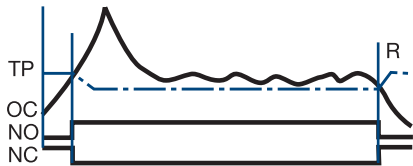The TCS Series is a low cost method of go/no go current detection. It includes a solid-state output to sink or source current when connected directly to a standard PLC digital input module. Its normally open or normally closed output can also be used to control relays, lamps, valves, and small heaters 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.

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: CE UL CSB

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

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.

Available Models:

TCSG2A	TCSH3A
TCSGAA	TCSH4A
TCSGAB	TCSHAA
TCSH2A	TCSHAB
TCSH2B	

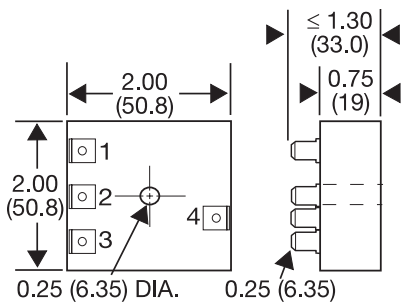**If desired part number is not listed, please call us to see if it is technically possible to build.**

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

Order Table:

TCS	X	X	X
	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
Current to Actuate	Adjustable: - 2 - 20A, guaranteed range Fixed: - 2 - 45A, +0/-20%
Reset Current	≅ 95% of the actuate current
Maximum Allowable Current	Steady - 50A turns Inrush - 300A turns for 10s
Actuate Current vs. Temp. & Voltage	≤ ±5%
Response Times	Overcurrent - ≤ 200ms Undercurrent - ≤ 1s
Burden	< 0.5VA

Output

Type	Solid state
Form	NO or NC
Rating	1A steady, 10A inrush
Voltage	AC - 24 to 240VAC +10/-20% DC - 3 to 50VDC
Voltage Drop	AC NO & NC - ≅ 2.5V DC NO & NC - ≅ 1.2V

Protection

Circuitry	Encapsulated
Dielectric Breakdown	≥ 2000V RMS terminals to mounting surface
Insulation Resistance	≥ 100 MΩ

Mechanical

Mounting	Surface mount with one #10 (M5 x 0.8) screw
Dimensions	2 x 2 x 1.75 in. (50.8 x 50.8 x 44.5 mm)
Termination	0.25 in. (6.35 mm) male quick connect terminals (2)
Sensor Hole	0.36 in. (9.14 mm) for up to #4 AWG (21.1 mm^2) THHN wire

Environmental

Operating / Storage Temperature	-20° to 60°C / -40° to 85°C
Humidity	95% relative, non-condensing
Weight	≅ 2.6 oz (74 g)

FIGURE 13

2.00 (50.8)

2.00 (50.8)

0.25 (6.35) DIA.   0.25 (6.35)

≤ 1.30 (33.0)

0.75 (19)

AF

FIGURE 14

3.5 (88.9)

2.94 (74.7)

1.94 (49.3)

2.5 (63.5)

.187 DIA. (4.75)

.25 (6.35)

≤1.22 (31)

.80 (20.32)

SC3; SC4; SQ

FIGURE 15

0.25 (6.35)

5.9 (149.9)

6.9 (1753)

.50 (12.7)

3.3 (83.8)

4.4 (111.8)

.55 (13.97)

≤2.2 (55.9)

≤2.4 (61.0)

0.68 (17.27)

WVM

FIGURE 16

RC

≤ 2.95 (75)

RC

≤1.97 (50)

≤4.33 (110)

2.41 (61.3)

DLMU

FIGURE 17

0.25 (6.35)

3.02 (76.7)

1.00 (25.4)

1.00 (25.4)   2.02 (51.3)

1.00 (25.4)

≤1.64 (41.7)

FB9L; HLMU; SCR9L

FIGURE 18

≤ 2.39 (60.7)

PERCENT UNBALAN

≤1.78 (45.2)

2.91(73.9)

≤3.03 (77.0)

PLMU

FIGURE 19

≤ 2.39 (60.7)

≤1.78 (45.2)

2.91(73.9)

LLC4; LLC6; PLS

FIGURE 20

.36 (9.14)

.187 (4.75)

3.5 (88.9)

2.94 (74.7)

0.25 (6.35)

.80 (20.3)

1.75 (44.5)

1.94 (49.3)

