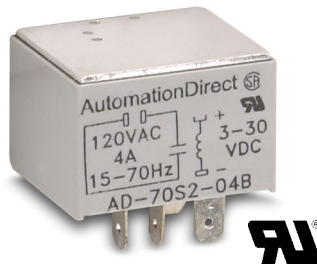


AD Series Solid State Relays



AD-SSR210-22-DCZ shown

A solid state relay is a relay with an isolated input and output, whose functions are achieved by using electronic components without the use of moving parts (vs. electromechanical relays).



AD-70S2-04B shown

Operation

Solid state relays (SSR) are similar to electromechanical relays, in that both use a control circuit and a separate circuit for switching the load. When voltage is applied to the input of the SSR, the relay is energized by a light-emitting diode. The light from the diode is beamed into a light sensitive semiconductor which, in the case of zero voltage crossover relays, signals the control circuit to turn on the output of the solid state switch at the next zero voltage crossover.

Solid State Relay Features

Solid state relays have features which electromechanical relays do not, such as:

- Long life
- Shock and vibration resistant
- No generation of RFI, EMI
- No contact bounce
- Arcless switching
- No acoustic noise
- Zero crossing or random switching types
- IC compatibility
- Immunity to humidity, salt spray and dirt
- UL # E222847
- CSA # 2742910

AD-SSR Features

- AC & DC input
- AC output
- 10 or 25 amp loads
- Photo isolated zero voltage switching
- 4000 Vrms isolation input to output
- Internal RC (snubber) network
- RFI suppression
- Integral safety cover and heatsink
- DIN-rail mounting or panel-mount

AD-70S2 Features

- DC input
- AC output
- Up to 4 amp loads
- Optically isolated
- Quick connect terminal, or panel mount when inserted into DIN-rail mountable socket

AD Series Solid State Relay Selection Guide

Solid State Relay Selection Guide											
Part Number	Price	Description	Switching Type	Dimensions & Derating Charts	Relay Socket Part Number	Price	Socket Dimensions				
AD-SSR210-22-ACZ	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 90-280 VAC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.	Zero Cross	Figure 1	N/A	N/A	N/A				
AD-SSR210-22-DCZ	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 4-32 VDC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR230-22-ACZ	\$59.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 90-280 VAC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR230-22-DCZ	\$59.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 4-32 VDC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR610-22-ACZ	\$41.25	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 90-280 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR610-22-DCZ	\$37.50	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 4-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR630-22-ACZ	\$58.50	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 90-280 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR630-22-DCZ	\$54.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 4-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR210-22-ACR	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 90-280 VAC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.	Random Switching	Figure 1	N/A	N/A	N/A				
AD-SSR210-22-DCR	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 4-32 VDC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR230-22-ACR	\$45.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 90-280 VAC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR230-22-DCR	\$45.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 4-32 VDC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR610-22-ACR	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 90-280 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR610-22-DCR	\$39.00	Solid state DIN-rail mount relay with 10A contact rating. Coil voltage 4-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR630-22-ACR	\$49.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 90-280 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR630-22-DCR	\$49.00	Solid state DIN-rail mount relay with 30A contact rating. Coil voltage 4-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR245-45-ACZ	\$73.75	Solid state DIN-rail mount relay with 45A contact rating. Coil voltage 90-140 VAC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.	Zero Cross	Figure 2	N/A	N/A	N/A				
AD-SSR245-45-DCZ	\$73.25	Solid state DIN-rail mount relay with 45A contact rating. Coil voltage 3-32 VDC. Load voltage is 24-280 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR645-45-ACZ	\$75.00	Solid state DIN-rail mount relay with 45A contact rating. Coil voltage 90-140 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR645-45-DCZ	\$75.00	Solid state DIN-rail mount relay with 45A contact rating. Coil voltage 3-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR665-45-ACZ	\$65.00	Solid state DIN-rail mount relay with 65A contact rating. Coil voltage 90-140 VAC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-SSR665-45-DCZ	\$65.00	Solid state DIN-rail mount relay with 65A contact rating. Coil voltage 3-32 VDC. Load voltage is 48-660 VAC. Finger-safe design and LED status lamp. SPST normally open.									
AD-70S2-04B	\$20.00	Solid state plug-in relay with 4A contact rating. Coil voltage is 3-30 VDC. Load voltage is 24-140 VAC. SPST normally open.						Figure 3	782-2C-SKT (see wiring diagram on next page)	\$4.00	Figure 6 *
AD-70S2-04C	\$20.00	Solid state plug-in relay with 4A contact rating. Coil voltage is 3-30 VDC. Load voltage is 24-280 VAC. SPST normally open.									
AD-70S2-04D	\$20.00	Solid state plug-in relay with 4A contact rating. Coil voltage is 3-30 VDC. Load voltage is 8-50 VAC. SPST normally open.									

