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HARTMAN Power Switching Contactors

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DC Contactors (continued)

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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.

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

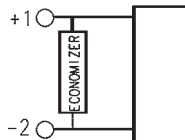
General Characteristics

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 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, 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

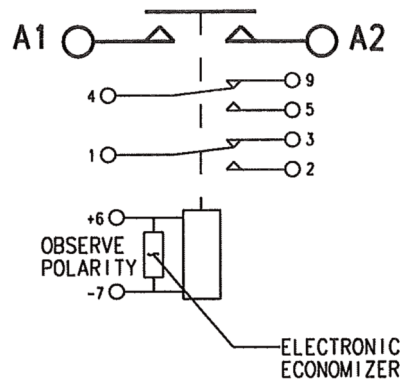
Coil Type



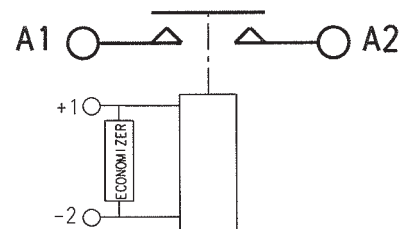
A — Electronic Economized with Suppression

Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

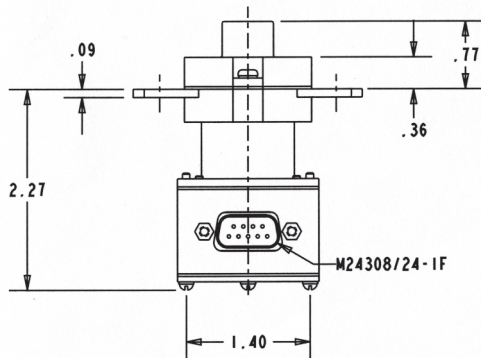
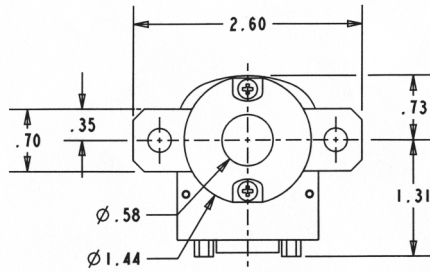


Circuit Configuration 2

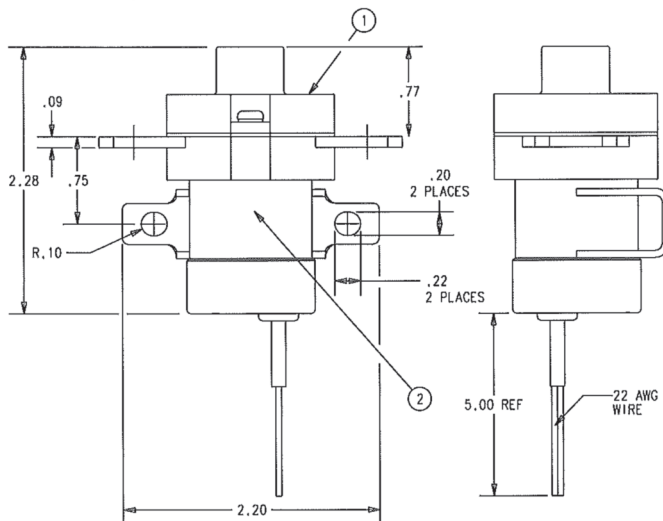
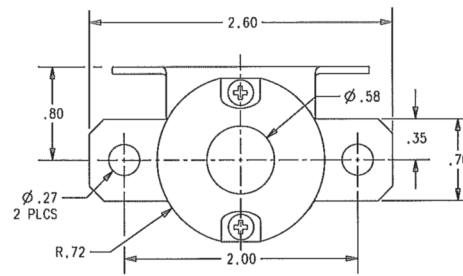
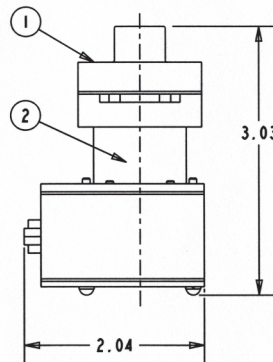
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
K200A1C	Gasket	B	A	2	5-1616970-9
K200B3C02	Gasket	A	A	1	4-1616968-7
K200B1C	Gasket	C	A	2	6-1616970-0
K200A3C	Gasket	E	A	1	8-1616977-1

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

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



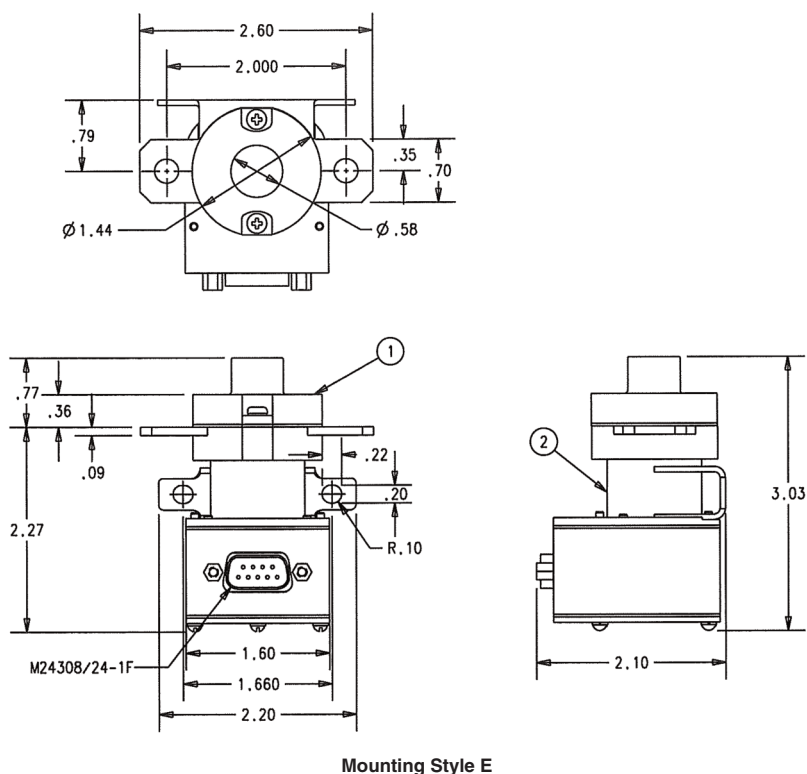
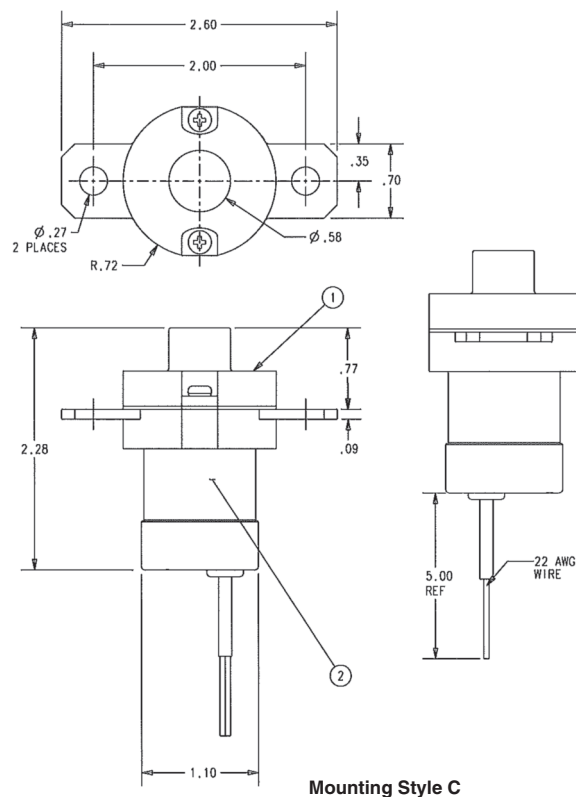
Mounting Style A



Mounting Style B

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

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



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

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

Coil to Ground and Aux. Contacts — 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. —

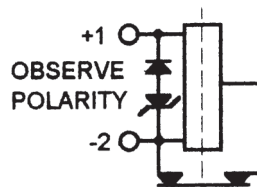
7 Vdc - Economized and continuous duty

5 Vdc - Intermittent duty coil

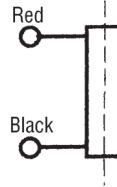
Product Facts

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

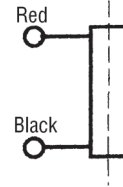
Coil Type



A — Economized with Suppression



B — Continuous

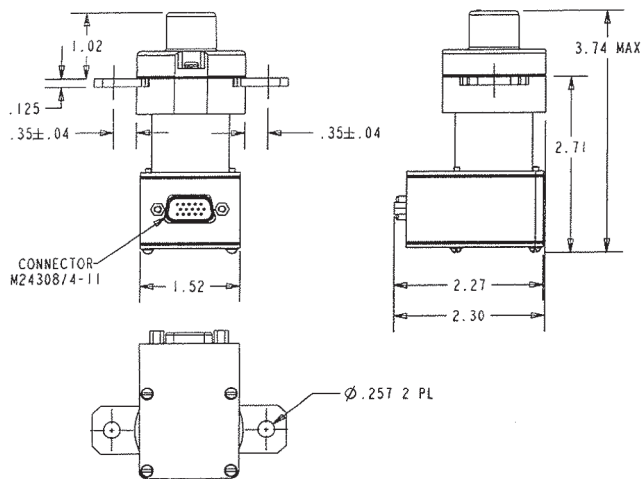
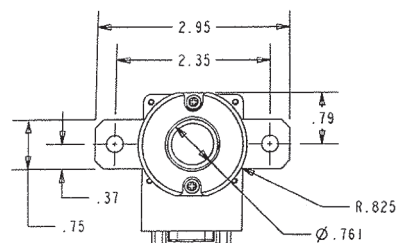


C — Intermittent

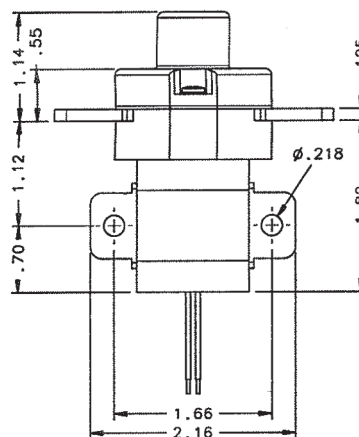
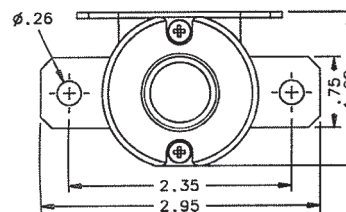
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
K4001A3C	Gasket Sealed	F	A	4	6-1616968-5
K4001B3C	Gasket Sealed	A	A	4	4-1616959-0
K400A1D	Gasket Sealed	B	C	1	—
K400A1F	Gasket Sealed	B	B	1	6-1616945-7
K400A4C1	Gasket Sealed	K	A	2	6-1616965-1
K400B1D	Gasket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

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

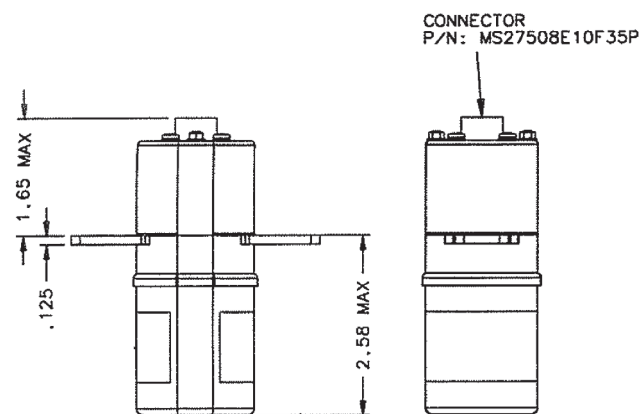
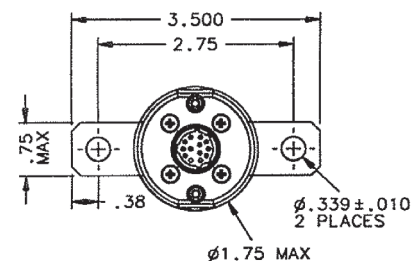
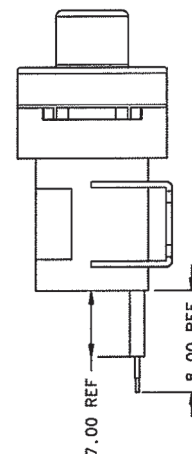
K Series, Rated up to 400 Amps, 28 Vdc (Continued)



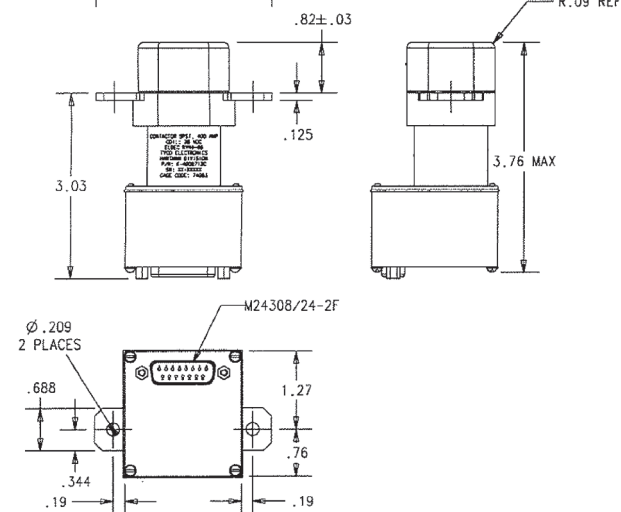
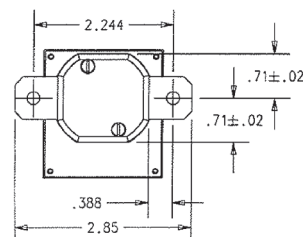
Mounting Style A



Mounting Style B



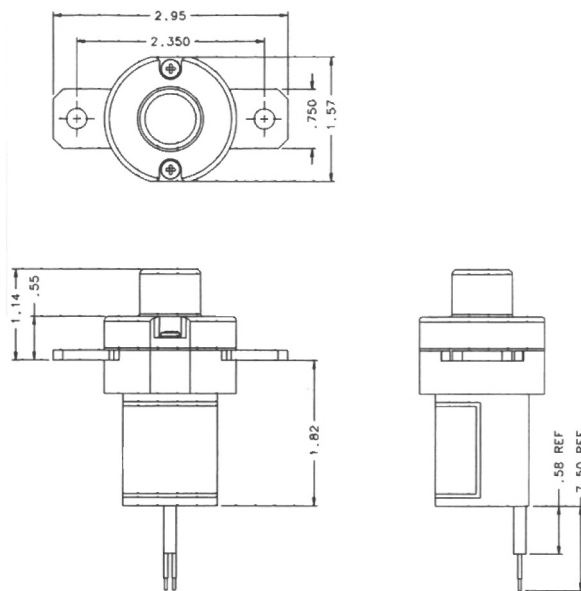
Mounting Style C



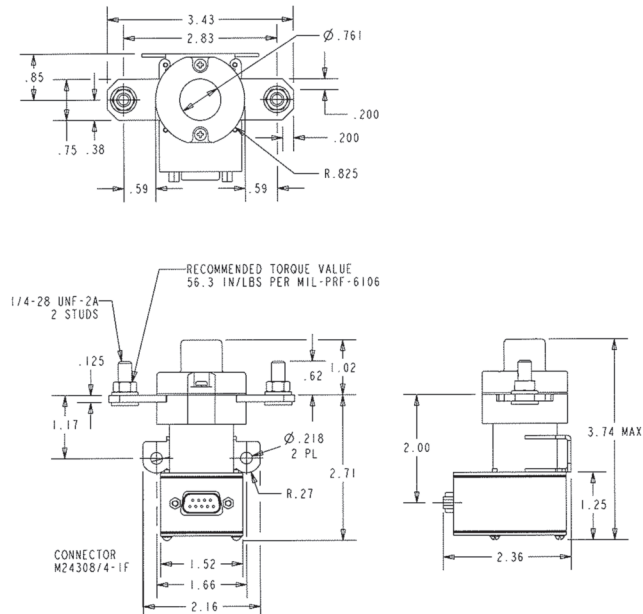
Mounting Style D

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

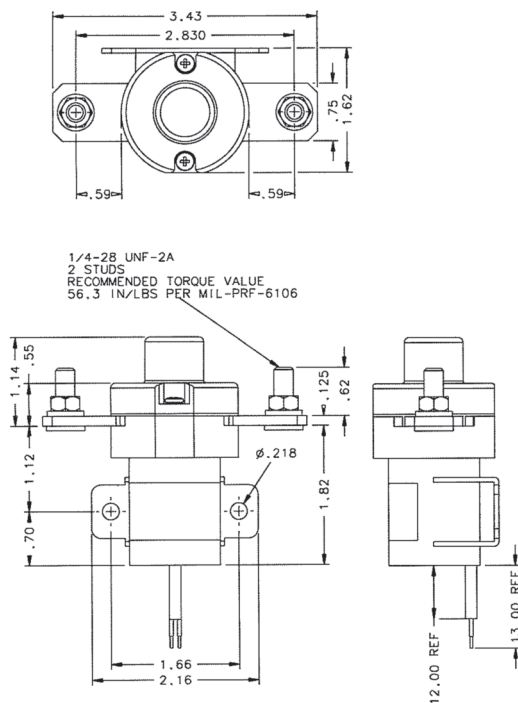
K Series, Rated up to 400 Amps, 28 Vdc (Continued)



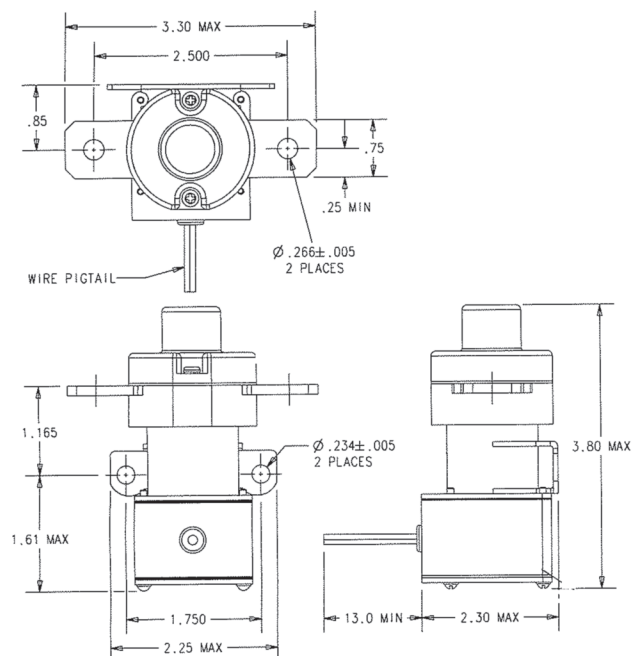
Mounting Style E



Mounting Style F



Mounting Style G

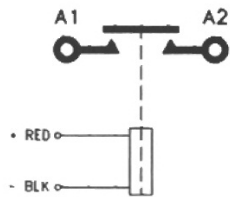


Mounting Style K

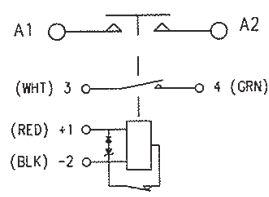
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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

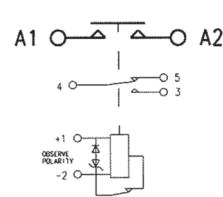
Circuit Configurations (Consult factory for other available circuit configurations)



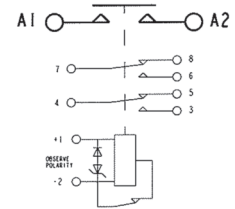
Circuit Configuration 1



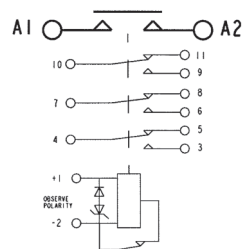
Circuit Configuration 2



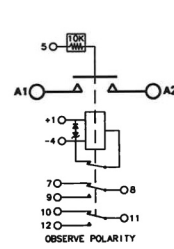
Circuit Configuration 3



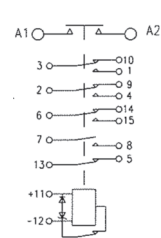
Circuit Configuration 4



Circuit Configuration 5



Circuit Configuration 6



Circuit Configuration 7

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

K Series, Rated up to 500 Amps, 28 Vdc



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

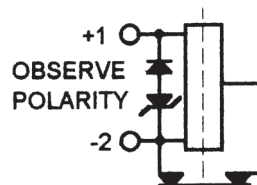
Inrush — 5 Amps

Hold @ 32 Vdc & -55°C —
0.272 mA max.

