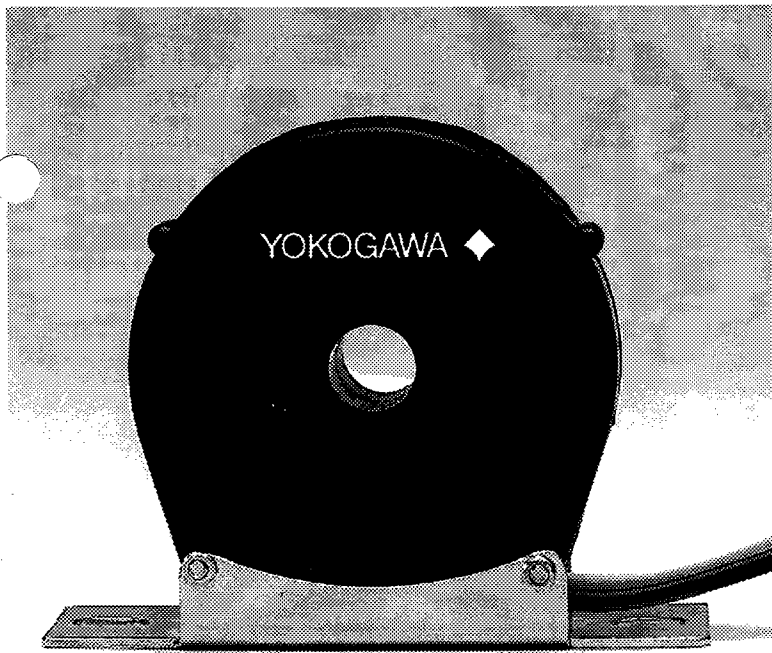


**YOKOGAWA** ◆

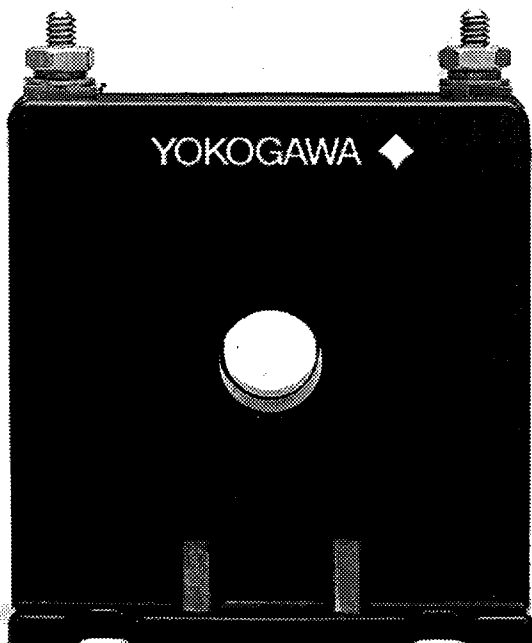
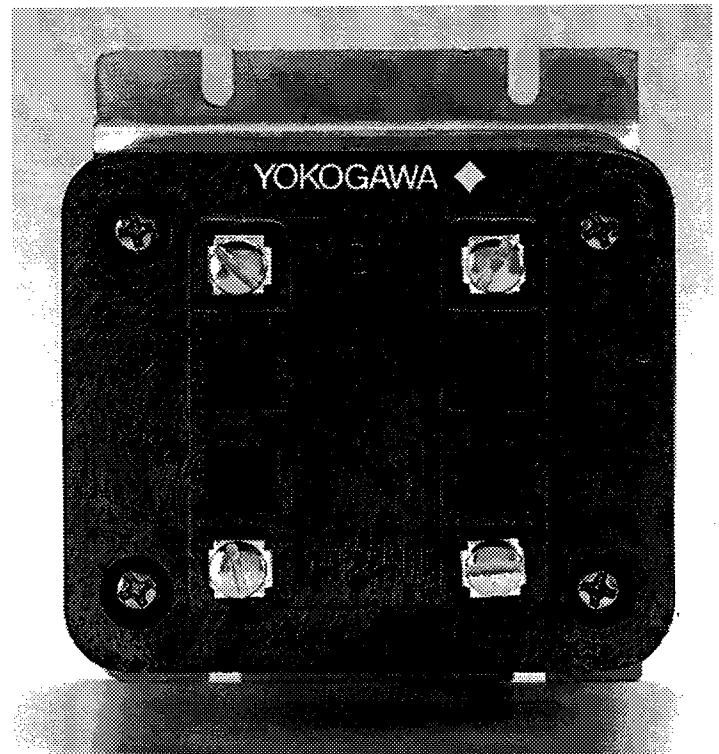


**CTs**

**CURRENT TRANSFORMERS**

**PTs**

**POTENTIAL TRANSFORMERS**

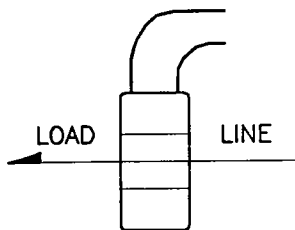


**ALSO,  
CURRENT  
TRANSDUCERS**

# APPLICATION GUIDE

## Primary Turn Ratio Modification      Secondary Turn Ratio Modification

The nameplate of the current transformer is based on the condition that the primary conductor will be passed once through the transformer opening. The rating can be reduced in even multiples by looping this conductor two or more times through the opening. A transformer having a rating of 200 to 5 amperes will be changed to 50 to 5 amperes if four loops or turns are made with the primary cable as illustrated.

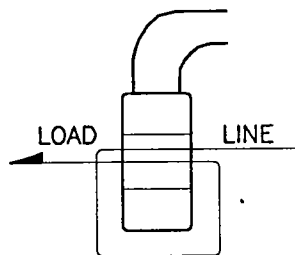


### 1 Primary Turn

NAMEPLATE RATIO	ACTUAL RATIO
100:5	100:5
150:5	150:5
200:5	200:5
300:5	300:5
400:5	400:5
500:5	500:5
600:5	600:5
800:5	800:5

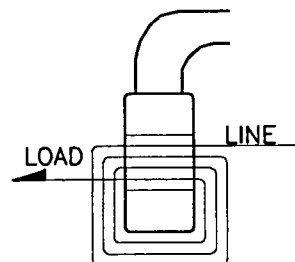
### 2 Primary Turns

NAMEPLATE RATIO	ACTUAL RATIO
100:5	50:5
150:5	75:5
200:5	100:5
300:5	150:5
400:5	200:5
500:5	250:5
600:5	300:5
800:5	400:5



### 4 Primary Turns

NAMEPLATE RATIO	ACTUAL RATIO
100:5	25:5
150:5	37.5:5
200:5	50:5
300:5	75:5
400:5	100:5
500:5	125:5
600:5	150:5
800:5	200:5



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

Where:  $I_p$  – Primary Amperage  
 $I_s$  – Secondary Amperage  
 $N_p$  – Number of Primary Turns  
 $N_s$  – Number of Secondary Turns

Example: A 300:5 Current Transformer –

$$\frac{300 p}{5 s} = \frac{60 s}{1 p}$$

(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 amperage will result in a decrease in secondary output. By subtracting secondary turns the same primary amperage 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

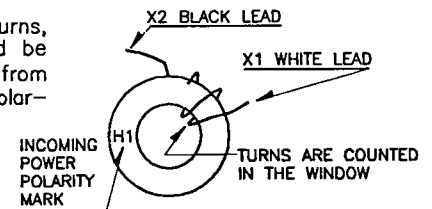
$$\frac{325 p}{5 s} = \frac{65 s}{1 p}$$

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

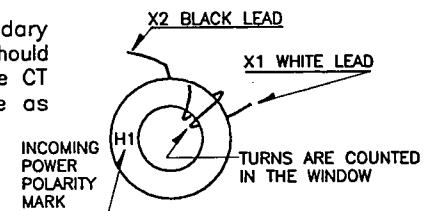
$$\frac{275 p}{5 s} = \frac{55 s}{1 p}$$

The above ratio modifications are achieved in the following manner:

To add secondary turns, the white lead should be wound through the CT from the side opposite the polarity mark.



To subtract secondary turns the white lead should be wound through the CT from the same side as the polarity mark.



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# CURRENT TRANSFORMERS

**Model 2**  
*Window Diameters*  
*1.00", 1.05", 1.13"*

**APPLICATION:**  
Generally for ammeter use only.

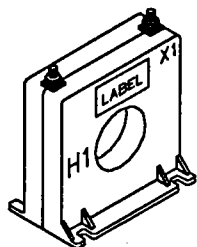
**FREQUENCY:**  
50-400 Hz.

**INSULATION LEVEL:**  
600 Volts, 10 kV BIL full wave.

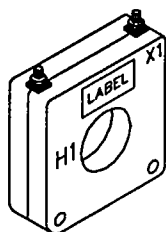
**RATING FACTOR:**  
2.0 @ 30°C amb.



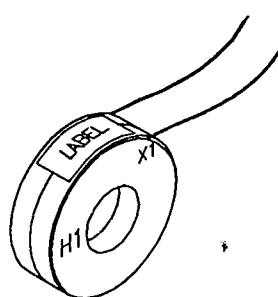
- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- SHT and SFT case styles also available as SHL and SFL with leads.
- Mounting bracket kit 0221B00839 when required for MODEL 2SHT.
- Approximate weight 0.5 lb.



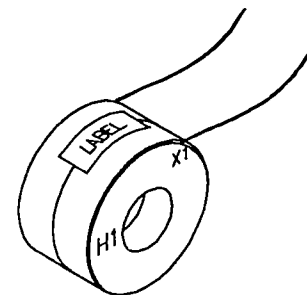
**2SFT**



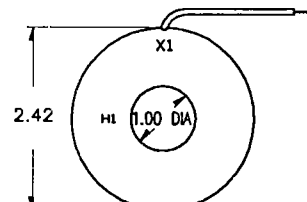
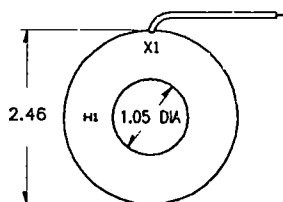
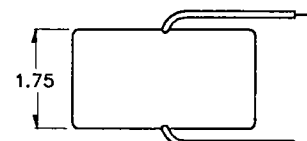
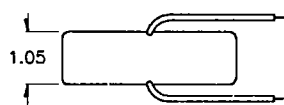
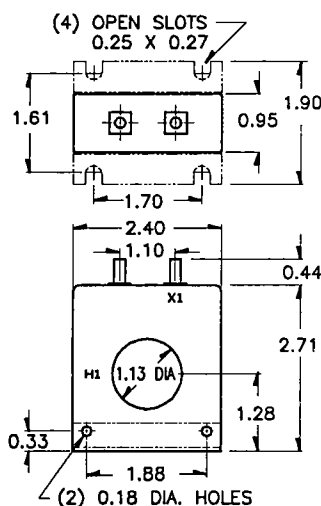
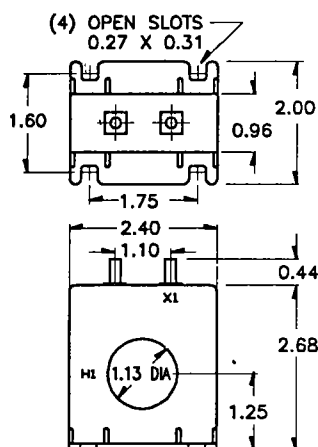
**2SHT**



**2RL**



**2DRL**



CATALOG NUMBER	CURRENT RATIO	MODELS 2SFT, 2SHT, 2RL		MODEL 2DRL	
		ACCURACY AT 60 Hz	BURDEN VA AT 60 Hz	ACCURACY AT 60 Hz	BURDEN VA at 60 Hz
2 ***-500	50:5	± 3 %	2.0	± 2 %	1.5
2 ***-600	60:5	± 2 %	2.0	± 1 %	2.5
2 ***-750	75:5	± 2 %	2.0	± 1 %	3.5
2 ***-800	80:5	± 2 %	2.0	± 1 %	4.0
2 **-101	100:5	± 1 %	2.0	± 1 %	5.0
2 **-121	120:5	± 1 %	2.5	± 1 %	5.0
2 **-1250	125:5	± 1 %	2.5	± 1 %	5.0
2 ***-151	150:5	± 1 %	4.0	± 1 %	8.0
2 ***-201	200:5	± 1 %	4.0	± 1 %	10.0
2 ***-251	250:5	± 1 %	6.0	± 1 %	12.5
2 ***-301	300:5	± 1 %	8.0	± 1 %	15.0

\*\* NOTE: When ordering, prefix Cat. No. with model designation required, i.e. 2SFT-301, 2RL-301, OR 2DRL-301, etc.

