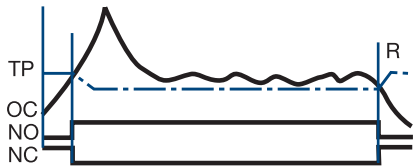


The TCS Series is a low cost method of go/no go current detection. It includes a solid-state output to sink or source current when connected directly to a standard PLC digital input module. Its normally open or normally closed output can also be used to control relays, lamps, valves, and small heaters rated up to 1A steady, 10A inrush. The TCS is self-powered (no external power required to operate the unit) and available with an adjustable actuation range of 2 - 20A or factory fixed actuation points from 2 - 45A.

For more information see:
Appendix B, page 166, Figure 21 for dimensional drawing.
Appendix C, page 169, Figure 19 for connection diagram.

Operation

Normally Open: When a current equal to or greater than the actuate current is passed through the toroidal sensor, the output closes. When the current is reduced to 95% of the actuate current or less, the output opens.
Normally Closed: When the current through the toroid is equal to or greater than the actuate current, the output opens. When the current is reduced below 95% of the actuate current, the output closes. To increase sensitivity, multiple turns may be made through the TCS's toroidal sensor. The trip point range is divided by the number of turns through the toroidal sensor to create a new range. When using an external CT, select a 2VA, 0-20A output CT rated for the current to be monitored. Select TCS adjustment range 0. Pass one secondary wire lead through the TCS' toroid and connect the secondary leads together.



- L = Load
- V = Voltage
- PS = Power Supply
- PLC = PLC Digital Input Module
- R = Reset
- TP = Trip Point
- OC = Monitored Current
- NO = Normally Open Output
- NC = Normally Closed Output

Features:

- Direct connection to a PLC digital input module
- 3 to 50VDC, 24 to 240VAC
- 1A steady - 10A inrush
- Actuation Points -
 - 2 - 45A (fixed units)
 - 2 - 20A (adjustable units)
- NO or NC solid-state output
- Complete isolation between sensed current & control circuit

Approvals:

Auxiliary Products:

- **Female quick connect:**
P/N: P1015-64 (AWG 14/16)
- **Quick connect to screw adaptor:**
P/N: P1015-18
- **Mounting bracket:** P/N: P1023-6
- **DIN rail:** P/N: C103PM (Al)
- **DIN rail adaptor:** P/N: P1023-20

Available Models:

TCSG2A	TCSH3A
TCSGAA	TCSH4A
TCSGAB	TCSHAA
TCSH2A	TCSHAB
TCSH2B	

If desired part number is not listed, please call us to see if it is technically possible to build.

Order Table:

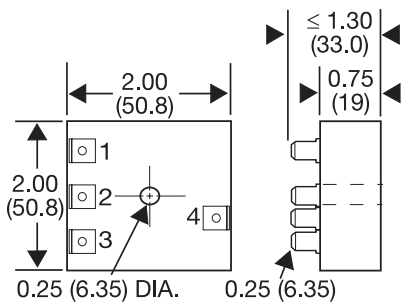
<u>TCS</u>	<u>X</u>	<u>X</u>	<u>X</u>
	Output Voltage	Actuate Current	Output Form
	-G - 3-50VDC	-A - 2-20A adjustable	-A - Normally Open
	-H - 24-240VAC	-Fixed - Specify from 2-45A in 1A increments	-B - Normally Closed

Specifications

Sensor	Type..... Toroid, through hole wiring, alternating current, monitored wire must be properly insulated	Protection	Circuitry..... Encapsulated
Current to Actuate.	Adjustable: - 2 - 20A, guaranteed range Fixed: - 2 - 45A, +0/-20%	Dielectric Breakdown	..... ≥ 2000V RMS terminals to mounting surface
Reset Current	..... ≅ 95% of the actuate current	Insulation Resistance	..... ≥ 100 MΩ
Maximum Allowable Current	Steady - 50A turns Inrush - 300A turns for 10s	Mechanical	Mounting Surface mount with one #10 (M5 x 0.8) screw
Actuate Current vs. Temp. & Voltage	..... ≤ ±5%	Dimensions	..... 2 x 2 x 1.75 in. (50.8 x 50.8 x 44.5 mm)
Response Times	Overcurrent - ≤ 200ms Undercurrent - ≤ 1s	Termination	..... 0.25 in. (6.35 mm) male quick connect terminals (2)
Burden	..... < 0.5VA	Sensor Hole	..... 0.36 in. (9.14 mm) for up to #4 AWG (21.1 mm ²) THHN wire
Output	Type..... Solid state	Environmental	Operating / Storage Temperature -20° to 60°C / -40° to 85°C
Form	..... NO or NC	Humidity	..... 95% relative, non-condensing
Rating	..... 1A steady, 10A inrush	Weight	..... ≅ 2.6 oz (74 g)
Voltage	..... AC - 24 to 240VAC +10/-20%		
	..... DC - 3 to 50VDC		
Voltage Drop	..... AC NO & NC - ≅ 2.5V		
	..... DC NO & NC - ≅ 1.2V		

