

FEATURES/BENEFITS

- New High Efficiency Back-to-Back Thyristors for long lifetime expectancy
- Zero-cross models designed for resistive loads; (-16 Model suitable for most type of loads)
- Input protection and control LED standard
- IP20 protective plastic cover
- Designed in conformity with EN60947-4-3 (IEC947-4-3) and EN60950/VDE0805 (Reinforced Insulation)



Part No.	Load Voltage	Load Current	Control Voltage	Switch Type
DH24D12	12-280 Vac	12A	3-32 Vdc	Zero Cross
DH24D25	12-280 Vac	25A	3-32 Vdc	Zero Cross
DH24D25-16	12-275 Vac	25A	3-32 Vdc	Zero Cross
DH24D35	12-280 Vac	35A	3-32 Vdc	Zero Cross
DH24D50	12-280 Vac	50A	3-32 Vdc	Zero Cross
DH48D35	24-600 Vac	35A	3.5-32 Vdc	Zero Cross
DH48D50	24-600 Vac	50A	3.5-32 Vdc	Zero Cross

NOTES

- 1) Line Voltage (nominal): 24 = 240 Vac; 48 = 480 Vac
- 2) Switch Type: D = Zero-cross turn-on

ELECTRICAL SPECIFICATIONS

(+25°C ambient temperature unless otherwise specified)

INPUT (CONTROL) SPECIFICATIONS

	Min	Max	Units
Input Voltage Range			
DH24	3	32	V
DH48	3.5	32	V
Input Current Range			
All Relays		14	mA
Must Turn-Off Voltage	2.0		Vdc
Reverse Voltage Protection (D)		32	V
Clamping Voltage (D)		36	V
Input Immunity (EN61000-4-4)		2	kV
Input Immunity (EN61000-4-5)		2	kV

CONTROL CHARACTERISTICS

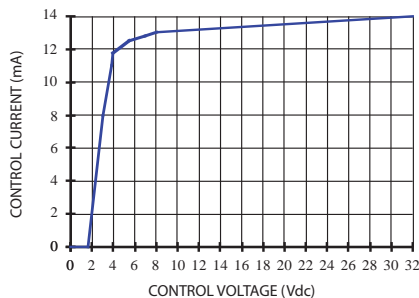


Figure 1

TYPICAL APPLICATION

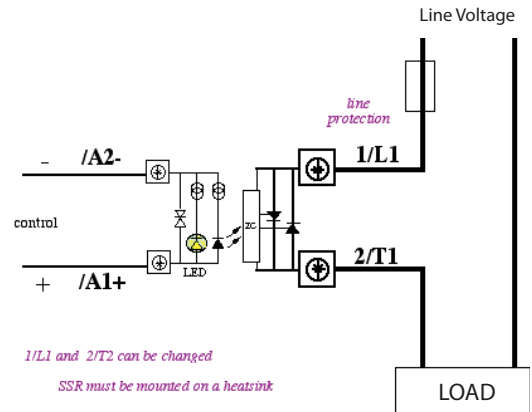
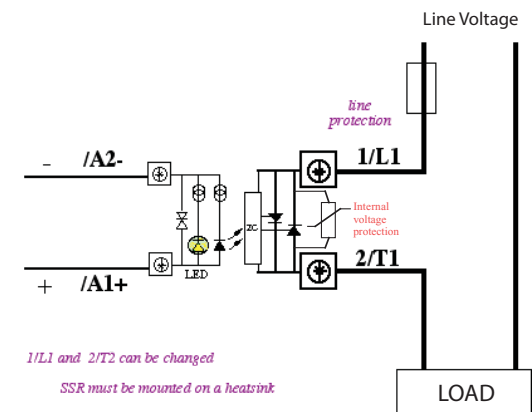


Figure 2a — DH Relays



Typical application:
Motors, lamps, heaters,....