# CURRENT TRANSFORMERS

Model 5

Window Diameter 1.56"

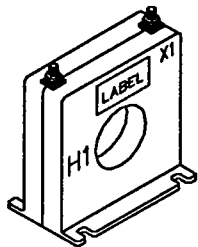
**APPLICATION:**  
With ammeters, wattmeters, and cross current compensation.

**FREQUENCY:**  
50-400 Hz.

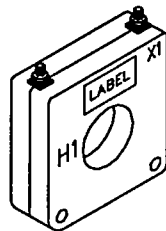
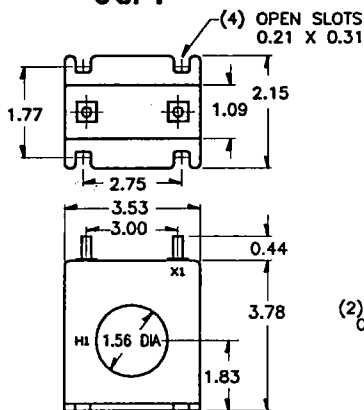
**INSULATION LEVEL:**  
600 Volts, 10 kV BIL full wave.

**RA** E93779 **SP** LR89403

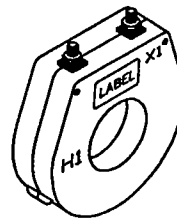
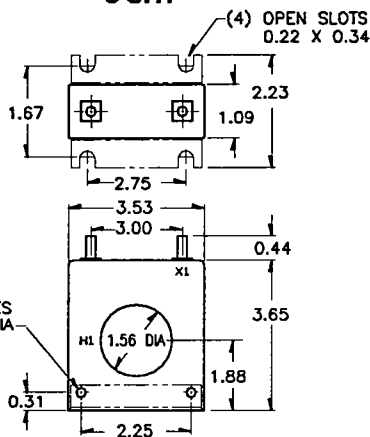
- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- SHT and SFT case styles also available as SHL and SFL with leads.
- Mounting bracket kit 0221B00180 when required for Model 5SHT.
- Approximate weight: 1.0 lb.



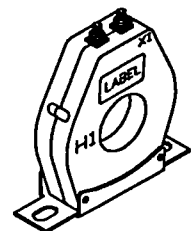
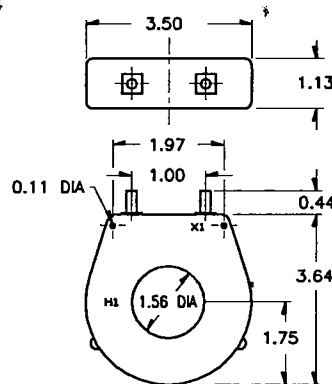
5SFT



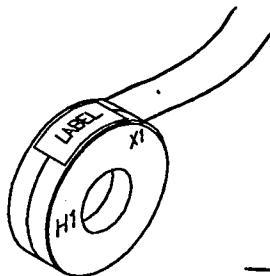
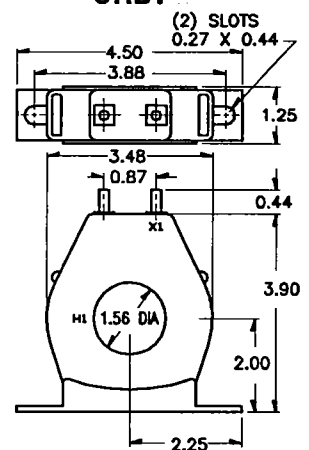
5SHT



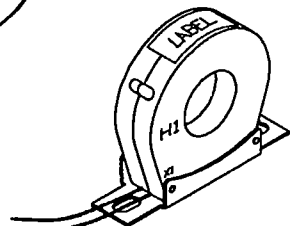
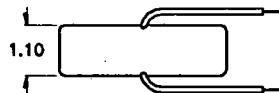
5RT



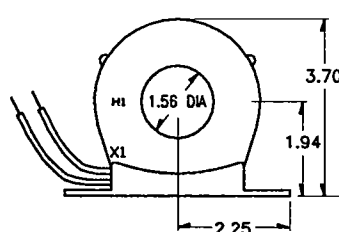
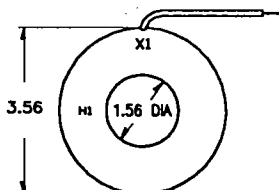
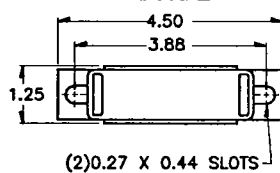
5RBT



5RL



5RBL



CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA at 60 Hz
5 ***- 500	50:5	± 2 %	1.0
5 ***- 750	75:5	± 2 %	1.5
5 ***- 101	100:5	± 2 %	2.0
5 ***- 151	150:5	± 1 %	5.0
5 ***- 201	200:5	± 1 %	5.0
5 ***- 251	250:5	± 1 %	10.0
5 ***- 301	300:5	± 1 %	12.5
5 ***- 401	400:5	± 1 %	12.5
5 ***- 501	500:5	± 1 %	20.0
5 ***- 601	600:5	± 1 %	25.0
* 5 ***- 751	750:5	± 1 %	25.0
* 5 ***- 801	800:5	± 1 %	25.0
* 5 ***- 102	1000:5	± 1 %	25.0
* 5 ***- 122	1200:5	± 1 %	30.0

\*\* NOTE: When ordering, prefix Cat No. with model designation required, i.e. 5SFT-500, 5RL-500, etc.  
\* NOTE: Available in SFT, SHT and RL only.

# CURRENT TRANSFORMERS

Model 7

Window Diameter 2.50"

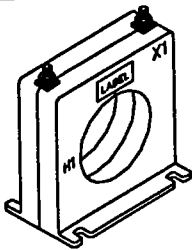
**APPLICATION:**  
With ammeters, wattmeters, and cross current compensation.

**FREQUENCY:**  
50-400 Hz.

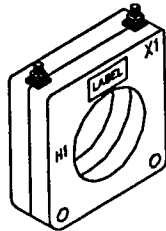
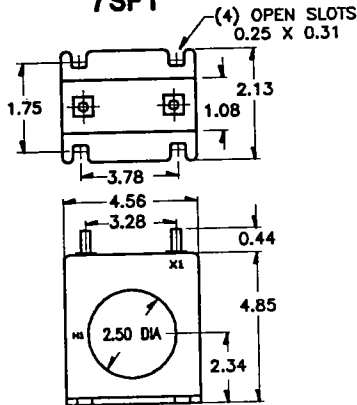
**INSULATION LEVEL:**  
600 Volts, 10 kV BIL full wave.

**UL E93779** **CS LR89403**

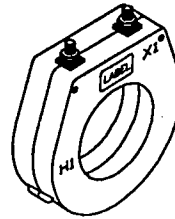
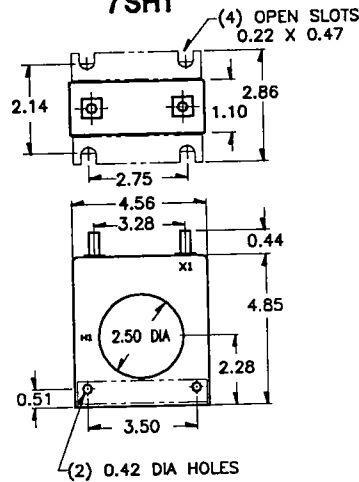
- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- SFT and SHT case styles also available as SFL and SHL with leads.
- Mounting bracket kit 0221B00182 when required for Model 7SHT.
- Approximate weight: 1.5 lb.



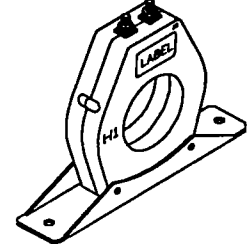
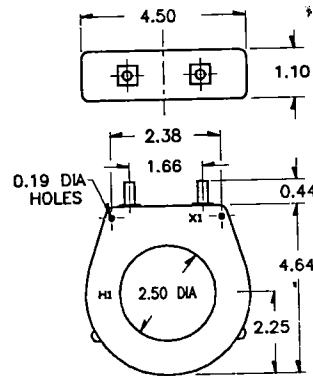
7SFT



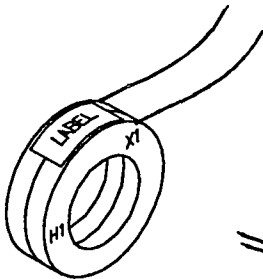
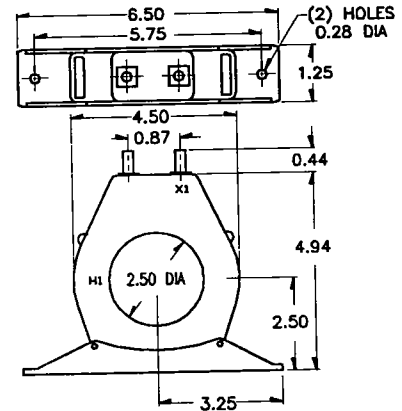
7SHT



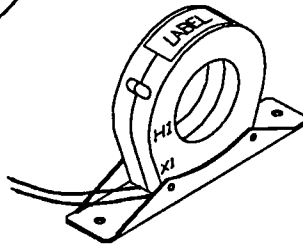
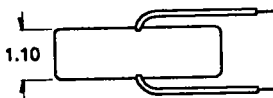
7RT



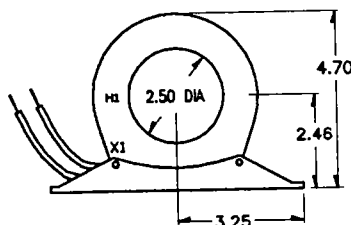
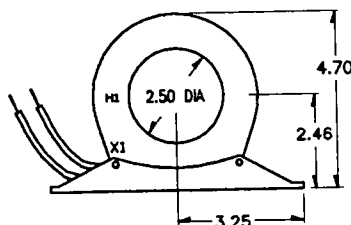
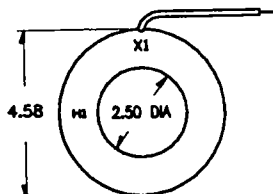
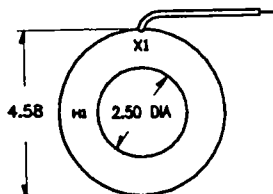
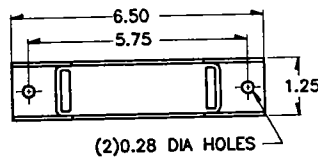
7RBT



7RL



7RBL



CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA at 60 Hz
7**-101	100:5	± 2 %	2.5
7**-151	150:5	± 1 %	5.0
7**-201	200:5	± 1 %	5.0
7**-251	250:5	± 1 %	5.0
7**-301	300:5	± 1 %	12.5
7**-401	400:5	± 1 %	15.0
7**-501	500:5	± 1 %	25.0
7**-601	600:5	± 1 %	30.0
7**-751	750:5	± 1 %	30.0
7**-801	800:5	± 1 %	35.0
7**-102	1000:5	± 1 %	35.0
7**-122	1200:5	± 1 %	35.0
7**-152	1500:5	± 1 %	40.0
7**-162	1600:5	± 1 %	45.0

\*\* NOTE: When ordering, prefix Cat No. with model designation required, i.e. 7SFT-500, 7RL-500, etc.

