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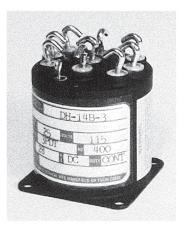
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DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT Rated Operating Voltage — 115/200 VAC, 400 Hz Resistive Rating — 25 Amps Inductive Rating — 20 Amps Motor Rating — 15 Amps General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms Insulation Resistance, Initial —

100 megohm min. Altitude — 80,000 ft. Weight, Max. — .41 to .50 lbs

Duty Cycle —

VAC 400 Hz — AC Continuous (Type A, See diagram below) Vdc — Continuous or continuous with suppression (See diagram B & C below)

Operating Voltage, Nom. – VAC 400 Hz — 115 VAC Vdc — 28 Vdc

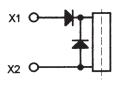
Pickup Voltage @ 25°C, Max. — VAC 400 Hz — 95 VAC Vdc — 18 Vdc

Dropout Voltage @ 25°C, Max. — VAC 400 Hz — 25 VAC Vdc — 1.5 to 7 Vdc

Coil Resistance ±20% @ 25°C — VAC 400 Hz — N/A Vdc — 290 Ohms

Coil Characteristics

Coil Type



A — AC Continuous

Dimensions are shown for

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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+X1 O

B — Continuous

OBSERVE

-X2 O-

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+X1 C

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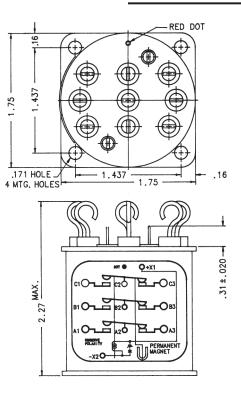
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C — Continuous with Suppression

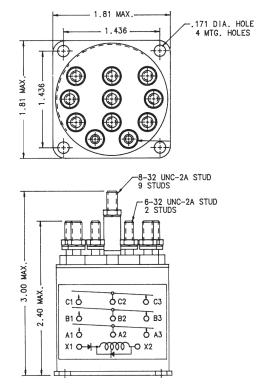
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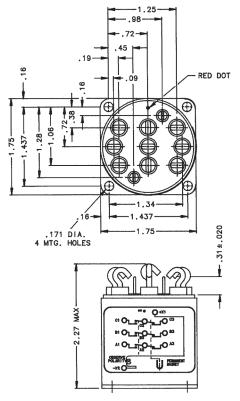
DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps, 115/200 VAC, 400 Hz (Continued)



Mounting Style A



Mounting Style B



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Mounting Style C

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HARTMAN Power Switching AC Contactors

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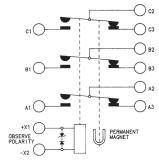
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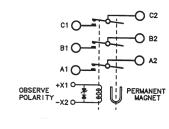
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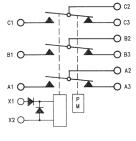


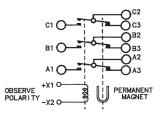
DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps, 115/200 VAC, 400 Hz (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)









Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Connectivity Part Number
DH-14B	Hermetically Sealed	С	В	4	1-1616522-4
DH-14B-3	Hermetically Sealed	A	С	1	1616037-1
DH-14CE	Hermetically Sealed	A	С	2	1616017-1
DHR-14B	Hermetically Sealed	А	А	3	1-1616037-2
DHR-14BA	Hermetically Sealed	В	A	3	1-1616037-3

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DHR-18 Series, Rated up to 30 Amps, 115 VAC, 400 Hz

Product Facts

- 3PDT, Center off
- Hermetically sealed

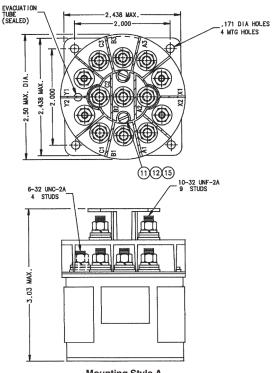


Performance Data

Electrical Characteristics Contact Arrangement — 3PDT, Center Off Rated Operating Voltage — 115 VAC, 400 Hz Resistive Rating — 30 Amps Inductive Rating — 20 Amps

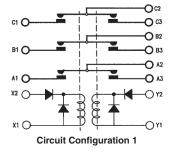
General Characteristics Operating Temperature — 71°C Weight, Max. - 14 oz.

Coil Characteristics Duty Cycle — Continuous Coil Rating - 115 VAC, 400 Hz Pickup Voltage, Max. - 90 Vdc, Hot Dropout Voltage — 45 ± 20 Vdc Current at 115 Vdc & 25°C — 0.28 Amp max.



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



rect application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
none 419-521-9500 or	Part Number	Type	Style	Type	Config.	Part Number
749.	DHR-18-1	Hermetically Sealed	А	Continuous	1	1616050-9

For factory-dire assistance, pho fax 419-526-27

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D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,

Product Facts

- 3PDT and 3PST NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement - 3PDT and 3PST NO Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating — 50 Amps Inductive Rating — 50 Amps Motor Rating — 30 Amps Lamp Rating — 15 Amps

General Characteristics Temperature Range —

-55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. -50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength -

All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms

Insulation Resistance, Initial — 100 megohm min. Altitude – D7, DR7 — 50,000 ft

DH7. DHR7 - 80.000 ft Weight, Max. - .94 to 1.20 lbs

Coil Characteristics

Duty Cycle -VAC 400 Hz — AC Continuous (Type A & E, See diagram below) Vdc — Continuous (Type B, See diagram below) Vdc — Continuous with suppression (Type C & D, See diagram below)

Operating Voltage, Nom. -VÁC 400 Hz - 115 VAC Vdc - 28 Vdc

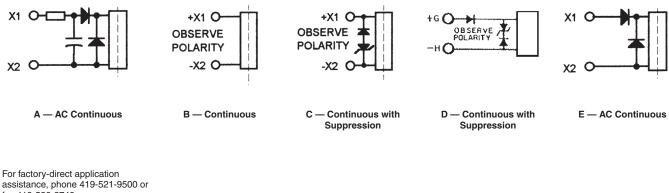
Pickup Voltage @ 25°C, Max. — VAC 400 Hz - 75 VAC Vdc — 18 Vdc

Dropout Voltage @ 25°C, Max. — VAC 400 Hz - 12 to 38 VAC Vdc — 1 to 7 Vdc

Coil Resistance $\pm 20\%$ @ 25° C — VAC 400 Hz - 505 Ohms Vdc - 126 Ohms

Coil Current @ 25°C. Max. — VAC 400 Hz - .065 Amp Vdc — .28 Amp

Coil Type



fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

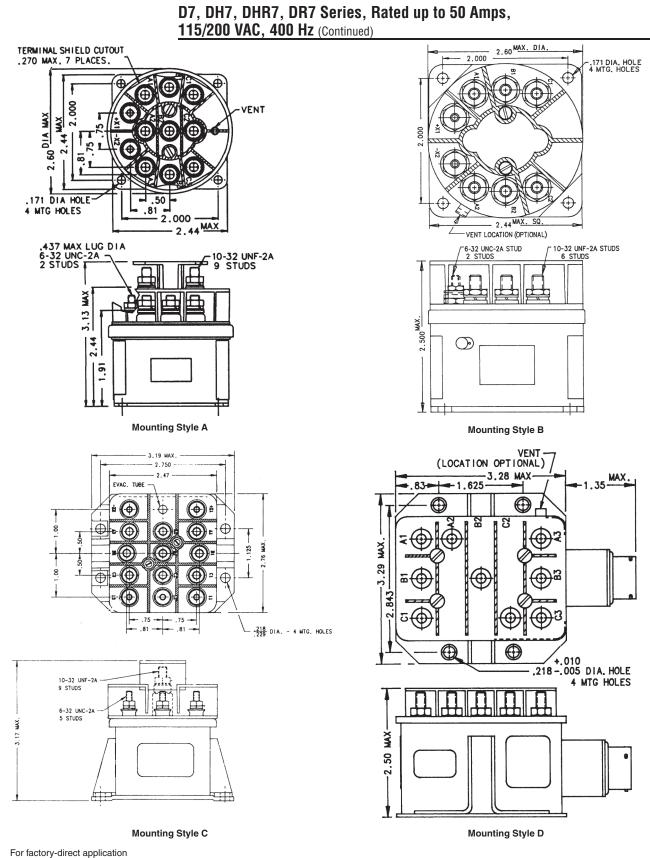
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assistance, phone 419-521-9500 or fax 419-526-2749.

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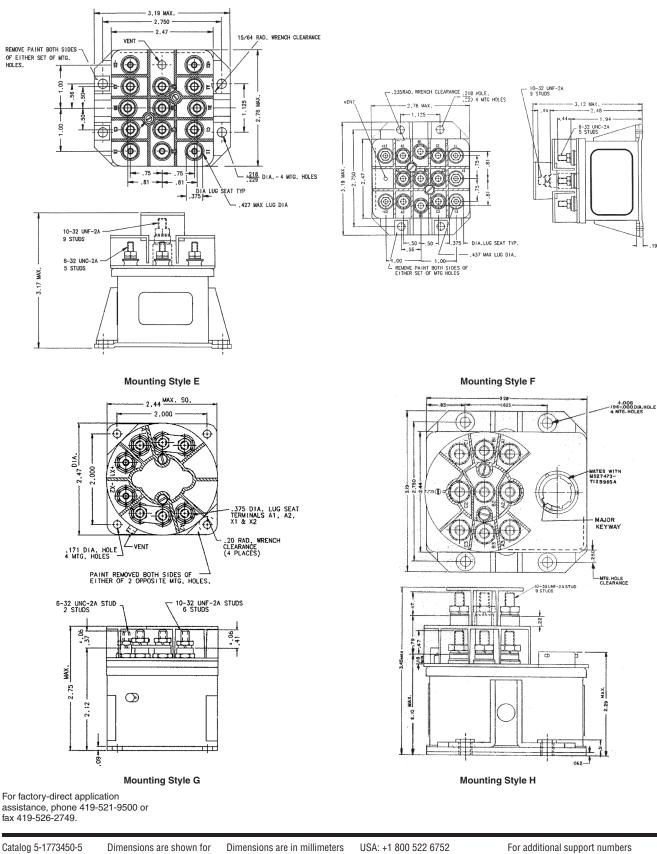
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D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)



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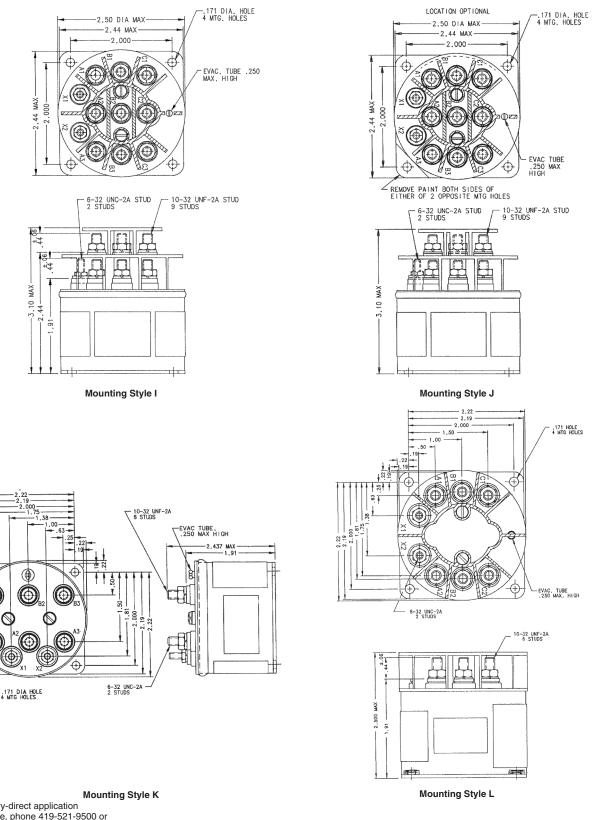
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D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)



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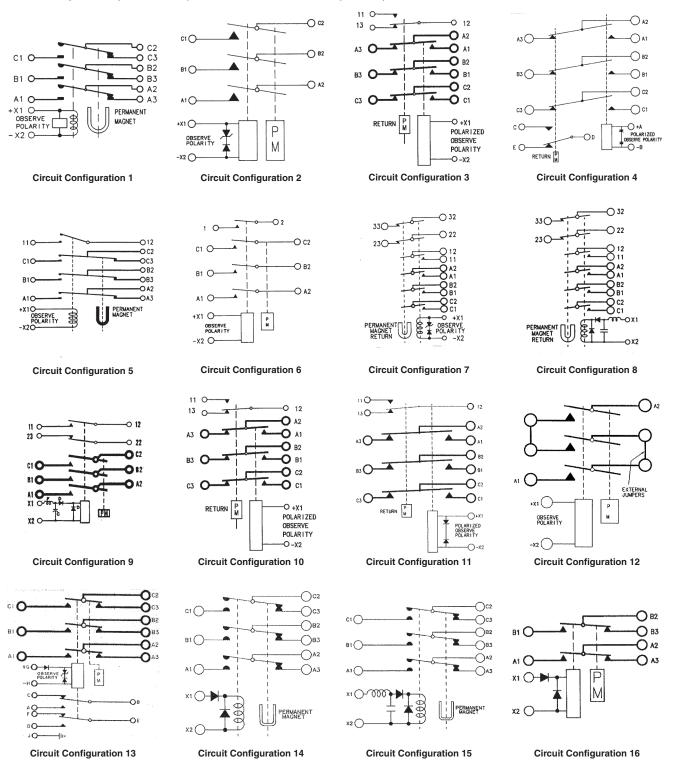
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D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

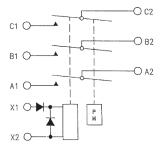
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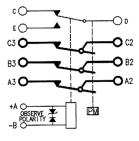


D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)



Circuit Configuration 17

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-7BS	Gasket/Vented	А	С	1	1616036-1
D-7M	Gasket/Vented	В	С	2	1616016-2
D-7GR-2	Gasket/Vented	С	В	3	1616036-3
D-7GRZ	Gasket/Vented	D	С	4	1616036-5
DH-7BB	Hermetically Sealed	А	В	5	1616037-7
DH-7N	Hermetically Sealed	В	В	6	1616017-9
DH-7ZG-1	Hermetically Sealed	С	С	7	1-1616017-1
DHR-7ZG	Hermetically Sealed	С	А	8	1-1616017-2
DR-7VC	Hermetically Sealed	В	А	9	1616018-1
D-7GR	Gasket/Vented	E	В	10	1616036-2
D-7GR-3	Gasket/Vented	F	В	11	1616036-4
D-7MA	Gasket/Vented	G	В	12	1616016-3
D-7MM	Gasket/Vented	Н	С	18	1616016-4
DH-7GR	Hermetically Sealed	E	С	11	1616037-9
DH-7ZAB	Hermetically Sealed	Н	D	13	1-1616037-1
DHR-7B	Hermetically Sealed	I	E	14	1-1616037-6
DHR-7BE	Hermetically Sealed	J	А	15	1-1616037-7
DHR-7K	Hermetically Sealed	К	E	16	1616522-2
DHR-7M	Hermetically Sealed	L	E	17	1616518-2



Circuit Configuration 18

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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D18, DH18 and DHR18 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz $\,$

Product Facts

- 3PDT, Center off
- Gasket sealed or Hermetically sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT, Center Off Rated Operating Voltage — 115/200 VAC, 400 Hz Resistive Rating — 50 Amps Inductive Rating — 50 Amps Motor Rating — 30 Amps Lamp Rating — 15 Amps Rupture Rating — 400 Amps General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Insulation Resistance, Initial —

100 megohm min. Altitude — D-18 — 50,000 ft. DH-18, DHR-18 — 80,000 ft. Weight, Max. — .94 to 1.50 lbs Sinusoidal Vibration — 10 G @ 70 to 2,000 Hz Shock, Max. — 25 G Operate Time @ Nom. Voltage, Max. — 35 msec Release Time @ Nom. Voltage, Max. — 15 msec Bounce Time @ Nom. Voltage, Max. — 5 msec For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Coil Characteristics

Duty Cycle — AC Continuous (Type E, See diagram below) DC Continuous (Type A-D, See diagram below)

Operating Voltage, Nom. — 28 Vdc Pickup Voltage @ 25°C, Max. — Coil Type A — 18 Vdc Coil Type B — 15 Vdc

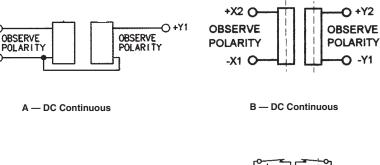
Dropout Voltage @ 25°C, Max. — Coil Type A — 1.5 to 7 Vdc Coil Type B — 2.5 to 6.5 Vdc

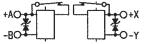
Coil Resistance ±20% @ 25°C — 175 Ohms Coil Current @ 25°C, Max. — .175 Amp

Coil Type

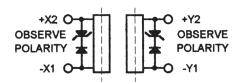
+X1C

-XYC

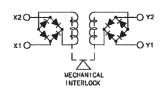




D — DC Continuous -Economical w/Suppression



C – DC Continuous with Suppression



E – AC Continuous

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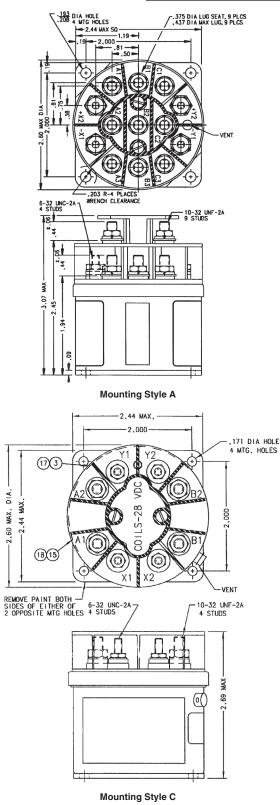
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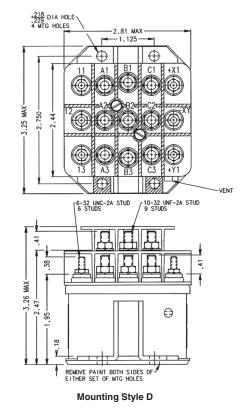
D18, DH18 and DHR18 Series Contactors, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)



3.28 MAX. 83 1,625 1.35 MAX. 얾 23 3 (€ Ð MAX. 2.843 (\oplus) 3.29 1 .218^{+.010} DIA. .005 DIA. 4 MTG, HOLES Д Π BASE MAIN MATERIAL IS G9 GLASS MELAMINE PER ASTM-D-709. MAJOR KEYWAY ORIENTED TOP MAX. 2.50 θ

VENT LOCATION OPTIONAL

Mounting Style B



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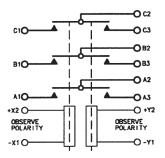
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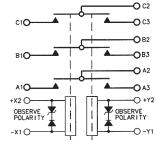
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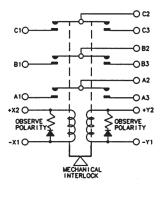


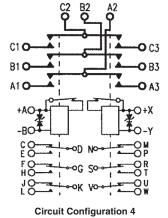
D18, DH18 and DHR18 Series Contactors, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)









Circuit Configuration 1

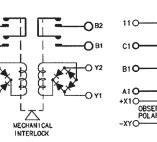
Circuit Configuration 2

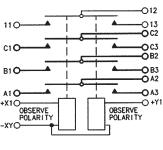
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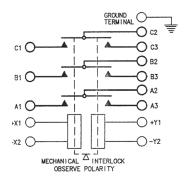
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X1 C

Circuit Configuration 3







Circuit Configuration 5

Circuit Configuration 6

Circuit Configuration 7

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-18	Gasket/Vented	A	А	1	1616048-1
D-180A	Gasket/Vented	D	С	6	1616048-2
D-18AA	Gasket/Vented	А	В	2	1616048-3
D-18F	Gasket/Vented	А	В	3	1616048-4
D-18ZZC	Gasket/Vented	В	D	4	1-1616957-3
DH-18	Hermetically Sealed	А	А	1	1616050-1
DH-18Y	Hermetically Sealed	А	А	7	1616524-3
DR-18E-5	Gasket/Vented	С	E	5	1616099-1

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-18

Catalog 5-1773450-5 Revised 3-13

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reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc

Product Facts

- 3PST NO, Double break
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PST NO.

Double Break **Rated Operating Voltage** — 28 Vdc or 115/200 VAC, 400 Hz, 3 phase

Resistive Rating — 50 Amps Inductive Rating — 115/200 VAC, 400 Hz, 3 phase — 50 Amps At 28 Vdc — 25 Amps

Motor Rating — 50 Amps

General Characteristics Temperature Range —

-55°C to +125°C Operating Cycles (Life) at Rated Resistive Load, Min. —

100,000 cycles Operating Cycles (Life)

Mechanical, Min. — 200,000 cycles Dielectric Strength —

All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Insulation Resistance, Initial — 100 megohm min.

Weight, Max. — 1.20 lbs Impact Shock — 5 G Close Time @ 28 Vdc and 25°C, Max. — 25 msec Release Time @ 28 Vdc and 25°C, Max. — 10 msec Coil Characteristics Duty Cycle — Continuous Operating Voltage, Nom. — 28 Vdc Pickup Voltage, Max. —

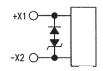
18 Vdc Dropout Voltage — 1.5 to 7 Vdc Coil Current, Holding, Max. —

0.5 Amp

Coil Type



A — Continuous



B — Continuous w/Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

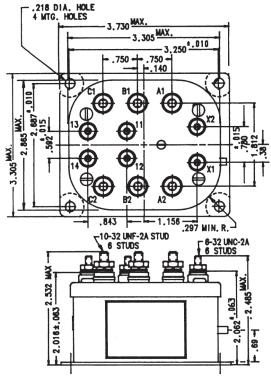
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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

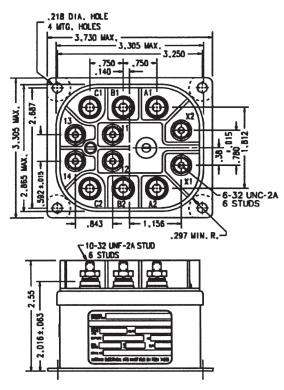
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



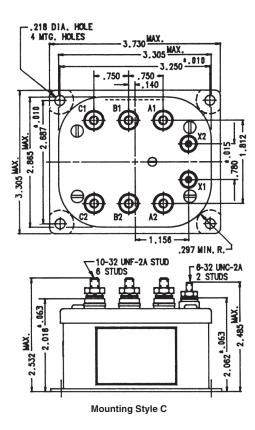
BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc (Continued)



Mounting Style A



Mounting Style B



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

Dimensions are shown for

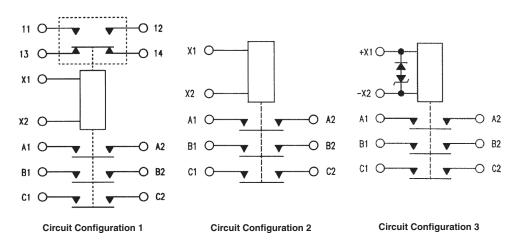
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BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
BH-316	Hermetically Sealed	А	Continuous	2	1616008-4
BH-316A	Hermetically Sealed	A	Continuous	1	1616008-5
BH-316D	Hermetically Sealed	А	Continuous	1	1616008-6
BH-316C	Hermetically Sealed	В	Continuous	3	1-1616520-0

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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B-138 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz

Product Facts

- TPST NO and TPDT NC
- Gasket sealed or Hermetically sealed
- 115/200 VAC, 400 Hz, 3 phase
- Auxiliary contacts available
- Meets the requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — TPST NO and TPDT NC Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Current, Resistive — 60 Amps Current, Inductive — 60 Amps Current, Motor — 60 Amps Current, Rupture — 600 Amps General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Altitude Max. — 50,000 ft. Weight, Nominal — 1.50 to 2.0 lbs

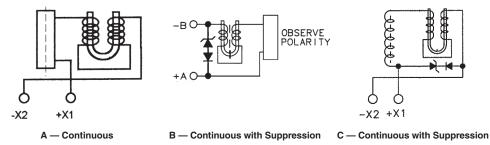
Coil Characteristics

Duty Cycle — Continuous or continuous with suppression Operating Voltage, Nom. — 28 Vdc

Pickup Voltage, Max. @ 85°C — 18 Vdc

Dropout Voltage, Max. — 1.5 to 7 Vdc Coil Current @ 29 Vdc Max. @ 25°C — 0.5 Amps Inrush — 5 Amps

Coil Type



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

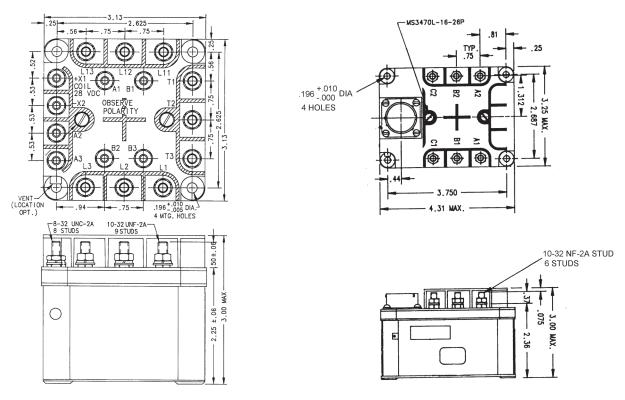
3 reference purposes only. Specifications subject to change.

Dimensions are shown for

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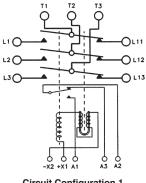


B-138 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz (Continued)

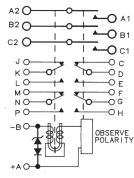
Mounting Style A

Mounting Style B

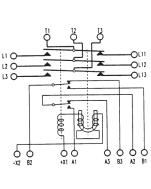
Circuit Configurations (Consult factory for other available circuit configurations)



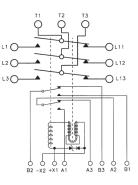
Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3



Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-138S	Gasket/Vented	В	В	2	1616002-5
B-138XEH	Gasket/Vented	А	С	4	1616028-3
B-138BH	Gasket/Vented	А	А	1	1616028-1
B-138XAH	Gasket/Vented	А	А	3	1616028-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change.

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B-140 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT NO, Center off
- Gasket sealed or Hermetically sealed
- 115/200 VAC, 400 Hz, 3 phase
- Auxiliary contacts available
- Meets the requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT NO, Center Off Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Current, Resistive — 60 Amps Current, Inductive — 60 Amps Current, Motor — 60 Amps Current, Rupture — 600 Amps General Characteristics Temperature Range — -55°C to +120°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Insulation Resistance, Initial — 100 megohm min. Altitude Max. — 50,000 ft. Weight, Nominal — 1.50 to 2.31 lbs Sinusoidal Vibration — 10 G @ 70 to 2,000 Hz

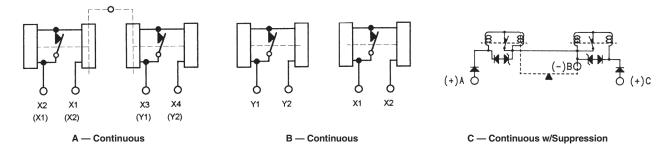
Shock, Max. — 15 G

Coil Characteristics

Duty Cycle — Continuous (Type A or B, See diagram below) Operating Voltage, Nom. — 28 Vdc Pickup Voltage, Max. @ 85°C —

18 Vdc Dropout Voltage, Max. — 1.5 to 7 Vdc Coil Current @ 29 Vdc Max. @ 25°C — 0.35 Amps Inrush — 5 Amps

Coil Type



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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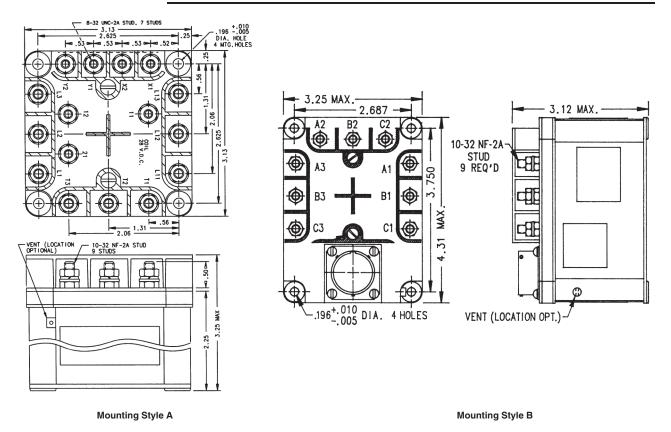
Catalog 5-1773450-5 Revised 3-13

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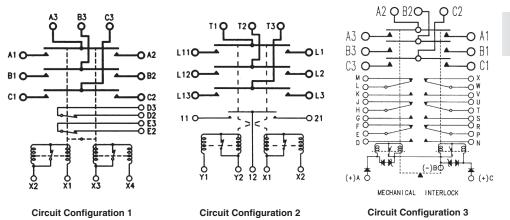
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B-140 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz (Continued)



Circuit Configurations (Consult factory for other available circuit configurations)

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-140AP-1	Gasket/Vented	В	Continuous	3	1616043-7
B-140BH	Gasket/Vented	А	Continuous	1	1616043-9
B-140V	Gasket/Vented	А	Continuous	2	1-1616043-0

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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DH-7 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase

Resistive Rating — 60 Amps

General Characteristics

Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. -50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts 1,000 Vrms Altitude - 80,000 ft

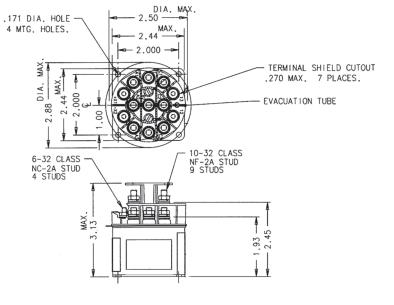
Weight, Max. - .91 lbs

Coil Characteristics

Duty Cycle — Continuous Operating Voltage, Nom. - 28 Vdc Pickup Voltage @ 25°C, Max. — 18 Vdc Dropout Voltage @ 25°C, Max. —

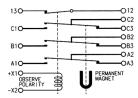
1.5 to 7 Vdc Coil Resistance ±20% @ 25°C ----126 Ohms

Coil Current @ 25°C, Max. — .28 Amp



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749.	DH-7BC	Hermetically Sealed	А	Continuous	1	1616037-8

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Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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D25, DH25 and DHR25 Series, Rated up to 100 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT NO Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating — 100 Amps Inductive Rating — 100 Amps

General Characteristics Temperature Range — -55°C to +85°C

Operating Cycles (Life) at Rated Resistive Load, Min. -50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms

Coil to Ground and Aux. Contacts -1,000 Vrms

Insulation Resistance, Initial -100 megohm min.

Altitude -D-25 — 50,000 ft. DH-25, DHR-25 - 80,000 ft.

