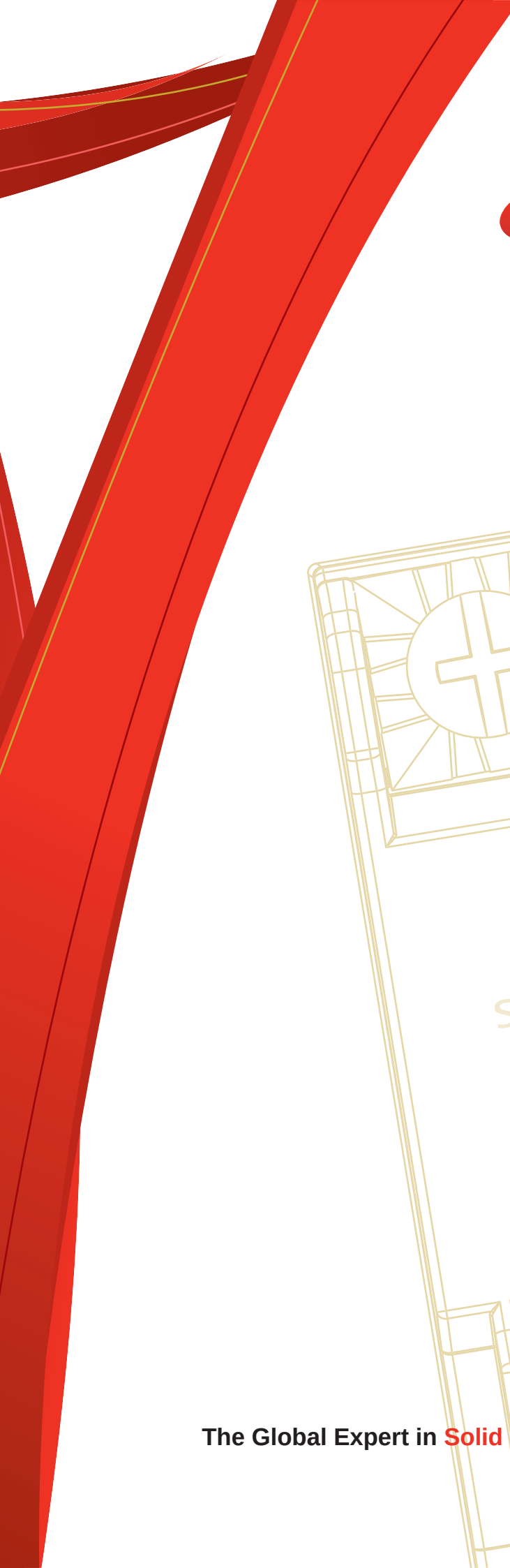
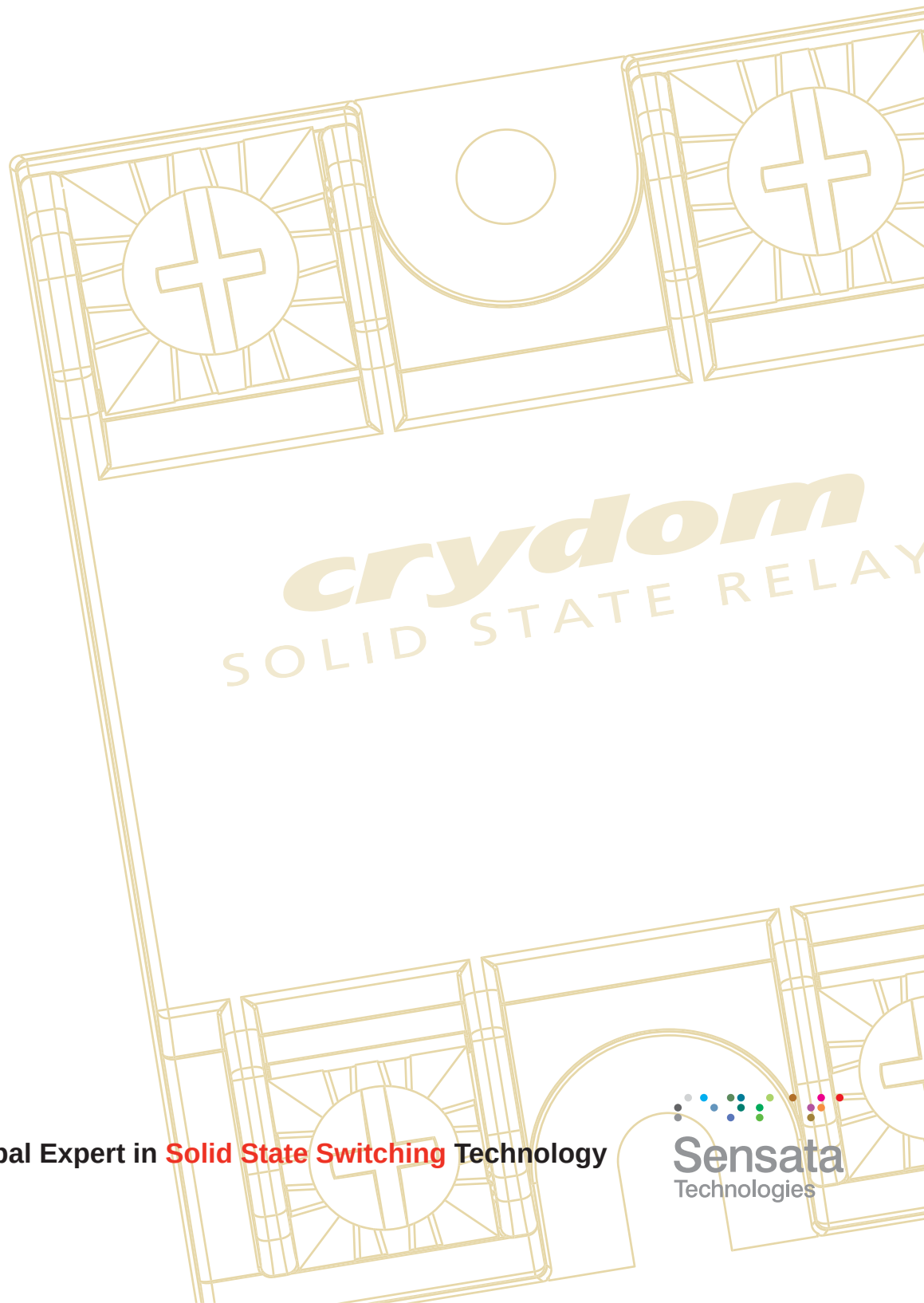




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Panel Mount Solid State Relays



The Global Expert in **Solid State Switching** Technology


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Technologies



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Crydom, a brand of Sensata Technologies 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.

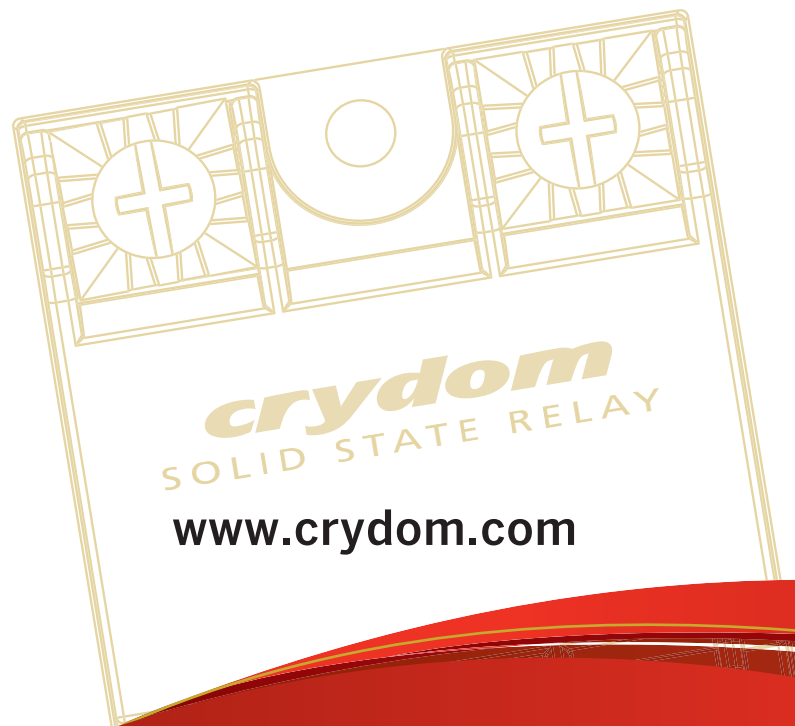
Crydom's extensive selection of standard off-the-shelf products is constantly being updated and expanded through its continuous improvement and aggressive new product development programs. Utilizing state of the art designs, materials and technology, Crydom offers a wide range of AC and DC output SSRs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

