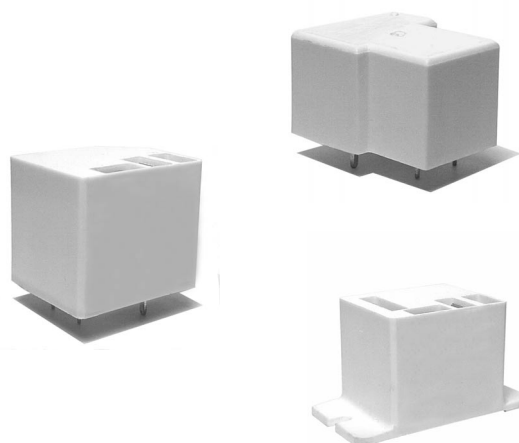


Greenwich Electronics, Inc.

HD1 Series

- High quality and reliability, low cost
- Standard PCB, panel mount, quick connect
- AC and DC coils
- Meets UL508 spacing
- 40A contact available
- Approvals:  (E197071)
 &  pending
- Applications: timers, heaters, industrial controls and equipment, appliances, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)	Nominal Voltage (AC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
5	179	28	12	444	27
6	150	40	24	200	120
9	100	90	110	47	2360
12	75	160	120	39	3040
18	50	360	220/240	17	13490
24	38	640			
48	19	2560			
110	8	13400			

Pick-up Voltage

DC: $\leq 75\%$ nominal **AC:** $\leq 85\%$ nominal

Drop-out Voltage

DC: $\geq 10\%$ nominal **AC:** $\leq 20\%$ nominal

Max. Coil Voltage

DC/AC: 120% nominal

Coil Consumption

DC: Approx. 0.9W **AC:** Approx 2.0VA

Contact

Configuration

A: 1 form A (SPST-NO), **B:** 1 form B (SPST-NC),
C: 1 form C (SPDT)

Material

AgSnO₂ / AgCdO

Rated Load

30: NO - 30A@14VDC / 240VAC,
inrush - 80A
NC - 30A@14VDC, 10A@240VAC
40: NO - 40A@240VAC,
inrush - 100A
NC - 30A@240VAC

Greenwich Electronics, Inc.

Max. Carry Current	30: 30A, 40: 40A
Max. Switching Voltage	125VDC / 250VAC
Max. Switching Current	30: 30A, 40: 40A
Max. Switching Power	30: 900W, 7200VA, 40: 1200W, 9600VA

CHARACTERISTICS

Contact Resistance	Max. 30mΩ
Operate Time	≤10ms
Release Time	≤8ms
Insulation Resistance	1000MΩ (@500VDC)
Dielectric Strength:	
• Between coil and contacts	1500VAC / 50Hz, one minute (40 type - 2500VAC)
• Between open contacts	1500VAC / 50Hz, one minute
Vibration Resistance	10-55Hz, 1.5mm, double amplitude
Shock Resistance	20g Approx.
Ambient Temperature	
• Storage	nil: -55 ⁰ C to 130 ⁰ C, F: -55 ⁰ C to 155 ⁰ C
• Operate	nil: -55 ⁰ C to 100 ⁰ C, F: -55 ⁰ C to 125 ⁰ C
Relative Humidity	20% - 85%
Life Expectancy:	
• Mechanical	1 x 10 ⁷
• Electrical	1 x 10 ⁵ (at rated load)
Weight	22g to 35g (package dependent)

ORDERING INFORMATION

	<u>HD1</u>	-	<u>012A</u>	-	<u>A</u>	<u>30</u>	<u>PC</u>	<u>S</u>	<u>N</u>	<u>F</u>
	I		II		III	IV	V	VI	VII	VIII
I.	Series				HD1					
II.	Coil Voltage (VDC)				DC: 005, 006, 009, 012, 018, 024, 048, 110					
					AC: 012, 024, 110, 120, 220/240					
					D - DC, A - AC					
III.	Contact Configuration				A - 1 form A (SPST-NO), B - 1 form B (SPST-NC),					
					C - 1 form C (SPDT)					
IV.	Contact Rating				30 - 30A, 40 - 40A					
V.	Mounting Style				PC - PCB, PQ - PCB with quick connect terminals,					
					PM - Panel mount					
VI.	Package Type				D - Dust cover, S - Sealed (washable), O - Open frame					
					E - Epoxy sealed (not washable)					
VII.	Mid-pin Configuration				nil - Mid-pin present, N - No mid-pin					
VIII.	Temperature Class				nil - Class B coil, F - Class F coil					

