

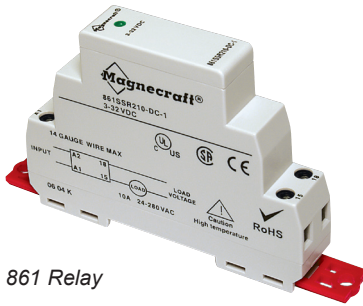
## Description

# Magnecraft® Solid State Relays

861

SPST-NO, 8 A to 15 A

SPST-NC, 10 A



861 Relay

## Description

The 861 is the first complete solid state relay without any moving parts, all in a slim 17.5 mm design.

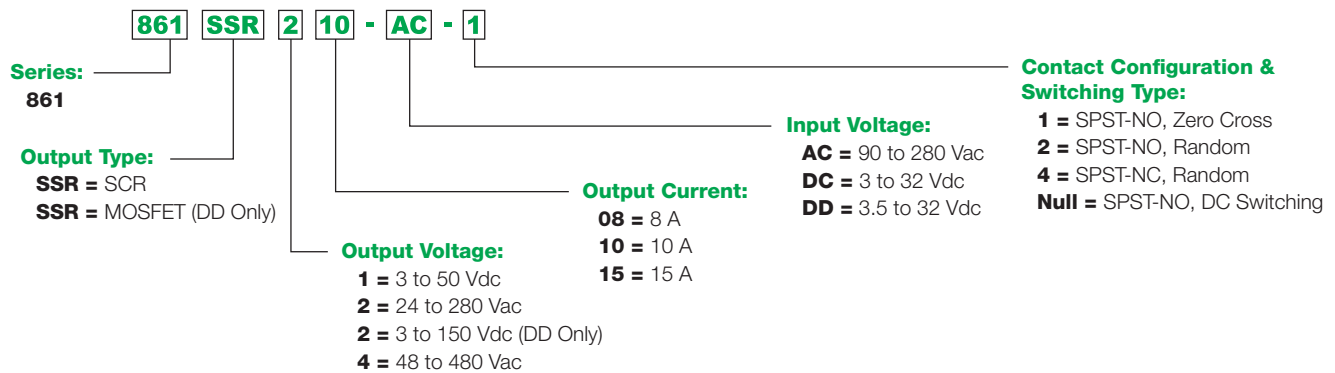
Feature	Benefit
Solid state circuitry	Involves no moving parts which extends product life, increases reliability, and enables silent operation
Optically coupled circuit	Provides isolation between input and output circuits
Internal snubber	Helps protect the relay's internal circuit from high voltage transients
Internal heat sink	Provides factory-tested thermal management
Fingersafe® terminals	Helps prevent an operator from touching live circuits
DIN and panel mounting	Mounts directly onto DIN rail or panel and provides flexibility to accommodate last minute design changes

Switching Type	Switching Device	Input Voltage Range	Output Voltage Range	Contact Configuration	Rated Output Current (A)	Standard Part Number
DC switching	MOSFET (1)	3.5–32 Vdc	3–50 Vdc	SPST-NO	15	861SSR115-DD
			3–150 Vdc	SPST-NO	8	861SSR208-DD
Random	SCR (2)	3–32 Vdc	24–280 Vac	SPST-NO	10	861SSR210-DC-2
		90–280 Vac	24–280 Vac	SPST-NC	10	861SSR210-DC-4
Zero cross	SCR	3–32 Vdc	24–280 Vac	SPST-NO	10	861SSR210-AC-2
			48–480 Vac	SPST-NO	10	861SSR410-DC-1
		90–280 Vac	24–280 Vac	SPST-NO	10	861SSR210-AC-1
			48–480 Vac	SPST-NO	10	861SSR410-AC-1

(1) MOSFET = metal oxide semiconductor field-effect transistor

(2) SCR = silicon-controlled rectifier

## Part Number Explanation



Specifications (UL 508)