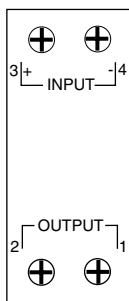
*NOTE: See 78 Series Relays Socket dimensions.

AD Series Solid State Relay Specifications

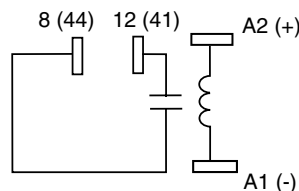
Specifications																						
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Input Characteristics																						
Control Voltage Range	3-32 VDC	4-32 VDC					90-280 VAC					90-140 VAC	90-280 VAC	90-140 VAC								
Typical Input Current	8-12 mA					2-4 mA																
Maximum Turn-On Voltage	4VDC										90 Vrms											
Minimum Turn-Off Voltage	1VDC										10 Vrms											
Output Characteristics																						
Output Type	SCR																					
Switching Type	Zero Cross	Random Switching	Zero Cross	Random Switching	Zero Cross	Random Switching	Zero Cross	Random Switching	Zero Cross	Random Switching	Zero Cross											
Output Voltage	24-280 VAC		48-660 VAC			24-280 VAC		48-660 VAC			24-280 VAC		48-660 VAC		65A							
Load Current Range	10-45A																					
Transient Over-Voltage	600Vpk		1200Vpk			600Vpk		1200Vpk			600Vpk		1200Vpk		600Vpk		1200Vpk					
Maximum Surge Current	10A: 120Apk; 30/45A: 625Apk; (at 16.6 ms)		625Apk (at 16.6 ms)			10A: 120Apk; 30/45A: 625Apk; (at 16.6 ms)		625Apk (at 16.6 ms)			10A: 120Apk; 30/45A: 625Apk; (at 16.6 ms)		625Apk (at 16.6 ms)		10A: 120Apk; 30/45A: 625Apk; (at 16.6 ms)		625Apk (at 16.6 ms)					
Maximum On-State Voltage Drop at Rated Current	1.6 Vpk																					
Maximum I²T for Fusing (8.3 ms)	10A: 60 A ² sec; 20A: 260 A ² sec; 30/45A: 1620 A ² sec		1620 A ² sec			10A: 60 A ² sec; 20A: 260 A ² sec; 30/45A: 1620 A ² sec		1620 A ² sec			10A: 60 A ² sec; 20A: 260 A ² sec; 30/45A: 1620 A ² sec		1620 A ² sec		10A: 60 A ² sec; 20A: 260 A ² sec; 30/45A: 1620 A ² sec		1620 A ² sec					
Maximum Off-State Leakage Current at Rated Current	10mA		1mA			10mA		1mA			10mA		1mA		10mA		1mA					
Maximum Rate of Rise Off State Voltage (dv/dt)	500 V/us																					
Max Response Time (On and Off)	1/2 cycle																					
General Characteristics																						
Electrical Life	N/A for solid state relays																					
Operating Temperature Range	-40°C to 80°C (-40°F to 176°F) - derating applies																					
Frequency	Input: no frequency limitation / output: snubber 48-63 Hz																					
Storage Temperature Range	-40°C to 125°C (-40°F to 257°F)																					
Weight	10/20/30 A: 272g (9.6 oz); 45A: 482g (17oz)																					
Input Indication	Green LED																					
Encapsulation	Thermally conductive epoxy																					
Input Terminal Screw Torque	10/20/30 A: 5.0-6.0 in-lb (0.6-0.7 N.m); 45A: 5.0-6.0 in-lb (0.6-0.7 N.m)																					
Output Terminal Screw Torque	10/20/30 A: 5.0-6.0 in-lb (0.6-0.7 N.m); 45A: 10.0-15.0 in-lb (1.1-1.7 N.m)																					
Mount Type	35mm DIN rail and panel mount																					
Maximum Wire Size	8AWG																					
Agency Approvals	E222847 UL Recognized, CE, CSA 2742910																					