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

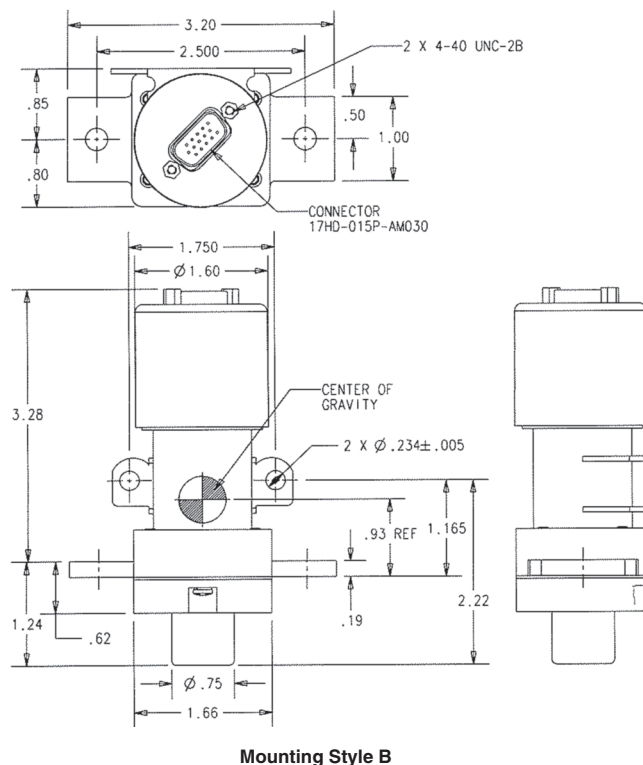
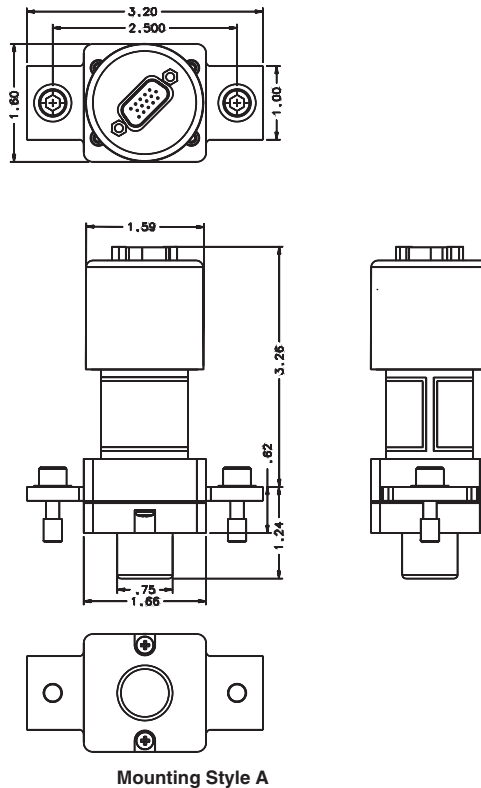
Coil Type



A — Economized with Suppression

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

K Series, Rated up to 500 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
www.te.com

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

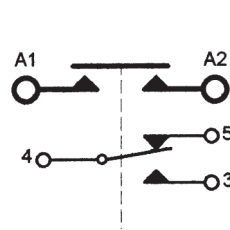
Dimensions are in millimeters
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USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

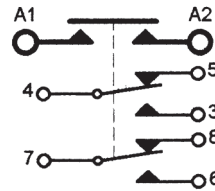
For additional support numbers
please visit www.te.com

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

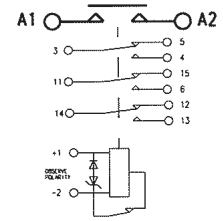
Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3

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

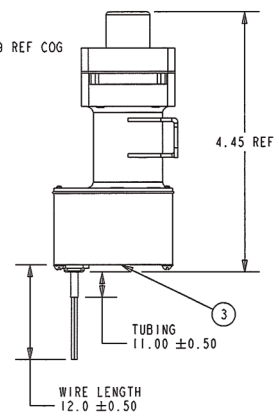
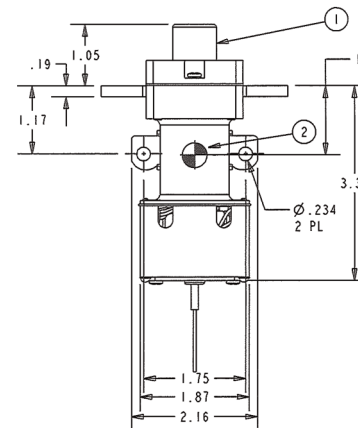
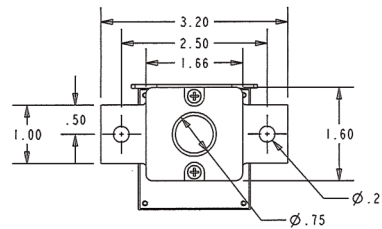
Altitude — 50,000 ft

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.
2. Intermittent duty coil is recommended for starting applications where significant control voltage sags are possible. Consult factory to specify correct coil duty for your application.

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

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

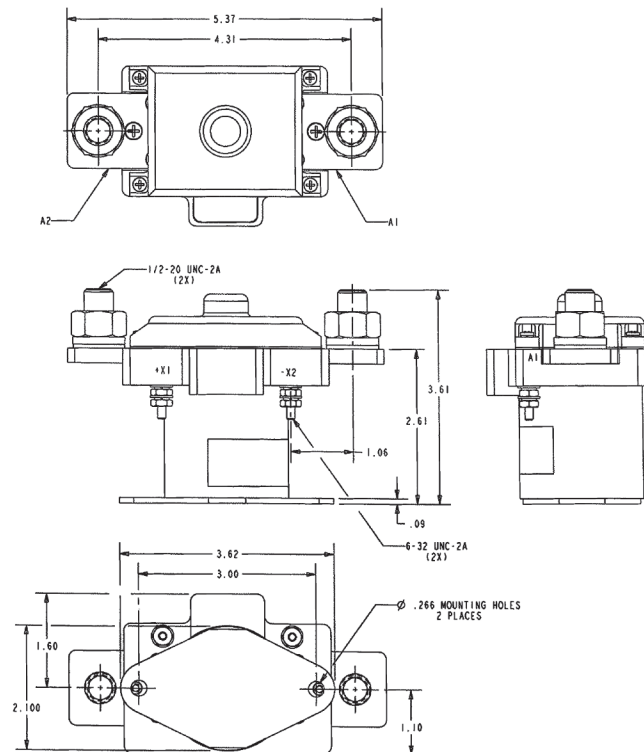
Operating Voltage, Nom. — 28 Vdc

Pickup Voltage, Max. @25°C —
18 Vdc

Dropout Voltage — 1 to 8 Vdc

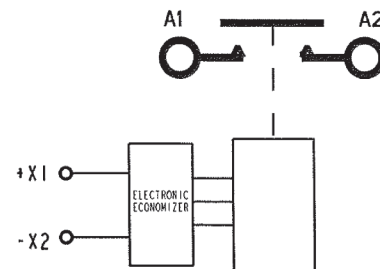
Current, Inrush, Max. @ 30 Vdc —
7.0 Amps

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



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

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

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

Cross Reference

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.
200	DC	28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200A1C	5-1616970-9
		28	SPST NO	Side Stable	2PDT	28	Gasket	Cont. Econ.	42	K200B3C02	4-1616968-7
		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
400	DC	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
		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
		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

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

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

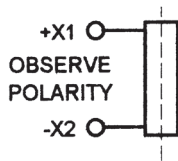
General Characteristics

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

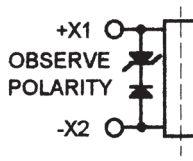
Coil Characteristics

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

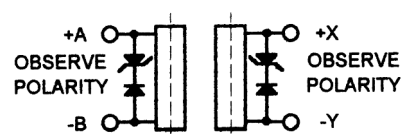
Coil Type



A — Continuous



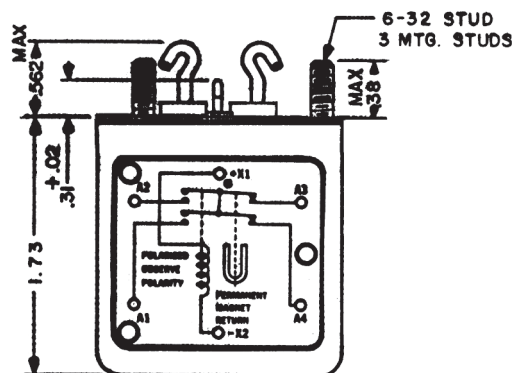
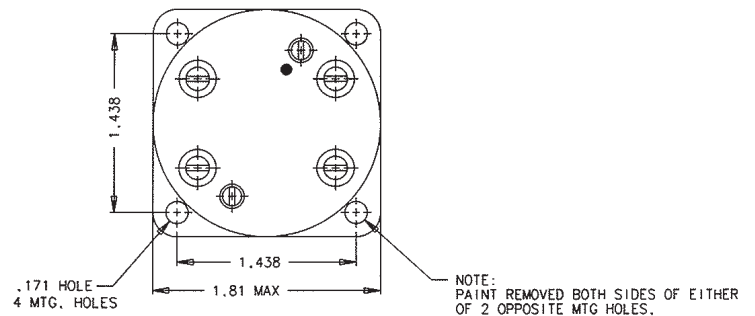
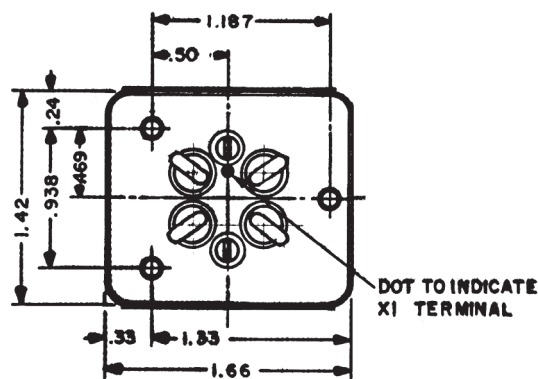
B — Continuous with Suppression



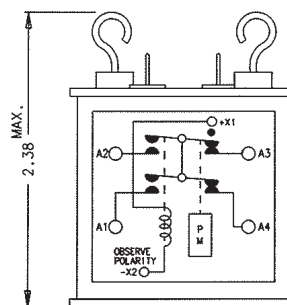
C — Intermittent

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

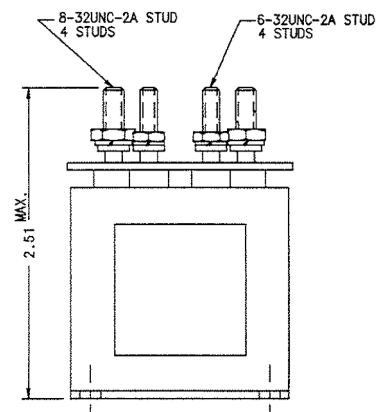
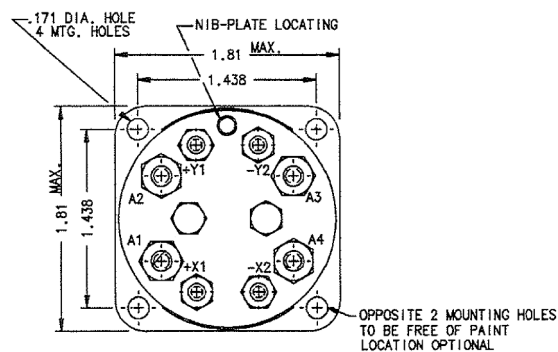
DH-14 and DH-21 Series, Rated up to 25 Amps, 28 Vdc (Continued)



Mounting Style A



Mounting Style B

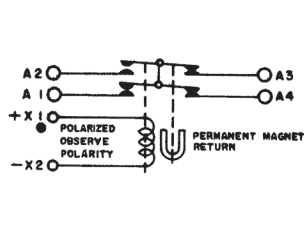


Mounting Style C

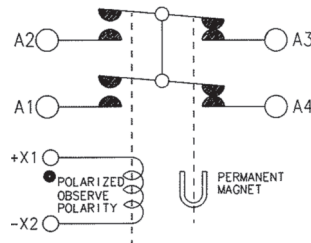
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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

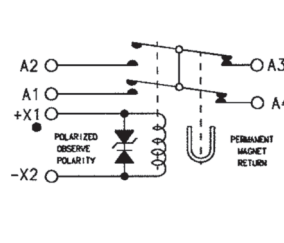
Circuit Configurations (Consult factory for other available circuit configurations)



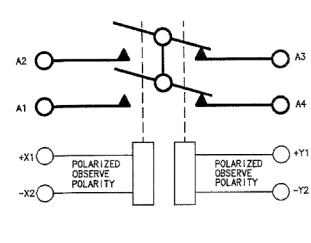
Circuit Configuration 1



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	A	1	1616089-1
DH-14AL	Hermetically Sealed	B	A	2	1616089-2
DH-14AT	Hermetically Sealed	A	B	3	1616089-3
DH-21N*	Hermetically Sealed	C	C	4	1616026-2

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

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

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

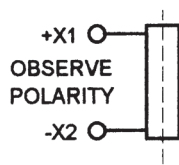
Dropout Voltage @ 25°C, Max. —

1.5 to 7 Vdc

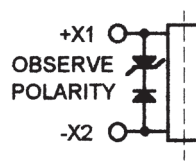
Coil Current @ 25°C, Max. —

0.28 Amp

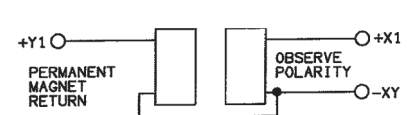
Coil Type



A — Continuous



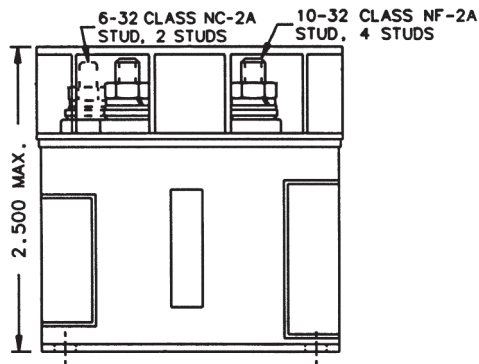
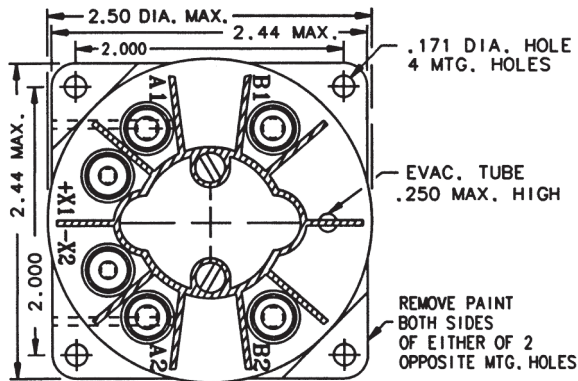
B — Continuous with Suppression



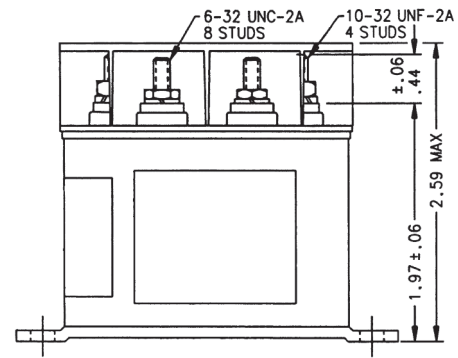
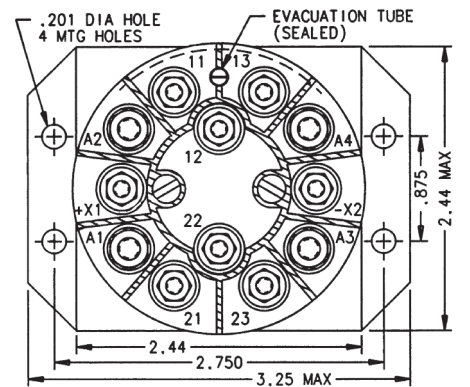
C — Continuous

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

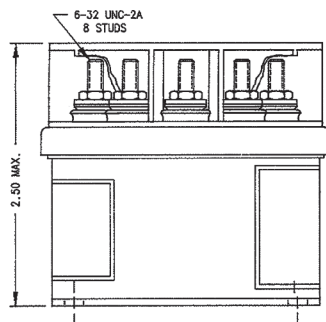
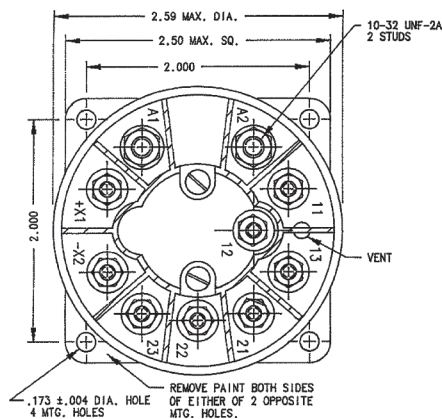
D-7, DH-7 and DH-18 Series, Rated up to 50 Amps, 28 Vdc (Continued)



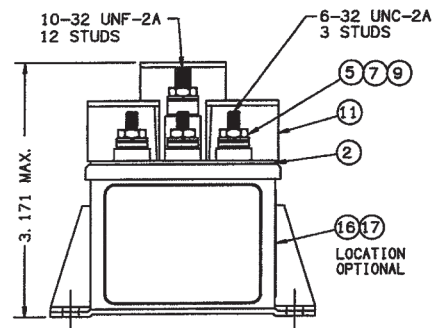
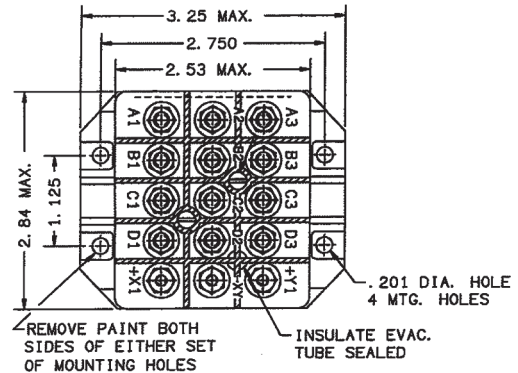
Mounting Style A



Mounting Style B



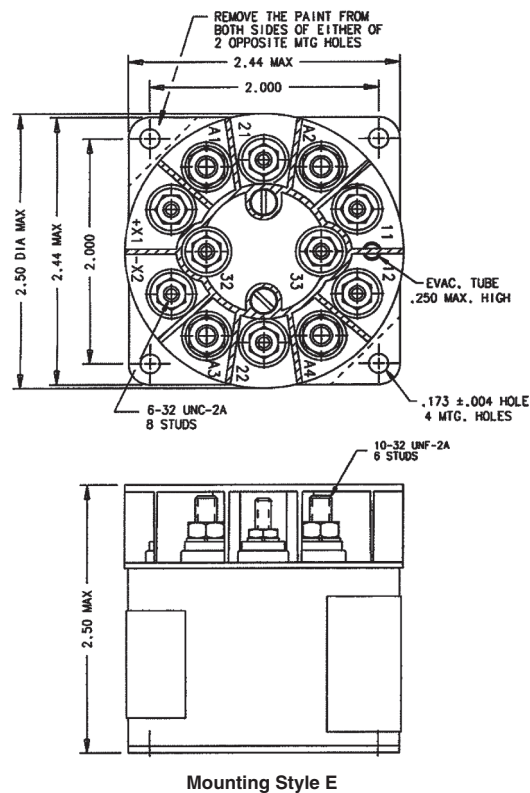
Mounting Style C



Mounting Style D

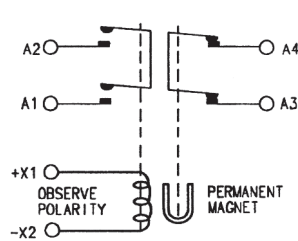
For factory-direct application
assistance, phone 419-521-9500 or
fax 419-526-2749.