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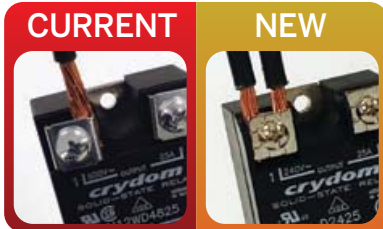
Following rigid design guidelines and standards, Crydom products have set the benchmark for SSR performance and reliability world wide. In addition to **award winning designs**, Crydom has acquired an impressive list of **patents** related to SSRs and Solid State Controls, while continuing to develop 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.

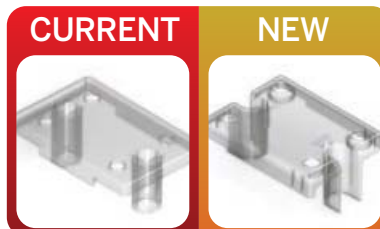


Meet **THE NEW** & improved **PANEL MOUNT** SOLID STATE RELAY

Improved "SEMS"
screw & washer



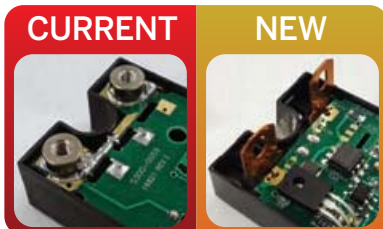
Improved touch safe cover



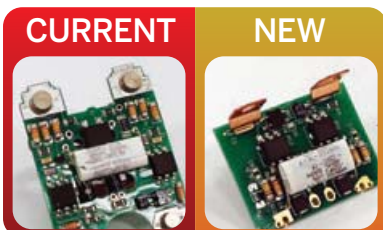
Redesigned housing
with anti-rotation barriers



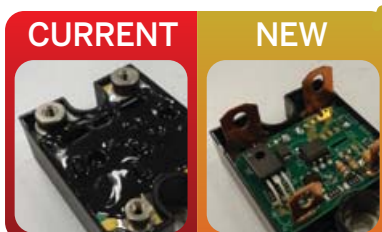
Direct output "lead frame"
termination



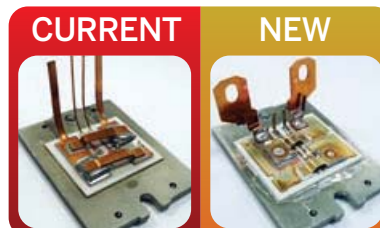
Improved circuit performance



Low input
current option



Stress & epoxy free
construction



Improved thermal
performance with
DBC technology

Regulated
control inputs





Series 1

120/240/480 VAC

10-125 Amp

- Crydom's signature family of Solid State Relays
- Ratings from 10 to 125 Amp @ 24-280 VAC and from 25 to 90 Amp @ 80-530 VAC
- Back-to-back SCR output for heavy industrial loads
- Flexible 3-32 VDC, 18-36 VAC or 90-280 VAC Control Voltage
- Available with Zero-crossing (resistive loads) or Random Turn-on (inductive loads) output
- Optional Normally Closed output ("-B" suffix option)

Output Specifications (A)

	x12xxx	x24xxx	x48xxx
Operating Voltage Range [Vrms]	24 - 140	24 - 280	80 - 530
Transient Overvoltage [Vpk]	400	600	800
Maximum Off-State Leakage Current @ Rated Voltage [mA] (B)	1	1	1

Output Specifications (A)

	10 A	25 A	40 A	50 A	75 A	90 A	110 A	125 A
Operating Frequency Range [Hz] (C)	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500	500
Maximum Load Current [Arms] (D)	10	25	40	50	75	90	110	125
Minimum Load Current [Arms]	0.15	0.15	0.15	0.15	0.25	0.25	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [Apk]	115/120	239/250	597/625	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum I ² t for Fusing (50/60 Hz) [A ² sec]	66/60	285/259	1770/1629	1770/1629	4555/4150	6560/5976	10249/9338	13950/12709
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case (Rjc) [°C/W]	1.03	0.8	0.5	0.45	0.3	0.27	0.25	0.22
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Input Specifications (A)

	A Prefix	D Prefix	AxxxxE Suffix
Control Voltage Range	90 - 280 Vrms	3 - 32 VDC (4-32 VDC for 48 suffix)	18 - 36 Vrms
Minimum Turn-On Voltage	90 Vrms	3 VDC (G)	18 Vrms
Must Turn-Off Voltage	10 Vrms	1 VDC	2 Vrms
Maximum Reverse Voltage	-	-32 VDC	-
Minimum Input Current (for on-state) [mA]	5	7	16
Maximum Input Current [mA]	10	14 / 12 (48 suffix)	20
Nominal Input Impedance	Current Regulated	Current Regulated	Current Regulated
Maximum Turn-On Time [msec] (ZC and Random) (E)	20 ms	1/2 Cycle	20 ms
Maximum Turn-Off Time [msec]	30 ms	1/2 Cycle	30 ms

General Specifications (A)

	Series 1
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]	4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹
Maximum Capacitance, Input/Output [pF]	8
Ambient Operating Temperature Range AC Control [°C]	-40 to 80
Ambient Operating Temperature Range DC Control [°C]	-40 to 80
Ambient Storage Temperature Range [°C]	-40 to 125
Status Indicator Display (F)	Yes, Green
Weight (Typical) [oz] (gr)	2.6 (74.9)
Housing Material UL94 Category	V-0
Baseplate Material	Aluminum
Humidity	85% non-condensing
Shock/ Vibration	Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz Shock Resistance according to IEC 60068-2-27: j 15 g / 11 ms (x12xxx only)

Part Number Nomenclature

Control Voltage	Overvoltage Protection (12 & 24 suffixes only)	Snubber	Trigger Circuit	Output Type
A: 90-280 VAC D: 3-32 VDC (4-32 VDC for 48 suffix) AxxxxE: 18-36 VAC	Blank: Not Included P: Included	Blank: Not Included S: Included (Not needed with T suffix, included as standard)	Blank: Phototriac T: Phototransistor (Not needed with -B suffix, included as standard)	-B: Normally Closed (Not available with -10 option)
4	K	S	T	-10
Output Frequency Blank: 47-440 Hz 4: 400 Hz (12 & 24 suffixes only)	Termination Blank: Screw F: Quick Connect (12 & 24 suffixes only, up to 50 Amp. Single pair [up to 25 Amp] Double pair [50 Amp]) (H)	Input Status LED (12 & 24 suffixes only) Blank: Not Included G: Included	Thermal Pad Blank: Not Included H: Included	Switching Type Blank: Zero Voltage Turn-On -10: Random Turn-On
A	P	G	H	-B
12	K	S	T	-10
Operating Voltage 12: 24-140 VAC 24: 24-280 VAC 48: 80-530 VAC	Rated Load Current 10: 10 Amp (12 & 24 suffixes only) 25: 25 Amp 40: 40 Amp (12 suffix only) 50: 50 Amp 75: 75 Amp 90: 90 Amp 110: 110 Amp (24 suffix only) 125: 125 Amp (24 suffix only)			
10	K	S	T	-10
E	K	S	T	-10