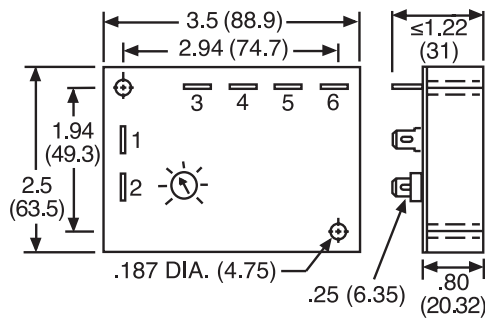
Appendix B - Dimensional Drawings

FIGURE 13



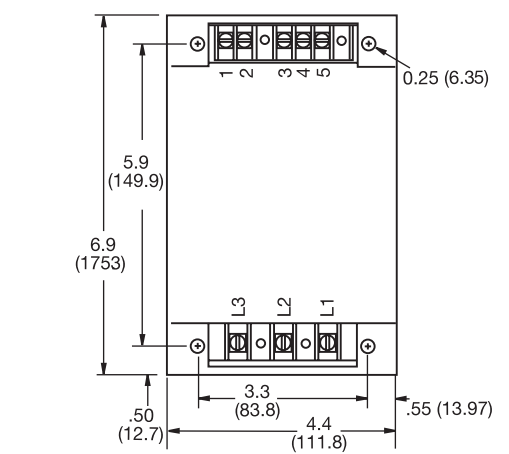
AF

FIGURE 14



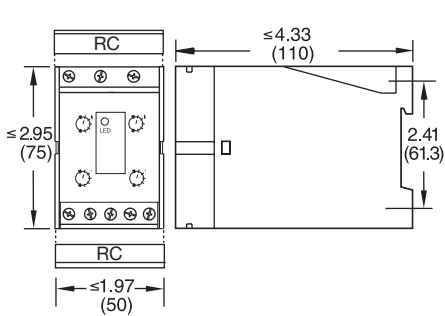
SC3; SC4; SQ

FIGURE 15



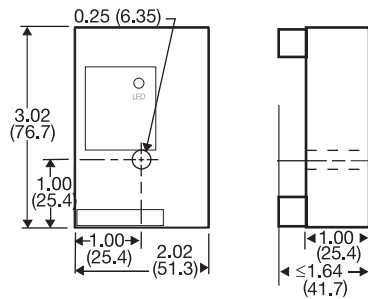
WVM

FIGURE 16



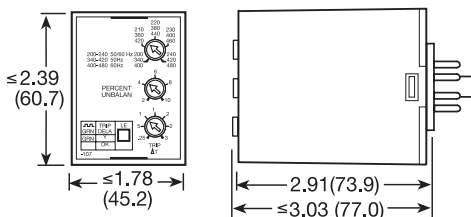
DLMU

FIGURE 17



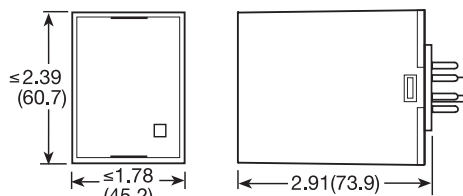
FB9L; HLMU; SCR9L

FIGURE 18



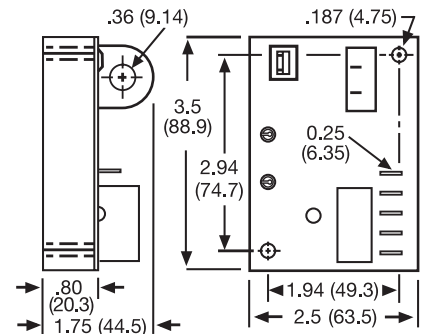
PLMU

FIGURE 19



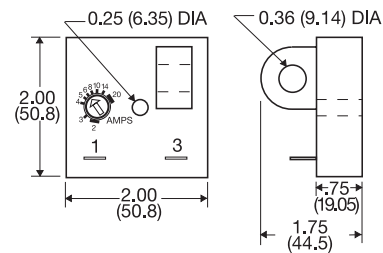
LLC4; LLC6; PLS

FIGURE 20



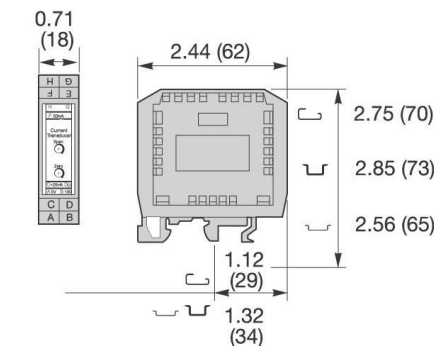
ECS; ECSW (ECS has spade connectors and ECSW has terminal board)

FIGURE 21



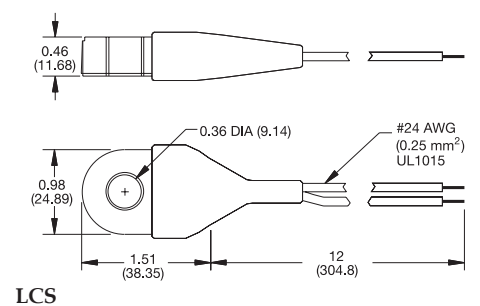
TCS; TCSA

FIGURE 22



DCSA

FIGURE 23