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

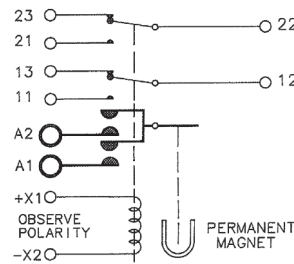


D-7, DH-7 and DH-18 Series, Rated up to 50 Amps, 28 Vdc (Continued)

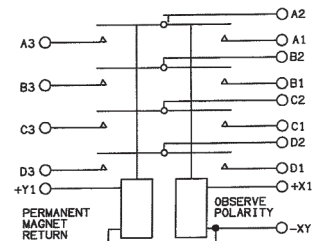
Circuit Configurations (Consult factory for other available circuit configurations)



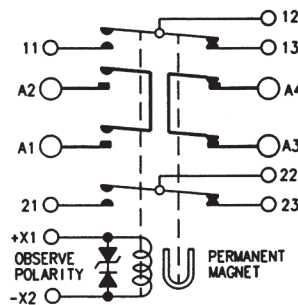
Circuit Configuration 1



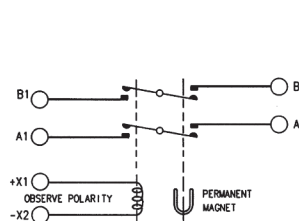
Circuit Configuration 2



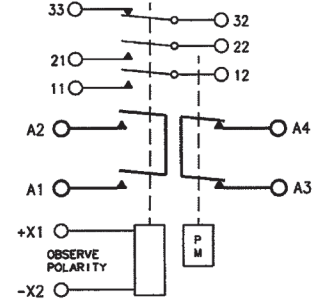
Circuit Configuration 3



Circuit Configuration 4



Circuit Configuration 5



Circuit Configuration 6

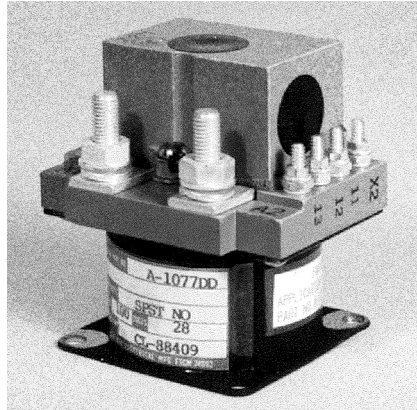
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-7AC	Gasket Sealed	A	A	1	1616088-1
D-7LHB	Gasket Sealed	C	A	2	1616064-1
DH-18DA*	Hermetically Sealed	D	C	3	1616050-2
DH-7ATK	Hermetically Sealed	B	B	4	1616089-7
DH-7MN	Hermetically Sealed	A	A	5	1616103-2
DH-7TB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

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

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

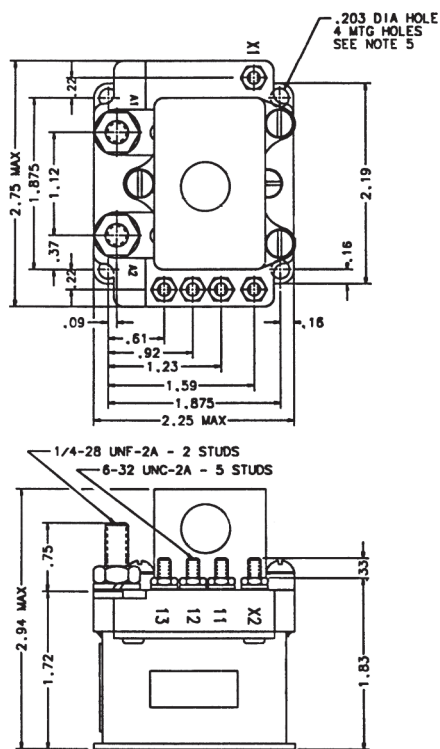
Operating Voltage, Min. — 24 Vdc

Pickup Voltage @ 25°C, Max. —
16.5 Vdc

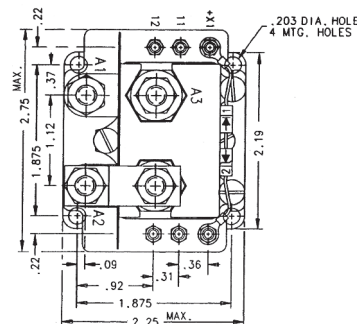
Dropout Voltage — 1 to 7 Vdc

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

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

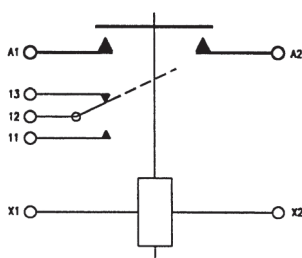


Mounting Style A

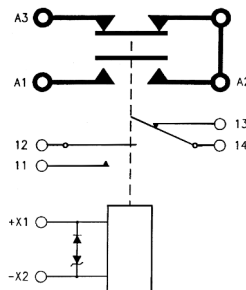


Mounting Style B

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	A	Continuous	1	1616055-3
A-1077S	Gasket Sealed	B	Continuous, w/ Suppression	2	1616081-3

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

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 —

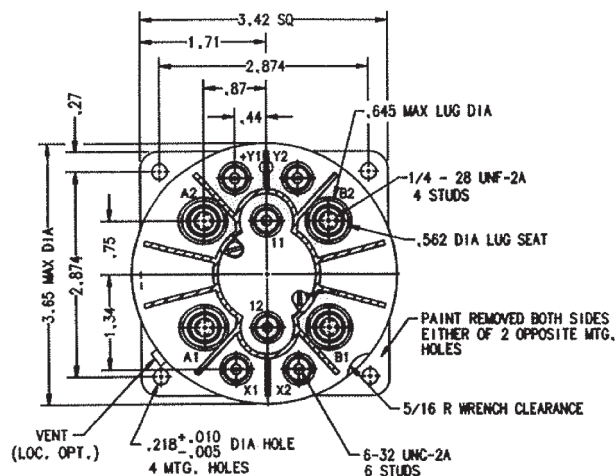
Operating Voltage, Nominal —
28 Vdc

Pickup Voltage @ 25°C, Max.,
Initial — 15 VDC

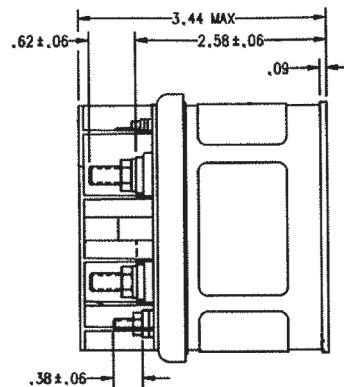
Dropout Voltage @ 25°C —
2.0 V to 6.5 V

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

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

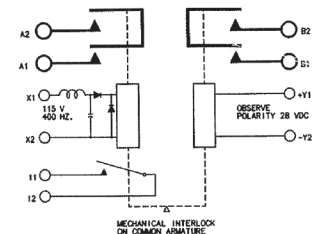


Mounting Style A



Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

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

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

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

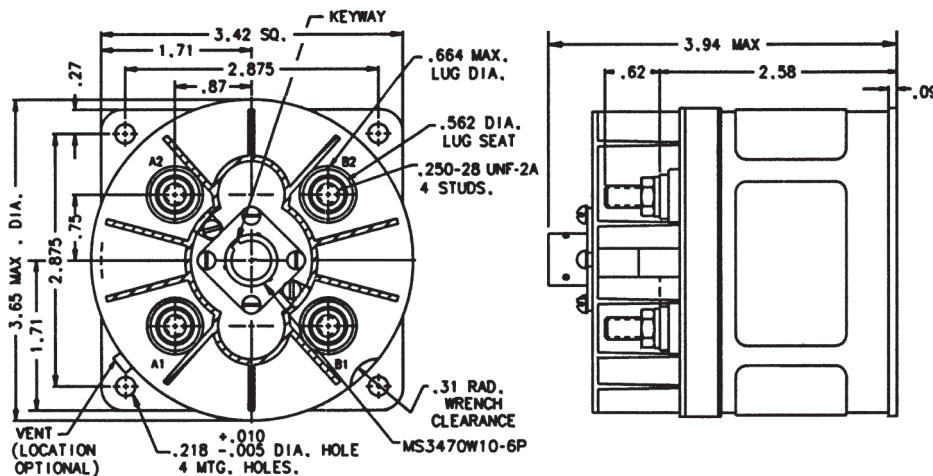
Hold Voltage — 8.0 Vdc

Coil Resistance $\pm 10\%$ @ 77°F —

163 Ohms

Coil Current @ 77°F & 30 Vdc,

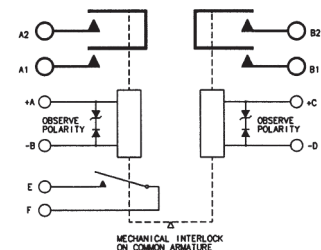
Max. — 0.215 Amp



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 fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-32A	Gasket/Vented	A	Continuous w/ Suppression	1	1616097-2

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

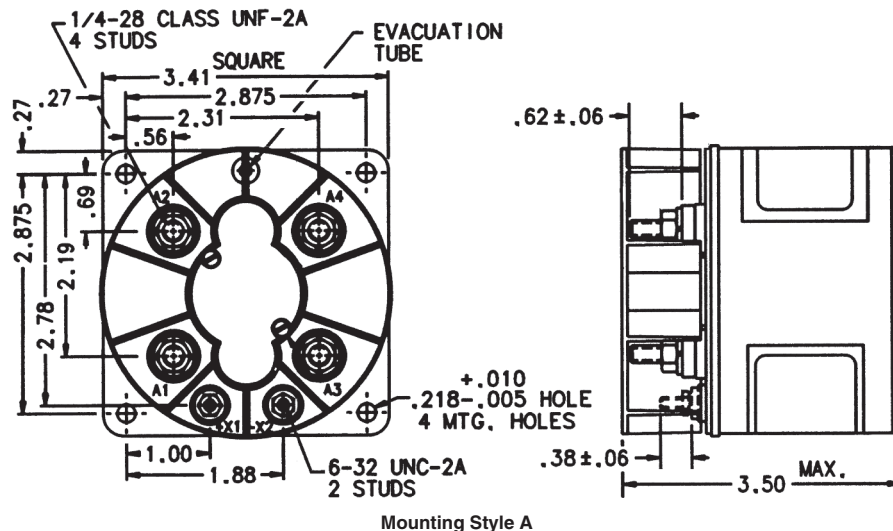
Duty Cycle — Continuous

Operating Voltage, Max. — 32 Vdc

Operating Voltage @ 21°C, Min. — 18 Vdc

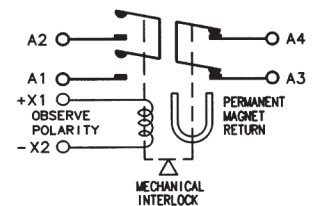
Dropout Voltage @ 25°C, Max. — 1.0 to 7 Vdc

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



Circuit Configurations

(Consult factory for other available circuit configurations)



Circuit Configuration 1

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

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

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

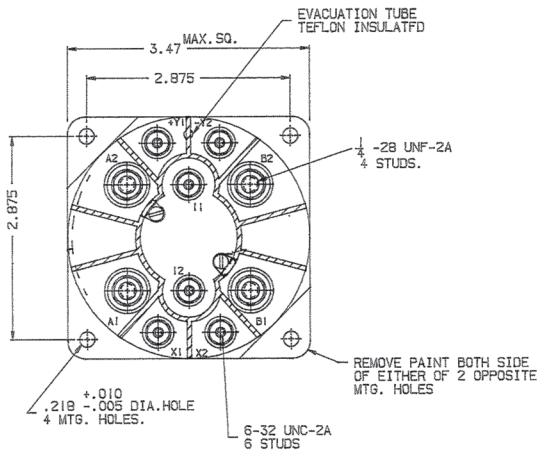
- Resistive Rating — 5 Amp
- Inductive Rating — 5 Amp

General Characteristics

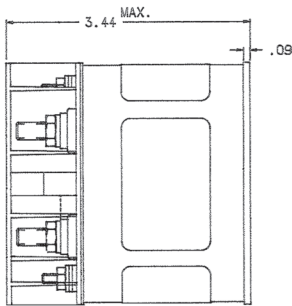
- Temperature Range — -55°C to +120°C
- Operating Cycles (Life) at Rated Resistive Load, Min. — 50,000 cycles
- Weight — 1 lb 13 oz

Coil Characteristics

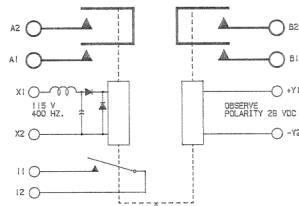
- Duty Cycle — Continuous
- Operating Voltage, Nom. —
- Coil X1-X2 (120 V, 400 Hz) — Pickup 100 V Max. Hot Dropout 25 V ± 20 V Nom. Resistance 1050 Ohms ± 10%
- Coil Y1-Y2 (28 Vdc) — Pickup 20 Vdc Max. Hot Dropout 1.5 to 7 Vdc Nom. Resistance 163 Ohms ± 10%
- Coil Current @ Nom. 120 V — X1-X2 — 0.12 Amp at 25°C
- Coil Current @ Nom. 28 Vdc — Y1-Y2 — 0.19 Amp at 25°C



Mounting Style A



Circuit Configurations
(Consult factory for other available circuit configurations)



Circuit Configuration 1

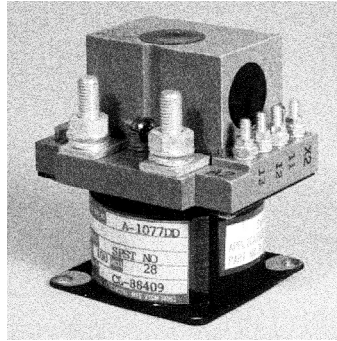
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
DHR-31BA	Hermetically Sealed	A	Continuous	1	1616098-1

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

Coil Characteristics

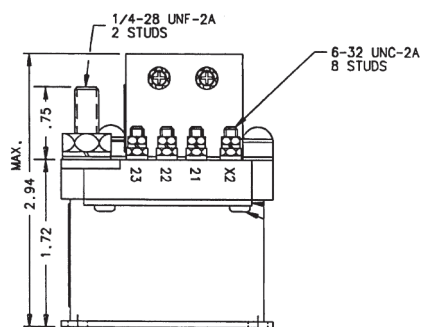
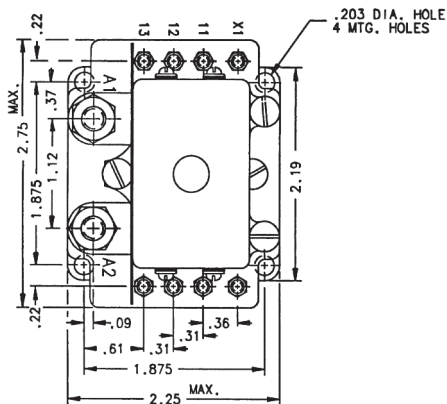
Duty Cycle — Continuous

Operating Voltage, Max. — 32 Vdc

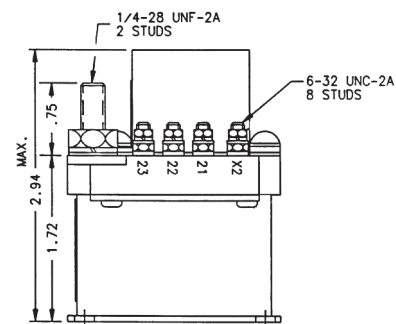
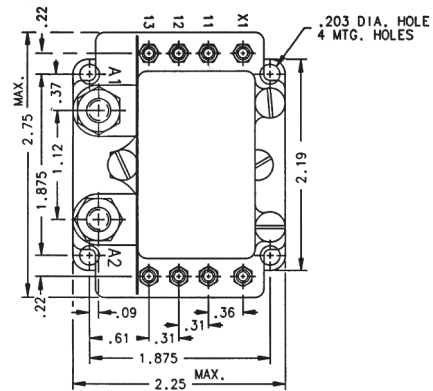
Operating Voltage, Nom. — 24 Vdc

Pickup Voltage @ 25°C, Max. — 16.5 Vdc

Dropout Voltage — 1.0 to 7 Vdc



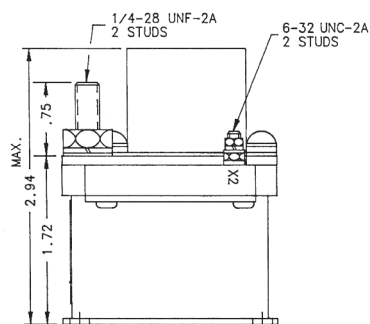
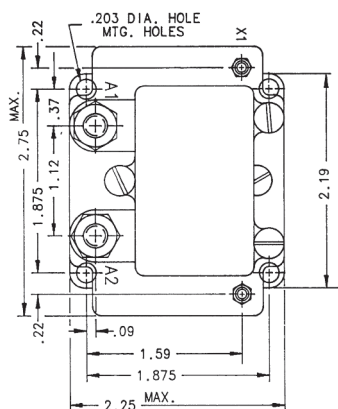
Mounting Style A



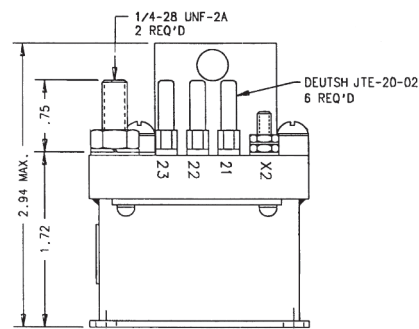
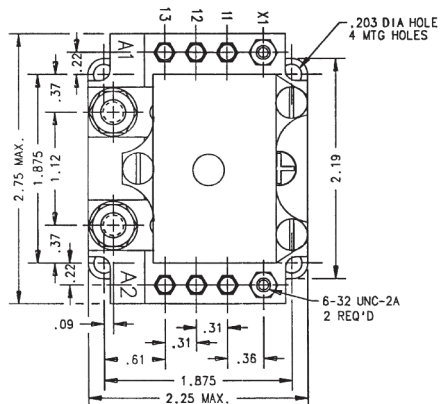
Mounting Style B

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

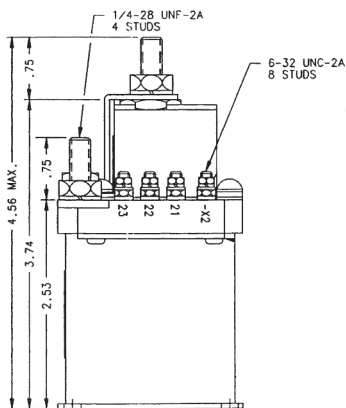
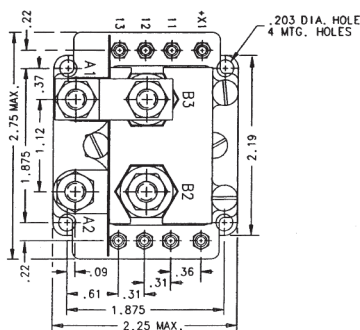
A1077 Series, Rated up to 200 Amps, 28 Vdc (Continued)