Weight, Max. - 2.20 to 2.75 lbs Sinusoidal Vibration 10 G @ 70 to 2,000 Hz **Shock, Max.** — 25 G Operate Time @ Nom. Voltage, Max. — 35 msec Release Time @ Nom. Voltage, Max. — 35 msec Bounce Time @ Nom. Voltage, Max. — 5 msec

Coil Characteristics

Duty Cycle -VAC 400 Hz — AC (Type A, See diagram below) Vdc - Continuous (Type B, See diagram below) Vdc — Continuous with suppression (Type C, See diagram below)

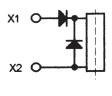
Operating Voltage, Nom. — VAC 400 Hz - 115 VAC Vdc - 28 Vdc

Pickup Voltage @ 25°C, Max. — VAC 400 Hz - 103.5 VAC Vdc — 18 Vdc

Dropout Voltage @ 25°C, Max. — VAC 400 Hz — 5 to 45 VAC Vdc — 1.5 to 7 Vdc

Coil Resistance ±20% @ 25°C ----VAC 400 Hz - N/A Vdc — 175 Ohms

Coil Type



A – AC

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

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+X1 O

-X2 O

B — Continuous

OBSERVE

POLARITY

please visit www.te.com

+X1 O

-X2 (

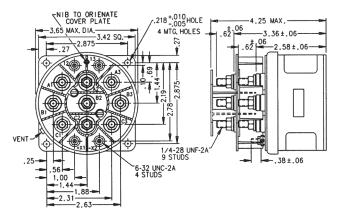
C — Continuous with Suppression

OBSERVE

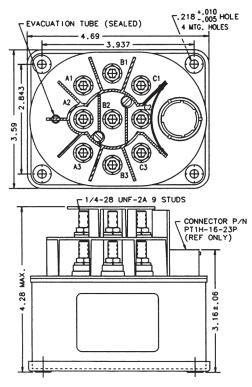
POLARITY



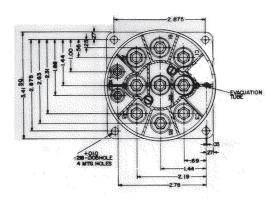
D25, DH25 and DHR25 Series, Rated up to 100 Amps, 115/200 VAC, 400 Hz (Continued)

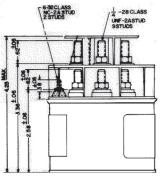


Mounting Style A



Mounting Style B





For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Mounting Style C

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Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

Dimensions are shown for

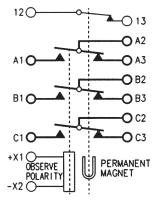
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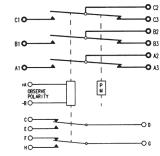
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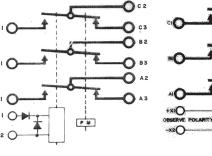


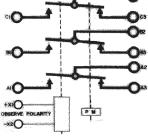
D25, DH25 and DHR25 Series, Rated up to 100 Amps, 115/200 VAC, 400 Hz (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)









Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-25BD	Gasket/Vented	А	В	1	1616034-3
DH-25B	Hermetically Sealed	С	В	4	1616037-2
DH-25BA	Hermetically Sealed	В	В	2	1616037-3
DHR-25BG	Hermetically Sealed	А	А	3	1-1616037-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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For additional support numbers please visit www.te.com

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D25 and DH25 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PST NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PST NO Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating — 120 Amps Inductive Rating — 120 Amps Motor Rating — 100 Amps Rupture Rating — 1,000 Amps General Characteristics Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Altitude —

D-25 — 50,000 ft. DH-25 — 80,000 ft. Weight, Max. — 2.10 lbs

Coil Characteristics

Duty Cycle — Vdc — Continuous (Type A, See diagram below) Vdc — Continuous with suppression (Type B, See diagram below) Operating Voltage, Nom. —

28 Vdc

Pickup Voltage @ 25°C, Max. — 18 Vdc

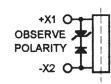
Dropout Voltage @ 25°C, Max. — 1.5 to 7 Vdc

Coil Resistance ±20% @ 25°C — 113 Ohms

Coil Type



A — Continuous



B — Continuous with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-30

Catalog 5-1773450-5 Revised 3-13

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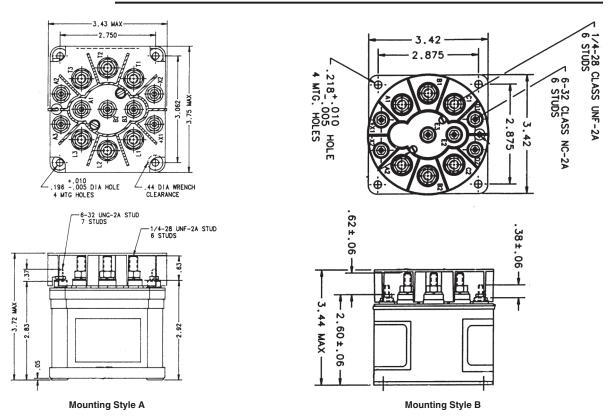
reference purposes only. Specifications subject to change.

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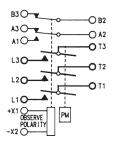
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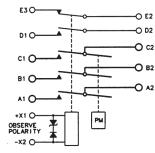


D25 and DH25 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz (Continued)



Circuit Configurations (Consult factory for other available circuit configurations)





Circuit Configuration 1

Circuit Configuration 2

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-25CF	Gasket/Vented	A	А	1	1616015-1
DH-25CU	Hermetically Sealed	В	В	2	1616017-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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6-31



D-31 Series, Rated up to 100 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT, Center off
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -3PDT, Center Off Rated Operating Voltage —

115/200 VAC, 400 Hz, 3 phase Resistive Rating — 100 Amps

General Characteristics

Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. -50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms Altitude - 50,000 ft

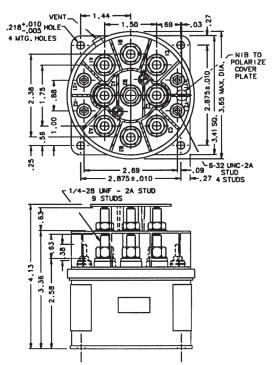
Weight, Max. - 2.31 lbs

Coil Characteristics

Duty Cycle — Continuous Operating Voltage, Nom. - 28 Vdc Pickup Voltage @ 71°C, Max. — 18 Vdc

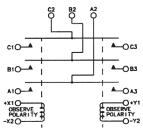
Dropout Voltage, Max. — 1.5 to 7 Vdc

Coil Resistance ±20% @ 25°C — 160 Ohms



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749.	D-31C	Gasket/Vented	A	Continuous	1	1616049-1

6-32

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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www.te.com



D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz $\,$

Product Facts

- 3PDT, Center off
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT, Center Off Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating — 120 Amps

Inductive Rating — 120 Amps Motor Rating — 80 Amps Rupture Rating — 1,000 Amps General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Altitude –

D-31 — 50,000 ft DH-31, DHL-31 — 70,000 ft Weight — 2.60 lbs

Coil Characteristics

Duty Cycle — Continuous (Type A, See diagram below) Continuous with suppression (Type B or Type C, See diagram below)

Operating Voltage, Nom. — 28 Vdc Pickup Voltage @ 25°C, Max. —

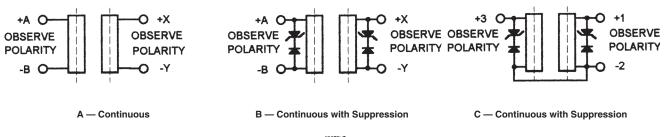
Coil Type A and C — 18 Vdc Coil Type B — 15 Vdc

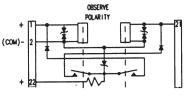
Dropout Voltage @ 25°C, Max. — Coil Type A and C — 1.5 to 7 Vdc Coil Type B — 2 to 7 Vdc

Coil Resistance $\pm 20\%$ @ 25°C —

Coil Type A — N/A Coil Type B — 100 Ohms Coil Type C — 132 Ohms **Coil Current @ 25°C, Max.** — .350 Amp

Coil Type





D — Latching

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

d 3-13

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

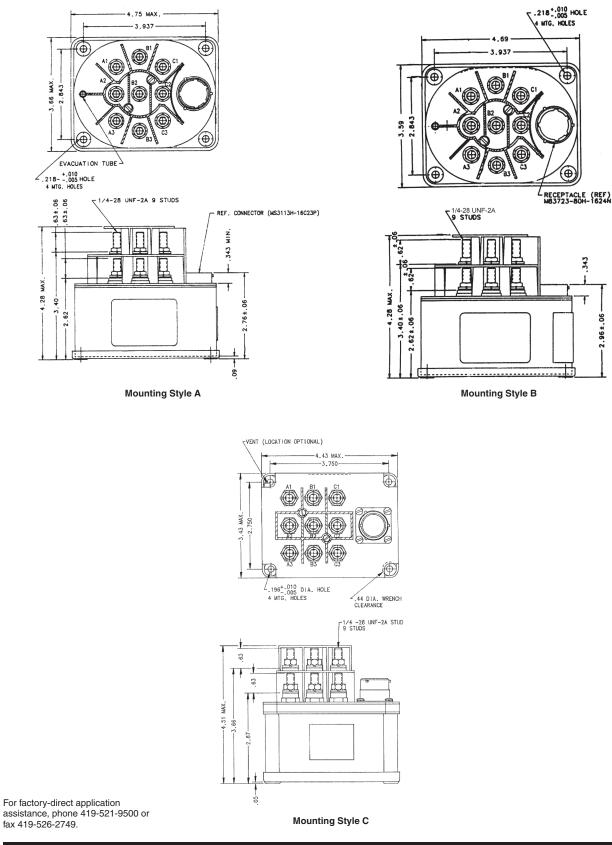
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HARTMAN Power Switching Contactors

6–33



D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz (Continued)



fax 419-526-2749.

6–34

Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

Dimensions are shown for

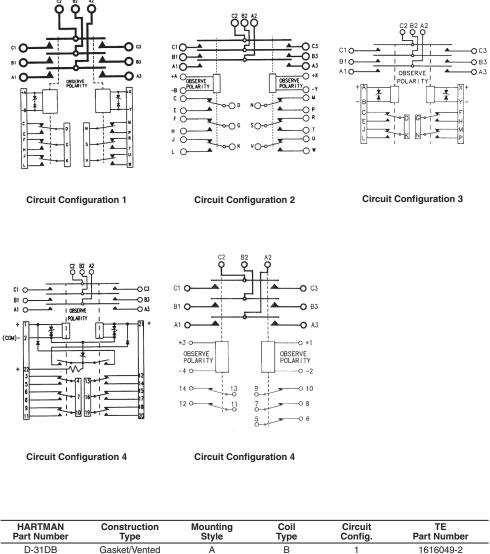
Dimensions are in millimeters unless otherwise specified.

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D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



1616524-5

1616050-4

1616050-5

1616050-6

1616050-8

HARTMAN Power Switching Contactors

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change.

D-31TH

DH-31A

DH-31DA

DH-31DAA

DHL-31B

Dimensions are in millimeters unless otherwise specified.

Gasket/Vented

Hermetically Sealed

Hermetically Sealed

Hermetically Sealed

Hermetically Sealed

С

А

А

А

В

А

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В

Α

D

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USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

6–35



D-25 Series, Rated up to 125 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT, Side stable
- Gasket sealed



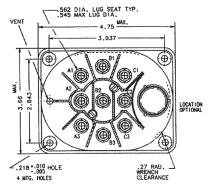
Performance Data

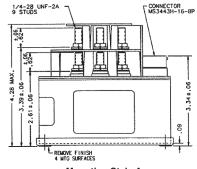
Electrical Characteristics Main Contacts -Contact Arrangement — 3PDT, Side Stable Rated Operating Voltage — 115/200 VAC, 400 Hz Resistive Rating — 125 Amps Inductive Rating — 100 Amps Motor Load — 60 Amps Rupture Rating — 600 Amps **Overload Rating** — 600 Amps Auxiliary Contacts -Contact Arrangement - 2PDT Voltage — 28 Vdc or 115 VAC, 400 Hz **Resistive Rating** — 3 Amps

General Characteristics Temperature Range --55°F to +71°F Altitude, Max. - 50,000 ft Weight, Nominal - 2.75 lbs

Coil Characteristics Duty Cycle — Continuous Operating Voltage, Nom. - 28 Vdc Pickup Voltage @ 25°C, Max. — 18 Vdc Dropout Voltage @ 25°C — 2.5 to 7 Vdc

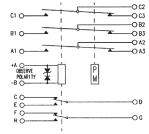
Coil Resistance @ 25°C — 113 Ohms ± 20%





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

Circuit Config.

1

factory-direct application sistance, phone 419-521-9500 or	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type
419-526-2749.	D-25BAH	Gasket/Vented	A	Continuous

6-36

Catalog 5-1773450-5 Revised 3-13

to change.

Dimensions are shown for reference purposes only. Specifications subject

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USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

Coil Type

For additional support numbers please visit www.te.com

TE Part Number

1616034-2

For assi

fax 4



B309 Series, Rated up to 130 Amps, 115 VDC

Product Facts

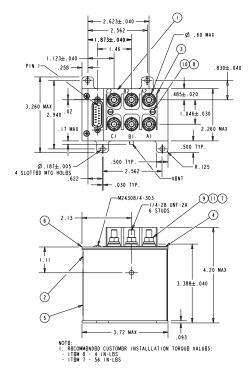
- 3PST NO, Single break main contacts
- 2PDT Auxiliary contacts (note 1)
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

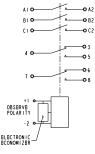
Performance Data

Electrical Characteristics Contact Arrangement — 3PST NO, Single Break Rated Operating Voltage — 115 VDC Resistive Currant Rating — 130 Amps (see note 2) Rupture Rating — 1300 Amps (see note 3)

General Characteristics

Temperature Range — -55°C to +85°C Minimum Electrical Cycles — 50,000 Minimum Mechanical Cycles — 100,000 @ 32.5 A Dielectric Strength — 1500 Vrms Altitude — 50,000 ft Weight, Max. — 1.35 lbs Duty Cycle — Continuous (Electronically Economized) Coil Operating Voltage — 28 Vdc Drop Out Voltage — 1.5 to 7 Vdc





HARTMAN	Construction	Mounting	Coil	Circuit	TE
Part Number	Type	Style	Type	Config.	Part Number
B309A	Gasket Sealed	А	Continuous, Electronically Economized	1	1-1616975-7

NOTES

1. Other aux contact configurations available. Consult Factory.

2. Units with current ratings to 175A are available. Consult Factory.

3. Units with rupture ratings to 1750A are available. Consult Factory.

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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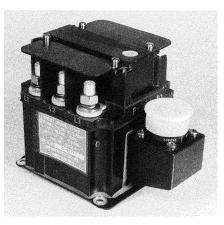
please visit www.te.com



B-451 Series, Rated up to 175 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT, Magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT, Magnetic Latching Rated Operating Voltage — 115/200 VAC, 400 Hz Resistive Rating — 175 Amps

General Characteristics Temperature Range —

-55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms

Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Insulation Resistance, Initial — 100 megohm min.

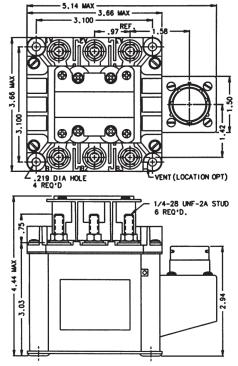
Altitude — 50,000 ft. Weight, Max. — 2.44 lbs

Coil Characteristics

Duty Cycle — Continuous, self-deenergizing

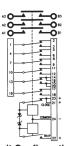
Operating Voltage, Max. — 30 Vdc Close Voltage @ 15 to 30 Vdc — Resistance — 4.4 +10% Ohms Current — 5 Amp Max.

Trip Voltage @ 15 to 30 Vdc — Resistance — 5.0 +10% Ohms Current — 5 Amp Max.



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	B451	Gasket/Vented	А	Continuous, Self-Deenergizing	1	1616023-3

6–38

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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B-312 Series, Rated up to 175 Amps, 253/440 VAC, 50-60 Hz

Product Facts

- 3PST NO, Double break
- Gasket sealed
- 235/440 VAC, 50-60 Hz, 3 phase
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PST NO, Double Break Rated Operating Voltage — 253/440 VAC, 50-60 Hz, 3 phase Current, Resistive — 175 Amps Current, Inductive — B312DB — 70 Amps Current, Motor — 150 Amps Current, Rupture — 1,500 Amps **General Characteristics Temperature Range** -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts —

Weight, Max. - 3.0 lbs

1,000 Vrms

Coil Characteristics Duty Cycle — Continuous, economizing

Operating Voltage, Nom. — 28 Vdc Pickup Voltage — 18 Vdc Dropout Voltage — B312DB — 1.5 to 7 Vdc B312CH — 1 to 7 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

www.te.com

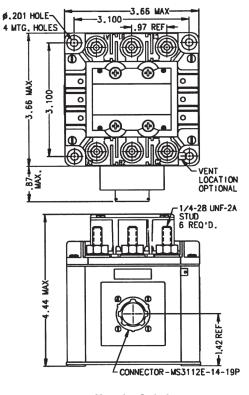
Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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HARTMAN Power Switching Contactors

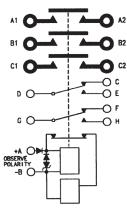


B-312 Series, Rated up to 175 Amps, 253/440 VAC, 50-60 Hz (Continued)



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

HARTMAN	Construction	Mounting	Coil	Circuit	TE
Part Number	Type	Style	Type	Config.	Part Number
B-312DB	Gasket/Vented	А	Continuous, Economizing	1	1616004-7

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-40

Catalog 5-1773450-5 Revised 3-13

www.te.com

reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



KA175 Series, Rated up to 175 Amps, 115 or 230 VAC, 400-800 Hz

Lightweight, High Performance

Product Facts

- 3PST NO, Side stable
- Gasket sealed
- Buss bar mount



Performance Data Electrical Characteristics Contact Arrangement — 3PST NO, Side Stable Rated Operating Voltage — 115/230 VAC, 230/460 VAC 400-800 Hz Resistive Rating — 175 Amps

4

2.13

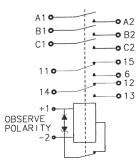
.880-

General Characteristics Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Weight, Max. — 1.25 lbs

Coil Characteristics Duty Cycle — Continuous, economizing Operating Voltage, Nom. — 28 Vdc Pickup Voltage — 18 Vdc Dropout Voltage —

1.0 to 7 Vdc

Circuit Configurations (Consult factory for other available circuit configurations)



A1 B1 C1 A1 C1 A1 B1 C1 A1 B1 C1 A1 C1 C1 C1 C1 C1 C1

2.92

-STAMP TERMINAL NO. ON COVER AS SHOWN

Coil

Туре

Continuous,

Economizing

Mounting Style A

Mounting Style

А

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Circuit Configuration 1

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

HARTMAN

Part Number

KA175B3C

Dimensions are in millimeters unless otherwise specified.

Construction

Туре

Gasket/Vented

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

TE

Part Number

2-1616960-7

Circuit Config.

1

HARTMAN Power Switching Contactors



SA136F Series, Rated up to 175 Amps, 240/416 VAC

Product Facts

- 3PST NO, Side stable
- Gasket/Vented sealed



Performance Data

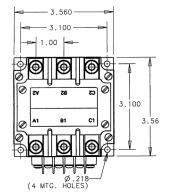
Electrical Characteristics Main Contacts — Contact Arrangement — 3PST NO, Double Break Rated Operating Voltage — 240/416 VAC, 50/60/400 Hz Resistive Rating — 240 Amps Rupture Rating — 2400 Amps Auxiliary Contacts — 1SPST NO Contact Arrangement — 4PST NC Voltage, Nom. — 28 Vdc Resistive Rating — 5 Amps, 28 Vdc; 10 Amps, 120 VAC

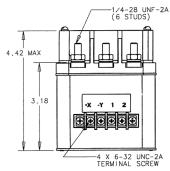
General Characteristics Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Weight, Max. — 2.8 lbs

Coil Characteristics Duty Cycle — Continuous, economizing Operating Voltage, Nom. — 24 Vdc

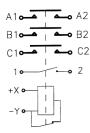
Pickup Voltage, Max. — 18 Vdc Dropout Voltage — 1 to 10 Vdc Coil Resistance — 240A Rupture — 2400A





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	SA136F	Gasket/Vented	А	Continuous	1	1616948-7

6-42

Catalog 5-1773450-5 Revised 3-13

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B-312 Series, Rated up to 200 Amps, 115 VAC, 400 Hz

Product Facts

- 3PST NO
- Gasket sealed
- 115 VAC, 400 Hz



Performance Data

Electrical Characteristics Main Contacts -Contact Arrangement — 3PST NO, Double Break

Rated Operating Voltage — 115 VAC, 400 Hz

Resistive Rating — 200 Amps Inductive Rating — 200 Amps Rupture Rating — 2000 Amps

Auxiliary Contacts -Contact Arrangement — 4PST NC Voltage, Nom. - 28 Vdc or 115 VAC,

400 Hz **Resistive Rating** — 5 Amps

General Characteristics

Temperature Range --55°C to +71°C **Operating Cycles (Life) at Rated**

Resistive Load, Min. - 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

Weight, Max. - 3 lbs

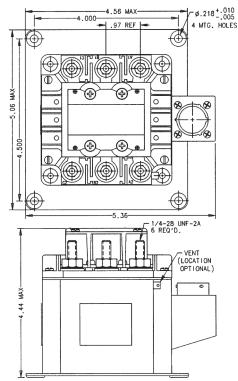
Coil Characteristics

Duty Cycle — Continuous, economizing

Operating Voltage, Nom. - 28 Vdc Pickup Voltage, Max. — 18 Vdc

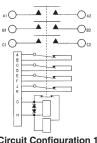
Dropout Voltage — 1 to 7 Vdc Coil Resistance -

Pickup — 12 Ohms ± 20% Holding - 60 Ohms ± 20%



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



oplication	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
19-521-9500 or	B-312CV	Gasket/Vented	А	Continuous, Economizing	1	1616004-5

For factory-direct app assistance, phone 4 fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

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B-393 Series, Rated up to 260 Amps, 120/208 VAC, 400 Hz

Product Facts

- 3PDT, Center off, double break
- Gasket sealed

Performance Data

Electrical Characteristics Main Contacts — Contact Arrangement — 3PDT,

Center Off, Double Break **Rated Operating Voltage** — 120/208 VAC, 400 Hz **Resistive Rating** — 260 Amps **Inductive Rating** — 2600 Amps **Rupture Rating** — 2600 Amps

Auxiliary Contacts — Contact Arrangement — 4PST NO, 2PST NC

Resistive Rating — 5 Amps Inductive Rating — 5 Amps Lamp Rating — 5 Amps

General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load — 50,000 cycles Operating Cycles (Life) Mechanical — 100,000 cycles Altitude Max. — 40,000 ft.

Weight — 5 lbs

Coil Characteristics Duty Cycle — Continuous,

economizing Operating Voltage, Nom. — 28 Vdc

Pickup Voltage, Max. — 18 Vdc Dropout Voltage —

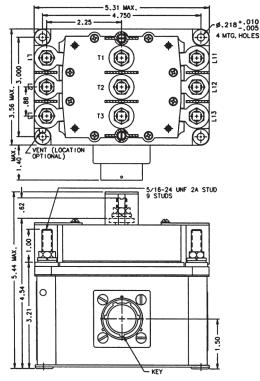
R-S Coil — 14 Vdc W-H Coil — 7 Vdc

HARTMAN

Part Number

B-393T

Dimensions are shown for



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)

WECHANICAL INTERLOOK
Circuit Configuration 1

Circuit

Config.

1

For factory-direct application
assistance, phone 419-521-9500 or
fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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Construction Type

Gasket/Vented

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Coil

Туре

Continuous

Economizing

Mounting Style

А

For additional support numbers please visit www.te.com

TE Part Number

1616044-5



B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC

Product Facts

- 3PST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data Electrical Characteristics Contact Arrangement — 3PST NO, Double Break Rated Operating Voltage — B-429-1 and B-429W — 115/200 VAC, 400 Hz, 3 phase B-429CA - 120/208 VAC

Resistive Rating – B-429-1 — 275 Amps B-429CA — 350 Amps B-429W — 260 Amps

General Characteristics Temperature Range — -55°C to +85°C **Operating Cycles (Life) at Rated** Resistive Load, Min. -50,000 cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts -1.000 Vrms Insulation Resistance, Initial — 100 megohm min. Altitude - 50,000 ft. Weight, Max. - 4.0 lbs

Coil Characteristics

Duty Cycle — Continuous. economized with suppression (Type A or B, See diagram below)

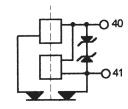
Operating Voltage, Nom. - 28 Vdc Pickup Voltage, Max. — Coil Type A — 15 Vdc Coil Type B — 18 Vdc

Dropout Voltage, Max. -Coil Type A — 1.5 to 10 Vdc Coil Type B — 1 to 7 Vdc

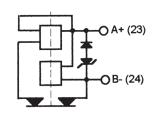
Coil Current Inrush — Coil Type A — 6 Amps Coil Type B — 2.7 Amps

Coil Current Holding — Coil Type A — 0.6 Amps Coil Type B — 0.56 Amps





A — Continuous, Economized with Suppression



B — Continuous, Economized with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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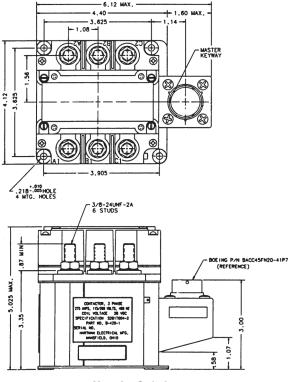
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

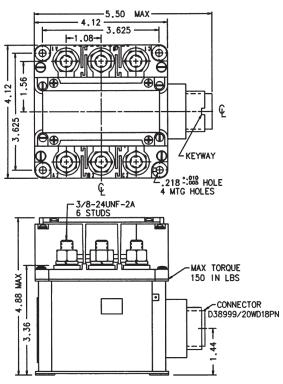
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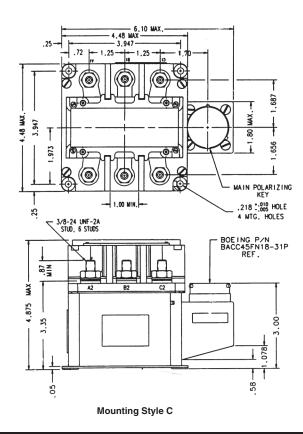
B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC (Continued)



Mounting Style A



Mounting Style B



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

Dimensions are shown for

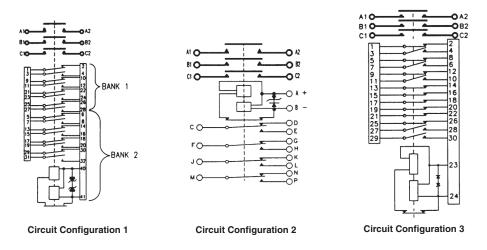
Dimensions are in millimeters unless otherwise specified.

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B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-429W	Gasket/Vented	В	В	3	1616005-6
B-429-1	Gasket/Vented	A	A	1	1616005-1
B-429CA	Gasket/Vented	A	В	2	1616005-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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For additional support numbers please visit www.te.com

6–47



B-430 Series, Rated up to 275 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PST, Double break, magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PST, Double Break, Magnetic Latching Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating — 275 Amps Interrupt Rating — 2,000 Amps General Characteristics Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms Insulation Resistance, Initial —

100 megohm min. Altitude — 45,000 ft. Weight, Max. — 4.0 lbs

Coil Characteristics

Duty Cycle — B-430-1 — Continuous, self-deenergizing (Type A, See diagram below) B-430Z — Continuous, self-deenergizing with suppression (Type B, See diagram below)

Operating Voltage Close, @ 85°C — Min. — 15 Vdc

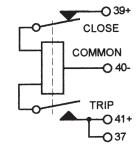
Max. — B-430-1 — 28 Vdc B-430Z — 29 Vdc

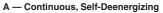
Operating Voltage Trip, @ 85°C — Min. — 15 Vdc Max. — B-430-1 — 28 Vdc

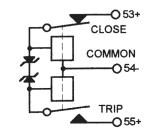
B-430Z — 29 Vdc Coil Current Closing, Max. —

6 Amps Coil Current Trip, Max. — 6 Amps

Coil Type







B — Continuous, Self-Deenergizing with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

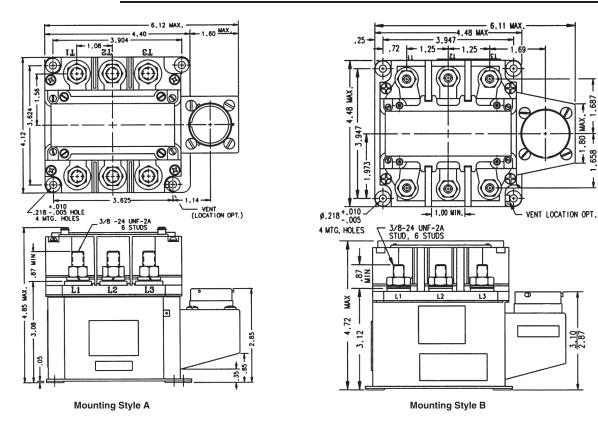
www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

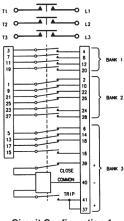
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



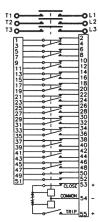
B-430 Series, Rated up to 275 Amps, 115/200 VAC, 400 Hz (Continued)



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-430-1	Gasket/Vented	А	А	1	1616023-1
B-430Z	Gasket/Vented	В	В	2	1616023-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

For additional support numbers please visit www.te.com

HARTMAN Power Switching AC Contactors

6-49

1.687

658

MAX

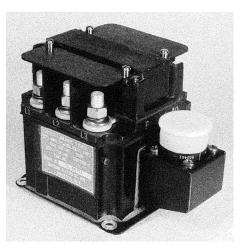
8



B-484 Series, Rated up to 500 Amps, 115/200 VAC, 400 Hz

Product Facts

- 3PDT, Magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics

Contact Arrangement — 3PDT, Magnetic Latching Rated Operating Voltage — 115/200 VAC, 400 Hz, 3 phase Resistive Rating, Continuous — 500 Amps Inductive Rating — 500 Amps

Interrupt Rating — 6,500 Amps

General Characteristics Temperature Range — -54°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms

Coil to Ground and Aux. Contacts — 1,000 Vrms Insulation Resistance, Initial —

100 megohm min. Altitude — 45,000 ft. Weight, Max. — 4.5 lbs

Coil Characteristics

Duty Cycle — Continuous, self-deenergizing Close Voltage —

Min. — 15 Vdc Max. — 29 Vdc **Trip Voltage** —

Min. — 15 Vdc Max. — 29 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-50

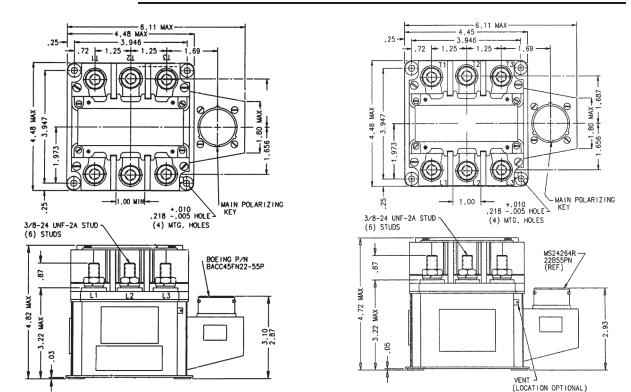
Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



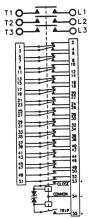


B-484 Series, Rated up to 500 Amps, 115/200 VAC, 400 Hz (Continued)

Mounting Style A

Mounting Style B

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
	B-484	Gasket/Vented	А	Continuous, Self-Deenergizing	1	1616023-4
or	B-484C	Gasket/Vented	В	Continuous, Self-Deenergizing	1	1616023-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