● Required for valid part number

● For options only and not required for valid part number

For General Notes see page 9

Designed in accordance with the requirements of IEC 62314
IEC 61000-4-2: Electrostatic Discharge – Level 3
IEC 61000-4-3: Radiated Electromagnetic Noise – Level 3
IEC 61000-4-4: Electrically Fast Transients – Level 3
IEC 61000-4-5: Electrical Surges – Level 3
IEC 61000-4-6: Conducted Electromagnetic Noise – Level 3



HA & HD Series

530/660 VAC

12-125 Amp

- Solid State Relay with ratings from 12 to 125 Amp @ 48-660 VAC
- Back-to-back SCR output for heavy industrial loads
- Flexible 4-32 VDC, 18-36 VAC or 90-280 VAC Control Voltage
- Available with Zero-crossing (resistive loads) or Random Turn-on (inductive loads) output



Output Specifications (A)

	Hx48xx	Hx60xx
Operating Voltage Range [Vrms]	48 - 530	48 - 660
Transient Overvoltage [Vpk]	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mAmps]	1	1

Output Specifications (A)

	12 A	25 A	50 A	75 A	90 A	110 A	125 A
Operating Frequency Range [Hz] (C)	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500
Maximum Load Current [Amps] (D)	12	25	50	75	90	110	125
Minimum Load Current [Amps]	0.15	0.15	0.15	0.25	0.25	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [Aps]	134/140	239/250	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum I ² t for Fusing (50/60 Hz) [A ² sec]	66/60	285/259	1770/1629	4555/4150	6560/5976	10249/9338	13950/12709
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case [Rjc] [°C/W]	1.03	0.8	0.45	0.3	0.27	0.25	0.22
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5

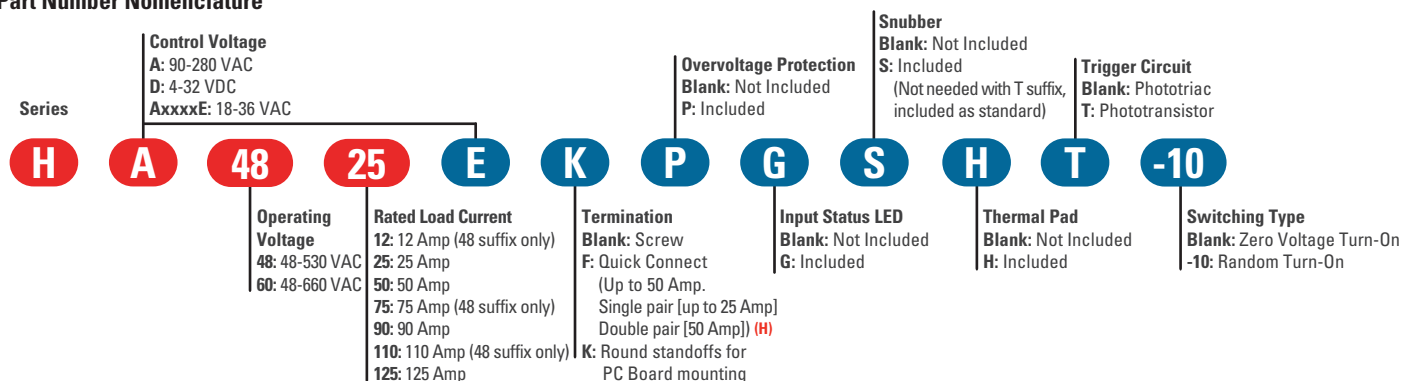
Input Specifications (A)

	A Prefix	D Prefix	AxxxxE Suffix
Control Voltage Range	90 - 280 Vrms	4 - 32 VDC	18 - 36 Vrms
Minimum Turn-On Voltage	90 Vrms	4 VDC (G)	18 Vrms
Must Turn-Off Voltage	10 Vrms	1 VDC	4 Vrms
Maximum Reverse Voltage	-	-32 VDC	-
Minimum Input Current (for on-state) [mA]	5	7	16
Maximum Input Current [mA]	10	12	20
Nominal Input Impedance	Current Regulated	Current Regulated	Current Regulated
Maximum Turn-On Time [msec] (ZC and Random) (E)	20 ms	1/2 Cycle	20 ms
Maximum Turn-Off Time [msec]	30 ms	1/2 Cycle	30 ms

General Specifications (A)

	HA & HD Series
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]	4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹
Maximum Capacitance, Input/Output [pF]	8
Ambient Operating Temperature Range [°C]	-40 to 80
Ambient Storage Temperature Range [°C]	-40 to 125
Status Indicator Display (F)	Yes, Green
Weight (Typical) [oz] (gr)	2.6 (74.9)
Housing Material UL94 Category	V-0
Baseplate Material	Aluminum
Humidity	85% non-condensing
Shock/Vibration	Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz

Part Number Nomenclature



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

For General Notes see page 9

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 e-mail: sales-cn@crydom.com

Designed in accordance with the requirements of IEC 62314
 IEC 61000-4-2: Electrostatic Discharge – Level 3
 IEC 61000-4-3: Radiated Electromagnetic Noise – Level 3
 IEC 61000-4-4: Electrically Fast Transients – Level 3
 IEC 61000-4-5: Electrical Surges – Level 3
 IEC 61000-4-6: Conducted Electromagnetic Noise – Level 3



H1 Series H12D, H12WD, H16WD 530/660/690 VAC 25-125 Amp

- Solid State Relay with ratings from 25 to 125 Amp @ 48-690 VAC
- Up to 1600 volt Blocking
- Back-to-back SCR output for heavy industrial loads
- Flexible 4-32 VDC Control Voltage
- Available with Zero-crossing (resistive loads) or Random Turn-on (inductive loads) output



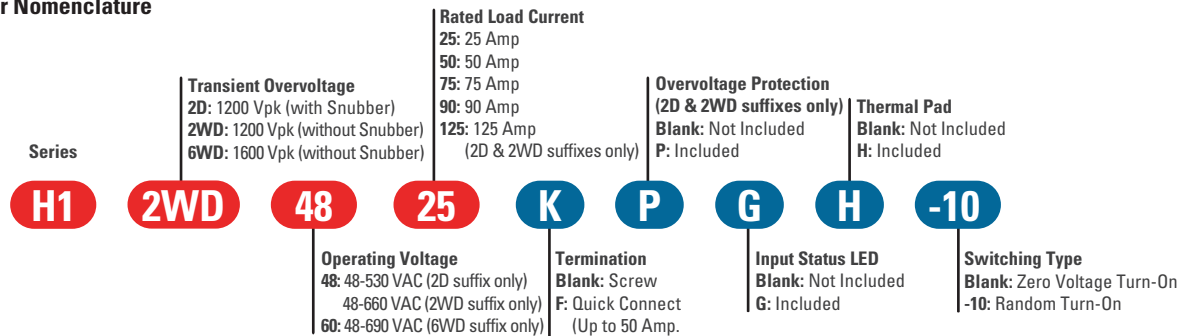
Output Specifications (A)	H12Dxxxx	H12WDxxxx	H16WDxx25	H16WDxx50	H16WDxx75	H16WDxx90
Operating Voltage Range [Vrms]	48 - 530	48 - 660	48 - 690	48 - 690	48 - 690	48 - 690
Transient Overvoltage [Vpk]	1200	1200	1600	1600	1600	1600
Maximum Off-State Leakage Current @ Rated Voltage [mA]	10	1	1	1	1	1
Operating Frequency Range [Hz]	47 - 63	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.3	1.3	1.2	1.2
HP rating UL 508 / IEC 60947 [HP (KW)]: 240 VAC	N/A	N/A	1.5 (1.1)	3 (2.2)	5 (3.7)	7.5 (5.6)
HP rating UL 508 / IEC 60947 [HP (KW)]: 380 VAC	N/A	N/A	2 (1.5)	5 (3.7)	7.5 (5.6)	15 (11.2)
HP rating UL 508 / IEC 60947 [HP (KW)]: 480 VAC	N/A	N/A	3 (2.2)	5 (3.7)	10 (7.4)	20 (14.9)
HP rating UL 508 / IEC 60947 [HP (KW)]: 600 VAC	N/A	N/A	3 (2.2)	10 (7.4)	15 (11.2)	25 (18.6)