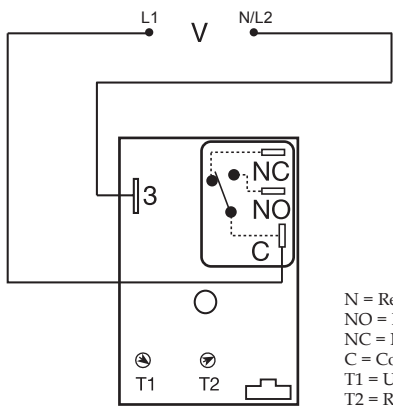


LCS

inches (millimeters)

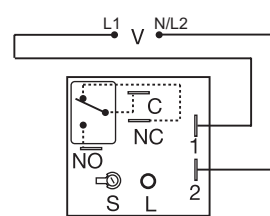
Appendix C - Connection Diagrams

FIGURE 15 - HLV Series



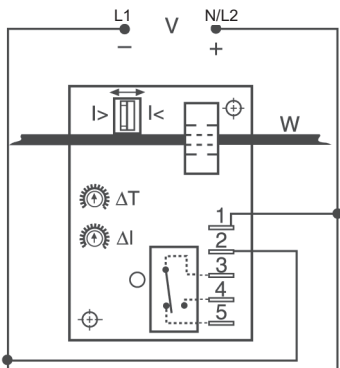
N = Relay contacts are non-isolated.
 NO = Normally Open
 NC = Normally Closed
 C = Common
 T1 = Undervoltage Trip Point
 T2 = Restart Delay

FIGURE 16 - KVM Series



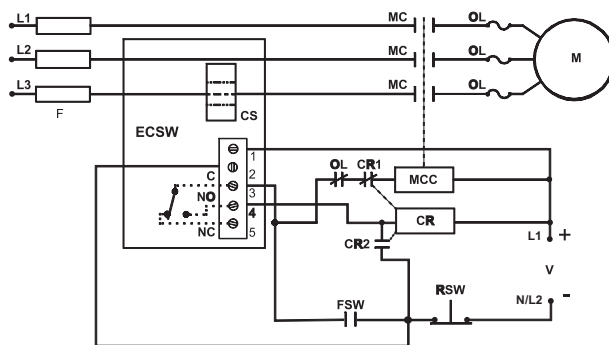
V = Voltage
 L = LED
 S = Undervoltage Setpoint
 NO = Normally Open
 NC = Normally Closed
 C = Common, Transfer Contact

FIGURE 17 - ECS Series

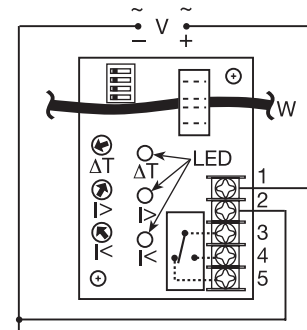


V = Voltage
 W = Insulated Wire Carrying Monitored Current
 I> = Overcurrent
 I< = Undercurrent
 Relay contacts are isolated.