Mounting Style C



Mounting Style D

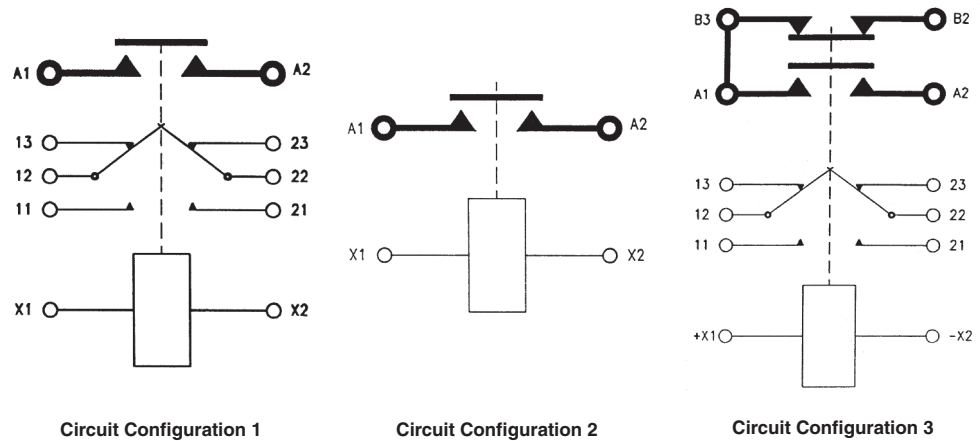


Mounting Style E

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

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

Circuit Configurations (Consult factory for other available circuit configurations)



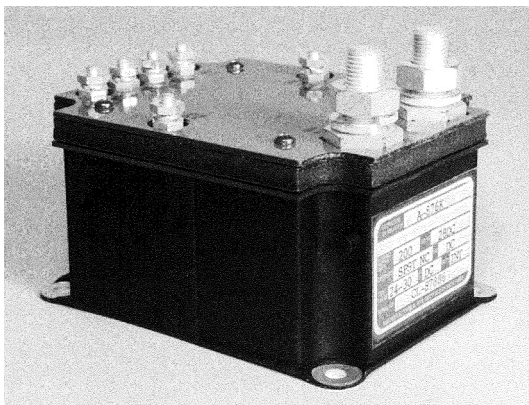
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-1077D	Gasket Sealed	A	Intermittent	1	1616055-2
A-1077F	Gasket Sealed	B	Continuous	1	1616055-4
A-1077G	Gasket Sealed	C	Continuous	2	1616055-5
A-1077V	Gasket Sealed	D	Continuous	1	1616055-6
A-1077W	Gasket Sealed	E	Continuous	3	1616081-4

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

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

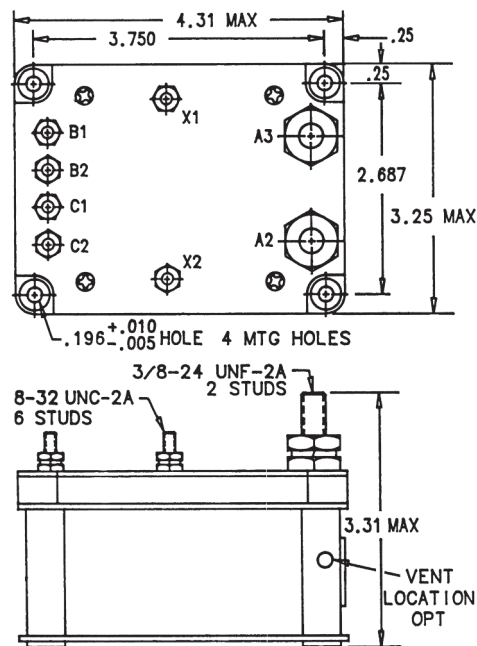
Duty Cycle — Intermittent

Operating Voltage — 24 to 30 Vdc

Pickup Voltage, Max. — 18 Vdc

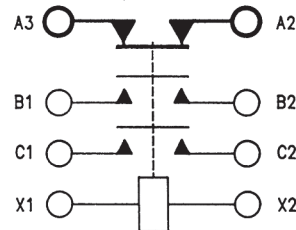
Dropout Voltage — 1 to 7 Vdc

Coil Resistance $\pm 20\%$ @ 25°C —
19.7 Ohms



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

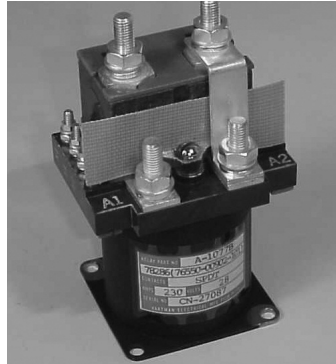
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-876K	Gasket/Vented	A	Intermittent	1	1616059-1

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

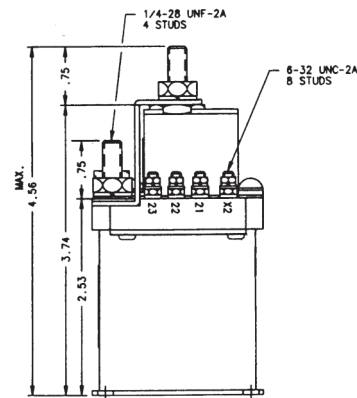
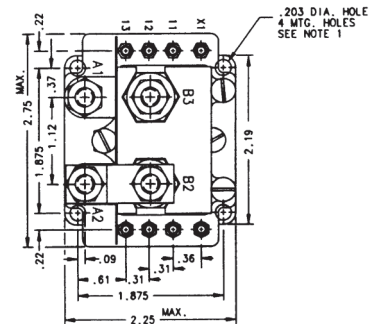
Duty Cycle — Continuous

Operating Voltage, Max. —
30 Vdc

Operating Voltage, Nom. —
24 Vdc

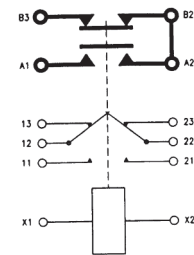
Pickup Voltage @ 25°C, Max. —
16.5 Vdc

Dropout Voltage — 0.5 to 7 Vdc



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

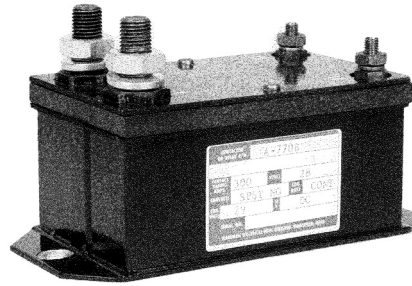
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-1077B	Gasket Sealed	A	Continuous	1	1616081-1

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

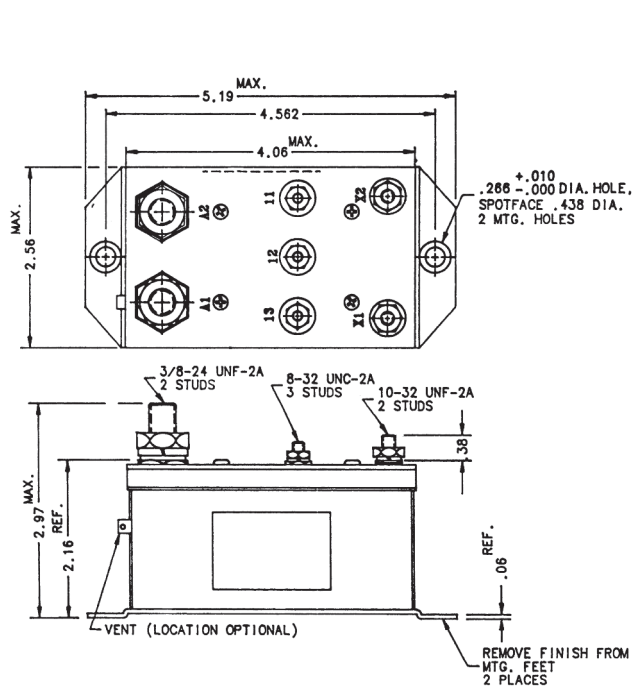
Pickup Voltage @ 25°C, Max. — 16 Vdc

Dropout Voltage @ 25°C — 1.5 to 5 Vdc

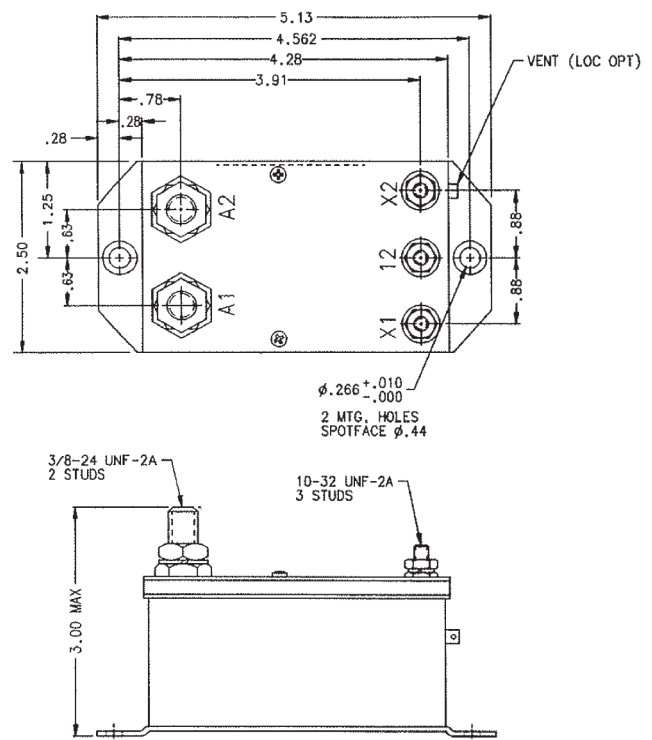
Coil Current, Max., Holding — Coil Type A — 0.4 Amp
Coil Type B — 0.625 Amp

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

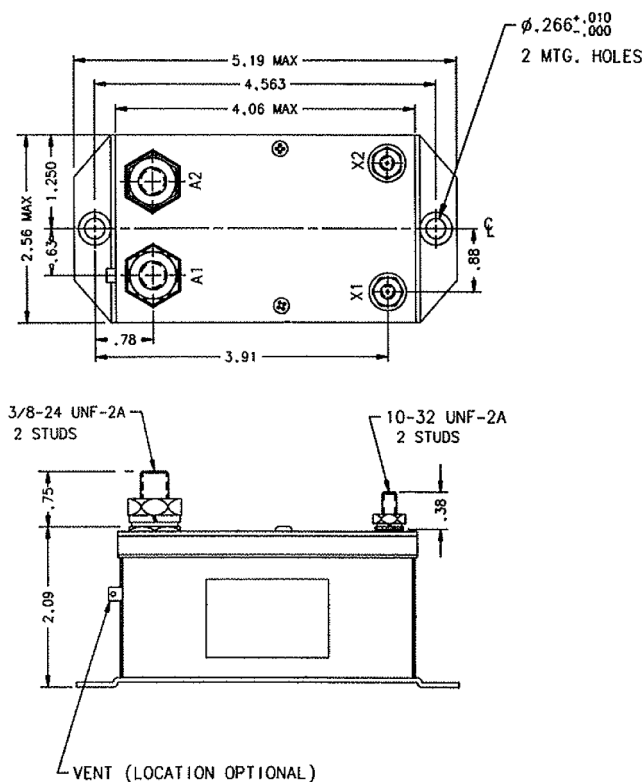
A-770 and AR-770 Series, Rated up to 300 Amps, 28 Vdc (Continued)



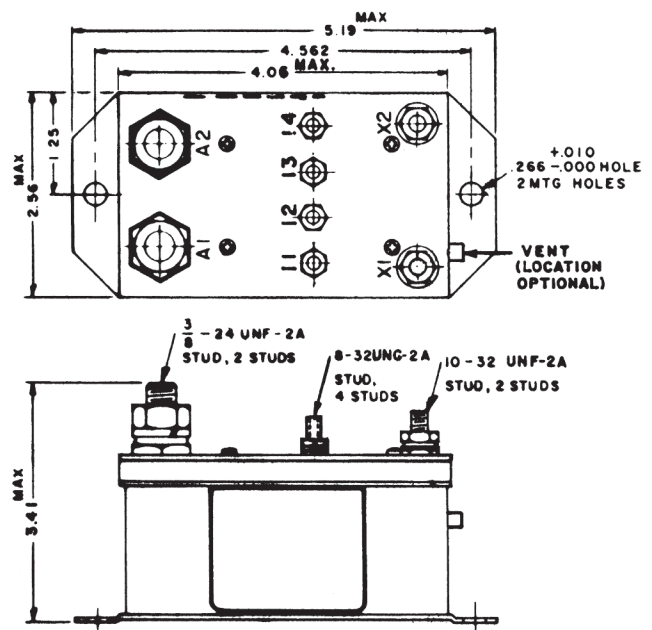
Mounting Style A



Mounting Style B



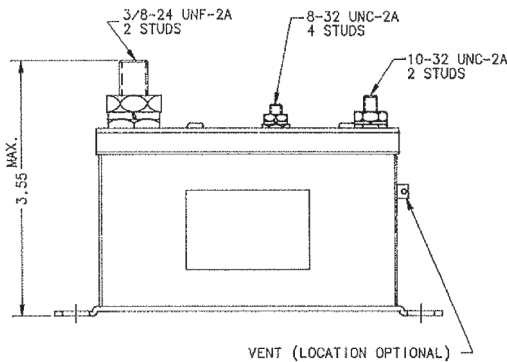
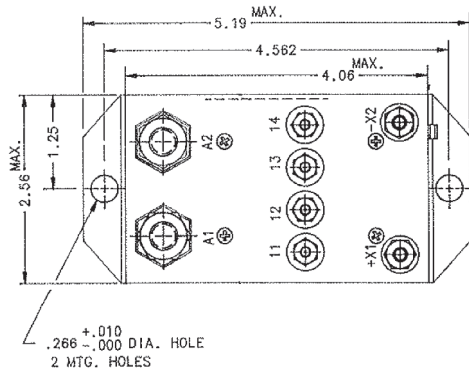
Mounting Style C



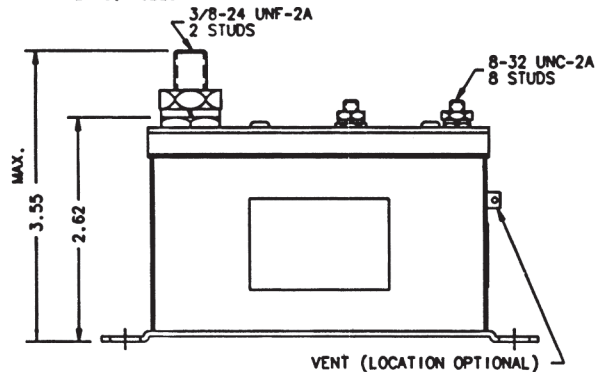
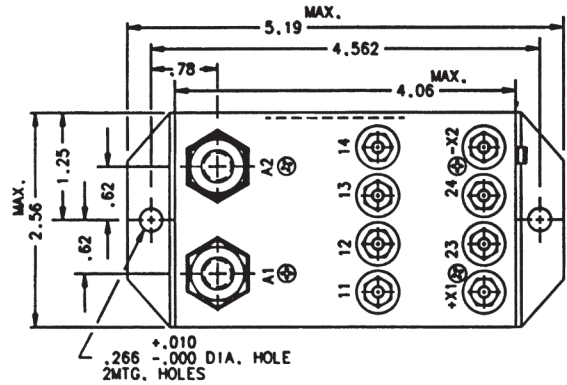
Mounting Style D

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

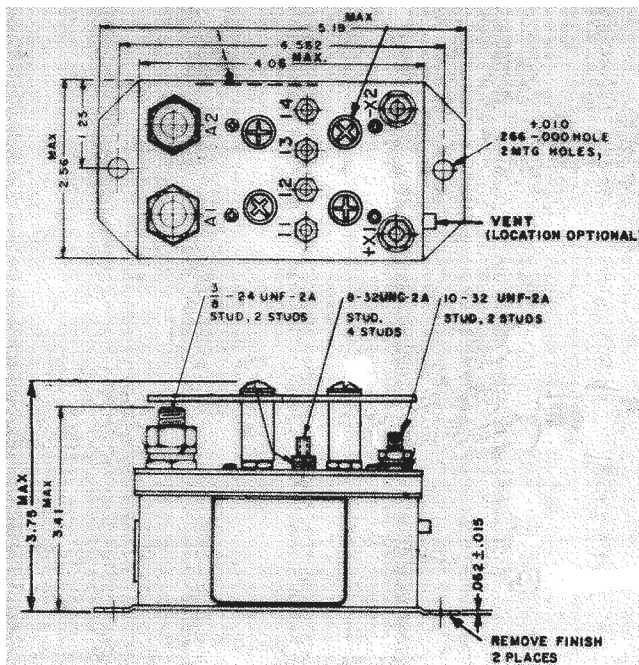
A-770 and AR-770 Series, Rated up to 300 Amps, 28 Vdc (Continued)



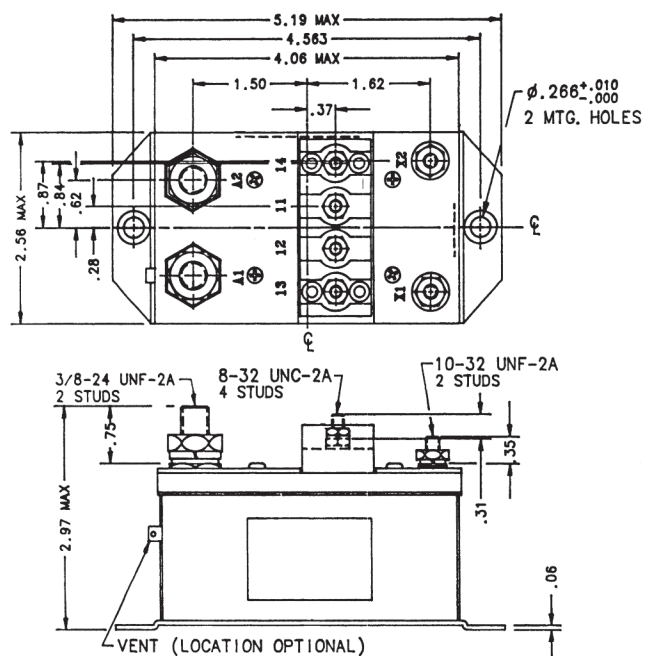
Mounting Style E



Mounting Style F



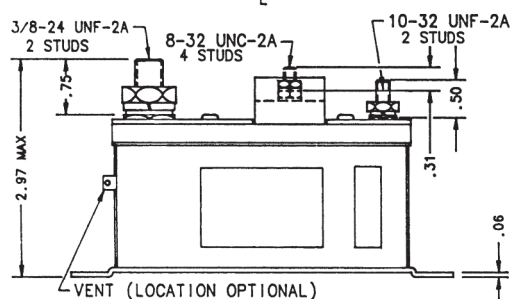
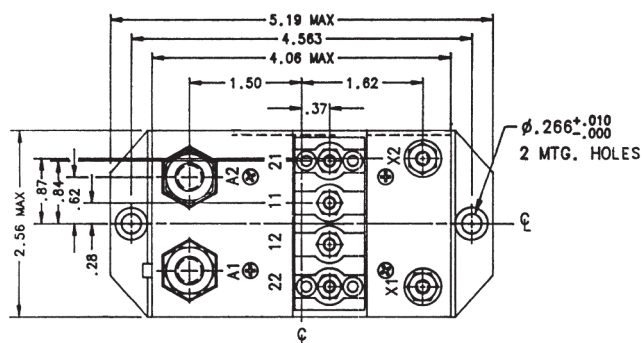
Mounting Style G