Output Specifications (A)	25 A	50 A	75 A	90 A	125 A
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500
Maximum Load Current [Arms] (D)	25	50	75	90	125
Minimum Load Current [Arms]	0.15	0.15	0.25	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [Apk]	239/250	597/625	954/1000	1145/1200	1670/1750
Maximum I ² t for Fusing (50/60 Hz) [A ² sec]	285/259	1770/1629	4555/4150	6560/5976	13950/12709
Thermal Resistance Junction to Case [Rjc] [°C/W]	0.8	0.45	0.3	0.27	0.22
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5

Input Specifications (A)	DC Control
Control Voltage Range [VDC]	4 - 32
Minimum Turn-On Voltage [VDC]	4 (G)
Must Turn-Off Voltage [VDC]	1
Maximum Reverse Voltage [VDC]	-32
Minimum Input Current (for on-state) [mA]	7
Maximum Input Current [mA]	12
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [msec] (ZC and Random) (E)	1/2 Cycle
Maximum Turn-Off Time [msec]	1/2 Cycle

General Specifications (A)	H12xxxx	H16xxxx
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]	4000	
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹	
Maximum Capacitance, Input/Output [pF]	8	
Ambient Operating Temperature Range [°C]	-40 to 80	-30 to 80
Ambient Storage Temperature Range [°C]		-40 to 125
Status Indicator Display (F)	Yes, Green	
Weight (Typical) [oz] (gr)	2.6 (74.9)	
Housing Material UL94 Category	V-0	
Baseplate Material	Aluminum	
Humidity	85% non-condensing	
Shock/Vibration	Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz	

Part Number Nomenclature



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

For General Notes see page 9

Designed in accordance with the requirements of IEC 62314
IEC 61000-4-2 : Electrostatic Discharge – Level 3
IEC 61000-4-3 : Radiated Electromagnetic Noise – Level 3
IEC 61000-4-4 : Electrically Fast Transients – Level 3
IEC 61000-4-5 : Electrical Surges – Level 3
IEC 61000-4-6 : Conducted Electromagnetic Noise – Level 3



CSW Series
280 VAC
10-90 Amp

- Heavy duty Solid State Relay with ratings from 10 to 90 Amp @ 24-280 VAC
- Back-to-back SCR output for heavy industrial loads
- Flexible 3-32 VDC Control Voltage
- Available with Zero-Crossing (resistive loads) or Random Turn-on (inductive loads) output



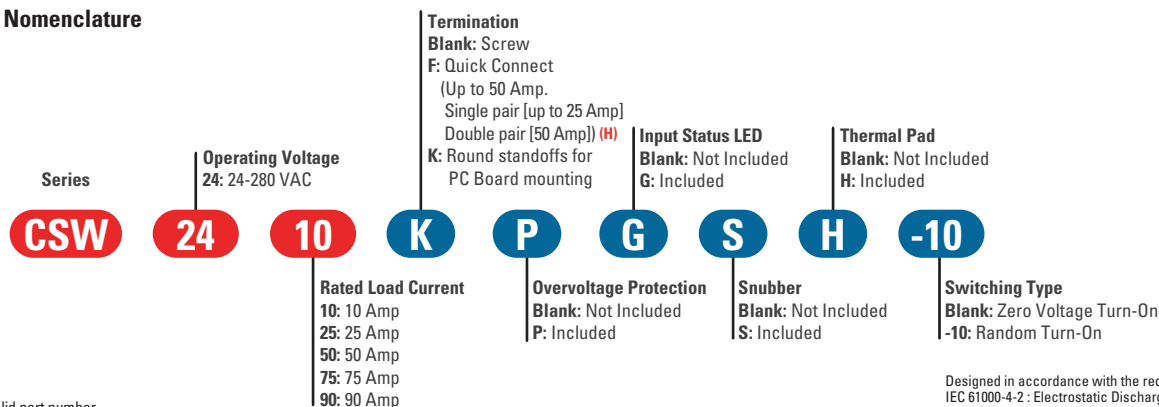
Output Specifications (A)	10 A	25 A	50 A	75 A	90 A
Operating Voltage Range [Vrms]	24 - 280	24 - 280	24 - 280	24 - 280	24 - 280
Transient Overvoltage [Vpk]	600	600	600	600	600
Maximum Off-State Leakage Current @ Rated Voltage [mA rms] (B)	1	1	1	1	1

Output Specifications (A)	10 A	25 A	50 A	75 A	90 A
Operating Frequency Range [Hz] (C)	47 - 440	47 - 440	47 - 440	47 - 440	47 - 440
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500
Maximum Load Current [Arms] (D)	10	25	50	75	90
Minimum Load Current [Arms]	0.15	0.15	0.15	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [Apk]	115/120	239/250	597/625	954/1000	1145/1200
Maximum I²t for Fusing (50/60 Hz) [A² sec]	66/60	285/259	1770/1629	4555/4150	6560/5976
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case [Rjc] [°C/W]	1.03	0.8	0.45	0.3	0.27
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5

Input Specifications (A)	DC Control
Control Voltage Range [VDC]	3 - 32
Minimum Turn-On Voltage [VDC]	3 (G)
Must Turn-Off Voltage [VDC]	1
Maximum Reverse Voltage [VDC]	-32
Minimum Input Current (for on-state) [mA]	7
Maximum Input Current [mA]	15
Nominal Input Impedance	Current Regulated
Maximum Turn-On Time [msec] (ZC and Random) (E)	1/2 Cycle
Maximum Turn-Off Time [msec]	1/2 Cycle

General Specifications (A)		CSW Series
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]		4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]		10 ⁹
Maximum Capacitance, Input/Output [pF]		10
Ambient Operating Temperature Range [°C]		-40 to 80
Ambient Storage Temperature Range [°C]		-40 to 125
Status Indicator Display (F)		Yes, Green
Weight (Typical) [oz] (gr)		2.6 (74.9)
Housing Material UL94 Category		V-0
Baseplate Material		Aluminum
Humidity		85% non-condensing
Shock/Vibration		Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz

Part Number Nomenclature



Designed in accordance with the requirements of IEC 62314
IEC 61000-4-2 : Electrostatic Discharge – Level 3
IEC 61000-4-3 : Radiated Electromagnetic Noise – Level 3
IEC 61000-4-4 : Electrically Fast Transients – Level 3
IEC 61000-4-5 : Electrical Surges – Level 3
IEC 61000-4-6 : Conducted Electromagnetic Noise – Level 3

For General Notes see page 9

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"T" Option, Series 1 @ 120/240 VAC x12xxT, x24xxT 10-125 Amp

- Low Input Current option (@ 5 VDC) for low voltage output SSRs
- Trigger Circuit with Phototransistor



Output Specifications (A)	x12xxT (10 A, 25 A & 40 A only)	x24xxT (all except 40 A)
Operating Voltage Range [Vrms]	24-140	24-280
Transient Overvoltage [Vpk]	400	600
Maximum Off-State Leakage Current @ Rated Voltage [mA]	8	10