2.5 (63.5)
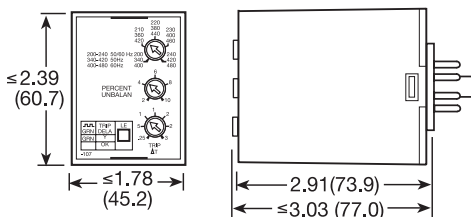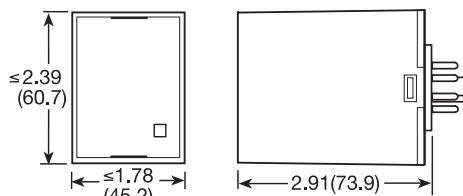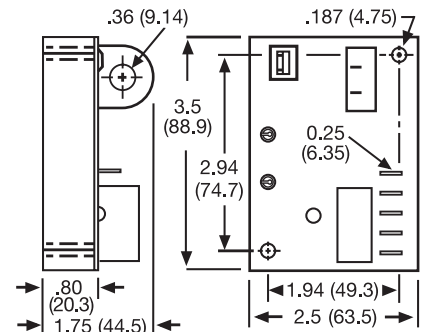
ECS; ECSW   (ECS has spade connectors and ECSW has terminal board)

FIGURE 21

0.25 (6.35) DIA

0.36 (9.14) DIA

2.00 (50.8)

AMPS

1   3

2.00 (50.8)

.75 (19.05)

1.75 (44.5)

TCS; TCSA

FIGURE 22

0.71 (18)

2.44 (62)

Current Transducer

2.75 (70)

2.85 (73)

2.56 (65)

1.12 (29)

1.32 (34)

DCSA

FIGURE 23

0.46 (11.68)

0.98 (24.89)

0.36 DIA (9.14)

+

1.51 (38.35)

#24 AWG (0.25 mm²) UL1015

12 (304.8)
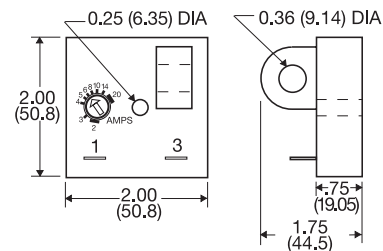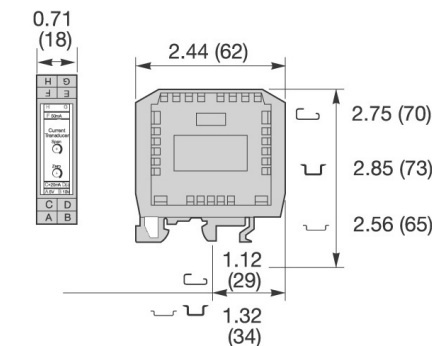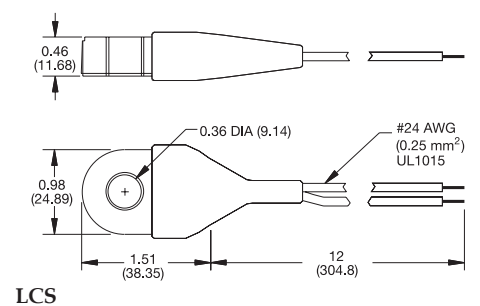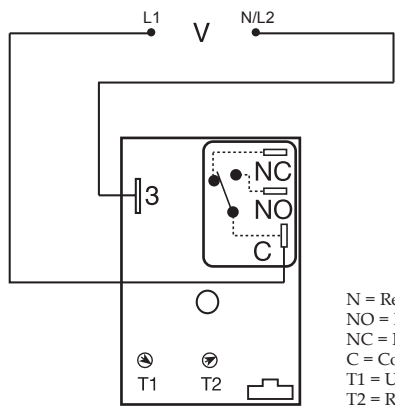
LCS

inches (millimeters)

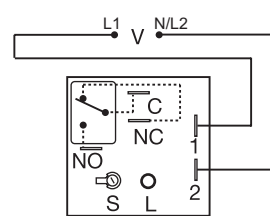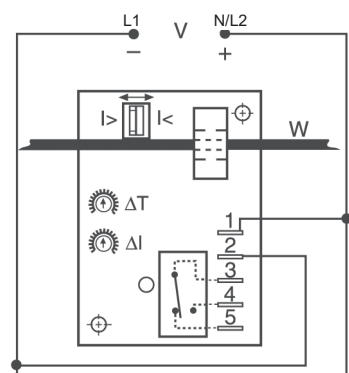## FIGURE 15 - HLV Series

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

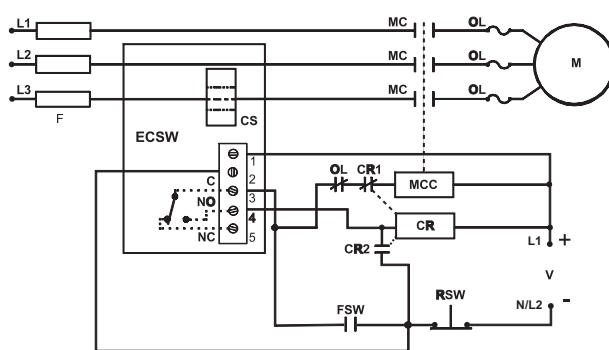I = Relay contacts are isolated.