Figure 2b — Models with -16 option only

ELECTRICAL SPECIFICATIONS
(+25°C ambient temperature unless otherwise specified)

OUTPUT (LOAD) SPECIFICATIONS

	Min	Max	Units
Operating Range			
DH24	12	280	Vac
DH24D25-16	12	275	Vac
DH48	12	600	Vac
Peak Voltage (VDR Clamping)			
DH24		600	V _{peak}
DH48		1200	V _{peak}
Load Current Range (Resistive)			
12 output current	.005	12	Arms
25 output current	.005	25	Arms
35 output current	.005	35	Arms
50 output current	.005	50	Arms
Maximum Surge Current Rating (Non-Repetitive)			
12 output current		120	A
25 output current		250	A
35 output current		420	A
50 output current		580	A
On-State Voltage Drop		0.85	V
Output Power Dissipation (Max)			
12 output current	$0.9 \times 0.85 \times I + 0.035 \times I^2$		W
25 output current	$0.9 \times 0.85 \times I + 0.016 \times I^2$		W
35 output current	$0.9 \times 0.85 \times I + 0.0095 \times I^2$		W
50 output current	$0.9 \times 0.85 \times I + 0.0075 \times I^2$		W
Zero-Cross Window (Typical)		±20	Vac
Off-State Leakage Current		1	mA
Turn-On Time (60 Hz)		8.3	ms
Turn-Off Time (60 Hz)		8.3	ms

ELECTRICAL SPECIFICATIONS (continued)
(+25°C ambient temperature unless otherwise specified)

OUTPUT (LOAD) SPECIFICATIONS

	Min	Max	Units
Off-State dv/dt		500	V/μs
Maximum di/dt (Non-Repetitive)		50	A/μs
Operating Frequency	0.1	800	Hz
I²t for fuse matching (<10ms)			
12 output current		78	A ² s
25 output current		340	A ² s
35 output current		882	A ² s
50 output current		1680	A ² s
Junction-Case Thermal Resistance			
12 output current		2.5	°C/W
25 output current		1.8	°C/W
35 output current		0.9	°C/W
50 output current		0.75	°C/W
Conducted Immunity Level			
IEC/EN61000-4-4 (bursts)			
All Relays		2kV criterion A	
IEC/EN61000-4-5 (surge)			
All Relays		2kV criterion B	
		2kV criterion A on -16 models	

GENERAL SPECIFICATIONS (+25°C ambient temperature unless otherwise specified)			
ENVIRONMENTAL SPECIFICATIONS			
	Min	Max	Units
Operating Temperature			
25A output current	-40	+80	°C
Storage Temperature			
25A output current	-55	+125	°C
Ambient Humidity	40 to 85		%
Input-Output Isolation	4000		Vrms

Output-Case Isolation		
25A output current	4000	Vrms
50A output current	4000	Vrms
Insulation Resistance @500Vdc		
	1000	MΩ
Rated Impulse Voltage		4000 V
Vibration (10-55 Hz according to CE168)		1.5 mm
Shock (according to CD168)		30 g
Housing Material		PA6 UL94V0
Baseplate		Aluminum