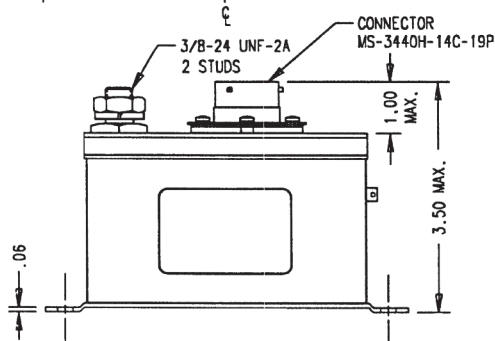
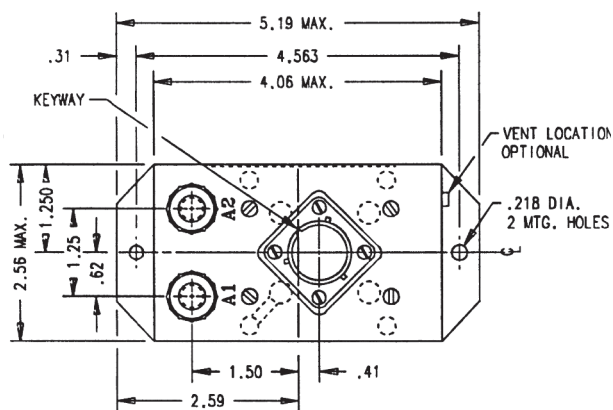
Mounting Style H

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

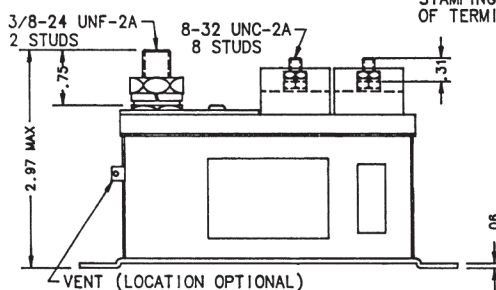
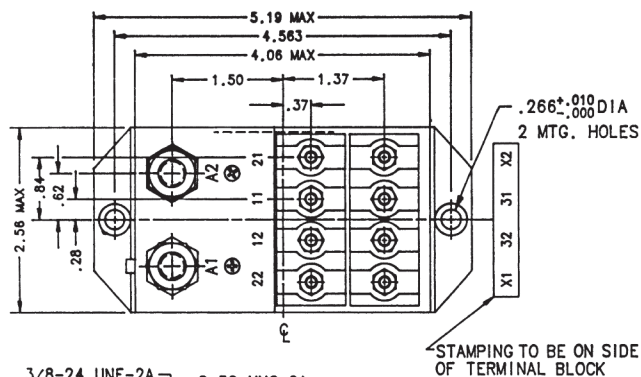
A-770 and AR-770 Series, Rated up to 300 Amps, 28 Vdc (Continued)



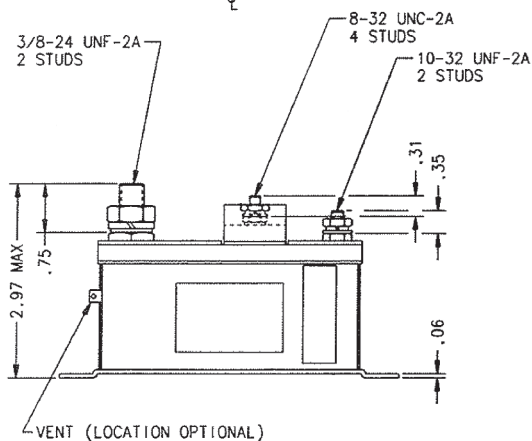
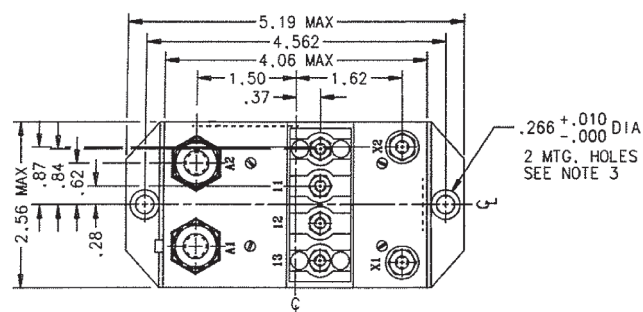
Mounting Style I



Mounting Style K



Mounting Style J

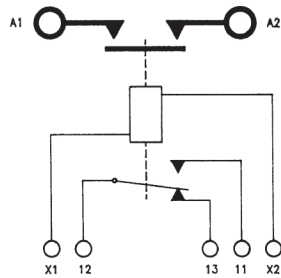


Mounting Style L

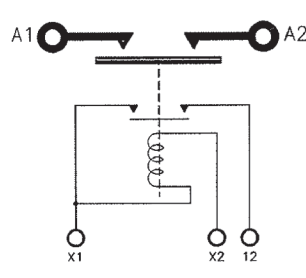
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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

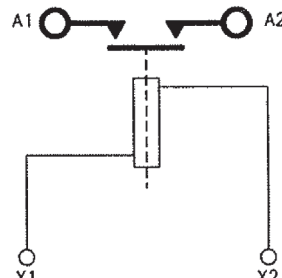
Circuit Configurations (Consult factory for other available circuit configurations)



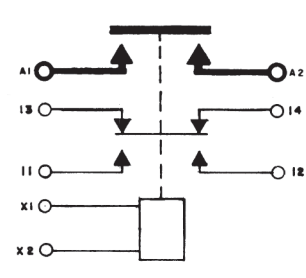
Circuit Configuration 1



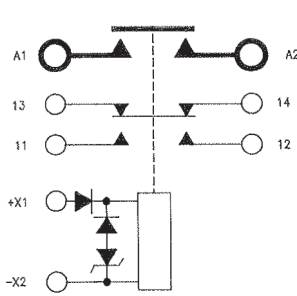
Circuit Configuration 2



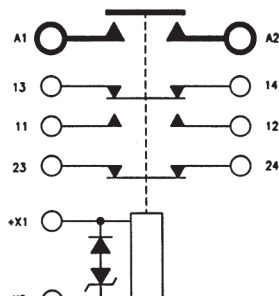
Circuit Configuration 3



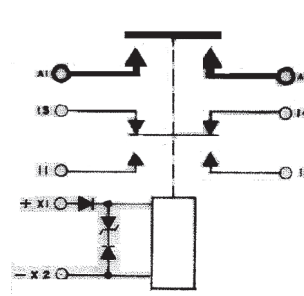
Circuit Configuration 4



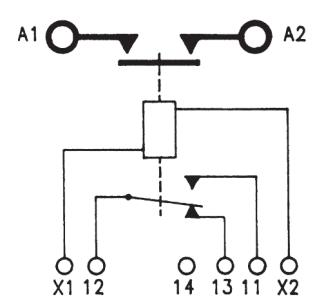
Circuit Configuration 5



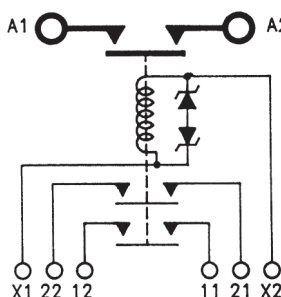
Circuit Configuration 6



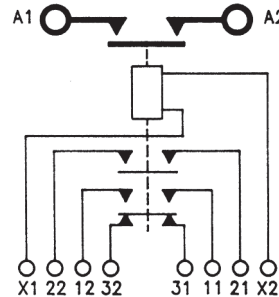
Circuit Configuration 7



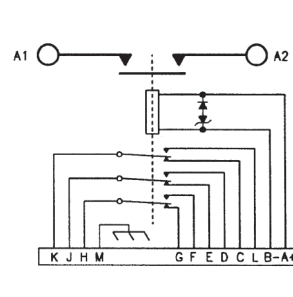
Circuit Configuration 8



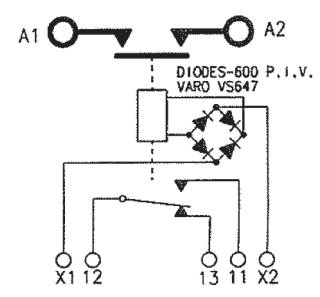
Circuit Configuration 9



Circuit Configuration 10



Circuit Configuration 11



Circuit Configuration 12

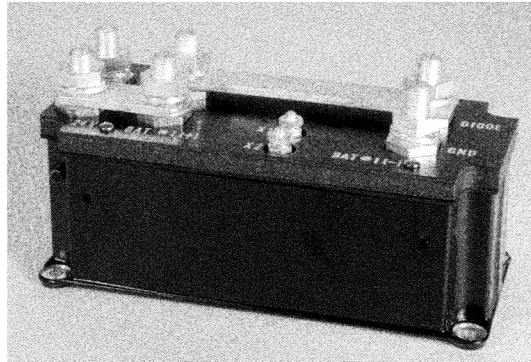
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-770AM	Gasket/Vented	A	Continuous	1	3-1616058-1
A-770N	Gasket/Vented	B	Continuous	2	3-1616058-3
A-770RF	Gasket/Vented	C	Continuous	3	3-1616058-4
A-770RG	Gasket/Vented	D	Intermittent	4	3-1616058-5
A-770RN	Gasket/Vented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

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

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

Weight — 3.5 lbs

Coil Characteristics

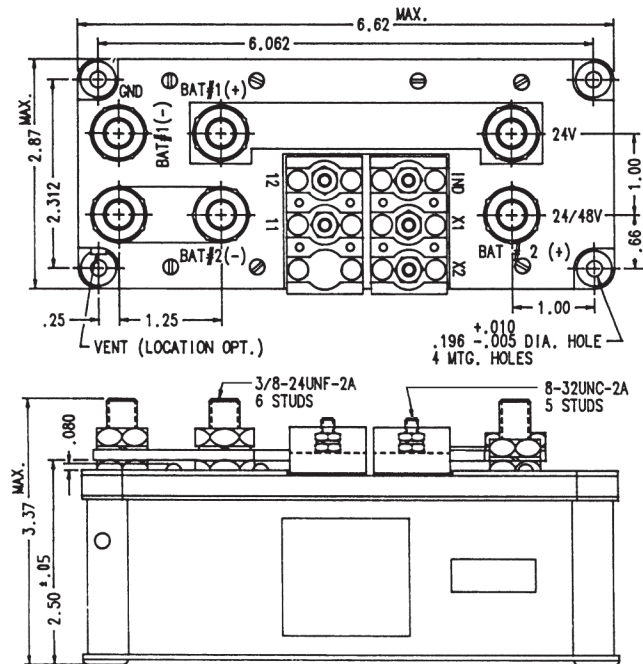
Duty Cycle — Intermittent

Operating Voltage, Max. — 31 Vdc

Operating Voltage, Min. — 18 Vdc

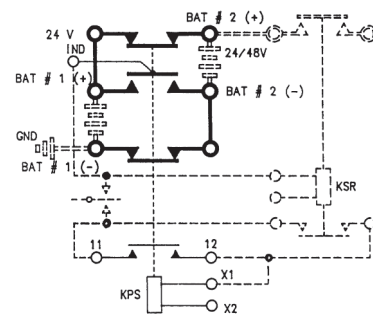
Pickup Voltage @ 25°C, Max., Initial — 12 Vdc

Dropout Voltage — 1.5 to 7 Vdc



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

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

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-848KH	Gasket/Vented	A	Intermittent	1	1616082-2
A-848KH-2	Gasket/Vented	A	Intermittent	1	1616082-4

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 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 — Continuous

Operating Voltage, Nom. —

28 Vdc

Pickup Voltage, Max. — 18 Vdc

Dropout Voltage —

9 Vdc (12 Vdc Hot)

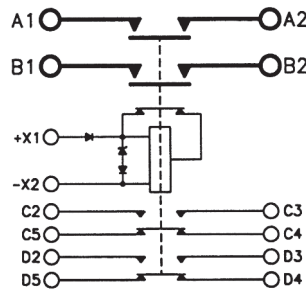
Coil Current, Inrush, Max. —

3.0 Amp

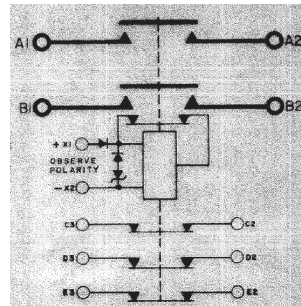
Coil Current, Holding, Max. —

0.35 Amp

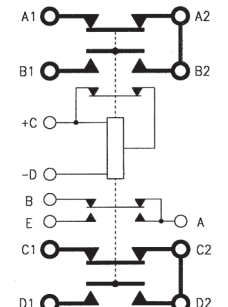
Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2

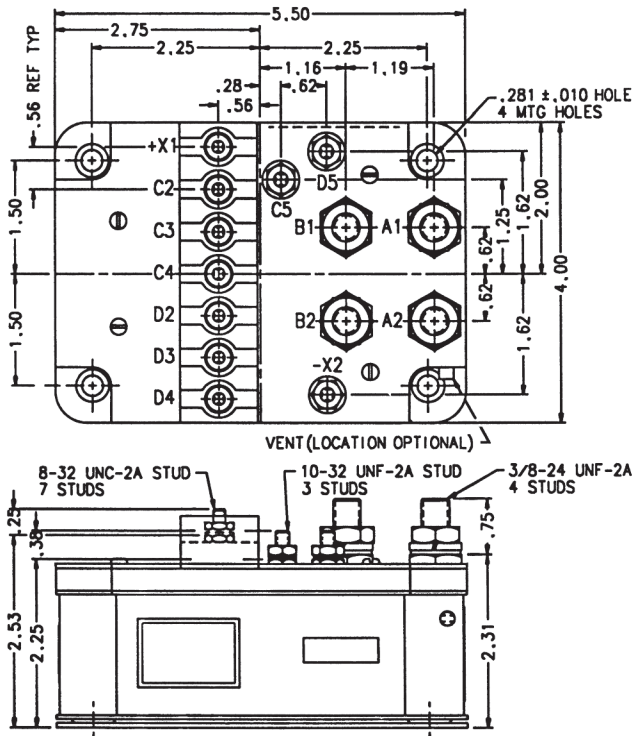


Circuit Configuration 3

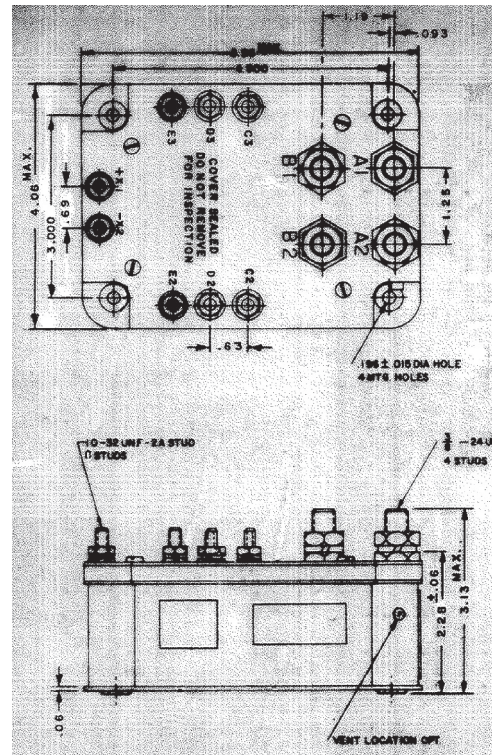
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-848MAS	Gasket/Vented	A	Continuous w/Supp., Economizing	1	1616102-2
A-848MLS	Gasket/Vented	B	Continuous w/Supp., Economizing	2	1616102-3
A-848KLC	Gasket/Vented	C	Continuous, Economizing	3	1616082-6

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

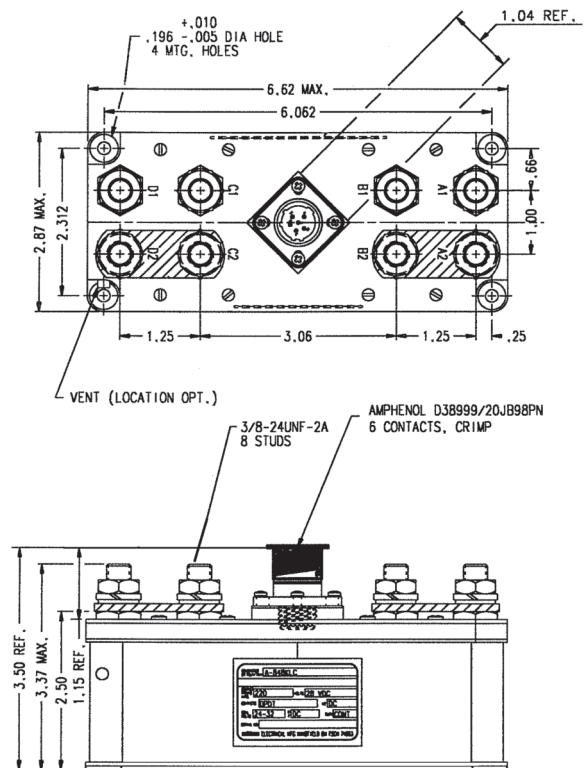
A-848 Series, Rated up to 300 Amps, 28 Vdc (Continued)



Mounting Style A



Mounting Style B



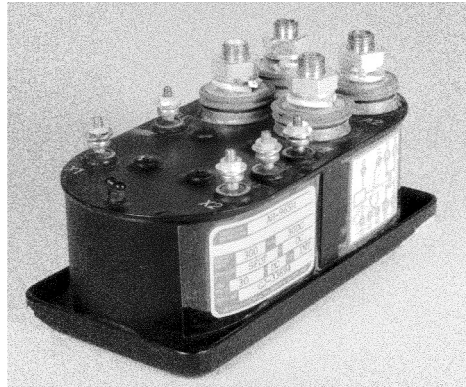
Mounting Style C

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

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 — 1,000 Vrms

Altitude, Max. — 50,000 ft.

Weight, Max. — 2.88 lbs

Coil Characteristics

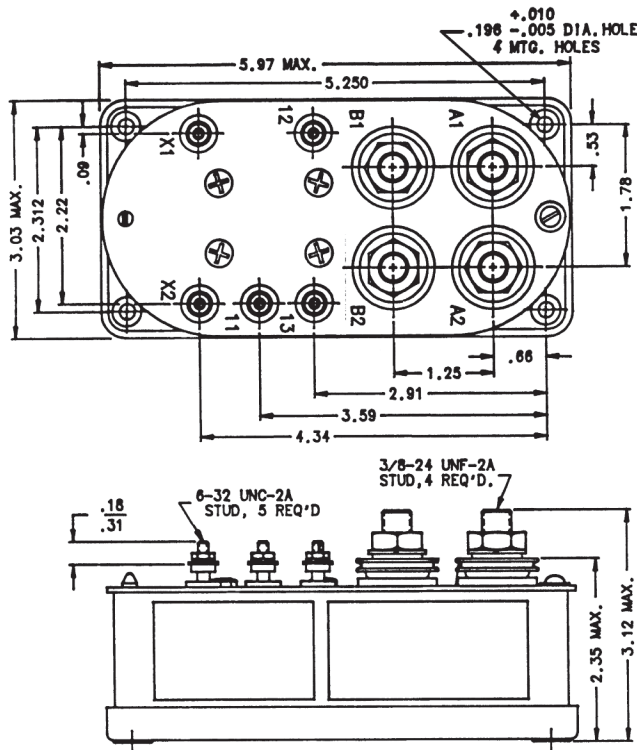
Duty Cycle — Intermittent, 3 minutes max.

