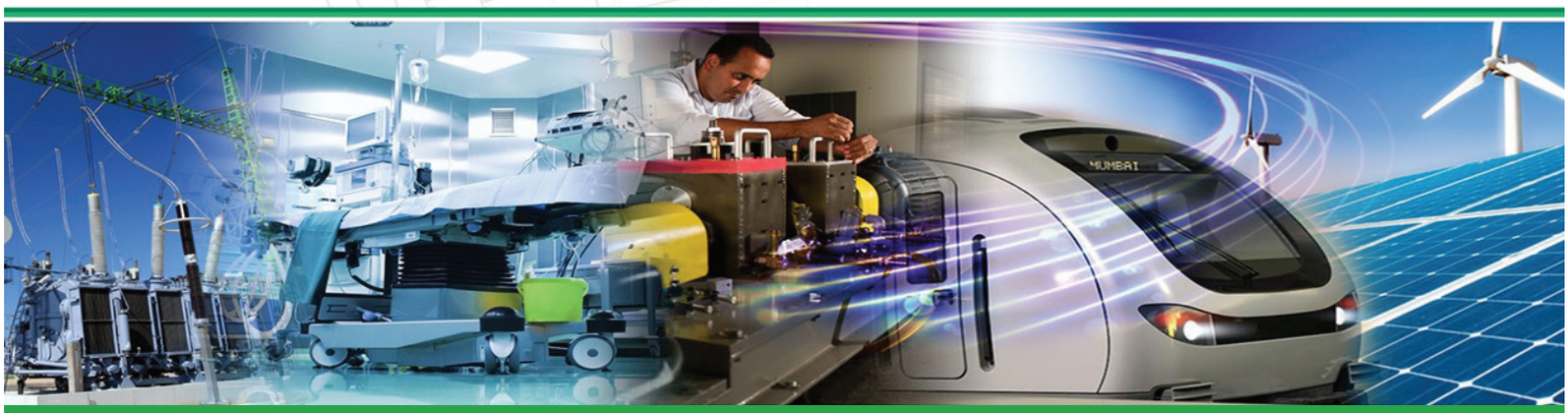
Current and Voltage Transformer



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Solutions for a connected, electric world

Investigate | Ideate | Define | Prototype | Test | Deliver

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Current and voltage Transformers from Electrohms

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Current and voltage measurement from Electrohms

Competence that you can rely on Profit from over 40 years of experience in current and voltage measurements. As an expert in electrical engineering, we offer sensors that can handle rough applications like rail, mining, offshore windmills, compact drive solutions and many more.

FAST DEVELOPMENT TIME

Digital tools for rapid prototyping and design and great engineers deliver your projects on time.

A full range of standard AC, Pulse and Split core sensor design thoroughly tested are readily available and can be customised to your needs.

TRACTION SENSORS

Our focus is on delivering unquestionable reliability for customers in a range of extreme operating conditions using a 6-sigma approach.

We are ISO 9001 certified and our products are CE marked and UL approved on customer request. We utilise best of class materials, which are UL, approved and ROHS certified.

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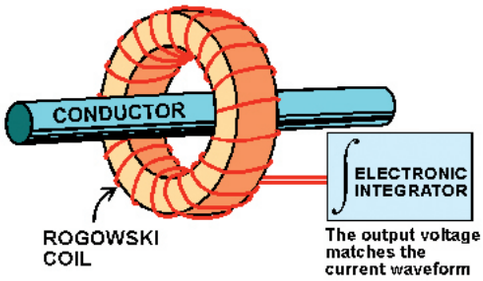
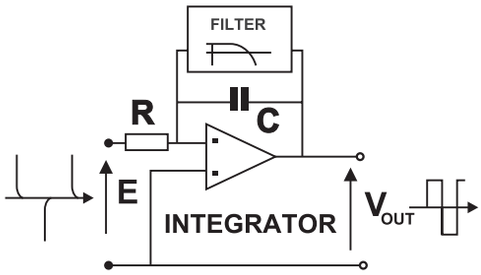
How does Rogowski Coil Work?

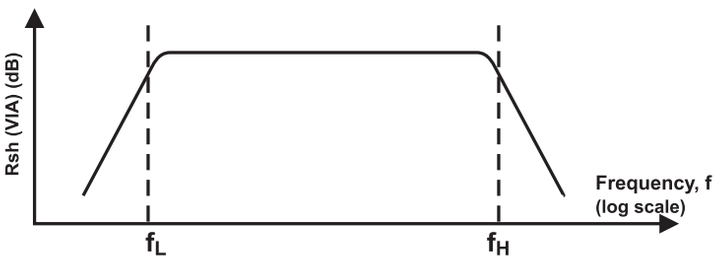
An alternating or pulsed current in a conductor develops a magnetic field and the interaction of this magnetic field and the Rogowski coil local to the field gives rise to an induced voltage within the coil which is proportional to the rate of change of the current being measured. Provided the coil constitutes a closed loop with no discontinuities, it may be shown that the voltage E induced in the coil is proportional to the rate of change of the encircled current I according to the relationship E=H.dI/dt, where H, the coil sensitivity in (Vs/A), is proportional to NA.

To obtain an output voltage VOUT proportional to I it is necessary to integrate the coil voltage E; hence an electronic integrator is used to provide a bandwidth extending down to below 1Hz. The op-amp integrator, in its simplest form, with an input resistor Rsh and feedback capacitor C has an output Vout=(1/CR)∫ Edt. The overall transducer gain is therefore given by, Vout=RshI, where Rsh= H/CR is the transducer sensitivity (V/A). The relationship Vout proportional to I is valid throughout the transducer bandwidth. The bandwidth is defined as the range of frequencies from fL to fH for which sinusoidal currents can be measured to within 3dB of the specified sensitivity Rsh.