# CURRENT TRANSFORMERS

Models 14, 15, 16

Window Diameters  
0.50", 0.94", 1.25"

## APPLICATION:

With ammeters,  
energy management systems,  
and instrumentation.

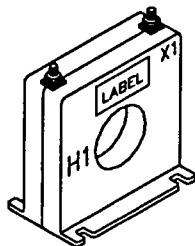
## FREQUENCY:

50-400 Hz.

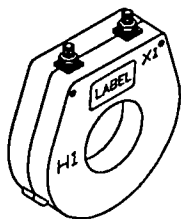
## INSULATION LEVEL:

600 Volts, 10 kV BIL full wave.

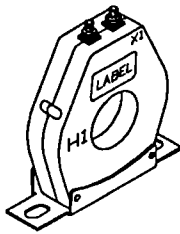
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- SFT case style also available as SFL with leads.
- Approximate weight: 0.9 lbs.



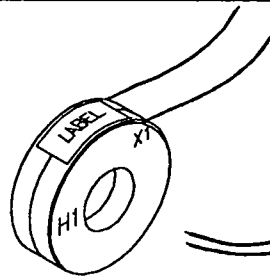
SFT Models



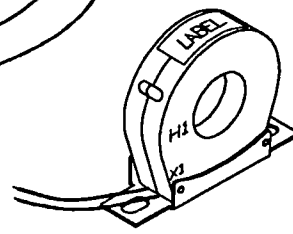
RT Models



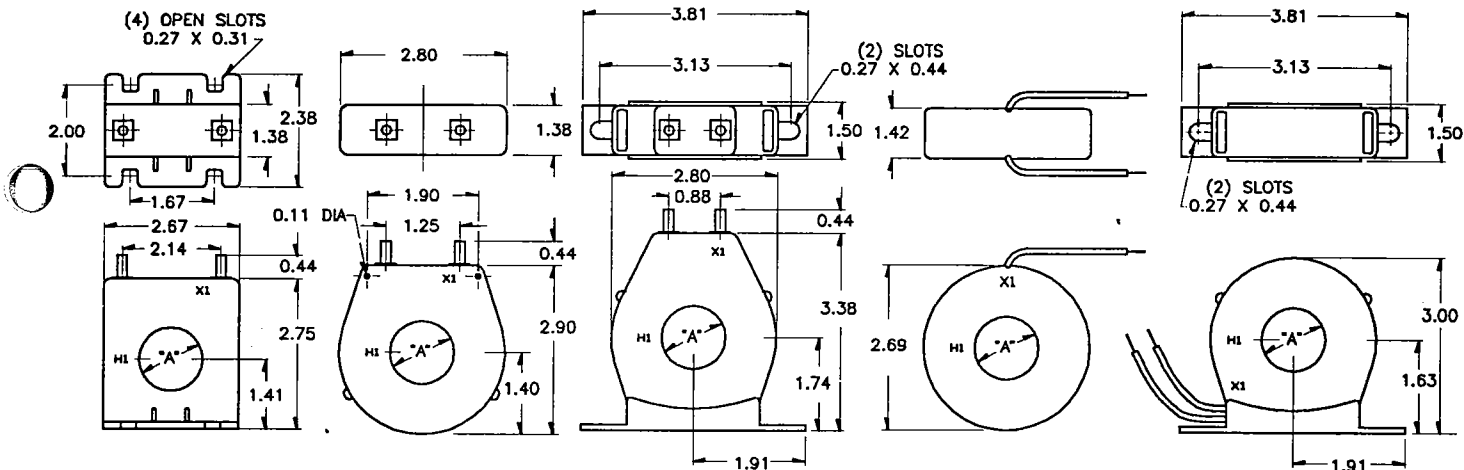
RBT Models



RL Models



RBL Models



CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA AT 60 Hz	DIM "A"
14**-500	50:5	± 1.5%	2.5	0.50
14**-600	60:5	± 1.5%	2.5	
14**-750	75:5	± 1.5%	2.5	
14**-800	80:5	± 1.0%	2.5	
14**-101	100:5	± 1.0%	3.0	
15**-500	50:5	± 1.5%	2.0	0.94
15**-600	60:5	± 1.5%	2.0	
15**-750	75:5	± 1.5%	2.5	
15**-800	80:5	± 1.0%	2.0	
15**-101	100:5	± 1.0%	2.0	
15**-121	120:5	± 1.0%	3.0	
15**-1250	125:5	± 1.0%	4.0	
15**-151	150:5	± 1.0%	5.0	
15**-1750	175:5	± 1.0%	10	
15**-201	200:5	± 1.0%	12.5	

CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA AT 60 Hz	DIM "A"
16**-500	50:5	± 2 %	1.5	1.25
16**-600	60:5	± 2 %	1.5	
16**-750	75:5	± 2 %	3.0	
16**-800	80:5	± 2 %	3.0	
16**-101	100:5	± 1 %	3.0	
16**-121	120:5	± 1 %	4.0	
16**-1250	125:5	± 1 %	5.0	
16**-151	150:5	± 1 %	6.0	
16**-1750	175:5	± 1 %	7.0	
16**-201	200:5	± 1 %	8.0	
16**-251	250:5	± 1 %	10	
16**-301	300:5	± 1 %	10	
16**-401	400:5	± 1 %	15	

\*\* NOTE: When ordering, prefix Cat No. with model designation required, i.e. 14RL-600, 15SFT-151, 16RT-151, etc.

# CURRENT TRANSFORMERS

Model 56

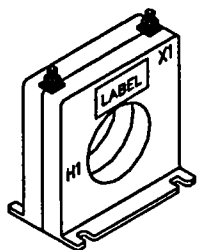
Window Diameter 2.06"

**APPLICATION:**  
With ammeters, wattmeters, and cross current compensation.

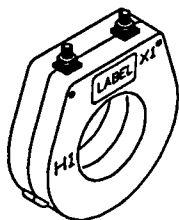
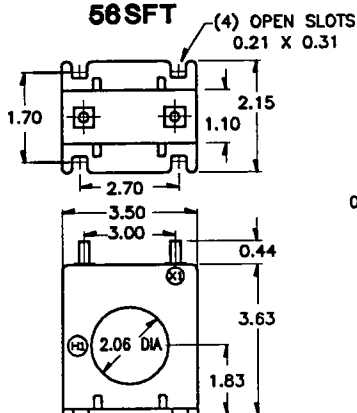
**FREQUENCY:**  
50-400 Hz.

**INSULATION LEVEL:**  
0.6 kV. BIL 10 kV. full wave.

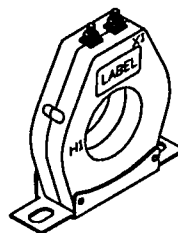
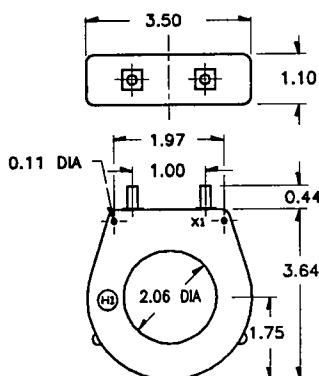
- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- SFT case style also available as SFL with leads.
- Approximate weight: 0.6 lb.



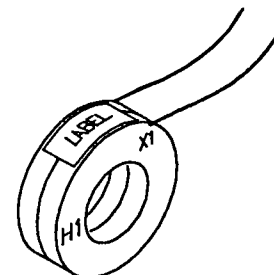
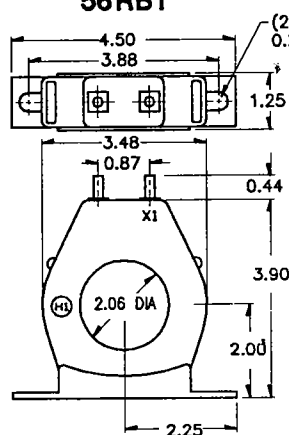
56SFT



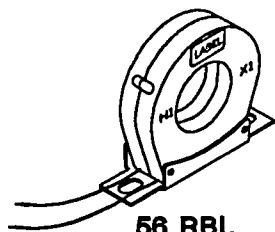
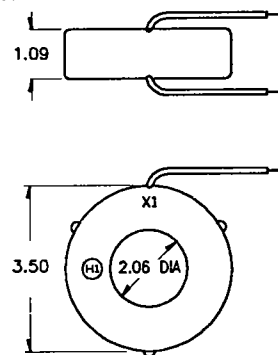
56RT



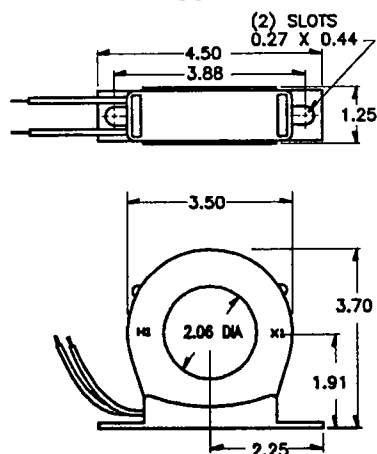
56RBT



56RL



56RBL



CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA at 60 Hz
56 **- 500	50:5	± 3 %	0.5
56 **- 750	75:5	± 1 %	0.5
56 **- 101	100:5	± 1 %	1.0
56 **- 151	150:5	± 1 %	2.5
56 **- 201	200:5	± 1 %	4.0
56 **- 251	250:5	± 1 %	6.0
56 **- 301	300:5	± 1 %	7.5
56 **- 401	400:5	± 1 %	10.0
56 **- 501	500:5	± 1 %	12.5
56 **- 601	600:5	± 1 %	15.0
56 **- 751	750:5	± 1 %	7.0
56 **- 801	800:5	± 1 %	8.0
56 **- 102	1000:5	± 1 %	10.0
56 **- 122	1200:5	± 1 %	12.5

\*\* NOTE: When ordering, prefix Cat No. with model designation required, i.e. 56RL-101, 56RBL-251, etc.

# CURRENT TRANSFORMERS

Model 76

Window Diameter 3.00"

## APPLICATION:

With ammeters, wattmeters, and cross current compensation.

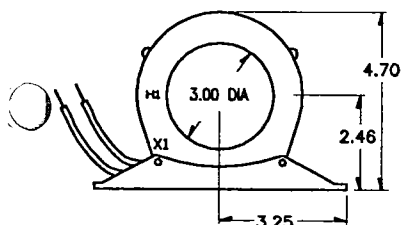
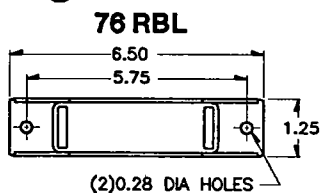
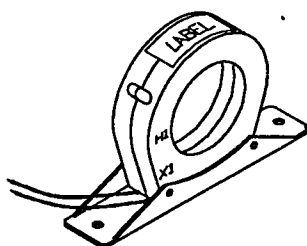
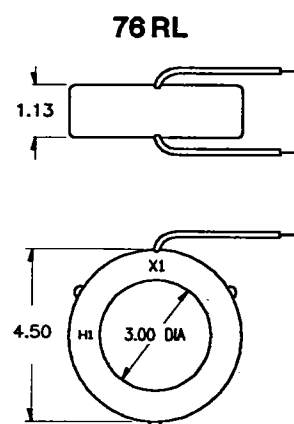
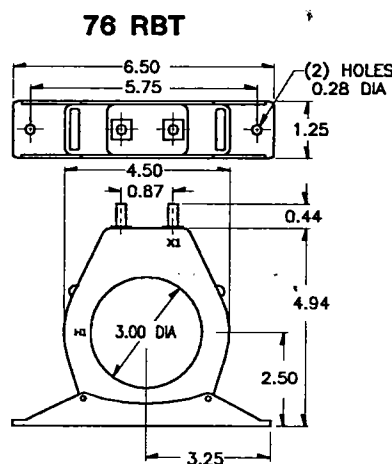
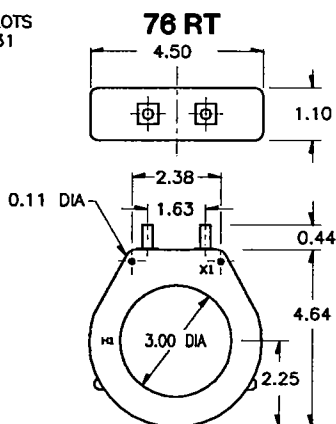
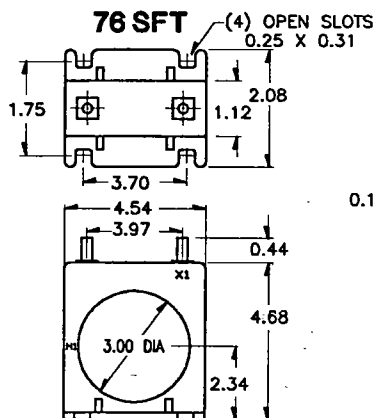
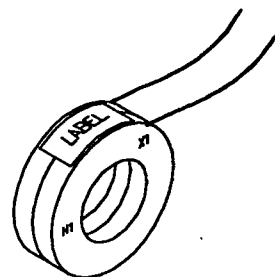
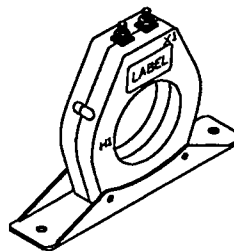
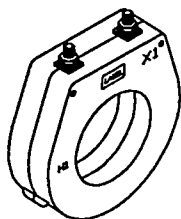
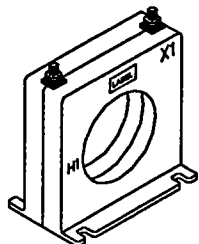
## FREQUENCY:

50-400 Hz.

## INSULATION LEVEL:

600 Volts, 10 kV BIL full wave.

- Flexible leads are UL 1015 105 ° C, CSA approved, #16 AWG, 24" long.
- Non-standard length to be specified.
- Terminals are brass studs No. 8-32 UNC with one flat washer, lockwasher and regular nut.
- SFT case styles also available as SFL with leads.
- Approximate weight: 0.9 lb.



CATALOG NUMBER	CURRENT RATIO	ACCURACY AT 60 Hz	BURDEN VA at 60 Hz
76**-201	200:5	± 1 %	5.0
76**-251	250:5	± 1 %	5.0
76**-301	300:5	± 1 %	6.0
76**-401	400:5	± 1 %	10.0
76**-501	500:5	± 1 %	10.0
76**-601	600:5	± 1 %	10.0
76**-751	750:5	± 1 %	10.0
76**-801	800:5	± 1 %	12.5
76**-102	1000:5	± 1 %	12.5
76**-122	1200:5	± 1 %	12.5
76**-152	1500:5	± 1 %	12.5
76**-162	1600:5	± 1 %	12.5
76**-202	2000:5	± 1 %	15.0

\*\* NOTE: When ordering, prefix Cat No. with model designation required, i.e. 76RL-101, 76RBL-251, etc.

# CURRENT TRANSFORMERS

Model 170

Window Diameter 4.25"

Model 8

Window Diameter 3.25"

**APPLICATION:**  
For relaying and metering.

**FREQUENCY:**  
50-400 Hz.

**INSULATION CLASS:**  
0.6 kV. BIL 10 kV. full wave.

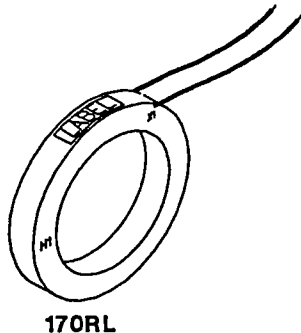
**CONTINUOUS THERMAL CURRENT RATING FACTOR:**  
1.33 at 30°C. amb.; 1.0 at 55°C. amb.

REGULATORY AGENCY APPROVALS

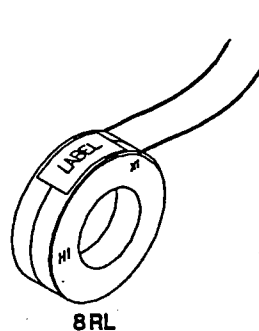
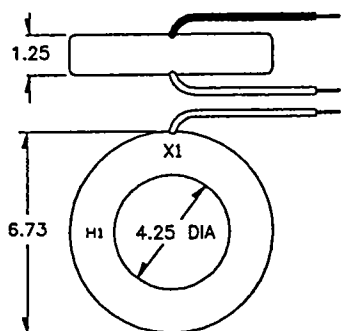


Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 185.

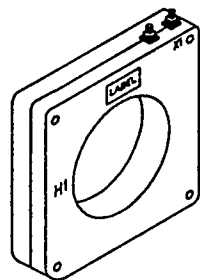
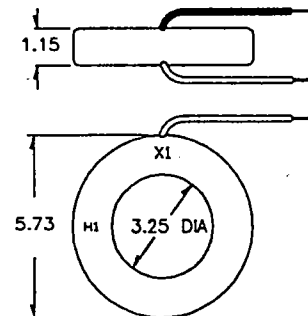
- Terminals are brass studs No. 8-32 UNC with one flatwasher, lockwasher and regular nut.
- Flexible leads are UL 1015 105°C., CSA approved, #16 AWG, 24" long. Non-standard length to be specified.
- Order mounting bracket kit 0221B00187 separately, when required for Model 170SHT.
- Order mounting bracket kit 0221B00183 separately when required for Model 8SHT.
- Models 170SHT & 8SHT also available as 170SHL & 8SHL with leads.
- Approximate weight 3 lbs.



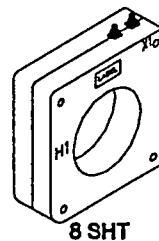
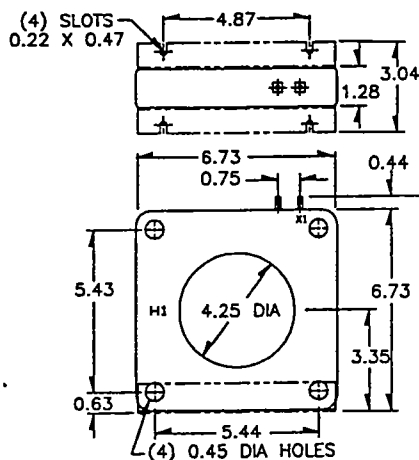
170RL



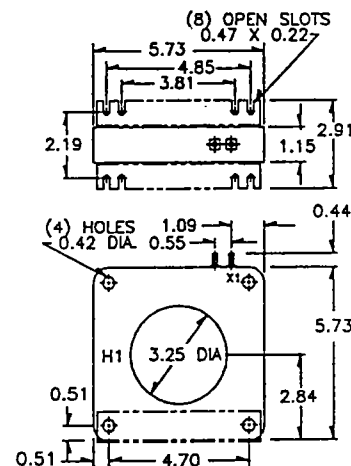
8RL



170SHT



8SHT



CATALOG NUMBER	CURRENT RATIO AMPERES	V.A. FOR $\pm 1\%$ CLASS	ANSI METERING CLASS AT 60 Hz					SECONDARY WINDING RESISTANCE (OHMS @ 75 °C)
			B0.1	B0.2	B0.5	B0.9	B1.8	
170 ** 201	200:5	5.0	1.2	1.2	—	—	—	0.040
170 ** 251	250:5	5.0	1.2	1.2	—	—	—	0.047
170 ** 301	300:5	12.5	0.6	0.6	1.2	2.4	—	0.053
170 ** 401	400:5	25.0	0.6	0.6	1.2	1.2	2.4	0.080
170 ** 501	500:5	25.0	0.3	0.3	0.6	1.2	2.4	0.110
170 ** 601	600:5	25.0	0.3	0.3	0.6	0.6	1.2	0.121
170 ** 751	750:5	40.0	0.3	0.3	0.3	0.3	0.6	0.151
170 ** 801	800:5	50.0	0.3	0.3	0.3	0.3	0.6	0.162
170 ** 102	1000:5	75.0	0.3	0.3	0.3	0.3	0.6	0.265
170 ** 122	1200:5	100.0	0.3	0.3	0.3	0.3	0.6	0.318
170 ** 152	1500:5	80.0	0.3	0.3	0.3	0.3	0.6	0.344
170 ** 162	1600:5	90.0	0.3	0.3	0.3	0.6	0.6	0.367
170 ** 202	2000:5	105.0	0.3	0.3	0.3	0.3	0.3	0.459
170 ** 252	2500:5	130.0	0.3	0.3	0.3	0.3	0.3	0.573
170 ** 302	3000:5	165.0	0.3	0.3	0.3	0.3	0.3	0.424
170 ** 352	3500:5	190.0	0.3	0.3	0.3	0.3	0.3	0.495
170 ** 402	4000:5	215.0	0.3	0.3	0.3	0.3	0.3	0.646

\*\*NOTE: When ordering, prefix catalog number with model designation required, i.e. 170SHT-201, or 170RL-301.

CATALOG NUMBER	CURRENT RATIO AMPERES	V.A. FOR $\pm 1\%$ CLASS	ANSI METERING CLASS AT 60 Hz					SECONDARY WINDING RESISTANCE (OHMS @ 75 °C)
			B0.1	B0.2	B0.5	B0.9	B1.8	
8 ** 201	200:5	5.0	1.2	1.2	—	—	—	0.030
8 ** 251	250:5	7.5	0.6	1.2	2.4	—	—	0.044
8 ** 301	300:5	15.0	0.6	0.6	1.2	2.4	—	0.049
8 ** 401	400:5	25.0	0.3	0.6	1.2	1.2	—	0.079
8 ** 501	500:5	35.0	0.3	0.3	0.6	1.2	2.4	0.098
8 ** 601	600:5	50.0	0.3	0.3	0.6	1.2	1.2	0.147
8 ** 751	750:5	50.0	0.3	0.3	0.3	0.6	1.2	0.184
8 ** 801	800:5	60.0	0.3	0.3	0.3	0.6	1.2	0.197
8 ** 102	1000:5	75.0	0.3	0.3	0.3	0.6	0.6	0.246
8 ** 122	1200:5	75.0	0.3	0.3	0.3	0.6	0.6	0.169
8 ** 152	1500:5	90.0	0.3	0.3	0.3	0.6	0.6	0.316
8 ** 162	1600:5	100.0	0.3	0.3	0.3	0.6	0.6	0.337
8 ** 202	2000:5	120.0	0.3	0.3	0.3	0.3	0.3	0.422
8 ** 252	2500:5	50.0	0.3	0.3	0.3	0.3	—	0.438
8 ** 302	3000:5	60.0	0.3	0.3	0.3	0.3	—	0.526
8 ** 322	3200:5	70.0	0.3	0.3	0.3	0.3	—	0.637
8 ** 402	4000:5	80.0	0.3	0.3	0.3	0.3	—	0.796

\* Approved for revenue metering in Canada by Consumer and Corporate Affairs Canada. Approval number T188.

\*\* NOTE: When ordering, prefix catalog number with model designation required, i.e. 8SHT-201, 8RL-301. etc.

◆ NOTE: Ratio 4000:5 Rating Factor 1.0 at 30 C.

# CURRENT TRANSFORMERS

## Models 600 & 601 SPLIT CORE

*Window Size*

600 - 2.00" X 5.50"

601 - 4.50" X 4.50"

### APPLICATION:

For energy management systems and instrumentation.

### FREQUENCY:

50-400 Hz.

### CONSTRUCTION:

The core and windings are encased in U.L. approved plastic.

### INSULATION LEVEL:

0.6 kV, BIL 10 kV full wave.