Output Specifications (A)	10 A	25 A	40 A	50 A	75 A	90 A	110 A	125 A
Operating Frequency Range [Hz]	47-63	47-63	47-63	47-63	47-63	47-63	47-63	47-63
Minimum Off-State dV/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500	500
Maximum Load Current [Arms] (D)	10	25	40	50	75	90	110	125
Minimum Load Current [Arms]	0.04	0.04	0.04	0.04	0.04	0.04	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [A _{pk}]	115/120	239/250	597/625	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum P _t for Fusing (50/60Hz) [A² sec]	66/60	285/259	1770/1629	1770/1629	4555/4150	6560/5976	10249/9338	13950/12709
Maximum On-State Voltage Drop @ Rated Current [Vrms]	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case [R _{jc}] [°C/W]	1.03	0.8	0.5	0.45	0.3	0.27	0.25	0.22
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Input Specifications (A)	A Prefix	D Prefix	E Suffix
Control Voltage Range	90 - 280 Vrms	3 - 32 VDC	18 - 36 Vrms
Minimum Turn-On Voltage	90 Vrms	3 VDC (J)	18 Vrms
Must Turn-Off Voltage	10 Vrms	1 VDC	2 Vrms
Maximum Reverse Voltage [VDC]	-	-32	-
Minimum Input Current (for on-state) [mA]	2	3.4	2
Maximum Input Current [mA]	4.7	20	4
Nominal Input Impedance	60K Ohms	1500 Ohms	9 K
Maximum Turn-On Time [msec] (ZC and Random) (E)	10 ms	1/2 Cycle	10 ms
Maximum Turn-Off Time [msec]	40 ms	1/2 Cycle	40 ms

General Specifications (A)	Series 1
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]	4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹
Maximum Capacitance, Input/Output [pF]	8
Ambient Operating Temperature Range [°C]	-40 to 80
Ambient Storage Temperature Range [°C]	-40 to 125
Status Indicator Display (F)	Yes, Green
Weight (Typical) [oz] (gr)	2.6 (74.9)
Housing Material UL94 Category	V-0
Baseplate Material	Aluminum
Humidity	85% non-condensing
Shock/Vibration	Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz

For available part numbers see Series 1 Part Number Nomenclature on page 4



To view available Installation Sheet scan the QR code with your smartphone or visit www.crydom.com



"T" Option, Series 1 @ 530/660 VAC & HA/HD Series A48xxT, HA48xxT, HA60xxT, D48xxT, HD48xxT, HD60xxT 12-125 Amp

- Low Input Current option (@ 5 VDC) for high voltage output SSRs
- Trigger Circuit with Phototransistor



Output Specifications (A)	A48xxT	D48xxT	Hx48xxT	Hx60xxT
Operating Voltage Range [Vrms]	48-530	48-530	48-530	48-660
Transient Overvoltage [Vpk]	1200	1200	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA rms]	10	10	10	5

Output Specifications (A)	12 A	25 A	50 A	75 A	90 A	110 A	125 A
Minimum Off-State dv/dt @ Maximum Rated Voltage [V/μsec]	500	500	500	500	500	500	500
Maximum Load Current [A rms] (D)	12	25	50	75	90	110	125
Minimum Load Current [A rms]	0.04	0.04	0.04	0.04	0.04	0.25	0.25
1 Cycle Surge Current (50 AND 60 Hz) [A pk]	134/140	239/250	597/625	954/1000	1145/1200	1432/1500	1670/1750
Maximum I _t for Fusing (50/60Hz) [A ² sec]	66/60	285/259	1770/1629	4555/4150	6560/5976	10249/9338	13950/12709
Maximum On-State Voltage Drop @ Rated Current [V rms]	1.15	1.15	1.15	1.15	1.15	1.15	1.15
Thermal Resistance Junction to Case [R _{jc}] [°C/W]	1.03	0.8	0.45	0.3	0.27	0.25	0.22
Minimum Power Factor (with Maximum Load)	0.5	0.5	0.5	0.5	0.5	0.5	0.5

Input Specifications (A)	A Prefix	D Prefix	E Suffix
Control Voltage Range	90 - 280 Vrms	3 - 32 VDC	18 - 36 Vrms
Minimum Turn-On Voltage	90 Vrms	3 VDC (J)	18 Vrms
Must Turn-Off Voltage	10 Vrms	1 VDC	4 Vrms
Maximum Reverse Voltage	-	-32 VDC	-
Minimum Input Current (for on-state) [mA]	2	2	2
Maximum Input Current [mA]	4.7	2.5	4
Nominal Input Impedance	60K	Current Regulated	9K
Maximum Turn-On Time [msec] (ZC and Random) (E)	10 ms	1/2 Cycle	10 ms
Maximum Turn-Off Time [msec]	40 ms	1/2 Cycle	40 ms

General Specifications (A)	
Dielectric Strength, Input/Output/Base (50/60 Hz) [Vrms]	4000
Minimum Insulation Resistance (@ 500 VDC) [Ohms]	10 ⁹
Maximum Capacitance, Input/Output [pF]	8
Ambient Operating Temperature Range [°C]	-40 to 80
Ambient Storage Temperature Range [°C]	-40 to 125
Status Indicator Display (F)	Yes, Green
Weight (Typical) [oz] (gr)	2.6 (74.9)
Housing Material UL94 Category	V-0
Baseplate Material	Aluminum
Humidity	85% non-condensing
Shock/Vibration	Vibration Resistance according to IEC 60068-2-6: 0.35 mm and 0.75 mm Amplitude over 10-55 Hz

For available part numbers see Series 1 & HA/HD Part Number Nomenclature on pages 4 & 5

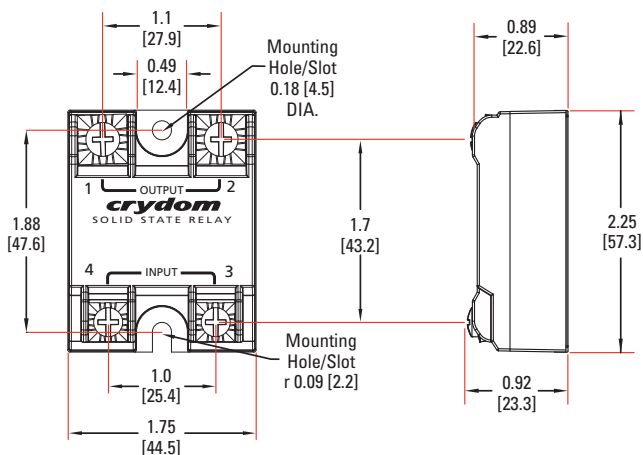
General Notes

- (A) All parameters at 25°C unless otherwise specified.
 (B) Maximum Off-State Leakage Current is 10 mA for models with snubber ("S" suffix option); 8 mA for Series 1 x12xxx models with snubber.
 (C) Operating Frequency Range is 47-63 Hz for models with snubber ("S" suffix option).
 (D) Heat sinking required, see derating curves on page 13.
 (E) Turn-On Time for Random Turn-On versions is 0.02 msec (DC Control Models).
 (F) LED indicates input status only. It does not represent output status.
 (G) Increased minimum input voltage by 1 VDC for operation from -20° to -40°C.
 (H) For 50 Amp models UL requires the use of both blades.
 (J) For relays with option "G" minimum Control Voltage is 4.5 VDC.