At low frequencies the integrator gain increases and in theory will become infinite as the frequency approaches zero. This would result in unacceptable dc drift and low frequency noise; hence the integrator gain has to be limited at low frequencies. This limitation is achieved by placing a low pass filter in parallel with the integrating capacitor. The low pass filter sets the low frequency bandwidth fL, typically this is less than 1Hz.



Rogowski coil and integrator frequency response

Furthermore, due to the distributed inductance and capacitance of the Rogowski coil there is a high frequency bandwidth fH, (generally 1MHz or greater) above which the measurement is attenuated, and significant phase delay occurs. The bandwidth of the electronic integrator and the length of cable connecting the integrator to the coil also influence this limit.

Over many years, ELECTROHMS has developed mathematical models of the Rogowski coil, cable and integrator allowing us to develop reliable, accurate current transducers in a variety of sizes for an ever-growing market.

Using a Rogowski coil to measure AC or fast transient currents has many advantages over other methods of current measurement:

- Simple to retro-fit, the clip-around Rogowski coil sensor is thin, lightweight, flexible and robust
- Coil size is not dependent on the magnitude of the current to be measured
- Non-Intrusive (presents the equivalent of only a few pH to the circuit under test)
- Wide-bandwidth devices with predictable frequency response, ideal for power quality measurement or monitoring complex waveforms.
- Intrinsically safe - No danger of an open circuit secondary.
- Galvanic isolation
- Excellent linearity (Rogowski coils have no magnetic materials to saturate)
- Capable of taking huge overload currents without damage
- Immune to DC Currents - as a result it can measure small AC currents in the presence of a large DC component

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High Accuracy Current Transformers

Product Code	IP(Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination	Remarks
CT1052-A1-RC	0.25-20	1:2500	90	120-145	0.5	0.5	PCB	
CT1164-A1-RC	0.25-60	1:2500	37.5	62-75	0.1	0.2	PCB	
CT1176-RC	0.25-20	1:2500	90	98-120	0.5	0.5	PCB	
CT1216-A1-RC	1-300	1:2000	6.8	21	0.1	0.1	Fly Lead	
CT1248-A2-RC	0.05-10	1:1500	75	45-60	0.2	0.5	PCB	
CT1267-A1-RC	0.25-40	1:2500	30	86-105	0.1	0.25	PCB	
CT1273-A1-RC	1-100	1:2500	7.5	37-47	0.1	0.2	PCB	
CT1275-A1-RC	1-100	1:2500	7.5	37-47	0.1	0.2	Fly Lead	
CT1295-RC	0.25-60	1:2500	37.5	62-75	0.1	0.2	Fly Lead	
CT1171-RC	0.25-20	1:2500	90	98-120	0.5	0.5	PCB	With Shield
CT1316-RC	0.25-40	1:2500	100	108-138	0.1	0.25	PCB	
CT1343-RC	15	1:2000	20	200	0.1	0.25	PCB	Overload 25A
CT1341-RC	0.05-15	1:2500	50	260	0.1	0.25	PCB	
CT1340-RC	0.05-10	1:1500	15	100	0.1	0.2	PCB	

Medium Accuracy Current Transformers

Product Code	IP(Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination	Remarks
CT1231-RC	0.25-30	1:2500	30	105-135	<0.3	<1	PCB	
CT1232	0.25-20	1:2500	30	145	<0.3	<1	Fly Lead	

DC Tolerant Current Transformers

Product Code	IP(Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination	Remarks
CT1332-RC	1-120	1:2500	6.25	91	0.7	3.5	PCB	

Protection & Control Current Transformers

Product Code	IP(Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination	Remarks
CT1202	40	1:1000	100	36 - 46	...	...	Fly Lead	
CT1270	0.05-5	1:700	10	28	1.5	...	PCB	
CT1278	5-60	1:4000	390	219-279	<3	...	PCB	
CT1202-C1-RC	40	1:1000	100	36 - 46	...	...	Fly Lead	UL material
CT1337-RC	0.030-0.30	1:500	100	16	...	...	PCB	
CT1292-B1	100	1:1800	25	46	<1.5	<1	Fly Lead	

AC Split Core Current Output Current Transformers

Product Code	IP(Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	AE (%)	PE (Deg)	Secondary Termination	Remarks
ST1338	100A	1:3000	10Ω	290Ω	≥2%	≤ 2.0%	Fly leads	

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Special Purpose Protection class Current Transformer

Product Code	Differential current (Arms)	Turns Ratio	Rb (Ohms)	DCR (Ohms)	Test Winding	V O/P across P1-P2	Secondary Termination	Remarks
CT1317	0.05 ±10%	1:645	10K	38-46	2	0.2-0.37	PCB	Self-Test application

AC Split Core Signal Conditioned Current Transformers

Product Code	IP (Arms)	Primary conductor temp.	Internal dia	Output Signal	Accuracy	Linearity	PE(Deg)	Temp. drift	Remarks
ST1343	80A	100 °C	10mm	4 - 20mA	≤ 2%	≤ 2%	≤0.4 %	≤5%	

AC Split Core Voltage Output Current Transformers

Product Code	IP (Arms)	Primary conductor temp.	Internal dia	Output Signal	Accuracy	Linearity	PE(Deg)	Temp. drift	Remarks
ST1362-V33305...10	5 to 10A	100 °C	6.3 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	
ST1361-V33305...80	5 to 80A	100 °C	10 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	
ST1339-V333050 ...120	50 to 100A	100 °C	16 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	
ST1348-V333100 ...300	100 to 300A	100 °C	24 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	
ST1357-V333100 ...600	100 to 600A	100 °C	36.5 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	
ST1358-V333100...1K0	100 to 1000A	100 °C	50 mm	0 to 0.333V	≤ 0.5 to 1%	≤0.5 to1%	≤0.4 %	≤5%	

Rogowski Coils

Product Code	IP(Arms)	Diameter	Position Error	PE (Deg)	AE (%)	Isolation Voltage	Response bandwidth	Remarks
RC1250-F	1250	100mm	±1%	≤ 0.5°	1	3.5KV	1 to 1MHz	