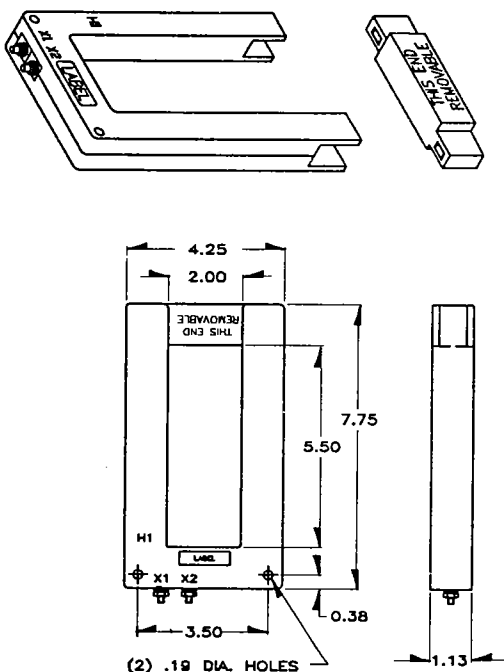
- Terminals are 8-32 brass studs with one flatwasher, lockwasher and regular nut.
- Flexible leads UL 1015 105°C, CSA approved, #16 AWG, 24" long are available.
- Approximate Weight: 1.5 Lbs.

REGULATORY AGENCY APPROVALS

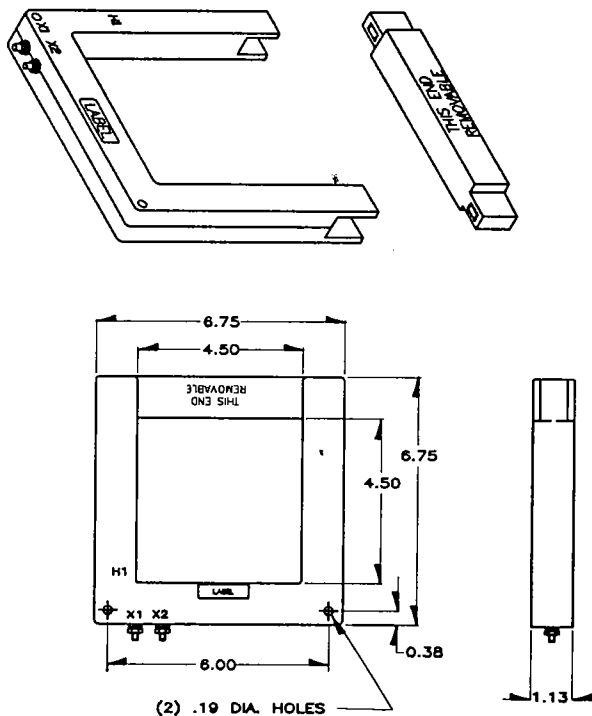


Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 185.

MODEL 600



MODEL 601



These transformers are designed for assembly to an existing electrical installation without the need for dismantling the primary bus or cables.

### CAUTION :

Proper safety precautions must be followed during installation by a trained electrician. It is recommended that the incoming power be de-energized before installation.

The current transformer must have its secondary terminals short circuited or the burden connected, before energizing the primary circuit.

CATALOG NO.	CURRENT RATIO	VA AT 1% CLASS	ANSI METERING CLASS AT 60Hz		
			B0.1	B0.2	B0.5
600-401	400:5A	1.5	2.4	4.8	—
600-501	500:5A	2.0	2.4	4.8	—
600-601	600:5A	2.5	2.4	2.4	—
600-801	800:5A	5.0	1.2	1.2	2.4
600-102	1000:5A	7.5	1.2	1.2	2.4
600-122	1200:5A	15.0	0.6	1.2	1.2
600-152	1500:5A	20.0	0.6	0.6	1.2
600-162	1600:5A	20.0	0.6	0.6	1.2
600-202	2000:5A	30.0	0.6	0.6	0.6

CATALOG NO.	CURRENT RATIO	VA AT 1% CLASS	ANSI METERING CLASS AT 60Hz		
			B0.1	B0.2	B0.5
601-401	400:5A	1.0	4.8	—	—
601-501	500:5A	1.5	4.8	4.8	—
601-601	600:5A	2.0	2.4	4.8	—
601-801	800:5A	2.5	1.2	2.4	4.8
601-102	1000:5A	5.0	1.2	1.2	4.8
601-122	1200:5A	10.0	1.2	1.2	2.4
601-152	1500:5A	15.0	1.2	1.2	1.2
601-162	1600:5A	15.0	1.2	1.2	1.2
601-202	2000:5A	20.0	0.6	0.6	1.2

# VOLTAGE TRANSFORMER

## Model 456

**FREQUENCY:**  
60 Hz

**STANDARD SECONDARY VOLTAGE:**  
120 Volts

**INSULATION LEVEL:**  
600 Volt, 10 kV BIL full wave.

**ACCURACY CLASS:**  
0.3 W, X, M and 0.6Y  
Those marked \*\* are  
0.6 W, X, M and Y  
**THERMAL RATING:**  
500 VA at 30°C. amb.,  
300 VA at 55°C. amb.

REGULATORY AGENCY APPROVALS

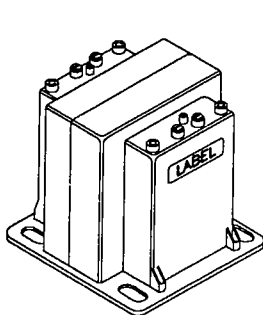


Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 186.

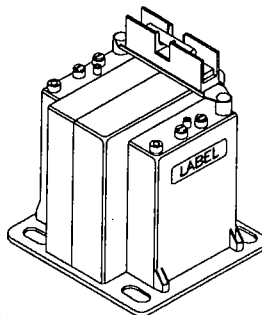
- The primary and secondary terminals are No. 10-32 screws into 3/8" deep brass inserts and fitted with one lockwasher and flatwasher and are contained in a sealable terminal cover.
- The core and coil assembly is encased in a thermoplastic shell and filled with resin.
- These transformers are designed for operation line-to-line. They may also be operated line-to-ground or line-to-neutral at reduced voltage, (58% of rated volts).

- It is desirable to use a 5.0 amp fuse in the secondary to protect the transformer.
- With three exceptions these transformers are ANSI C57.13 group 1. Those marked \* are group 2.
- The model 456-380 is designed specifically for 50 Hz operation.
- Fuse blocks containing type KTK-R (class CC) fuses can be fitted.
- When primary fuses are requested, the ratings will be as given in the table below.

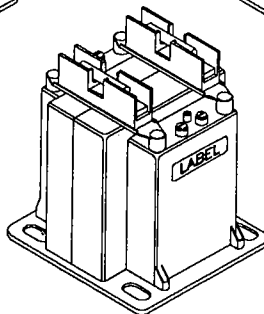
- This page contains a circle diagram for the estimation of the errors for other than rated burdens. See page 12 in this section for a description of its use.
- When only one fuse is used, it must be connected into the line side (H1) terminal wiring. This will prevent the presence of voltage at the H1 terminal for a ruptured fuse in the neutral (H2) terminal wiring for line-to-neutral connected transformers.
- Approximate weight: 18.5 lbs.



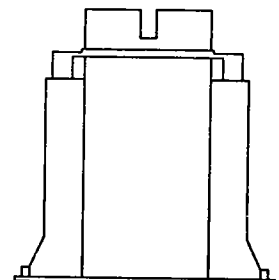
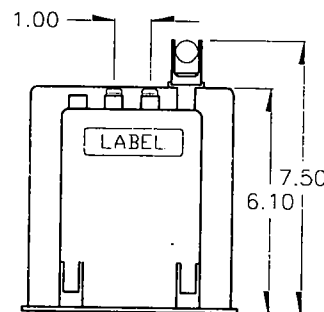
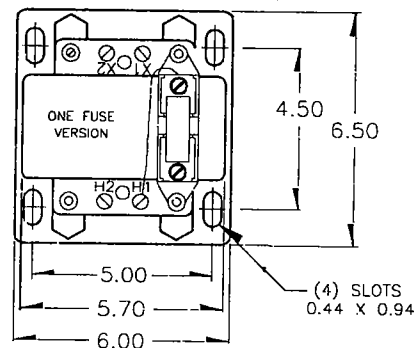
No Fuse



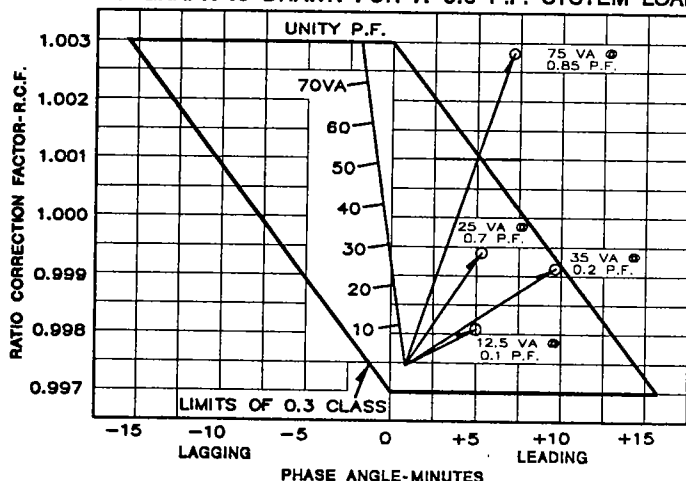
1 Fuse



2 Fuses



**VOLTAGE TRANSFORMER CIRCLE DIAGRAM**  
THIS GRAPH IS DRAWN FOR A 0.6 P.F. SYSTEM LOAD



CATALOG NUMBERS			VOLTAGE RATING	TURNS RATIO	PRIMARY FUSE RATING
NOT FUSED	ONE FUSE	TWO FUSES			
*456-069	456-069F	456-069FF	69.4:120	0.58:1	12A
*456-120	456-120F	456-120FF	120:120	1:1	6A
456-208	456-208F	456-208FF	208:120	1.73:1	4A
456-240	456-240F	456-240FF	240:120	2:1	4A
456-288	456-288F	456-288FF	288:120	2.4:1	4A
456-300	456-300F	456-300FF	300:120	2.5:1	4A
*456-480	*456-480F	*456-480FF	480:120	4:1	3A
*456-600	*456-600F	*456-600FF	600:120	5:1	2A
*456-380	*456-380F	*456-380FF	380:120	3.17:1 for 50Hz	3A

Retro Fit Fuse Kit Order No. 0222 PL 7019

# VOLTAGE TRANSFORMER

## Models 467 & 469

### FREQUENCY:

60 Hz

### STANDARD SECONDARY VOLTAGE:

120 Volts

### INSULATION LEVEL:

600 Volt, 10 kV BIL full wave.

### ACCURACY CLASS:

± 1% at all burdens up to 5 VA at 1.0 and 0.95 P.F. The transformers are compensated for ± 0.5% at 5VA., 0.95 P.F.