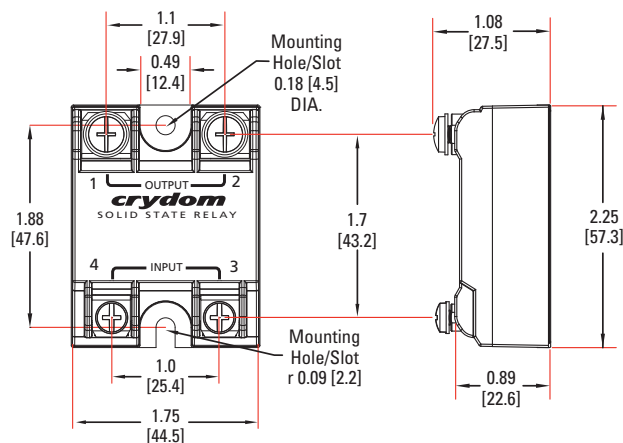
Mechanical Dimensions

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

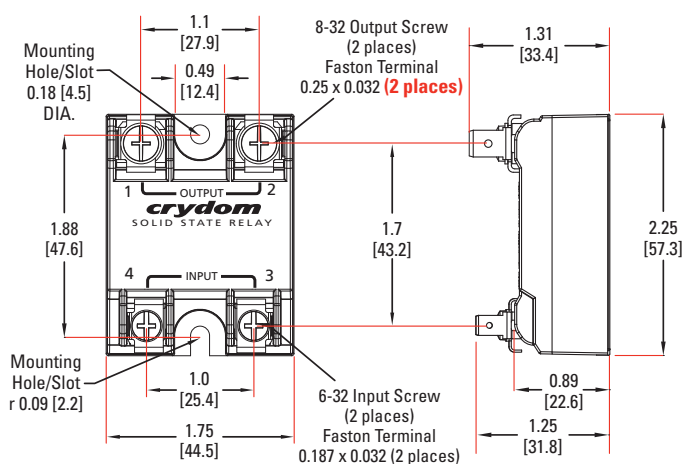
Screw Termination



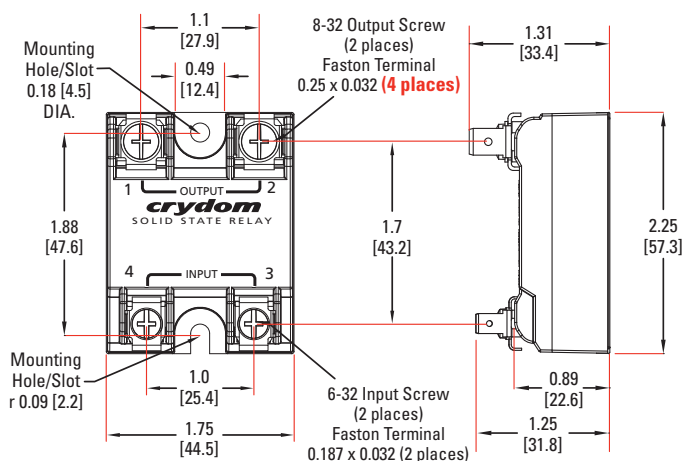
Round Standoff Termination (Suffix "K")



Quick Connect Termination (Suffix "F") - Up to 25 Amp



Quick Connect Termination (Suffix "F") - Up to 50 Amp



New Accessories! Protective Cover & Hardware Kits

Protective Cover Part number: KS101



Clear plastic cover compatible with all new S1 designs. Safety covers provide added protection from electric shock when installing or checking equipment.

Hardware Kit Part number: HK3



Bag with 2 threaded standoffs, 2 screws 8-32 x 1/4, and 2 lockwashers M8 for output, and 2 threaded standoffs, 2 screws 6-32 x 3/16, and 2 lockwashers M6 for input.

Standoff screws provide additional mounting options such as "dead bug" mounting, using lug terminals or wire terminals to the side of the relay.

Hardware Kit Part number: HK4



Bag with 2 square brass accessories and 2 screw 8-32 x 5/8 for output. Used to mount TMR1 lug terminals.

Wiring Diagram (K, L)

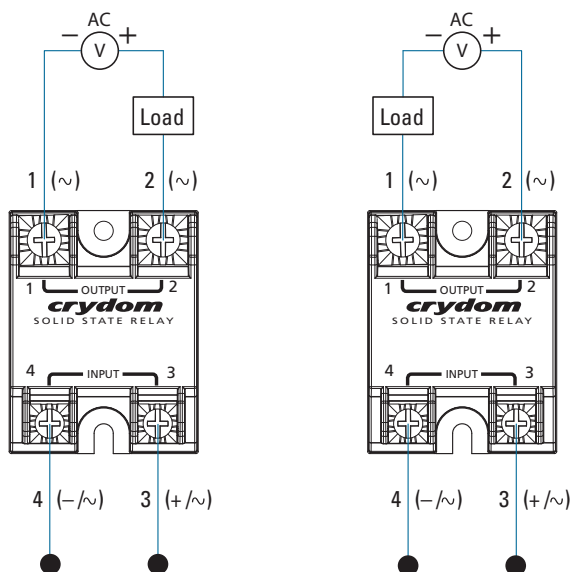


TABLE 1. Recommended Wire Sizes

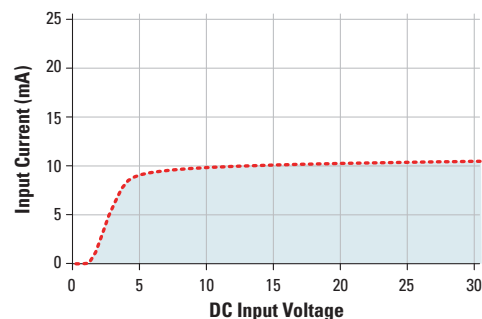
Terminals	Wire Size (Solid / Stranded)	Wire Pull-Out Strength (lbs)[N]
Input	24 AWG (0.2 mm ²) / 0.2 [minimum]	10 [44.5]
	2 x 12 AWG (3.3 mm ²) / 3.3 [maximum]	90 [400]
Output	20 AWG (0.5 mm ²) / 0.518 [minimum]	30 [133]
	2 x 10 AWG (5.3 mm ²) / 5.3	110 [490]
	2 x 8 AWG (8.4 mm ²) / 8.4 [maximum]	90 [400]

TABLE 2. Accessories (M)

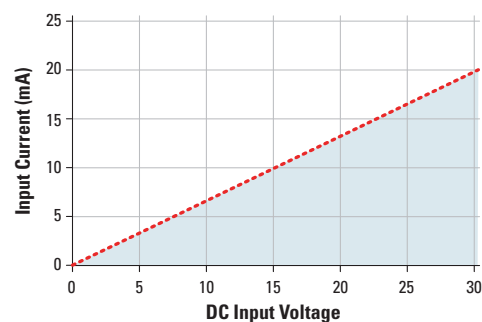
Cover	Hardware Kit	Heat Sink Part No.	Thermal Resistance [°C/W]	Lug Terminal	Thermal Pad
KS101	HK1	HS501DR	5.0	TRM1	HSP-1
	HK3	HS301 / HS301DR	3.0	TRM6	HSP-2
	HK4	HS251	2.5		
		HS201 / HS201DR	2.0		
		HS172	1.7		
		HS151 / HS151DR	1.5		
		HS103 / HS103DR	1.0		
		HS072	0.7		
		HS053	0.5		

Input Current Graphs

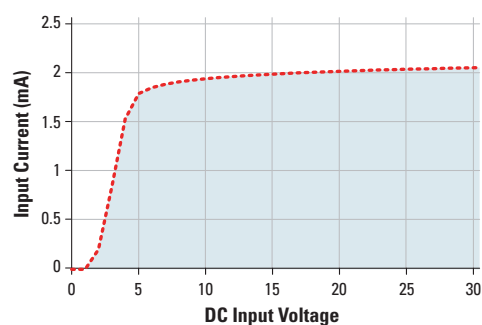
Standard Regulated "D" Inputs



"T" Option - Low Voltage Output



"T" Option - High Voltage Output



(K) Load can be wired to either terminal 1 or terminal 2. Proper polarity must be observed all the time for the DC control power supply, with terminal 3 being positive with respect to terminal 4.

(L) Choose wire gauge according to actual load current (see TABLE 1). For larger wire sizes use lug terminals (see TABLE 2 for available part numbers).

(M) See compatible accessories in corresponding datasheet.