MECHANICAL SPECIFICATION

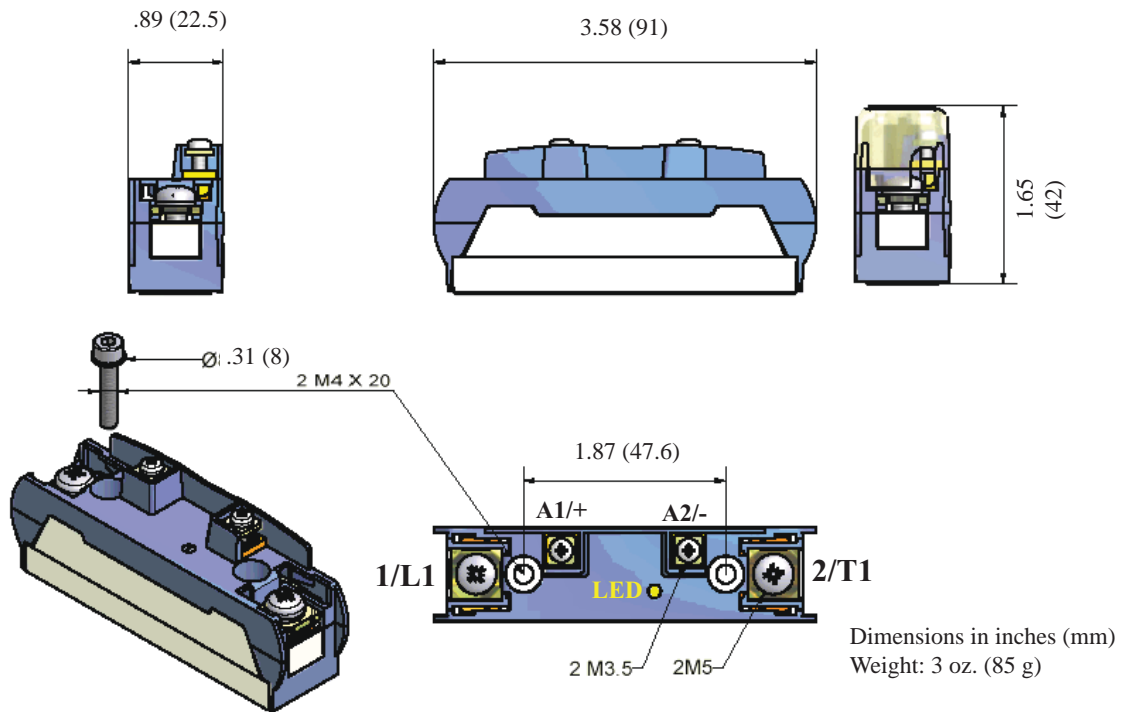


Figure 3

SURGE CURRENT

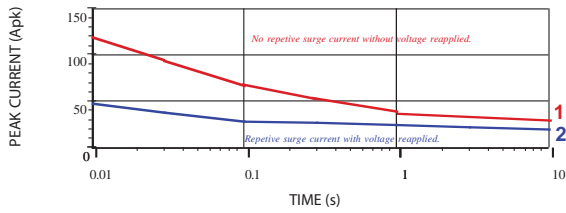


Figure 4a — 12A output current

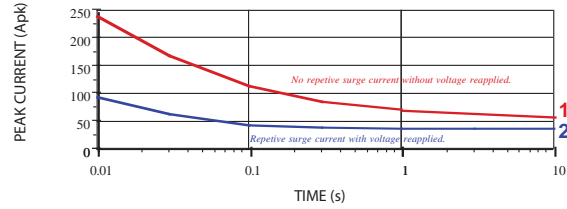


Figure 4b — 25A output current

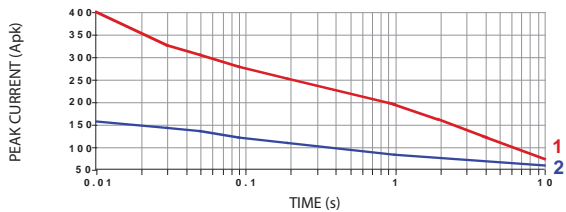


Figure 4c — 35A output current

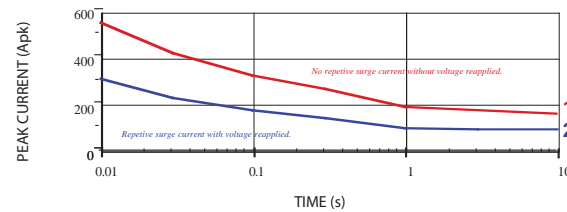


Figure 4d — 50A output current

THERMAL CURVES

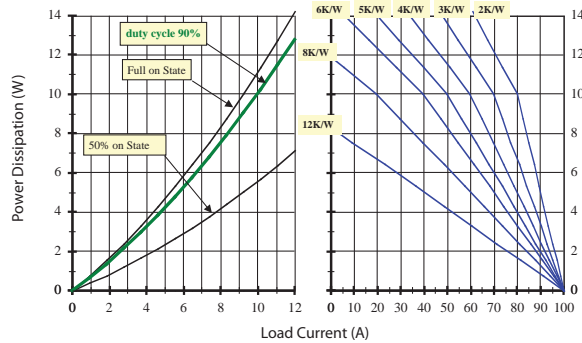


