Sifam Tinsley Solid Core AC Current Transformers

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PRECISION INSTRUMENTATION

The Sifam Tinsley line of Solid Core Instrumentation Grade Electrical Current Transformers is available in Commercial Class and ANSI Metering Class. These ANSI Metering Class transformers are intended for power monitoring applications where high accuracy and minimum phase angle error are required.

Two different sensing window opening sizes and two mounting styles, along with numerous secondary ratios, are available to meet most applications.

Features

- Low cost
- Core secured with epoxy resin
- Hand-tuned accuracy
- Supplied with serialized test certificate

Applications

- Use for measurement in conjunction with ammeters, wattmeters, etc.
- Cross current compensation applications of synchronous generators
- Watt/VAR/watt-hour measurement (for use with Socomec Diris, Trumeter, and Sifam Tinsley panel meters)

Sifam Tinsley Omega 30 ANSI Current Transformers

Part Number	Price	Ratio	Output	Solid Core Case Style	Sensing Window	Drawing
2RL-250	$19.50	25:5	5 A secondary	RL	1.05 in [26.67 mm]	PDF
2RL-500	$19.50	50:5				PDF
2RL-101	$19.50	100:5				PDF
2RL-201	$19.50	200:5				PDF
2RL-401 *	$19.50	400:5				PDF
2SFT-250	$20.00	25:5		SFT	1.13 in [28.70 mm]	PDF
2SFT-500	$20.00	50:5				PDF
2SFT-101	$20.00	100:5				PDF
2SFT-201	$20.00	200:5				PDF
2SFT-401 *	$20.00	400:5				PDF

** CSA approval not available on 400A models (2RL-401 and 2SFT-401)*

2RL-201

2SFT-201

E472409

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Sifam Tinsley Omega 30 ANSI Metering Class Current Transformers

Part Number	Price	Ratio	Output	Solid Core Case Style	Sensing Window	Drawing
19RL-401	$53.00	400:5	5 A secondary	RL	4.25 in [107.95 mm]	PDF
19RL-801	$53.00	800:5				PDF
19RL-102	$63.00	1000:5				PDF
19RL-162	$63.00	1600:5				PDF
19RL-202	$63.00	2000:5				PDF
19RL-252	$63.00	2500:5				PDF
19SHT-401	$53.00	400:5		SHT	4.25 in [107.95 mm]	PDF
19SHT-801	$53.00	800:5				PDF
19SHT-102	$63.00	1000:5				PDF
19SHT-162	$63.00	1600:5				PDF
19SHT-202	$63.00	2000:5				PDF
19SHT-252	$63.00	2500:5				PDF

19RL-162

19SHT-162

E472409

Sifam Tinsley Solid Core AC Current Transformers Selection and Connection

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One of the most common uses of current transformers is in metering and power usage, where a 5 A secondary current transformer is connected to a panel meter or a power meter for displaying amperage or recording power. When extremely accurate measurement is required, or when revenue is generated from a power meter, ANSI metering class current transformers are generally selected. The accompanying table describes the characteristics of the ANSI metering class transformer.

The primary selection criteria is the burden placed on the secondary of the transformer. This is the impedance of the instrument that is connected to the transformer. This value is generally given in ohms or VA (volt-amps).

For ANSI-class transformers, the headings at the top of the table (B0.1 through B0.9) organize the accuracy of the transformer according to the burden placed on the secondary. For example, B0.1 means a burden of 0.l Ω.

The accuracies listed under the burden values are given as percentages of a full-scale reading. Percent accuracy means that the reading received from the transformer at the burden listed will be within the percentage given of ideal. Hence, a 1600-to-5 turns ratio transformer with 1600 A through the window will output 5 A ±0.3% in the secondary into a 0.1 Ω burden. The current in the secondary will be somewhere between 4.985 and 5.015 A.

