Sensata
Technologies

SOLID STATE RELAY
SELECTION GUIDE

What is a
Solid State
Relay / Contactor?

A Solid State Relay or Contactor (SSR or SSC) is an electronic component that switches Power (AC or DC current) to a load circuit and provides electrical isolation between an application's control circuit and load circuit. It is a competitive technology to Electromechanical Relays (EMRs) and other switching technologies such as Mercury Displacement Relays (MDRs). Solid state switching technology can also be combined with EMR technology to produce a switching device with hybrid technology.

Load

Switch

Trigger
Circuit

— Control +

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Long Life

Quiet Operation

Minimum Electrical Noise

Low Power Consumption

Shock & Vibration Resistant

Magnetic Noise Immunity

Ideal for Harsh Environments

High Compatibility with Control Systems

Fast Switching

Position Insensitive

Reduced Weight

Reduced Energy Cost

Why Use
Solid State
Switching
Technology?

Ratings by Mounting Type*

		PANEL	DIN RAIL	PCB	PLUG-IN
AC Output					
Voltage (Volts)	Single	690	660	660	280
	Dual	660	600	280	
	3 Phase	530	600	280	
Current (Amps)	Single	150	65	40	5
	Dual	50	6	15	
	3 Phase	75	75	15	
DC Output					
Voltage (Volts)		1000	250	200	100
Current (Amps)		160	30	20	10

*Sensata's maximum ratings per channel

Solid State Relay Applications

There are literally thousands of individual uses for Solid State Relays. Most can be categorized into the following applications:

Motion Control
Includes conveyor systems, solar trackers, fans, solenoid, valve control, elevators, lifts, hoists, and exercise equipment.

Heating Control
Applications include: professional food equipment, plastic molding/extrusion machinery, HVAC&R and soldering equipment.

Power Control
Includes power supplies, transformers, regulators, inverters, converters, UPS systems, etc. as well as any load that is not specifically for heating, lighting or motion control.

Lighting Control
These applications are usually broken down into three categories: theatrical, warehouse and commercial. Many of the products used in this segment are custom designed.

Leading the market through
Quality & Innovation

Our leadership in Solid State Switching Technology has allowed us to offer only the highest quality products to our customers. Sensata's expertise is materialized in the widest range of standard solid state relays and contactors, custom designed products, and related products of the highest quality and level of innovation. We are strongly committed to building the best products and provide our customers the highest levels of service and support all over the world.

DIN Rail Mount

SeriesOne DR Timer

DRMS Series

NOVA22 DR22 series

SOLICON DRC series

NOVA22 DR67 Series

DRA series

AC Output — Rating [Amps]

Series	Description	2	3	4	5	6	8	9	12	18	20	25	30	35	45	60	75
Solid State Relays																	
DRA-CN	6 mm	■															
DRA	10/54 mm	■	■	■	■		■										
SeriesOne DR	11/18 mm		■			■			■								
NOVA22 DR22 (NEW MODELS!)	22.5 mm										■		■	■			
NOVA22 DR45	45 mm														■	■	
SeriesOne DR Dual	18 mm					■											
Solid State Relay Timers																	
SeriesOne DR Timers	11 mm					■											
3 Phase Solid State Relays																	
NOVA22 DR67	3 Phase										■	■			■	■	■
SOLICON DRC3P	3 Phase			■		■											
SOLICON DRC3R	Reversing					■											
DRH	3 Phase IEC OTP									■	■						
Hybrid Motors Starters																	
DRMS	3 Phase Reversing							■									

DC Output — Rating [Amps]

Series	Description	0.1	3	3.5	5	6	10	12	20	24	30
Solid State Relays											
DRA-CN	6 mm	■									
DRA	10/54 mm			■	■	■	■				
SeriesOne DR	11/18 mm			■		■	■	■		■	
NOVA22 DR22	22.5 mm								■		■
Solid State Relay Timers											
SeriesOne DR Timers	11 mm							■			
Solid State Contactors											
DRA4D	Reversing SSC						■		■		

Panel Mount

AC Output — Rating [Amps]

Solid State Relays

Series	Description	5	10	12	15	18	20	25	40	50	75	90	95	110	125	150
Series 1	Signature family, 530 VAC		■					■	■	■	■	■		■	■	
HA/HD	530 VAC			■				■		■	■	■			■	
H1	1200 / 1600 V blocking, 690 VAC							■		■	■	■			■	
CW	Heavy Duty SSR, 660 VAC		■					■		■		■			■	
LN NEW	Low Noise SSR, 530 VAC							■		■						
CL	Low Current SSR, 280 VAC	■	■													
NOVA22 PM22	22.5mm SSR, 600 VAC							■		■			■			
EL	Mini-Puck SSR, 280 VAC	■	■				■	■								
EZ	Low Profile SSR, 660 VAC	■		■		■										
HAC	High Current SSC															■

