

## Donut Current Transformers



UL File # E93779

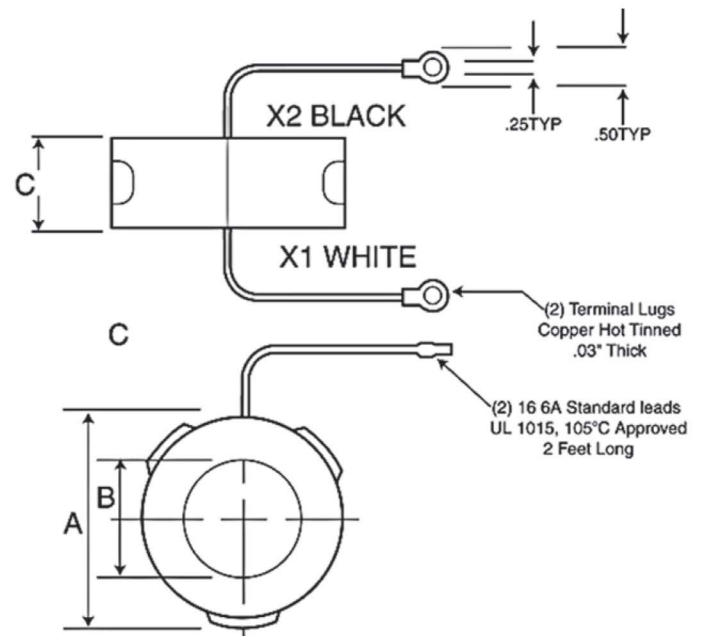
- Meets A.S.A C57.13 Standard
- Molded from impact and abrasive resistance black nylon for rugged construction

| Catalog Number | Turns Ratio | Accuracy For 2 VA Burden |
|----------------|-------------|--------------------------|
| 01293          | 10:1        | 2%                       |
| 01306          | 15:1        | 2%                       |
| 01297          | 20:1        | 1%                       |
| 01298          | 30:1        | 1%                       |
| 01299          | 40:1        | 1%                       |
| 01313          | 50:1        | .8%                      |
| 01300          | 60:1        | .6%                      |
| 01305          | 80:1        | .5%                      |
| 01301          | 100:1       | .5%                      |
| 02303          | 120:1       | .5%                      |
| 02459          | 150:1       | .3%                      |
| 02304          | 200:1       | .3%                      |

## Ordering Information

| Ampere  |           | Turns Ratio | Catalog Number | Dimensions |       |   |
|---------|-----------|-------------|----------------|------------|-------|---|
| Primary | Secondary |             |                | A          | B     | C |
| 50      | 5         | 10:1        | 3.56"          | 1.56"      | 1.10" |   |
| 75      | 5         | 15:1        |                |            |       |   |
| 100     | 5         | 20:1        |                |            |       |   |
| 150     | 5         | 30:1        | 3.56"          | 2.06"      | 1.10" |   |
| 200     | 5         | 40:1        |                |            |       |   |
| 250     | 5         | 50:1        |                |            |       |   |
| 300     | 5         | 60:1        |                |            |       |   |
| 400     | 5         | 80:1        |                |            |       |   |
| 500     | 5         | 100:1       |                |            |       |   |
| 600     | 5         | 120:1       |                |            |       |   |
| 750     | 5         | 150:1       | 4.50"          | 3.00"      | 1.09" |   |
| 1000    | 5         | 200:1       |                |            |       |   |

## Dimensions



## Donut Current Transformer Wrapping Information

### Primary Turn Ratio Modification

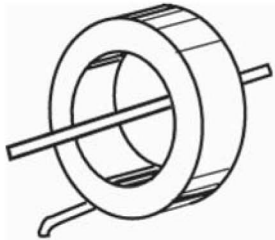
**Formula:**  $K_a = K_n \times N_n / N_a$

**Where:**  $K_a$  = Actual Transformer Ratio  
 $K_n$  = Nameplate Transformer Ratio  
 $N_a$  = Actual Number of Primary Turns  
 $N_n$  = Nameplate Number of Primary Turns

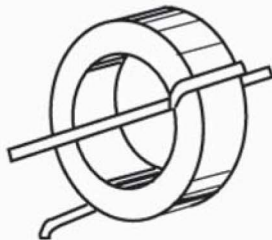
The ratio of the current transformer can be modified by adding more primary turns to the transformer. By adding primary turns, the current required to maintain five amps on the secondary is reduced.

