DRH Series

- Ratings up to 18 & 20 Amps at 600VAC
- Fits standard 35mm DIN Rail
- Integrated over-temperature protection
- Alarm output in case of over-temperature
- Multicolor LED with input status and alarm indicator
- AC or DC control
- Zero Voltage (resistive loads) or instantaneous (inductive loads) turn-on output
- C-UL-US Listed, IEC Rated, CE & RoHS Compliant, Horsepower Rated
- Built-in Overvoltage Protection
- Fan controlled through thermistor and microprocessor to optimize fan operation

PRODUCT SELECTION

Control Voltage	18A	20A
90-280 VAC/VDC	DRH3P60A18	DRH3P60A20
4-32 VDC	DRH3P60D18	DRH3P60D20

AVAILABLE OPTIONS

Series DRH

Function — **3P:** Contactor

Operating Voltage — **60:** 48-600 VAC

Control Voltage — **A:** 90-280 VAC/VDC; **D:** 4-32 VDC

Rated Load Current — **18:** 18 Amps (3 Controlled legs); **20:** 20 Amps (2 Controlled legs)

Switching Type — **Blank:** Zero Voltage Turn-On; **R:** Instantaneous Turn-On

DRH 3P 60 A 18 R

Required for valid part number

For options only and not required for valid part number

OUTPUT SPECIFICATIONS (1)

Description	18A	20A
Operating Voltage (47-63Hz) [V_{RMS}]	48-600	48-600
Transient Overvoltage [Vpk] (2)	1200	1200
Maximum Off-State Leakage Current @ Rated Voltage [mA_{RMS}]	3	3
Minimum Off-State dV/dt @ Maximum Rated Voltage [V/µsec]	500	500
Load Current, General Use UL508/IEC62314 @ 40°C [A_{RMS}] (3)	18	20
Load Current, Motor Starting UL508 FLA/IEC62314 @ 40°C [A_{RMS}] (3)	7.6	7.6
Minimum Load Current [A_{RMS}]	0.15	0.15
Maximum Surge Current [Apk] 1Cycle 60Hz	750	750
Maximum Surge Current [Apk] 1Cycle 50Hz	716	716
Maximum I^2t for Fusing (8.33 msec) [A^2sec]	2330	2330
Maximum I^2t for Fusing (10 msec) [A^2sec]	2560	2560
Maximum On-State Voltage Drop @ Rated Current [Vpk]	1.35 per channel	1.35 per channel
Minimum Power Factor (with Maximum Load)	0.5	0.5
Motor Rating UL 508/ IEC60947-4-2 [HP/kW] :240 VAC	2/1.5	2/1.5
Motor Rating UL 508/ IEC60947-4-2 [HP/kW] :380 VAC	3/2.2	3/2.2
Motor Rating UL 508/ IEC60947-4-2 [HP/kW] :480 VAC	5/3.7	5/3.7

INPUT SPECIFICATIONS (1)

Description	DRH3P60Dx	DRH3P60Ax
Control Voltage Range	4-32 VDC	90-280 VAC/VDC
Minimum Turn-On Voltage	4 VDC	90 VAC/VDC
Must Turn-Off Voltage	1 VDC	10 VAC
Minimum Input Current (for on-state)	2 mA	1 mA
Maximum Input Current	17 mA	3 mA
Nominal Input Impedance [Ohms]	2k	100k
Maximum Turn-On Time [msec]	1/2 Cycle (4)	30
Maximum Turn-Off Time [msec]	1/2 Cycle	40

POWER SUPPLY SPECIFICATIONS (1)

Description	DRH3P60Dx	DRH3P60Ax
Voltage Range	8-32 VDC	90-265 VAC/VDC
Minimum Turn-On Voltage	8 VDC	90 VAC/VDC
Must Turn-Off Voltage	3 VDC	5 VAC/VDC
Maximum Source Current [mA]	125	40
Maximun Start Up Time [msec]	20	50
Maximun Shut Off Time [msec]	40	500