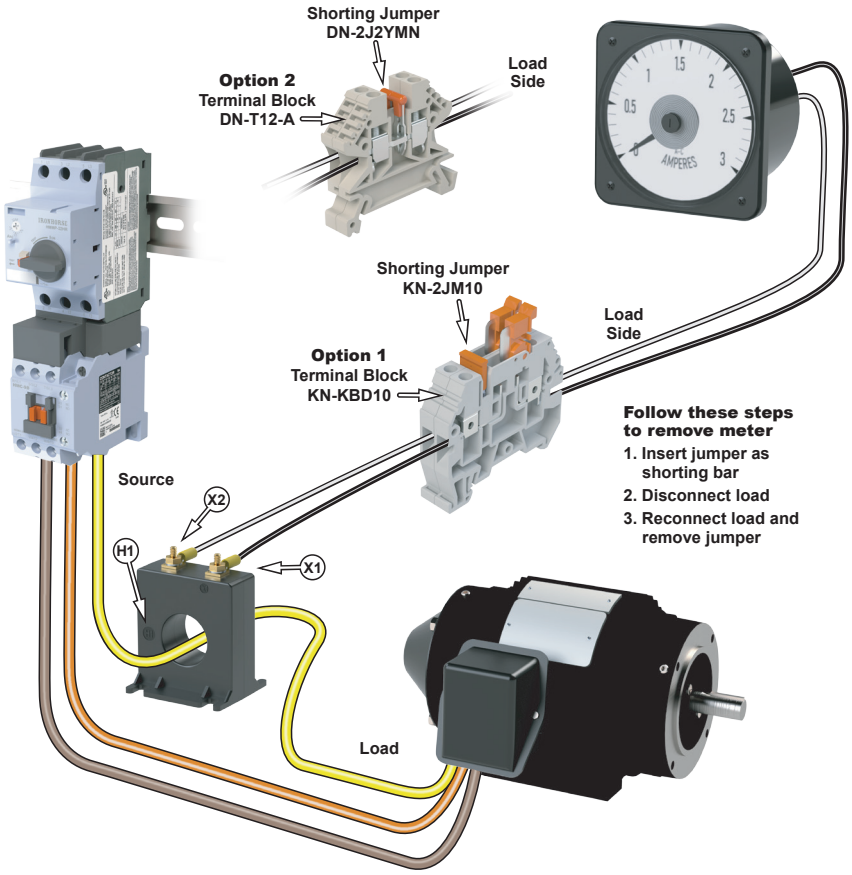
ANSI Metering Class @ 60Hz Turns Ratio [Current Ratio] = 1600:5				
Burden in Ohms	B0.1	B0.2	B0.5	B0.9
Percent Accuracy	0.3	0.3	0.6	0.6

When the instrument connected gives the burden to the transformer in VA (volt-amps), the table can be used to determine accuracy. Since the transformer has a 5A secondary, the impedance can be determined using Ohm's Law. A burden of 5 VA must be equal to the current squared times the impedance in ohms ($P = I^2*Z$, where P=burden in VA, I=CT secondary current in amps, and Z=impedance in ohms). By solving for the impedance ($Z=P/I^2$), 5 VA/(5X5) = 0.2 Ω, and the accuracy of this transformer-meter system would be ±0.3%. Any additional impedance resulting from the instrument wiring must also be taken into consideration.

If the connected impedance falls between two values shown, use interpolation to determine accuracy.

In general, the lower the burden, the higher the accuracy.

It is critical to understand that the accuracy ratings are for a full-scale reading. This accuracy will only be maintained at 20% full scale and above. Below this, the accuracy worsens greatly. Always strive to select transformers so that the majority of readings will be within the 20% to 100% of full-scale range.



Connecting a Current Transformer

A current transformer (CT) should never be energized (AC current through the sensing window) without a load connected to the secondary output terminals (X1, X2). Best practice is to terminate the current transformer secondary on a terminal block with the ability to short between two points before extending the leads to the load. If it is ever necessary to remove the load from the CT while the primary circuit is or could become energized, a shorting bar can be placed between the secondary leads, as shown in the illustration below. This will allow the leads to be removed safely.

Sifam Tinsley Solid Core Omega 30 ANSI Current Transformers

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Sifam Tinsley Omega 30 (2RL-xxx and 2SFT-xxx) ANSI Current Transformers Specifications					
Models	***2RL-250 2SFT-250***	***2RL-500 2SFT-500***	***2RL-101 2SFT-101***	***2RL-201 2SFT-201***	***2RL-401 2SFT-401***
Primary (Input) Current Range	0-25 A AC	0-50 A AC	0-100 A AC	0-200 A AC	0-400 A AC
Secondary (Output) Current Range	0-5 A AC				
Rated Frequency	50-400 Hz (UL tested at 60 Hz only)[1]				
Primary System Voltage Rating	600 VAC				
Basic Insulation Level	10 kV full wave				
Secondary Connections	**RL:** 16 AWG conductors, 24 in [61 cm] long, UL1015, 105 °C, CSA Approved **SFT:** 8-32 brass terminal stud with one M4 type flat washer, lock washer & hex nut size 8-32 UNC Use M4 ring terminal - Terminal torque 13 lb•in [1.5 N•m]				
Current Ratio	25:5	50:5	100:5	200:5	400:5
Rated Burden at 60Hz	1.0 VA	1.5 VA	2.0 VA	4.0 VA	8.0 VA
Accuracy	±5%	±3%	±1%		
Continuous Rating Factor (RF)[2]	1.0 @ 30 °C [86 °F]				
Operating Temperature Range	-30 to +55 °C [-22 to +176 °F]				
Humidity	Up to 95% non-condensing				
Storage Temperature Range	-50 to +80 °C [-58 to +176 °F]				
Altitude	Maximum 6561.68 ft [2000 m]				
Core Type	Fixed/solid core				
Case Material	10% glass-filled polycarbonate, flame retardant UL 94V-0				
Mounting	**RL:** pass-through conductor mounting **SFT:** panel mounting				
Approvals[3]	UL recognized file E472409; CSA file 216907; CE certified; Meets IEEE C57.13				

Notes:

1: Not suitable for installation on the output circuit of a Variable Frequency Drive (VFD).