Voltage Transformer

Product Code	Input voltage V	Maximum input voltage V	Turns Ratio	Frequency Hz	Rec Secondary Load Resistor Ω	Output at rated input voltage V	Isolation in KV
VT1342	400	580	1:174	50/60	3.3K	2.3	2.5
VT1329	110	220	1:48	50/60	3.3K	2.3	2.0
VT1090	110	NA	1:1	50/660	22K	4.3	4.0

Isolation Voltage Transformer

Product Code	Turns Ratio	Frequency Hz	DCR Primary Ω	DCR Secondary Ω	Isolation in KV
VT1211	1:1	50/60	135 - 165	135-165	2.5

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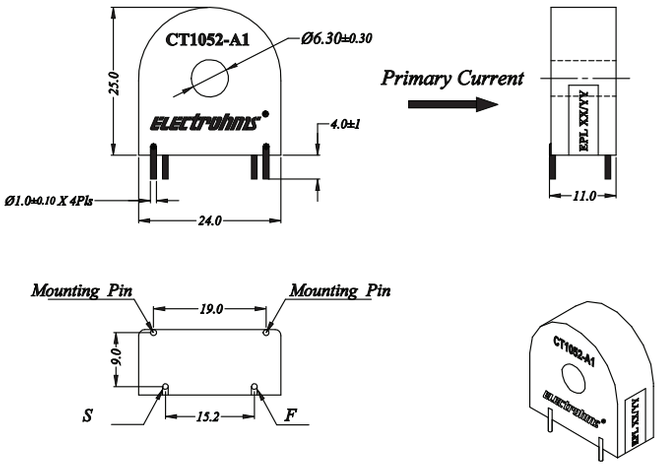
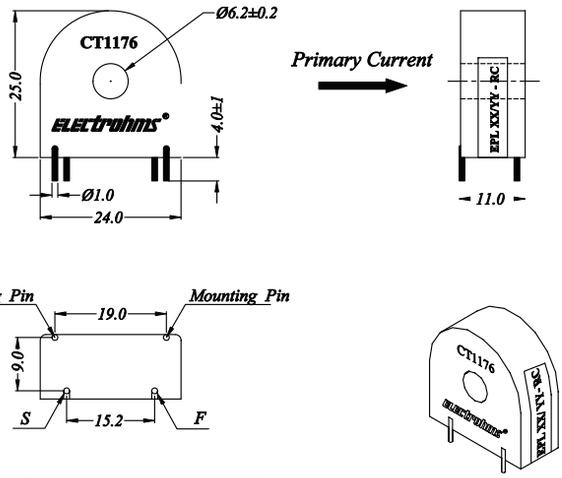
CT 1052-A1-RC



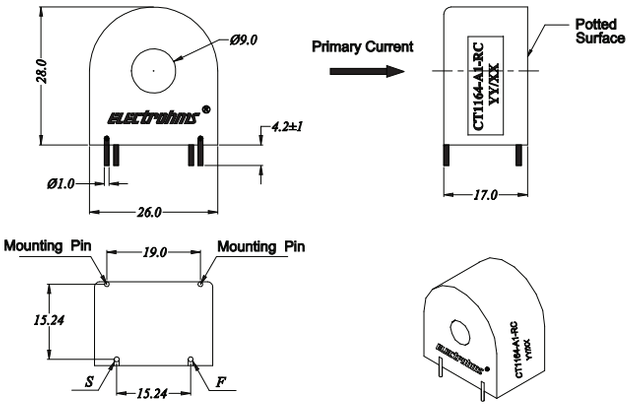
TERMINATION DETAILS	
F	Finish
S	Start

CT1176-RC



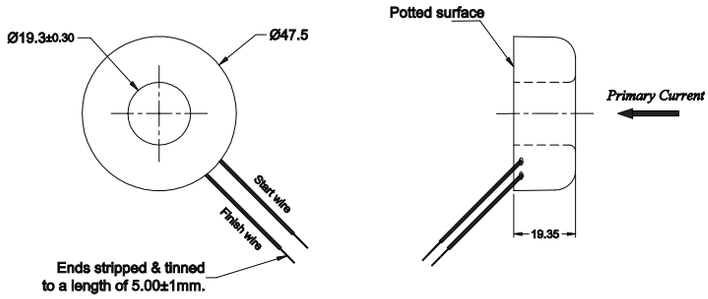
TERMINATION DETAILS	
F	Finish
S	Start

CT1164-A1-RC



TERMINATION DETAILS	
F	Finish
S	Start

CT1216-A1-RC



Start Wire: Red PVC Wire, 7 Strands x 0.2mm, length 300±5mm.
Finish Wire: Black PVC Wire, 7 Strand x 0.2mm, length 300±5mm.

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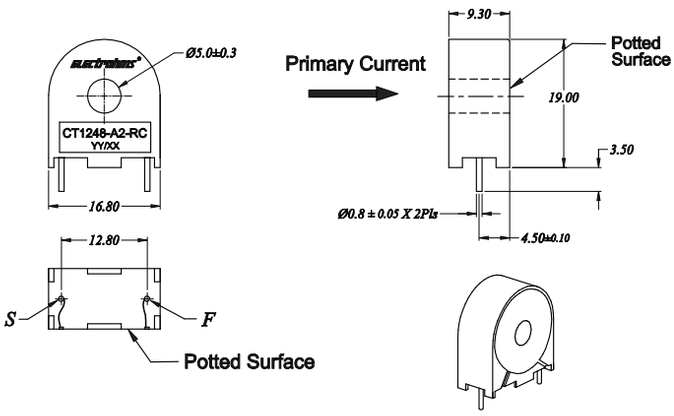
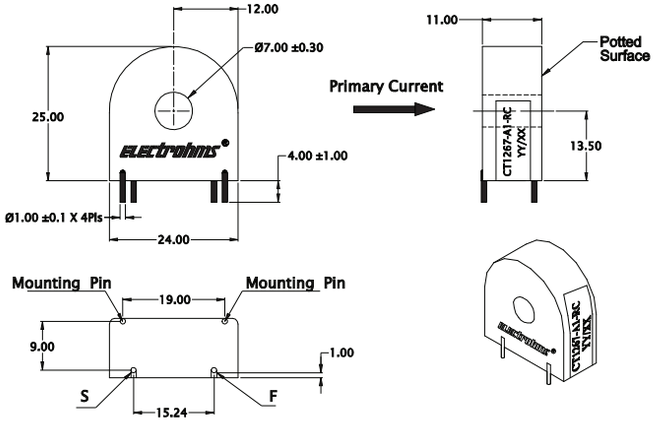
CT1248-A2-RC