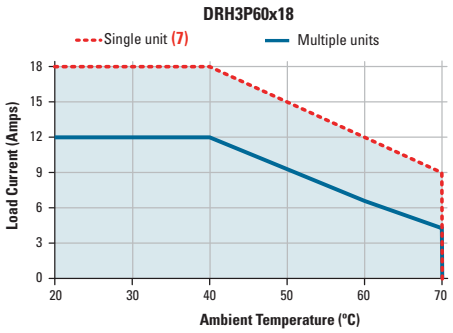
ALARM OUTPUT (1)

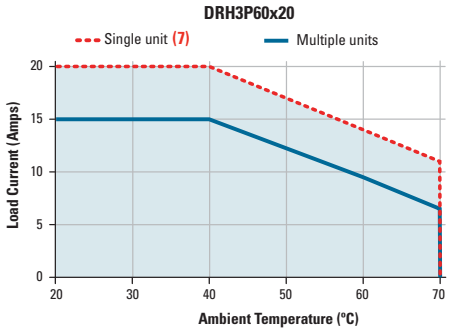
Description	DRH3P60D18
Maximum Contact Switching Voltage [Volts]	200 VDC, 120 VAC
Contact Rated Current [A]	0.5
Minimum Recommended Contact Load [mA]	10
Static Contact Resistance (max. and init.)[Ohms]	0.2
Turn-On / Off Condition	See Status Chart

GENERAL SPECIFICATIONS (1)

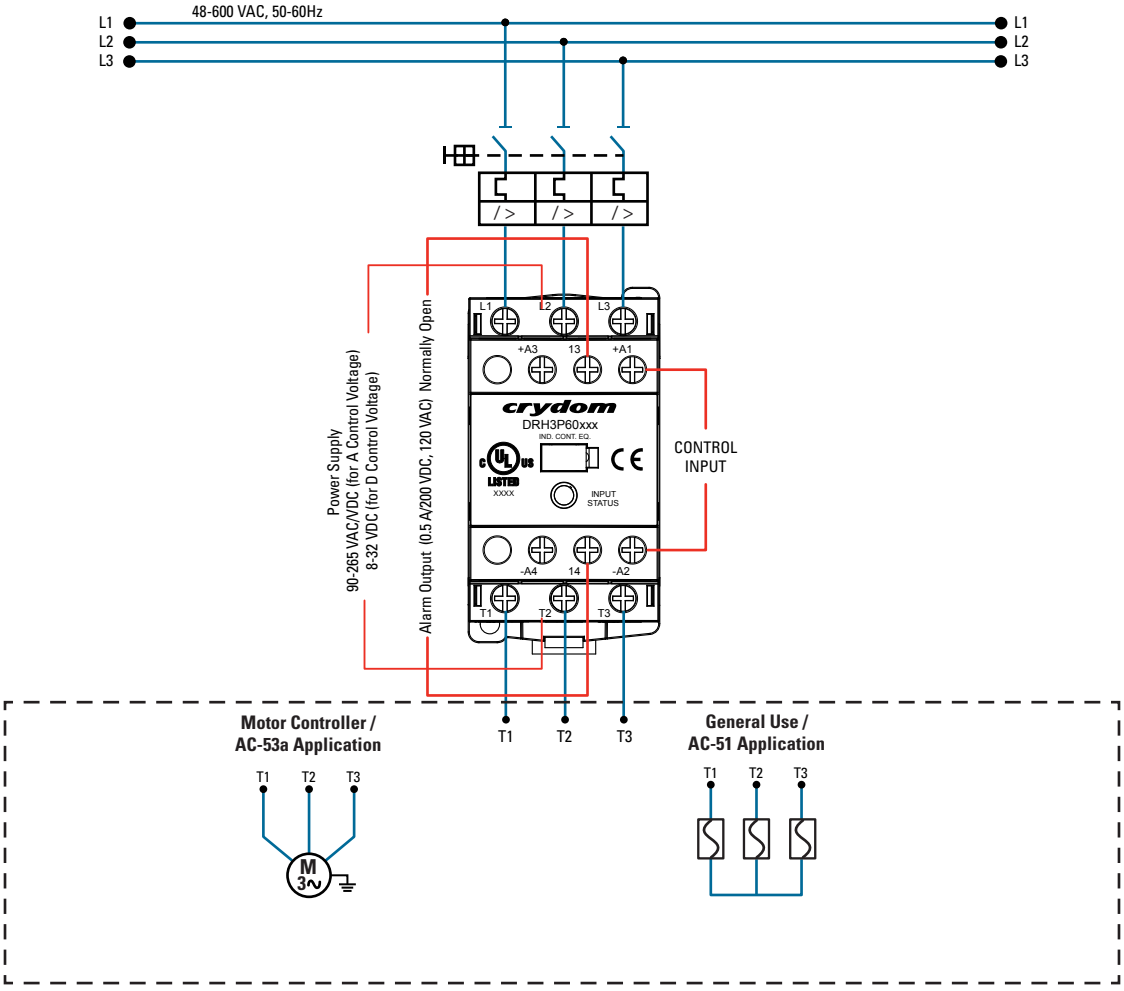
Description	Parameters
Dielectric Strength, Input/Output/Base (50/60Hz) (5)	3750 Vrms
Minimum Insulation Resistance (@ 500 VDC)	10^9 Ohm
Maximum Capacitance, Input/Output	20 pF
Ambient Operating Temperature Range	-10 to 70 °C
Ambient Storage Temperature Range	-40 to 70 °C
Weight (typical)	2 Controlled Legs (7.4 oz [210 g]) / 3 Controlled Legs (8.5 oz [242 g])
Housing Material	UL94 V-0
Housing Color	Black and Light Gray
LED Status Indicator (color)	See Status Chart
Short Circuit Current Rating (6)	100kA
Pollution Degree	2
Protection Degree	IP20
Humidity	85% non-condensing
Control and Auxiliary Contact Terminal Screw Torque Range (in-lb/Nm)	12 / 1.36
Load Terminal Screw Torque Range (in-lb/Nm)	15 / 1.7
Input Terminal Wire Capacity	18-12 AWG (IEC 1-4 mm^2) (stranded /solid)
Output Terminal Wire Capacity	18-10 AWG (IEC 1-6 mm^2) (stranded /solid)