Part Number	861SSR***-DD	861SSR***-DC-	861SSR***-AC-
<b>Input Characteristics</b>			
Input Voltage Range	3.5–32 Vdc	3–32 Vdc	90–280 Vac
Must Release Voltage	1 Vdc		10 Vac
Nominal Input Impedance	Current regulator		16–25 kΩ
Typical Input Current at 5 Vdc	12 mA	16 mA; 12 mA (861SSR210-DC-4)	12 mA
Reverse Polarity Protection	Yes	Yes	N/A
<b>Output Characteristics</b>			
Switching Device	MOSFET	SCR (2)	
Switching Type	DC switching	Zero cross; Random	
Contact Configuration	SPST-NO	SPST-NO; SPST-NC	
Output Voltage Range	3–150 Vdc	24–480 Vac	
Maximum Rate of Rise Off State Voltage (dv/dt)	N/A	500 V/us; 350 V/us (861SSR410); 200 V/us (861SSR210-DC-4)	
Output Current Range	8–15 A	10 A (rms)	
Minimum Load Current–Maintain On	20 mA	50 mA	
Non-Repetitive Surge Current (8.3 ms)	8 A: 35 A; 15 A: 50 A	500 A (rms)	
Maximum rms Overload Current (1 s)	8 A: 17 A; 15 A: 24 A;	24 A (rms)	
Maximum Off State Leakage Current	0.25 mA	10 mA (rms)	
Typical On State Voltage Drop	N/A	1.25 Vac (rms)	
Maximum On State Voltage Drop	0.5 Vdc	1.6 Vac (rms)	
Maximum On State Resistance	40 mΩ	N/A	
Maximum Turn-On Time	5 ms	8.3 ms	
Maximum Turn-Off Time	5 ms	8.3 ms	
Maximum I <sup>2</sup> T for Fusing	N/A	1250 A <sup>2</sup> sec (861SSR210); 850 A <sup>2</sup> sec (861SSR410)	
<b>General Characteristics</b>			
Electrical Life	N/A for solid state relays		
Thermal Resistance (Junction–Case)	8 A: 0.5 °C/W; 15 A: 1.4 °C/W	0.66 °C/W	
Internal Heat Sink	4.0 °C/W		
Dielectric Strength (Input–Output)	2500 V (rms)	4000 V (rms)	
Dielectric Strength (Terminals–Chassis)	2500 V (rms)		
Operating Temperature Range	–30 °C–+ 80 °C (derating applies)		
Storage Temperature Range	–40 °C–+100 °C		
Weight	127.1 g (4.1 oz)		
Input Indication	Green LED		
Terminal Wire Capacity (Input and Output)	14 AWG (2.5 mm <sup>2</sup> ) maximum		
Terminal Screw Torque	7.1 lb-in (0.8 N-m) maximum		
Safety Cover	IP20		
Agency Approvals	UL Listed (E258297); CE (per IEC60947-4-2); CSA (168986); RoHS		

*Dimensions,  
Wiring Diagram,  
De-Rating Curves*

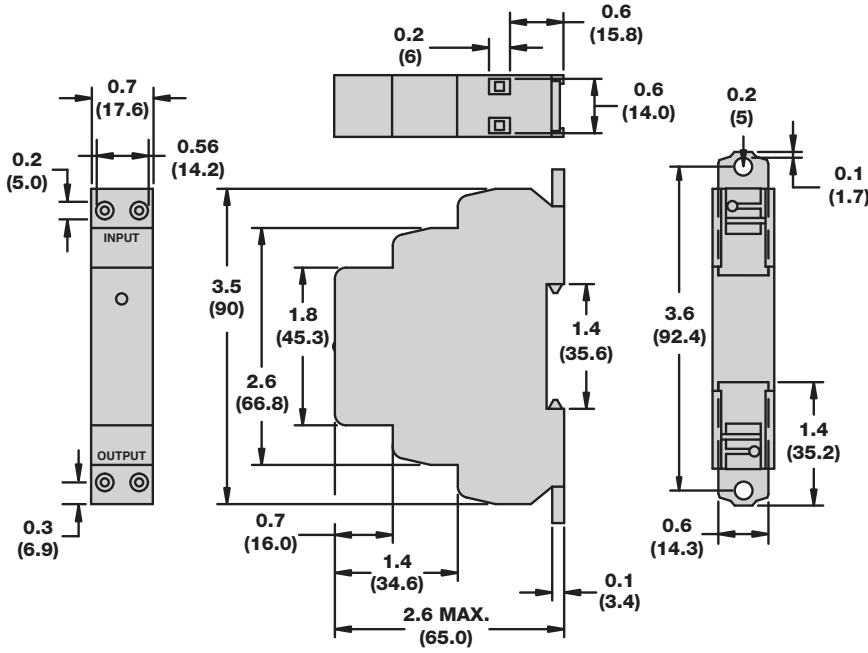
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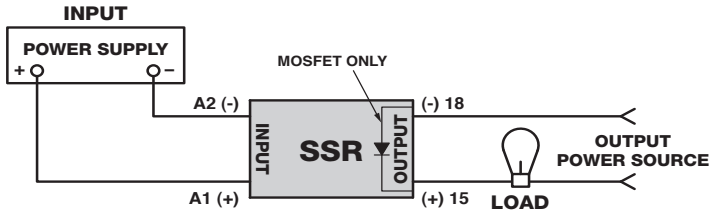
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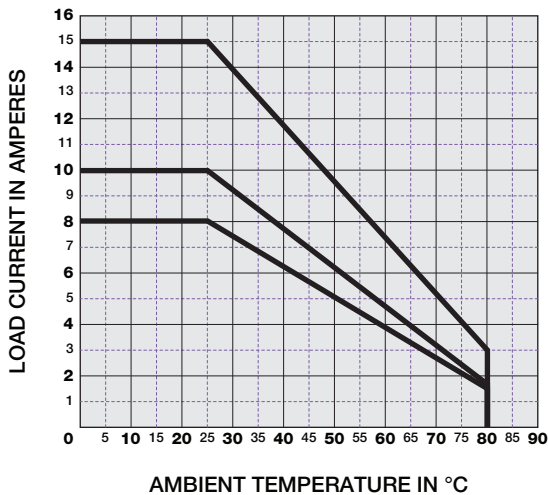
## Dimensions: Inches (Millimeters)



## Wiring Diagram



## De-Rating Curves



**Note:** A minimum spacing of 17.5 mm (0.7 in) between adjacent 861 relays is required in order to achieve the maximum ratings.

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