2: RF = the maximum current at which a CT can operate continuously without exceeding the thermal limits of its insulation at the specified ambient temperature. Value is expressed as a multiple of the primary current rating. I.e.,- a 400:5 C.T. with an RF of 1.0, the C.T. will continuously accept 400 X 1.0 = 400 A AC on the primary with 5 X 1.0 = 5 A AC from the secondary.

3: To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.

Sifam Tinsley Solid Core Omega 30 ANSI Metering Class Current Transformers

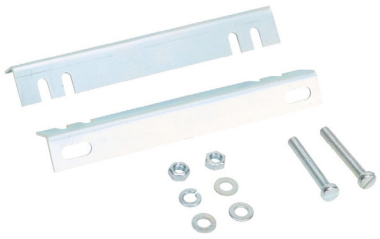
Sifam Tinsley Omega 30 (19RL-xxx and 19SHT-xxx) ANSI Metering Class Current Transformers Specifications							
Models		***19RL-401 19SHT-401***	***19RL-801 19SHT-801***	***19RL-102 19SHT-102***	***19RL-162 19SHT-162***	***19RL-202 19SHT-202***	***19RL-252 19SHT-252***
Primary (Input) Current Range		0-400 A AC	0-800 A AC	0-1000 A AC	0-1600 A AC	0-2000 A AC	0-2500 A AC
Secondary (Output) Current Range		0-5 A AC					
Rated Frequency		50 - 400 Hz (UL tested at 60 Hz only)[1]					
Primary System Voltage Rating		600 VAC					
Basic Insulation Level		10 kV full wave					
Secondary Connections		**RL:** 16 AWG conductors, 24in [61cm] long, UL1015, 105°C, CSA Approved **SHT:** 8-32 brass terminal stud with one M4 type flat washer, lock washer & hex nut size 8-32 UNC Use M4 ring terminal - Terminal torque 13 lb•in [1.5 N•m]					
Current Ratio		400:5	800:5	1000:5	1600:5	2000:5	2500:5
Rated Burden at 60Hz for ± 1% Accuracy		10 VA	30 VA	30 VA	15 VA	20 VA	20 VA
ANSI Metering Class at 60Hz[2]	***B0.1***	0.3 %	0.3 %				
	B0.2	0.6 %	0.3 %				
	B0.5	1.2 %	0.6 %				
	B0.9	N/A	0.6 %				
Continuous Rating Factor (RF)[3]		2.0 @ 30 °C [86°F] 2.0 @ 55 °C [131°F]	1.5 @ 30 °C [86 °F] 1.33 @ 55 °C [131 °F]	1.33 @ 30 °C [86 °F] 1.0 @ 55 °C [131 °F]	1.5 @ 30 °C [86 °F] 1.0 @ 55 °C [131 °F]	1.33 @ 30 °C [86 °F] 1.0 @ 55 °C [131 °F]	1.0 @ 30 °C [86 °F] 0.8 @ 55 °C [131 °F]
Operating Temperature Range		-30 to +55 °C [-22 to +131 °F]					
Humidity		Up to 95% non-condensing					
Storage Temperature Range		-50 to +80 °C [-58 to +176 °F]					
Altitude		Maximum 6561.68 ft [2000 m]					
Core Type		Fixed/solid core					
Case Material		10% glass-filled polycarbonate, flame retardant UL 94V-0					
Mounting		**RL:** pass-through conductor mounting **SHT:** panel mounting (mounting feet available: SPAR-SA00-2337)					
Approvals4		UL recognized file E472409; CE certified; Meets IEEE C57.13 To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page.					

1: Not suitable for installation on the output circuit of a Variable Frequency Drive (VFD).

2: % accuracy at the specified burden impedance in Ω., i.e., a CT with an ANSI metering class B0.1 value of 0.3 % will have a ±0.3 % accuracy when the burden (load) on the secondary circuit does not exceed 0.1 Ω.

3: RF = the maximum current at which a CT can operate continuously without exceeding the thermal limits of its insulation at the specified ambient temperature. Value is expressed as a multiple of the primary current rating, i.e., for a 400:5 CT with an RF of 1.0, the C.T. will continuously accept 400 X 1.0 = 400A AC on the primary with 5 X 1.0 = 5 A AC from the secondary. UL testing done @ RF=1.

Accessories



SPAR-SA00-2337

Sifam Tinsley Solid Core Omega 30 ANSI Current Transformer Accessory Selection Guide			
Part Number	***Price***	***Description***	***Drawing***
SPAR-SA00-2337	$15.50	Sifam Tinsley mounting hardware, for use with 19SHT type Omega 30 series current transformers. Mounting bracket and bolts included.	PDF