THERMAL DERATE INFORMATION

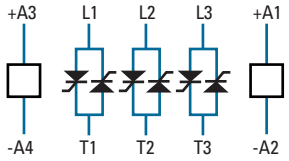




WIRING AND BLOCK DIAGRAM

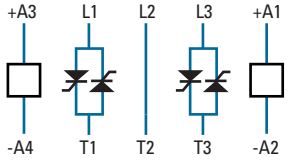


DRHP60x18
(3 controlled legs model)
Main Circuit



Alarm Output
(DRHP60x18 & DRHP60x20)

DRHP60x20
(2 controlled legs model)
Main Circuit



SHORT CIRCUIT AND OVERLOAD PROTECTION FOR ALL DEVICES

IEC standard 60947-4-1 make a distinction between two different types of protection, (called "coordination"), which are designated types "1" and "2".
Any short-circuit that occurs is cleared safely by either type of coordination.
The only difference between the 2 categories concerns the extent of the SSR damage caused by the short-circuit.

Type "1" coordination requires that in the event of a short-circuit, the Solid State Contactor does not endanger personnel or installations, but permanent damage to the SSC is permissible. In this case the SSC may need to be replaced. For this type of co-ordination, the use of fusing or circuit breakers adequate to protect the system and wiring from short circuits, (but not specifically considering SSC protection), can be used.

Type "2" coordination requires that under a short-circuit condition, the circuit is interrupted, the SSC does not endanger persons or installations, and in addition the SSR will be able to operate after the fault condition is repaired.

Type of coordination 1

For resistive loads:

Protection by Thermal Magnetic Circuit Breaker or by Fuse			
Nominal Current	**Class gG fuses (example from Littlefuse)**	**Solid State Contactor 2 controlled legs**	**Solid State Contactor 3 controlled legs**
0.15-20 A	CY14X51G25	DRH3P60x20	DRH3P60x18 (up to 18A)

For motor loads:

