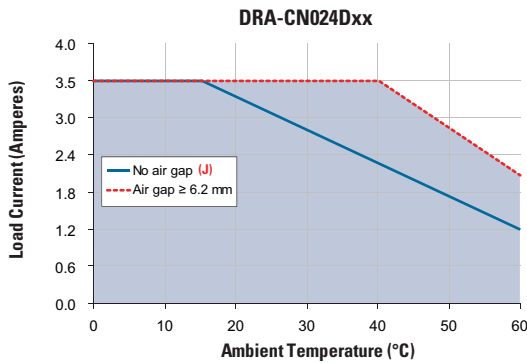
**Switching Mode**  
**Blank:** Zero Cross  
 Turn-On (AC Output Only)  
**R:** Random Turn-On  
 (AC Output Only)

Series  
**DRA-CN** **024D** **24** **R**

**Assembly Input Voltage**  
**05:** 05 VDC  
**24:** 24 VDC  
**120:** 120 VAC  
**240:** 240 VAC

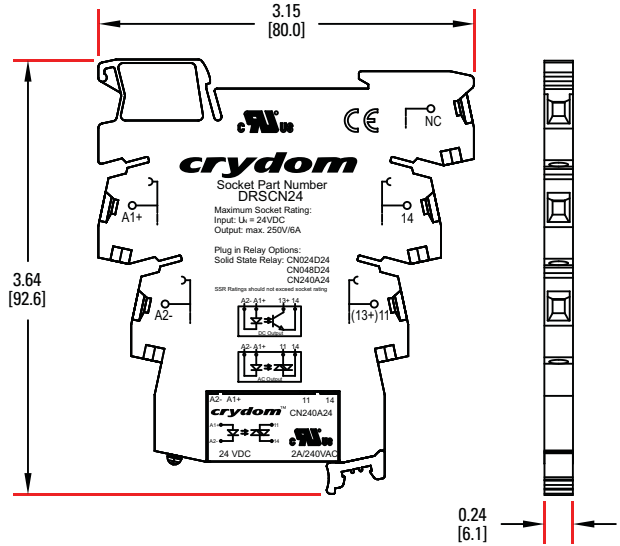
- Required for valid part number
- For options only and not required for valid part number

## Derating Curves

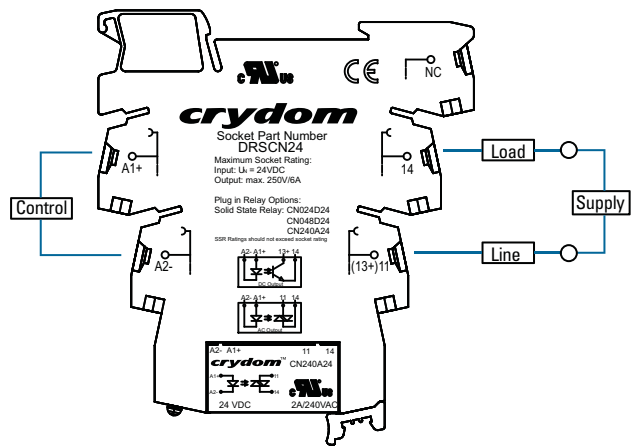


## Mechanical Dimensions

Tolerances:  $\pm 0.02$  in / 0.5 mm  
 All dimensions are in: inches [millimeters]



## Wiring Diagram <sup>(L, M)</sup>



- <sup>(1)</sup> Assembly part number is marked on the opposite side of the socket from the socket's labeling.
- <sup>(J)</sup> The air gap is the clearance distance adjacent to either side of the relay or assembly measured to the next closer assembly.
- <sup>(K)</sup> For 100 mA output SSRs, no air gap is required for full output current rating.
- <sup>(L)</sup> For sockets intended for AC input control voltage, the AC line can be wired to either DRS socket terminal A1+ or terminal A2-. Proper polarity must be observed for DC input control voltage sockets being terminal A1+ positive with respect to terminal A2-.
- <sup>(M)</sup> For AC loads, the AC line can be wired to either DRS socket terminal 11 or terminal 14. The AC load may also be wired on either the line or neutral side of the SSR. For DC loads, the proper polarity must be observed for the power supply, load and DRS socket with terminal 13 being positive with respect to terminal 14.

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