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Cross Reference

115 3PDT Side Stable - 28 Hermetic Cont. - DH-14B 1-165022-4 25 AC 115/200 3PDT Side Stable - 128-30 1-165023-4 30 AC 115 3PDT Side Stable - 28-34 Hermetic Cont. 42 DH-14B-3 1-1650037-3 30 AC 115 3PDT Center Ort - 115V Hermetic Cont. - DH-14B 1-1650037-1 115 3PDT Side Stable PST NO 28 Hermetic Cont. - DH-74B 1-1610037-6 115/200 3PDT Side Stable - 115V Hermetic Cont. - DH-74B 1-1610037-6 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A	Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.
25 AC 115/200 3PDT Side Stable - 28-31 Hermetic Cont. 42 DH-14/E 1616037-1 30 AC 115 3PDT Side Stable - 28 Hermetic Cont. 42 DH-14/E 1616037-1 30 AC 115 3PDT Center 0H - 115/W Hermetic Cont. - DHR-18-1 1616037-1 115 3PDT Side Stable - 115/W Hermetic Cont. - DH-78B 1616037-1 120/208 3PDT Side Stable - 115/W Hermetic Cont. - DHR-78B 1-1616037-6 120/208 3PDT Side Stable - 115/W Hermetic Cont. - DHR-78B 1-1616037-6 120/208 3PDT Center 0H - 28 Gasket/Vented Cont. - DH-18 1616037-6 115/200 3PDT Center 0H - 28 Gas			115	3PDT	Side Stable	-	28	Hermetic	Cont.	-	DH-14B	1-1616522-4
Integrad Side Stable - 115/V Hermetic Cont. - DHR-148A 1-1616037-3 30 AC 115 3P01 Center Off - 115 Vermetic Cont. - DHR-148A 1-1616037-3 30 AC 115 3P01 Side Stable - 115V Hermetic Cont. - DHR-78B 1-616037-6 115 3P01 Side Stable - 115V Hermetic Cont. - DHR-78B 1-1616037-6 120/208 3P01 Side Stable - 115V Hermetic Cont. - DHR-78E 1-1616037-6 115/200 3P01 Center Off - 28 Gasket/Vented Cont. - D-18 1616048-1 115/200 3P01 Center Off - 28 Gasket/Vented Cont. - D-18A 1616048-2 115/200 3P01 Center Off - 28 Gasket/Vented Cont. -				3PDT	Side Stable	-	115V	Hermetic	Cont.	_	DHR-14B	1-1616037-2
115/200 SPET NO Side Stable - 28 Hermetic Cont. - DH-14/E 161607-9 30 AC 115 3PDT Centre Off - 115V Hermetic Cont. - DH-78.11 1616037-1 115 3PDT Side Stable SPT NO 28 Hermetic Cont. - DH-78.18 1616037-1 115.0200 3PDT Side Stable - 115V Hermetic Cont. - DH-72.48 1-161037-6 120/208 3PDT Side Stable - 115V Hermetic Cont. - DH-72.48 1-161037-6 115 3PDT Center Off - 28 Gasket/Vented Cont. - D-18 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A.1 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-17M<	25	AC	115/200	3PDT	Side Stable	-	28-31	Hermetic	Cont.	42	DH-14B-3	1616037-1
30 AC 115 3PDT Center Off - 115V Hermetic Cont. - DHR-7K 1616632-2 115 DPDT Side Stable SPST N0 28 Hermetic Cont. - DHR-7K 1616637-7 115:200 3PDT Side Stable DPT 18-32 Hermetic Cont. - DHR-7B 1-1616037-6 120:208 3PDT Side Stable - 115V Hermetic Cont. - DHR-7B 1-1616037-6 120:208 3PDT Center Off - 28 Gasket/Vented Cont. - D-18F 1616044-3 115:200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A 1616043-3 115:200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18A 1616043-3 115:200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18V<						-	115V	Hermetic	Cont.			1-1616037-3
Init DPDT Side Stable - 115V Hermetic Cont. - DHR-7K 1616632-7 115 3PDT Side Stable DPDT 18-22 Hermetic Cont. - DHR-7BB 1616632-7 115/200 3PDT Side Stable - 115V Hermetic Cont. - DHR-7BB 1-1616037-6 120/208 3PDT Side Stable - 115V Hermetic Cont. - DHR-7BE 1-1616037-7 115 3PST Center Off - 28 Gasket/Vented Cont. - D-18F 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18AA 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18A 1616049-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18A 1616037-1			115/200		Side Stable	-		Hermetic	Cont.	42	DH-14CE	1616017-1
115 3PDT Side Stable SPST NO 28 Hermetic Cont. - DH-78B 1616037-1 115/200 3PDT Side Stable - 115V Hermetic Cont. - DHR-7B 1-1616037-6 120/208 3PDT Side Stable - 115V Hermetic Cont. - DHR-7B 1-1616037-6 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18F 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D+18A 1616048-3 115/200 3PDT Center Off - 28.0 Gasket/Vented Cont. - D+18A 1616015-2	30	AC			Center Off	-	115V	Hermetic	Cont.	_		
115/200 3PDT Side Stable DPDT 11-3/2 Hermetic Cont. 50 DHR-72AB 1-1616037-6 120/208 3PDT Side Stable - 115V Hermetic Cont. - DHR-78 1-1616037-6 115 3PST Center Off - 28 Gasket/Vented Cont. 20 D-18F 1516048-4 50 AC 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-180A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-180A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-182/C 1-1616937-3 115 3PDT Center Off - 28 Gasket/Vented Cont. - DH-181 161604-3 115/200 3PST Side Stable - 28 Gasket/Vented Cont. -			115	DPDT			115V	Hermetic	Cont.	_	DHR-7K	1616522-2
120/208 3PDT Side Stable - 115V Hermetic Cont. - DHR-7B 1-1616037-6 115 3PST Center Off - 28 Gasket/Vented Cont. 20 D-18F 11616044-1 50 AC 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A 1616044-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18AA 1616044-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18AA 1616043-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 1616060-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18'1 1616060-1 115/200 3PST NO Side Stable - 28 Gasket/Vented Cont. - <				3PDT	Side Stable	SPST NO		Hermetic	Cont.	-	DH-7BB	1616037-7
120/208 3PDT Side Stable - 115V Hermetic Cont. - DHR-79E 1-1616037-7 115 3PST Center Off - 28 Gasket/Vented Cont. 20 D-18F 1616048-1 50 AC 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18A 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-18AA 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-182C 1-161604-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 161604-3 115/200 3PST Side Stable - 28 Gasket/Vented Cont. - DH-18V 1616016-3 115/200 3PST NO Side Stable SPST NO 115 Gasket/Vented Cont. -						DPDT		Hermetic	Cont.	50		1-1616037-1
115 3PST Center Off - 28 Gasket/Vented Cont. 20 D-18F 1616048-4 50 AC 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-180 1616048-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-180A 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-182A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-184 1616050-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-187 1616016-3 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. - DR-18E-5 1616016-3 115/200 3PST NO Side Stable SPST NO 115 Gasket/Vented Cont.						-		Hermetic	Cont.	_		1-1616037-6
50 AC 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-18 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - D-180A 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-182C 1-1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-182C 1-1616957-3 115 3PDT Center Off - 28-30 Hermetic Cont. - DH-18Y 1616504-3 115 SPDT Center Off - 28 Gasket/Vented Cont. - DH-18Y 1616016-3 115/200 3PST NO Side Stable SPT 28 Gasket/Vented Cont. - DF-7MM 1616016-3 115/200 3PST NO Side Stable SPT NO 115 Gasket/Vented Cont. -			120/208		Side Stable	-	115V	Hermetic	Cont.	_	DHR-7BE	1-1616037-7
115/200 3PDT Center Off SPST NO Each Side 28 Gasket/Vented Cont. - D-180A 1616048-2 115/200 3PDT Center Off 6PDT 28 Gasket/Vented Cont. 45 D-182A 1616048-3 115/200 3PDT Center Off 6PDT 28 Gasket/Vented Cont. 45 D-182A 1616049-3 115/200 3PDT Center Off - 28 Harmetic Cont. - DH-18 161603-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DR-18E-5 1616099-1 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. - DR-7M 1616016-3 115/200 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DR-7N 1616017-9 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7N </td <td></td> <td></td> <td>115</td> <td>3PST</td> <td>Center Off</td> <td>-</td> <td>28</td> <td>Gasket/Vented</td> <td>Cont.</td> <td>20</td> <td>D-18F</td> <td>1616048-4</td>			115	3PST	Center Off	-	28	Gasket/Vented	Cont.	20	D-18F	1616048-4
Fight 1 115/200 SPD1 Center Off - 28 Gasket/Vented Cont. - D=160A 1616048-2 115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D=182A 1616048-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 1616050-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 1616052-3 115/200 3PST Side Stable - 28 Gasket/Vented Cont. - DH-18V 1616016-3 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. - DR-7VC 1616018-1 115/200 3PST NO Side Stable SPDT 28 Gasket/Vented Cont. - DR-7VC 1616018-1 115/200 3PST NO Side Stable SPST NO 28 Hermetic Cont. -	50	AC	115/200	3PDT	Center Off		28	Gasket/Vented	Cont.	-	D-18	1616048-1
115/200 3PDT Center Off - 28 Gasket/Vented Cont. 45 D-18AA 161608-3 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 1616050-1 115/200 3PDT Center Off - 28 Hermetic Cont. - DH-18 1616050-1 115/200 3PDT Center Off - 28 Gasket/Vented Cont. - DH-18 1616050-3 115/200 3PST Side Stable - 28 Gasket/Vented Cont. - DT/MA 1616016-3 115/200 3PST NC Side Stable SPST NO 28 Gasket/Vented Cont. - DR-7WC 1616018-1 115/200 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7W 1616017-9 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7R 1616037			115/200	3PDT	Center Off		28	Gasket/Vented	Cont.	-	D-180A	1616048-2
115 3PDT Center Off - 28 Hermetic Cont. - DH-18 1616050-1 115/200 3PDT Center Off - 28-30 Hermetic Cont. - DH-18Y 16165243 115 SPDT Center Off - 28 Gasket/Vented Cont. - DR-18E-5 1616096-2 115/200 3PST Side Stable - 28 Gasket/Vented Cont. - D7MA 1616016-2 115/200 3PST NC Side Stable - 28 Gasket/Vented Cont. - D7MM 1616016-3 115/200 3PST NC Side Stable SPST NO 115 Gasket/Vented Cont. - DR-7VC 1616017-0 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7R 1616017-0 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7R 1616518-2			115/200	3PDT	Center Off	_	28	Gasket/Vented	Cont.	45	D-18AA	1616048-3
115/200 3PDT Center Off - 28-30 Hermetic Cont. - DH-18Y 1616524-3 115 SPDT Center Off - 35 Gasket/Vented Cont. - DR-18E-5 1616099-1 115/200 3PST Side Stable - 28 Gasket/Vented Cont. - D7MA 1616016-2 115/200 3PST NC Side Stable SPST 28 Gasket/Vented Cont. - D7MA 1616016-3 115/200 3PST NC Side Stable SPST NC 115 Gasket/Vented Cont. - DR-7VC 1616018-1 115/200 3PST NO Side Stable SPST NC 28 Hermetic Cont. - DH-7N 1616017-9 115 3PST NO Side Stable SPST NC 28 Hermetic Cont. - DH-7R 1616017-2 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DHR-7ZG			115/200	3PDT		6PDT	28	Gasket/Vented	Cont.	45	D-18ZZC	1-1616957-3
115 SPDT Center Off - 35 Gasket/Vented Cont. - DR-18E-5 1616099-1 115/200 3PST Side Stable - 28 Gasket/Vented Cont. 50 D-7M 1616016-3 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. - D7MA 1616016-3 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. - DR-7VC 1616016-1 115/200 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DR-7VC 1616017-9 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7XG 1-1616017-0 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7R 1616037-9 115 3PST NO Side Stable SPST NO 115V Hermetic Cont. - DH-7GR			115	3PDT	Center Off	-	28	Hermetic	Cont.	_	DH-18	1616050-1
115/200 3PST Side Stable - 28 Gasket/Vented Cont. - D-7M 1616016-2 115/200 3PST NC Side Stable - 28 Gasket/Vented Cont. - D7MA 1616016-3 115/200 3PST NC Side Stable SPST NO Side Stable SPST NO 15 Gasket/Vented Cont. - D7MA 1616016-3 115/200 3PST NO Side Stable SPST NO 28 Gasket/Vented Cont. - DR-7VC 1616018-1 115 3PST NO Side Stable SPST NO(2) 28 Hermetic Cont. - DH-7XG 1616017-0 115 3PST NO Side Stable SPST NC 28 Hermetic Cont. - DH-7XG 11616017-0 115 3PST NO Side Stable SPST NC 115V Hermetic Cont. - DH-7GR 1616037-9 115/200 3PDT Side Stable SPDT 28 Gasket/Vented			115/200	3PDT	Center Off	_	28-30	Hermetic	Cont.	_	DH-18Y	1616524-3
115/230 SPST Side Stable - 28 Gasket/Vented Cont. - D7MA 1616016-3 115/200 3PST NC Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7MM 1616016-3 115/200 3PST NO Side Stable SPST NO Side Stable SPST NO 28 Hermetic Cont. - DR-7VC 1616018-1 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7X 1616017-9 115 3PST NO Side Stable SPST NO(2) 28 Hermetic Cont. - DH-7XG 1616017-0 115 3PST NO Side Stable SPST NC 115V Hermetic Cont. - DH-7RG 1616037-9 115/200 3PDT Side Stable SPDT 28-30 Hermetic Cont. - DH-76R 1616037-9 115/200 3PDT Side Stable SPDT 28-30 Hermetic Con			115	SPDT	Center Off	_	35	Gasket/Vented	Cont.	_	DR-18E-5	1616099-1
Inition Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7MM 1616016-4 115/200 3PST NO Side Stable SPST NO 115 Gasket/Vented Cont. - DR-7VC 1616018-1 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7N 1616017-9 115 3PST NO Side Stable SPST NO 28 Hermetic Cont. - DH-7XG-1 1-1616017-0 50 AC 115 3PST NO Side Stable - 120V Hermetic Cont. - DHR-7M 1616017-0 50 AC 115 3PST NO Side Stable SPST NO 115V Hermetic Cont. - DHR-7M 1616037-9 50 AC 115 3PST NO Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616037-9 115/208 3PDT Side Stable SPDT 28 <td></td> <td></td> <td>115/200</td> <td>3PST</td> <td>Side Stable</td> <td>_</td> <td>28</td> <td>Gasket/Vented</td> <td>Cont.</td> <td>50</td> <td>D-7M</td> <td>1616016-2</td>			115/200	3PST	Side Stable	_	28	Gasket/Vented	Cont.	50	D-7M	1616016-2
Image: second synthetic synthy image: synthy imag			115/230	SPST	Side Stable	_	28	Gasket/Vented	Cont.	_	D7MA	1616016-3
ACC Instruction Side Stable SPST NC SPST NC Instruction Cont.			115/200	3PST NC	Side Stable	SPDT	28	Gasket/Vented	Cont.	45	D-7MM	1616016-4
115 3PST N0 Side Stable SPST N0(2) SPST NC 28 Hermetic Cont. - DH-7N 1616017-9 115 3PST N0 Side Stable SPST NC(2) SPST NC 28 Hermetic Cont. 50 DH-72G-1 1-1616017-0 50 AC 115 3PST N0 Side Stable - 120V Hermetic Cont. - DHR-7M 1616518-2 50 AC 115 3PST N0 Side Stable DPST NC SPST N0 115V Hermetic Cont. - DHR-7ZG 1-1616017-2 50 AC 115/200 3PDT Side Stable SPDT 28-30 Hermetic Cont. - DHR-7ZG 1-1616037-9 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side			115/200	3PST NO	Side Stable		115	Gasket/Vented	Cont.	-	DR-7VC	1616018-1
50 AC 115 3PST NO Side Stable - 120V Hermetic Cont. - DHR-7M 1616017-0 50 AC 115 3PST NO Side Stable - 120V Hermetic Cont. - DHR-7M 1616518-2 50 AC 115 3PST NO Side Stable DPST NC SPST NO 115V Hermetic Cont. - DHR-7ZG 1-1616017-2 115/200 3PDT Side Stable SPDT 28-30 Hermetic Cont. - DHR-7GR 1616037-9 115/200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR2 1616036-5 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-3 1616036-3 115/208 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - DH-7GR 1616036-3 50 AC 115 3PST NO			115	3PST NO	Side Stable	SPST NO	28	Hermetic	Cont.	-	DH-7N	1616017-9
50 AC 115 3PST NO Side Stable DPST NC SPST NO 115V Hermetic Cont. - DHR-7ZG 1-1616017-2 115/200 3PDT Side Stable SPDT 28-30 Hermetic Cont. 50 DH-7GR 1616037-9 115/200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7GRZ 1616036-5 115/208 3PDT Side Stable - 18-30 Gasket/Vented Cont. - D-7GR 1616036-5 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-2 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-3 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - DH-7BC 1616036-4 115 3PDT NO Side Stable SPDT 28 Gasket/Vented <td< td=""><td></td><td></td><td>115</td><td>3PST NO</td><td>Side Stable</td><td></td><td>28</td><td>Hermetic</td><td>Cont.</td><td>50</td><td>DH-7ZG-1</td><td>1-1616017-0</td></td<>			115	3PST NO	Side Stable		28	Hermetic	Cont.	50	DH-7ZG-1	1-1616017-0
S0 AC 113 3F3 NO Side Stable SPST NO Harmetic Cont. Image: Cont. Image			115	3PST NO	Side Stable	-	120V	Hermetic	Cont.	-	DHR-7M	1616518-2
115/200 3PDT Side Stable SPDT 28-30 Hermetic Cont. 50 DH-7GR 1616037-9 115/200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7GRZ 1616036-5 115/208 3PDT Side Stable - 18-30 Gasket/Vented Cont. - D-7GR 1616036-1 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-2 115/208 SPDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - DH-7GR 1616036-3 115 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - BH-316 <td>50</td> <td>AC</td> <td>115</td> <td>3PST NO</td> <td>Side Stable</td> <td></td> <td>115V</td> <td>Hermetic</td> <td>Cont.</td> <td>_</td> <td>DHR-7ZG</td> <td>1-1616017-2</td>	50	AC	115	3PST NO	Side Stable		115V	Hermetic	Cont.	_	DHR-7ZG	1-1616017-2
115/200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7GRZ 1616036-5 115/208 3PDT Side Stable - 18-30 Gasket/Vented Cont. - D-7GRZ 1616036-5 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-2 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-3 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - DH-7BC 1616037-8 115 3PST NO Side Stable SPST NC 18-30 Hermetic Cont. - BH-316 1616008-4 15 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316			115/200	3PDT	Side Stable		28-30	Hermetic	Cont.	50	DH-7GR	1616037-9
115/208 3PDT Side Stable - 18-30 Gasket/Vented Cont. - D-7BS 1616036-1 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-2 115/208 SPDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-3 1616036-4 115 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - DH-7BC 1616037-8 50 AC 115 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. <			115/200									
115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR 1616036-2 115/208 SPDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-3 1616036-4 115 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - DH-7BC 1616036-4 115 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - DH-7BC 1616037-8 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-5 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-5 5115 3PST NO Side Stable - 28 Hermetic <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>												
115/208 SPDT Side Stable SPDT 28 Gasket/Vented Cont. - D-7GR-2 1616036-3 115/208 3PDT Side STable SPDT 28 Gasket/Vented Cont. 45 D-7GR-3 1616036-4 115 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - DH-7BC 1616036-4 115 3PDT Side Stable SPT NC 18-30 Hermetic Cont. - DH-7BC 1616037-8 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-4 115 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316C 1-1616520-0 115/200 TPST NO Side Stable SPDT 28 Gasket/Vented Cont. -<						SPDT				_		
115/208 3PDT Side Stable SPDT 28 Gasket/Vented Cont. 45 D-7GR-3 1616036-4 115 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - DH-7BC 1616037-8 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616037-8 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-4 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. 45 BH-316C 1-1616520-0 115/200 TPST NO Side Stable SPDT 28 Gasket/Vented Cont. - B-138BH 1616028-1 200 3PDT Side Stable DPDT 28								Gasket/Vented		_	D-7GR-2	1616036-3
115 3PDT Side Stable SPST NC 18-30 Hermetic Cont. - DH-7BC 1616037-8 50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-4 50 AC 115 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316D 1616008-5 115/200 TPST NO Side Stable - 28 Gasket/Vented Cont. - BH-316D 1616008-6 200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - B-1388H 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Co							28			45		
50 AC 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316 1616008-4 50 AC 115 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. - BH-316C 1-1616520-0 115/200 TPST NO Side Stable - 28 Hermetic Cont. - BH-316D 1616008-6 200 3PDT Side Stable - 28 Gasket/Vented Cont. - B-138BH 1616008-6 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 115/200 3PDT Center Off SPST NO 28 Gasket/Vented												
50 AC 115 3PST NO Side Stable 1NO, 1NC 28 Hermetic Cont. - BH-316A 1616008-5 115 3PST NO Side Stable - 28 Hermetic Cont. 45 BH-316C 1-1616520-0 115/200 TPST NO Side Stable - 28 Hermetic Cont. - BH-316D 1616008-6 200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - B-138BH 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-140V 1-1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vent			115	3PST NO	Side Stable	_	28	Hermetic	Cont.	_	BH-316	1616008-4
30 AC 115 3PST NO Side Stable - 28 Hermetic Cont. 45 BH-316C 1-1616520-0 115/200 TPST NO Side Stable - 28 Hermetic Cont. - BH-316D 1616008-6 200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - B-138BH 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XBH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XBH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. 42 B-138XEH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. - B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Ga	50	10			Side Stable	1NO, 1NC				_		1616008-5
115/200 TPST NO Side Stable - 28 Hermetic Cont. - BH-316D 1616008-6 200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - B-138BH 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. 42 B-138XAH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. - B-138XAH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. - B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. - B-140BH 1616043-9	50	AC				_	28			45		1-1616520-0
200 3PDT Side Stable SPDT 28 Gasket/Vented Cont. - B-138BH 1616028-1 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 115/200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. 42 B-138XEH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. 42 B-138XEH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. - B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. - B-140BH 1616043-9			115/200	TPST NO		-	28		Cont.	_	BH-316D	1616008-6
200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. - B-138XAH 1616028-2 60 AC 200 3PDT Side Stable DPDT 28 Gasket/Vented Cont. 42 B-138XAH 1616028-3 60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. - B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. - B-140V 1-616043-0						SPDT			Cont.	_	B-138BH	1616028-1
60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. – B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. – B-140BH 1616043-9									-	_		
60 AC 200 3PDT Center Off SPST NO 28 Gasket/Vented Cont. – B-140V 1-1616043-0 115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. – B-140BH 1616043-9			115/200		Side Stable							
115/200 3PDT NO Center Off DPST NC 28 Gasket/Vented Cont. – B-140BH 1616043-9	60	AC										
										-		
120/200 SPDT NO GENERON OPDT ZO GASKEL/VENIED GONT. 75 B-140AP-1 1616043-7			120/208	3PDT NO	Center Off	6PDT	28	Gasket/Vented	Cont.	75	B-140AP-1	1616043-7
115/200 3PST NO Side Stable 4PDT 28 Gasket/Vented Cont. 45 B-138S 1616002-5												

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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Cross Reference (Continued)

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.
		115/200	3PDT	Side Stable	SPST NC	28	Gasket/Vented	Cont.	-	D-25BD	1616034-3
		115/200	3PDT	Side Stable	-	28	Hermetic	Cont.	-	DH-25B	1616037-2
100	AC	115/200	3PDT NC	Side Stable	DPDT	28	Hermetic	Cont.	_	DH-25BA	1616037-3
		115/200	3PDT	Side Stable	-	115	Hermetic	Cont.	-	DHR-25BG	1-1616037-5
		115/200	3PDT	Center Off	_	28	Gasket/Vented	Cont.	_	D-31C	1616049-1
		115/200	3PDT	Center Off	5PST NC	28	Gasket/Vented	Cont.	-	D-31TH	1616524-5
		115/208	3PDT	Center Off	6PDT	28	Gasket/Vented	Cont.	42	D-31DB	1616049-2
		115/208	3PDT	Center Off	4PDT	18-30	Hermetic	Cont.	42	DH-31DAA	1616050-6
		115/200	3PDT	Center Off	6PDT	28	Hermetic	Cont.	_	DH-31A	1616050-4
		115/208	3PDT	Center Off	4PDT	18-30	Hermetic	Cont.	42	DH-31DA	1616050-5
120	AC	115/200	3PDT	Center Off Latching	6PDT	18-30	Hermetic	Cont.	50	DHL-31B	1616050-8
		115/200	3PST NO	Side Stable	(1)SPST NC (1) SPDT	28	Gasket/Vented	Cont.	_	D-25CF	1616015-1
		115/200	3PST NO	Side Stable	(1)SPST NO (1) SPST NC	28	Hermetic	Cont.	42	DH-25CU	1616017-4
125	AC	115/200	3PDT	Side Stable	DPDT	28	Gasket/Vented	Cont.	45	D-25BAH	1616034-2
130	AC	115/200	3PST NO	-	3PST NO	28	Gasket	Cont.Econ	_	B309A	1-1616975-7
175	AC	115/200	3PST	Mag Latching	6PDT	15-30	Gasket/Vented	Cont.	42	B-451	1616023-3
		253/440	3PST NO	_	DPDT	28	Gasket/Vented	Cont.Econ.	45	B-312DB	1616004-7
175	AC	115	3PST NO	Side Stable	2PDT	28	Gasket/Vented	Cont. Econ.	. –	SA-136F	1616948-7
		115/200	3ST NO	Side Stable	2DT	28	Gasket	Cont. Econ.	. 42	KA175B3C	2-1616960-7
200	AC	115	3PST NO	-	4PST NC	28	Gasket/Vented	Cont. Econ.	. 45	B-312CV	1616004-5
260	AC	120/208	3PDT	Center Off	4PST NO 2PST NC	28	Gasket/Vented	Cont. Econ.	. 45	B-393T	1616044-5
200	AU	115/200	3PST NO	Side Stable	(5)SPST NO (9 SPST NC	28	Gasket/Vented	Cont. Econ.	. 45	B-429W	1616005-6
275	AC	115/200	3PST	Mag Latching	(7)SPST NO (7)2PST NC	28	Gasket/Vented	Cont. Econ.	. 45	B-430-1	1616023-1
210	70	115/200	3PST	Mag Latching	(12)SPST NO (14 SPST NC	28	Gasket/Vented	Cont. Econ.	. 45	B-430Z	1616023-2
275	AC	115/200	3PST NO	Side Stable	(8)SPST NO	28	Gasket/Vented	Cont. Econ	45	B-429-1	1616005-1
350	AC	120/208	3PST NO	Side Stable	4SPDT	28	Gasket/Vented	Cont.	45	B-429CA	1616005-4
500	AC	115/200	3PST	Mag Latching	(12)SPST NO (14)2PST NC	15-29	Gasket/Vented	Cont.	45	B-484	1616023-4
	ΛU	115/200	3PST	Mag Latching	(12)SPST NO (14 SPST NC	15-29	Gasket/Vented	Cont.	45	B-484C	1616023-5

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



K Series Connectors

Product Facts

- Light weight
- Small package size
- Small footprint
- Easy to package in panel assemblies
- Buss bar mount or chassis mount
- Designed to meet the applicable portions of MIL-PRF-6106
- 10X rupture current



TE HARTMAN brand of K Series contactors offer outstanding performance and reliability in a highly efficient package. The HARTMAN brand K-Series are among the smallest and lightest 200-1000 ampere DC contactors available in the aerospace industry. These highly flexible buss bar mounted or chassis mounted units are designed for either continuous or start duty applications in the DC power distribution systems of military and commercial aircraft and ground vehicles.

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



K Series, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Buss bar or chassis mount available
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 200 Amps Rupture Rating — 2,000 Amps

General Characteristics Temperature Range --40°C to +85°C

Operating Cycles (Life) at Rated Resistive Load, Min. - 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strenath — All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms

Coil to Ground and Aux. Contacts -1.000 Vrms

Insulation Resistance, Initial -100 megohm min. Altitude Max. - 50,000 ft.

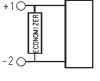
Weight, Max. - .31-.41 lbs

Coil Characteristics Duty Cycle

AC (Type A, See diagram below), Economized (Type B, See diagram below), Economized with suppression (Type C, See diagram below), Continuous or Intermittent (Type D & F. See diagram below), Continuous or Intermittent with suppression (Type E & G, See diagram below)

Operating Voltage, Nom. — 28 Vdc

Pickup Voltage @ 20°C, Max. — 18 Vdc

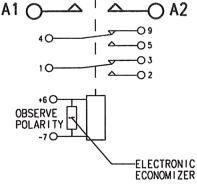


- Electronic Economized Αwith Suppression

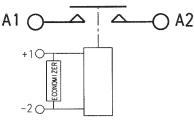
Circuit Configurations

Coil Type

(Consult factory for other available circuit configurations)







Circuit Configuration 2

	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
	K200A1C	Gasket	В	А	2	5-1616970-9
For factory, direct application	K200B3C02	Gasket	А	A	1	4-1616968-7
For factory-direct application assistance, phone 419-521-9500 or	K200B1C	Gasket	С	A	2	6-1616970-0
fax 419-526-2749.	K200A3C	Gasket	E	А	1	8-1616977-1

assistance, phone 419fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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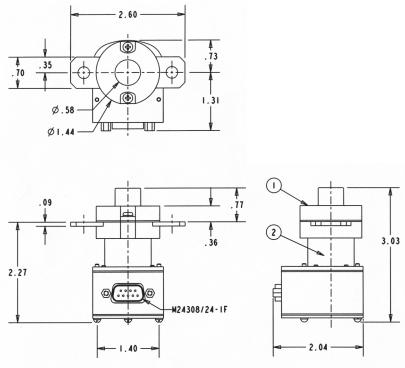
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

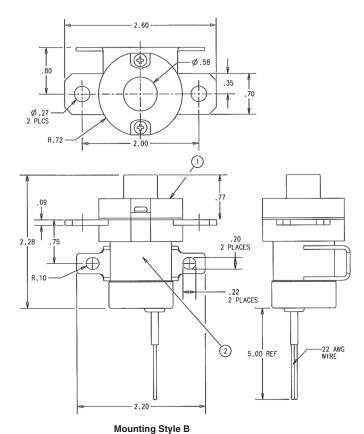
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K Series, Rated up to 200 Amps, 28 Vdc (Continued)



Mounting Style A



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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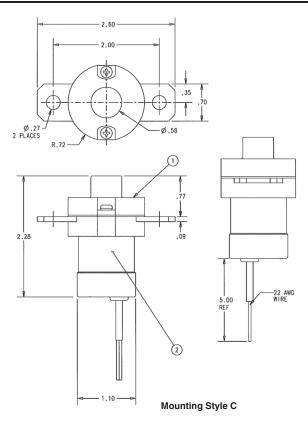
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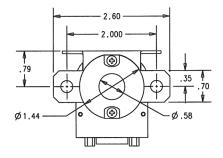
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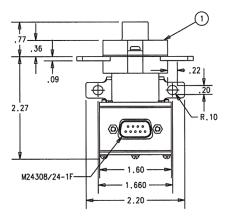
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

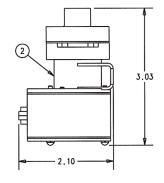


K Series, Rated up to 200 Amps, 28 Vdc (Continued)









Mounting Style E

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change.