Protection by Thermal Magnetic Circuit Breaker or by Fuse				
Nominal Motor Current	**Thermal Magnetic Circuit Breaker (Schneider Electric)**	**Class gG fuses (example from Littlefuse)**	**Solid State Contactor 2 controlled legs**	**Solid State Contactor 3 controlled legs**
0.40-0.63 A	GV2ME04 / GV2P04	CY14X51G16	DRH3P60x20	DRH3P60x18
0.63-1 A	GV2ME05 / GV2P05	CY14X51G16	DRH3P60x20	DRH3P60x18
1-1.6 A	GV2ME06 / GV2P06	CY14X51G25	DRH3P60x20	DRH3P60x18
1.6-2.5 A	GV2ME07 / GV2P07	CY14X51G25	DRH3P60x20	DRH3P60x18
2.5-4 A	GV2ME08 / GV2P08	CY14X51G25	DRH3P60x20	DRH3P60x18
4-6.3 A	GV2ME10 / GV2P10	CY14X51G40	DRH3P60x20	DRH3P60x18
6.3-10 A	GV2ME14 / GV2P14	CY14X51G40	DRH3P60x20 (up to 7.6A)	DRH3P60x18 (up to 7.6A)

Type of coordination 2

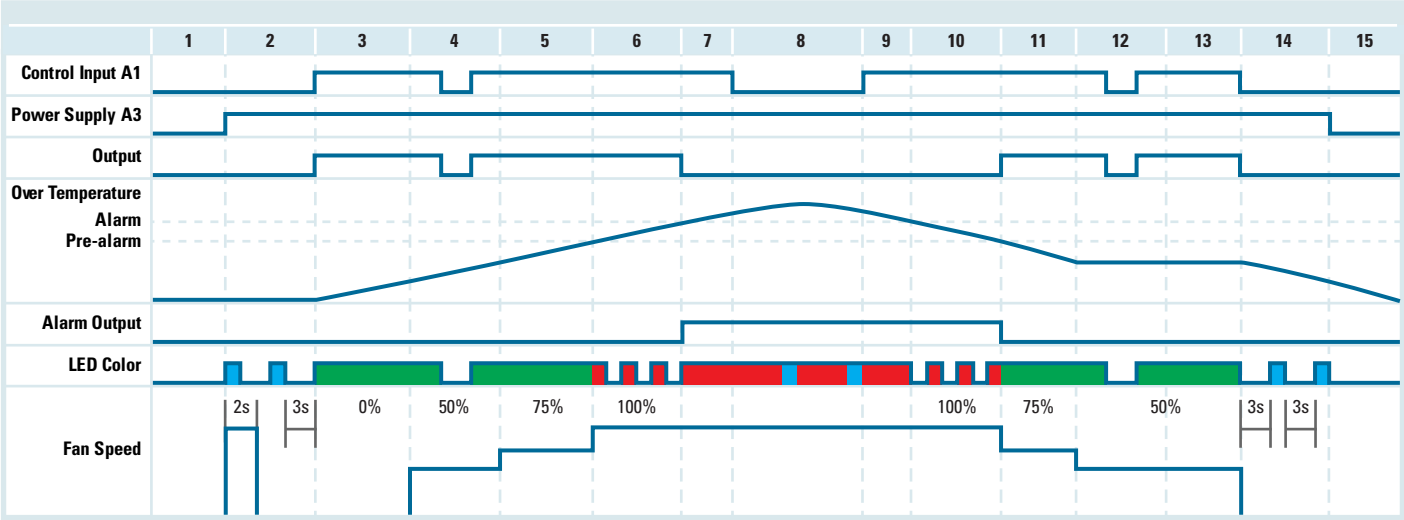
For resistive loads:

Protection by Fuse					
Nominal Current	**Semiconductor fuses with less than 2330 A^2s**			**Solid State Contactor 2 controlled legs**	**Solid State Contactor 3 controlled legs**
	Littlefuse	**SIBA1 (Cylindric)**	**Ferraz (Cylindric)**		
0.15-20 A	LA50QS35-4	50 058 06.32	Z093908	DRH3P60x20	DRH3P60x18 (up to 18A)

For motor loads:

Protection by Fuse					
Nominal Motor Current	**Semiconductor fuses with less than 2330 A^2s**			**Solid State Contactor 2 controlled legs**	**Solid State Contactor 3 controlled legs**
	Littlefuse	**SIBA1 (Cylindric)**	**Ferraz (Cylindric)**		
0.15-7.6 A	LA50QS40-4	50 058 06.40	A093909	DRH3P60x20	DRH3P60x18