Control Solid State Relays

Series	Description	5	10	12	15	18	20	25	40	50	75	90	95	110	125	150
MCBC	Burst Fire Controller / SSR							■		■		■				
MCPC	Phase Angle Controller / SSR							■		■		■				
PCV	Proportional (Phase Angle) Ctrl			■				■		■	■	■				
NOVA22 PMP	Multi-function Proportional Ctrl							■		■		■				
RPC	Resistive Input Proportional Ctrl							■	■							
SMR-6	Current Monitoring & Diagnostics							■		■	■					

Dual Solid State Relays

Series	Description	5	10	12	15	18	20	25	40	50	75	90	95	110	125	150
Evolution Duals	Screw Termination, 3 Connector options							■		■						
Series 1 Duals	Quick Connect & Pin Termination							■	■							
DPI NEW	Fast Push-In Wiring Connection						■		■							

3 Phase Solid State Relays

Series	Description	5	10	12	15	18	20	25	40	50	75	90	95	110	125	150
NOVA22 PM67	3-Phase 67mm, 600 VAC							■		■						
53TP	3 Phase, 530 VAC, IP00 & IP20							■		■						
GN0	Reversing, 530 VAC, IP20							■		■						

DC Output — Rating [Amps]

Solid State Relays

Series	Description	3	5	7	10	12	20	25	40	60	80	100	120	160
DC60	Economical, 1 - 60 VDC	■	■	■										
D06D	Low Voltage MOSFET Output, 1 - 60 VDC									■	■	■		
PowerPlus DC	Enhanced Switching, 1 - 500 VDC			■		■			■	■	■	■		
Series 1-DC	Low Impedance MOSFET, 1 - 500 VDC		■		■	■	■		■	■	■	■		
EL	Mini-Puck SSR, 1 - 100 VDC	■			■		■							
SSC	High Voltage IGBT Output, 1 - 1000 VDC							■						
LVD	Low Voltage Disconnect								■	■	■	■		

Solid State Contactors

Series	Description	3	5	7	10	12	20	25	40	60	80	100	120	160
DP	Reversing SSC, IP00						■		■	■				
HDC	High Current, 1 - 200 VDC												■	■

NOVA22 PM22 series

EL series

H1 series

Evolution Duals

CW series

NOVA22 PMP series

DP series

HDC series

NOVA22 PM67 series

For more information about these and other solid state relay products, visit www.sensata.com

PCB Mount ──────────────

ASO series

CX series

PF series

Plug-In Mount ──────────────

CN series

ED series

AC Output

Series	Description	1	1.5	2	3	4	5	25	40
		Rating [Amps]							
		Solid State Relays							
ASO	Mini SIP SSR with ratings up to 2 Amps @ 12 - 280 VAC		■	■					
MP	SIP SSR with ratings up to 4 Amps @ 24 - 280				■	■			
CX	SIP SSR with ratings up to 5 Amps @ 48 - 660 VAC						■		
MCX	SIP SSR with ratings up to 5 Amps @ 48 - 660 VAC						■		
LR	SIP SSR with ratings up to 40 Amps @ 48 - 530 VAC							■	■
PF	SIP SSR with ratings up to 25 Amps @ 48 - 660 VAC							■	
DPA	DIP SSR with ratings up to 1 Amps @ 20 - 280 VAC	■							
SDV	DIP SSR with ratings up to 1.5 Amps @ 12 - 280 VAC		■						

DC Output

Series	Description	3	5	6	10	20
		Rating [Amps]				
		Solid State Relays				
DMO	Mini SIP SSR with ratings up to 3 Amps @ 60 VDC	■				
CMX	SIP SSR with ratings up to 20 Amps @ 60 VDC or 10 Amps @ 100 VDC	■	■	■	■	■
MP	SIP SSR with ratings up to 3 Amps @ 60 VDC	■				

AC Output

Series	Description	2	3	5
		Rating [Amps]		
		Solid State Relays		
CN	Slim SSR with ratings up to 2 Amps @ 24 - 280 VAC	■		
ED	SSR in industry standard EMR package with ratings up to 5 Amps @ 24 - 280 VAC		■	■

DC Output

Series	Description	0.1	3.5	5	6	10
		Rating [Amps]				
		Solid State Relays				
CN	Slim SSR with ratings up to 6 Amps @ 1 - 100 VDC	■	■		■	
ED	SSR in industry standard EMR package with ratings up to 10 Amps @ 1 - 100 VDC			■		■

Add-On Modules ──────────────

NOVA22
DRML1

Series	Description
DMRL1	Load Monitoring module for use with DR22 Solid State Relays (Contactor configuration)