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For additional support numbers please visit www.te.com

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HARTMAN Lightweight HP DC Contactors



K Series, Rated up to 400 Amps, 28 Vdc



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 400 Amps Overload Rating — 3,200 Amps Rupture Rating — 4,000 Amps

General Characteristics Temperature Range — -40°C to +85°C

Operating Cycles (Life) at Rated Resistive Load, Min. - 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,250 Vrms

Circuit to Circuit — 1,250 Vrms 1,000 Vrms

Altitude, Max. - 50,000 ft. Weight, Max. - .59 - .75 lbs

Coil Characteristics Duty Cycle -

Economized with suppression (Type A, See diagram below), Continuous (Type B, See diagram below), Intermittent (Type C, See diagram below)

Operating Voltage, Nom. — 28 Vdc

Pickup Voltage @ 250°C, Max. — 18 Vdc - Economized and continuous duty coil 12 Vdc - Intermittent duty coil

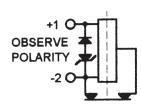
Dropout Voltage, Max. —

7 Vdc - Economized and continuous duty 5 Vdc - Intermittent duty coil

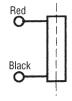
Product Facts

- SPST NO, Double break
- Buss bar or chassis mount desian
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

Coil Type



Α Economized with Suppression



B — Continuous

Red C Black С

C- Intermittent

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
K4001A3C	Gasket Sealed	F	А	4	6-1616968-5
K4001B3C	Gasket Sealed	A	А	4	4-1616959-0
K400A1D	Gasket Sealed	В	С	1	—
K400A1F	Gasket Sealed	В	В	1	6-1616945-7
K400A4C1	Gasket Sealed	K	А	2	6-1616965-1
K400B1D	Gasket Sealed	E	С	1	8-1616968-4
K400B1F	Gasket Sealed	E	В	1	2-1616921-3
K400B3C05	Gasket Sealed	С	А	6	7-1616941-3
K400B712C	Gasket Sealed	D	А	7	5-1616946-6
K4001B7C	Gasket Sealed	А	А	5	4-1616959-8
K4001A7C	Gasket Sealed	F	А	5	6-1616970-7
K4001B2C	Gasket Sealed	А	А	3	6-1616970-8
K4001A2C	Gasket Sealed	F	А	3	6-1616970-6
K400A1F1	Gasket Sealed	G	В	1	4-1616964-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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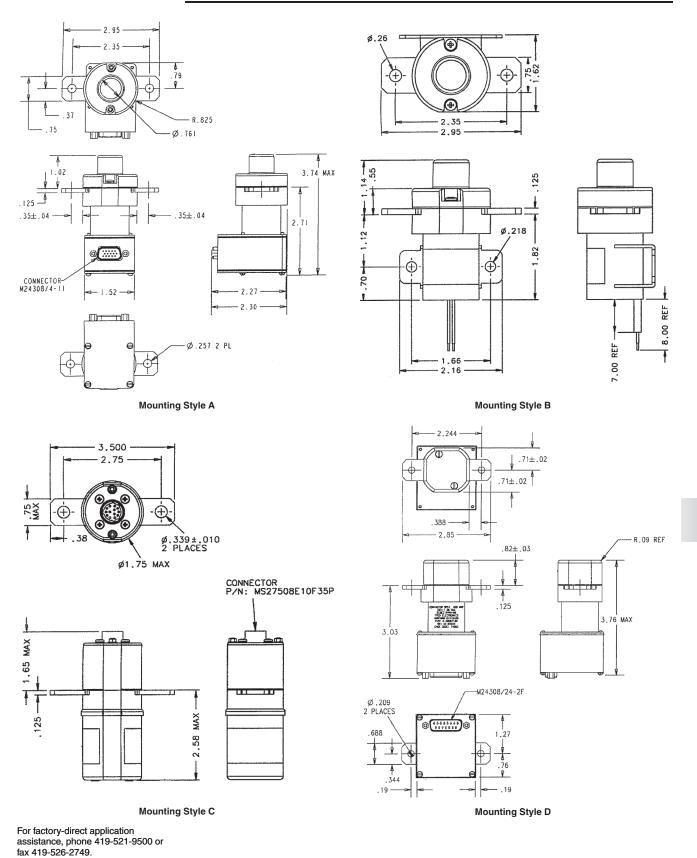
Dimensions are shown for reference purposes only. Specifications subject to change.

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K Series, Rated up to 400 Amps, 28 Vdc (Continued)



Catalog 5-1773450-5

Revised 3-13

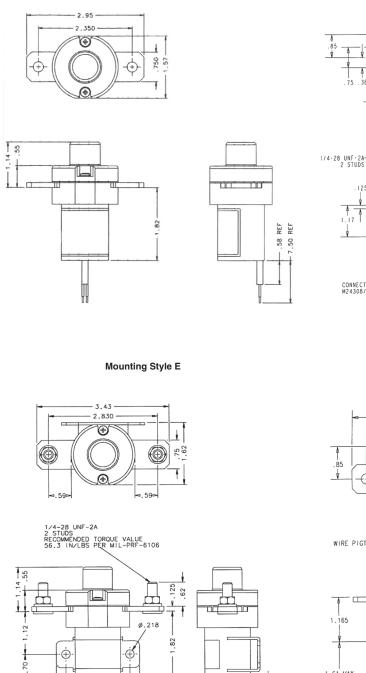
Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

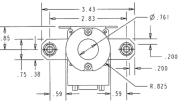
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers 6–59

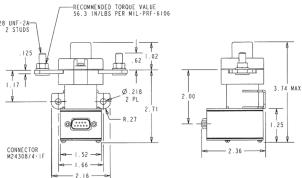
please visit www.te.com



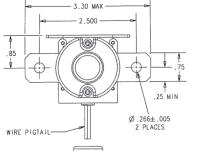
K Series, Rated up to 400 Amps, 28 Vdc (Continued)

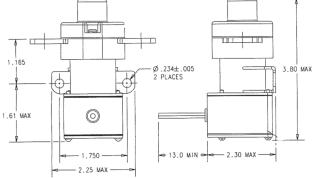






Mounting Style F





Mounting Style K

Mounting Style G

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Catalog 5-1773450-5 Revised 3-13

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Dimensions are in millimeters unless otherwise specified.

13.00 REF

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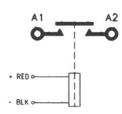
12.00 REF

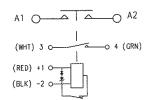
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

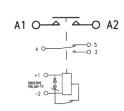


K Series, Rated up to 400 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)





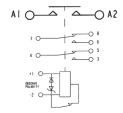


Circuit Configuration 3

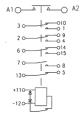
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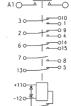
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Circuit Configuration 4

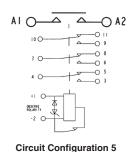




Circuit Configuration 7

Circuit Configuration 1

Circuit Configuration 2





01

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Catalog 5-1773450-5 Revised 3-13

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K Series, Rated up to 500 Amps, 28 Vdc



Product Facts

- SPST NO, Double break
- Buss bar or chassis mount designs
- Gasket sealed
- Multiple auxiliary contact choices
- Meets many requirements of MIL-PRF-6106

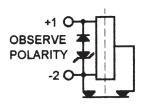
Performance Data

Electrical Characteristics Main Contacts — Contact Arrangement — SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 500 Amps Rupture Rating — 5,000 Amps Auxiliary Contacts — Aux. Contact Arrangement — 3 SPDT Rated Operating Voltage — 28 Vdc Resistive Rating — 5 Amps Lamp Rating — 1 Amps Low Level — 1 mA @ 28 Vdc General Characteristics Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Resistive Load — 50,000 cycles Operating Cycles (Life) Mechanical — 100,000 cycles Altitude — 50,000 ft. Weight, Max. — .88 lbs Operate Time @ 18 Vdc & 85°C, Max. — 45 msec Dropout Time @ 32 Vdc, Max. — 25 msec

Coil Characteristics

Duty Cycle — Continuous, economizing Operating Voltage, Nom. — 28 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage — 1 to 7 Vdc Inrush — 5 Amps Hold @ 32 Vdc & -55°C — 0.272 mA max.

Coil Type



A — Economized with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

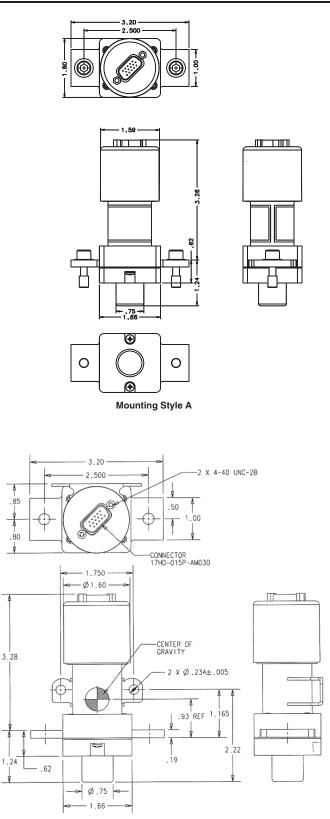
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K Series, Rated up to 500 Amps, 28 Vdc (Continued)



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Catalog 5-1773450-5 Revised 3-13 Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

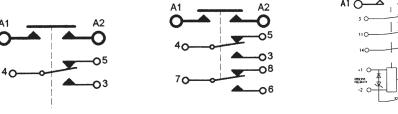
Mounting Style B

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K Series, Rated up to 500 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

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HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number	
K500B2C	Gasket Sealed	А	А	1	7-1616927-0	
K500A2C	Gasket Sealed	В	А	1	4-1616951-4	
K500B3C	Gasket Sealed	A	A	2	7-1616970-0	
K500A3C	Gasket Sealed	В	А	2	6-1616970-9	
K500B7C01	Gasket Sealed	А	A	3	9-1616965-0	
K500A7C01	Gasket Sealed	В	Α	3	2-1616970-8	

K Series, Rated up to 500 Amps, 28 Vdc — Time Delay

Product Facts

- SPST NO, Double break
- Delay on operator or release
- Chassis Mount (bus bar mount available)
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

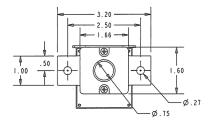
Performance Data

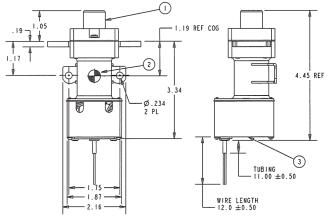
Electrical Characteristics Contact Arrangement -

SPST NO, Double Break Rated Operating Voltage — 28 VDC Resistive Rating — 500A Rupture Rating - 5000A Delay on operate or release — See note 1

General Characteristics

Temperature Range — -55°C to +85°C Minimum Electrical Cycles — 50,000 Minimum Mechanical Cycles — 100,000 @ 125A Dielectric Strength — 1000 Vrms Altitude --- 50,000 ft Weight, Max. - 1.0 lbs Duty Cycle — Intermittent or Continuous (See note 2) Operating Voltage Range — 21 - 32 Vdc Drop Out Voltage — 1 to 7 Vdc





NOTES

1. Delay can be tailored to meet customer need. Consult Factory.

Consult factory to specify correct coil duty for your application.

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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2. Intermittent duty coil is recommended for starting applications where significant control voltage sags are possible.



K-1000 Series, Rated up to 1,000 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

Performance Data

Electrical Characteristics Contact Arrangement — SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 1,000 Amps

General Characteristics Temperature Range — -55°C to +71°C

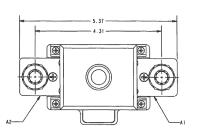
Operating Cycles (Life) at Rated Resistive Load — 50,000 cycles Operating Cycles (Life) Mechanical — 100,000 cycles Weight, Max. — 2.75 lbs

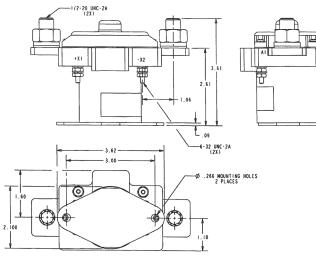
Coil Characteristics Duty Cycle — Continuous, economizing

Operating Voltage, Nom. — 28 Vdc Pickup Voltage, Max. @25°C — 18 Vdc

Dropout Voltage — 1 to 8 Vdc Current, Inrush, Max. @ 30 Vdc — 7.0 Amps

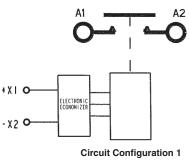
Current, Hold, Max. @ 30 Vdc — 1.0 Amps





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
K-1000A1F03	Gasket Sealed	A	Continuous	1	4-1616966-1

Catalog 5-1773450-5 Revised 3-13

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HARTMAN Lightweight HP DC Contactors

6-65

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Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage	Seal Type	Duty Cycle	Coil Trans. Voltage (VDC)	Hartman Part No.	TE Part No.
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200A1C	5-1616970-9
200	DC	28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200B3C02	4-1616968-7
200	DU	28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200B1C	6-1616970-0
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200A3C	8-1616977-1
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K4001A3C	6-1616968-5
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K4001B3C	4-1616959-0
		28	SPST NO	Side Stable	None	28	Gasket	Intermittent	-	K400A1D	_
		28	SPST NO	Side Stable	None	28	Gasket	Continuous	-	K400A1F	6-1616945-7
		28	SPST NO	Side Stable	1PST NO	28	Gasket	Cont. Econ.	42	K400A4C1	6-1616965-1
		28	SPST NO	Side Stable	None	28	Gasket	Intermittent	-	K400B1D	8-1616968-4
400	DC	28	SPST NO	Side Stable	None	28	Gasket	Continuous	_	K400B1F	2-1616921-3
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K400B3C05	7-1616941-3
		28	SPST	Side Stable	3PDT	28	Gasket	Cont. Econ.	42	K4001B7C	4-1616959-8
		28	SPST	Side Stable	3PDT	28	Gasket	Cont. Econ.	42	K4001A7C	6-1616970-7
		28	SPST	Side Stable	1PDT	28	Gasket	Cont. Econ.	42	K4001B2C	6-1616970-8
		28	SPST	Side Stable	1PDT	28	Gasket	Cont. Econ.	42	K4001A2C	6-1616970-6
		28	SPST	Side Stable	None	28	Gasket	Continuous	-	K400A1F1	4-1616964-5
		28	SPST NO	Side Stable	3PDT, 1PST NO, 1PST NC	28	Gasket	Cont. Econ.	42	K400B712C	5-1616946-6
		28	SPST NO	Side Stable	1PDT	28	Gasket	Cont. Econ.	42	K500B2C	7-1616927-0
	·	28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K500B3C	7-1616970-0
500	DC	28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K500A3C	6-1616970-9
500	00	28	SPST NO	Side Stable	1PDT	28	Gasket	Cont. Econ.	42	K500A2C	4-1616951-4
		28	SPST NO	Side Stable	3PDT	28	Gasket	Cont. Econ.	42	K500A7C01	2-1616970-8
		28	SPST NO	Side Stable	3PDT	28	Gasket	Cont. Econ.	42	K500B7C01	9-1616965-0
1000	DC	28	SPST NO	Side Stable	N/A	28	Gasket	Continuous	-	K1000A1F03	4-1616966-1

Cross Reference

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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DH-14 and DH-21 Series, Rated up to 25 Amps, 28 Vdc

Product Facts

- SPDT, 1 NO, 1 NC, **Double Break**
- Hermetically Sealed
- DH21 Series has magnetically latched contacts
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPDT, 1 NO, 1 NC, Double Break Rated Operating Voltage -28 Vdc

Resistive Rating — 25 Amps Inductive Rating — 25 Amps Motor Rating — 15 Amps

General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated **Resistive Load, Min.** — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength -

All Circuits to Ground — 1,250 Vrms Circuit to Circuit - 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms Altitude Max. - 80,000 ft.

Weight - .39 lbs

Coil Characteristics Duty Cycle -

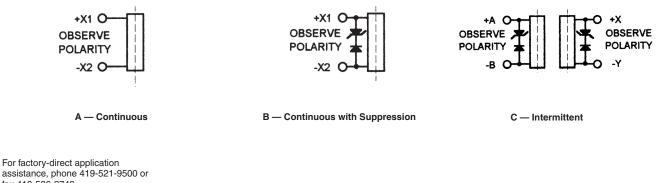
Continuous (Type A, See diagram below), Continuous with suppression (Type B, See diagram below) or Intermittent (Type C)

Operating Voltage, Nom. — 28 Vdc

Pickup Voltage @ 25°C, Max. — 18 Vdc

Dropout Voltage @ 25°C, Max. — 1.0 to 7 Vdc

Coil Type



fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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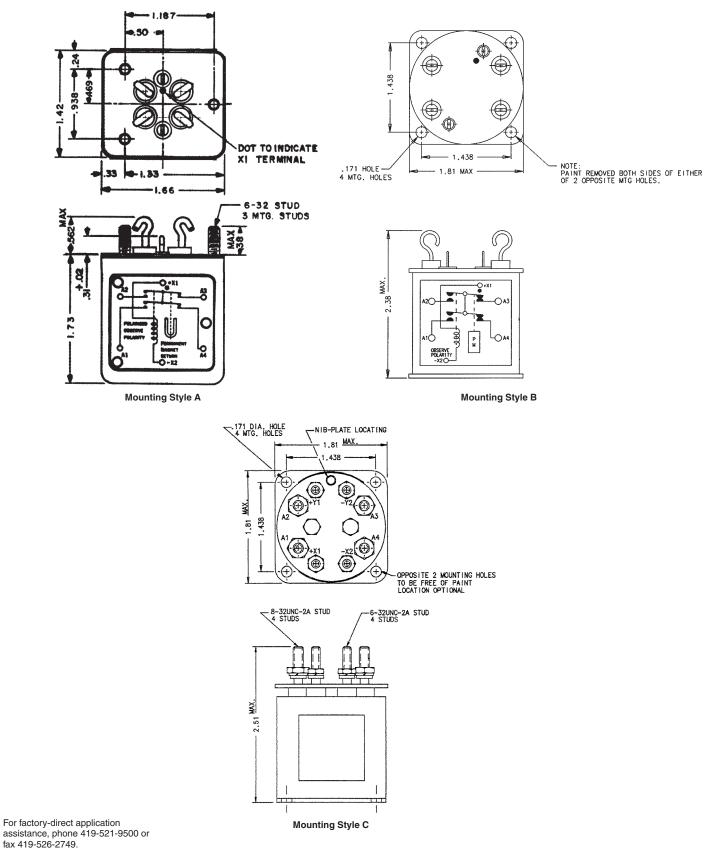
6-67

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to change.



DH-14 and DH-21 Series, Rated up to 25 Amps, 28 Vdc (Continued)



fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

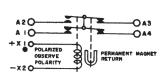
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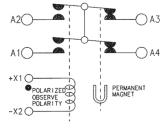
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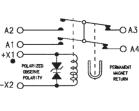


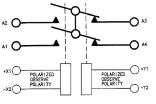
DH-14 and DH-21 Series, Rated up to 25 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)









Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
DH-14A	Hermetically Sealed	A	А	1	1616089-1
DH-14AL	Hermetically Sealed	В	А	2	1616089-2
DH-14AT	Hermetically Sealed	A	В	3	1616089-3
DH-21N*	Hermetically Sealed	С	С	4	1616026-2

*DH21N is a magnetically latched unit. Contacts will remain in position until the opposing coil is pulsed.

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Catalog 5-1773450-5 Revised 3-13

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D-7, DH-7 and DH-18 Series, Rated up to 50 Amps, 28 Vdc

Product Facts

- 2 SPST, 1 NO, 1 NC
- DH-18 Series are center-off double-throw units
- Gasket Sealed or **Hermetically Sealed**
- Auxiliary contacts available
- Meets many requirements of MIL-R-6106



Performance Data

Electrical Characteristics Contact Arrangement -2 SPST, 1 NO, 1 NC, Electrically Latched Rated Operating Voltage -28 Vdc Resistive Rating — 50 Amps Inductive Rating — 25 Amps

General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated **Resistive Load, Min.** — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,500 Vrms Circuit to Circuit — 1,500 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms

Altitude Max. — 50,000 ft. Weight - .72 to .94 lbs

Coil Characteristics Duty Cycle -

Continuous (Type A, See diagram below) or Continuous with suppression (Type B, See diagram below) or Continuous (Type C)

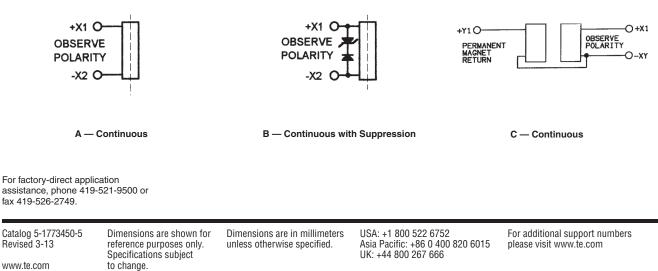
Operating Voltage, Nom. — 28 Vdc

Pickup Voltage @ 25°C, Max. — 18 Vdc

Dropout Voltage @ 25°C, Max. — 1.5 to 7 Vdc

Coil Current @ 25°C, Max. — 0.28 Amp

Coil Type

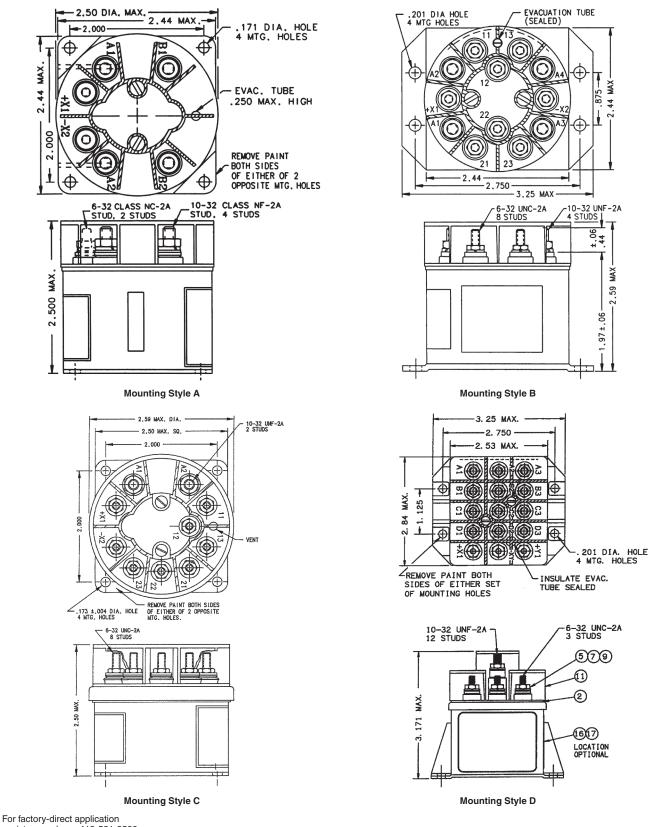


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assistance, phone 419-521-9500 or fax 419-526-2749.

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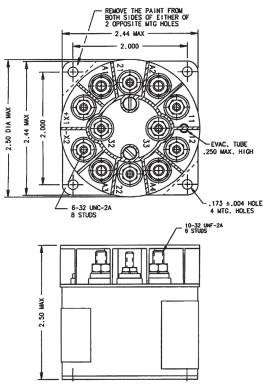
HARTMAN Power Switching DC Contactors

For additional support numbers

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D-7, DH-7 and DH-18 Series, Rated up to 50 Amps, 28 Vdc (Continued)



Mounting Style E

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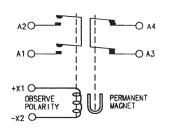
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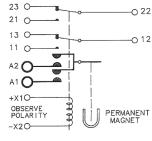
Dimensions are in millimeters unless otherwise specified.

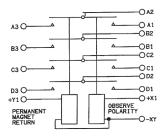
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D-7, DH-7 and DH-18 Series, Rated up to 50 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



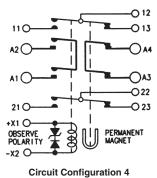


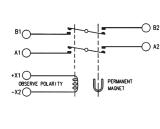


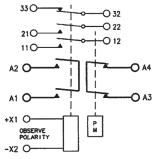
Circuit Configuration 1











Circuit Configuration 5



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-7AC	Gasket Sealed	А	А	1	1616088-1
D-7LHB	Gasket Sealed	С	А	2	1616064-1
DH-18DA*	Hermetically Sealed	D	С	3	1616050-2
DH-7ATK	Hermetically Sealed	В	В	4	1616089-7
DH-7MN	Hermetically Sealed	А	А	5	1616103-2
DH-7TB	Hermetically Sealed	E	А	6	1-1616089-3

*DH-18DA is a 4PDT center-off unit. Contacts will return to the center position when coil power is removed.

6-73

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

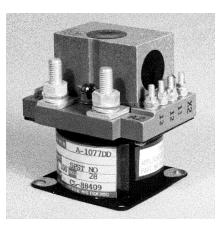
www.te.com



A-1077 Series, Rated up to 100 Amps, 28 Vdc

Product Facts

- SPST NO, Double Break or SPDT Double Break
- Gasket Sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Main Contact Configuration — A-1077DD — SPST NO A-1077S — SPDT Rated Operating Voltage — 28 Vdc Main Contact Rating — Resistive Rating — 100 Amps Inductive Rating — 100 Amps Motor Rating — 100 Amps Interrupt Rating — 1,200 Amps Auxiliary Contacts — Resistive Rating — 5 Amp, 28 VAC/115 VAC General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Altitude, Max. — 50,000 ft. Weight, Max. — 1.5 to 2 lbs

Coil Characteristics

Coil Characteristics Duty Cycle — Continuous Operating Voltage, Max. — 32 Vdc Operating Voltage, Min. — 24 Vdc Pickup Voltage @ 25°C, Max. — 16.5 Vdc Dropout Voltage — 1 to 7 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-74

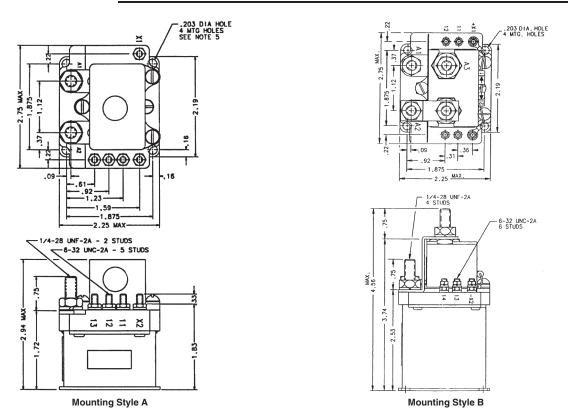
Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

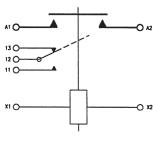
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



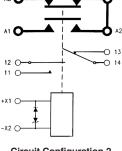


A-1077 Series, Rated up to 100 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-1077DD	Gasket Sealed	А	Continuous	1	1616055-3
A-1077S	Gasket Sealed	В	Continuous, w/ Suppression	2	1616081-3

HARTMAN Power Switching DC Contactors

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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For additional support numbers please visit www.te.com

www.te.com

6-75



D-31 Series, Rated up to 100 Amps, 28 Vdc

Product Facts

- SPDT, Center Off, Double Break
- Gasket Sealed, Vented
- Meets many requirements of MIL-PRF-6106



Performance Data Electrical Characteristics Main Contacts -Main Contact Configuration — SPDT, Center Off, Double Break Voltage, Nom. - 28 Vdc Resistive Rating — 100 Amps Inductive Rating — 100 Amps Motor Rating — 80 Amps Overload Rating — 800 Amps **Rupture Rating** — 1,000 Amps Auxiliary Contacts -Aux. Contact Configuration — SPST, NO Voltage, Nom. - 115 VAC, 400 Hz or 28 Vdc Resistive Rating — 3 Amp Inductive Rating — 3 Amp Lamp Rating — 1 Amp

General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Altitude — 50,000 ft. Weight, Max. — 1 lb 15 oz

Coil Characteristics

Duty Cycle — Continuous

Coil Data, X Coil — Operating Voltage, Nominal —

115 VAC, 400 Hz

Pickup Voltage @ 25°C, Max., Initial — 75 VAC, 400 Hz

Dropout Voltage @ 25°C — 12 V to 38 V

Coil Resistance ±20% @ 25°C — 655 Ohms

Coil Current @ 25°C — .050 Amp DC AV @ 115 VAC, 400 Hz

Coil Data, Y Coil — Operating Voltage, Nominal —

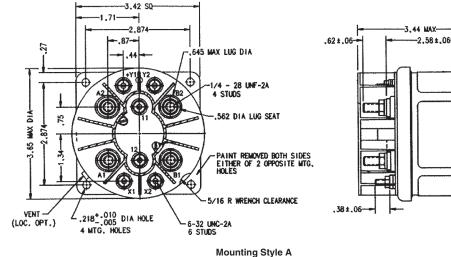
28 Vdc Pickup Voltage @ 25°C, Max.,

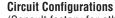
Initial — 15 VDC

Dropout Voltage @ 25°C — 2.0 V to 6.5 V

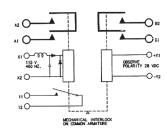
Coil Resistance ±20% @ 25°C — 163 Ohms

Coil Current @ 25°C — .215 Amp Max. @ 28 Vdc





(Consult factory for other available circuit configurations)



Circuit Configuration 1

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-31BAA	Gasket/Vented	А	Continuous	1	1616097-1
-	Part Number	Part Number Type	Part Number Type Style	Part Number Type Style Type	Part Number Type Style Type Config.

6-76

Catalog 5-1773450-5 Revised 3-13

3 reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

,09

D-32A Series, Rated up to 100 Amps, 28 Vdc

Product Facts

- 2PST, Center Off, Double Break
- Gasket Sealed, Vented
- Meets many requirements of MIL-PRF-6106



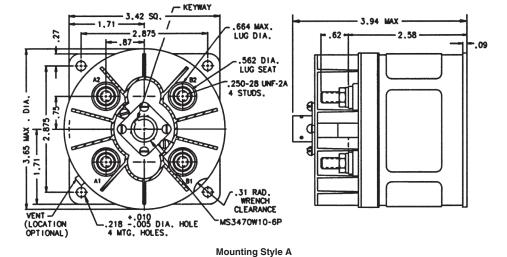
Performance Data

Electrical Characteristics Main Contacts Main Contact Configuration — 2PST, Center Off Voltage, Nom. — 28 Vdc Resistive Rating — 100 Amps Inductive Rating — 100 Amps Motor Rating — 80 Amps Lamp Rating — 50 Amps Overload Rating — 800 Amps Rupture Rating — 1,000 Amps Auxiliary Contacts -Aux. Contact Configuration — SPST

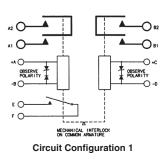
Voltage, Nom. - 28 Vdc Resistive Rating — 0.1 Amps Inductive Rating — 0.1 Amps Lamp Rating — 0.1 Amps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load. Min. -50,000 cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms Altitude - 50,000 ft. Weight, Max. — 1.9 lbs

Coil Characteristics Duty Cycle — Continuous with suppression Operating Voltage, Nom. - 28 Vdc Operating Voltage, Max. - 30 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage, Max. — 1.5 to 7.5 Vdc Hold Voltage — 8.0 Vdc Coil Resistance ±10% @ 77°F — 163 Ohms Coil Current @ 77°F & 30 Vdc, Max. - 0.215 Amp







ΤE

Part Number

1616097-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject

HARTMAN

Part Number

D-32A

Dimensions are in millimeters unless otherwise specified.

Construction

Туре

Gasket/Vented

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

Coil

Туре

Continuous w/ Suppression

Mounting

Style

А

For additional support numbers please visit www.te.com

6 - 77

to change.

Circuit

Config.