Figure 5a — 12A output power

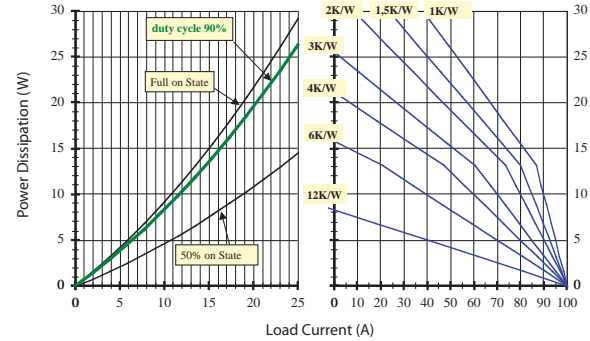


Figure 5b — 25A output power

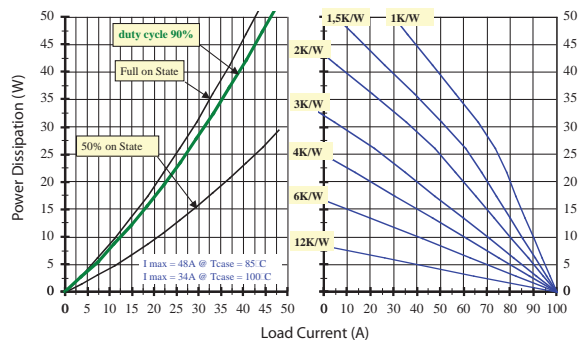


Figure 5c — 35A output power

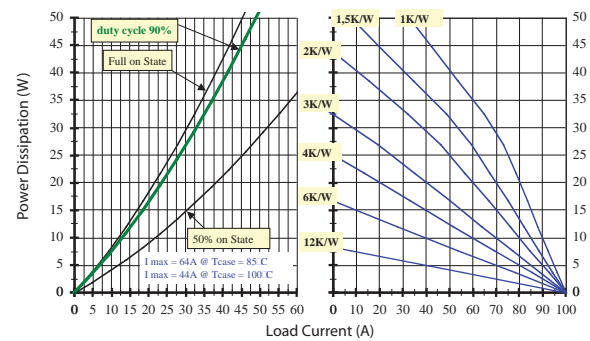

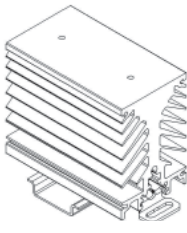

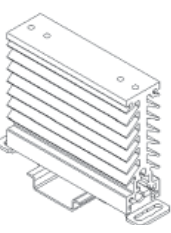


Figure 5d — 50A output power

12°C/W corresponds to a relay without heat sink
6°C/W corresponds to a relay mounted on a DIN-rail adaptor (Teledyne P/N DL12)