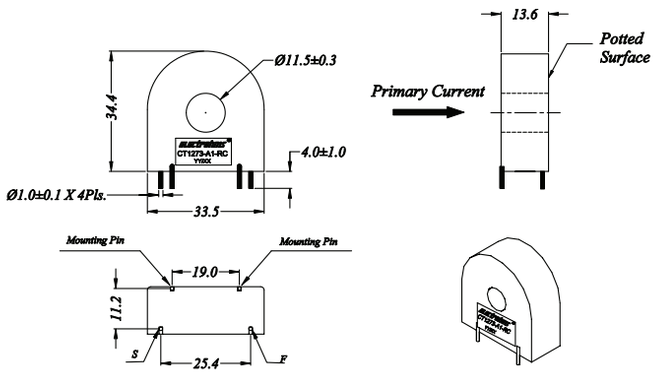
TERMINATION DETAILS	
F	Finish
S	Start

CT1267-A1-RC



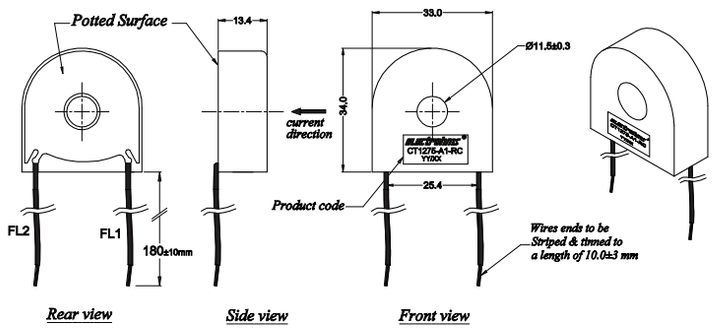
TERMINATION DETAILS	
F	Finish
S	Start

CT1273-A1-RC



TERMINATION DETAILS	
F	Finish
S	Start

CT1275-A1-RC



FL1: Wire-PVC, 7X0.2mm 24 AWG, Red (Start)
FL2: Wire-PVC, 7X0.2mm 24 AWG, Black (Finish)

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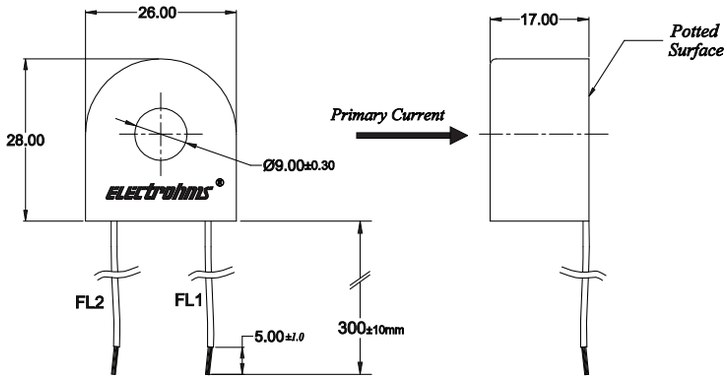
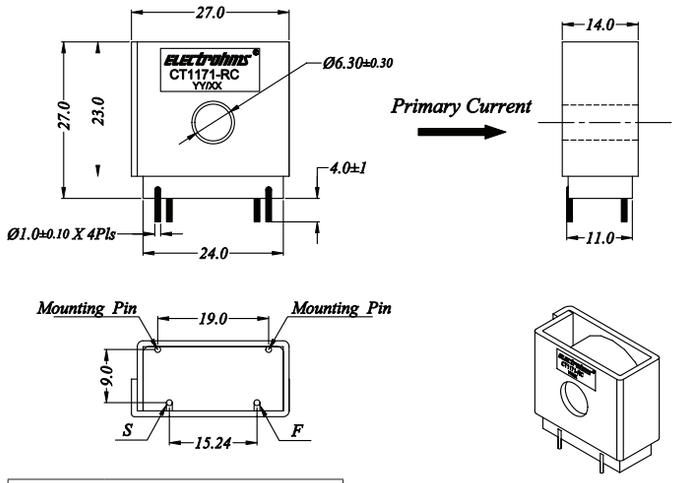
CT1295-RC



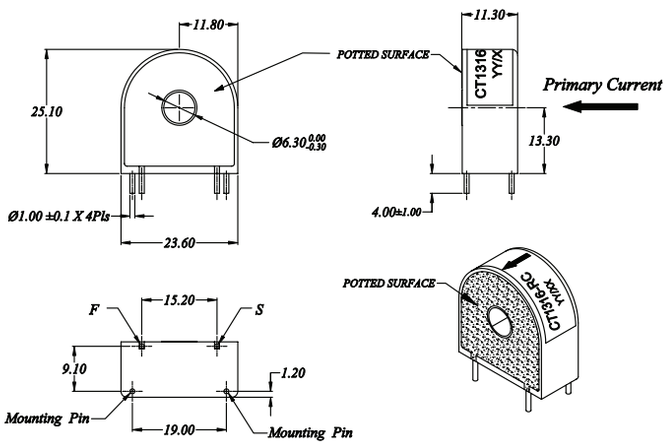
FL1: Wire-PTFE, 7 X 0.2mm OD: 1.21mm, Blue
300±10.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm OD: 1.21mm, White
300±10.0mm Length (Finish)