To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at www.AutomationDirect.com

AD-SSRxxx-xx wiring diagram



AD-70S2-xx wiring diagram



Please see our website www.AutomationDirect.com for complete engineering drawings.

AD Series Solid State Relay Specifications

Specifications			
Part Number	AD-70S2-04B	AD-70S2-04C	AD-70S2-04D
Input Characteristics			
Input Voltage Range	3 - 30 VDC		
Must Release Voltage	5VDC		
Typical Input Current	1 - 17 mA	1 - 6 mA	1 - 17 mA
Maximum Reverse Control Voltage	5VDC		
Output Characteristics			
Contact Rating	4A		
Contact Configuration	SPST-NO		
Output Voltage Range	24 - 140 VAC	24 - 280 VAC	8 - 50 VAC
Switching Type	Zero Cross		
Switching Device	Triac		
Maximum Rate of Rise Off State Voltage (dv/dt)	300 V/us		
Min. Load Current to Maintain On	75mA		
Non-Repetitive Surge Current (1 cycle)	60A		
Max. Off State Leakage Current (rms)	6mA	6mA	10mA
Minimum Peak Blocking Voltage	400VAC	600VAC	200VAC
Typical On State Voltage Drop (rms)	1.6 VAC		
General Characteristics			
Mounting Type	Socket Mount		
Thermal Resistance (Junction to Case)	4 °C/W		
Dielectric Strength, Terminals to Chassis	3000 VAC		
Ambient Air Temperature around the Device - Storage	-40 to +125 °C		
Ambient Air Temperature around the Device - Operation	-40 to +100 °C		
Agency Approvals	UL (E258297), CSA (040787), RoHs		

SSR Series Dimensions & Derating Charts

Dimensions

inches [mm]

AD-SSR Series

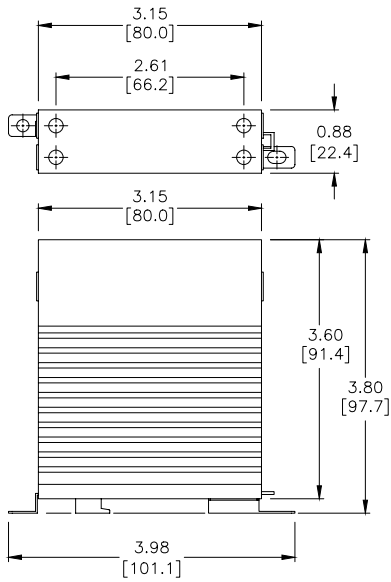


Figure 1

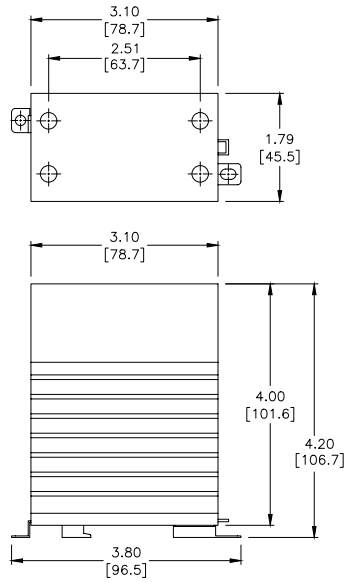
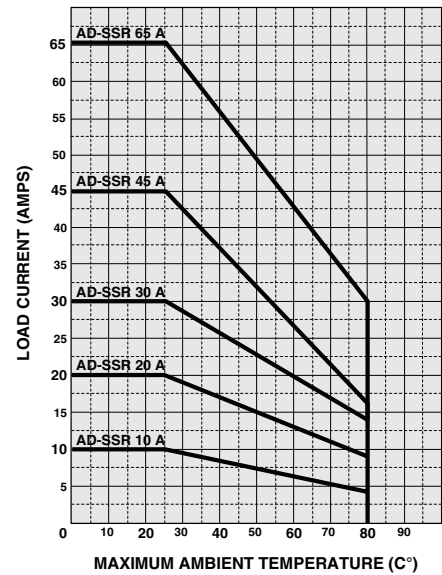


Figure 2

Note: Recommended spacing between multiple SSRs is 0.75 inch.