Operating Voltage, Max. — 30 Vdc

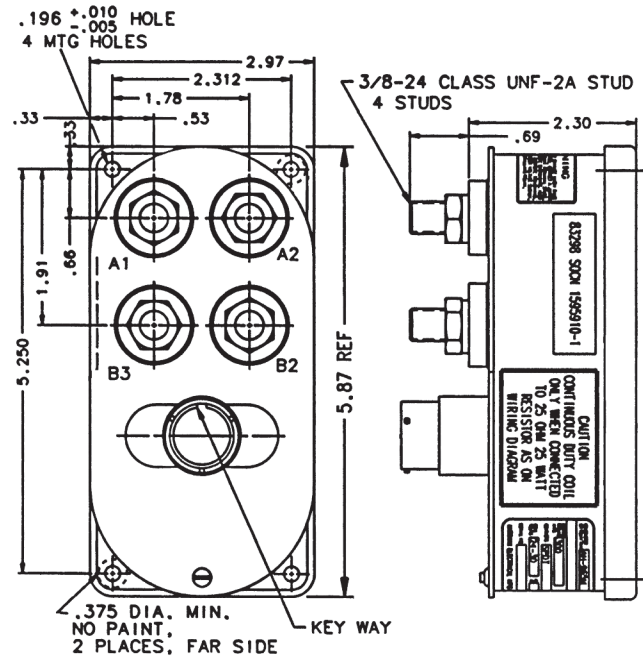
Pickup Voltage, Max. Hot — 20 Vdc

Dropout Voltage — 0.5 to 5 Vdc

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

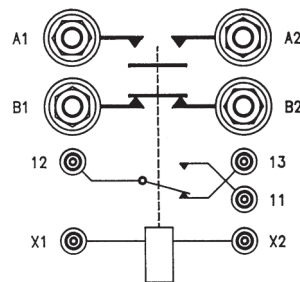


Mounting Style A

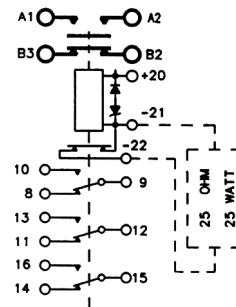


Mounting Style B

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
AH-965H	Hermetically Sealed	A	Intermittent	1	1616084-1
AH-965M	Hermetically Sealed	B	Continuous w/ External 25 Ohm/25 Watt Resistor Connected	2	1616084-2

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

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

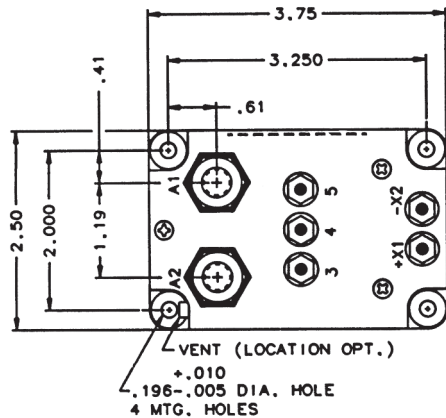
A-400B, A-400D, A400DB-1 —
1 to 7 Vdc

A-400DC, A-400G, A-400G-2 —
1.0 Vdc Min.

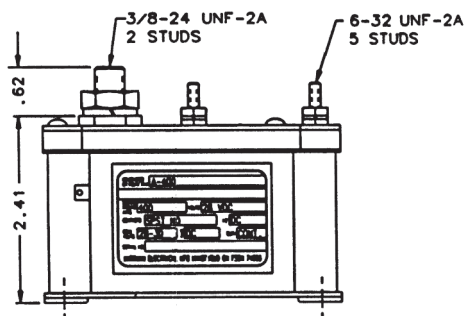
A-400S — +X to -X2 — 1 to 7 Vdc

+Y1 to -Y2 — 0.5 to 5 Vdc

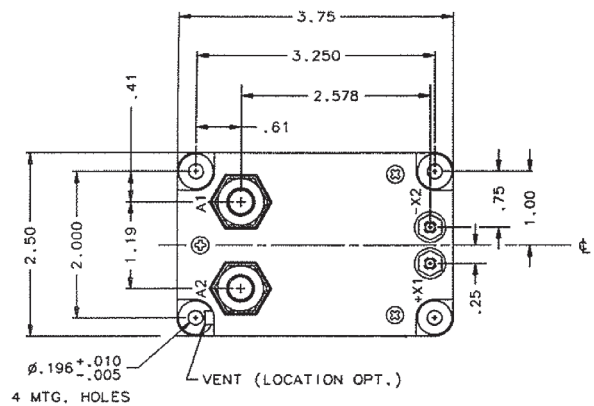
A-400 Series, Rated up to 400 Amps, 28 Vdc (Continued)



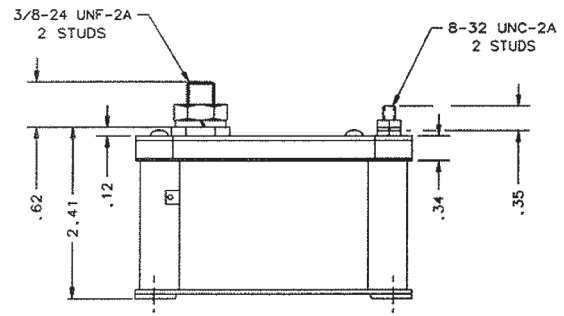
VENT (LOCATION OPT.)
+.010
DIA. HOLE
4 MTG. HOLES



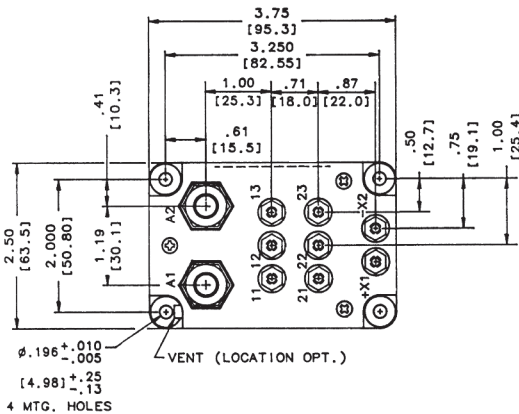
Mounting Style A



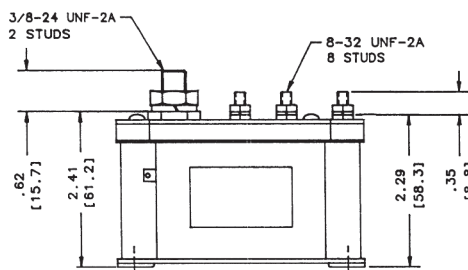
VENT (LOCATION OPT.)
+.010
DIA. HOLE
4 MTG. HOLES



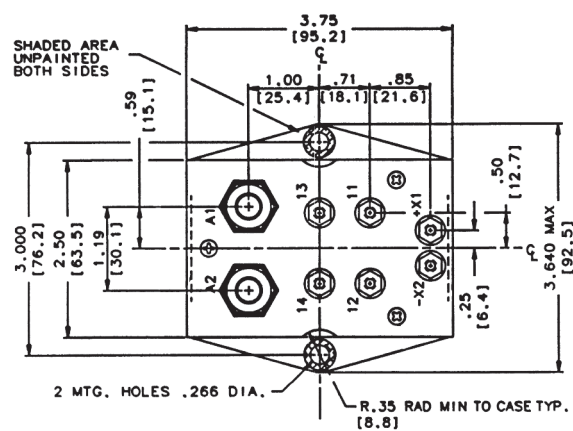
Mounting Style B



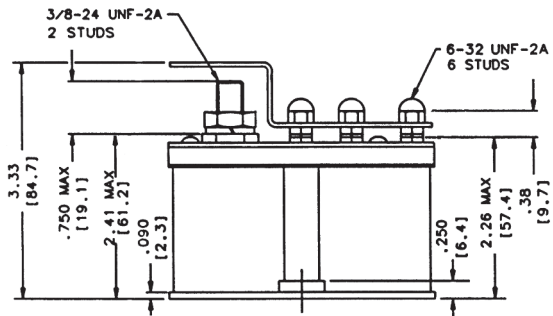
VENT (LOCATION OPT.)
+.010
DIA. HOLE
4 MTG. HOLES



Mounting Style C



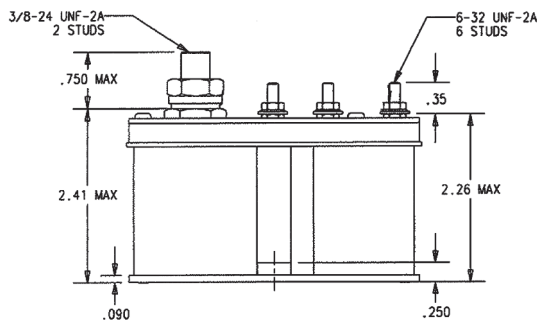
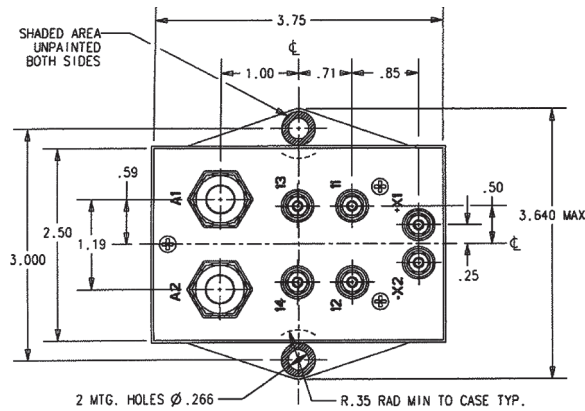
2 MTG. HOLES .266 DIA.
R.35 RAD MIN TO CASE TYP.
(.8)



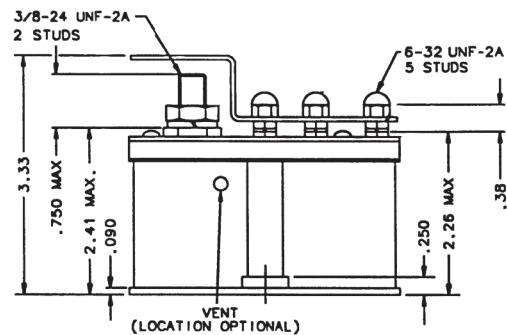
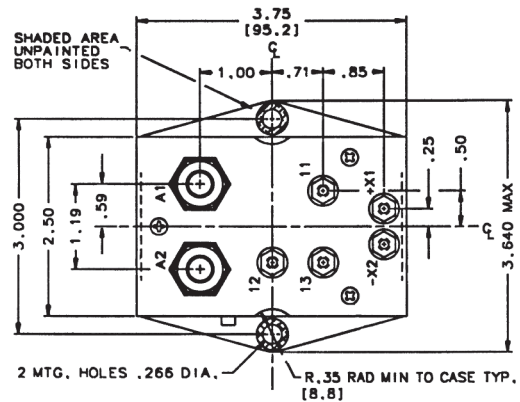
Mounting Style D

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

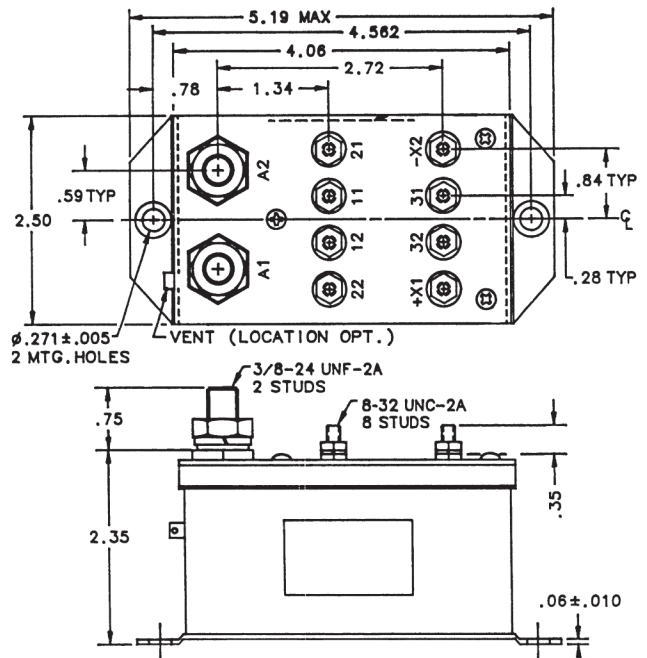
A-400 Series, Rated up to 400 Amps, 28 Vdc (Continued)



Mounting Style E



Mounting Style F



Mounting Style G

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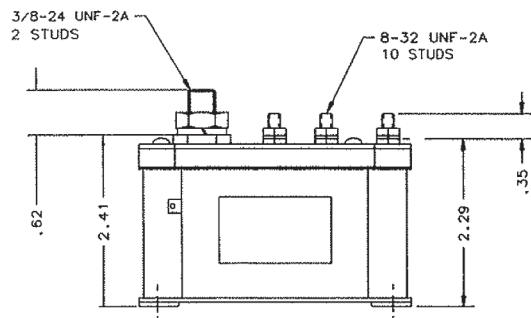
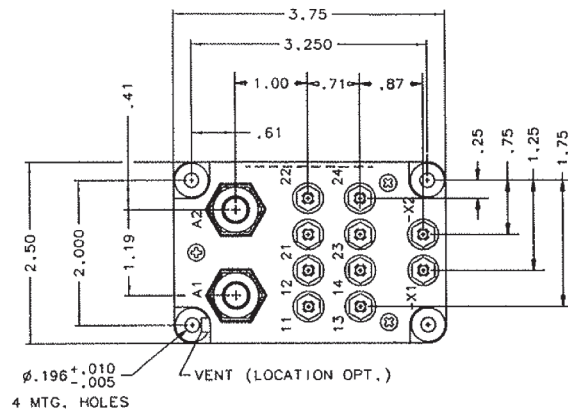
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters
unless otherwise specified.

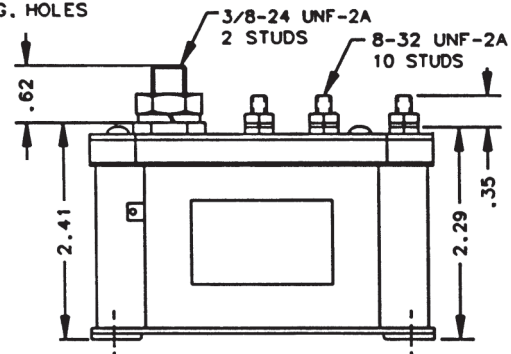
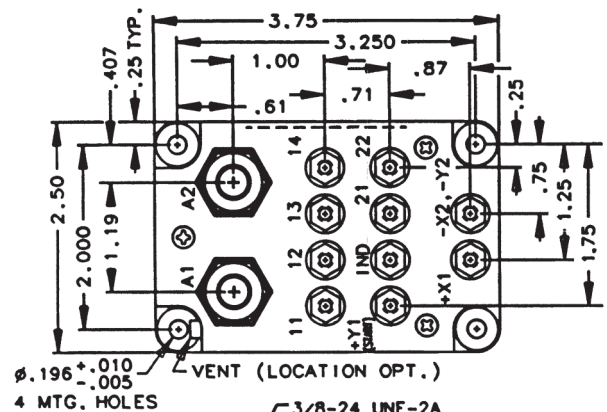
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers
please visit www.te.com

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



Mounting Style I

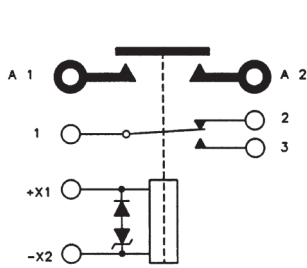


Mounting Style J

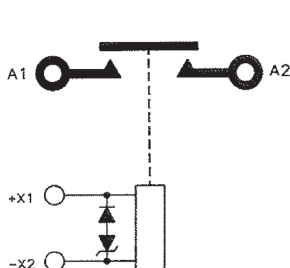
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

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

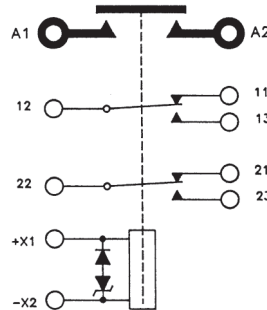
Circuit Configurations (Consult factory for other available circuit configurations)



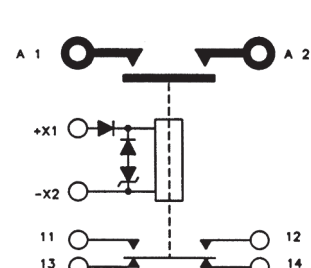
Circuit Configuration 1



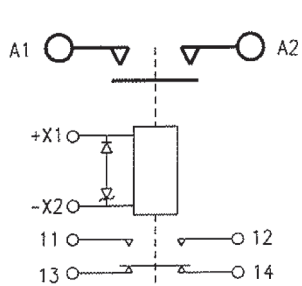
Circuit Configuration 2



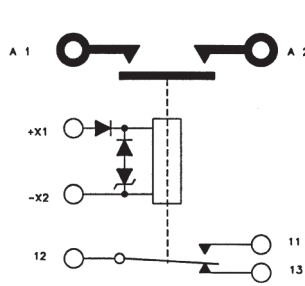
Circuit Configuration 3



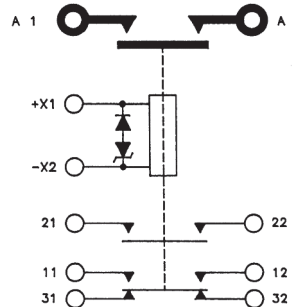
Circuit Configuration 4



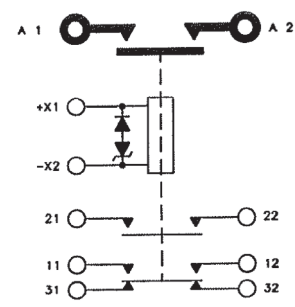
Circuit Configuration 5



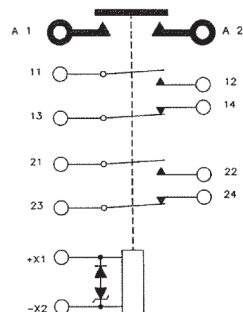
Circuit Configuration 6



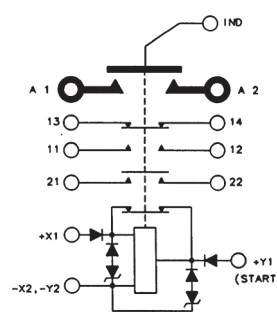
Circuit Configuration 7



Circuit Configuration 8



Circuit Configuration 9



Circuit Configuration 10

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-400A	Gasket/Vented	A	Intermittent	1	1-1616530-6
A-400AA	Gasket/Vented	B	Intermittent	2	1616056-2
A-400B	Gasket/Vented	C	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.

