

KCS03X Contactor

600A/28Vdc - 600Vdc Bi-Directional Power Switching
 SPST-NO Form X
 Integrated Current Sensor and Current Trip Function

Product Facts:

- Lowest cost, smallest 600A hermetically sealed contactor in the industry with integrated Bi-directional Current Sensing and Trip Function
- Bottom mount – not position sensitive.
- Hermetically Sealed – Operates in explosive/harsh environments without oxidation or contamination of contacts, including long periods of non-operation.
- Typical applications include Ground Vehicle Power Systems, Power/motor control circuit isolation, Circuit Protection and safety. Suitable for Low Voltage up to 600Vdc power switching.
- Electronic Two-Coil Economizer with Internal Suppression



AEROSPACE,
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Kilovac Brand

PRODUCTION DATA SHEET

10/18/2016 Rev

PH. 805-220-2020 FAX 805-220-2075
 550 LINDEN AVE, CARPINTERIA, CA 93013

KCS03X Contactor

Dimensions shown for reference only. Specifications subject to change.

CAGE CODE

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NONE

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1 of 8

General Specifications

Physical Data

	Units	
Contact Arrangement: Main Contacts		SPST-NO (form X)
Contact Arrangement: Auxiliary Contacts		SPST-NO (form A)
Dimensions		See Figure 1
Weight, Nominal	g	500

Environmental Data

Shock, 11ms ½ sine (operating)	G peak	20
Sine Vibration, 20 G _{pk}	Hz	55-2000
Operating Temperature Range	°C	-40 to +105
Noise Emission (at 100 mm distance)	dB(a)	70

Electrical Data

Voltage Rating: Main Contacts Switching (max)	Vdc	600
Current Rating, Continuous: Main Contacts	A	+/-600
Short Term Current (30 sec)		+/-1200
Contact Resistance: Main Contacts	mΩ	0.2 max @ rated current
Resistive Load Performance (DC-1):		
650A (make only)	Cycles	See Figure 2
	Cycles	50
Maximum Short Circuit Current (1/2 cycle, 60 Hz) (through closed contacts)	A	3000
Mechanical Life	Cycles	10 ⁶
Dielectric Withstand Voltage:		
Between Open Contacts	Vrms	2800
Contacts to Coil	Vrms/Vdc	2800/4000
Insulation resistance		
Terminal to Terminal/ Terminals to Coil	MΩ	100 min @ 500Vdc new 50 min @ 500Vdc end of life
Auxiliary Contact Rating: Switching Life at Max Rating = 100k Cycles minimum.	W	1A/30Vdc 3A/125Vac Minimum Load = 5Vdc/5mA

Coil Data @ 20C (Internal Two-Coil Economizer)

12V Coil

24/28V Coil

	Vdc	9-14	18-28
Coil Voltage Range	Vdc	9-14	18-28
Nominal Pickup Current	A	4.5	4.5
Nominal Holding Current	A	0.26	0.23
Pickup Voltage	Vdc	≥ 9	≥ 16
Dropout Voltage	Vdc	≤ 3.5	≤ 10
Pickup Pulse (max)	ms	50	50
Coil Resistance +/-5%	Ω	2.0 Pickup/45 Hold	5.7 Pickup/120 Hold
Coil Holding Power	W	3.2	5.5
Main Contacts:		20	20
Operate Time (max)	ms		
Operate Bounce (max)	ms	3	3
Release time	ms	5	5
Current Sensing			
Sensing Range (5% accurate -40C to +105C)	A	+/-50-630	+/-50-630
Null Output @ I = 0	Vdc	2.5 (+/-0.04)	2.5 (+/-0.04)
Output Voltage vs. Current	Vdc	$V(I) = +/-I(.0034)+2.50$	
Current Trip Point vs. Setpoint Resistance	A	See Figure 3	
Hysteresis (-40C to + 105C)	%	1% of Full Scale Output	