FIGURE 16 - KVM Series

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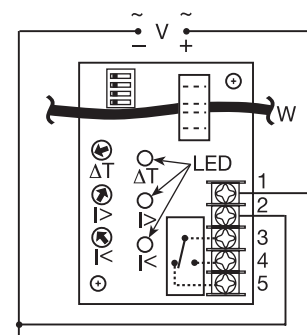C = Common, Transfer Contact

FIGURE 17 - ECS Series

V = Voltage
I> = Overcurrent
I< = Undercurrent

W = Insulated Wire
Carrying Monitored Current
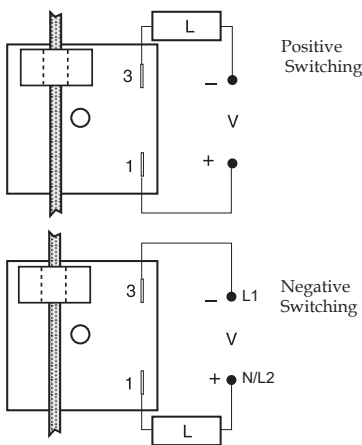Relay contacts are isolated.

FIGURE 18 - ECSW Series

MC = Motor Contactor
M = Motor
F = Fuses
OL = Overload
RSW = Reset Switch

FSW = Fan or Float Contacts
CR = Control Relay
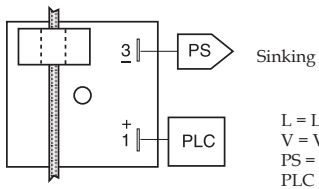CS = Current Sensor
MCC = Motor Contactor Coil

V = Voltage
I> = Adjustable Overcurrent
I< = Adjustable Undercurrent
W = Monitored Wire
ΔT - Adjustable Trip Delay
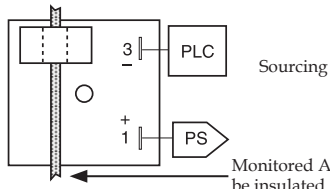
FIGURE 19 - TCS Series
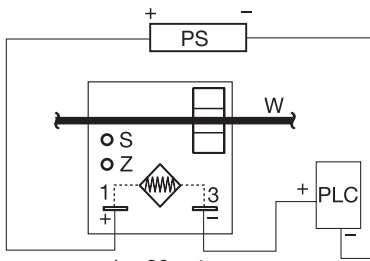

Positive Switching

Negative Switching

Sinking

Sourcing

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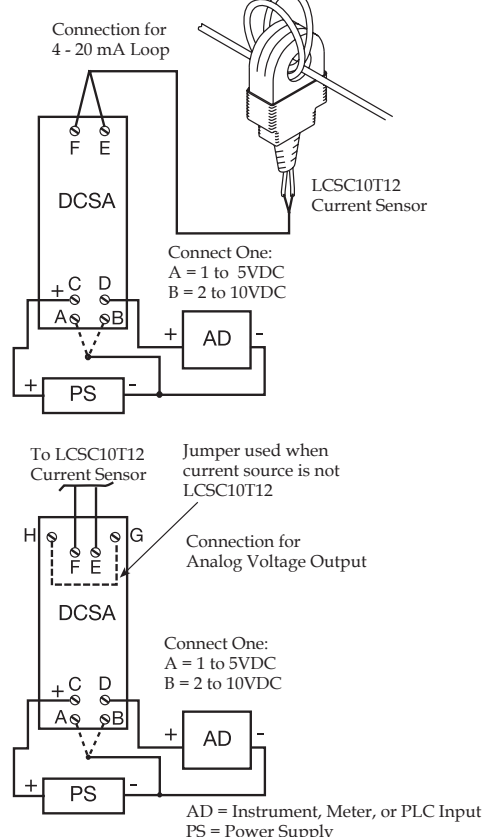PS = Power Supply
PLC = PLC Digital Input Module

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

Connection for
4 - 20 mA Loop

LCSC10T12
Current Sensor

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

To LCSC10T12
Current Sensor

Jumper used when
current source is not
LCSC10T12

Connection for
Analog Voltage Output

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

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