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

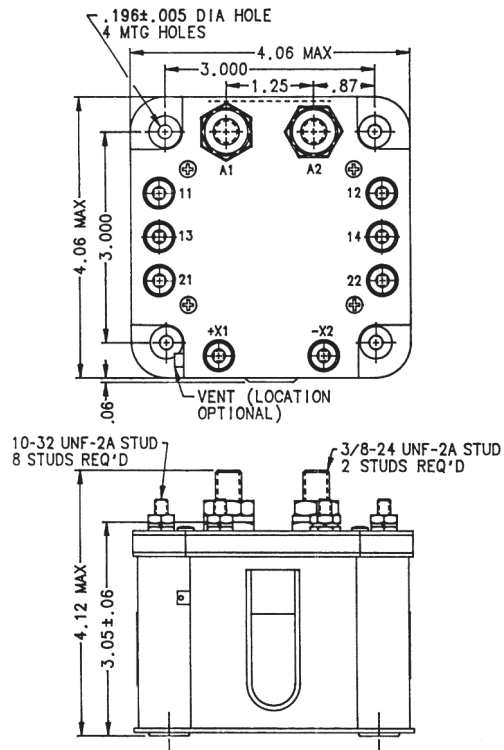
Pickup Voltage @ 25°C, Max. —
A-703B — 8 Vdc
A-703DBH — 10 Vdc
A-703, A-703CD, A-703CSM, A-703D,
A-703FA, A-703FB, A-703FSS,
A-703ZS — 12 Vdc
A-703T — 13 Vdc
AH-703F, A-703E, A-703G-1, A-703GC,
A-703GS, A-703R, AH-703F — 16 Vdc

Dropout Voltage —

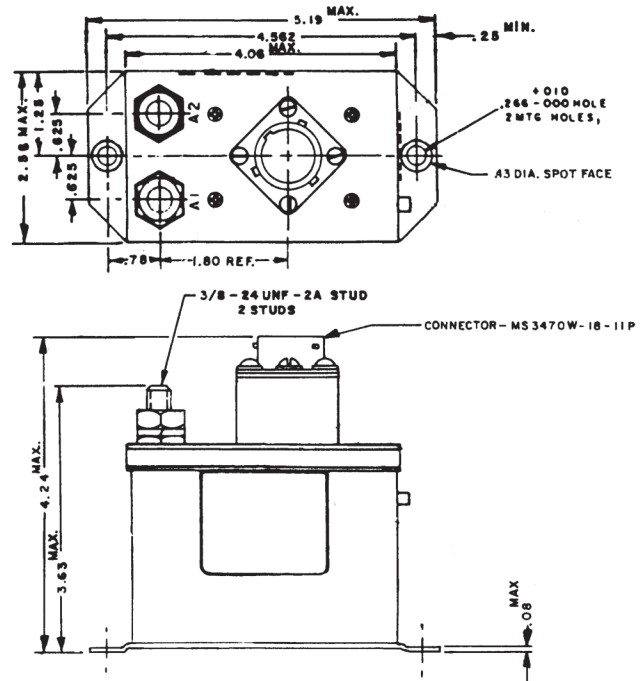
A-703B — 0.5 to 3 Vdc
A-703CD, A-703FA, A-703FB —
0.5 to 5 Vdc
A-703T — 0.5 to 6 Vdc
A-703, A-703CSM, A-703D, A-703FSS,
A-703ZS — 0.5 to 7 Vdc
A-703DBH, A-703E, A-703R —
1.0 to 7 Vdc
AH-703F, A-703G-1, A-703GC, A-
703GS, AH-703F — 1.5 to 7 Vdc

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

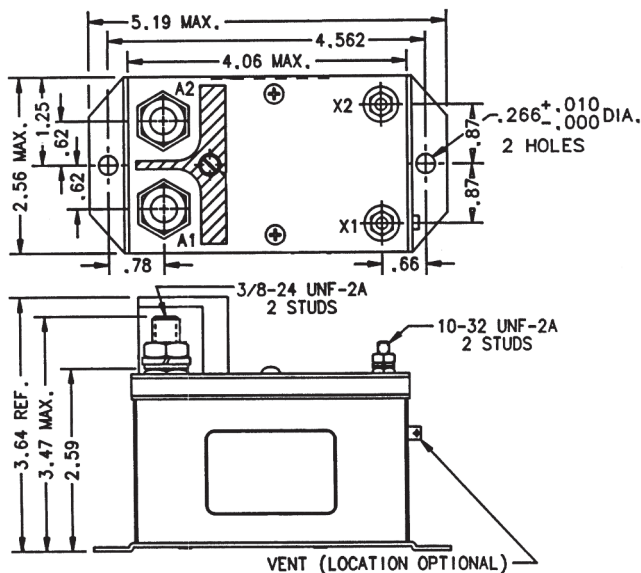
A-703 and AH-703 Series, Rated up to 400 Amps, 28 Vdc (Continued)



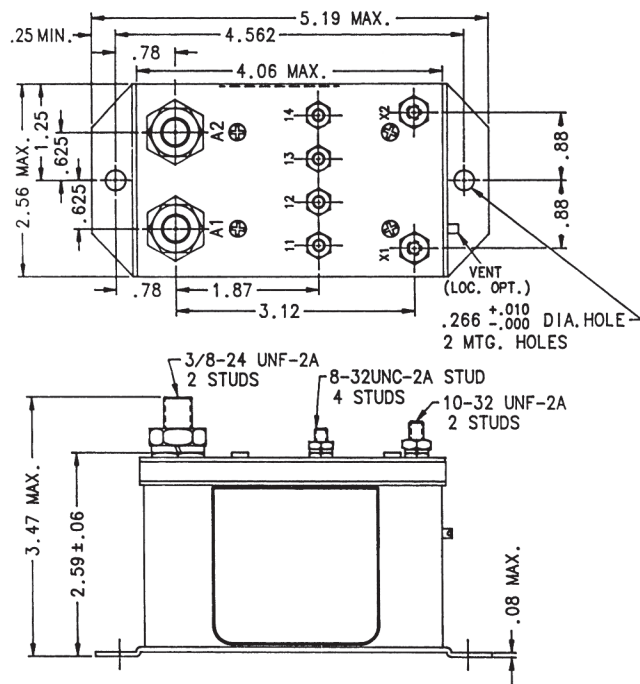
Mounting Style A



Mounting Style B



Mounting Style C



Mounting Style D

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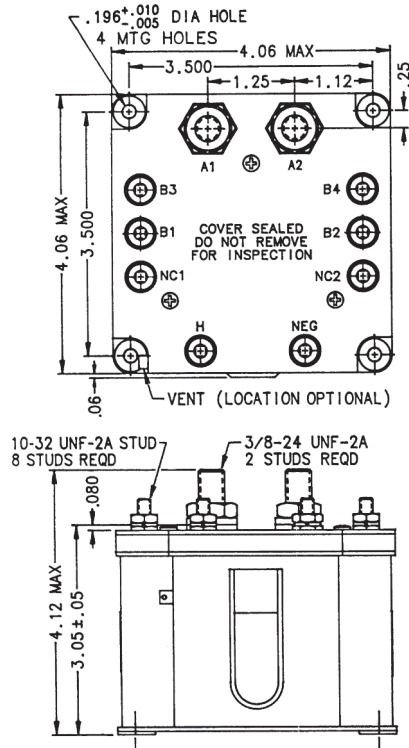
Dimensions are shown for reference purposes only. Specifications subject to change.

Dimensions are in millimeters
unless otherwise specified.

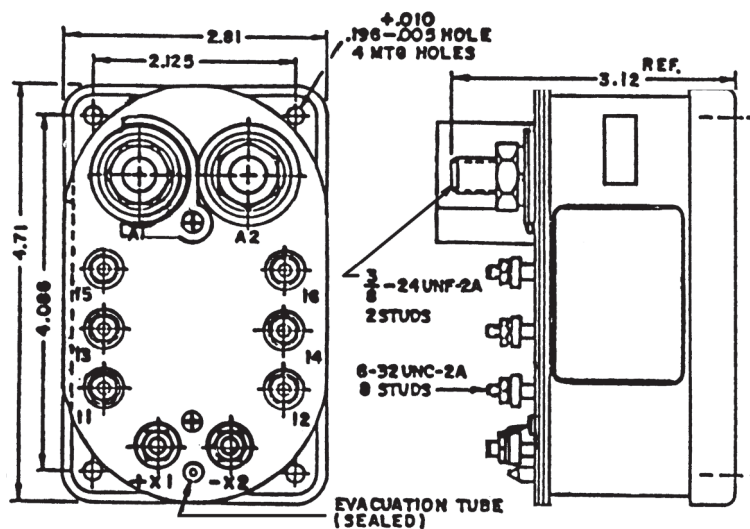
USA: +1 800 522 6752
Asia Pacific: +86 0 400 820 6015
UK: +44 800 267 666

For additional support numbers
please visit www.te.com

A-703 and AH-703 Series, Rated up to 400 Amps, 28 Vdc (Continued)



Mounting Style E

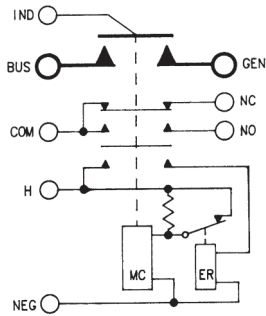


Mounting Style F

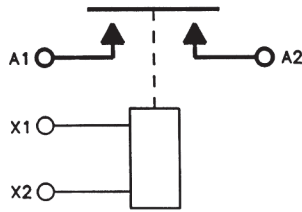
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

A-703 and AH-703 Series, Rated up to 400 Amps, 28 Vdc (Continued)

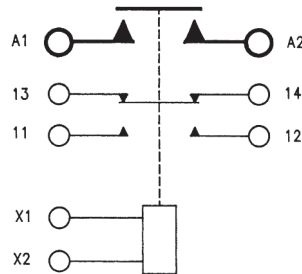
Circuit Configurations (Consult factory for other available circuit configurations)



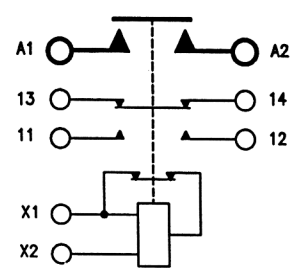
Circuit Configuration 1



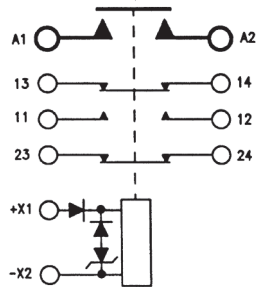
Circuit Configuration 2



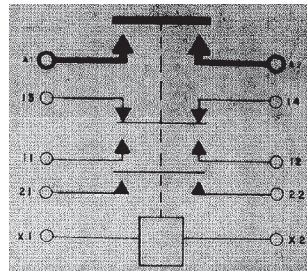
Circuit Configuration 3



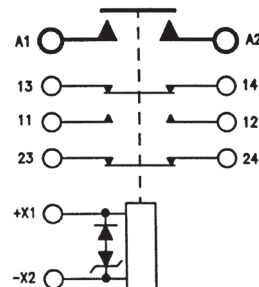
Circuit Configuration 4



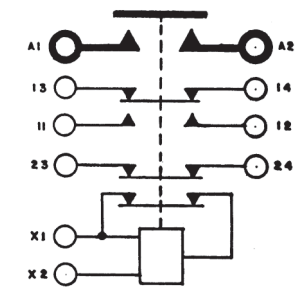
Circuit Configuration 5



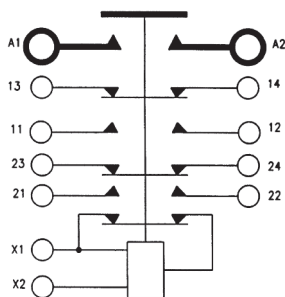
Circuit Configuration 6



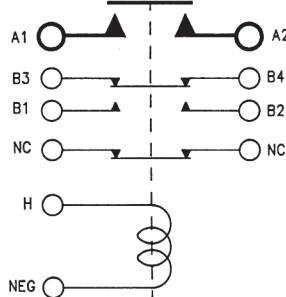
Circuit Configuration 7



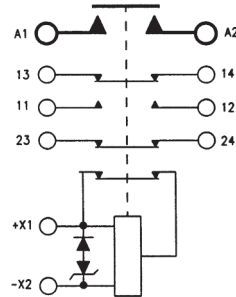
Circuit Configuration 8



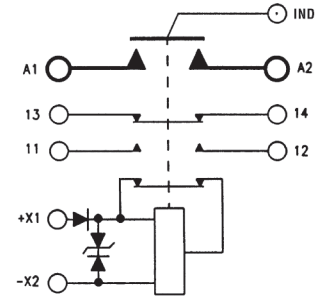
Circuit Configuration 9



Circuit Configuration 10



Circuit Configuration 11

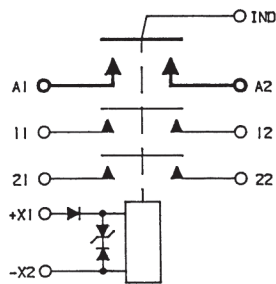


Circuit Configuration 12

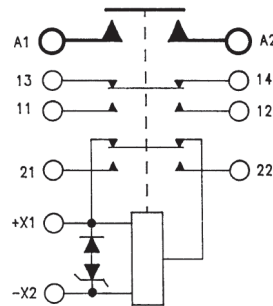
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

A-703 and AH-703 Series, Rated up to 400 Amps, 28 Vdc (Continued)

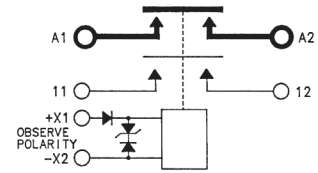
Circuit Configurations (Consult factory for other available circuit configurations)



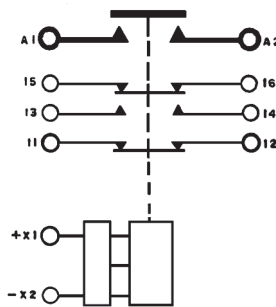
Circuit Configuration 13



Circuit Configuration 14



Circuit Configuration 15



Circuit Configuration 16

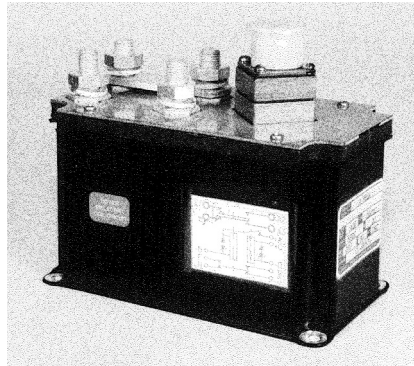
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-703	Gasket/Vented	A	Continuous, Economized	1	1616058-1
A-703CD	Gasket/Vented	C	Intermittent	2	1616058-6
A-703CSM	Gasket/Vented	D	Intermittent	15	1616058-7
A-703D	Gasket/Vented	D	Intermittent	3	1616058-8
A-703DBH	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	A	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.

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

Weight, Max. — 3.2 lbs

Coil Characteristics

Duty Cycle — Continuous with suppression

Operating Voltage, Max. — 31 Vdc

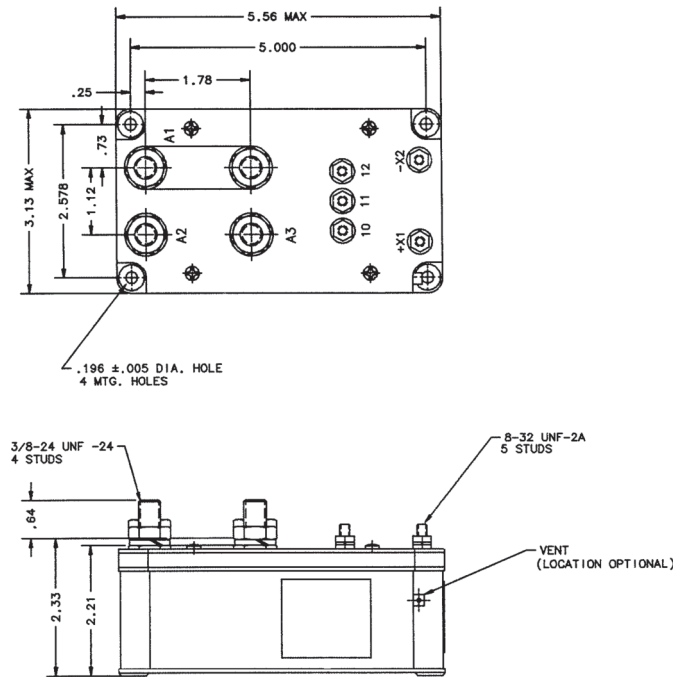
Operating Voltage, Min. — 17 Vdc

Pickup Voltage, Max. — 18 Vdc

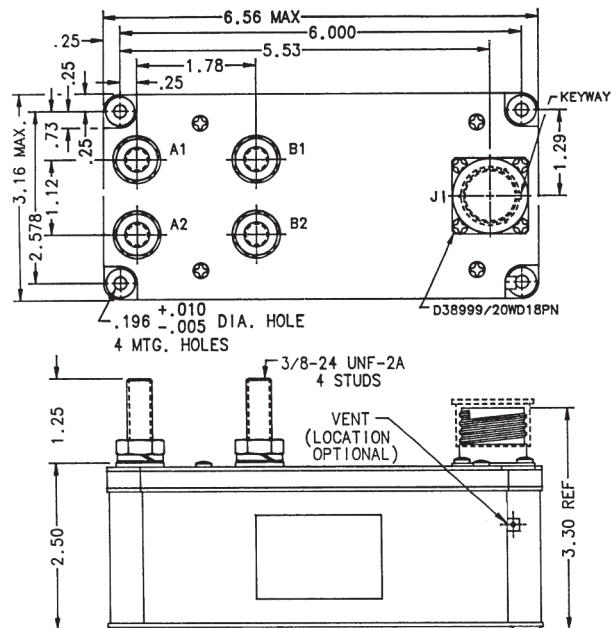
Dropout Voltage @ 25°C —
1 to 10 Volts

Coil Current, Inrush, Max. —
4.5 Amp

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

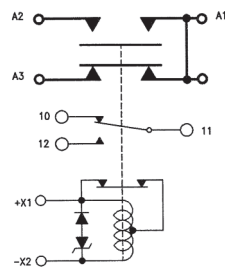


Mounting Style A

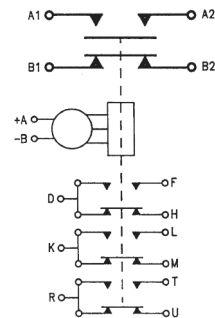


Mounting Style B

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-981S	Gasket/Vented	A	Continuous, Economizing w/Supp.	1	1616083-7
A-981P	Gasket/Vented	B	Continuous, Economizing w/Supp.	2	1616083-6

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

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

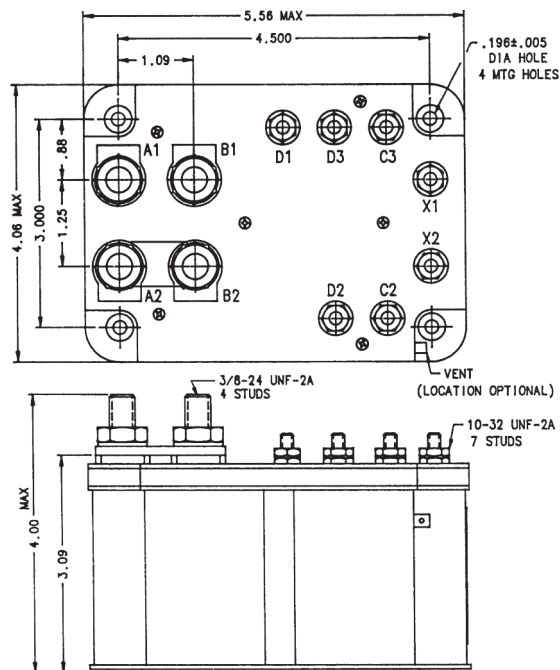
Pickup Voltage @ 25°C, Max. —
20 V

Resistance @ 25°C —

Pickup — 27 Ohm ± 20%

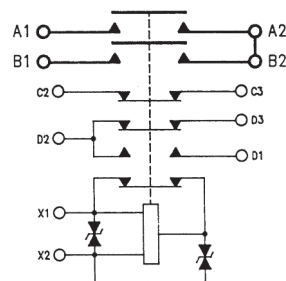
Hold — 111 Ohm ± 20%

Suppression, Peak, Max. — 50 V



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

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

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-792SFS	Gasket/Vented	A	Continuous, Economizing w/Supp.	1	1616101-2

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 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 - 3 lbs 7 oz.