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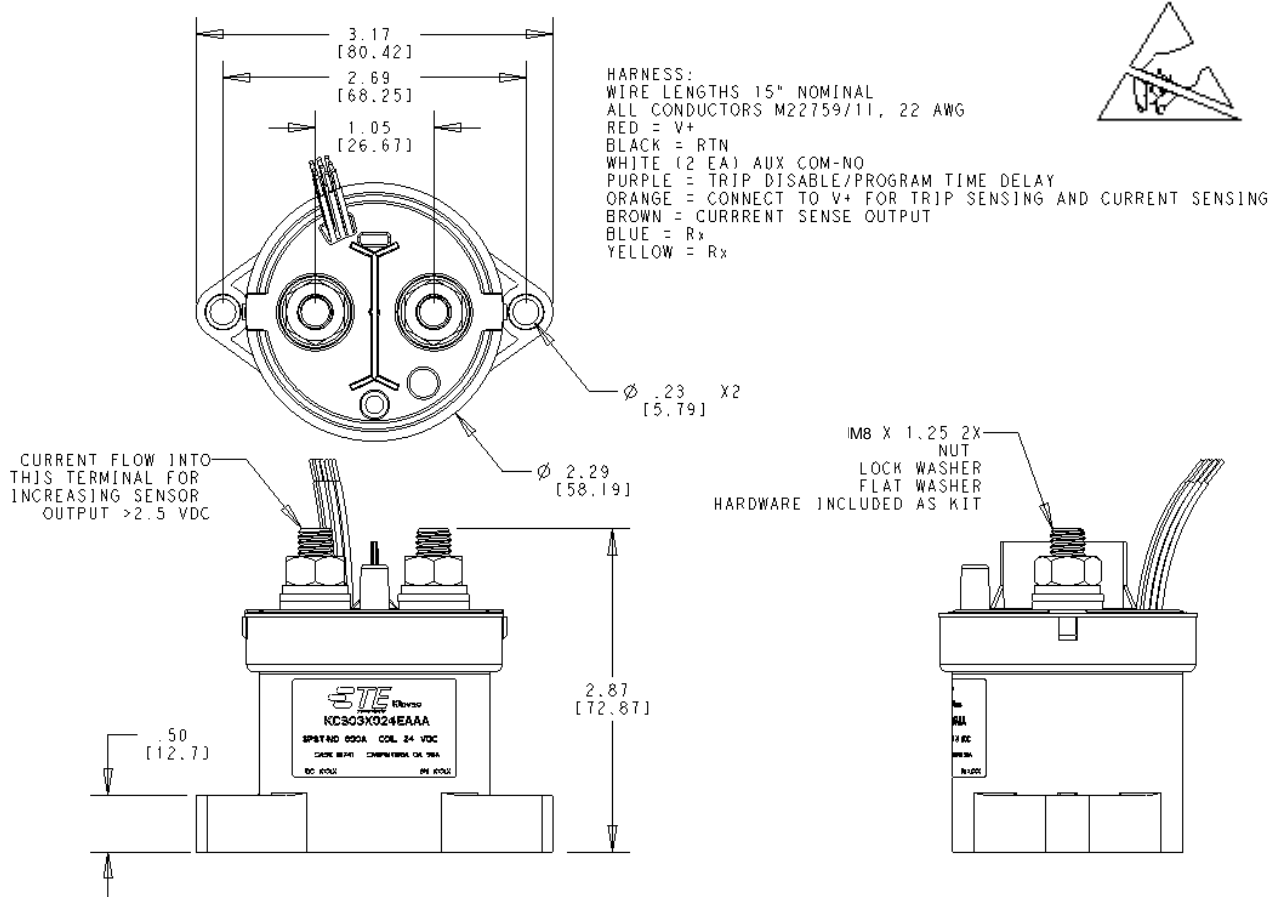
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2 of 8

Figure 1
Product Dimensions



All Dimensions +/- .03" [+/-0.76 mm]
Main Terminals Maximum Torque 11 N*M

NOTES:

1. OBSERVE PROPER POLARITIES FOR CONTROL LINES
2. UNTERMINATED WIRES – USE ESD HANDLING PROCEDURES



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3 of 8

Figure 2

Resistive Load Switching (make/break) – Bi-Directional

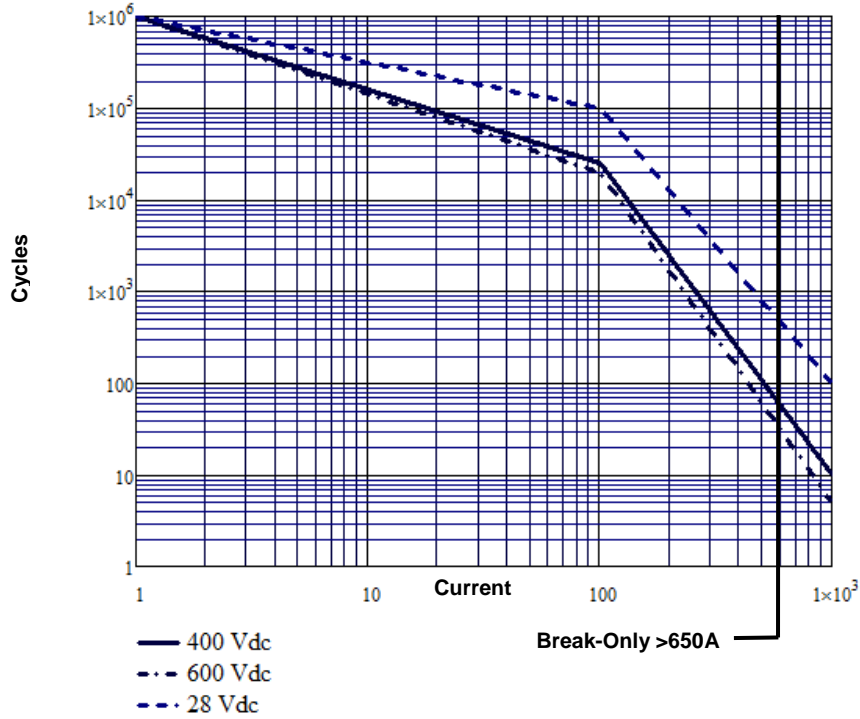
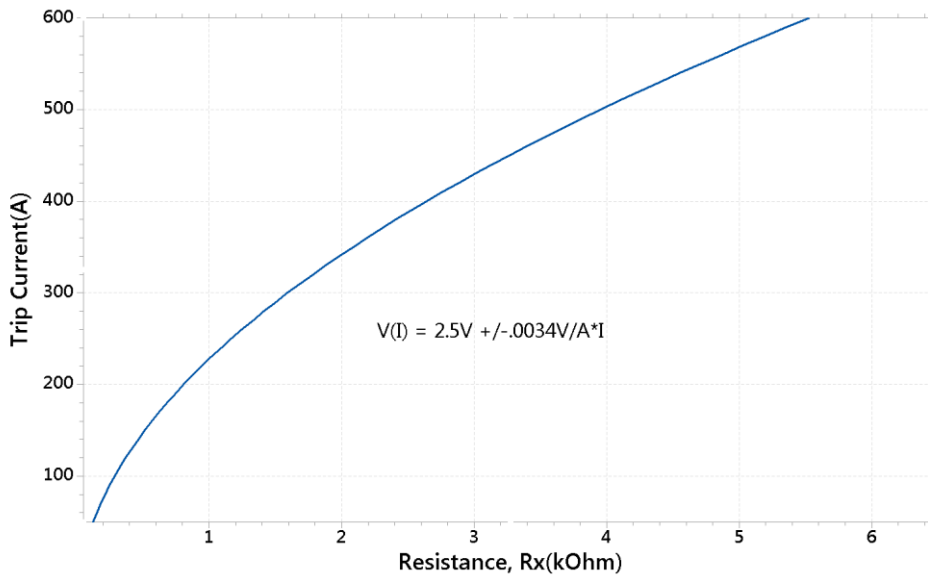


Figure 3 - Trip Set Point Resistor Curve

50-600A

Trip Current |A| vs. Rx (kOhms)



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4 of 8

Trip Function/Trip Delay

HARNES:

WIRE LENGTHS 15"