1



DH-25 Series, Rated up to 100 Amps, 28 Vdc

Product Facts

- SPDT, 1 NO, 1 NC, Double Break
- Gasket Sealed or Hermetically Sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement —

SPDT, 1 NO, 1 NC, Double Break **Rated Operating Voltage** — 28 Vdc

Resistive Rating — 100 Amps Inductive Rating — 100 Amps Motor Rating — 60 Amps Interrupt Rating — 600 Amps General Characteristics Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

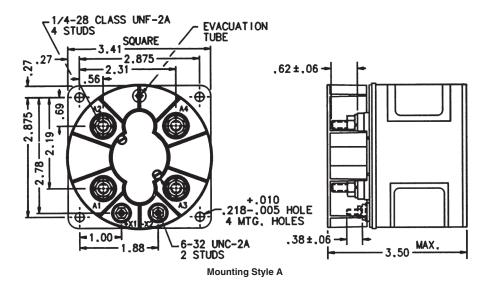
Altitude Max. — 80,000 ft. Weight — 1.81 lbs

Coil Characteristics Duty Cycle — Continuous

Operating Voltage, Max. — 32 Vdc Operating Voltage @ 21°C, Min. — 18 Vdc Dropout Voltage @ 25°C, Max. —

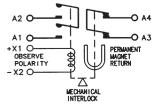
1.0 to 7 Vdc

Coil Resistance ±20% @ 25°C — 180 Ohms



Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

HARTMAN	Construction	Mounting	Coil	Circuit	TE
Part Number	Type	Style	Type	Config.	Part Number
DH-25EA	Hermetically Sealed	А	Continuous	1	1616089-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-78

Catalog 5-1773450-5 Revised 3-13

3 reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

DHR-31BA Series, Rated up to 100 Amps, 28 Vdc

Product Facts

SPDT, Center Off

Hermetically Sealed



Performance Data

Electrical Characteristics Main Contacts Main Contact Arrangement — SPDT, Center Off Rated Operating Voltage — 28 Vdc Resistive Rating — 100 Amps Inductive Rating — 100 Amps Motor Rating — 100 Amps Inrush, Max. — 500 Amps Auxiliary Contacts -

Aux. Contact Configuration — SPST, NO Resistive Rating — 5 Amp Inductive Rating — 5 Amp

General Characteristics Temperature Range —

-55°C to +120°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000 cycles

Weight — 1 lb 13 oz

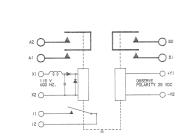
Coil Characteristics Duty Cycle — Continuous

Operating Voltage, Nom. -Coil X1-X2 (120 V, 400 Hz) -Pickup 100 V Max. Hot Dropout 25 V ± 20 V Nom. Resistance 1050 Ohms ± 10% Coil Y1-Y2 (28 Vdc) Pickup 20 Vdc Max. Hot Dropout 1.5 to 7 Vdc Nom. Resistance 163 Ohms \pm 10% Coil Current @ Nom. 120 V -

X1-X2 — 0.12 Amp at 25°C Coil Current @ Nom. 28 Vdc — Y1-Y2 — 0.19 Amp at 25°C

Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

6-79

/ TEFLON INSULATED	
3. 47 WAX. SO. 2. 875 2. 875 4 2. 875 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 4 2. 875 5 4 2. 875 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3.44 MAX.
*.010 .218005 DIA.HOLE 4 MTG. HOLES. 6-32 UNC-2A 6 STUDS	

EVACUATION TUBE

Mounting Style A

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
fax 419-526-2749.	DHR-31BA	Hermetically Sealed	А	Continuous	1	1616098-1

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

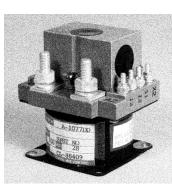
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



A1077 Series, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NO, Double Break or SPDT Double Break
- Gasket Sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Performance Data

Electrical Characteristics Contact Arrangement — SPST NO, Double Break or SPDT Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 200 Amps Inrush Rating — 800 Amps General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms Weight — 1.50 to 1.90 lbs

2

MAX

2.75

.875

2

75

1.72

MAX.

2.94

Coil Characteristics Duty Cycle — Continuous

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.31 .36

2.25 MAX.

X2 21 22

Mounting Style B

.61 - .31

1/4-28 UNF-2A

1,875

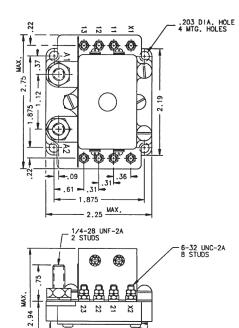
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Operating Voltage, Max. — 32 Vdc Operating Voltage, Nom. — 24 Vdc Pickup Voltage @ 25°C, Max. — 16.5 Vdc Dropout Voltage — 1.0 to 7 Vdc

> .203 DIA, HOLE 4 MTG, HOLES



For factory-direct application

assistance, phone 419-521-9

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6-80

Catalog 5-1773450-5 Revised 3-13

n to change.

Dimensions are in millimeters unless otherwise specified.

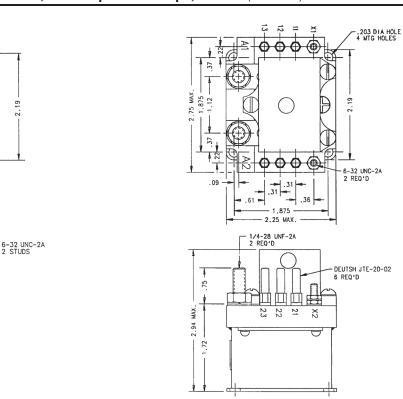
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

6-32 UNC-2A 8 STUDS



www.te.com





A1077 Series, Rated up to 200 Amps, 28 Vdc (Continued)

Mounting Style C

.203 DIA. HOLE MTG. HOLES

⊢.09

- 2.25 MAX

1.59

1.875

☐ 1/4-28 UNF-2A 2 STUDS

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1 MAX.

1.72

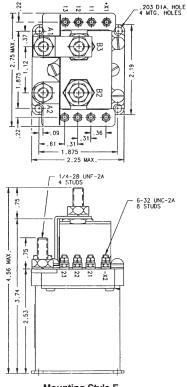
2.94

1.875

1

MAX. .37 2.75 -

Mounting Style D



Mounting Style E

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

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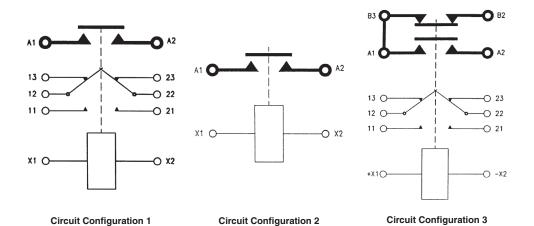
6-81

www.te.com



A1077 Series, Rated up to 200 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Mounting Construction Coil Circuit TE Part Number Style Config. Part Number Туре Туре 1616055-2 A-1077D Gasket Sealed А Intermittent 1 A-1077F Gasket Sealed В Continuous 1 1616055-4 С A-1077G Gasket Sealed Continuous 1616055-5 2 A-1077V Gasket Sealed D Continuous 1616055-6 1 A-1077W Gasket Sealed Е Continuous 3 1616081-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-82

Revised 3-13 www.te.com

Catalog 5-1773450-5

Dimensions are shown for

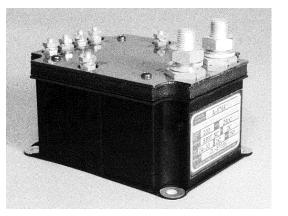
Dimensions are in millimeters unless otherwise specified.

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A876 Series, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NC, Double Break
- Gasket Sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Main Contacts Main Contact Configuration — SPST NC, Double Break

Rated Operating Voltage — 28 Vdc

Resistive Rating — 200 Amps Inrush, Carry Only — 900 Amps Auxiliary Contacts -

Aux. Contact Configuration — DPST NO

Voltage, Nom. - 28 Vdc Resistive Rating — 5 Amps

General Characteristics Temperature Range —

-55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000 cycles

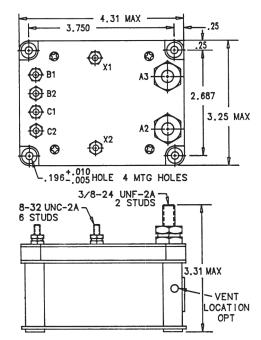
Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms

Weight - 3.00 lbs

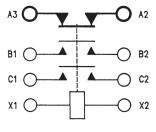
Coil Characteristics

Duty Cycle — Intermittent Operating Voltage — 24 to 30 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage — 1 to 7 Vdc Coil Resistance ± 20% @ 25°C — 19.7 Ohms





Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
assistance, phone 419-521-9500 or	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749	A-876K	Gasket/Vented	А	Intermittent	1	1616059-1

assistance, phon fax 419-526-2749

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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6-83



A1077 Series, Rated up to 230 Amps, 28 Vdc

Product Facts

- Gasket Sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics

Contact Arrangement -SPST NO, Double Break or SPDT Double Break

Rated Operating Voltage — 28 Vdc

Resistive Rating — 230 Amps Inrush Rating — 600 Amps

General Characteristics

Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

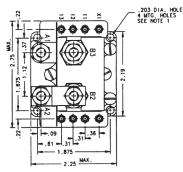
Dielectric Strength -All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms

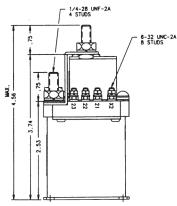
Weight - 1.90 lbs

Coil Characteristics Duty Cycle — Continuous Operating Voltage, Max. — 30 Vdc

Operating Voltage, Nom. — 24 Vdc

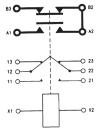
Pickup Voltage @ 25°C, Max. — 16.5 Vdc Dropout Voltage — 0.5 to 7 Vdc





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749.	A-1077B	Gasket Sealed	A	Continuous	1	1616081-1

6-84

Catalog 5-1773450-5 Revised 3-13

to change.

Dimensions are shown for reference purposes only. Specifications subject

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666





A-770 and AR-770 Series, Rated up to 300 Amps, 28 Vdc

Product Facts

- SPST NO, Double Break
- Gasket Sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 300 Amps Motor Load — 300 Amps Rupture Rating — 3,000 Amps General Characteristics Temperature Range —

-55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms Altitude Max. — 50,000 ft.

Weight — 2.00 lbs

Coil Characteristics Duty Cycle —

DC Continuous or Intermittent or Continuous or Intermittent with suppression

Operating Voltage, Nom. — 28 Vdc

Pickup Voltage @ 25°C, Max. — 16 Vdc

Dropout Voltage @ 25°C — 1.5 to 5 Vdc

Coil Current, Max., Holding — Coil Type A — 0.4 Amp Coil Type B — 0.625 Amp

HARTMAN Power Switching DC Contactors

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

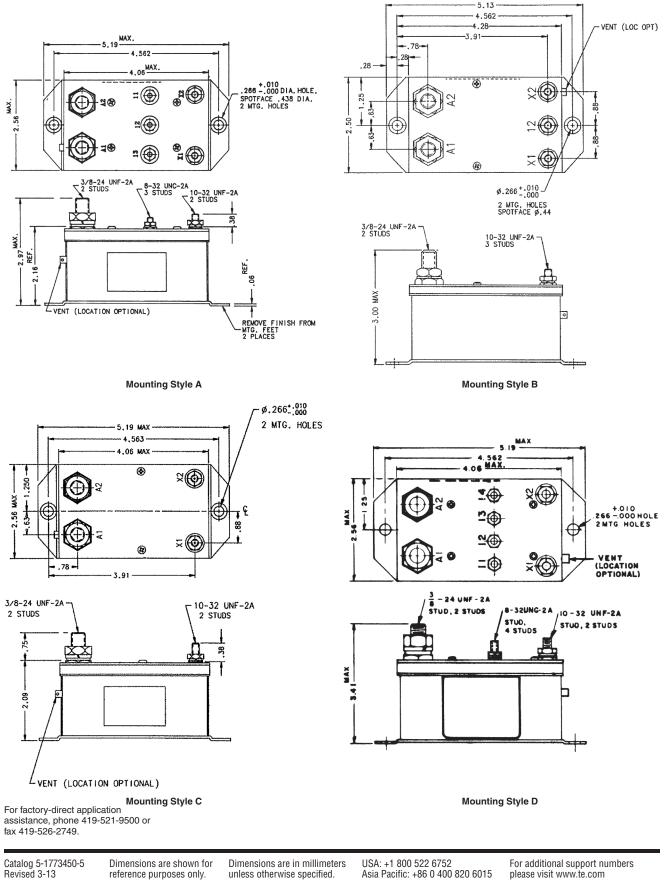
Catalog 5-1773450-5 Revised 3-13

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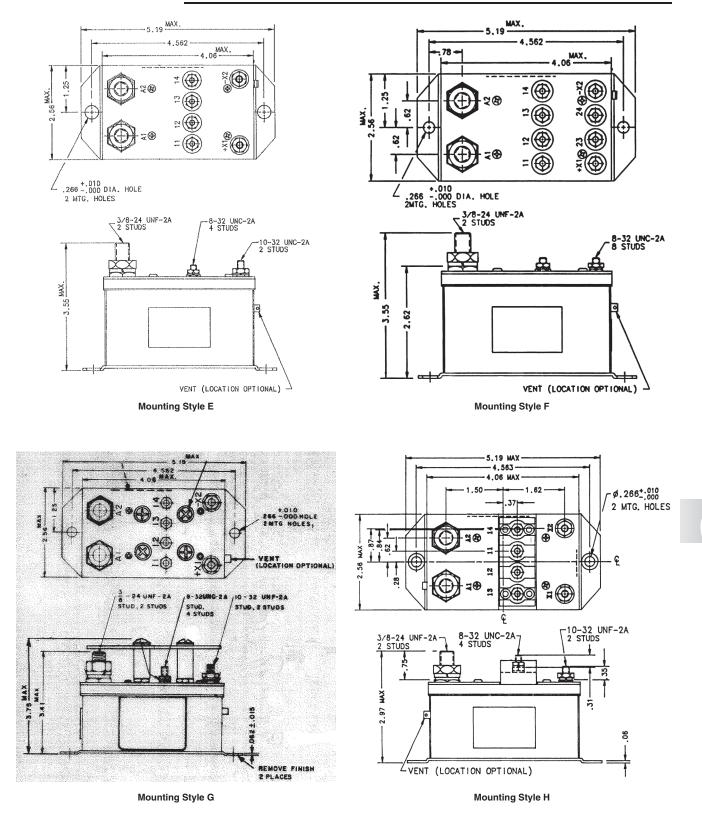
6-86

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

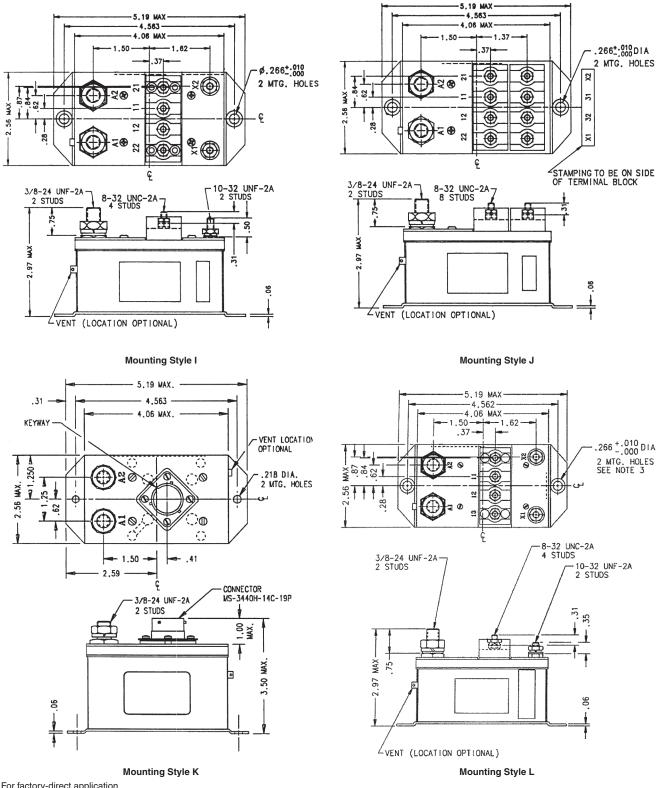
Catalog 5-1773450-5 Revised 3-13

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Catalog 5-1773450-5 Revised 3-13

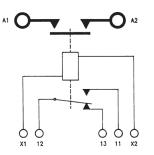
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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

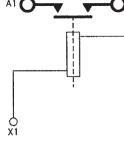
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Circuit Configurations (Consult factory for other available circuit configurations)



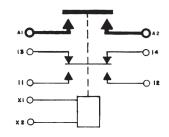
Circuit Configuration 1



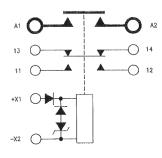
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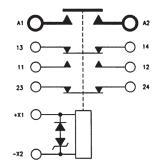
Circuit Configuration 3



Circuit Configuration 4

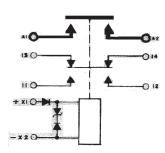


Circuit Configuration 5

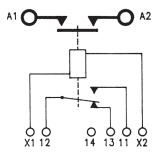


Circuit Configuration 2

Circuit Configuration 6



Circuit Configuration 7



Circuit Configuration 8

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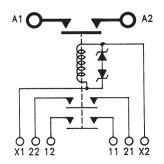
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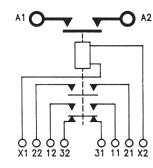
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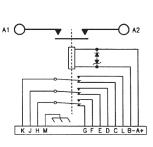
DIODES-600 P.I.V. VARO VS647



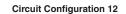
Circuit Configuration 9



Circuit Configuration 10



Circuit Configuration 11



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HARTMAN Mounting Style Coil Type Construction Circuit Config. TE Part Number Part Number Туре A-770AM Gasket/Vented Continuous 3-1616058-1 1 A A-770N Gasket/Vented В Continuous 2 3-1616058-3 Gasket/Vented С 3-1616058-4 A-770RF Continuous 3 A-770RG Gasket/Vented D Intermittent 4 3-1616058-5 A-770RN Gasket/Vented Е Continuous w/Supp. 5 3-1616058-8 A-770RSS Gasket/Vented F Continuous w/Supp. 6 3-1616058-9 G A-770RV Gasket/Vented Intermittent w/Supp. 7 1616530-7 A-770W Н 4-1616058-1 Gasket/Vented Continuous 8 A-770WA-2 Gasket/Vented Intermittent 4-1616058-2 9 A-770WA-3 Gasket/Vented J Intermittent 10 4-1616058-3 A-770WF Gasket/Vented Κ Continuous 11 4-1616058-4 AR-770W 1616063-1 Gasket/Vented L Continuous 12

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Catalog 5-1773450-5 Revised 3-13

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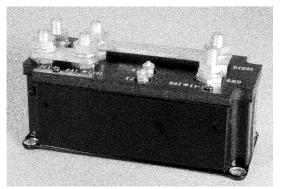
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A-848 Series, Rated up to 300 Amps, 24/48 Vdc

Product Facts

- SPST NO, DPST NC, **Double break**
- Gasket sealed
- Meets many requirements of MIL-PRF-6106
- Designed for series/parallel starting systems



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, DPST NC, Double Break Rated Operating Voltage — 24/48 Vdc

Resistive Rating — 300 Amps Inrush for 30 sec — 1,100 Amps Inrush — 700 Amps

General Characteristics Temperature Range —

-55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000

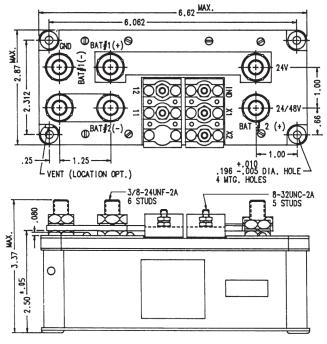
cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms 1,000 Vrms Weight - 3.5 lbs

Coil Characteristics Duty Cycle — Intermittent Operating Voltage, Max. — 31 Vdc

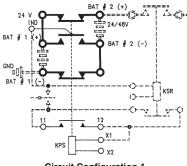
Operating Voltage, Min. ---18 Vdc

Pickup Voltage @ 25°C, Max., Initial — 12 Vdc Dropout Voltage — 1.5 to 7 Vdc



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

- - - - - - - - - -	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
For factory-direct application assistance, phone 419-521-9500 or	A-848KH	Gasket/Vented	A	Intermittent	1	1616082-2
fax 419-526-2749.	A-848KH-2	Gasket/Vented	А	Intermittent	1	1616082-4

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Catalog 5-1773450-5 Revised 3-13

> reference purposes only. Specifications subject to change.

Dimensions are shown for

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A-848 Series, Rated up to 300 Amps, 28 Vdc

Product Facts

- DPST NO, Double break and **DPDT Double break**
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -A-848MAS/MLS: DPST NO, Double

Break A-848KLC: DPDT Double Break Rated Operating Voltage —

28 Vdc Resistive Rating — 300 Amps,

A-848KLC - 200 Åmps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated**

Resistive Load, Min. - 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

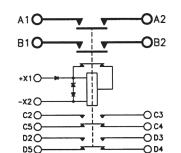
All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms 1,000 Vrms

Weight - 3.00 lbs

Coil Characteristics Duty Cycle — Continuous Operating Voltage, Nom. -28 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage -9 Vdc (12 Vdc Hot)

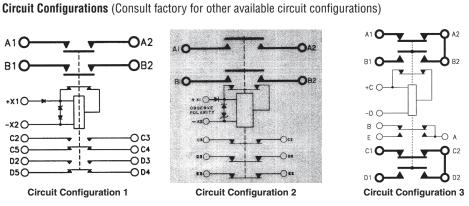
Coil Current, Inrush, Max. — 3.0 Amp

Coil Current, Holding, Max. — 0.35 Amp



Circuit Configuration 1

OBSERVE POL ARITY -00 #3Q--0 == **Circuit Configuration 2**



	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
	A-848MAS	Gasket/Vented	А	Continuous w/Supp., Economizing	1	1616102-2
-	A-848MLS	Gasket/Vented	В	Continuous w/Supp., Economizing	2	1616102-3
•	A-848KLC	Gasket/Vented	С	Continuous, Economizing	3	1616082-6

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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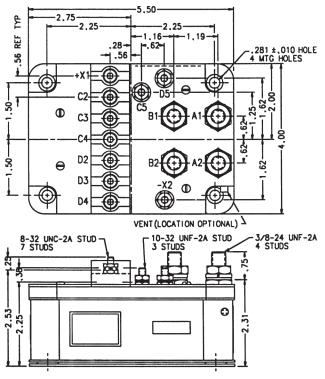
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

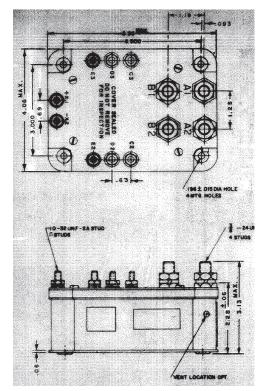
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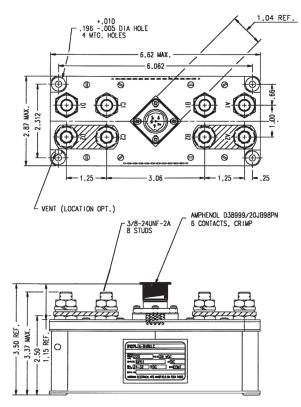
A-848 Series, Rated up to 300 Amps, 28 Vdc (Continued)



Mounting Style A



Mounting Style B



Mounting Style C

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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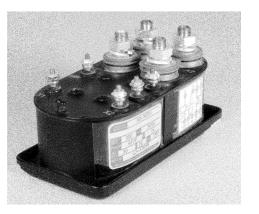
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AH-965 Series, Rated up to 300 Amps, 30 Vdc

Product Facts

- SPDT NO, SPST NC
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPDT, Double Break Rated Operating Voltage — 30 Vdc Resistive Rating — 300 Amps Carry Only for 30 sec — 1,000 Amps Carry Only, Inrush — 1,500 Amps Rupture Rating — 3,000 Amps General Characteristics Temperature Range — -65°C to +120°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts —

Altitude, Max. — 50,000 ft. Weight, Max. — 2.88 lbs

1,000 Vrms

Coil Characteristics Duty Cycle — Intermittent, 3 minutes max.

Operating Voltage, Max. — 30 Vdc Pickup Voltage, Max. Hot — 20 Vdc Dropout Voltage — 0.5 to 5 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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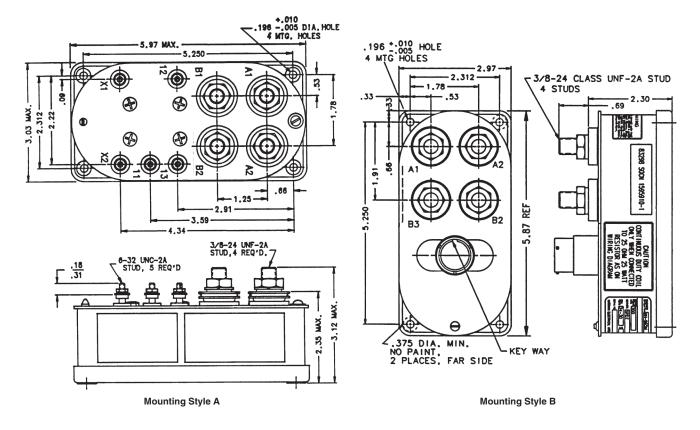
Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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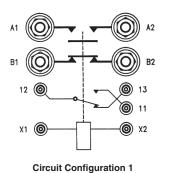
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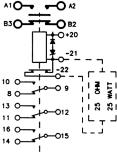


AH-965 Series, Rated up to 300 Amps, 30 Vdc (Continued)



Circuit Configurations (Consult factory for other available circuit configurations)





Circuit Configuration 2

HARTMAN Part Number	Construction Type	Mounting Style	l Coil Type	Circuit Config.	TE Part Number
AH-965H	Hermetically Sealed	А	Intermittent	1	1616084-1
AH-965M	Hermetically Sealed	В	Continuous w/ External 25 Ohm/25 Wa Resistor Connected	tt 2	1616084-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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A-400 Series, Rated up to 400 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics

Contact Arrangement -SPST NO. Double Break Rated Operating Voltage — 28 Vdc

Resistive Rating — 400 Amps Inductive Rating — 100 Amps

Inrush Rating A-400B, A-400D, A400DB-1 - 1,200 Amps A-400A, A-400AA, A-400L and

A-400S - 1,500 Amps Rupture Rating — 4,000 Amps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000 cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles Dielectric Strength — All Circuits to Ground — 1,250 Vrms

Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms Altitude, Max. - 50,000 ft.

Weight - 1.26 to 1.48 lbs

Coil Characteristics

Duty Cycle — Intermittent with Suppression, or Continuous with Suppression

Operating Voltage, Nom. -A-400A, A-400AA, A-400B, A-400D, A400DB-1, A-400DC, A-400G, A-400G-2, A-400L, A-400S - 28 Vdc

Operating Voltage, Max. -A-400A, A-400AA, A-400B, A-400D, A400DB-1, A-400L, A-400S - 30 Vdc A-400G, A-400G-2 - 31 Vdc A-400DC - 32 Vdc

Pickup Voltage, Max. — A-400A, A-400AA, A-400L - 14 Vdc A-400B, A-400D, A400DB-1 - 18 Vdc A-400DC — Normal — 14 Vdc High Temp. — 18 Vdc A-400G — Normal — 15 Vdc High Temp. — 19 Vdc A-400G-2 — Normal — 10 Vdc

High Temp. — 12.5 Vdc A-400S — +X to -X2 - 18 Vdc +Y1 to -Y2 - 13 Vdc

Dropout Voltage

A-400L - 0.5 to 4 Vdc A-400A, A-400AA, --- 1 to 5 Vdc 1 to 7 Vdc 1.0 Vdc Min. A-400S -- +X to -X2 - 1 to 7 Vdc

+Y1 to -Y2 - 0.5 to 5 Vdc

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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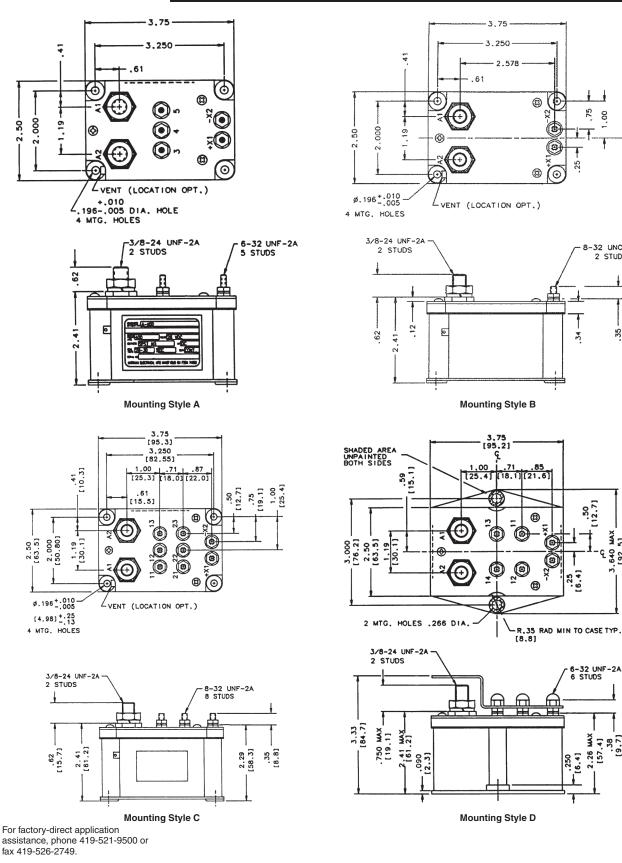
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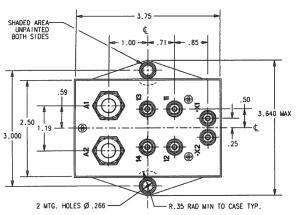
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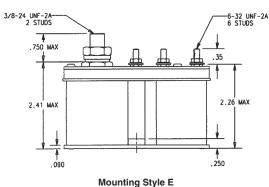
2 STUDS

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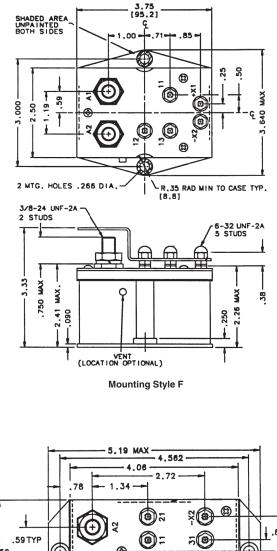
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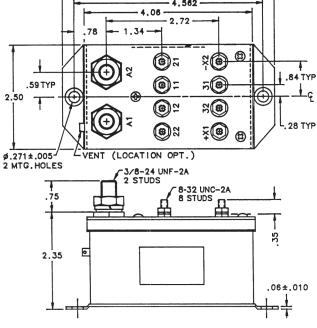






A-400 Series, Rated up to 400 Amps, 28 Vdc (Continued)





For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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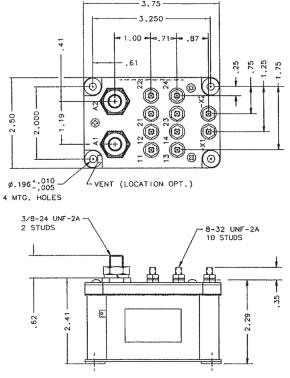
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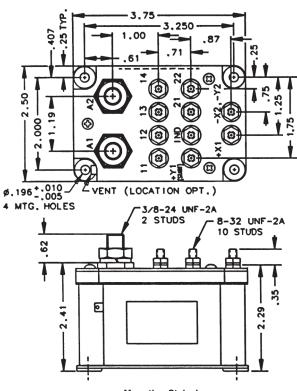
Mounting Style G







Mounting Style I



Mounting Style J

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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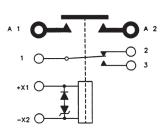
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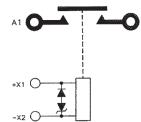
A-400 Series, Rated up to 400 Amps, 28 Vdc (Continued)