Accessories ──────────────

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Product	Description
Sockets	DIN Rail mountable socket for 1 (DRS1) & 4 (DRS4) PCB mount relays
	DIN Rail mountable sockets for CN Series SSRs (DRSCN05, DRSCN24)
	DIN Rail mountable socket for ED Series SSRs, finger safe IP10 (DRSED) Ⓐ
	PCB mountable socket for ED Series SSRs (PCBSED)
Covers	Clear plastic covers for Gen 3 (KS100 & KS100-SMR), Gen 4 (KS101) Ⓑ & 3 Phase SSRs (KS300)
Thermal Pads	Hockey (HSP-2) Ⓒ & large (HSP-5) puck SSRs with adhesive on one side
	For hockey (HSP-1) & large (HSP-3) puck SSRs, non adhesive
	For half-puck PM22 Series SSRs (HSP-7)
	For 67mm PM67 Series SSRs (HSP-8)
Lug Terminals	Copper wire lugs for AWG 6 to 0 (TRM1), AWG 14 to 6 (TRM6) and AWG 4 to 3/0 (TRM3/0) wire sizes
	Copper wire lugs for Gen 4 screw terminals & NOVA22 elevator screw SSRs, for AWG 6 to 0 wire size (TRM0) Ⓓ
ID Marker Strips	Plastic strips (CNLB, 10 pack) unprinted Ⓔ
	Plastic strips (CNLN, 10 pack) printed from 1 to 10 & (CNL2, 10 pack) printed from 11 to 20
Input Connectors	Plug-in input connector for contactor configuration NOVA22 SSRs, screw (CP201) & spring cage (CP202) Ⓕ terminals
Filters	EMI noise suppression filter for SSR in AC single phase (1F25), 3 Phase (3F20) & 3 Phase with neutral (3F20-4) Ⓖ systems

Heat Sinks & Other Accessories

Product	Description
Hardware kits	Mounting screws 8-32 x 3/8 in (HK1, 2 per bag), M4 x 9mm (HKM1, 2 per bag)
	1 Ground screw 10-32 x 3/8 in & 2 bracket screws 6-32 x 1/4 in (HK2)
	Mounting screws 8-32 x 3/8 in for PM22 Series SSRs, Hex Socket Cap (HK8) Ⓗ
DIN Rail Bracket	DIN Rail bracket and 2 screws 6-32 x 1/4 in (DRK1) Ⓙ

The use of heat sinks allows the solid state relay to operate properly by dissipating the heat into the surrounding ambient air, this suitable operating temperature maintains a reliable performance for a very long time.

Sensata | Crydom heat sinks are available for mounting onto a panel or, depending on the model, into a standard 35mm DIN rail. Custom heat sinks and SSR/heat sink assemblies are also available upon request.

Thermal Resistance [°C/W]	Part no.		Relay Capacity				Complementary Accessories
	Panel Mount	DIN Rail Mount	Half Puck 22.5 mm	Hockey Puck 45 mm	Medium Puck 67mm	Large Puck 74 mm	
5.0	-	HS501DR		1			HKM1
3.0	HS301	HS301DR		1			HK1, HK2, DRK1
2.5	-	HS259DR	1				HK8
2.5	HS251	-		1			HK1
2.0	HS202	HS202DR		2			HK1, HK2, DRK1
2.0	HS201	HS201DRⓁ		1			HK1, HK2, DRK1
1.7	HS172	-		2			HK1, HK2
1.5	HS151	HS151DR		1			HK1, HK2, DRK1
1.2	HS122	HS122DR		2			HK1, HK2, DRK1
1.0	HS103	HS103DR		3		1	HK1
1.0	HS101	-		1		1	HKM1
0.7	HS073	-	3	3	1	1	HK1
0.7	HS072	-	1	2			HK1
0.5	HS053	-	3	3	1	1	HK1
0.36	HS033	-	3	3	1	1	HK1
0.25	HS023	-	3	3	1	1	HK1

** All heat sinks include the necessary hardware to mount the relay(s) onto the heat sink. The number of hardware kits (HK1 or HKM1) included depends upon the number and type of SSRs possible to install on each heat sink.

For more information about these and other solid state relay products, visit www.sensata.com

A team of experts working for you

Custom Solutions ⊙
We have a team of highly experienced engineers dedicated to design custom products to meet specific application requirements. A wide variety of modifications that can be applied, from a simple SSR/heat sink to a totally customized solution.

⊙ International Standards
Sensata | Crydom products are manufactured and/or approved according to a wide range of international safety standards and comply with the latest legal environmental directives. For specific information visit our website or contact Sensata Tech Support.

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About us

Sensata Technologies is a global industrial technology company striving to create a cleaner, more efficient, electrified and connected world. Through its broad portfolio of sensors, electrical protection components and sensor-rich solutions which create valuable business insights, Sensata helps its customers address increasingly complex engineering and operating performance requirements.

With more than 21,000 employees and global operations in 13 countries, Sensata serves customers in the automotive, heavy vehicle & off-road, industrial, and aerospace markets.

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