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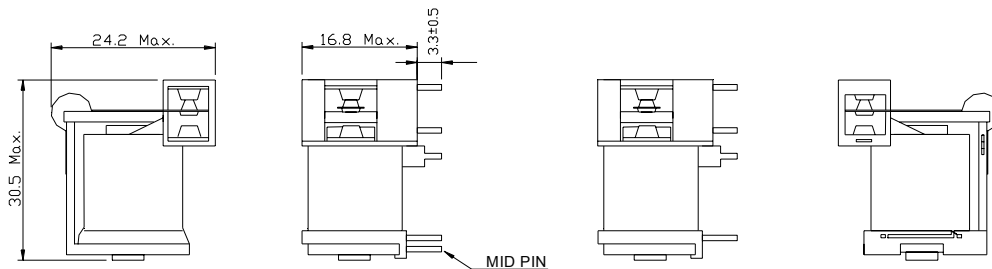
HD1 Series Dimensions and Schematics (in mm)

HD1 - PC style

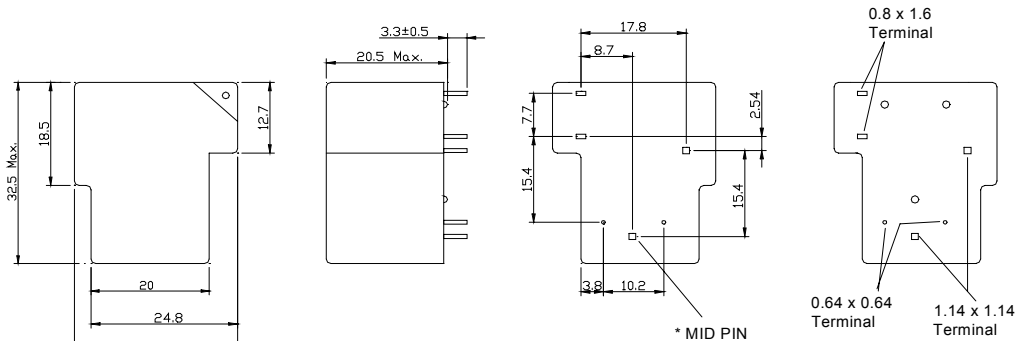
Open frame

Std type – with mid-pin

N type – without mid-pin



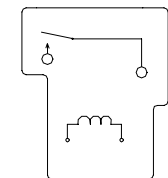
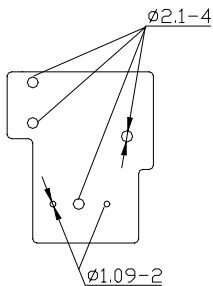
PC style sealed, epoxy base, or dust cover



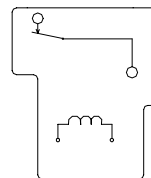
*This terminal absent in N type

Mounting holes

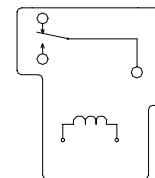
Terminal arrangement and wiring diagram



SPST-NO - 1 form A



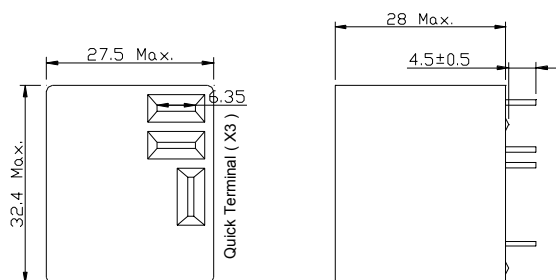
SPST-NC - 1 form B



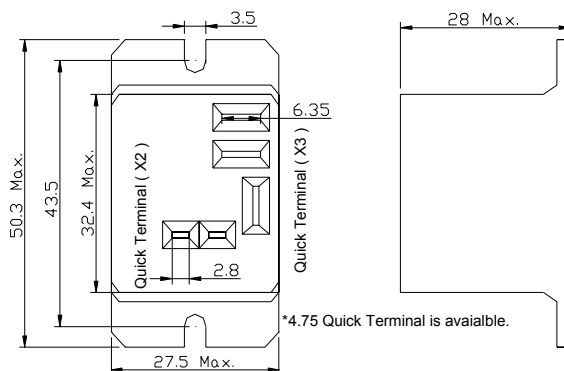
SPDT - 1 form C

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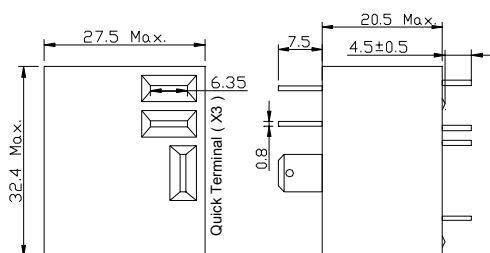
HD1 - PQ style