HEAT MANAGEMENT

Number of Wires			
FW151		FW131	
2-2.5 °C/W Heatsink		3 °C/W Heatsink	
			

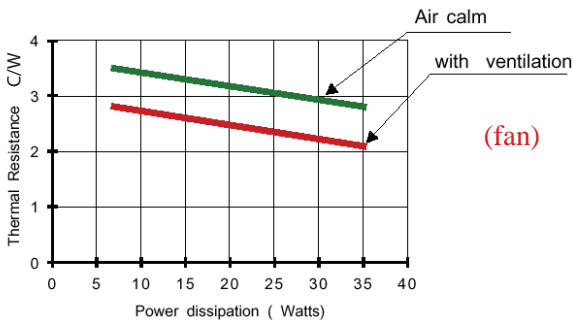


Figure 6a

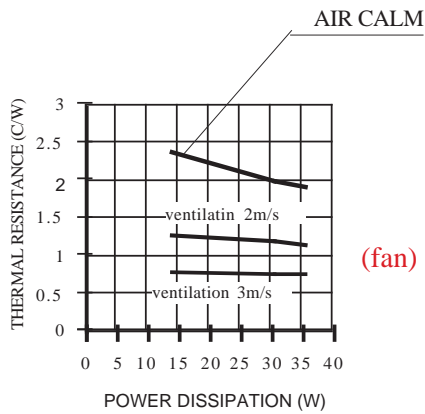


Figure 6b

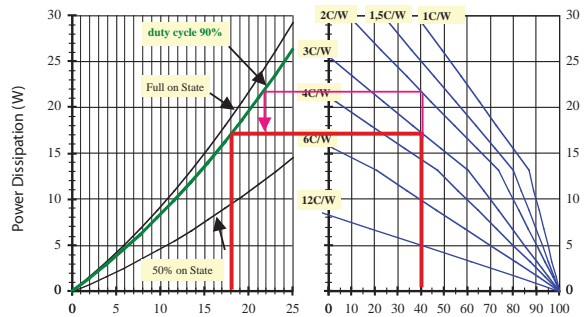


Figure 7a - Load Current (12A Model)

Example 1: 23A @ 40 °C, Recommended Heatsink: 3 °C/W
Example 2: 32A @ 40 °C, Recommended Heatsink: 2 °C/W

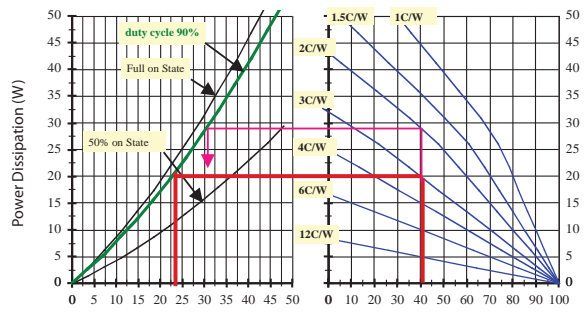


Figure 7b - Load Current (25A Model)

Example 1: 18A @ 40 °C, Recommended Heatsink: 3 °C/W
Example 2: 22A @ 40 °C, Recommended Heatsink: 2 °C/W

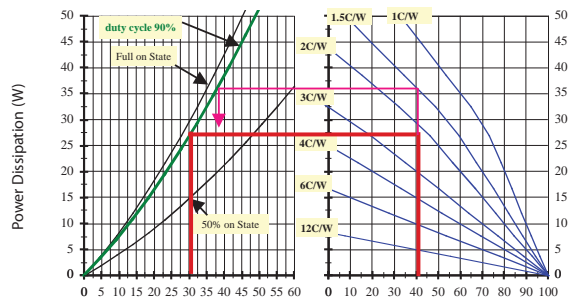

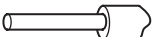
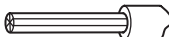
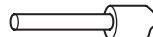
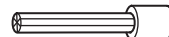
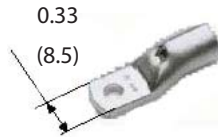


Figure 7c - Load Current (35A & 50A Model)


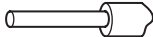

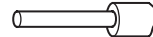

Example 1: 30A @ 40 °C, Recommended Heatsink: 1.5 °C/W
Example 2: 38A @ 40 °C, Recommended Heatsink: 2.2 °C/W

CONTROL WIRING

Number of Wires				Screwdriver Type	Recommended Torque
1		2			
Solid (no ferrule)	Fine Stranded (with ferrule)	Solid (no ferrule)	Fine Stranded (with ferrule)		N.m
					
AWG18...AWG14	AWG18...AWG14	AWG18...AWG14	AWG18...AWG14	Pozidriv 2	1.2



POWER WIRING

Number of Wires				Screwdriver Type	Recommended Torque
1		2			
Solid (no ferrule)	Fine Stranded (with ferrule)	Solid (no ferrule)	Fine Stranded (with ferrule)		N.m
					
AWG16...AWG8	AWG16...AWG10	AWG16...AWG8	AWG16...AWG10	Pozidriv 2	2