Coil Characteristics

Duty Cycle — Continuous or Intermittent

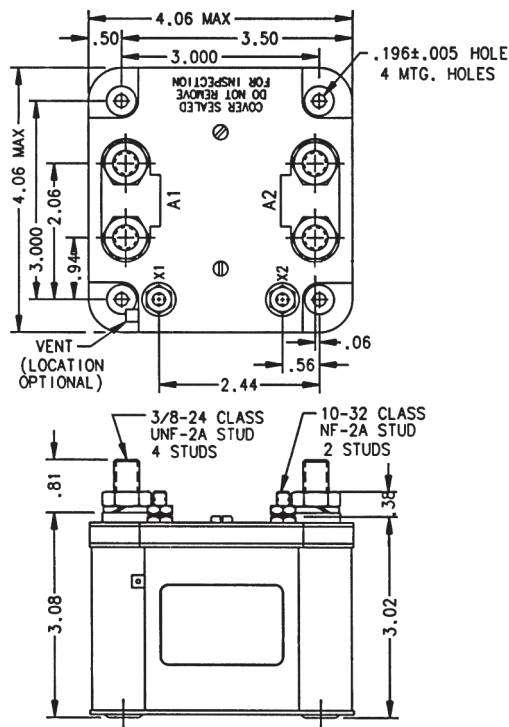
Operating Voltage, Max. — 29 Vdc

Coil Voltage, Nom. — 24-28 Vdc

Pickup Voltage, Max. — 18 Vdc

Dropout Voltage — 1 to 5 Vdc

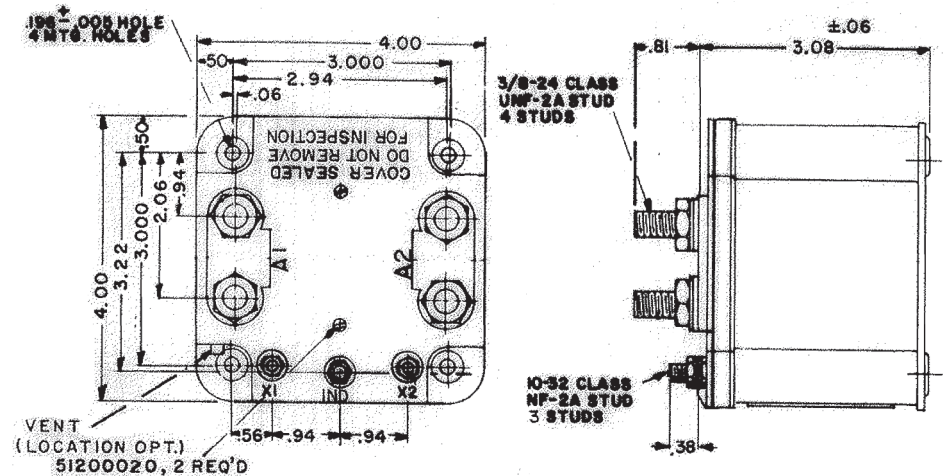
Coil Current, Hold, Max. —
0.6 Amp



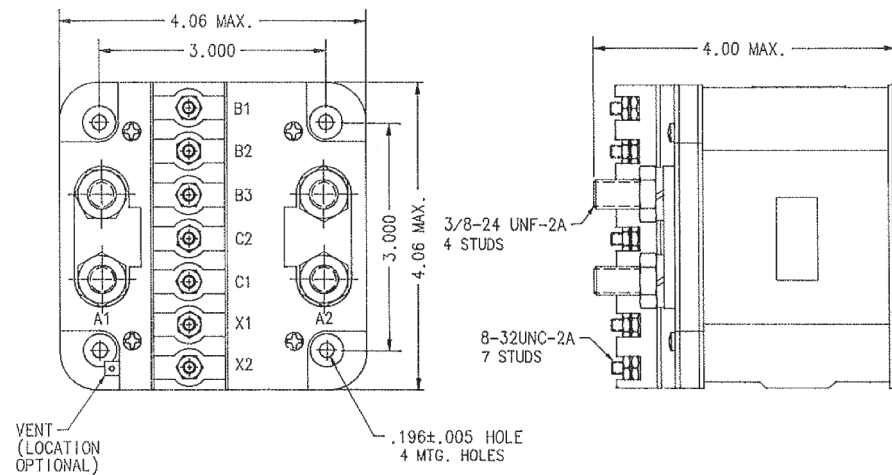
Mounting Style A

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

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

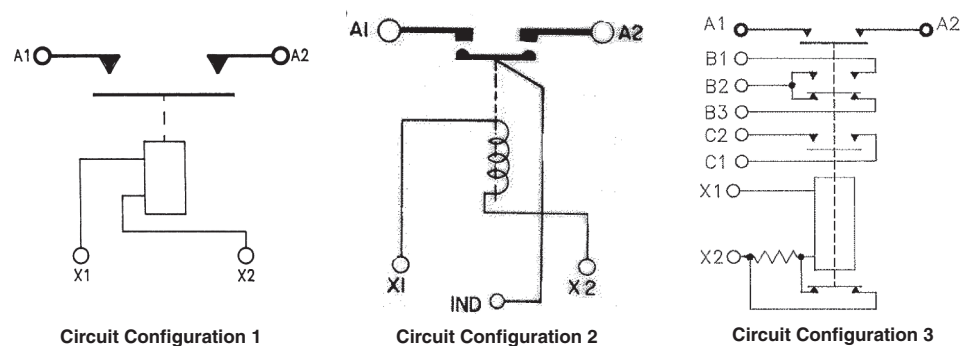


Mounting Style B



Mounting Style C

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

Circuit Configuration 2

Circuit Configuration 3

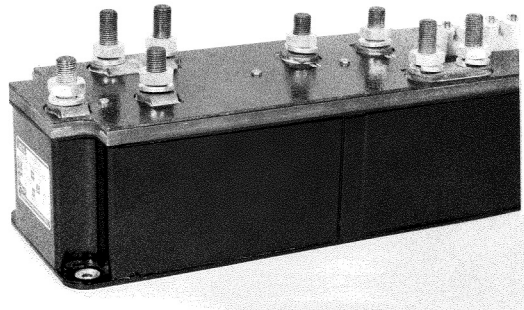
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-712AB	Gasket/Vented	A	Continuous	1	2-1616058-3
A-712AF	Gasket/Vented	A	Intermittent	1	2-1616058-4
A-712J	Gasket/Vented	B	Continuous	2	2-1616058-6
A-712W	Gasket/Vented	C	Continuous, Economizing	3	6-1616032-3

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

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

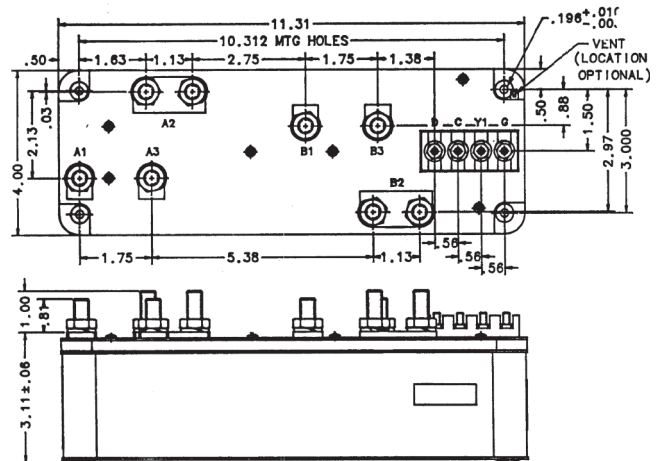
Operating Voltage, Min. — 18 Vdc

Pickup Voltage, Max., Hot — 18 Vdc

Dropout Voltage, Max., Hot — 7 Vdc

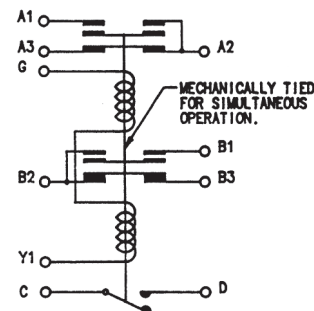
Coil Current, Max. @ 70°F —
8 Amps

Coil Current, Max. @ -65°F —
9.6 Amps



Mounting Style A

Circuit Configurations (Consult factory for other available circuit configurations)



Circuit Configuration 1

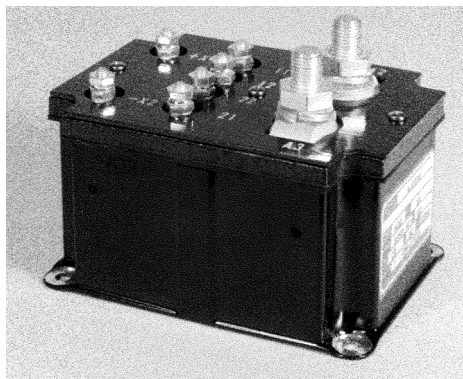
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-882DL	Gasket/Vented	A	Intermittent	1	1616102-6

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

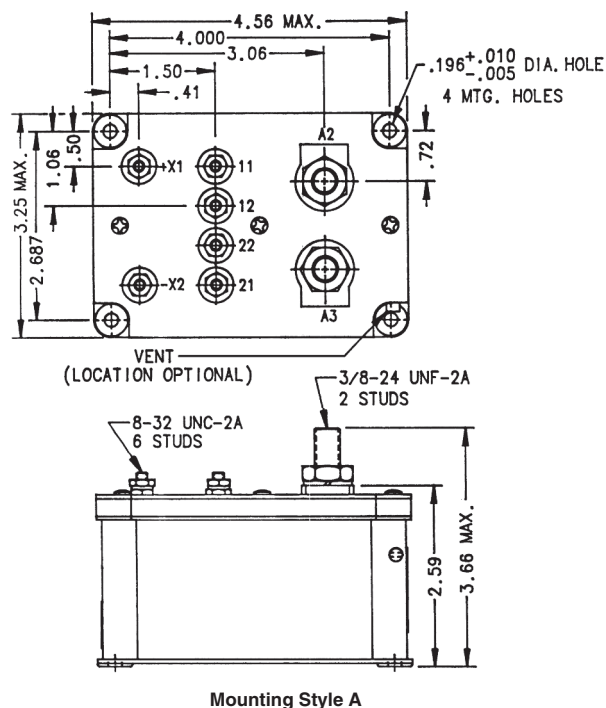
Operating Voltage, Min. — 18 Vdc

Pickup Voltage, Initial, Max. @

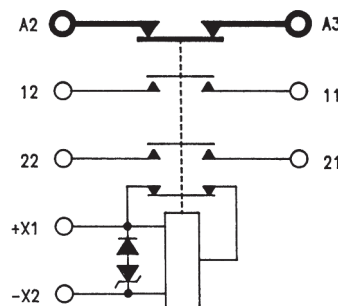
71°C — 10 Vdc

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)



Circuit Configuration 1

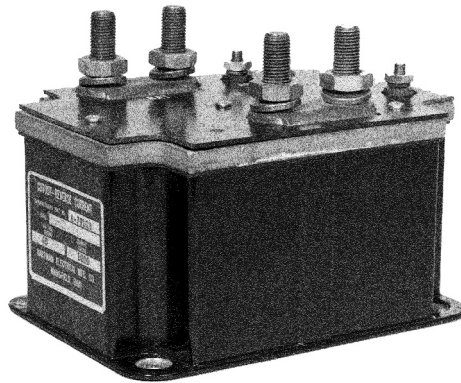
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
A-931F	Gasket/Vented	A	Continuous, Economizing w/Supp.	1	1616060-1

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

Coil Characteristics

Duty Cycle

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

Operating Voltage

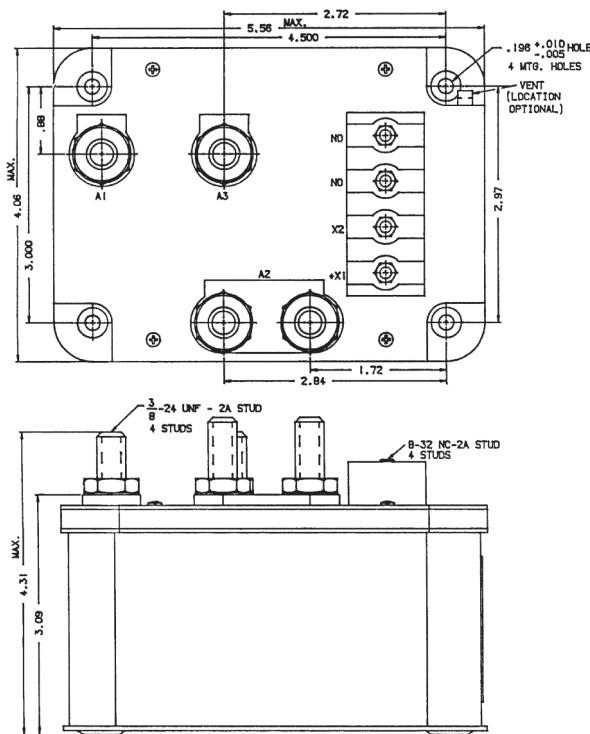
A-981E — 28 Vdc
A-981K — 24 Vdc min. to 30 Vdc max.

Pickup Voltage

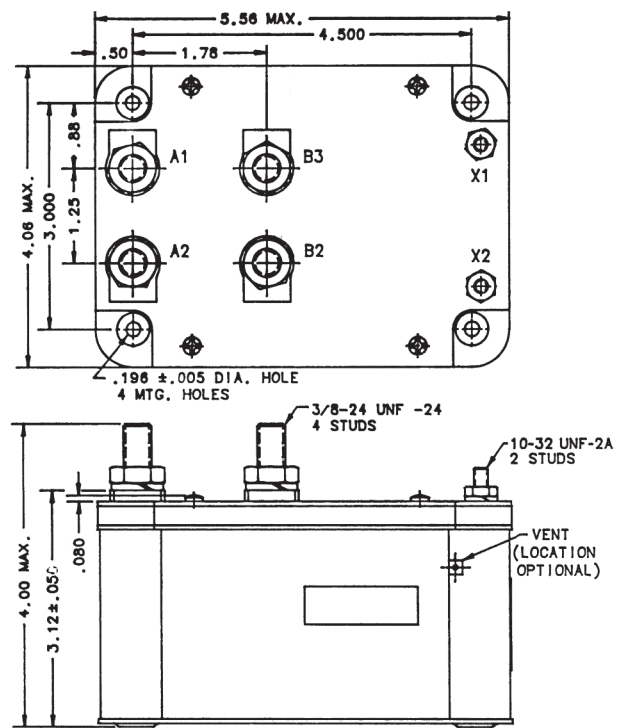
A-981E — 18 Vdc max. hot
A-981K — 16 Vdc max. initial @ 25°C

Dropout Voltage

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



Mounting Style A

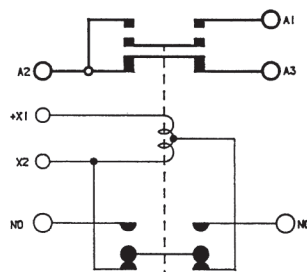


Mounting Style B

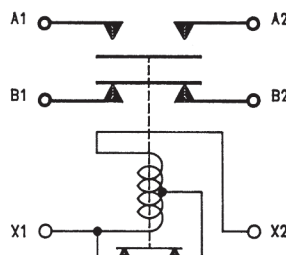
For factory-direct application
assistance, phone 419-521-9500 or
fax 419-526-2749.

A-981 Series, Rated up to 600 Amps, 28/48 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-981E	Gasket/Vented	A	Continuous, Economizing	1	1616083-1
A-981K	Gasket/Vented	B	Continuous, Economizing	2	1616083-2

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

Cross Reference

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	DC	28	SPDT NO SPDT NC	Side Stable	—	30	Hermetic	Cont.	—	DH-14A	1616089-1
		28	SPDT NO SPDT NC	Side Stable	—	30	Hermetic	Cont.	—	DH-14AL	1616089-2
		28	SPDT NO SPDT NC	Side Stable	—	30	Hermetic	Cont.	42	DH-14AT	1616089-3
		3	SPDT NO SPDT NC	Side Stable	—	28	Hermetic	Intermittent	—	DH-21N	1616026-2
50	DC	28	SPST NO SPST NC	Side Stable	—	28	Gasket/Vented	Cont.	—	D-7AC	1616088-1
		28	SPST NO	Side Stable	DPDT	28	Gasket/Vented	Cont.	—	D-7LHB	1616064-1
		28	4PDT	Center Off	—	28	Hermetic	Cont.	—	DH-18DA	1616050-2
		28	SPST NO SPST NC	Side Stable	DPDT	18-30	Hermetic	Cont.	50	DH-7ATK	1616089-7
		28	2PST NO	Side Stable	—	28	Hermetic	Cont.	—	DH-7MN	1616103-2
		28	SPST NO SPST NC	Side Stable	(2)SPST NO	28	Hermetic	Cont.	—	DH-7TB	1-1616089-3
100	DC	28	SPST NO	Side Stable	SPDT	24-32	Gasket	Cont.	—	A-1077DD	1616055-3
		28	SPDT	Side Stable	1NO, 1NC	24-30	Gasket	Cont.	45	A-1077S	1616081-3
100	DC	28	SPDT	Center Off	SPST NO	115VAC	Gasket/Vented	Cont.	—	D-31BAA	1616097-1
		28	(2)SPST	Center Off	SPST NO	28	Gasket/Vented	Cont.	45	D-32A	1616097-2
		28	1PST NO 1PST NC	Side Stable	—	18-22.5	Hermetic	Cont.	—	DH-25EA	1616089-4
		28	SPDT	Center Off	SPST NO	28	Hermetic	Cont.	—	DHR-31BA	1616098-1
200	DC	28	SPST NO	Side Stable	DPDT	24-30	Gasket	Int.	—	A-1077D	1616055-2
		28	SPST NO	Side Stable	DPDT	24-30	Gasket	—	—	A-1077F	1616055-4
		28	SPST NO	Side Stable	—	24-30	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
300	DC	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	Cont.	—	A-770RF	3-1616058-4
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Int.	—	A-770RG	3-1616058-5
		28	SPST NO	Side Stable	Form Z SPST NC	24-30	Gasket/Vented	Cont.	45	A-770RN	3-1616058-8
		28	SPST NO	Side Stable	Form Z SST NC	24-30	Gasket/Vented	Cont.	45	A-770RSS	3-1616058-9
		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
		28	SPST NO	Side Stable	2PST NO	28	Gasket/Vented	Int.	42	A-700WA-2	4-1616058-2
		28	SPST NO	Side Stable	DPST NO SPS NC	28	Gasket/Vented	Int.	—	A-770WA-3	4-1616058-3
		28	SPST NO	Side Stable	3PDT	28	Gasket/Vented	Cont.	42	A-770WF	4-1616058-4
		28	SPST NO	Side Stable	SPDT	115 VAC	Gasket/Vented	Cont.	—	AR-770W	0-1616063-1

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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.
300	DC	24/48	DPDT NC SPDT NO	Side Stable	SPST NO	24-30	Gasket/Vented	Int.	–	A-848KH	1616082-2
		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
300	DC	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
		30	SPDT	Side Stable	SPDT	30	Hermetic	Int.	–	AH-965H	1616084-1
300	DC	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	1-1616530-6
		28	SPST NO	Side Stable	–	28	Gasket/Vented	Int.	45	A-400AA	1616056-2
400	DC	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	1616056-6
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Int.	45	A-400G	1616056-8
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Int.	45	A-400G2	6-1616949-1
400	DC	28	SPST NO	Side Stable	DPST NO DPST NC	28	Gasket/Vented	Int.	45	A-400L	1-1616530-5
		28	SPST NO	Side Stable	DPST NO SPST NC	28	Gasket/Vented	Cont/Int	45	A-400S	1616056-9
		28	SPST NO	Side Stable	SPDT	24-30	Gasket/Vented	Cont. Econ.	–	A-703	1616058-1
400	DC	28	SPST NO	Side Stable	–	24-30	Gasket/Vented	Int.	–	A-703CD	1616058-6
		36/40	SPST NO	Side Stable	SPST NO	24-30	Gasket/Vented	Int.	50	A-703CSM	1616058-7
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Int.	–	A-703D	1616058-8
400	DC	28	SPST NO	Side Stable	Form Z	18-31	Gasket/Vented	Int.	–	A-703DBH	1-1616058-0
		28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Cont. Econ.	–	A-703E	1-1616058-1
		28	SPST NO	Side Stable	Form Z SPST NC	24-30	Gasket/Vented	Int.	45	A-703FA	1-1616058-2
400	DC	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
		28	SPST NO	Side Stable	Form Z SPST NC	18-31	Gasket/Vented	Cont. Econ.	–	A-703G-1	1-1616058-5
400	DC	28	SPST NO	Side Stable	Form Z SPDT Form Z	18-31	Gasket/Vented	Cont. Econ.	–	A-703GC	1-1616058-6
		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	Cont. Econ.	45	A-703GS	1-1616058-7
400	DC	28	SPST NO	Side Stable	Form Z	24-30	Gasket/Vented	Cont. Econ.	45	A-703R	1-1616058-9
		28	SPST NO	Side Stable	SPST NO SPST NC	24-30	Gasket/Vented	Int.	45	A-703T	2-1616058-0
		28	SPST NO	Side Stable	SPST NO Form Z	18-24	Gasket/Vented	Cont. Econ.	45	A-703ZS	1-1616058-2
400	DC	28	SPST NO	Side Stable	1Form Z 1Form Y	18-31	Hermetic	Cont. Econ.	–	AH-703F	1616061-1

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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.
400	DC	28	SPDT	Side Stable	Form Z	17-31	Gasket/Vented	Int.	45	A-981S	1616083-7
		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
600	DC	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
		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
600	DC	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
		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

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