CT1171-RC



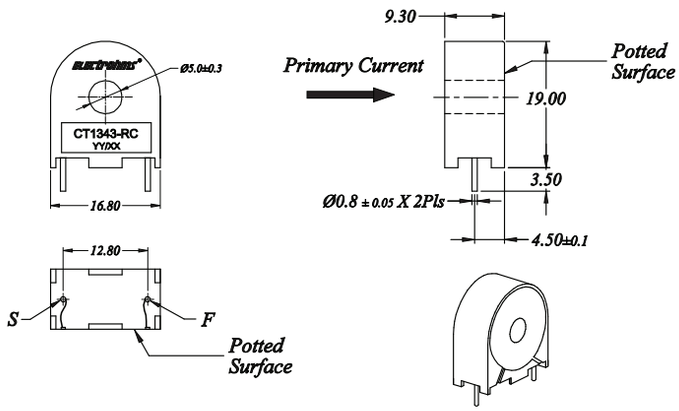
TERMINATION DETAILS	
F	Finish
S	Start

CT1316-RC



TERMINATION DETAILS	
F	Finish
S	Start

CT1343-RC



TERMINATION DETAILS	
F	Finish
S	Start

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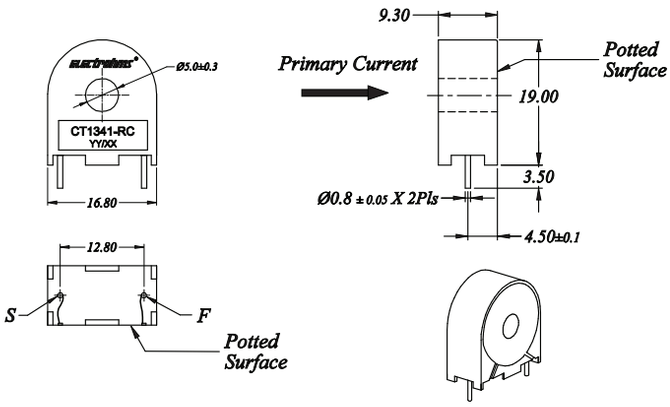
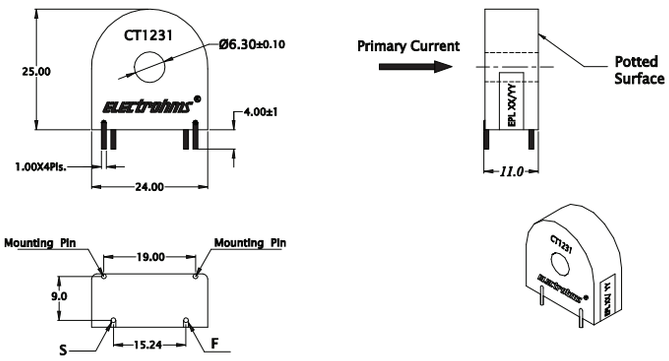
CT1341-RC