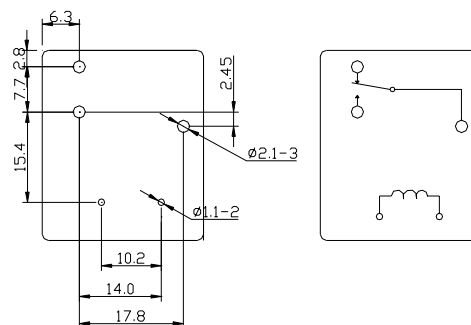
HD1 - PM style



Side and top views and dimensions of quick connect terminals



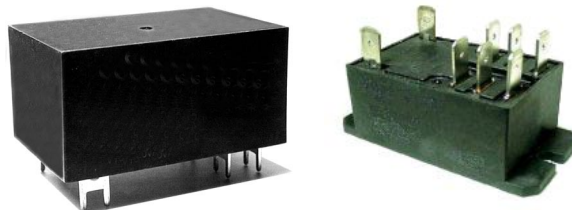
Terminal arrangement and wiring diagram



Greenwich Electronics, Inc.

HD2 Series

- Standard PCB or panel mount
- AC and DC coils
- 30A DPDT
- Approvals:  us (E197071)
- Applications: heaters, industrial and motor controls, appliances, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) (± 10% at 20°C)	Coil Resistance (Ω) (± 10% at 20°C)	Nominal Voltage (AC) @60Hz	Nominal Coil Current (mA) (± 10% at 20°C)	Coil Resistance (Ω) (± 10% at 20°C)
6	273	22	12	1200	10
12	140	86	24	615	39
24	69	350	120	126	950
48	34	1390	240	63	3800
110	15	7255	277	51	5200

Pick-up Voltage

DC: ≤75% nominal, **AC:** ≤80% nominal

Drop-out Voltage

DC: ≥10% nominal, **AC:** ≥20% nominal

Max. Coil Voltage

DC/AC: 110% nominal

Coil Consumption

DC: Approx. 1.7W, **AC:** Approx 4.0VA

Contact

Configuration

2A: 2 form A (DPST-NO), **2C:** 2 form C (DPDT)

Material

Silver Alloy

Rated Load

NO: 30A@120 / 277VAC, 20A@28VDC

1hp@120VAC, 2.5hp@250VAC, TV-10

NC: 3A@277VAC / 28VDC; 2A@480VAC,

1A@600VAC

Max. Carry Current

30A, Inrush 72A

Max. Switching Voltage

277VAC

Max. Switching Current

30A

Max. Switching Power

840W, 8300VA

Greenwich Electronics, Inc.

CHARACTERISTICS

Contact Resistance	Max. 50mΩ
Operate Time	≤15ms
Release Time	≤10ms
Insulation Resistance	1000MΩ (@500VDC)
Dielectric Strength:	
• Between coil and contacts	4000VAC - 50Hz / one minute
• Between open contacts	1500VAC - 50Hz / one minute
• Between contact sets	2000VAC - 50Hz / one minute
Vibration Resistance	10-55Hz, 1.65mm, double amplitude
Shock Resistance	10g (functional)
Ambient Temperature	
• Storage	-55 ⁰ C to 155 ⁰ C
• Operate	DC: -55 ⁰ C to 85 ⁰ C, AC: -40 ⁰ C to 65 ⁰ C
Relative Humidity	35% - 85%
Life Expectancy:	
• Mechanical	5 x 10 ⁶
• Electrical	1 x 10 ⁵ (at rated load)
Weight	Approx. 86g

ORDERING INFORMATION

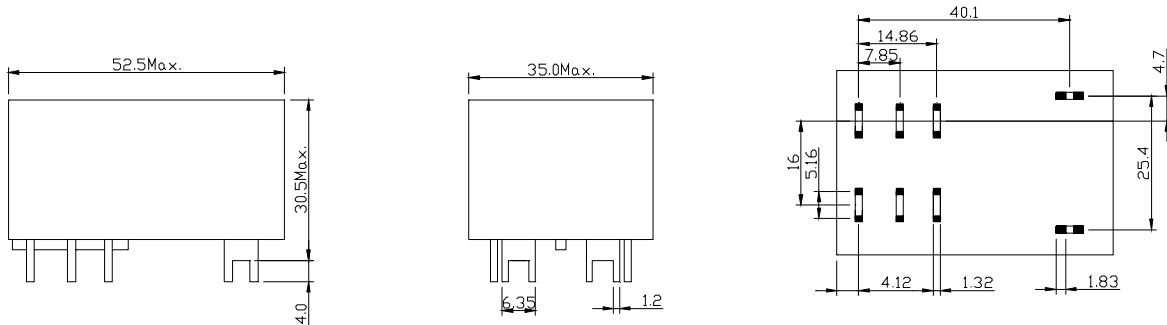
	<u>HD2</u>	-	<u>110D</u>	-	<u>2A</u>	<u>PM</u>	<u>1</u>	<u>S</u>
	I		II		III	IV	V	VI
I.	Series				HD2			
II.	Coil Voltage (VDC)				DC: 006, 012, 024, 048, 110			
					AC: 012, 024, 120, 240, 277			
					D - DC, A - AC			
III.	Contact Configuration				2A - 2 form A (DPST-NO), 2C - 2 form C (DPDT)			
IV.	Mounting Style				PC - PCB, PM - Panel mount			
V.	Terminal code				1 - PM with 4.75mmcoil / 6.35mm contact terminations			
					2 - PM with 6.35mm coil and contact terminations			
VI.	Package Type				D - dust cover, S - Sealed			