**Example:** A 100:5 current transformer designed for one primary turn.

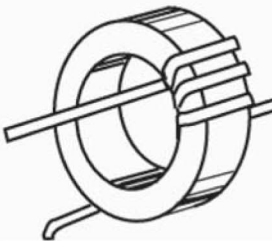
| 1 Primary Turn  |              |  |
|-----------------|--------------|--|
| Nameplate Ratio | Actual Ratio |  |
| 100:5           | 100:5        |  |



| 2 Primary Turns |              |  |
|-----------------|--------------|--|
| Nameplate Ratio | Actual Ratio |  |
| 100:5           | 50:5         |  |



| 4 Primary Turns |              |  |
|-----------------|--------------|--|
| Nameplate Ratio | Actual Ratio |  |
| 100:5           | 25:5         |  |



### Primary Turn Ratio Modification

**Formula:**  $\frac{I_p}{I_s} = \frac{N_s}{N_p}$

**Where:**  $I_p$  - Primary Current  
 $I_s$  - Secondary Current  
 $N_p$  - Number of Primary Turns  
 $N_s$  - Number of Secondary Turns

**Example:** A 300:5 Current Transformer.  
 $\frac{300p}{5s} = \frac{60s}{1p}$

(In practicality one turn is dropped from the secondary as a ratio correction factor.)

The ratio of the current transformer can be modified by altering the number of secondary turns by forward or backwinding the secondary lead through the window of the current transformer. By adding secondary turns, the same primary current will result in a decrease in secondary output. By subtracting turns, the same primary current will result in greater secondary output.

Again using the 300:5 example adding five secondary turns will require 325 amps on the primary to maintain the 5 amp secondary output or

$$\frac{325p}{5s} = \frac{65s}{1p}$$

Deducting 5 secondary turns will only require 275 amps on the primary to maintain the 5 amp secondary output or

$$\frac{275p}{5s} = \frac{65s}{1p}$$

The above ratio modifications are achieved in the following manner:



## Donut Current Transformer Wire Length Table

As the distance between the transformer and the meter increases, the signal intensity falls.

For all of the current transformers the maximum distance is determined by its VA burden and also the VA burden of the meter being used.

Here is a table of the maximum recommended wire length for all of our current transformers using the recommended 16 gauge copper wire.

| Catalog Number | CT Ratio | Burden VA | Analog (.2 VA) | Digital (1 VA) |
|----------------|----------|-----------|----------------|----------------|
| 01293          | 50 :5    | 2 VA      | 9 FT.          | 5 FT.          |
| 01306          | 75 :5    | 2 VA      | 9 FT.          | 5 FT.          |
| 01297          | 100 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01298          | 150 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01299          | 200 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01313          | 250 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01300          | 300 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01305          | 400 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 01301          | 500 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 02303          | 600 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 02459          | 750 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 02304          | 1000 :5  | 2 VA      | 9 FT.          | 5 FT.          |
| 37020          | 100 :5   | 2 VA      | 9 FT.          | 5 FT.          |
| 37021          | 150 :5   | 5 VA      | 24 FT.         | 20 FT.         |
| 37022          | 200 :5   | 5 VA      | 24 FT.         | 20 FT.         |
| 37023          | 300 :5   | 12.5 VA   | 61 FT.         | 57 FT.         |
| 37024          | 500 :5   | 20 VA     | 98 FT.         | 95 FT.         |
| 37025          | 1000 :5  | 25 VA     | 123 FT.        | 119 FT.        |

**Note:**

A different set up using model 186 CT can achieve a greater distance up to 500 ft. Call Simpson Technical Support for the details.