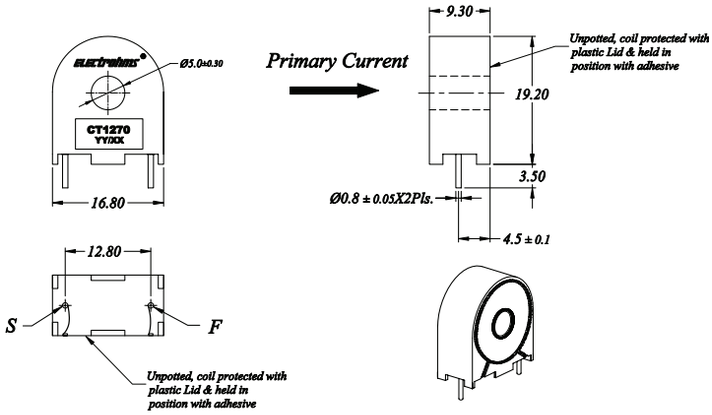
TERMINATION DETAILS	
F	Finish
S	Start

CT1231-RC



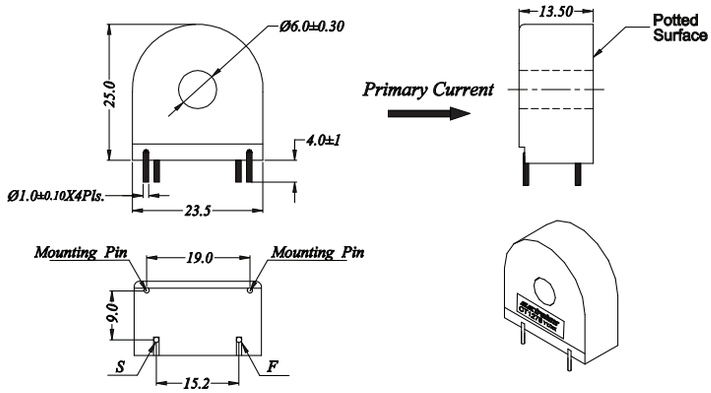
TERMINATION DETAILS	
F	Finish
S	Start

CT1270



TERMINATION DETAILS	
F	Finish
S	Start

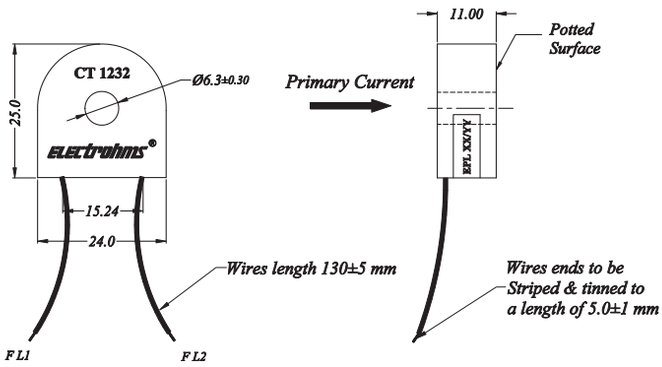
CT1278



TERMINATION DETAILS	
F	Finish
S	Start

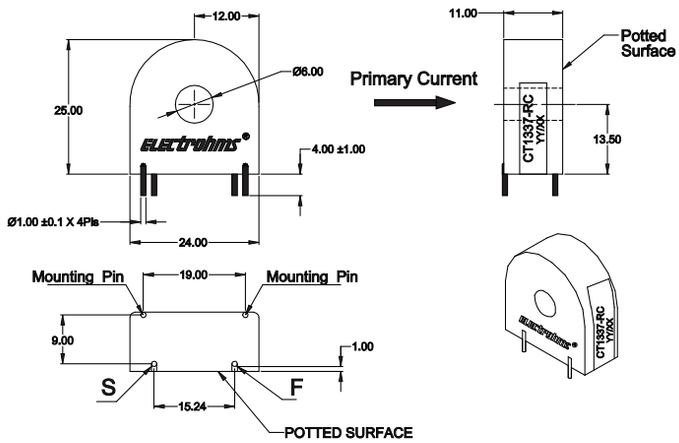
Solutions for a connected, electric world

CT1232



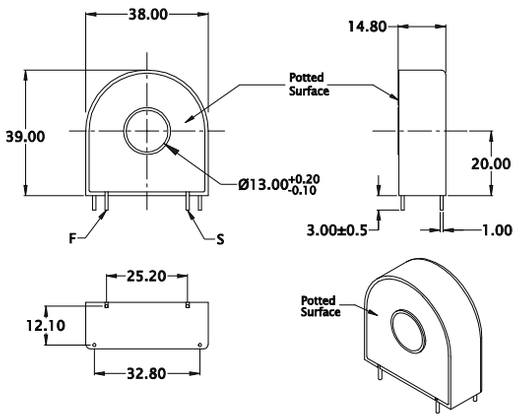
FL1: Wire-PTFE, 7 X 0.2mm, Red 130±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 130±5.0mm Length (Finish)

CT1337-RC



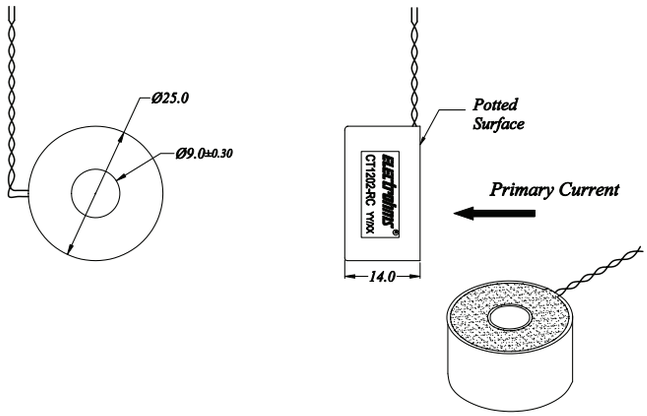
TERMINATION DETAILS	
F	Finish
S	Start

CT1332-A1-RC



TERMINATION DETAILS	
F	Finish
S	Start

CT1202-RC/CT1202-C1-RC



FL1: Wire-PTFE, 7 X 0.2mm, Red 130±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 130±5.0mm Length (Finish)

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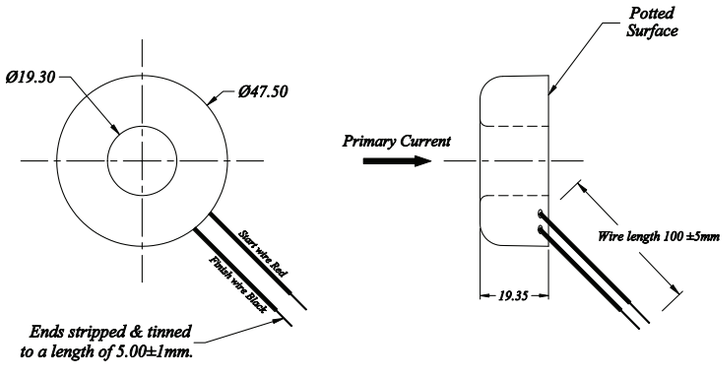
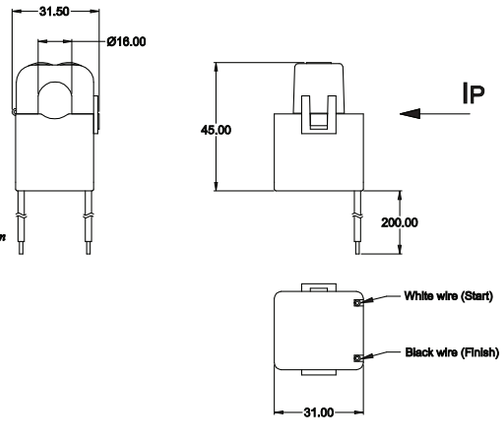
CT1292-B1



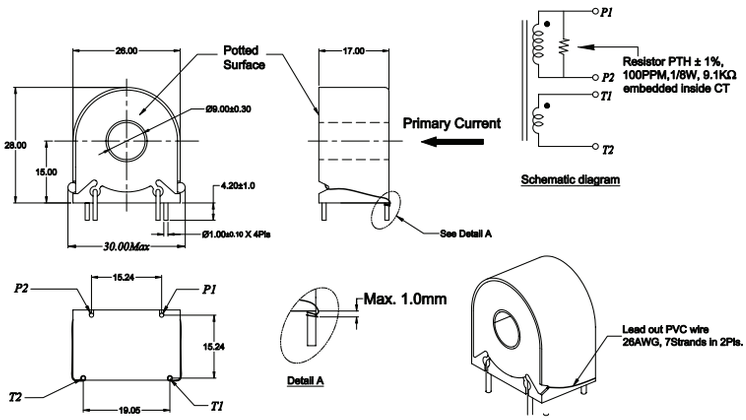
FL1: Wire-PTFE, 7 X 0.2mm, Red 130±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 130±5.0mm Length (Finish)

