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 Bidirectional 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 nonoperation.
- 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







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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	Α	+/-600		
Short Term Current (30 sec)		+/-1200		
Contact Resistance: Main Contacts	mΩ	0.2 max @ rated current		
Resistive Load Performance (DC-1):				
	Cycles	See Figure 2		
650A (make only)	Cycles	50		
Maximum Short Circuit Current (1/2 cycle, 60 Hz)	Α	3000		
(through closed contacts)				
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:	W	1A/30Vdc		
Switching Life at Max Rating = 100k Cycles minimum.		3A/125Vac		
		Minimum Load = 5Vdc/5mA		

Coil Data @ 20C (Internal Two-Coil Economizer)	12V Coil	24/28V Coil	
Coil Voltage Range	Vdc	9-14	18-28

Coil Voltage Range	Vdc	9-14	18-28	
Nominal Pickup Current	Α	4.5	4.5	
Nominal Holding Current	Α	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)	Α	+/-50-630	+/-50-630	
Null Output @ I = 0	Vdc	2.5 (+/.04)	2.5 (+/04)	
Output Voltage vs. Current	Vdc	V(I) = +/-I(.0034)+2.50		
Current Trip Point vs. Setpoint Resistance	Α	See Figure 3		
Hysteresis (-40C to + 105C)	%	1% of Full Scale Output		





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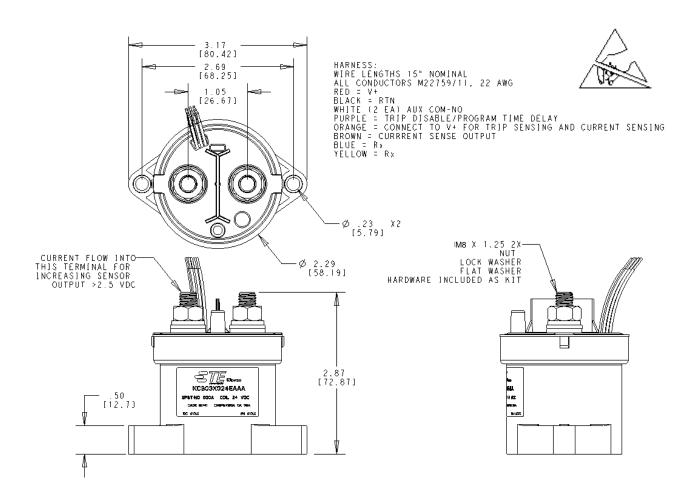
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Figure 1 Product Dimensions



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

NOTES:

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



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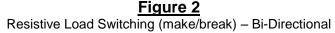
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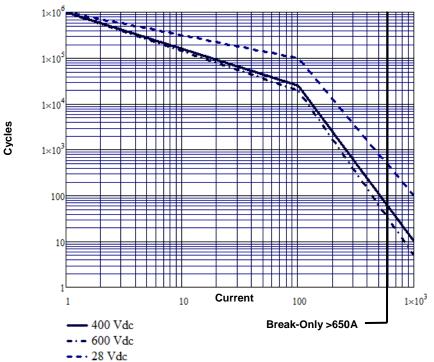
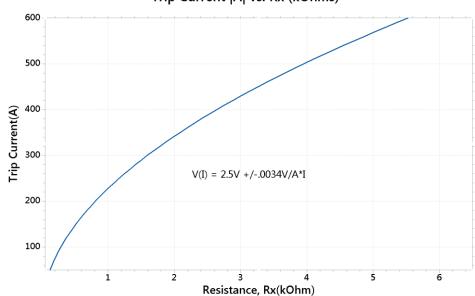


Figure 3 - Trip Set Point Resistor Curve 50-600A

Trip Current |A| vs. Rx (kOhms)







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Trip Function/Trip Delay

HARNESS:
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 = CURRRENT 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 (NOTD)
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.	RELAYTRIP 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)	х	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.	RELAYTRIP 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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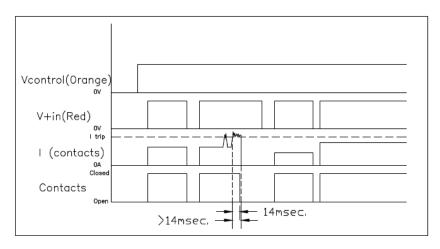
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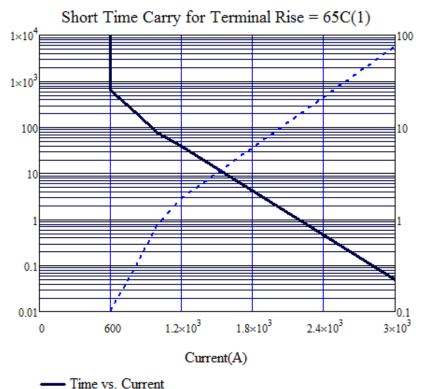
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Timing Diagram



Current vs. Time

>= 350 kcmil conductor size



Temperature Rate (deg C/sec)

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--- Rate vs. Current

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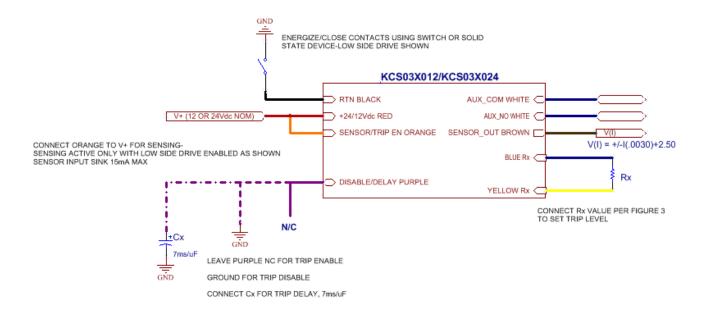
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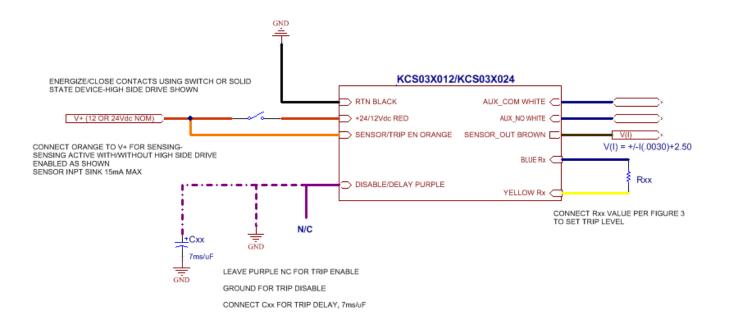
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Connection Diagram









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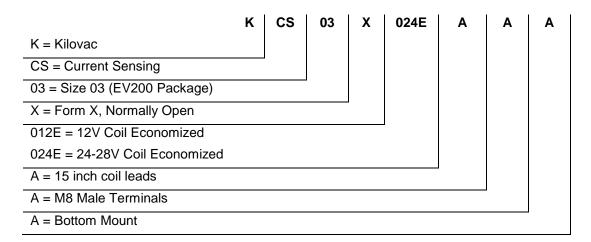
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PN Selection





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