### THERMAL RATING: (Per V.T.)

40 VA at 30°C. amb.,  
27 VA at 55°C. amb.

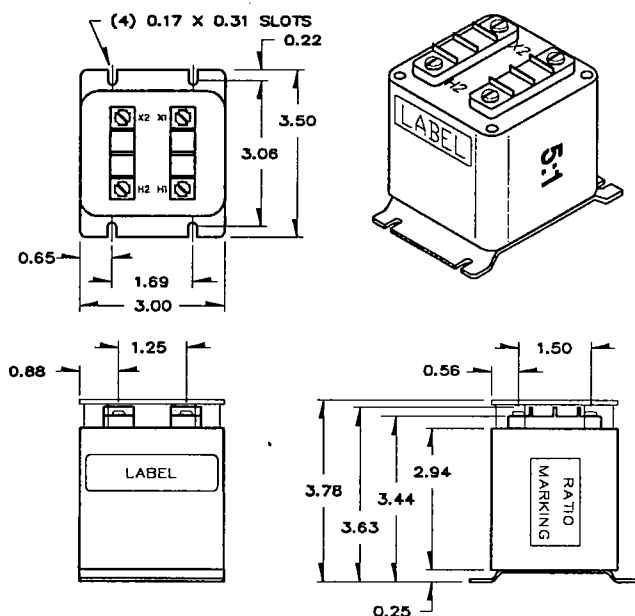
REGULATORY AGENCY APPROVALS



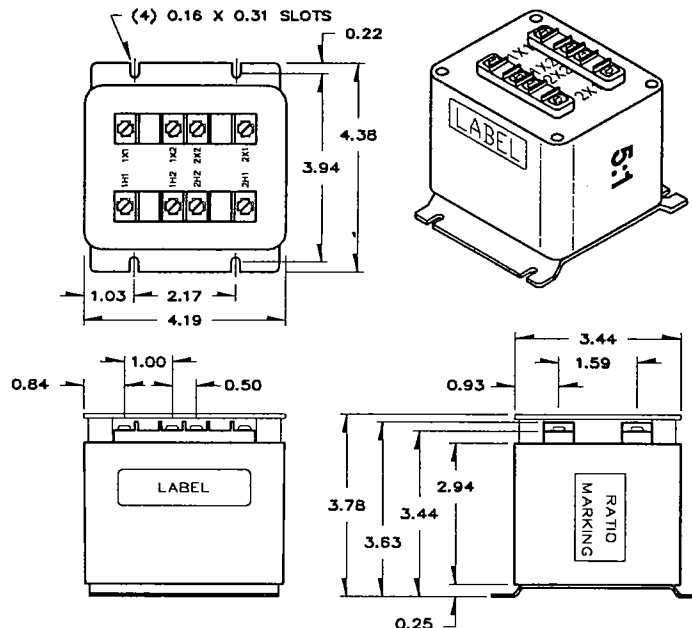
Manufactured to meet the requirements of ANSI/IEEE C57.13.  
Classified by U.L. in accordance with IEC 186.

- The core and coil assembly is encased in a thermoplastic shell and filled with resin.
- These transformers are designed for operation line-to-line. They may also be operated line-to-ground or line-to-neutral at reduced voltage, (58% of rated volts).
- Terminals are No. 6-32 screws with one lockwasher and one flatwasher.
- It is desirable to use a 0.40 amp fuse in the secondary to protect the transformer.
- With three exceptions these transformers are ANSI C57.13 group 1. Those marked \* are group 2.
- The models 467-380 and 469-380 are designed specifically for 50 Hz operation.
- The model 469 is an assembly of two transformers in one case with all terminals accessible, for open delta connection.
- Each transformer has a clear plastic terminal cover.
- Approximate weight:  
Model 467; 2.5 lbs.  
Model 469; 4.5 lbs.

Model 467



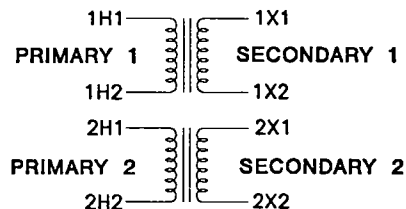
Model 469



### APPLICATION AND ORDERING DATA

CATALOG NUMBER	CATALOG NUMBER	VOLTAGE RATING	TURNS RATIO
467-069	469-069	69.3:120	0.58:1
467-120	469-120	120:120	1:1
467-208	469-208	208:120	1.73:1
467-240	469-240	240:120	2:1
467-288	469-288	288:120	2.4:1
467-300	469-300	300:120	2.5:1
*467-480	*469-480	*480:120	4:1
*467-600	*469-600	*600:120	5:1
*467-380	*469-380	*380:120	3.17:1 for 50Hz

### 469 CONNECTION DIAGRAM



# VOLTAGE TRANSFORMER

## Model 460

**FREQUENCY:**

60 Hz

**STANDARD**

**SECONDARY VOLTAGE:**

120 Volts

**INSULATION LEVEL:**

600 Volt, 10 kV BIL full wave.

**ACCURACY CLASS:**

0.6 W, 1.2 X at 60 Hz.

**THERMAL RATING:**

150 VA at 30°C. amb.,

100 VA at 55°C. amb.

REGULATORY AGENCY APPROVALS



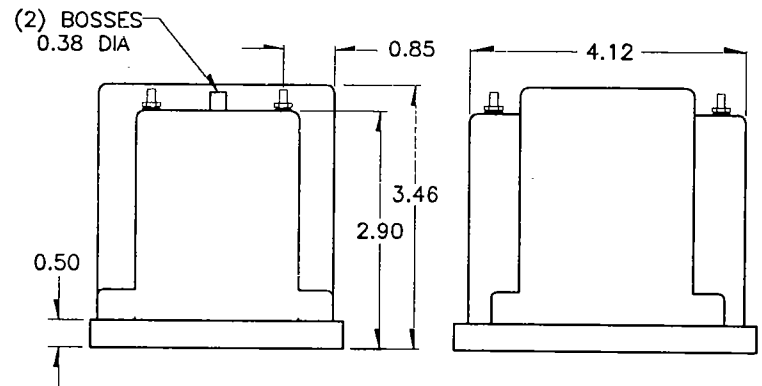
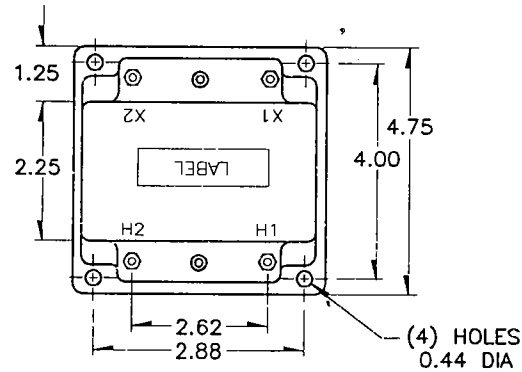
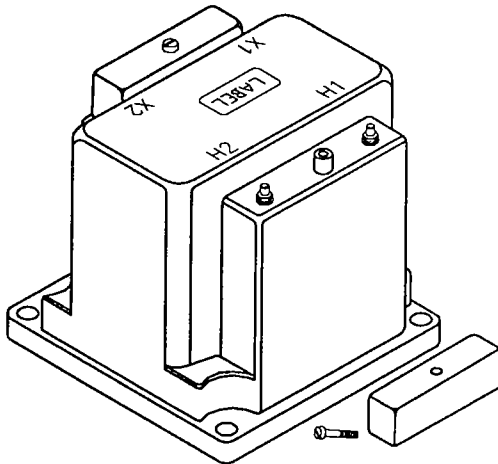
E93779



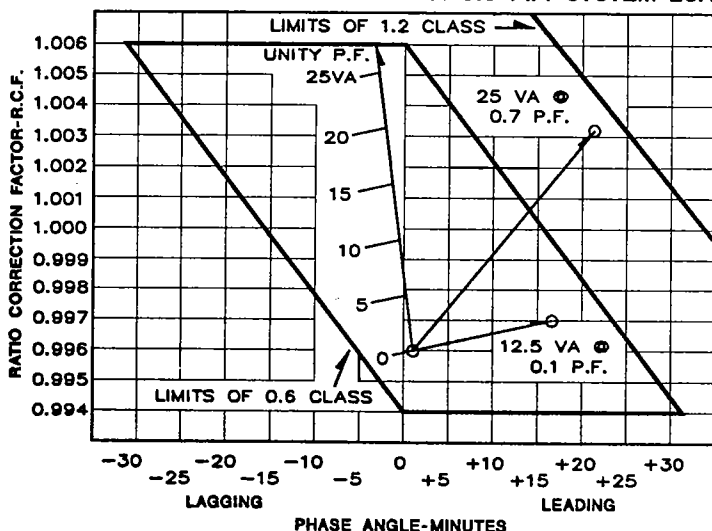
LR89403

Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 186.

- Terminals are brass studs No. 10-32 with one lockwasher, flatwasher and regular nut.
- The core and coil assembly is encased in a thermoplastic shell and filled with resin.
- These transformers are designed for operation line-to-line. They may also be operated line-to-ground or line-to-neutral at reduced voltage, (58% of rated volts).
- It is desirable to use a 1.6 amp fuse in the secondary to protect the transformer.
- With three exceptions these transformers are ANSI C57.13 group 1. Those marked \* are group 2.
- The model 460-380 is designed specifically for 50 Hz operation.
- This page contains a circle diagram for the estimation of the errors for other than rated burdens. See page 12 in this section for a description of its use.
- Each transformer has two plastic terminal covers.
- Approximate weight: 7.75 lbs.



**VOLTAGE TRANSFORMER CIRCLE DIAGRAM**  
THIS GRAPH IS DRAWN FOR A 0.6 P.F. SYSTEM LOAD



CATALOG NUMBER	VOLTAGE RATING	TURNS RATIO
460-069	69.4:120	0.58:1
460-120	120:120	1:1
460-208	208:120	1.73:1
460-240	240:120	2:1
460-288	288:120	2.4:1
460-300	300:120	2.5:1
*460-480	480:120	4:1
*460-600	*600:120	5:1
*460-380	*380:120	3.17:1 for 50Hz

# VOLTAGE TRANSFORMER

Model 468

## FREQUENCY:

60 Hz

## STANDARD

## SECONDARY VOLTAGE:

120 Volts

## INSULATION LEVEL:

600 Volt, 10 kV BIL full wave.

## ACCURACY CLASS:

± 0.6% at all burdens up to 7.5 VA and  
± 1.5% with 20 VA burden.

## THERMAL RATING:

75 VA at 30°C amb.,  
50 VA at 55°C amb.

REGULATORY AGENCY APPROVALS



E93779



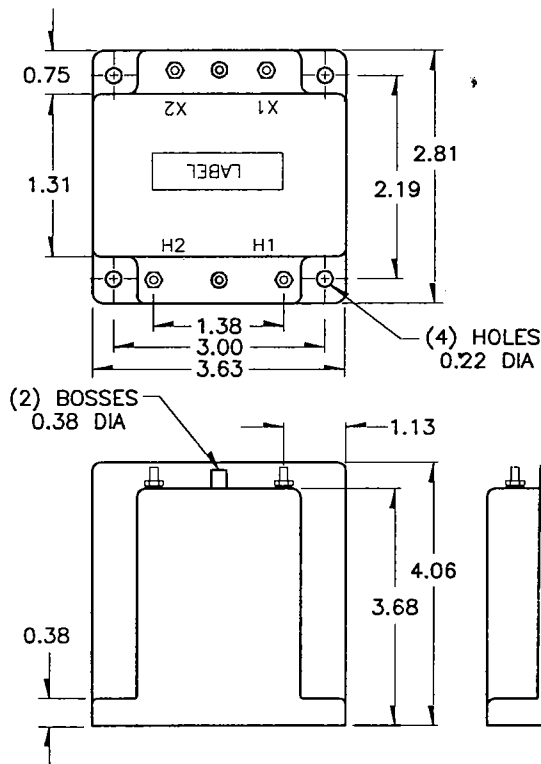
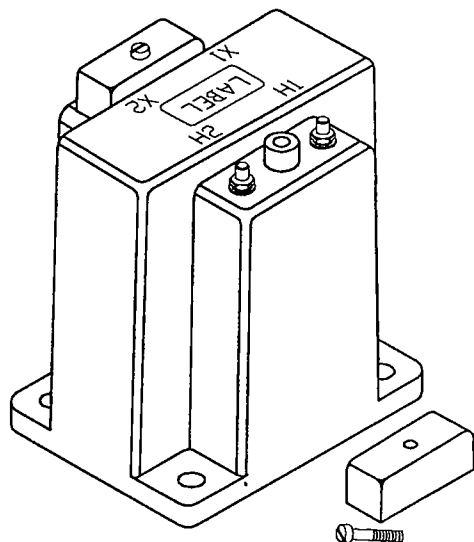
LR89403

Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 186.

- Terminals are brass studs No. 10-32 with one lockwasher, flatwasher and regular nut.
- These transformers are designed for operation line-to-line. They may also be operated line-to-ground or line-to-neutral at reduced voltage, (58% of rated volts).