ALL CONDUCTORS M22759/11, 22 AWG

RED = V+

BLACK = RTN

WHITE (2 EA) AUX COM-NO

PURPLE = TRIP DISABLE/PROGRAM TIME DELAY

ORANGE = CONNECT TO V+ FOR TRIP SENSING AND CURRENT SENSING

BROWN = CURRENT SENSE OUTPUT, $V(I) = 2.5+/-0.003*I$ VOLTS

BLUE = Rx

YELLOW = Rx

CONNECT Rx ACROSS BLUE AND YELLOW FOR TRIP SETPOINT

CONNECT PURPLE TO RTN TO DISABLE TRIP FUNCTION OR

CONNECT PURPLE TO EXTERNAL CAPACITOR TIED TO RTN TO DELAY TRIP, 7ms/uF

CONNECT ORANGE TO V+ TO ENABLE TRIP AND CURRENT SENSING

RESET TRIPPED CONTACTS BY CYCLING V+ OFF TO ON

INTRINSIC TRIP DELAY (BLUE/YELLOW NOT CONNECTED TO Rx) = 14ms

Input						Output		
Sensing Control (Orange)	V+ (Red)	RTN (Black)	MAIN CONTACTS (CURRENT +/-Adc)	Trip Disable/ Time delay (Purple)	Trip set Rx (Blue) Trip Set Ax (Yellow)	Hall Output (Vdc) (Brown)	Main Contacts	Aux. Contact (N.O) White/White
0	9-14 or 18-28	0	0	NON-ACTIVE	NON-ACTIVE	0	ON (NO TD)	ON (NO TD)
0	0	0	0	NON-ACTIVE	NON-ACTIVE	0	OFF(NO TD)	OFF(NO TD)
V+	0	0	0	OPEN	OPEN	2.5	OFF	OFF
V+	9-14 or 18-28	0	500A±7%	OPEN	4.2K	4.145 (2.5V when tripped)	RELAY TRIP OPEN AFTER 14mSec.	RELAY TRIP OPEN AFTER 14mSec.
V+	0, then 9-14 or 18-28 remove and re-apply power	0	≤464	OPEN	4.2K	2.5	ON (NO TD)	ON (NO TD)
V+	9-14 or 18-28	0	0	GND (TRIP DISABLE)	X	2.5	ON (NO TD)	ON (NO TD)
V+	9-14 or 18-28	0	500A±7%	GND (TRIP DISABLE)	X	4.145	ON (NO TD)	ON (NO TD)
V+	0	0	0	GND (TRIP DISABLE)	X	2.5	OFF(NO TD)	OFF(NO TD)
V+	9-14 or 18-28	0	0	1uF is added between these two wires	4.2K	2.5	ON (NO TD)	ON (NO TD)
V+	9-14 or 18-28	0	500A±7%	10uF is added between these two wires	4.2K	4.145 (2.5V when tripped)	RELAY TRIP OPEN AFTER 82mSec.	RELAY TRIP OPEN AFTER 82mSec.
V+	9-14 or 18-28	0	500A±7%	100uF is added between these two wires	4.2K	4.145 (2.5V when tripped)	RELAY TRIP OPEN AFTER 720mSec.	RELAY TRIP OPEN AFTER 720mSec.
V+	0, then 9-14 or 18-28 remove and re-apply power	0	≤464	100uF is added between these two wires	4.2K	2.5	ON (NO TD)	ON (NO TD)



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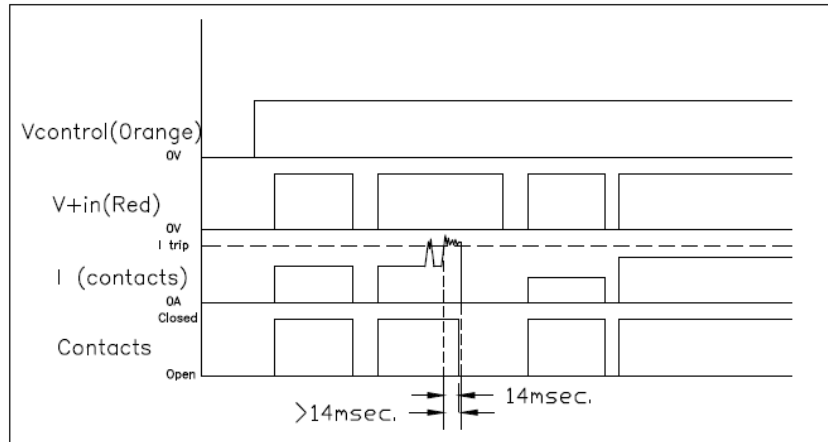
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5 of 8