Equivalent Circuit Block Diagrams

Diagram 1: Series 1 DC control, CSW Series

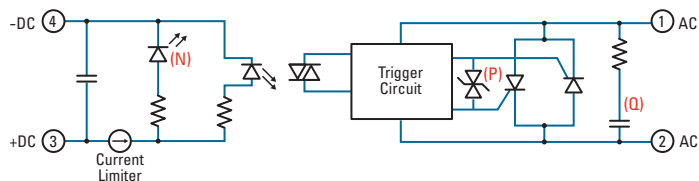


Diagram 2: H12D models

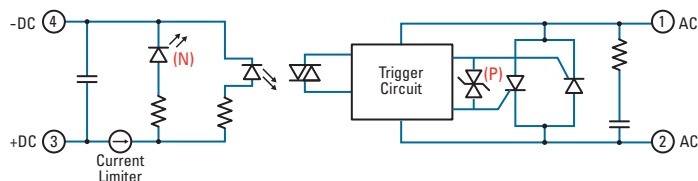


Diagram 3: Series 1 AC control, HAxxxx

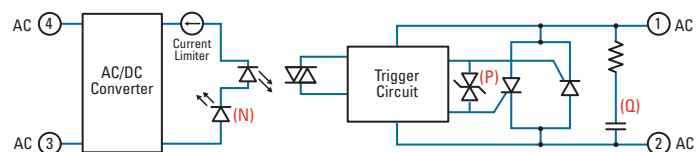


Diagram 4: H12WD models

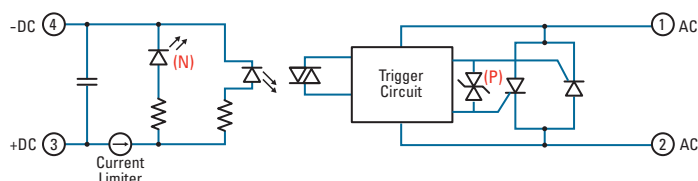


Diagram 5: H16WD models

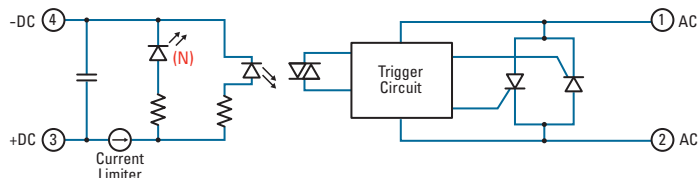


Diagram 6: AC control "-B" models, A12xxxxT, A24xxxxT, A48xxxxT, HA48xxT

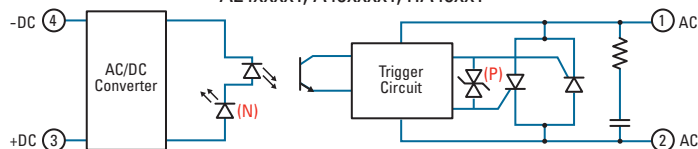


Diagram 7: DC control "-B" models, D12xxT, D24xxT

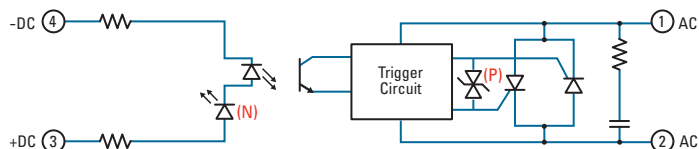


Diagram 8: HA60xxT

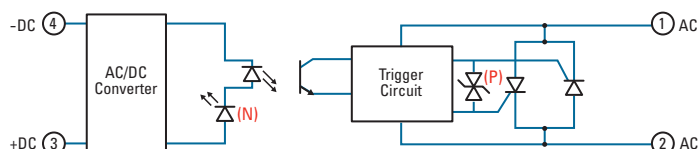


Diagram 9: HD48xxT, D48xxT

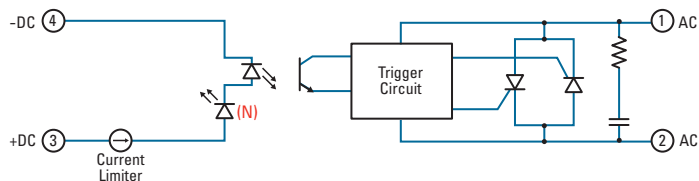


Diagram 10: HD60xx

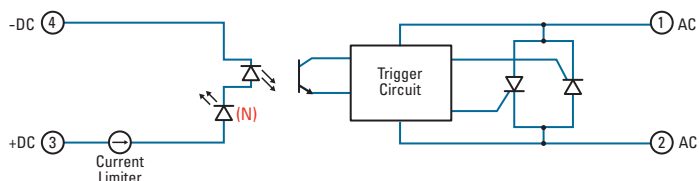


TABLE 3. Block Diagrams

Diagram 1	Series 1 DC control, CSW Series
Diagram 2	H12D models
Diagram 3	Series 1 AC control, HAxxxx
Diagram 4	H12WD models
Diagram 5	H16WD models
Diagram 6	AC control "-B" models, A12xxxxT, A24xxxxT, A48xxxxT, HA48xxT
Diagram 7	DC control "-B" models, D12xxT, D24xxT
Diagram 8	HA60xxT
Diagram 9	HD48xxT, D48xxT
Diagram 10	HD60xx

(N) Elective Input Status LED, suffix "G".

(P) Elective Overvoltage Protection, suffix "P".

(Q) Elective Internal Snubber, suffix "S".

Output Current Derating Curves

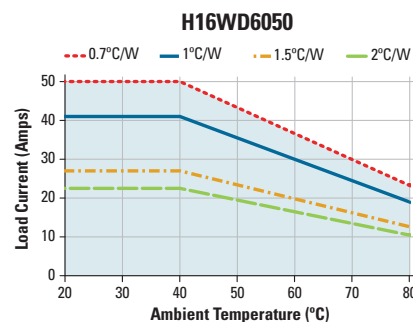
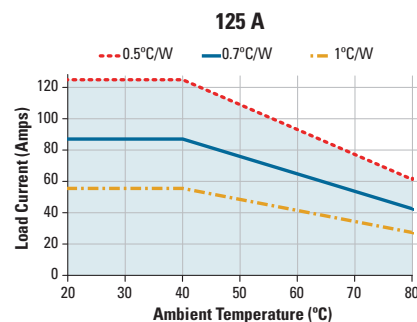
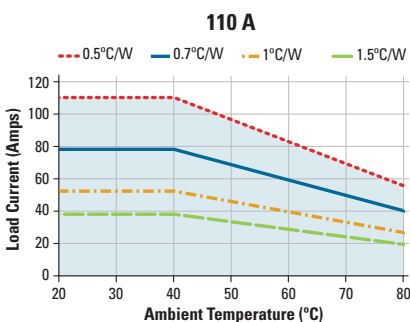
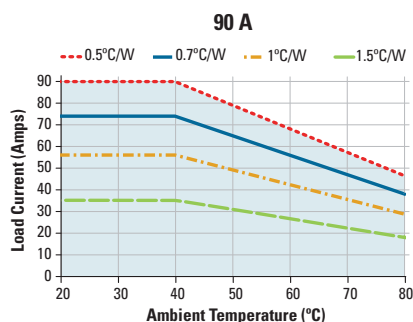
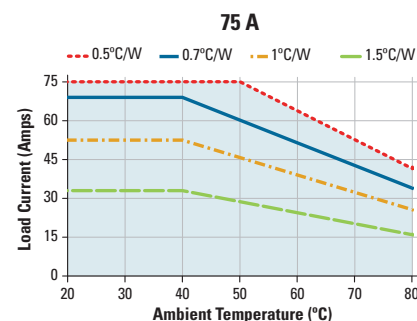
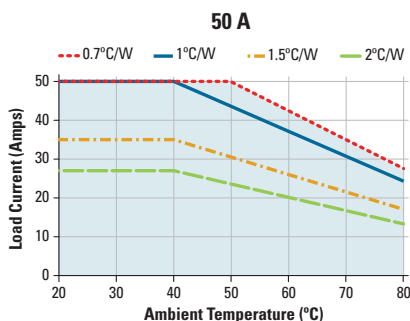
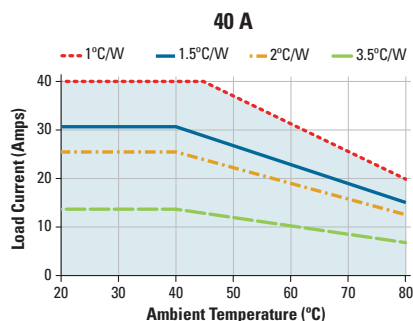
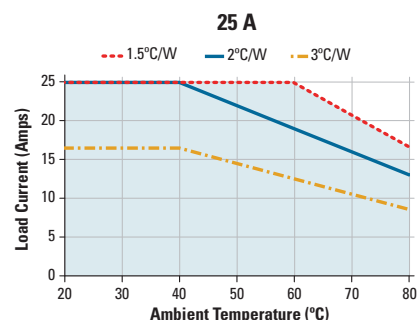
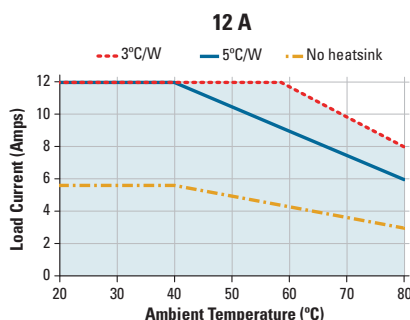
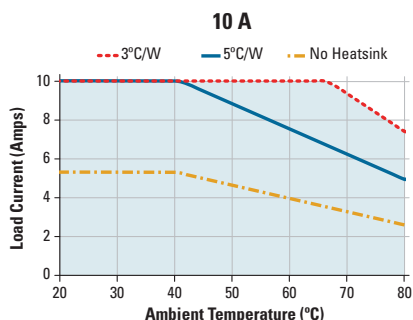
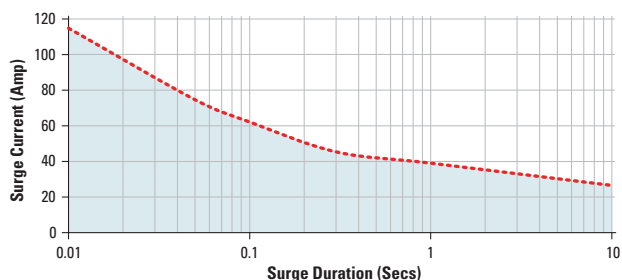