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HD2 Series Dimensions and Schematics (in mm)

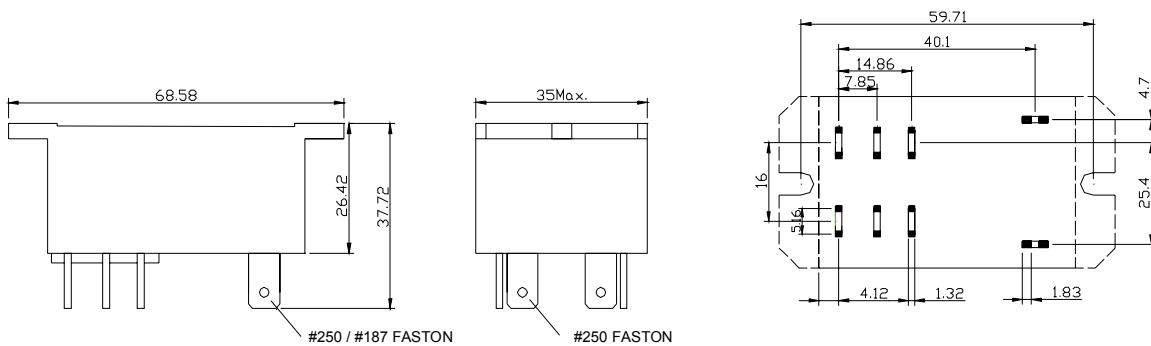
HD2 - PC style

Mounting and PC pin dimensions



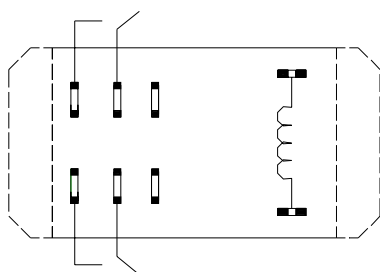
HD2 - PM style

Mounting and terminal dimensions

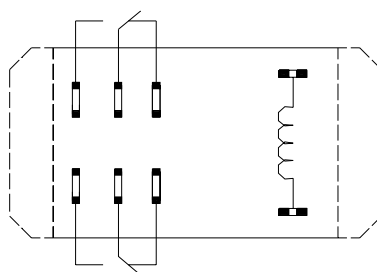


HD2 Series Terminal Arrangement

Terminal arrangement and wiring diagram



DPST-NO - 2 form A



DPDT - 2 form C

Greenwich Electronics, Inc.

HD3 Series

- PCB with quick-connect terminals
- SPST-NO 20A capacity
- Exceeds 8mm creepage requirements
- Inrush current to 60A
- Approvals:  pending
- Applications: industrial control, high inrush lighting, appliances, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
12	75	160
24	38	640

Pick-up Voltage	$\leq 70\%$ nominal
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	110% nominal
Coil Consumption	Approx. 0.9W

Contact

Configuration	A: 1 form A (SPST-NO)
Material	Silver (Ag) alloy
Rated Load	20A@30VDC / 220VAC Motor: 1 1/2hp@220VAC
Max. Carry Current	25A - Inrush 60A
Max. Switching Voltage	30VDC / 220VAC
Max. Switching Current	20A
Max. Switching Power	600W / 4400VA

CHARACTERISTICS

Contact Resistance	Max. 50m Ω
Operate Time	$\leq 15\text{ms}$
Release Time	$\leq 10\text{ms}$
Insulation Resistance	1000M Ω (@500VDC)

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Dielectric Strength:

- Between coil and contacts 2000VAC / 50Hz one minute
- Between open contacts 1000VAC / 50Hz one minute

Vibration Resistance

10-55Hz, 1.5mm, double amplitude

Shock Resistance

Min. 10g (functional)

Ambient Temperature

- Operate -40°C to +70°C
- Storage -40°C to +125°C

Relative Humidity

45% - 85%

Life Expectancy:

- Mechanical 5×10^6
- Electrical 1×10^5 Operations (at rated load)

Weight

Approx. 42 grams

ORDERING INFORMATION

HD3 - 012 - A
I II III

I. Series

HD3

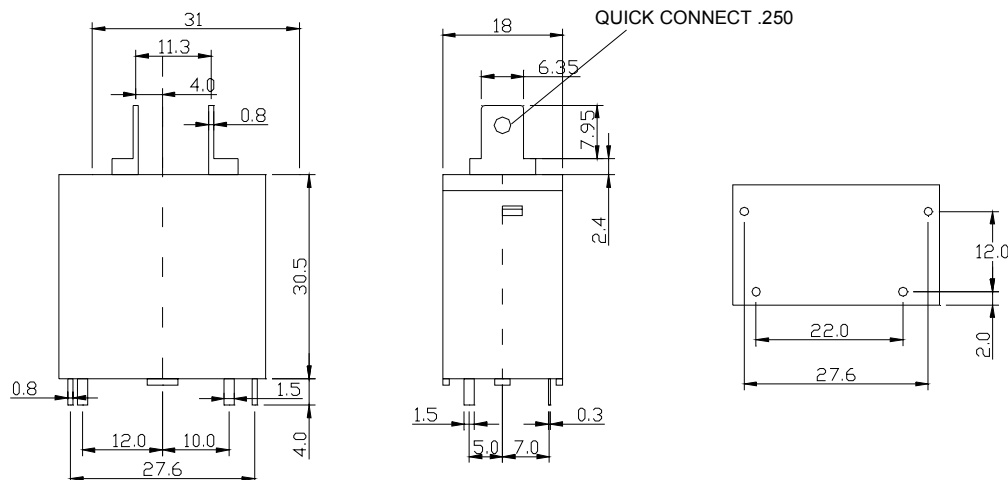
II. Coil Voltage (VDC)

012, 024

III. Contact configuration

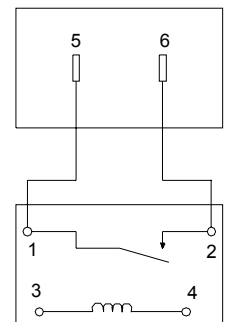
A - 1 form A (SPST-NO)

HD3 Series Dimensions and Schematics (in mm)



Terminal arrangement and wiring diagram

Top view



Bottom view

Greenwich Electronics, Inc.

HD4 Series

- Inrush current to 80A
- PCB or PCB with quick-connect terminals
- SPST-NO 20A capacity
- High dielectric strength
- Small package size
- Approvals:  pending
- Applications: motor control, high inrush lighting, appliances, general purpose



COIL DATA

Nominal Voltage (DC)	Nominal Coil Current (mA) ($\pm 10\%$ at 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
5	180	28
12	75	160
24	38	640
48	19	2560

Pick-up Voltage	$\leq 70\%$ nominal
Drop-out Voltage	$\geq 10\%$ nominal
Max. Coil Voltage	130% nominal
Coil Consumption	Approx. 0.9W

Contact

Configuration	A: 1 form A (SPST-NO)
Material	Silver (Ag) alloy
Rated Load	20A@250VAC, 1hp@120VAC, 2hp@240VAC Motor: inrush 80A (0.3 sec)
Max. Carry Current	20A
Max. Switching Voltage	250VAC
Max. Switching Current	20A
Max. Switching Power	5000VA

Greenwich Electronics, Inc.

CHARACTERISTICS

Contact Resistance	Max. 30m Ω (Measured at 1A 24VDC)
Operate Time	$\leq 20\text{ms}$
Release Time	$\leq 10\text{ms}$
Insulation Resistance	$\geq 1000\text{M}\Omega$ (@500VDC)
Dielectric Strength:	
• Between coil and contacts	4500VAC / 50Hz one minute
• Between open contacts	1000VAC / 50Hz one minute
Vibration Resistance	10-55Hz, 1.5mm, double amplitude
Shock Resistance	Min. 20g (functional)
Ambient Temperature	
• Operate	-20°C to +70°C
• Storage	-20°C to +125°C
Relative Humidity	40% - 85%
Life Expectancy:	
• Mechanical	2×10^6
• Electrical	1×10^5 Operations (at rated load)
Weight	Approx. 23 grams