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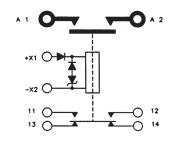
Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

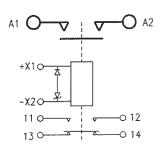


A1 \bigcirc A2 12 \bigcirc 11 13 22 \bigcirc 21 23 +X1 \bigcirc 23 -X2 \bigcirc Circuit Configuration 3



Circuit Configuration 4

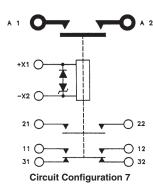
A 2

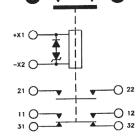


Circuit Configuration 5

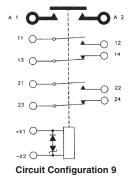
Circuit Configuration 2

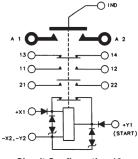
Circuit Configuration 6





Circuit Configuration 8







HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-400A	Gasket/Vented	А	Intermittent	1	1-1616530-6
A-400AA	Gasket/Vented	В	Intermittent	2	1616056-2
A-400B	Gasket/Vented	С	Continuous	3	1616056-4
A-400D	Environ.	D	Continuous	4	1616056-5
A-400DB1	Environ.	E	Continuous	5	1-1616964-3
A-400DC	Gasket/Vented	F	Continuous	6	1616056-6
A-400G	Gasket/Vented	G	Intermittent	7	1616056-8
A-400G2	Gasket/Vented	G	Intermittent	8	6-1616949-1
A-400L	Gasket/Vented	I	Intermittent	9	1-1616530-5
A-400S	Gasket/Vented	J	Continuous/ Intermittent	10	1616056-9

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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A-703 and AH-703 Series, Rated up to 400 Amps, 28 Vdc*

Product Facts

- SPST NO, Double break
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, Double Break

Rated Operating Voltage — 28 Vdc* Except for A-703CSM which is 36/40 Vdc

Resistive Rating — 400 Amps Resistive for 30 sec — 1,000 Amps Inrush Rating — 1,500 Amps

General Characteristics

Temperature Range --55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. - 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strenath —

All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1.250 Vrms 1,000 Vrms

Weight — 2.12 to 2.88 lbs Pickup Time, @ Nom. Voltage, Max. — 35 msec Dropout Time, @ Nom. Voltage, Max. — 35 msec Bounce Time, @ Nom. Voltage, Max. — .004 msec

Coil Characteristics

Duty Cycle -

Intermittent (Type A, See diagram below), Intermittent with suppression (Type B, See diagram below), Continuous, economized (Type C, See diagram below) or Continuous, economized with suppression (Type D, See diagram below)

Operating Voltage — 28 Vdc Nominal

Pickup Voltage @ 25°C, Max. — A-703B — 8 Vdc

A-703DBH - 10 Vdc A-703, A-703CD, A-703CSM, A-703D, A-703FA, A-703FB, A-703FSS, A-703ZS — 12 Vdc A-703T — 13 Vdc AH-703F, A-703E, A-703G-1, A-703GC, A-703GS, A-703R, AH-703F - 16 Vdc

Dropout Voltage —

A-703B — 0.5 to 3 Vdc A-703CD, A-703FA, A-703FB — 0.5 to 5 Vdc A-703T - 0.5 to 6 Vdc A-703, A-703CSM, A-703D, A-703FSS, A-703ZS - 0.5 to 7 Vdc 1.0 to 7 Vdc AH-703F, A-703G-1, A-703GC, A-703GS, AH-703F - 1.5 to 7 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

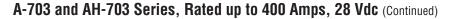
www.te.com

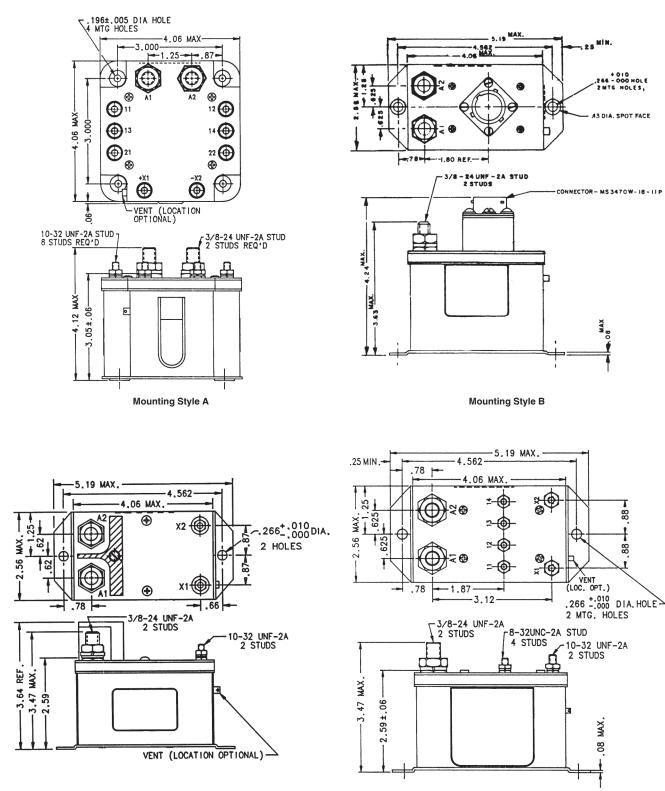
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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HARTMAN Power Switching DC Contactors

Mounting Style C

Dimensions are shown for

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

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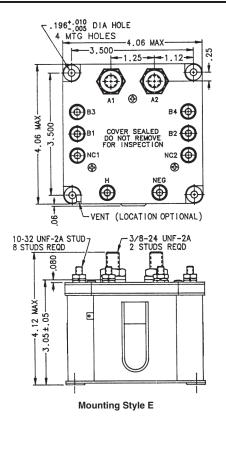
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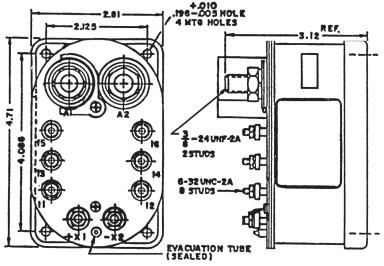
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Mounting Style F

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-102

Catalog 5-1773450-5 Revised 3-13

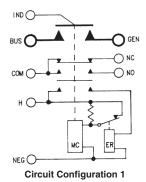
www.te.com

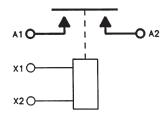
Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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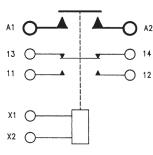


Circuit Configurations (Consult factory for other available circuit configurations)

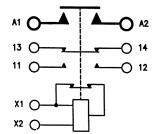




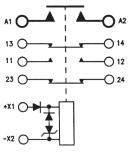
Circuit Configuration 2



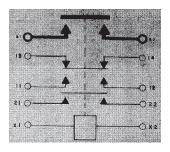
Circuit Configuration 3



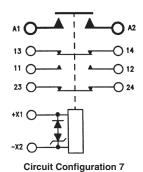
Circuit Configuration 4



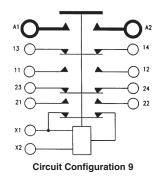
Circuit Configuration 5

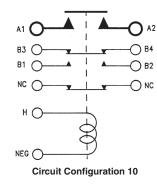


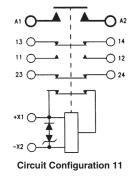
Circuit Configuration 6

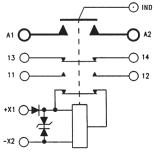


Circuit Configuration 8











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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

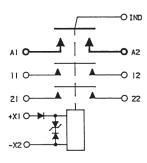
www.te.com

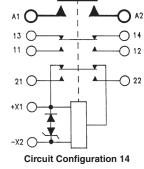
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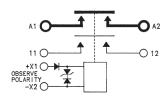
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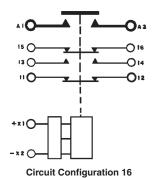
Circuit Configurations (Consult factory for other available circuit configurations)







Circuit Configuration 13



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Circuit Configuration 15

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-703	Gasket/Vented	А	Continuous, Economized	1	1616058-1
A-703CD	Gasket/Vented	С	Intermittent	2	1616058-6
A-703CSM	Gasket/Vented	D	Intermittent	15	1616058-7
A-703D	Gasket/Vented	D	Intermittent	3	1616058-8
A-703DBH	Gasket/Vented	D	Intermittent	3	1-1616058-0
A-703E	Gasket/Vented	D	Continuous, Economized	4	1-1616058-1
A-703FA	Gasket/Vented	D	Intermittent w/Supp.	5	1-1616058-2
A-703FB	Gasket/Vented	D	Intermittent	6	1-1616058-3
A-703FSS	Gasket/Vented	D	Intermittent w/Supp.	7	1-1616058-4
A-703G-1	Gasket/Vented	D	Continuous, Economized	8	1-1616058-5
A-703GC	Gasket/Vented	D	Continuous, Economized	19	1-1616058-6
A-703B	Gasket/Vented	E	Intermittent	10	1616058-3
A-703GS	Gasket/Vented	D	Continuous, Economized w/Supp.	11	1-1616058-7
A-703R	Gasket/Vented	D	Continuous, Economized w/Supp.	12	1-1616058-9
A-703T	Gasket/Vented	D	Intermittent w/Supp.	13	2-1616058-0
A-703ZS	Gasket/Vented	А	Continuous, Economized w/Supp.	14	2-1616058-2
AH-703F	Hermetically Sealed	F	Continuous, Economized w/Supp.	16	1616061-1

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Dimensions are shown for

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6-104

Catalog 5-1773450-5 Revised 3-13

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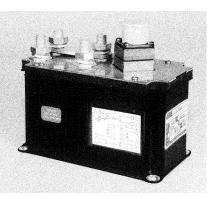
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A-981 Series, Rated up to 400 Amps, 28 Vdc

Product Facts

- SPDT, Double break or SPST NO, SPST NC
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPDT, Double Break or SPST NO, SPST NC

Rated Operating Voltage — 28 Vdc

Resistive Rating — 400 Amps Inrush for 30 sec — 1,000 Amps Inrush — 1,500 Amps

General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. - 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms 1,000 Vrms

Weight, Max. - 3.2 lbs

Coil Characteristics

Duty Cycle --- Continuous with suppression Operating Voltage, Max. - 31 Vdc Operating Voltage, Min. - 17 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage @ 25°C — 1 to 10 Volts Coil Current, Inrush, Max. — 4.5 Amp

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For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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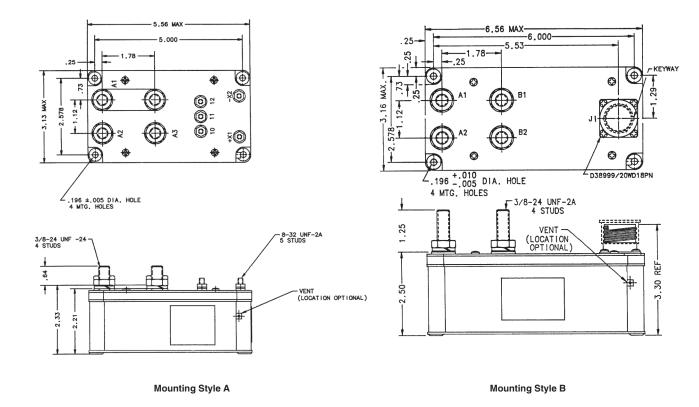
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

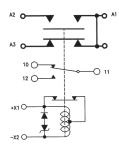
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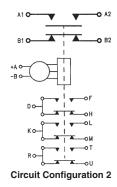
A-981 Series, Rated up to 400 Amps, 28 Vdc (Continued)



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



HARTMAN Part Number	Construction Type	Mounting Coil Style Type		Circuit Config.	TE Part Number
A-981S	Gasket/Vented	А	Continuous, Economizing w/Supp.	1	1616083-7
A-981P	Gasket/Vented	В	Continuous, Economizing w/Supp.	2	1616083-6

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-106

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

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A-792 Series, Rated up to 500 Amps, 50 Vdc

Product Facts

- SPST NO, Quad. break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

Performance Data

Electrical Characteristics Main Contacts — Contact Arrangement —

SPST NO, Quad. Break Rated Operating Voltage — 50 Vdc

Resistive Rating — 500 Amps Auxiliary Contacts -

Aux. Contact Arrangement — SPDT, SPST NC Rated Operating Voltage — 38 Vdc

Resistive Rating — 5 Amps

General Characteristics

Temperature Range --55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load — 50,000 cycles **Operating Cycles (Life)** Mechanical — 100,000 cycles Weight, Max. - 4 lb 8 oz.

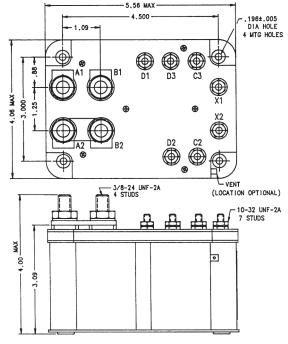
Coil Characteristics

Duty Cycle — Continuous, economizing Operating Voltage, Nom. —

35-39 Vdc Pickup Voltage @ 25°C, Max. —

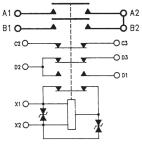
20 V Resistance @ 25°C —

Pickup — 27 Ohm ± 20% Hold — 111 Ohm ± 20% Suppression, Peak, Max. - 50 V



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
phone 419-521-9500 or -2749.	A-792SFS	Gasket/Vented	А	Continuous, Economizing w/Supp.	1	1616101-2

For factory-di assistance, pl fax 419-526-2

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

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6-107



A-712 Series, Rated up to 600 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Meets requirements of MIL-PRF-6106



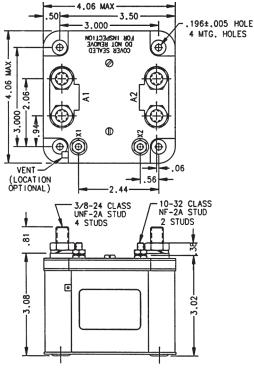
Performance Data

Electrical Characteristics Contact Arrangement – SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 600 Amps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated Resistive Load** — 50,000 cycles **Operating Cycles (Life)** Mechanical — 100,000 cycles Dielectric Strenath — All Circuits to Ground - 1,250 Vrms Circuit to Circuit - 1,250 Vrms

1,000 Vrms Weight, Max. - 3.00 lbs - 3 lbs 7 oz.

Coil Characteristics Duty Cycle — Continuous or Intermittent Operating Voltage, Max. - 29 Vdc Coil Voltage, Nom. - 24-28 Vdc Pickup Voltage, Max. — 18 Vdc Dropout Voltage — 1 to 5 Vdc Coil Current, Hold, Max. — 0.6 Amp



For factory-direct application

Mounting Style A

assistance, phone 419-521-9500 or fax 419-526-2749.

6-108

Catalog 5-1773450-5 Revised 3-13

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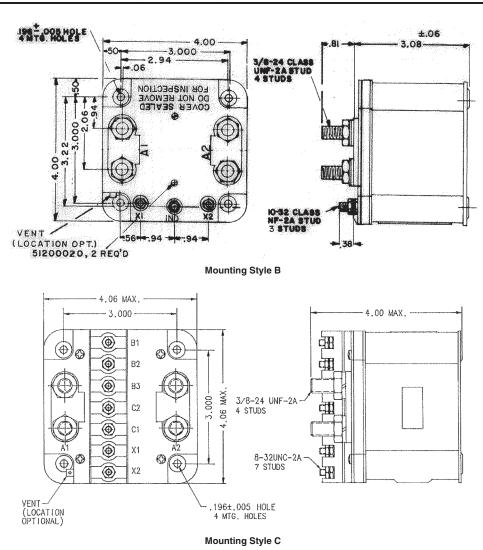
reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

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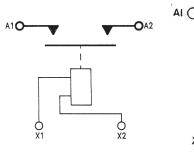




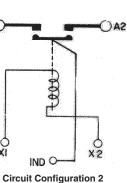
A-712 Series, Rated up to 600 Amps, 28 Vdc (Continued)

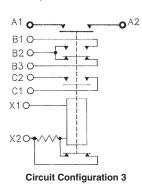
Circuit Configurations (Consult factory for other available circuit configurations)

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Circuit Configuration 1





HARTMAN Part Number	Construction Type	Mounting Style	g Coil Type	Circuit Config.	TE Part Number
A-712AB	Gasket/Vented	A	Continuous	1	2-1616058-3
A-712AF	Gasket/Vented	A	Intermittent	1	2-1616058-4
A-712J	Gasket/Vented	В	Continuous	2	2-1616058-6
A-712W	Gasket/Vented	С	Continuous, Economizing	J 3	6-1616032-3

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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6-109



A-882 Series, Rated up to 600 Amps, 28/48 Vdc

Product Facts

- 2PDT, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics

Main Contacts -Contact Arrangement —

2PDT, Double Break Rated Operating Voltage —

28/48 Vdc

Resistive Rating — 600 Amps Resistive for 30 sec — 1,000 Amps Motor Rating — 1,500 Amps, Inrush only

Auxiliary Contacts -Aux. Contact Arrangement — SPST NO

Resistive Rating — 5 Amps Inductive Rating — 5 Amps

General Characteristics

Temperature Range --65°C to +160°C

Operating Cycles (Life) at Rated **Resistive Load, Min.** — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

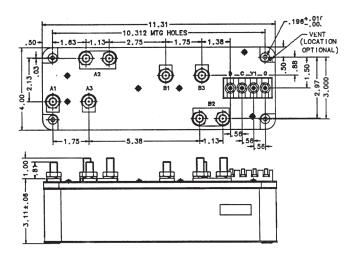
Dielectric Strength -All Circuits to Ground — 1,250 Vrms

Circuit to Circuit - 1,250 Vrms Coil to Ground and Aux. Contacts -1,000 Vrms

Altitude, Max. - 50,000 ft Weight - 8.75 lbs

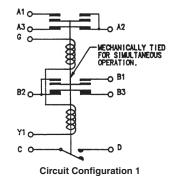
Coil Characteristics

Duty Cycle — Intermittent Operating Voltage, Max. - 29 Vdc Operating Voltage, Min. - 18 Vdc Pickup Voltage, Max., Hot - 18 Vdc Dropout Voltage, Max., Hot - 7 Vdc Coil Current, Max. @ 70°F — 8 Amps Coil Current, Max. @ -65°F ----9.6 Amps



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Construction Mounting Coil Circuit ΤE For factory-direct application Config. Part Number Part Number Туре Style Туре assistance, phone 419-521-9500 or A-882DL Gasket/Vented Intermittent 1616102-6 А 1

6-110

Catalog 5-1773450-5 Revised 3-13

fax 419-526-2749.

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Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

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A-931 Series, Rated up to 600 Amps, 28 Vdc

Product Facts

- SPST NC, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics

Main Contacts —

Contact Arrangement -

SPST NC, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 600 Amps Inrush for 30 sec — 1,000 Amps

Inrush for 5 min — 800 Amps Auxiliary Contacts —

Aux. Contact Arrangement — DPST

Rated Operating Voltage — 28 Vdc Resistive Rating — 5 Amps

General Characteristics

Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Strength —

All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 1,000 Vrms

Weight, Max. — 3.00 lbs

Coil Characteristics

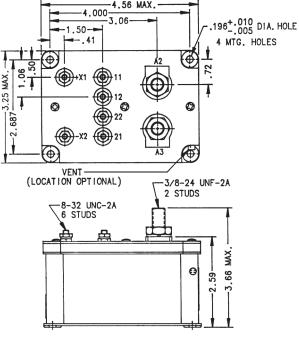
Duty Cycle — Continuous, economizing

Operating Voltage, Max. — 30 Vdc Operating Voltage, Min. — 18 Vdc Pickup Voltage, Initial, Max. @

71°C — 10 Vdc Dropout Voltage — 1 to 7 Vdc

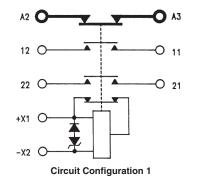
Resistance, Inrush ± 20% @ 25°C – 3 Ohm

Resistance, Hold ± 20% @ 25°C — 80 Ohm





Circuit Configurations (Consult factory for other available circuit configurations)



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN	Construction	Mounting	Coil	Circuit	TE
Part Number	Type	Style	Type	Config.	Part Number
A-931F	Gasket/Vented	А	Continuous, Economizing w/Supp.	1	

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

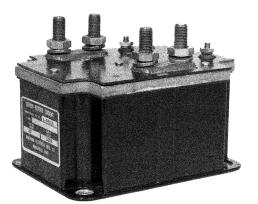
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A-981 Series, Rated up to 600 Amps, 28/48 Vdc

Product Facts

- SPDT, Double break or **1PST NO, 1PST NC**
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPST NC, Double Break or 1PST NO, 1PST NC

Rated Operating Voltage - 28 Vdc Resistive Rating — 600 Amps Inrush for 30 sec — 1,000 Amps Motor Rating — 1,500 Amps, Inrush only

General Characteristics Temperature Range --55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000 cycles **Operating Cycles (Life)**

Mechanical, Min. — 100,000 cycles Weight, Max. -A-981E — 4 lbs 5 oz A-981K — 4.5 lbs

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Mounting Style B

Coil Characteristics

Duty Cycle -A-981E — Continuous A-981K — Continuous, economizing

Operating Voltage -A-981E — 28 Vdc A-981K — 24 Vdc min. to 30 Vdc max.

Pickup Voltage -A-981E — 18 Vdc max. hot A-981K — 16 Vdc max. initial @ 25°C

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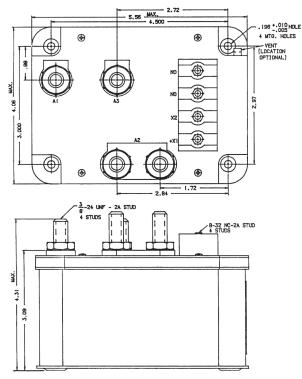
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/8-24 UNF -24 STUDS

Dropout Voltage -A-981E - 10 Vdc max. hot A-981K - 1 to 10 Vdc



Mounting Style A

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13

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Dimensions are in millimeters unless otherwise specified.

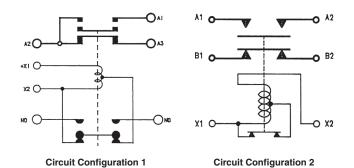
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A-981 Series, Rated up to 600 Amps, 28/48 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-981E	Gasket/Vented	А	Continuous, Economizing	1	1616083-1
A-981K	Gasket/Vented	В	Continuous, Economizing	2	1616083-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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6-113



Cross Reference

Main Main Aux. Coil Operating Seal Duty Coil Trans. Hartman ΤE Current Contact Voltage AC/DC Rating Contact Mode Type Cycle Voltage Part No. Part No. Rating Config. Config (VDC) SPDT NO 28 Side Stable _ 30 Hermetic Cont. DH-14A 1616089-1 _ SPDT NC SPDT NO 28 Side Stable 30 Hermetic Cont. _ DH-14AL 1616089-2 SPDT NC 25 DC SPDT NO 28 30 42 Side Stable _ Hermetic Cont. DH-14AT 1616089-3 SPDT NC SPDT NO 3 Side Stable 28 Hermetic Intermittent **DH-21N** 1616026-2 _ _ S{DT NC SPST NO 28 Side Stable 28 Gasket/Vented Cont. D-7AC 1616088-1 SPST NC 28 SPST NO Side Stable DPDT 28 Gasket/Vented Cont _ D-7LHB 1616064-1 DH-18DA 50 DC 28 4PDT Center Off _ 28 Hermetic Cont _ 1616050-2 SPST NO DPDT 28 Side Stable 18-30 Hermetic Cont. 50 DH-7ATK 1616089-7 SPST NC 28 28 Cont. 1616103-2 2PST NO Side Stable _ Hermetic _ DH-7MN 28 SPST NO Side Stable (2)SPST NO 28 Hermetic Cont. DH-7TB 1-1616089-3 SPST NC 28 SPST NO SPDT 24-32 A-1077DD 1616055-3 Side Stable Gasket Cont DC 100 28 SPDT Side Stable 1NO, 1NC 24-30 Gasket Cont 45 A-1077S 1616081-3 SPST NO D-31BAA 28 SPDT Center Off 115VAC Gasket/Vented 1616097-1 Cont 28 (2)SPST Center Off SPST NO 28 Gasket/Vented Cont 45 D-32A 1616097-2 100 DC 1PST NO Side Stable 18-22.5 Hermetic DH-25EA 1616089-4 Cont 28 1PST NC 28 SPDT Center Off SPST NO DHR-31BA 1616098-1 28 Hermetic Cont _ 28 SPST NO Side Stable DPDT 24-30 Gasket A-1077D 1616055-2 Int. _ 28 SPST NO Side Stable DPDT 24-30 Gasket A-1077F 1616055-4 _ 200 DC 28 24-30 SPST NO Side Stable _ Gasket Cont _ A-1077G 1616055-5 28 SPST NO Side Stable DPDT 24-30 Gasket Cont A-1077V 1616055-6 28 SPST NO Side Stable DPDT 24-30 Gasket Cont A-1077W 1616081-4 200 DC 28 SPST NC Side Stable DPST NO 24-30 Gasket/Vented Int. A-876K 1616059-1 230 DC 28 SPDT Side Stable DPDT 24-30 Gasket Cont A-1077B 1616081-1 28 SPST NO Side Stable SPDT 28 Gasket/Vented Cont A-770AM 3-1616058-1 29 SPST NO Side Stable SPST NO 28 Gasket/Vented Cont _ A-770N 3-1616058-3 28 SPST NO Side Stable 24 Gasket/Vented A-770RF 3-1616058-4 _ Cont _ 28 SPST NO Side Stable Form Z 24-30 Gasket/Vented Int. _ A-770RG 3-1616058-5 SPST NO 28 Side Stable Form Z 24-30 Gasket/Vented Cont. 45 A-770RN 3-1616058-8 SPST NC 300 DC Form Z 28 SPST NO 24-30 Gasket/Vented 45 A-770RSS 3-1616058-9 Side Stable Cont. SST NC 28 SPST NO Side Stable Form Z 16-32 Gasket/Vented Int 80 A-770RV 1616530-7 28 SPST NO Side Stable SPDT 28 Gasket/Vented Cont A-770W 4-1616058-1 SPST NO 42 28 Side Stable 2PST NO 28 Gasket/Vented Int A-700WA-2 4-1616058-2 DPST NO 28 28 SPST NO Side Stable Gasket/Vented Int. A-770WA-3 4-1616058-3 _ SPS NC 28

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-114

Catalog 5-1773450-5 Revised 3-13

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28

SPST NO

SPST NO

Dimensions are shown for

Side Stable

Side Stable

Dimensions are in millimeters unless otherwise specified.

3PDT

SPDT

28

Gasket/Vented

115 VAC Gasket/Vented

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Cont

Cont

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For additional support numbers please visit www.te.com

A-770WF

AR-770W

4-1616058-4

0-1616063-1



Cross Reference (Continued)

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.
•		24/48	DPDT NC SPDT NO	Side Stable	SPST NO	24-30	Gasket/Vented	Int.	-	A-848KH	1616082-2
300	DC	24/48	DPST NC SPST NO	Side Stable	SPST NO	24-30	Gasket/Vented	Int.	-	A-848KH-2	1616082-4
		28	DPST NO	Side Stable	DPST NO DPST NC	28	Gasket/Vented	Cont.	45	A-848MAS	1616102-2
		28	DPST NO	Side Stable	3PST NC	24-30	Gasket/Vented	Cont. Econ.	50	A-848MLS	1616102-3
		28	DPST NO	Side Stable	3PST NC	24-30	Gasket/Vented	Cont. Econ.	50	A-848KLC	0-1616082-6
300	DC ·	30	SPDT	Side Stable	SPDT	30	Hermetic	Int.	-	AH-965H	1616084-
300	D0 -	30	SPDT	Side Stable	3PDT	28	Hermetic	Cont.	45	AH-965M	1616084-2
		28	SPST NO	Side Stable	SPDT	28	Gasket/Vented	Int.	45	A-400A	1-1616530-0
		28	SPST NO	Side Stable	-	28	Gasket/Vented	Int.	45	A-400AA	1616056-2
		28	SPST NO	Side Stable	DPDT	28	Gasket/Vented	Cont.	45	A-400B	1616056-4
		28	SPST NO	Side Stable	(1)SPST NO (1)SPST NC	28	Environ.	Cont.	45	A-400D	1616056-5
		28	SPST NO	Side Stable	(1)SPST NO (1)SPST NC	28	Environ.	Cont.	45	A-400DB1	1-1616964-3
400	DC	28	SPST NO	Side Stable	SPDT	28	Gasket/Vented	Cont.	45	A-400DC	1616056-0
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Int.	45	A-400G	1616056-6
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Int.	45	A-400G2	6-1616949-
		28	SPST NO	Side Stable	DPST NO DPST NC	28	Gasket/Vented	Int.	45	A-400L	1-1616530-
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Cont/Int	45	A-400S	1616056-
		28	SPST NO	Side Stable	SPDT	24-30	Gasket/Vented	Cont. Econ.	-	A-703	1616058-
		28	SPST NO	Side Stable	-	24-30	Gasket/Vented	Int.	-	A-703CD	1616058-
		36/40	SPST NO	Side Stable	SPST NO	24-30	Gasket/Vented	Int.	50	A-703CSM	1616058-
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Int.	-	A-703D	1616058-
		28	SPST NO	Side Stable	Form Z	18-31	Gasket/Vented	Int.	-	A-703DBH	1-1616058-
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Cont. Econ.	-	A-703E	1-1616058-
		28	SPST NO	Side Stable	Form Z SPST NC	24-30	Gasket/Vented	Int.	45	A-703FA	1-1616058-
		28	SPST NO	Side Stable	Form Z SPST NC	24-30	Gasket/Vented	Int.	-	A-703FB	1-1616058-3
		28	SPST NO	Side Stable	Form Z SPST NC	24-30	Gasket/Vented	Int.	45	A-703FSS	1-1616058-4
400	DC	28	SPST NO	Side Stable	Form Z SPST NC	18-31	Gasket/Vented	Cont. Econ.	-	A-703G-1	1-1616058-
		28	SPST NO	Side Stable	Form Z SPDT	18-31	Gasket/Vented	Cont. Econ.	-	A-703GC	1-1616058-0
		0.0		0.4.01.11	Form Z	04.00	Onelint Alter 1	Le C		A 700D	1010050
		28	SPST NO	Side Stable	SPST NC	24-30	Gasket/Vented	Int.	-	A-703B	1616058-3
		28	SPST NO	Side Stable	Form Z SPST NC	18-31	Gasket/Vented		45	A-703GS	1-1616058-
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Cont. Econ.	45	A-703R	1-1616058-
		28	SPST NO	Side Stable	SPST NO SPST NC	24-30	Gasket/Vented	Int.	45	A-703T	2-1616058-
		28	SPST NO	Side Stable	SPST NO Form Z	18-24	Gasket/Vented	Cont. Econ.	45	A-703ZS	1-1616058-
		28	SPST NO	Side Stable	1Form Z 1Form Y	18-31	Hermetic	Cont. Econ.	-	AH-703F	1616061-

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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			GIU	ss Reieren	ice (Conti	nued)					
Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.
400	DC	28	SPDT	Side Stable	Form Z	17-31	Gasket/Vented	Int.	45	A-981S	1616083-7
100	50	28	1PST NO 1PST NC	Side Stable	3PDT	24-30	Gasket/Vented	Cont. Econ.	-	A-981P	1616083-6
500	DC	50	SPST NO	Side Stable	SPDT SPST NC	38	Gasket/Vented	Cont. Econ.	50	A-792SFS	1616101-2
		29	SPST NO	Side Stable	_	24-28	Gasket/Vented	Cont.	_	A-712AB	2-1616058-3
		29	SPST NO	Side Stable	_	24-28	Gasket/Vented	Int.	-	A-712AF	2-1616058-4
600	DC	29	SPST NO	Side Stable	-	24-28	Gasket/Vented	Cont.	-	A-712J	2-1616058-6
		29	SPST NO	Side Stable	SPST NO SPDT	24-28	Gasket/Vented	Cont.	_	A-712W	6-1616058-3
		28/48	DPDT	Side Stable	SPST NO	29	Gasket/Vented	Int.	-	A-882DL	1616102-6
		28	SPST NC	Side Stable	DPST NO	18-30	Gasket/Vented	Cont. Econ.	45	A-931F	1616060-1
600	DC	28	SPDT	Side Stable	SPST NO	28	Gasket/Vented	Cont.	_	A-981E	1616083-1
		28	SPST NO SPST NC	Side Stable	_	24-30	Gasket/Vented	Cont. Econ.	-	A-981K	1616083-2

Cross Reference (Continued)

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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Catalog 5-1773450-5 Revised 3-13 Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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E-328-2 Series AC Low Voltage Warning Relay, 10 Amps, 28 Vdc Contacts

Product Facts

- DPDT
- Gasket sealed

Performance Data

Electrical Characteristics Relay/Relay Driver Contact Arrangement — DPDT Rated Operating Voltage -28 Vdc Resistive Rating — 10 Amps Inductive Rating — 5 Amps Lamp Rating — 1.5 Amps

Coil Characteristics

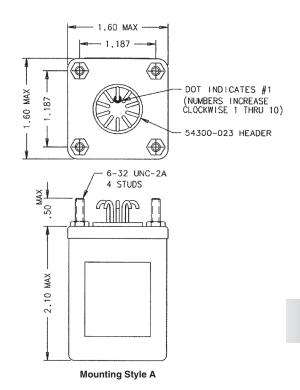
Duty Cycle — Continuous

Voltage Sensor

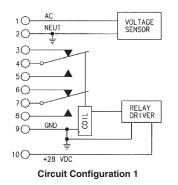
Operating Voltage, Nom. — 115 V, 380-420 Hz Pickup Voltage — 107 ± 3 Vrms Dropout Voltage — 100 ± 2 Vrms Dropout Time, Min. — 40 msec

General Characteristics

Temperature Range -55°C to +85°C **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles Weight, Max. - 6 oz.