TABLE 4. Heat Sinks

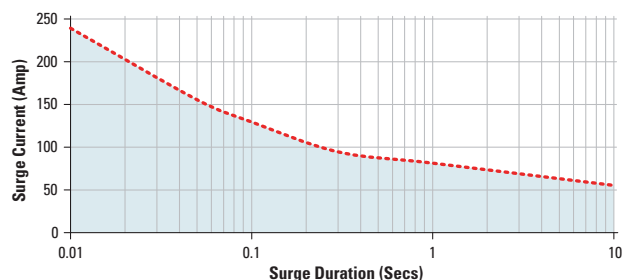
Crydom Part No.	Thermal Resistance [°C/W]
HS501DR	5.0
HS301 / HS301DR	3.0
HS201 / HS201DR	2.0
HS151 / HS151DR	1.5
HS103 / HS103DR	1.0
HS072	0.7
HS053	0.5

Overload Current Capability Graphs ^(R)

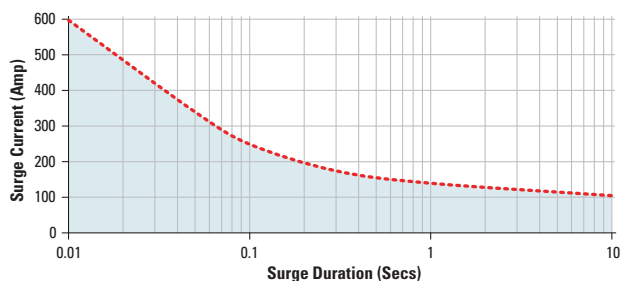
10 A & 12 A



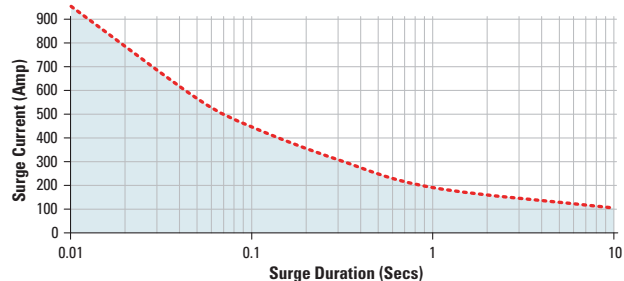
25 A



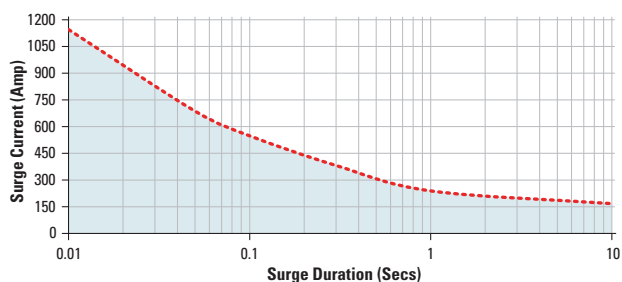
40 A & 50 A



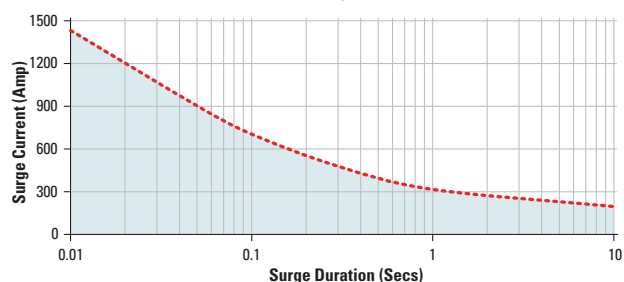
75 A



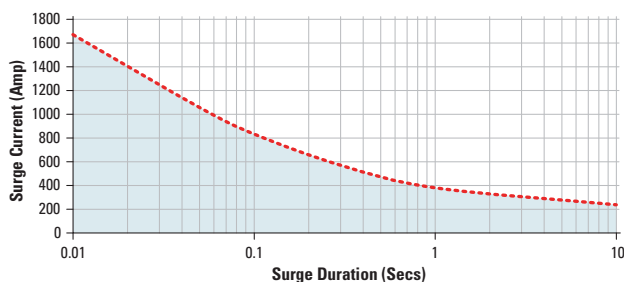
90 A



110 A



125 A



^(R) Non repetitive peak surge current at T_j initial 40°C.

Crydom's Range of Rating by Type of Package *

						
			Panel Mount	DIN Rail Mount	PCB Mount	Plug-In Mount
AC Output	Voltage (Volts)		140	140	140	
			280	280	280	
			530	530	530	280
			660	660	660	
	Current (Amp)	Single	150	65	25	5
		Dual	50	6	15	
		3 Phase	50	25	15	
DC Output	Voltage (Volts)		1000	200	200	100
	Current (Amp)		160	30	20	5

* Crydom's maximum ratings

Solid State Relay & Contactor Applications

Although there are literally thousands of individual uses for Solid State Relays and Contactors, most can be categorized into the following applications:



Heating Control

This encompasses the largest segment of solid state relay users. Applications include, but are not limited to: professional food equipment, plastic molding/extrusion machinery, HVAC&R and soldering equipment.

Benefits: Long life, no maintenance, safe product, easy to interface, as well as enabling temperature accuracy. Suitable for heater, fan, blower and valve 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.

Benefits: Dimming, silent operation, fast switching, long life, no maintenance, safe product, easy to interface, reduced parts count.



Motion Control

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

Benefits: Endurance, shock & vibration resistance, Soft Start, reversing, no arcing, fast switching, long life, no maintenance, easy to interface, reduced parts count.



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.

Benefits: Long life, silent operation, high speed switching, endurance, mechanical shock and vibration resistance, position insensitive, logic compatibility, arc and bounce free switching, and low electromagnetic emissions.

crydom®

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