STATUS CHART

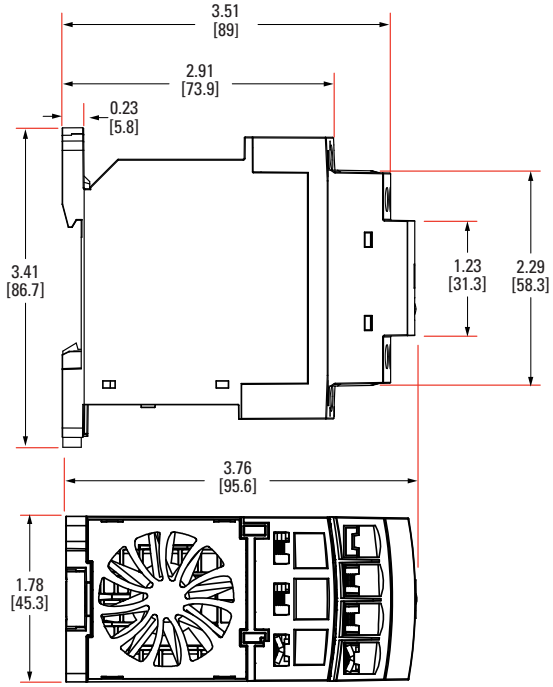


Step	Description
1, 15	Initial Condition
2, 14	Stand by condition. LED is blinking Blue. Fan is activated at full speed for 2 seconds after power is applied to A3
3	A1 is On, Output is activated, temperature rises. LED is Green
4, 12	Fan is activated at 50% speed. If A1 is disabled, LED changes to blinking Blue
5, 11	Fan is at 75% speed
6, 10	LED changes to blinking Red, fan is at full speed
7	Output is Off, Alarm Output is On, LED changes to solid Red
8	If A1 is disabled while alarm output is active, LED alternates between Blue and Red
9	LED is solid Red, temperature starts to fall
13	Fan is activated at 50% speed, temperature is steady

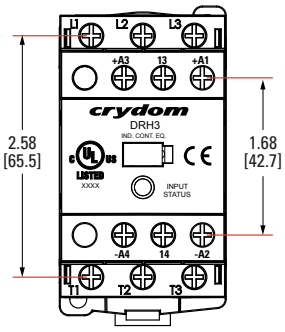
LED Color

Blue Green Red

MECHANICAL SPECIFICATIONS



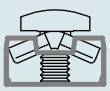
Tolerances: ±0.02 in / 0.5 mm
All dimensions are in: inches [millimeters]



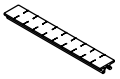
TERMINAL SCREW TYPE

Top/Bottom view (Fig. 1)

Fig. 1



ACCESSORIES

ID Marker	
 ID Marker	Package of 10 plastic strip comprising 10 individual markers which can be placed for easy identification during the use of multiple units.
CNLB CNLN CNL2	

AGENCY APPROVALS

Certification in accordance with:

United States Standard for Industrial Control Equipment - UL 508 and
Canadian Standard Association for Industrial Control Equipment – C22.2 No. 14.

DRH series conforms to the harmonized EN standard EN/IEC 60947-4-2

Electromagnetic Compatibility:
IEC 61000-4-2 : Electrostatic Discharge – Level 3
IEC 61000-4-4 : Electrically Fast Transients – Level 3
IEC 61000-4-5 : Electrical Surges – Level 3

Vibration Resistance:
IEC 60068-2-6: Amplitude Range 10-55 Hz, Displacement 0.75mm

Shock Resistance:
IEC 60068-2-27: Peak Acceleration 15g, Duration 11msec.

c UL us LISTED E116949

DRH series has Environmental Product declarations type III conforming to ISO 14025.

GENERAL NOTES

(1) All parameters at 25°C unless otherwise specified.
(2) Relay will self trigger between 900-1200V, Not suitable for capacitive loads.
(3) Mounted in the Vertical position.
(4) Turn-on time for Instantaneous turn-on version is 4 msec.
(5) For input to alarm output the dielectric strength is 1.5kV.
(6) When protected with J Class fuses rated 600 VAC, 20 A or equivalent.
(7) Minimum spacing to obtain max. current is 22mm between adjacent units.