- It is desirable to use a 0.80 amp fuse in the secondary to protect the transformer.
- With three exceptions these transformers are ANSI C57.13 group 1. Those marked \* are group 2.

- The model 468-380 is designed specifically for 50 Hz operation.
- Each transformer has two plastic terminal covers.
- The core and coil assembly is encased in a thermoplastic shell and filled with resin.
- Approximate weight: 4 lbs.



CATALOG NUMBER	VOLTAGE RATING	TURNS RATIO
468-069	69.3:120	0.58:1
468-120	120:120	1:1
468-208	208:120	1.73:1
468-240	240:120	2:1
468-288	288:120	2.4:1
468-300	300:120	2.5:1
*468-480	*480:120	4:1
*468-600	*600:120	5:1
*468-380	*380:120	3.17:1 for 50Hz

# 3 PHASE VOLTAGE TRANSFORMER

Model 471

FREQUENCY:  
60 Hz

STANDARD  
SECONDARY VOLTAGE:  
120 Volts line-to-line

INSULATION LEVEL:  
600 Volt, 10 kV BIL full wave.

ACCURACY CLASS: (Per Phase)  
0.3 @ 1.0 VA; 0.6 @ 2 VA.  
1.2 @ 4.0 VA.

THERMAL RATING:  
75 VA at 30°C. amb.,  
45 VA at 55°C. amb.  
(25 VA per phase)

REGULATORY AGENCY APPROVALS



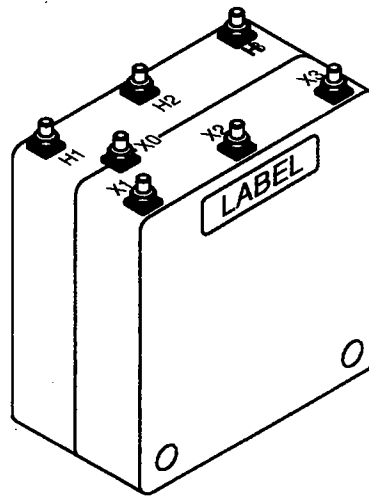
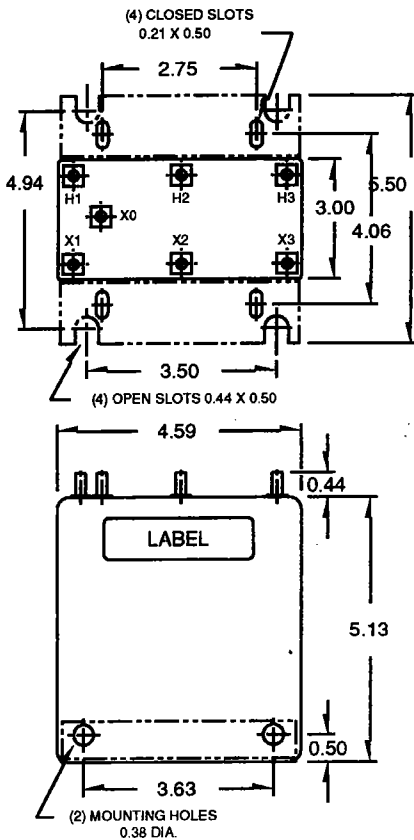
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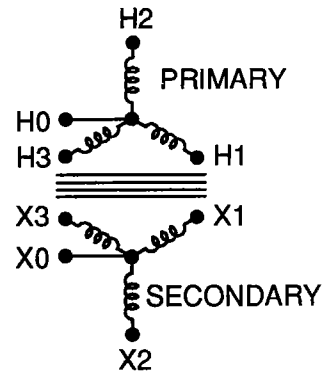
LR89403

Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 186.

- 471 terminals are brass studs No. 8-32 with one lockwasher, flatwasher and regular nut.
- The core and coil assembly is encased in a thermoplastic shell, and filled with resin.
- These transformers are designed for application to Y connected systems.
- Approximate weight: 8 lbs.



Model 471



Order Mounting Bracket  
Kit No. 0221B00541

CATALOG NUMBER	PRIMARY VOLTS LINE/LINE	SECONDARY VOLTS		TURNS RATIO
		LINE/LINE	LINE/NEUTRAL	
471-120-120	120Y	120	69.3	1:1
471-120-208	120Y	208	120	1:1.73
471-208-120	208Y	120	69.3	1.73:1
471-208-208	208Y	208	120	1:1
471-480-120	480Y	120	69.3	4:1
471-480-208	480Y	208	120	2.31:1
471-600-120	600Y	120	69.3	5:1
471-600-208	600Y	208	120	2.88:1

# VOLTAGE TRANSFORMER

## Model 3VT460

- The model 3VT460 is an assembly of three transformers in one case.
- The primary and secondary terminals are No. 8-32 screws into 1/2" deep brass inserts and fitted with one lockwasher and flatwasher.
- The core and coil assembly is encased in a thermoplastic shell and filled with resin.
- These transformers are designed for operation line to neutral when fused, independently when not fused.
- 2 inch spacing between live parts per U.L. 1558.

**FREQUENCY:**  
60 Hz

**STANDARD SECONDARY VOLTAGE:**  
120 Volts Line-to-neutral.

**INSULATION LEVEL:**  
600 Volt, 10 kV BIL full wave.

- Primary fuses are current limiting, 200kA interrupting capacity, incorporating a rejection feature, typically (class CC) KTK-R type.
- The transformer has a clear plastic terminal cover.
- Secondary fuses are 3AG size, 250 volt.
- With three exceptions these transformers are ANSI C57.13 group 1. Those marked \* are group 2.

**ACCURACY CLASS:** (Per Phase)  
0.6 W, 1.2 X AT 60 Hz.

**THERMAL RATING:** (Per Phase)  
150 VA at 30°C. amb.,  
100 VA at 55°C. amb.

REGULATORY AGENCY APPROVALS



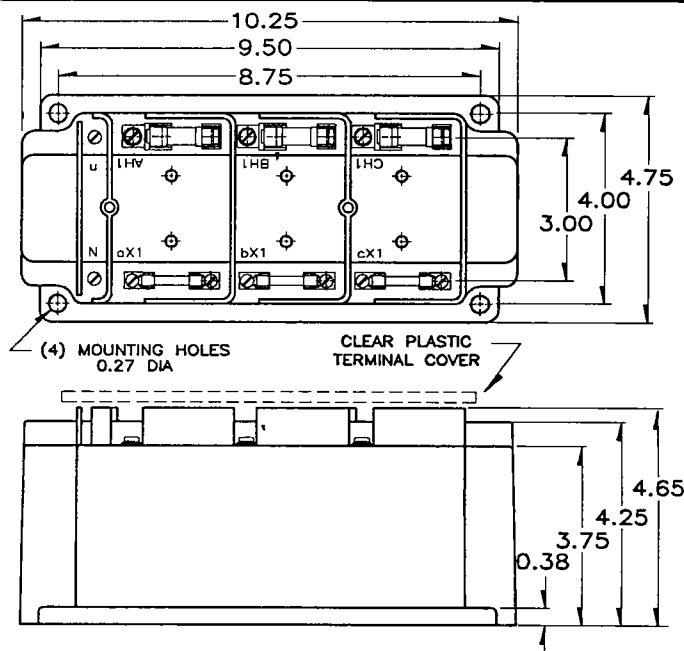
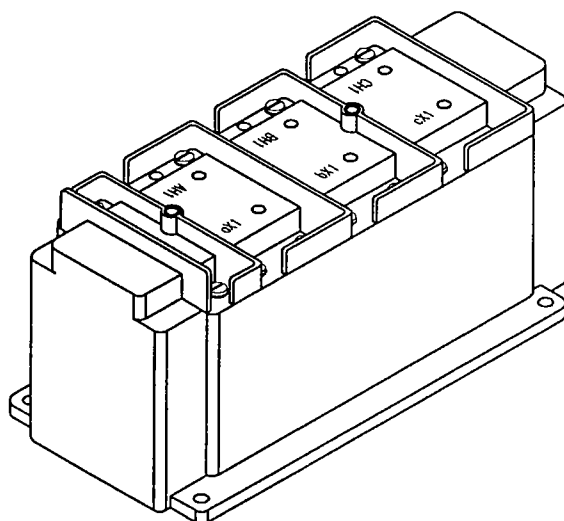
E93779



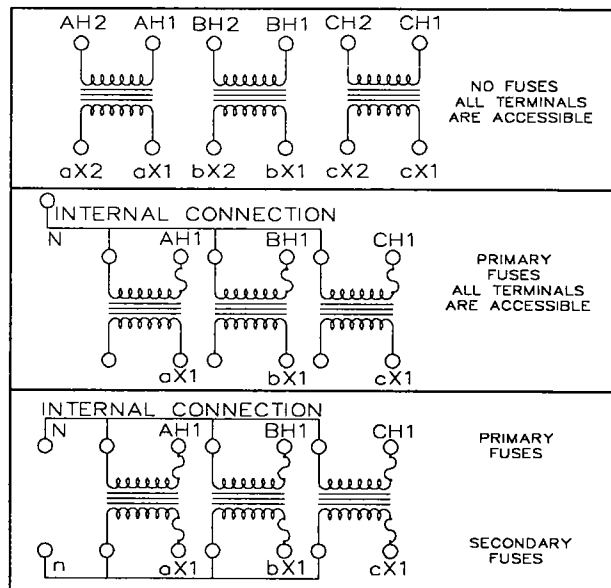
LR89403

Manufactured to meet the requirements of ANSI C57.13.  
Classified by U.L. in accordance with IEC 186.

- The model 3VT460-380 is designed specifically for 50 Hz operation.
- See page 6 of this section for a circle diagram for the estimation of the errors for other than rated burdens. See page 12 in this section for a description of its use.
- Approximate weight: 24 lbs.



CATALOG NUMBER	LINE TO NEUTRAL VOLTAGE RATING	TURNS RATIO	PRIMARY FUSE RATING	SECONDARY FUSE RATING
3VT- 460 - 069*	69.4:120	0.58:1	15A	1.6 AMPS
3VT- 460 - 120*	120:120	1:1	8A	
3VT- 460 - 240*	240:120	2:1	4A	
3VT- 460 - 288*	288:120	2.4:1	3A	
3VT- 460 - 300*	300:120	2.5:1	3A	
LINE-TO-LINE				
**3VT- 460 - 480*	480:120	4:1	2A	
**3VT- 460 - 600*	600:120	5:1	2A	
**3VT- 460 - 380*	380:120	3.17:1	3A	



\* FUSE ORDERING  
INSERT F AFTER PRIMARY VOLTAGE RATING FOR PRIMARY FUSES.  
INSERT FF AFTER PRIMARY VOLTAGE RATING FOR PRIMARY AND SECONDARY FUSES.

CONNECTION DIAGRAMS

# AC CURRENT TRANSDUCER

## Model PCM

*0-300 Amps ac to  
produce 4-20 mA dc*



### OPERATING RANGE:

Input: 0 to 5 thru 300 Amps ac.  
Output: 4 - 20 mA dc.

### FREQUENCY:

50/60 Hz.

### AMBIENT TEMPERATURE RANGE:

- Effect on accuracy:  $\pm 0.04\%/^{\circ}\text{C}$
- Operating:  $-30^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$
- Storage:  $-55^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$

### INSULATION LEVEL:

600 Volt, 10 kV BIL full wave.

### ACCURACY:

$\pm 0.5\%$  F.S. maximum.  
1% maximum peak to  
peak ripple on dc output.