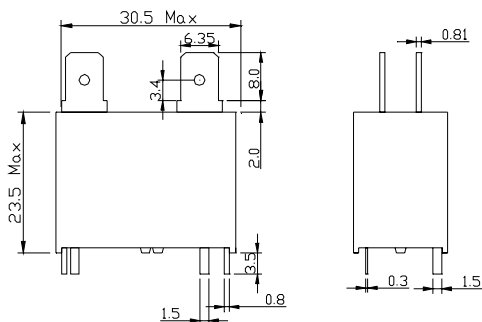
ORDERING INFORMATION

	<u>HD4</u>	-	<u>005</u>	-	<u>A</u>	<u>PC</u>
	I		II		III	IV
I.	Series				HD4	
II.	Coil Voltage (VDC)				012, 024	
III.	Contact configuration				A - 1 form A (SPST-NO)	
IV.	Mounting type				PC - PCB, PQ - PCB with quick connect terminals	

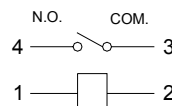
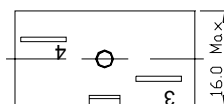
Greenwich Electronics, Inc.

HD4 Series Dimensions and Schematics (in mm)

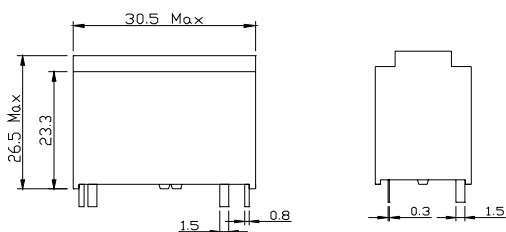
HD4 – PQ style



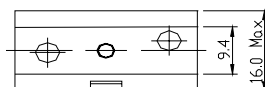
Terminal arrangement and wiring diagram



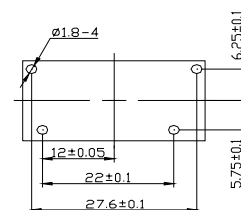
HD4 – PC style



Top view



Bottom view



Greenwich Electronics, Inc.

HD5 Series

- Standard PCB, panel mount, plug-in
- AC and DC coils
- 30A contact
- Applications: motor control, compressor control



COIL DATA

Nominal Voltage (DC)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)	Nominal Voltage (AC)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
3	4.7	6	18.8
6	18.8	12	75
12	75	24	300
24	300	48	1200
48	1200	120	5200
100	5200	220	20800
110	6300		
200	21000		

Pick-up Voltage

DC: $\leq 75\%$ nominal **AC:** $\leq 80\%$ nominal

Drop-out Voltage

DC: $\geq 10\%$ nominal **AC:** $\leq 15\%$ nominal

Coil Consumption

DC: Approx. 1.9W **AC:** Approx 2.7VA

Contact

Configuration

1A: 1 form A (SPST-NO), **2A:** 2 form A (DPST-NO)

Material

Silver (Ag) alloy

Rated Load

1A: 30A@28VDC / 250VAC

2A: 25A@28VDC / 250VAC

Max. Carry Current

1A: 30A, **2A:** 25A

Max. Switching Voltage

28VDC / 277VAC

Max. Switching Current

1A: 30A, **2A:** 25A

Max. Switching Power

1A: 840W, 7500VA, **2A:** 700W, 6250VA

Greenwich Electronics, Inc.

CHARACTERISTICS

Contact Resistance	Max. 100mΩ (1A@24VDC)
Operate Time	≤30ms
Release Time	≤30ms
Insulation Resistance	1000MΩ (@500VDC)
Dielectric Strength:	
• Between coil and contacts	4000VAC / one minute
• Between open contacts	2000VAC / one minute
Surge Voltage	10,000VAC (between coil and contacts; @1.2 x 50μs)
Vibration Resistance	10-55Hz, 1.5mm, double amplitude
Shock Resistance	10g (functional)
Ambient Temperature	-55 ⁰ C to 70 ⁰ C
Relative Humidity	98%@40 ⁰ C
Life Expectancy:	
• Mechanical	1 x 10 ⁶
• Electrical	1 x 10 ⁵ (at rated load)
Weight	Approx. 120g

ORDERING INFORMATION

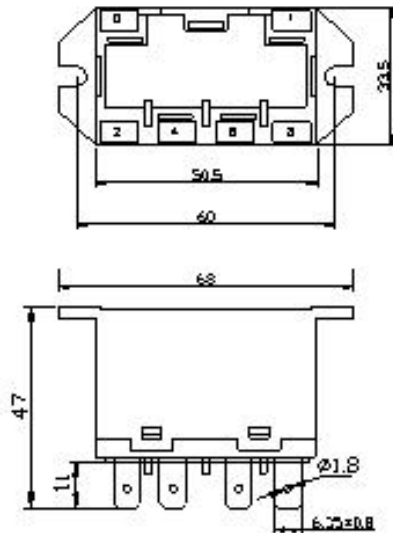
	<u>HD5</u>	-	<u>012A</u>	-	<u>1A</u>	<u>PC</u>
	I		II		III	IV
I.	Series				HD5	
II.	Coil Voltage (VDC)				DC: 003, 006, 012, 024, 048, 100, 110, 200 AC: 006, 012, 024, 048, 120, 220 D - DC, A - AC	
III.	Contact Configuration				1A - 1 form A (SPST-NO), 2A - 2 form A (DPST-NO)	
V.	Mounting Style				PC - PCB, BR - Bracket, TM - Top mounting	

Greenwich Electronics, Inc.