ST1338

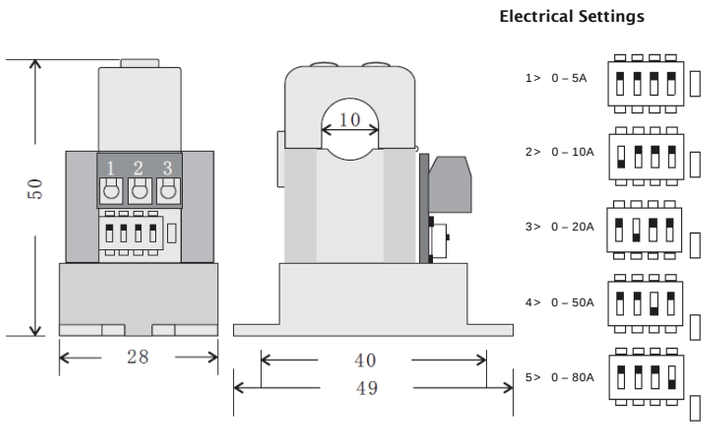


FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

CT1317

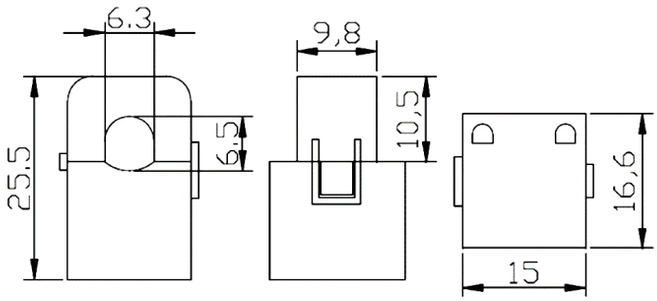


ST1343



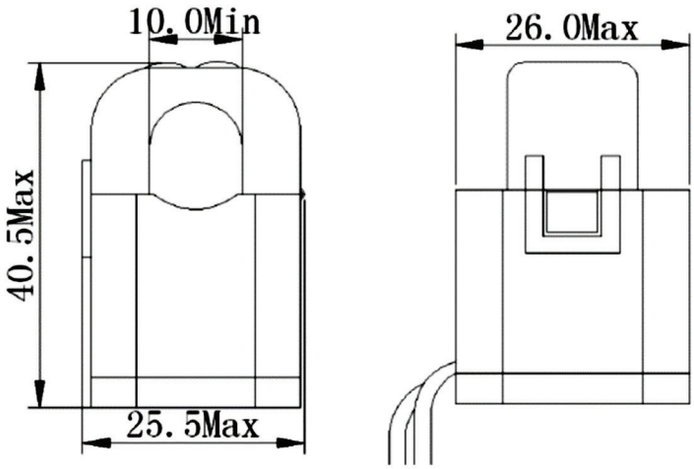
TERMINATION DETAILS	
F	Finish
S	Start

ST1362-V33305...10



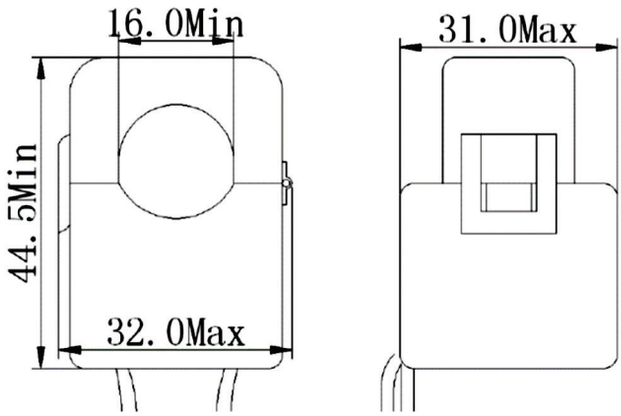
FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

ST1361-V33305...80



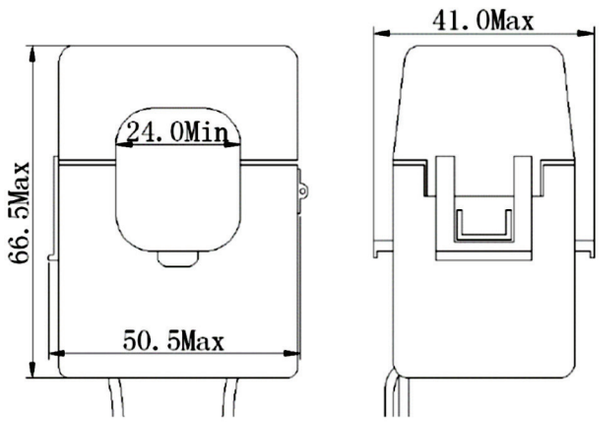
FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