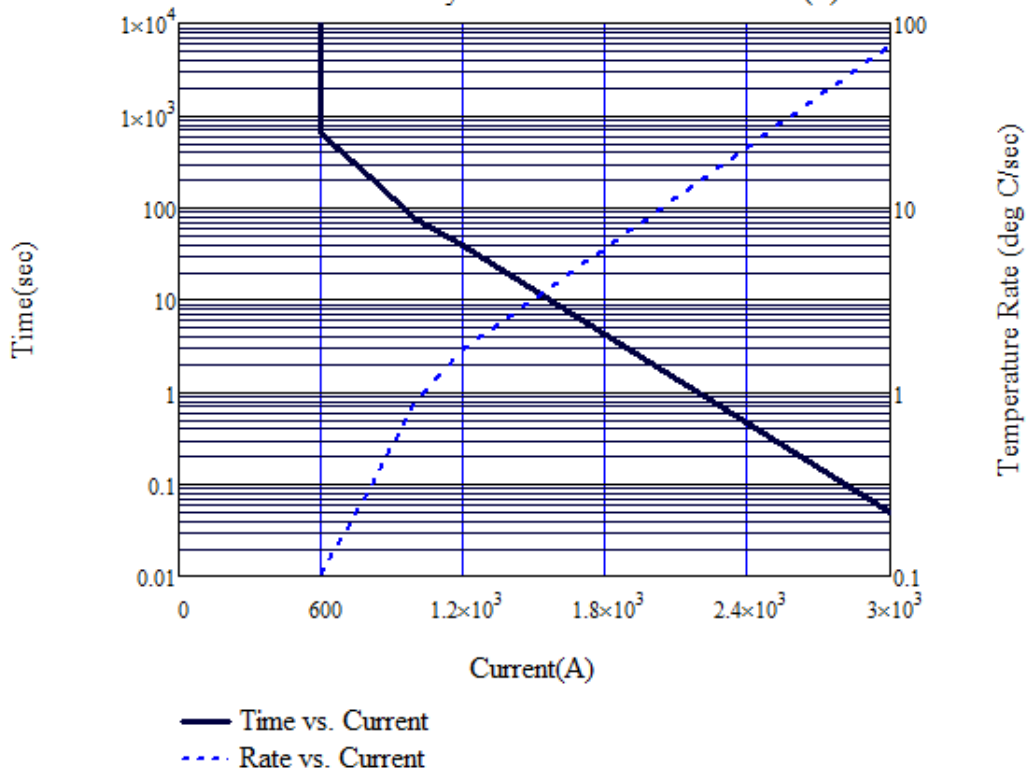
Timing Diagram



Current vs. Time

>= 350 kcmil conductor size

Short Time Carry for Terminal Rise = 65C(1)