FIGURE 18 - ECSW Series

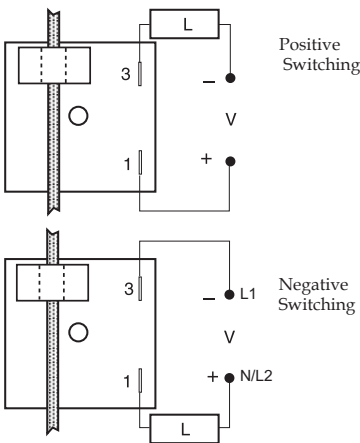


MC = Motor Contactor
 M = Motor
 F = Fuses
 OL = Overload
 RSW = Reset Switch
 FSW = Fan or Float Contacts
 CR = Control Relay
 CS = Current Sensor
 MCC = Motor Contactor Coil



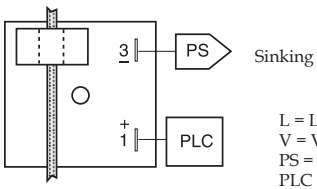
V = Voltage
 I> = Adjustable Overcurrent
 I< = Adjustable Undercurrent
 W = Monitored Wire
 ΔT = Adjustable Trip Delay

FIGURE 19 - TCS Series



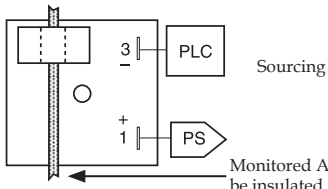
Positive Switching

Negative Switching



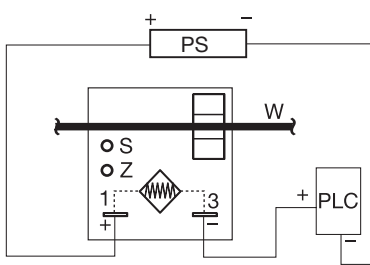
Sinking

L = Load
 V = Voltage
 PS = Power Supply
 PLC = PLC Digital Input Module



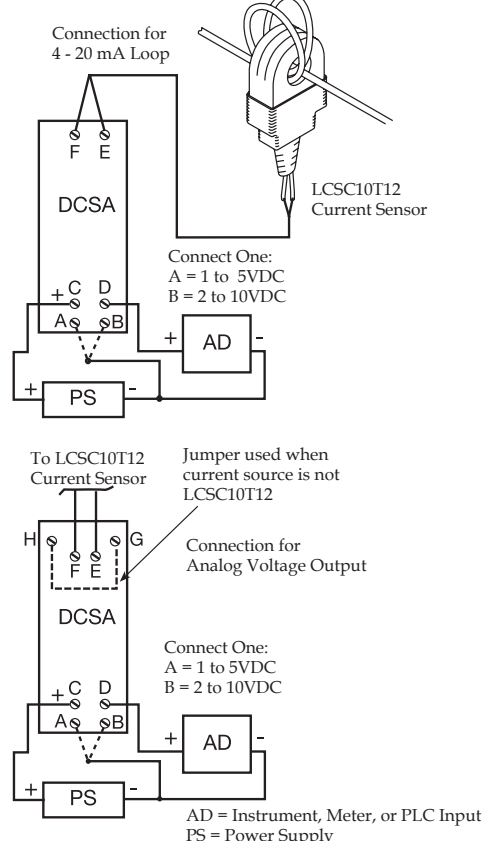
Monitored AC conductor must be insulated.

FIGURE 20 - TCSA Series



4... 20 mA
 PS = Power Supply
 Z = Zero Adjust
 S = Span Adjust
 W = Insulated Wire Carrying Monitored Current
 PLC = PLC Analog Input or Meter Input

FIGURE 21 - DCSA Series



Connect One:
 A = 1 to 5VDC
 B = 2 to 10VDC

Connect One:
 A = 1 to 5VDC
 B = 2 to 10VDC

AD = Instrument, Meter, or PLC Input
 PS = Power Supply