AD-SSR Series derating chart



AD-70S2 Series

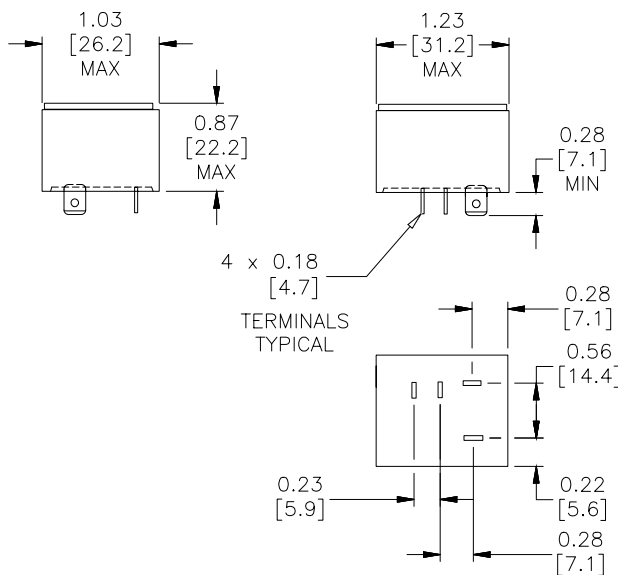
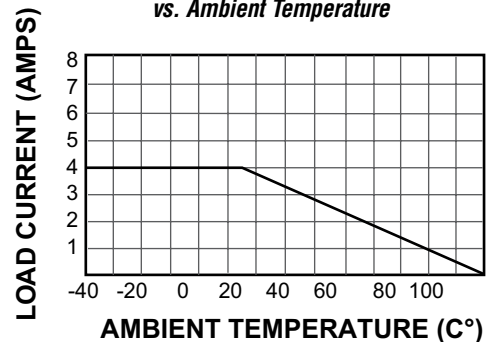


Figure 3

AD-70S2 Series derating charts

Maximum Continuous Current vs. Ambient Temperature



Please see our website www.AutomationDirect.com for complete engineering drawings.

78 Series Relay Socket Dimensions

Dimensions

inches [mm]