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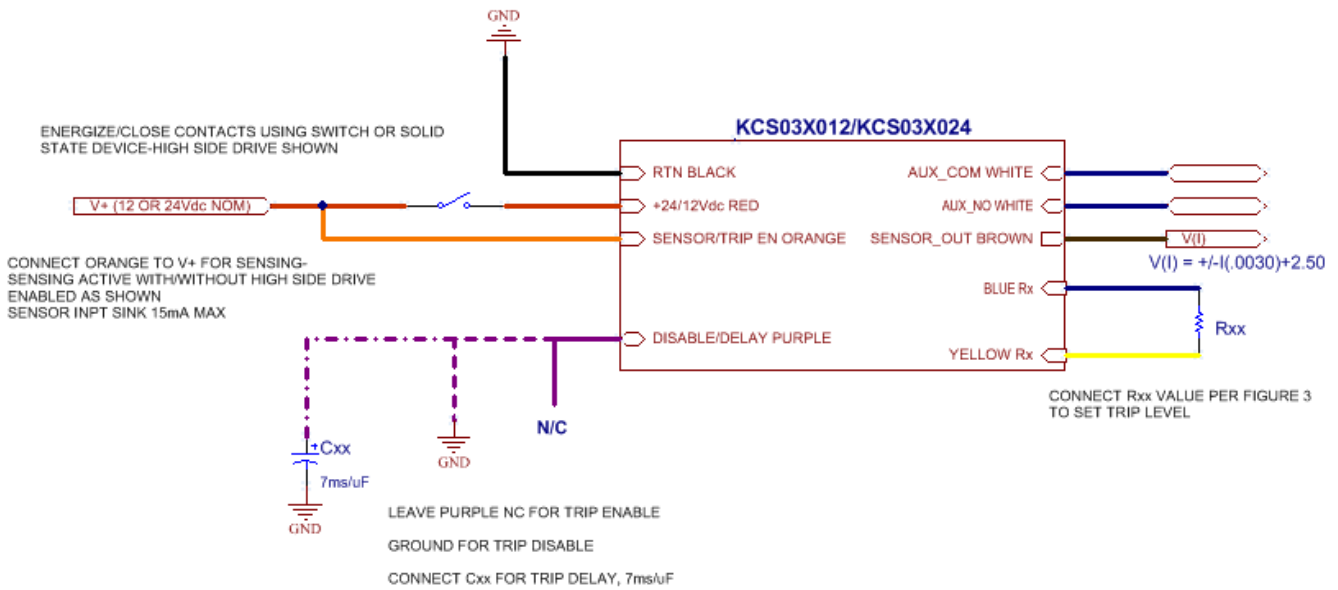
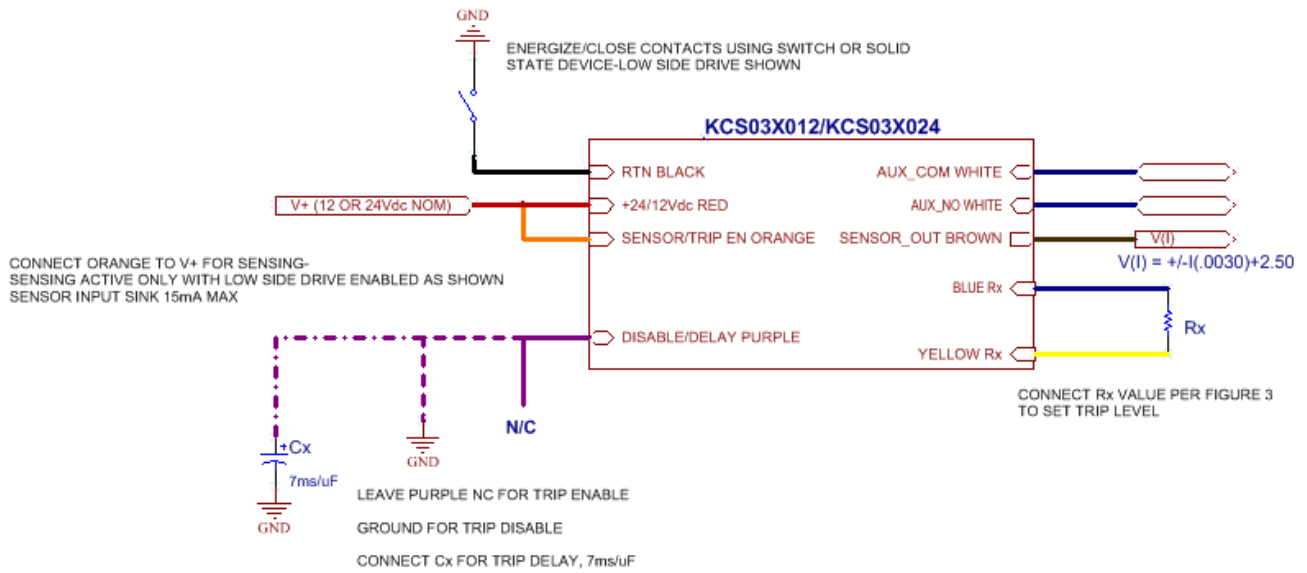
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6 of 8

Connection Diagram



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7 of 8

PN Selection

	K	CS	03	X	024E	A	A	A
K = Kilovac								
CS = Current Sensing								
03 = Size 03 (EV200 Package)								
X = Form X, Normally Open								
012E = 12V Coil Economized								
024E = 24-28V Coil Economized								
A = 15 inch coil leads								
A = M8 Male Terminals								
A = Bottom Mount								



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8 of 8