Circuit Configurations (Consult factory for other available circuit configurations)



ory-direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
ce, phone 419-521-9500 or	Part Number	Type	Style	Type	Config.	Part Number
526-2749.	E-328-2	Gasket/Vented	А	Continuous	1	1-1616126-8

For factor assistance fax 419-52

Catalog 5-1773450-5 Revised 3-13

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A-772 Series Battery Contactor — Discharge Overload, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NO
- Gasket sealed
- Auxiliary contacts available
- Limits overload current duration



Performance Data

Electrical Characteristics Main Contacts — Contact Arrangement — SPST NO Rated Operating Voltage — 28 Vdc Resistive Rating — 200 Amps Auxiliary Contacts — Aux. Contact Arrangement — SPST NC Rated Operating Voltage — 28 Vdc Resistive Rating — 5 Amps

General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load — 50,000 cycles Operating Cycles (Life) Mechanical — 100,000 cycles Electrical — 50,000 min. Weight, Max. — 2 lbs. 13 oz.

Coil Characteristics

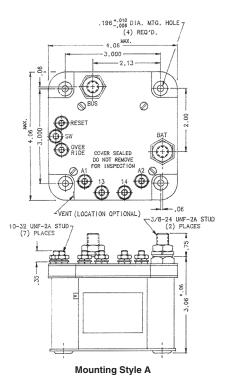
Duty Cycle — Continuous Operating Voltage, Max. — 30 V Operating Voltage, Min. — 24 V Pickup Voltage @ 25°C, Max. — 16 V

Dropout Voltage — 1 to 7 V

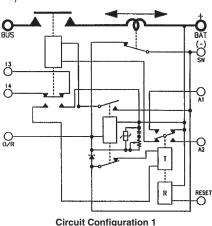
Overload Sensor Type — Latching Polarized — Discharge

Trip — 300 Amps ± 10% Time Delay — 900 to 1,100 msec

Sensor Contacts, Aux. Sensor Contact Arrangement — SPST NO Rated Operating Voltage — 28 Vdc Resistive Rating — 3 Amps Reset Rating, Max. — 18 V



Circuit Configurations (Consult factory for other available circuit configurations)



tion	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
21-9500 or	A-772XTB	Gasket/Vented	А	Continuous	1	1616545-1

For factory-direct application assistance, phone 419-521-9500 of fax 419-526-2749.

6-118

Catalog 5-1773450-5 Revised 3-13

-13 m Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

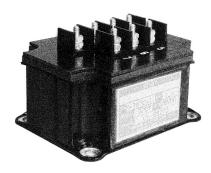
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



E-387 Series Current Sensor, Rated up to 25 Amps, 28 Vdc

Product Facts

- SPDT
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

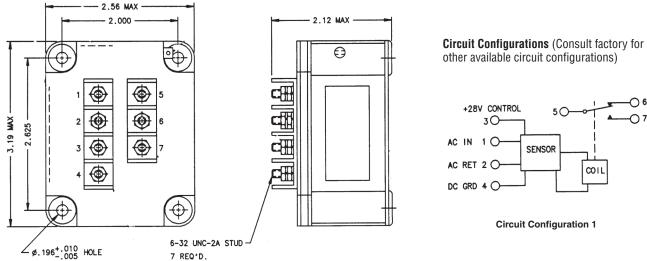


Performance Data Electrical Characteristics Indicator Contact Arrangement — SPDT Rated Operating Voltage - 28 Vdc Resistive Rating — 1 Amp

General Characteristics Dielectric Strength -1,000 Vrms, 60 Hz Insulation Resistance @ 500 Vdc & 20°C & 50% R.H. (Max.)— 1,000 megohm min. Weight, Max. - 8 oz

Coil Characteristics

Duty Cycle — Continuous Control Power — 28 Vdc Sensor Input — 400 Hz \pm 100 Hz Pickup Current — 14 ± 2 Amps Dropout Current — 7 ± 1 Amp Continuous Sensor Current — 25 Amp, max.



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Mounting Style A

6-119

HARTMAN	Construction	Mounting	Coil	Circuit	TE
Part Number	Type	Style	Type	Config.	Part Number
E-387C-1	Gasket/Vented	А	Continuous	1	

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



A-700 Series Cutout — Reverse Current, Rated up to 100 Amps, 28 Vdc

Product Facts

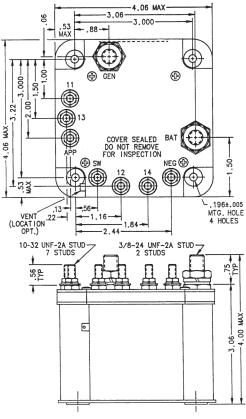
- SPST NO
- Gasket sealed
- Auxiliary contacts available



Performance Data

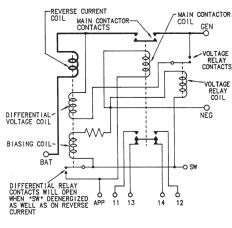
Electrical Characteristics Main Contacts — Contact Arrangement — SPST NO Rated Operating Voltage — 28 Vdc Resistive Rating — 100 Amps Resistive Rating at 1 min. — 200 Amps Interrupting Capacity — 4,500 Amps Reverse Current Setting* — 2 to 6 Amps Differential Voltage for Pickup — .85 ± .15 V Auxiliary Contacts — Aux. Contact Arrangement — SPST NC, SPST NO Resistive Rating — 5 Amps Inductive Rating — 2 Amps Lamp Rating — 1 Amps General Characteristics Weight, Max. — 3 lbs 1 oz Coil Characteristics Duty Cycle — Continuous

*Over a Voltage Range of 27.5 ± 2.5 Vdc



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
fax 419-526-2749.	A-700BU	Gasket/Vented	А	Continuous	1	1616109-6

6-120

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

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A-700 Series Cutout — Reverse Current, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NO
- Gasket sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPST NO Rated Operating Voltage — 28 Vdc Current Rating, Continuous — 200 Amps Current Rating at 15 sec. —

1,000 Amps Current Rating at 1 min. — 500 Amps Current Rating at 5 min. —

300 Amps

Interrupting Capacity — 4,500 Amps

Reverse Current Setting* — 6 to 17 Amps

Differential Voltage for Pickup — .85 \pm .15 V

General Characteristics

Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

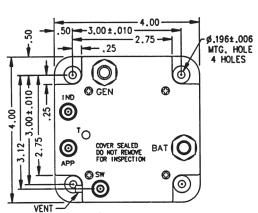
Operating Cycles (Life) Mechanical, Min. — 100,000 cycles

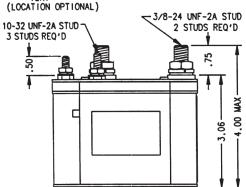
Electrical— 50,000 min. Weight, Max. — 2 lbs 15 oz

Coil Characteristics

Duty Cycle — Continuous

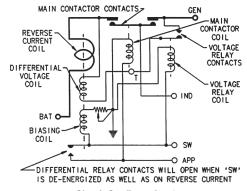
*Over a Voltage Range of 27.5 ± 2.5 Vdc and Calibrated at 12 ± 1 Amp RC at 28 Vdc & $25^{\circ}C \pm 5^{\circ}C$





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

please visit www.te.com

on	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
-9500 or	A-700AQ-4	Gasket/Vented	А	Continuous	1	1616109-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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A-700 Series Cutout — Reverse Current, Rated up to 300 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, Double Break Rated Operating Voltage - 28 Vdc Resistive Rating — 300 Amps Reverse Current Dropout — 9 to 25 Amps Differential Pickup - .5 ± .15

General Characteristics Temperature Range — -55°C to +71°C

Operating Cycles (Life) at Rated Resistive Load, Min. - 50,000 cycles **Operating Cycles (Life)**

Mechanical, Min. — 100,000 cycles Electrical -50,000 min.

Dielectric Strength -All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -500 Vrms

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Weight, Max. -A-700AAP - 2.9 lbs A-700ZC-7, A-700ZG - 2.5 lbs

Coil Characteristics

Duty Cycle — Continuous Duty Cycle when using "APP" — Intermittent Nom. Coil Voltage — 24 to 30 Vdc

Pickup Voltage, Max. — 18 Vdc Dropout Voltage — 0.5 to 7.0 Vdc

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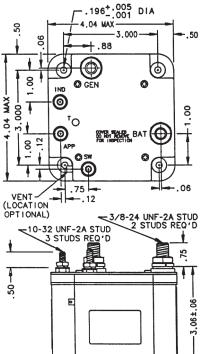
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Mounting Style A

Dimensions are shown for

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-122

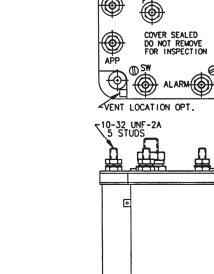
Catalog 5-1773450-5 Revised 3-13

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reference purposes only. Specifications subject to change.

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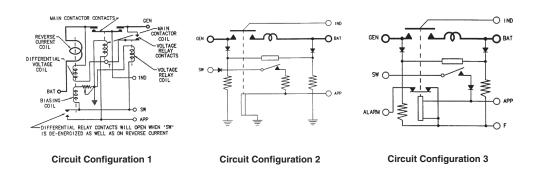
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Mounting Style B



A-700 Series Cutout — Reverse Current, Rated up to 300 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-700AAP	Gasket/Vented	А	Continuous	1	1616109-1
A-700ZC-7	Gasket/Vented	А	Continuous	2	1616109-7
A-700ZG	Gasket/Vented	В	Continuous	3	1616109-9

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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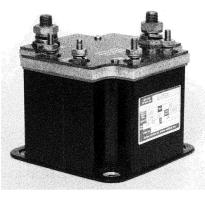
6-123



A-701 Series Cutout — Reverse Current, Rated up to 400 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Meets many requirements of MIL-C-5026 and MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -SPST NO, Double Break Rated Operating Voltage - 28 Vdc Resistive Rating — 400 Amps Resistive for 30 sec. - 1,000 Amps Inrush Rating — 1,500 Amps **Reverse Current Dropout** -A-701D — 25 to 50 Amps A-701C — 18 to 35 Amps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated** Resistive Load, Min. - 50,000 cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles

Electrical — 50,000 min. **Dielectric Strength** All Circuits to Ground — 1,250 Vrms

Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts -500 Vrms Differential Pickup - 0.5 ± .15 Vdc

> MAX -3,000

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Weight, Max. -A-701D — 3 lbs 10 oz A-701C — 4 lbs

Coil Characteristics

Duty Cycle — Continuous, economizing

Duty Cycle when using "APP" on A-701D or "GMG" on A-701C — Intermittent

Nom. Coil Voltage — 24 to 30 Vdc Pickup Voltage, Max. —

A-701D — 15 Vdc A-701C — 12 Vdc

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Mounting Style B

-32 UNF-2A

DIV 6

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GMG

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Dropout Voltage — 0.5 to 7.0 Vdc

.196+.010

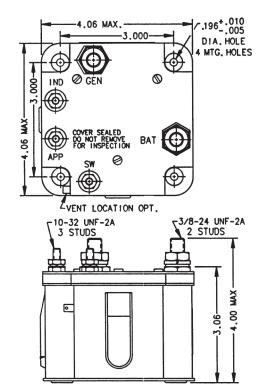
DIA, HOLE 4 MTG. HOLES

3/8-24 UNF-2A

MAX

3.75

2 STUDS



Mounting Style A

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-124

Catalog 5-1773450-5 Revised 3-13

www.te.com

Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

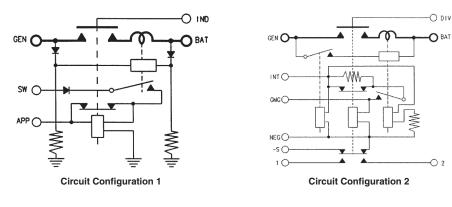
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

Dimensions are shown for reference purposes only.



A-701 Series Cutout — Reverse Current, Rated up to 400 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-701D	Gasket/Vented	А	Continuous, Economizing	1	1-1616109-1
A-701C	Gasket/Vented	В	Continuous, Economizing	2	1-1616109-0

6-125

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



A-702 Series Cutout — Reverse Current, Rated up to 600 Amps, 28 Vdc

Product Facts

SPST NO

Gasket sealed

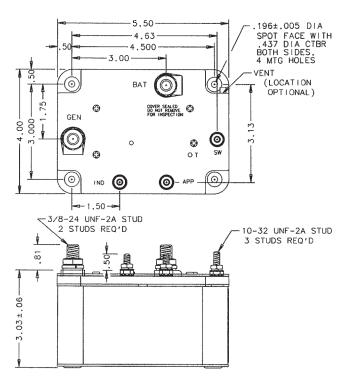
Performance Data Electrical Characteristics Contact Arrangement — SPST NO, Double Break Rated Operating Voltage — 28 Vdc Resistive Rating — 600 Amps Reverse Current Dropout — 18 to 35 Amps Differential Pickup — .5 ± .15 General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Electrical — 50,000 min.

Dielectric Strength — All Circuits to Ground — 1,250 Vrms Circuit to Circuit — 1,250 Vrms Coil to Ground and Aux. Contacts — 500 Vrms

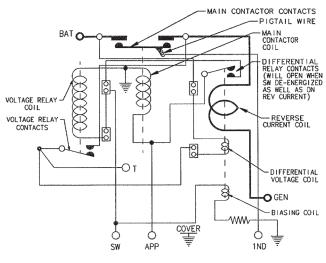
Weight, Max. — 3.9 lbs.

Coil Characteristics Duty Cycle — Continuous Duty Cycle when using "APP" — Continuous Nom. Coil Voltage — 24 to 30 Vdc Pickup Voltage, Max. — 18 Vdc

Dropout Voltage — 0.5 to 7.0 Vdc



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

Mounting Style A

Dimensions are shown for

	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
For factory-direct application assistance, phone 419-521-9500 or	A-702AAP	Gasket/Vented	А	Continuous	1	1-1616109-3
fax 419-526-2749.						

6-126

Catalog 5-1773450-5 Revised 3-13

3 reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



B-188 Series External Power Monitor, 115 VAC, 400 Hz

Product Facts

- SPST
- Gasket Sealed
- Over/under frequency protection
- Over/under voltage protection

Performance Data

Electrical Characteristics

Contact Arrangement — SPST

115 VAC/28 Vdc, 3 phase, 400 Hz

Rated Operating Voltage —

Resistive Rating — 3 Amps

General Characteristics

Dielectric Strength -

Altitude --- 0-40,000 ft

Weight, Max. - .75 lb Sinusoidal Vibration —

5-15.5 CPS ±0.13 G, 15.5-54 CPS 0.01 inch DA

54-500 CPS ± 1.5 G

Para. 4.6.2 of MIL-E-24021A

-54°C to +71°C

Operating Temperature Range —

Leakage current will not exceed .001

Shock, Max. — 10 G 30 ± 1 ms

Amps when unit is subjected to test of

Dust tight



Operation — Contacts will remain as shown (off condition) until input power is anywhere within the "on" zone. Contacts will revert to off condition whenever input voltage and/or frequency is above the high side or below the low side "off". Limits for time intervals exceeding the transient period.

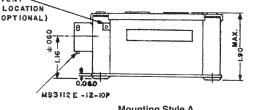
Limits

- "On" zone "On" zone voltage limits 100 to 120 volts rms all phases "On" zone frequency limits 380 to 420 CPS "Off" limits -
- High side voltage "off" limits - 131 ± 5 volts 3 Ø (highest of 3Ø) High side frequency "off" limits -425 ± 5 CPS Low side frequency "off" limits -
- 375 ± 5 CPS Voltage Transient Limits -
- High Side above limit 2 but below limit 1 of Fig. 2 MIL-STD-704, 3Ø (highest of 3Ø) Low Side — below limit 3 Fig. 2 MIL-STD-704

Over and Under frequency time delay 3 ± 1 sec. Output rating SPST 3 AMP Ind. 28 V DC/115 V 400 CPS

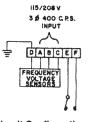
4.078 MAX 3.6.3 MAX. 3.000 ۲ ۲ 0 **©**I ۵ 3,000 .2 0 ⊗ ø A . +010 198-000 HOLE, 4 MTG. HOLES SAND BOYTOM & SPOT FACE TOP OF ALL MTG. HOLES 0.304 DIA. MIN. 50 DIA





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749.	B-188MA-1	Gasket/Vented	A	N/A	1	1616114-7

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

HARTMAN Sensors and Protective Devices

6-127



A-711 Series Relay, Automatic Dropout, Rated up to 600 Amps, 29 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

For factory-direct application

fax 419-526-2749.

assistance, phone 419-521-9500 or



Performance Data

Electrical Characteristics

Contact Arrangement — SPST NO, Double Break Operating Voltage, Max. - 29 Vdc Resistive Rating — 600 Amps Pickup Voltage, Max. — 17 Vdc Dropout Voltage, Max. — 14 Vdc, except for A-711 which is 1 to 5 Vdc

Pickup Current, Max. — 490 Amps

Dropout Current at any Contactor

Voltage — 150 ± 15 Amps, except for A-711R which is S1 — 135 ± 15 Amps and S2 — 235 ± 20 Amps

General Characteristics Temperature Range — -55°C to +71°C **Operating Cycles (Life) at Rated**

Resistive Load, Min. - 25,000 cycles

Operating Period, Max. - 3 min. Weight, Max. -

> 4.00 3.00

2.75

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8-32 UNC-2A 6 STUDS

Mounting Style B

25-4

90 2.75

3/8-24 UNF-2A 4 STUDS

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A-711JF, A-711JF — 3 lbs 13 oz A-711Z — 3 lbs 6 oz A-711R — 3 lbs 5 oz

Coil Characteristics

Duty Cycle — Intermittent Coil Current, Max. -A-711AJ, A-711JM — 2 Amps A-711Z — 0.6 Amp A-711R — 1.0 Amp

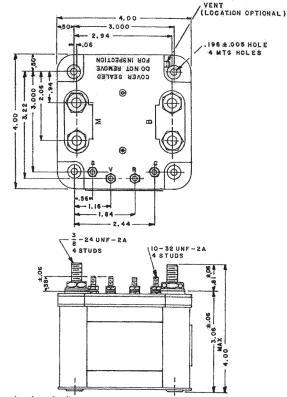
Coil Voltage, Nom. - 28 Vdc Signal Resistor — 20 Ohm ± 10%, 20 W

Coil Res., "C" Term. to "GND" — 36 Ohm ± 10%

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For factory-direct application assistance, phone 419-521-9509 Style A fax 419-526-2749.

6-128

Catalog 5-1773450-5 Revised 3-13

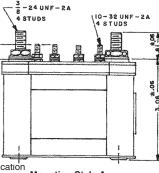
www.te.com

reference purposes only. Specifications subject to change.

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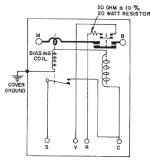


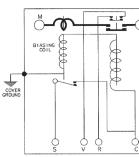
Dimensions are shown for

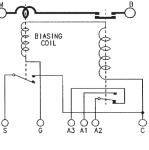


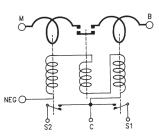
A-711 Series Relay, Automatic Dropout, Rated up to 600 Amps, 29 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)









Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

Circuit Configuration 4

Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
asket/Vented	A	Intermittent	1	1-1616109-6
asket/Vented	A	Intermittent	2	1-1616109-7
asket/Vented	В	Intermittent	3	6-1616071-3
asket/Vented	А	Intermittent	4	1-1616109-8
	Type Gasket/Vented Gasket/Vented Gasket/Vented	Type Style iasket/Vented A iasket/Vented A iasket/Vented B	Type Style Type tasket/Vented A Intermittent tasket/Vented A Intermittent tasket/Vented B Intermittent	Type Style Type Config. casket/Vented A Intermittent 1 casket/Vented A Intermittent 2 casket/Vented B Intermittent 3

6-129

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



A-957 Series Relay, Automatic Cutout, Rated up to 200 Amps, 28 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

Performance Data

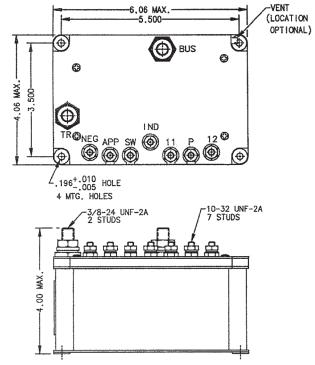
Electrical Characteristics Main Contacts — Contact Arrangement — SPST NO, Double Break Operating Voltage, Nom. — 28 Vdc Resistive Rating — 200 Amps Inrush Rating — 300 Amps Pickup Current — VR — 21-24 V I — 25 Amp Max. SR — 18 V Max. MC — 18 V Max. Dropout Current — I — 5 Amp Min. SR — 18 ± 3 V

MC — 1 to 7 V Auxiliary Contacts — Aux. Contact Arrangement —

SPST NO, SPST NC Rated Operating Voltage — 28 Vdc Resistive Rating — 5 Amps General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical — 100,000 cycles Altitude, Max. — 50,000 ft

Weight, Max. — 4 lbs 8 oz Coil Characteristics

Duty Cycle — Continuous Coil Voltage, Nom. — 24 to 30 Vdc



Mounting Style A

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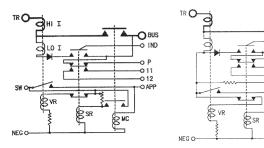
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Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-957CSD	Gasket/Vented	А	Continuous	1	1616110-6
A-957G	Gasket/Vented	A	Continuous	2	1616110-8

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-130

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for

reference purposes only.

Specifications subject

to change.

Dimensions are in millimeters unless otherwise specified.

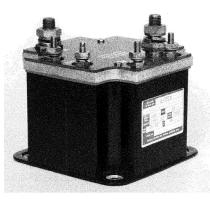
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



A-957 Series Relay, Automatic Cutout, Rated up to 300 Amps, 24/30 Vdc

Product Facts

- SPST NO, Double break
- Gasket sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPST NO, Double Break

Operating Voltage, Nom. — 24/30 Vdc Resistive Rating — 300 Amps

Inrush Rating — 800 Amps Pickup Current — VR — 21-24 Vdc

Current — 25 Amp Max. SR — 18 V Max. Main Contactor — 18 V Max.

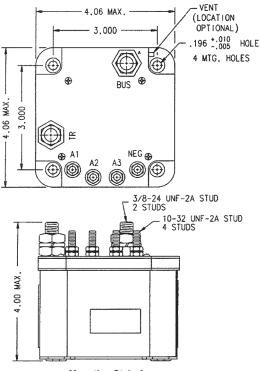
Dropout Current — Current — 5 Amp Min. SR — 18 ± 3 V Main Contactor — 12 V Max.

General Characteristics Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles

Operating Cycles (Life) Mechanical — 100,000 cycles Weight, Max. — 3.5 lbs

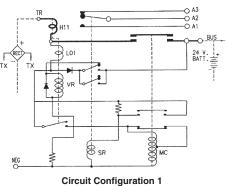
Coil Characteristics

Duty Cycle — Continuous Coil Voltage, Nom. — 24 to 30 Vdc



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



ct application ne 419-521-9500 or	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
19.	A-957E	Gasket/Vented	А	Continuous	1	1616110-7

For factory-direct application assistance, phone 419-521-9500 fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

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Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

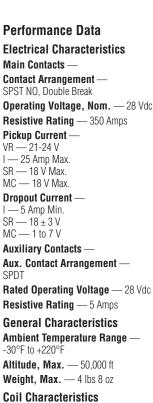
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



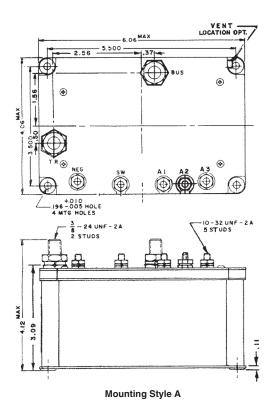
A-957 Series Relay, Automatic Cutout, Rated up to 350 Amps, 28 Vdc

Product Facts

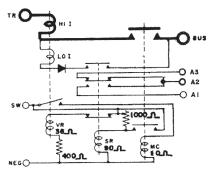
- SPST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Duty Cycle — Continuous Coil Voltage, Nom. — 24 to 30 Vdc



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
fax 419-526-2749.	A-957CA	Gasket/Vented	А	Continuous	1	1616110-5

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Catalog 5-1773450-5 Revised 3-13

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reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



Q-50 Series Relay, Current Indicator, Rated up to 2 Amps, 28 Vdc

Product Facts

- SPST NC
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPST NC Contact Rating @ 120 Vdc — 0.1 Amp Rated Operating Voltage - 28 Vdc Sensing Current Rating — 2 Amps, continuous Pickup Max. — 1 Amp DC

Dropout Min. — 0.4 Amp Operating Voltage, Nom. — 28 Vdc

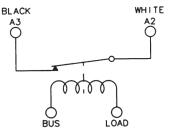
General Characteristics Temperature Range — -55°C to +71°C

Altitude, Max. - 50,000 ft Weight, Max. - 1.25 oz

166 DIA HOLE 2 MTG HOLES •9 BLACK MHITE Α3 A2 (4 5 BUS LOAD 1.500 1.87 6-32 UNC-2A 2 REQ'D. .20 XW MAX ---PART NO .03 MAX 76 OPERATE AMPS 59 SERIAL NO. HARTMAN ELEC. MFG.

Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

tory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
nce, phone 419-521-9500 or 9-526-2749.	Q-50Y	Environmentally Sealed	А	Continuous	1	1-1616131-2

For facto assistan fax 419-

Catalog 5-1773450-5 Revised 3-13

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Dimensions are in millimeters unless otherwise specified.

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Q-50 Series Relay, Current Indicator, Rated up to 3.5 Amps, 28 Vdc

Product Facts

- SPDT
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106

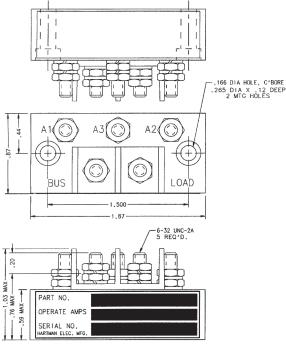


Performance Data

Electrical Characteristics Contact Arrangement — SPDT Contact Rating @ 28 Vdc — 0.25 Amp Lamp Load @ 28 Vdc — 0.080 Amp Rated Operating Voltage - 28 Vdc Sensing Current Rating — 3.5 Amps, continuous Pickup Max. — 2 Amp DC Dropout Min. — 0.8 Amp

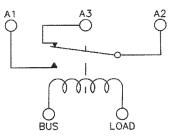
General Characteristics

Temperature Range — -55°C to +71°C Altitude, Max. — 50,000 ft Weight, Max. — 1.25 oz



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	Q-50F	Environmentally Sealed	А	Continuous	1	1616131-9

6-134

Catalog 5-1773450-5 Revised 3-13

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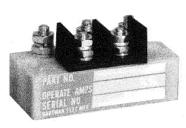
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Q-50 Series Relay, Current Indicator, Rated up to 6.25 Amps, 28 Vdc

Product Facts

- SPDT
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106

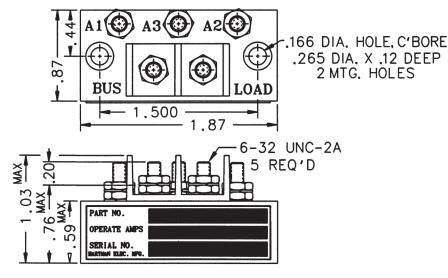


Performance Data

Electrical Characteristics Contact Arrangement — SPST NC Contact Rating @ 28 Vdc -0.25 Amp Rated Operating Voltage - 28 Vdc Sensing Current Rating - 6.25 Amps, continuous Lamp Load — 0.080 Amp Pickup Max. — Q50BB - 2.5 Amps DC Q50BD - 2.0 Amps DC Q50E - 3.5 Amps DC Dropout Min. -Q50BD - 0.8 Amps DC Q50BB - 1.0 Amps DC

General Characteristics Temperature Range —

-55°C to +71°C Altitude, Max. - 50,000 ft Weight, Max. - 1.25 oz

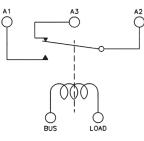


Q50E - 1.4 Amps DC

Mounting Style A

Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

Construction Type Mounting Style Coil Type HARTMAN Part Number Circuit Config. TE Part Number Environmentally Q-50BB 1616131-5 Continuous 1 А Sealed Environmentally Continuous Q-50E А 1 1616131-8 Sealed For factory-direct application assistance, phone 419-521-9500 or Environmentally Q-50BD А 1 1616131-6 Continuous Sealed

Catalog 5-1773450-5 Revised 3-13

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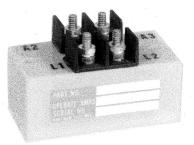
HARTMAN Sensors and Protective Devices



Q-50 Series Relay, Current Indicator, Rated up to 10 Amps, 28 Vdc

Product Facts

- SPST NO
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

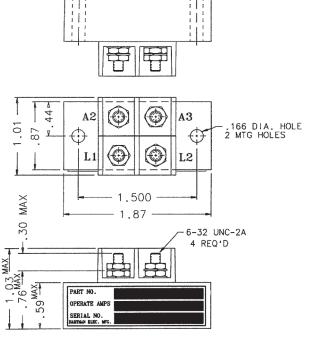
Electrical Characteristics Contact Arrangement — SPST NO Contact Rating @ 28 Vdc — 0.25 Amp

Lamp Load @ 28 Vdc — 0.08 Amp Rated Operating Voltage — 28 Vdc Sensing Current Rating — 20 Amps, continuous, max.