Figure 5: 781-1C-SKT

DIN-rail mounting, SPDT, for use with 781 series relays

Note: See Table on next page for maximum screw torques and wire sizes

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file number: E225080

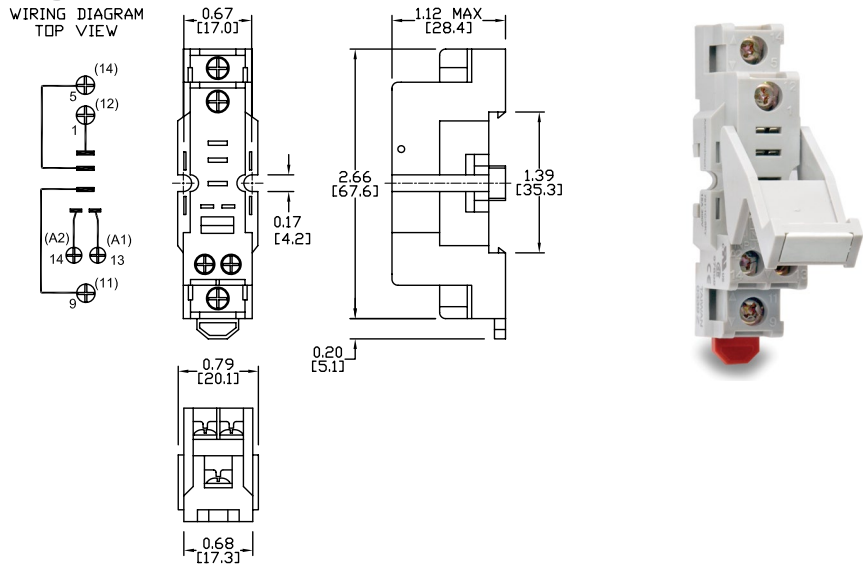


Figure 6: 782-2C-SKT

DIN-rail mounting, DPDT, for use with 782 series and AD-70S2 relays

Note: See Table on next page for maximum screw torques and wire sizes

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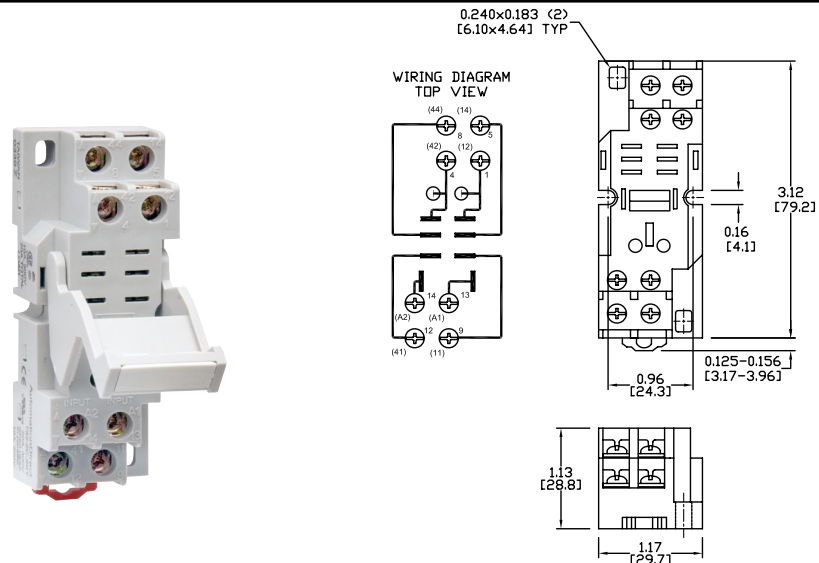
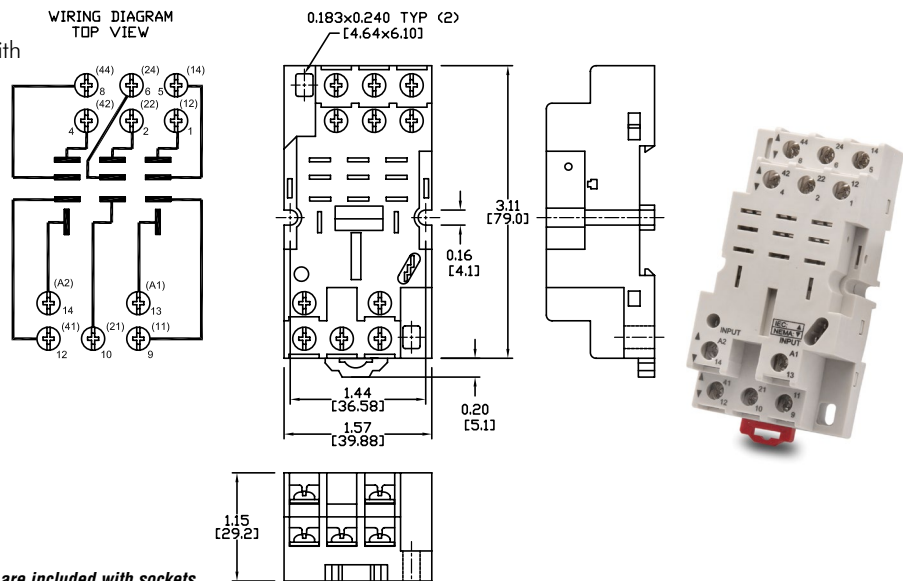


Figure 7: 783-3C-SKT

DIN-rail mounting, 3PDT, for use with 783 series relays.

Note: See Table on next page for maximum screw torques and wire sizes

UL Recognized
file number: E225080



Note: Order sockets separately; holding clips are included with sockets.