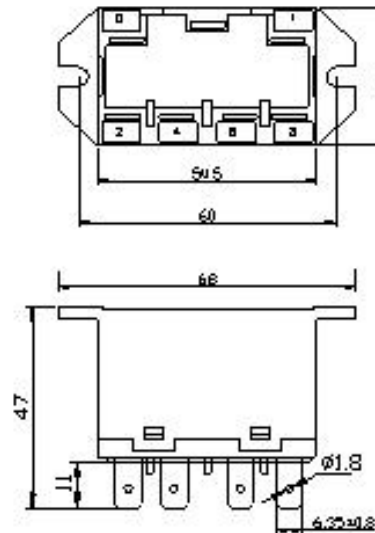
HD5 Series Dimensions and Schematics (in mm)

HD5 - TM style

HD5-1ATM

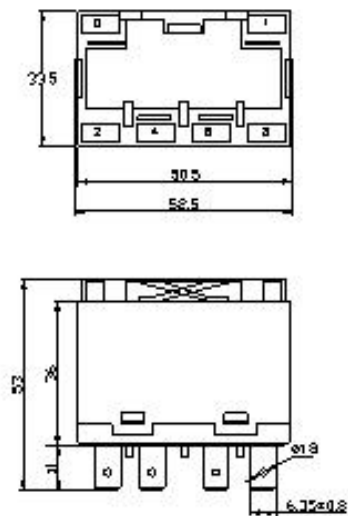


HD5-2ATM

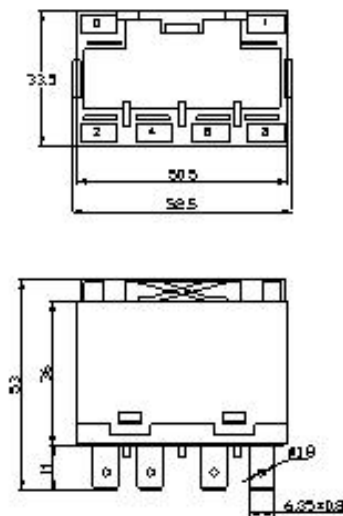


HD5 - BR style

HD5-1ABR



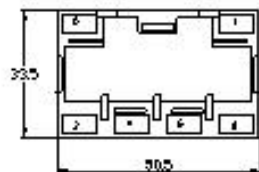
HD5-2ABR



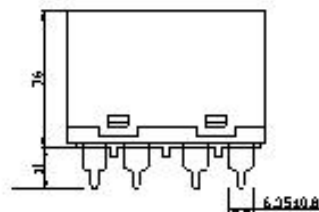
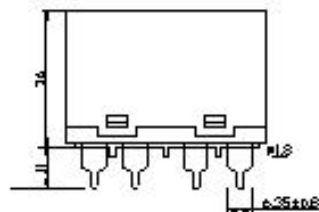
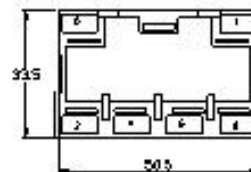
Greenwich Electronics, Inc.

HD5 - PC style

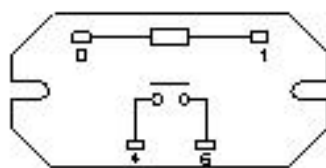
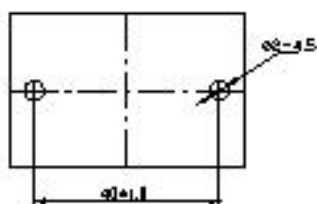
HD5-1APC



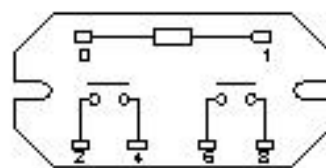
HD5-2APC



Terminal Arrangement and Wiring Diagram



1 FORM A

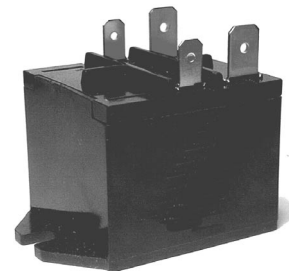


2 FORM A

Greenwich Electronics, Inc.