Pickup Max. — 3.5 Amps DC Dropout Min. — 0.5 Amp

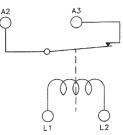
General Characteristics Temperature Range -55°C to +71°C

Altitude, Max. — 50,000 ft Weight, Max. — 1.25 oz



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	Q-50A	Environmentally Sealed	А	Continuous	1	1616131-1

6-136

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

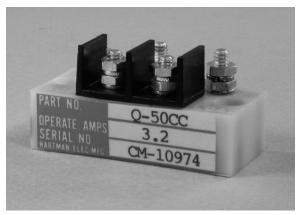
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Q-50 Series Relay, Current Indicator, Rated up to 15 Amps, 28 Vdc

Product Facts

- SPDT
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — SPDT Contact Rating @ 28 Vdc — 0.25 Amp Lamp Load @ 28 Vdc — 0.10 Amp Rated Operating Voltage - 28 Vdc Sensing Current Rating — 15 Amps DC, continuous, max. Pickup Max. -

3.2 Amps DC Dropout Min. — 1.2 Amps

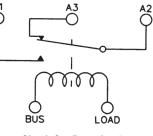
General Characteristics

Temperature Range — -55°C to +85°C Altitude, Max. - 50,000 ft Weight, Max. - 1.25 oz

.265 DIA X .12 DEEP 2 MTG HOLES \bigcirc Α3 A2(Ć 1 C C BUS LOAD 1.500 1,87 -32 UNC-2A REQ'D. 20 -XMM 1.03 N PART NO. M 76 OPERATE AMPS 59 SERIAL NO. HARTMAN ELEC.

Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	Q-50CC	Environmentally Sealed	А	Continuous	1	1616131-7

fax 41

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

6-137

.166 DIA HOLE, C'BORE

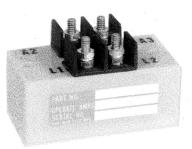
www.te.com

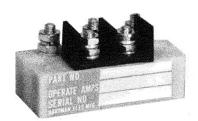


Q-50 Series Relay, Current Indicator, Rated up to 16 Amps, 28 Vdc

Product Facts

- SPST NC
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



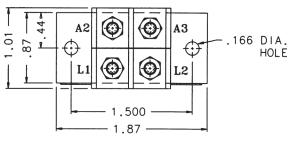


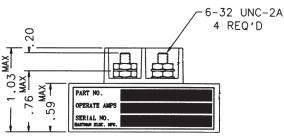
Performance Data

Electrical Characteristics Contact Arrangement — Q50S - SPST NC Q50Z - SPDT Contact Rating @ 28 Vdc — 0.25 Amp Lamp Load @ 28 Vdc — 0.10 Amp Rated Operating Voltage — 28 Vdc Sensing Current Rating — 16 Amps DC, continuous, max. Pickup Max. — 3 Amps DC Dropout Min. — 1.2 Amps General Characteristics

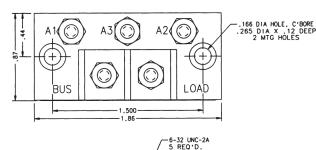
Temperature Range — -55°C to +71°C **Altitude, Max.** — 50,000 ft

Weight, Max. - 1.25 oz

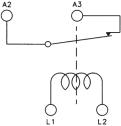




Mounting Style A



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

BUS BUS

HARTMAN

Part Number

Q-50S

Q-50Z

Circuit Configuration 1

1

0

Construction

Туре

Environmentally Sealed

Environmentally

Sealed

PART NO. PART NO. OPERATE AMPS SERIAL NO. MARTINAN ELEC. MFG.

> Duty Cycle

Continuous

Continuous

Mounting Style B

Circuit

Config

1

2

For factory-direct application
assistance, phone 419-521-9500 or
fax 419-526-2749.

6-138

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666

Mounting

Style

А

А

For additional support numbers please visit www.te.com

ΤE

Part Number

1-1616131-1

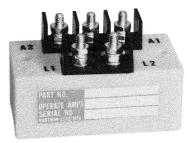
1-1616131-3



Q-50 Series Relay, Current Indicator, Rated up to 20 Amps, 28 Vdc

Product Facts

- SPST NC or SPST NO
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement -

SPST NC. SPST NO or SPDT Contact Rating @ 28 Vdc — Q-50AB-2 — 0.2 Amp Q-50J, — 0.25 Amp Q-50AG — 1.0 Amp Q-50AB-1 — 1 Amp switching, and 2 Amps carry

Q50AC — 2 Amp

Lamp Load @ 28 Vdc — Q-50AC, Q-50AB-2 — 0.08 Amp Q-50J, Q-50AG — 0.20 Amp

Operating Voltage, Nom. - 28 Vdc Sensing Current Rating -

20 Amps continuous, max. except for Q-50AB-1 and Q-50AB-2 which are 10

Amps max. and 15 Amps max. for 3 sec. Q50AC 2 Amps continuous 10 Amps max. for 5 seconds

Pickup Max. -Q-50AC — 0.3 Amp Q-50AB-1, Q-50AB-2 — 1.5 Amp Q-50J - 3.5 Amps DC Q-50AG — 6 Amps DC ± 20%

Dropout Min. — Q-50AC — 0.1 Amp Q-50J — 0.5 Amp Q-50AB-1, Q-50AB-2 - less than 1 Amp Q-50AG — 2.4 Amp

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6-32 UNC-2/ 5 REQ'D

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166 DIA HOLE 2 MTG HOLES

PART NO.

OPERATE AMP SERIAL NO.

Mounting Style B

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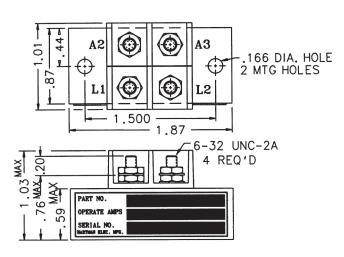
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General Characteristics

Temperature Range — -55°C to +71°C Altitude, Max. -Q-50J. Q-50AB-1 — 50.000 ft 60,000 ft Weight, Max. - 1.25 oz





Dimensions are shown for



assistance, phone 419-521-9500 or fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 HARTMAN Sensors and Protective Devices

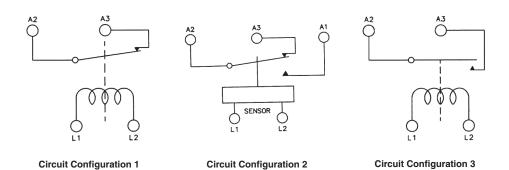
For additional support numbers please visit www.te.com

www.te.com



Q-50 Series Relay, Current Indicator, Rated up to 20 Amps, 28 Vdc (Continued)

Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number Construction Type Mounting Style Circuit Config. TE Part Number Duty Cycle Environmentally Q-50J Continuous 1-1616131-0 А 1 Sealed Environmentally Sealed Q-50AC В Continuous 2 1616131-4 Environmentally Q-50AG А Continuous 1 1616540-7 Sealed Environmentally Q-50AB-1 А Continuous 1 1616131-2 Sealed Environmentally Sealed Q-50AB-2 А Continuous 3 1616131-3

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



QR-50 Series Relay, AC Current Indicator, Rated up to 5 Amps, 115 VAC

Product Facts

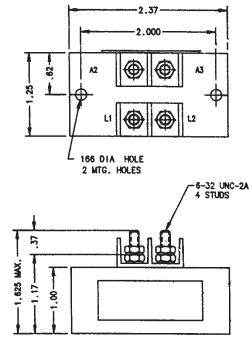
- SPST NC
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

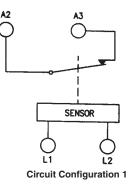
Electrical Characteristics Contact Arrangement — SPST NC Resistive Rating @ 28 Vdc — .25 Amp Lamp Load @ 28 Vdc — .10 Amp Sensing Current Rating — 5 Amp, AC continuous

General Characteristics Temperature Range --55°C to +85°C Altitude - 50,000 ft Weight, Max. — .25 lbs Operating Voltage, Nom. — 115 Vrms, 325-600 Hz Pickup Max. -95 MA, AC Dropout Min. — 47 MA AC



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



For factory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	QR-50V	Environmentally Sealed	А	Continuous	1	1616132-3

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

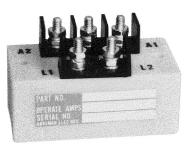
USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



QR-50 Series Relay, AC Current Indicator, Rated up to 15 Amps, 115 VAC

Product Facts

- SPDT
- Environmentally sealed
- Meets many requirements of MIL-PRF-6106



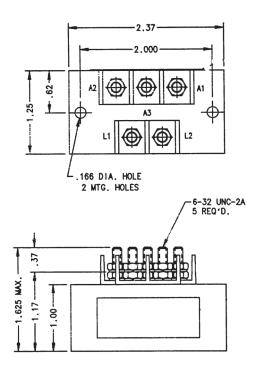
Performance Data

Electrical Characteristics Contact Arrangement — SPDT Resistive Rating @ 28 Vdc — .25 Amp Lamp Load @ 28 Vdc — .08 Amp Operating Voltage, Nom. — 115 VAC, 1 Phase, 400 Hz Pickup Max. — 6 Amp, AC Dropout Min. — 2.4 Amp, AC Sensing Current Rating —

15 Amp, AC Continuous General Characteristics

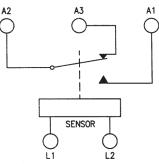
Temperature Range — -55°C to +71°C

Altitude — 50,000 ft Weight, Max. — .19 lbs Sinusoidal Vibration — 10 G to 500 Hz



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	QR-50H	Environmentally Sealed	А	Continuous	1	1616132-1

6–142

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



E-316C Series Relay, Undervoltage AC 3 Phase, Lowest of 3

Product Facts

- DPDT
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

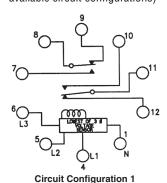
Performance Data

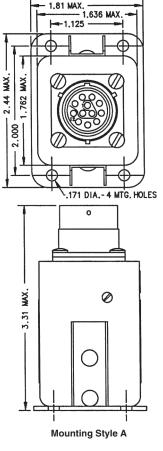
Electrical Characteristics Contact Arrangement — DPDT Resistive Rating @ 28 Vdc — 10 Amps Inductive Rating — 5 Amps Lamp Load — 1.5 Amps Rated Operating Voltage, Nom. — 115 V, 400 Hz Pickup Voltage (All 3 Phases Up) — 85-90 Volts Dropout Voltage (3 Phase — Lowest of 3) — 75-80 Volts

General Characteristics

Temperature Range — -55°C to +71°C Operating Cycles (Life) at Rated Resistive Load, Min. — 10,000 cycles Weight, Max. — 10 oz. Operating Voltage, Max. — 124 VAC

Circuit Configurations (Consult factory for other available circuit configurations)





For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

)0 or	HARTMAN	Construction	Mounting	Duty	Circuit	TE
	Part Number	Type	Style	Cycle	Config.	Part Number
000	E-316C	Gasket/Vented	А	Continuous	1	1-1616126-4

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



E-311PB Series Relay, Undervoltage with Time Delay

Product Facts

- 2PDT
- Solder sealed, hermetically sealed
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Main Contacts -Contact Arrangement - 2PDT Operating Voltage, Nom. - 28 Vdc **Resistive Rating** — 10 Amps Inductive Rating — 6 Amps Motor Rating — 3 Amps Lamp Rating — 1 Amps Pickup Time, Max. — 125 msec Contact Bounce, Max. — 3 msec Operating Voltage, Max. - 36 Vdc Operating Voltage, Nom. - 28 Vdc Pickup Voltage — 24.5 ± 0.5 Vdc Dropout Voltage — 21.5 ± 0.5 Vdc Dropout Time Delay — 200-400 milliseconds when the relay is in the

energized position and the voltage drops below 21.5 ± 0.5 Vdc and above 15 Vdc. The relay will remain energized for 200 to 400 milliseconds before de-energizing when the voltage drops below 15 Vdc. Time delay is 30 Ms max.

Operating Current, Max. @ 25°C — 150 milliamp

General Characteristics Ambient Temperature Range — -55°C to +85°C

Operating Cycles (Life) at Rated Resistive Load, Min. -100,000 cycles

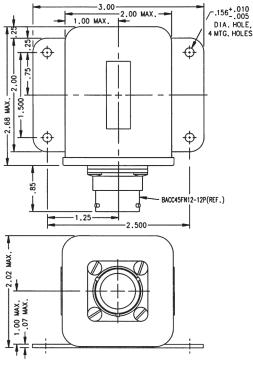
Dielectric Withstanding Voltage — 1,000 Vrms, 60 Hz, 1 mil/Amp max. leakage

Insulation Resistance @ 500 Vdc — 100 megohm min. Altitude - 80,000 ft

Weight, Max. - .25 lbs

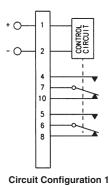
Sinusoidal Vibration .060 DA @ 5 to 80 Hz 20 G ™ 80 to 2000 Hz

Shock for 11 msec, 1/2 Sine, 3 Axes — 30 G



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



TE Part Number HARTMAN Construction Mounting Duty Circuit For factory-direct application Config. Part Number Туре Style Cycle assistance, phone 419-521-9500 or E-311PB Hermetically Sealed А Continuous 1-1616126-1 1

6-144

Catalog 5-1773450-5 Revised 3-13

fax 419-526-2749.

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



E-329 Series Relay, Voltage Sensing

Product Facts

- 3PDT
- Solder sealed cover, hermetically sealed contacts
- Meets many requirements of MIL-PRF-6106



Performance Data

Electrical Characteristics Contact Arrangement — 3PDT Rated Operating Voltage -28 Vdc, and 155 Vac 400 Hz Resistive Rating — 10 Amps Inductive Rating — 8 Amps Motor Rating — 4 Amps Lamp Rating — 2 Amps Pickup Time, Max. — 70 msec Contact Bounce, Max. — 3 msec Dropout Time Delay -200-400 msec when the relay is in the energized position and the voltage drops below 104 ± 2 Vrms and above 88 ± 4 Vrms. The relay will remain energized for 200-400 msec before deenergizing. When the voltage drops below 88 ±4 Vrms no time delay is required. When the voltage drops to 30 volts or less the relay will de-energize 50 msec max.

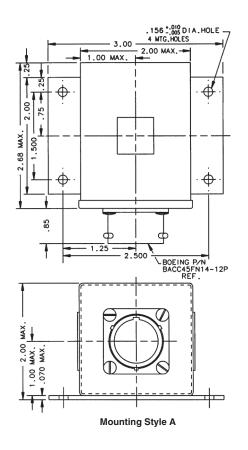
Operating Voltage, Nom. — 115 VAC, RMS L-N

Operating Voltage, Max. — 122 VAC, RMS L-N

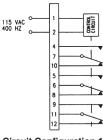
Operating Frequency — 400 ±20 Hz Pickup Voltage — 109 ±2 Vrms Dropout Voltage — 104 ±2 Vrms Operating Current, Max. @ 25°C — 100 milliamp

General Characteristics Temperature Range — -55°C to +85°C Depending Cycles (Life) of Pa

Operating Cycles (Life) at Rated Resistive Load, Min. — 100,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Dielectric Withstanding Voltage — 1,000 Vrms, 60 Hz Insulation Resistance @ 500 Vdc — 1,000 megohm min. Altitude — 0-80,000 ft Weight, Max. — 10 oz Shock for 11 msec, 1/2 Sine, 3 Axis — 30 G



Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

HARTMAN Sensors and Protective Devices

For factory-direct application	Par
assistance, phone 419-521-9500 or	E
fax 419-526-2749.	

HARTMAN C	onstruction	Mounting	Duty	Circuit	TE
Part Number	Type	Style	Cycle	Config.	Part Number
E-329E Herr	netically Sealed	A	Continuous	1	1-1616126-9

Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change. Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



RA-3100 Series Remote Power Controller, Rated up to 60 Amps, 115/208 VAC

Product Facts

- 3PST NO
- Gasket sealed



Performance Data Electrical Characteristics

Contact Arrangement — 3PST NO **Rated Operating Voltage -**115/208 VAC, 400-610 Hz, 3 phase Resistive Rating — 50 Amp Motor Rating — 30 Amp Rupture Rating — 1000 Amp

Closing Time, Max., Override at **28 Vdc** — 35 msec Opening Time, Max., Override at

28 Vdc — 25 msec

Contact Bounce, Max. — 3 msec

Coil Characteristics

Duty Cycle — Continuous, economizing

Operating Voltage, Max. - 32 Vdc Operating Voltage @ 85°C, Min. — 18 Vdc

Trip Time @ 60 Amp Current +10% - 2.0 to 3.0 sec

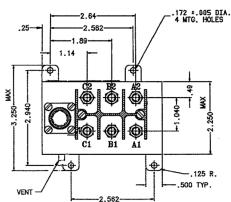
Trip Time @ 75 Amp Current +10% - 1.0 to 1.9 sec Trip Time @ 95 Amp Current +10%

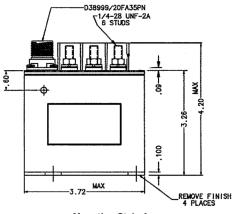
- .2 to .9 sec Trip Time @ 200+ Amp Current

+10% - 0.01 to 0.1 sec **General Characteristics**

Temperature Range — -55°C to +85°C

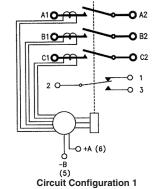
Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Altitude --- 50,000 ft Weight, Max. - 1.55 lbs





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



For factory-direct application	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
assistance, phone 419-521-9500 or fax 419-526-2749.	RA-3100H	Gasket/Vented	А	Continuous, Economizing	1	1616539-3

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Catalog 5-1773450-5 Revised 3-13

www.te.com

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



RA-3100 Series Remote Power Controller, Rated up to 70 Amps, 115/208 VAC

Product Facts

- 3PST NO
- Gasket sealed



Performance Data Electrical Characteristics Contact Arrangement — 3PST NO Rated Operating Voltage -115/208 VAC, 400-610 Hz, 3 phase Resistive Rating — 70 Amp Motor Rating — 70 Amp Rupture Rating — 1,000 Amp

Coil Characteristics

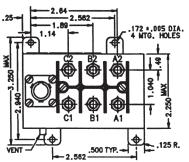
Duty Cycle — Continuous, economizing Operating Voltage, Max. - 32 Vdc Operating Voltage @ 85°C, Min. — 18 Vdc

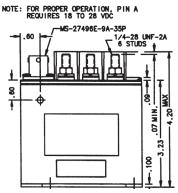
Trip Time @ 70 Amp Current +10% — 3.0 to 5.0 sec Trip Time @ 87 Amp Current +10% - 2.0 to 2.9sec Trip Time @ 111 Amp Current

+10% — 1.0 to 1.8 sec Trip Time @ 200 Amp Current +10% - 0.25 to 0.5 sec

General Characteristics Operating Temperature Range —

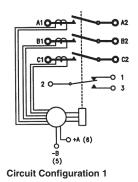
-55°C to +85°C Altitude — 50,000 ft max. Weight, Max. - 1.55 lb Sinusoidal Vibration -.038 DA from 10 to 50 Hz 10g from 55 to 2000 Hz Shock, Max. — 9 G max for 10-12 ms Load, Min. — 50,000 cycles **Operating Cycles (Life)** Mechanical, Min. — 100,000 cycles





Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



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Devices

ation	HARTMAN	Construction	Mounting	Coil	Circuit	TE
	Part Number	Type	Style	Type	Config.	Part Number
521-9500 or	RA-3100F	Gasket/Vented	А	Continuous, Economizing	1	1616133-2

For factory-direct applica assistance, phone 419-5 fax 419-526-2749.

Catalog 5-1773450-5 Revised 3-13

Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666 For additional support numbers please visit www.te.com

www.te.com



RA-3100 Series Remote Power Controller, Rated up to 100 Amps, 115/208 VAC

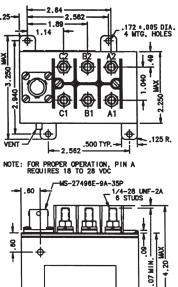
Product Facts

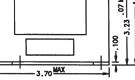
- 3PST NO
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



Electrical Characteristics Contact Arrangement — 3PST NO Rated Operating Voltage -115/208 VAC, 400-610 Hz, 3 phase Resistive Rating — 100 Amp Motor Rating — 100 Amp Rupture Rating — 1,000 Amp Closing Time, Max., at 28 Vdc — 35 msec Opening Time, Max., at 28 Vdc — 25 msec Contact Bounce, Max. — 3 msec **Coil Characteristics** Duty Cycle — Continuous, economizing Operating Voltage, Max. - 32 Vdc Operating Voltage @ 85°C, Min. — 18 Vdc Coil Current, Inrush Max.@ 25°C — 6.0 Amps Coil Current, Hold Max.@ 25°C — 0.5 Amps Trip Time @ 28 Amp Current +10% RA-3100M - 1.0 to 1.50 sec Trip Time @ 151 Amp Current +10% -RA-3100D - 3.0 to 5.0 Sec. Trip Time @ 185 Amp Current +10% -RA-3100D - 2 to 2.9 Sec. Trip Time @ 237 Amp Current +10% -RA-3100D - 1 to 2.5 Sec. **General Characteristics** Temperature Range — -55°C to +85°C **Operating Cycles (Life) at Rated** Load, Min. - 50,000 cycles

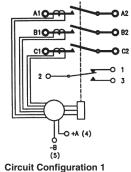
Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Altitude — 50,000 ft Weight, Max. — 1.55 lbs







Circuit Configurations (Consult factory for other available circuit configurations)



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
RA-3100D	Gasket/Vented	А	Continuous, Economizing	1	1616133-1
RA-3100M	Gasket/Vented	А	Continuous, Economizing	1	1616133-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

6-148

Catalog 5-1773450-5 Revised 3-13

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reference purposes only. Specifications subject to change.

Dimensions are shown for

Dimensions are in millimeters unless otherwise specified.

USA: +1 800 522 6752 Asia Pacific: +86 0 400 820 6015 UK: +44 800 267 666



RA-3100 Series Remote Power Controller, Rated up to 110 Amps, 115/208 VAC

Product Facts

- 3PST NO
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

Performance Data

Electrical Characteristics Contact Arrangement — 3PST NO Rated Operating Voltage — 115/208 VAC, 400-610 Hz, 3 phase

Resistive Rating –

RA-3100J-1 - 110 Amp RA-3100L - 50 Amp **Motor Rating** — RA-3100J01 - 110 Amp

RA-3100L - 50 Amp **Rupture Rating** — RA-3100J-1 - 1,100 Amp

RA-3100L 500 Amp Shock for 10-12 msec — 50 G

Closing Time, Max., Override at 28 Vdc — 35 msec

Opening Time, Max., Override at 28 Vdc — 25 msec

Contact Bounce, Max. — 3 msec

Coil Characteristics Duty Cycle — Continuous,

economizing Operating Voltage, Max. — 32 Vdc

Operating Voltage, Max. — 32 Volt Operating Voltage @ 85°C, Min. — 18 Vdc Coil Current, Inrush Max.@ 25°C — 6.0 Amps

Coil Current, Hold Max.@ 25°C — 0.5 Amps

Trip Time @ 165 Amp Current +10% — 8.0 to 10.0 sec

Trip Time @ 330 Amp Current +10% — RA-3100J-1 - 1.2 to 2.0 sec

Trip Time @ 550 Amp Current +10% —

RA-3100J-1 -0.34 to 0.65 sec **Trip Time @ 1100 Amp Current** +10% —

RA-3100J-1 -0.07 to 0.20 sec

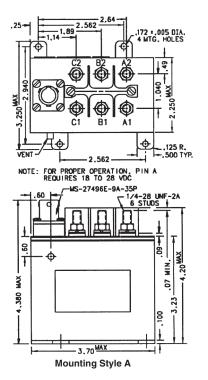
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.



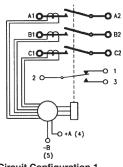
Trip Time @ 60 Amp Current +10% — RA-3100L - 8.0 to 10.0 sec Trip Time @ 150 Amp Current +10% — RA-3100L - 4.0 to 6.0 sec Trip Time @ 300 Amp Current +10% — RA-3100L - 2.0 to 3.0 sec Trip Time @ 500 Amp Current +10% — RA-3100L - 0.07 to 0.20 sec

General Characteristics

Temperature Range — -55°C to +85°C Operating Cycles (Life) at Rated Load, Min. — 50,000 cycles Operating Cycles (Life) Mechanical, Min. — 100,000 cycles Altitude — 60,000 ft Weight, Max. — 1.55 lbs



Circuit Configurations (Consult factory for other available circuit configurations)



	HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
	RA-3100J-1	Gasket/Vented	А	Continuous, Economizing	1	1616133-3
00 or	RA-3100L	Gasket/Vented	А	Continuous, Economizing	1	1616133-4

Catalog 5-1773450-5 Revised 3-13

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E-308TA Series, Undervoltage Sensor, Rated up to 10 Amps, 28 Vdc

Product Facts

- DPDT
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

Performance Data

Electrical Characteristics Contact Arrangement — DPDT Operating Voltage, Nom. — 28 Vdc Resistive Rating — 10 Amps Inductive Rating — 2 Amps

General Characteristics

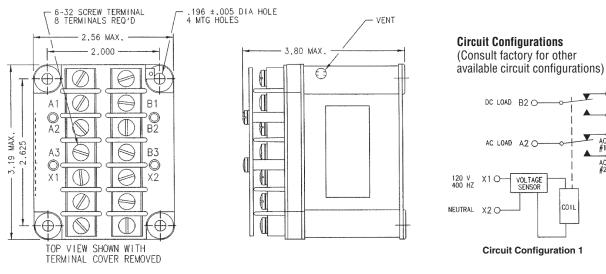
Operating Ambient Temperature Range — -55°F to +165°F Altitude — 50,000 ft Weight, Max. — 15.5 oz

Coil Characteristics

Duty Cycle — Continuous Input to Sensor, Nom. — 120 V, 400 Hz

Operating Characteristic — Contacts A1-A2, B1-B2 will close if the

Contacts A1-A2, B1-B2 will close if the AC input voltage is above 106 ± 2 VAC Contacts A1-A2, B1-B2 will open if the AC input voltage falls below 106 ± 2 VAC.



Mounting Style A

	0		0.1	0		-
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	IE Part Number	
E-308TA	Gasket/Vented	А	Continuous	1	1616126-6	

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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AC SOURCE #1 AC SOURCE #2

) A3 Source



Cross Reference

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)		Duty Coil Trans. Tycle Voltage	Hartman Part No.	TE Part No.
10	DC	28	DPDT	Side Stable	_	115V	Gasket/Vented	Cont.	E-328-2	1-1616126-8
200	DC	28	SPST NO	Side Stable	SPST NC	24-30	Gasket/Vented	Cont.	A772XTB	1616545-1
25	AC	_	_	Side Stable	SPDT	28	Gasket/Vented	Cont.	E-387C-1	2-1616126-3
100	DC	28	SPST NO	Side Stable	SPST NC SPST NO.	28	Gasket/Vented	Cont.	A-700BU	1616109-6
200	DC	28	SPST NO	Side Stable	N/A	28	Gasket/Vented	Cont.	A-700AQ-4	1616109-4
		28	SPST NO	Side Stable	N/A	28	Gasket/Vented	Cont.	A-700AAP	1616109-1
300	DC	28	SPST NO	Side Stable	_	24-30	Gasket/Vented	Cont.	A-700ZC-7	1616109-7
		28	SPST NO	Side Stable	SPST NC	24-30	Gasket/Vented	Cont.	A-700ZG	1616109-9
400	D0	28	SPST NO	Side Stable	_	24-30	Gasket/Vented	Cont. Econ.	A-701D	1-1616109-1
400	DC	28	SPST NO	Side Stable	SPDT	24-30	Gasket/Vented	Cont. Econ.	A-701C	1-1616109-0
600	DC	28	SPST NO	Side Stable	_	28	Gasket/Vented	Cont.	A-702AAP	1-1616109-3
3	AC/DC	28/115	SPST NO	Side Stable	_	_	Gasket/Vented	_	B-188MA-1	1616114-7
	110/00	29	SPST NO	Side Stable	SPST NO	28	Gasket/Vented	Int.	A-711JF	1-1616109-6
		29	SPST NO	Side Stable	SPST NO	28	Gasket/Vented	Int.	A-711JM	1-1616109-7
600	DC	29	SPST NO	Side Stable	SPDT	28	Gasket/Vented	Int.	A-711Z	6-1616071-3
		29	SPST NO	Side Stable	01.01	28	Gasket/Vented	Int.	A-7112	1-1616109-8
		29	SPST NO	Side Stable	SPST NO	24-30	Gasket/Vented	Cont.	A-957CSD	1616110-6
200	DC				SPST NC			cont.		
		28	SPST NO	Side Stable	SPST NO SPST NC	24-30	Gasket/Vented	Cont.	A-957G	1616110-8
300	DC	24/30	SPST NO	Side Stable	_	24-30	Gasket/Vented	Cont.	A-957E	1616110-7
350	DC	28	SPST NO	Side Stable	SPDT	24-30	Gasket/Vented	Cont.	A-957CA	1616110-5
2	DC	28	SPST NC	Side Stable	_	120	Environ	Cont.	Q-50Y	1-1616131-2
3.5	DC	28	SPDT	Side Stable	_	29	Environ	Cont.	Q-50F	1616131-9
		28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50BB	1616131-5
6.25	DC	28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50E	1616131-8
		28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50BD	1616131-6
10	DC	28	SPST NO	Side Stable	_	28	Environ	Cont.	Q-50A	1616131-1
15	DC	28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50CC	1616131-7
10	DC	28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50S	1-1616131-1
16 -	DC	28	SPDT	Side Stable	_	28	Environ	Cont.	Q-50Z	1-1616131-3
		28	SPST NC	Side Stable	_	28	Environ	Cont.	Q-50J	1-1616131-0
		28	SPST NO	Side Stable	_	28	Environ	Cont.	Q-50AC	1616131-4
20	DC	28	SPST NO	Side Stable	_	28	Environ	Cont.	Q-50AG	1616540-7
20	20	28	SPST NC	Side Stable	_	28	Environ	Cont.	Q-50AB-1	1616131-2
		28	SPST NC	Side Stable	_	28	Environ	Cont.	Q-50AB-2	1616131-3
5	AC	115	SPST NC	Side Stable	_	115	Environ	Cont.	Q-50V	1616132-3
15	AC	115	SPDT	Side Stable	_	115	Environ	Cont.	QR-50H	1616132-1
		28	DPDT	Side Stable	_	_	Gasket/Vented	Cont.	E-316C	1-1616126-4
10	DC	28	3PDT	Side Stable	_	28	Hermetic	Cont.	E-311PB	1-1616126-1
10	DC	28	3PDT	Side Stable	_	115	Hermetic	Cont.	E-329E	1-1616126-9

HARTMAN Sensors and Protective Devices

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Cross Reference (Continued)

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.
100	AC	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100M	1616133-5
100	710	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100D	1616133-1
110	AC	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100J-1	1616133-3
50	AC	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100L	1616133-4
60	AC	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100H	1616539-3
70	AC	115/208	3PST NO	Side Stable	SPDT	18-32	Gasket/Ven	ted C	ont. Econ.	RA-3100F	1616133-2
10	DC	28	DPDT	Side Stable	_	120V	Gasket/Ven	ted	Cont.	E-308TA	1616126-6

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