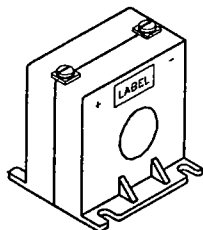
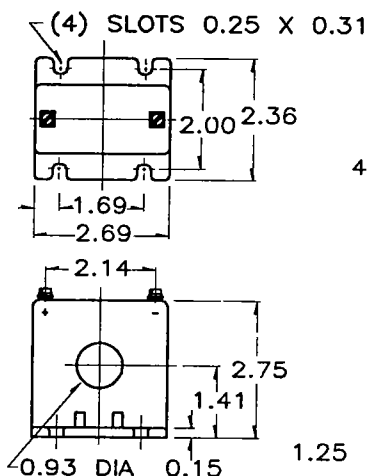
- Output load ( $R_L$ ): 0 to 600 ohms.
- Maximum output: 30 mA dc.
- Supply Voltage Range:  
24V dc  $\pm 10\%$
- Response time: <200ms (10%-90%)
- Repeatability: < 0.1%
- PCM 5-200 terminals are brass  
screws No. 10-32 with one  
flatwasher and lockwasher.
- PCM 300 terminals are brass  
studs No. 8-32 with one  
flatwasher, lockwasher and nut.
- Approximate weight: 1.5 lbs.

The PCM transducer accurately converts a sinusoidal ac input current to a proportional dc output current. The high performance integrated circuit amplifiers achieve a constant current output, insensitive to a variable impedance load. This allows the PCM to be easily applied to remote instrumentation, motor control, and energy management installations. The input circuit is average responding. The output is calibrated to read true RMS for a pure sinusoidal waveform.

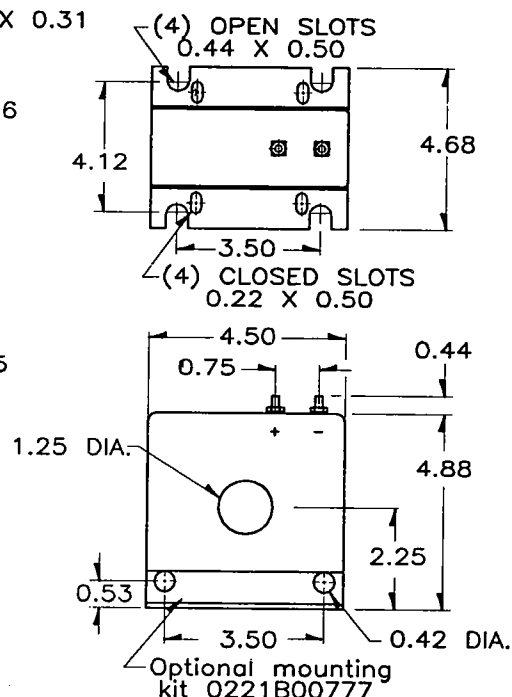
MODEL NUMBER	INPUT CURRENT RANGE
PCM 5	0 - 5
PCM 10	0 - 10
PCM 20	0 - 20
PCM 30	0 - 30
PCM 50	0 - 50
PCM 75	0 - 75
PCM 100	0 - 100
PCM 150	0 - 150
PCM 200	0 - 200
PCM 300	0 - 300

For primary currents which are greater than 300A, the 5A unit may be used in conjunction with higher ratio C.T.'s having a rated 5A secondary.

### PCM 5-200



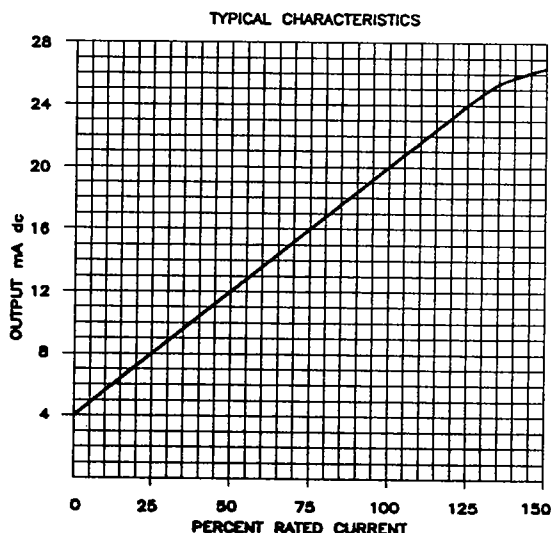
### PCM 300



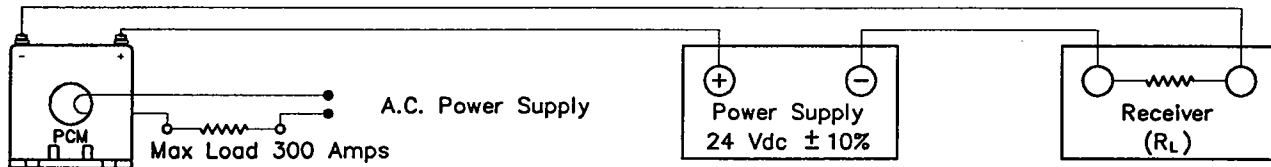
The output requires 24V dc to be applied between the (+) terminal and ground. The output load may be inserted in either the (-) line for a negative ground system or the (+) line for a positive ground system. Power supply polarity is critical for correct operation, but an accidental reverse polarity connection will not damage the output. Several transducers can be operated from a single power supply with the only limitation being the maximum current available from the supply itself. (Example: a one Amp supply will support 50 transducers operating at 20mA dc output.) The maximum output is limited to 30mA dc to prevent damage to external components.

### CAUTION:

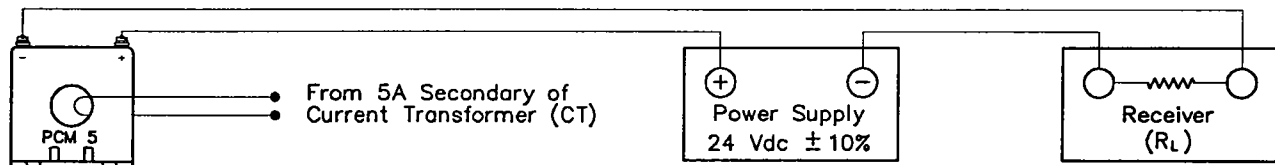
Some consideration should be given to the ripple content of the external power supply. Any extra ripple introduced by the power supply will appear at the load resistor.



## APPLICATION #1 Monitoring Loads 300 Amps or Less



## APPLICATION #2 Monitoring Loads from a Current Transformer Secondary

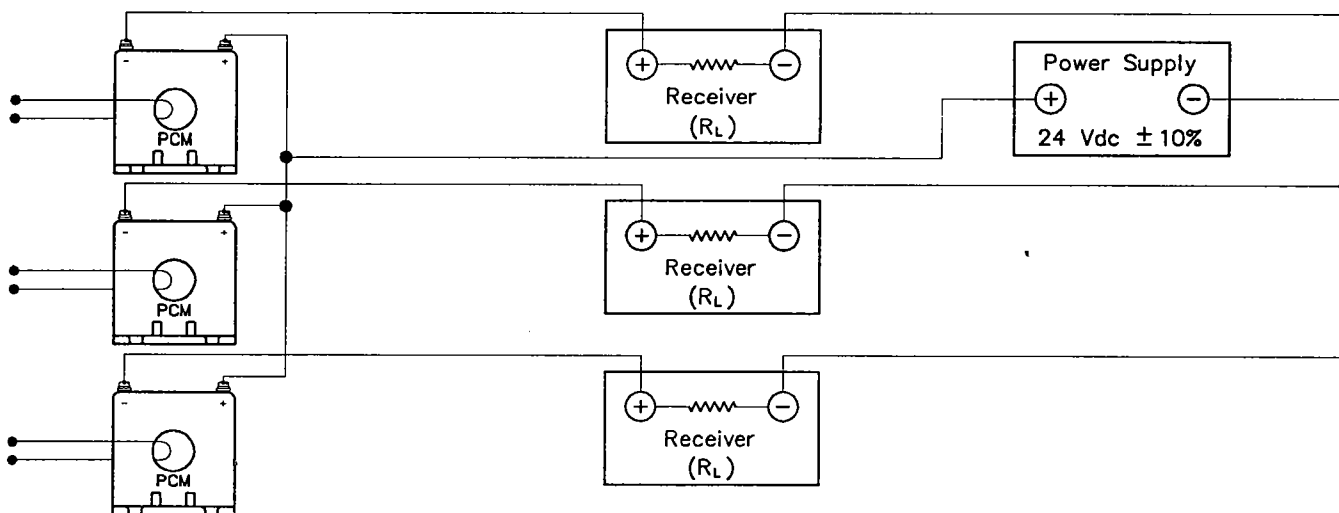


When used with a 2000:5 CT  $I_{in} = 2000 \times \left( \frac{I_o - 4}{16} \right)$

### EXAMPLE

If  $I_o = 10\text{mA}$  then  $I_{in} = 2000 \times \left( \frac{10 - 4}{16} \right) = 750 \text{ amps}$

## APPLICATION #3 Energizing multiple transducers from a single power supply



## APPLICATION NOTES

Calculating:

$I_{in}$  = ac Amps input

$I_o$  = mA dc output

Rated Input = CT Primary Rating (when monitoring a CT)

Rated Input = PCM Primary Rating (when monitoring direct)

Therefore:

$$I_{in} = \text{Rated Input} \times \left( \frac{I_o - 4}{16} \right)$$

NOTE: Output current of each PCM is limited to 30mA max. From this the required output capacity of the D.C. supply can be calculated by multiplying the total number of PCM's times 0.03A to find the maximum required total output current from the supply.

It is possible to achieve an output close to full scale and increase output resolution by using multiple turns through the window of the PCM. The following equation would apply:

$$I_{in} = \frac{\text{Rated Input Amps}}{\text{No. of Turns}} \times \left( \frac{I_o - 4}{16} \right)$$

**EXAMPLE:** A PCM 5 is used with two turns and is monitoring a 2A load.

$$\text{If } I_o = 16.8 \text{ mA then } I_{in} = \frac{5}{2} \times \left( \frac{16.8 - 4}{16} \right) = 2 \text{ Amps}$$

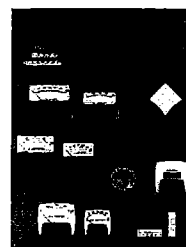
## Other Catalogs Available . . .

### Power Transducers



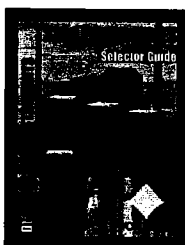
Yokogawa Juxta Power Transducers (models 2469, 2489) are UL recognized and enclosed in a rugged case with either 0.2% or 0.5% accuracy. For complete information, including other models and ratings, request catalog BU-JAC-05E.

### Panel Meters



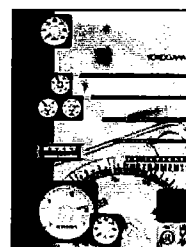
Yokogawa has the broadest line of panel meters available today. In many cases, our panel meters are completely interchangeable with other manufacturer's products. UL and IP54 splash resistant models are available. For more information please request catalog 250260PM-D.

### Digital Panel Meters



The 2350 Series Digital Panel meters provide high accuracy read out of AC and DC inputs and are capable of retransmitting analog signals to remote monitors, recorders and control systems. Available in 1/8 and 1/4 DIN case with single and multifunction capability. For more information please request catalog BU-2350PS-D.

### Switchboard Instruments



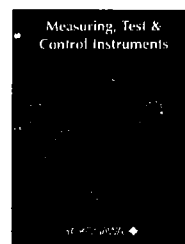
Yokogawa is the world leader in Analog Switchboard Instruments. Catalog 103SBF-02 contains the entire switchboard line including AB/DB 14, 16, 17 and 40, and type 180 edgewise. It also includes the 2180 mini-switchboard meters, potential transformers, transducers and digital switchboard meters.

### Digital Switchboard Meters



The design of the Power SeriesPlus combines a high accuracy digital switchboard meter with a transducer output, which can be configured in the field by the end user. Models are currently available in a single, dual and triple display and each may be programmed through the front panel. For more information please request catalog PSP-01A.

### Measuring, Test & Control Instruments



Yokogawa offers a broad line of portable electrical test equipment. From Digital Clamp-On Ammeters that measure AC/DC current and leakage current to Clamp-Ons with a waveform output that can be sent to an oscilloscope or recorder. For more information, request catalog BU MCC-300-YCA-01E

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