CHP Series

- Panel mount design
- High capacity (15A)
- Approvals:  US (E122258)
 (R9154269)
- Applications: vending machines,
light duty appliances, office machines,
general purpose



COIL DATA

Nominal Voltage (AC)	Nominal Coil Current (mA) (+ 15%, -20% 20°C)	Coil Resistance (Ω) ($\pm 10\%$ at 20°C)
115	15	3000
220/240	6	14500

Pick-up Voltage	$\leq 80\%$ nominal
Drop-out Voltage	$\geq 30\%$ nominal
Max. Coil Voltage	110% nominal
Coil Consumption	115VAC ~ 1.7VA, 220/240VAC ~ 1.4VA

Contact

Configuration	11: 1 form A (SPST-NO)
Material	Silver (Ag) alloy
Rated Load	15A@30VDC / 250VAC
Max. Carry Current	15A
Max. Switching Voltage	30VDC, 250VAC
Max. Switching Current	20A
Max. Switching Power	250W, 3250VA

CHARACTERISTICS

Contact Resistance	Max. 50m Ω
Operate Time	≤ 6 ms
Release Time	≤ 20 ms
Insulation Resistance	100M Ω (@500VDC)

Greenwich Electronics, Inc.

Dielectric Strength:

- Between coil and contacts 2000VAC / one minute
- Between open contacts 1000VAC / one minute

Vibration Resistance

9g, 10-55Hz, 1.5mm, double amplitude (functional)

Shock Resistance

Min. 20g (functional)

Ambient Temperature

- Operate -25°C to 70°C
- Storage -25°C to 70°C

Relative Humidity

45% - 85%

Life Expectancy:

- Mechanical 5×10^6
- Electrical 1×10^5 Operations (at rated load)

Weight

Approx. 44 grams

ORDERING INFORMATION

CHP 11 - A115 S
I II III IV

I. Series

CHP

II. Contact configuration

11 - 1 form A

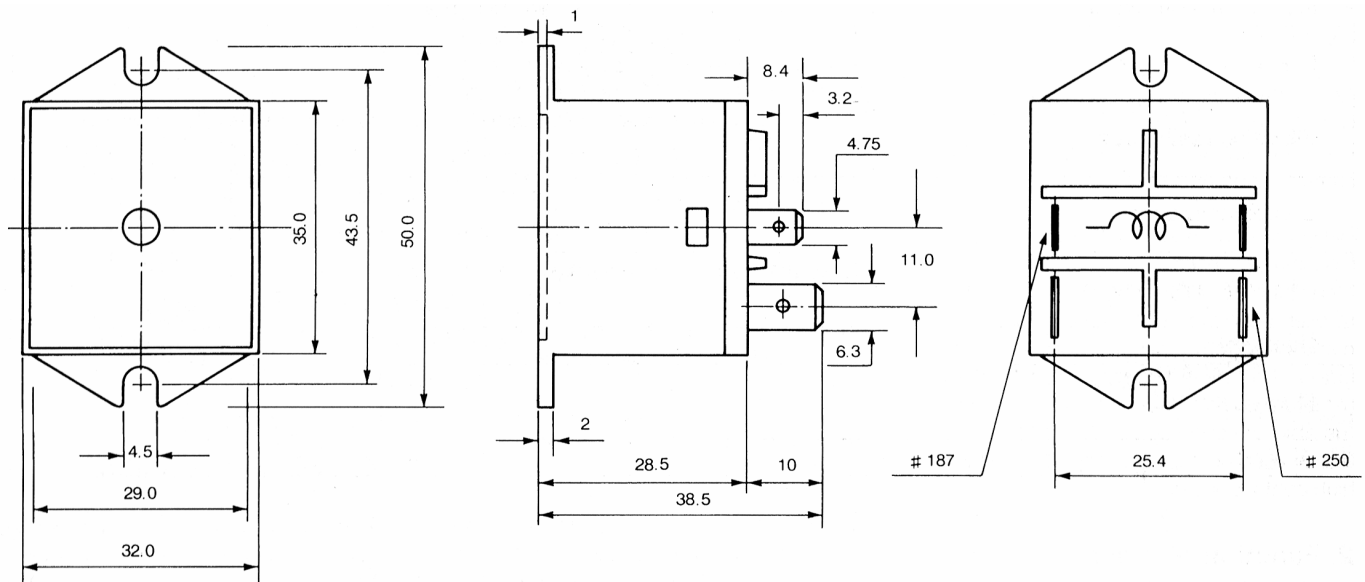
III. Coil Voltage

A115 - 115VAC, **A240** - 220/240VAC

IV. Terminal form

S - Quick connect terminals

CHP Series Dimensions and Schematics (in mm)



Tolerance: ± 0.5