ST1339-V333050...120



FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

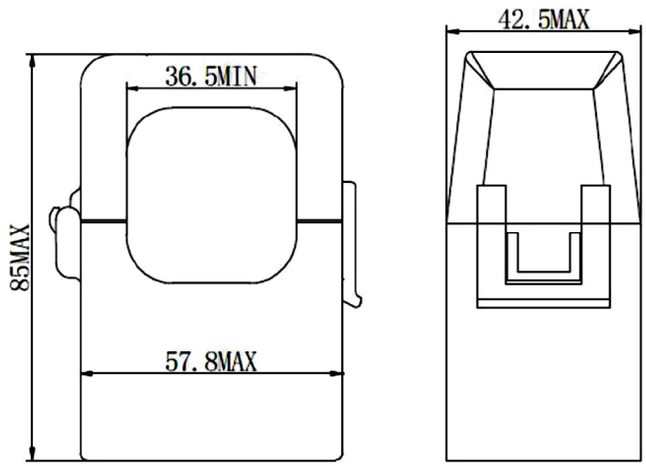
ST1348-V333100...300



FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

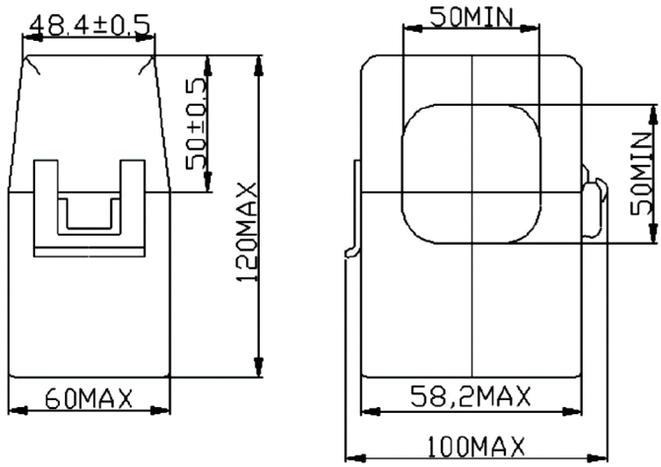
Solutions for a connected, electric world

ST1357-V333100...600



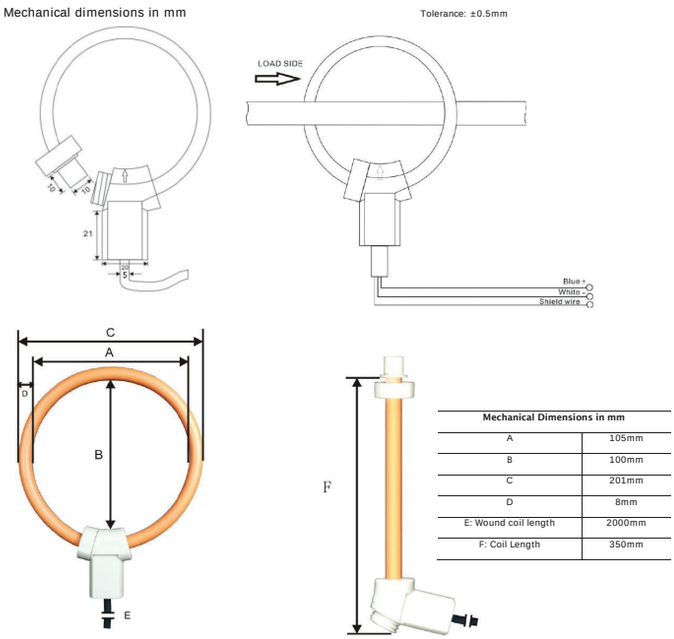
FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

ST1358-V333100...1K0



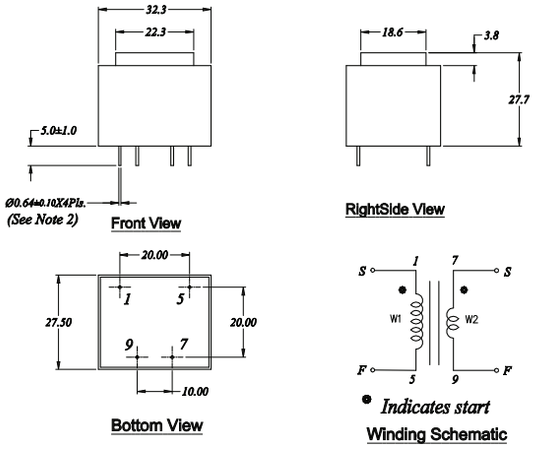
FL1: Wire-PTFE, 7 X 0.2mm, White 200±5.0mm Length (Start)
FL2: Wire-PTFE, 7 X 0.2mm, Black 200±5.0mm Length (Finish)

CT1317



Mechanical Dimensions in mm	
A	105mm
B	100mm
C	201mm
D	8mm
E: Wound coil length	2000mm
F: Coil Length	350mm

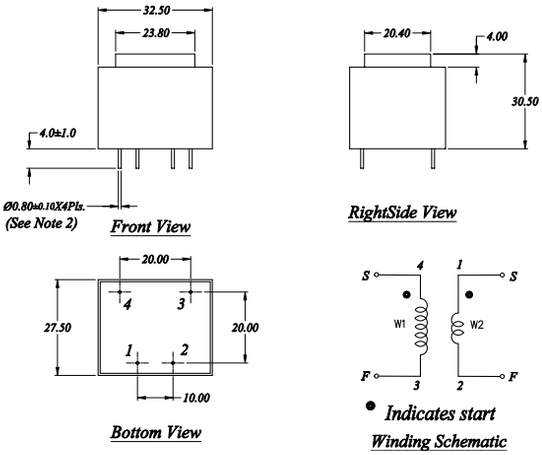
ST1343



TERMINATION DETAILS	
F	Finish
S	Start

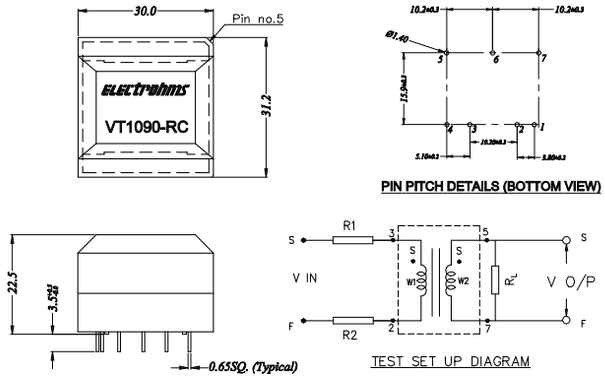
Solutions for a connected, electric world

VT1329



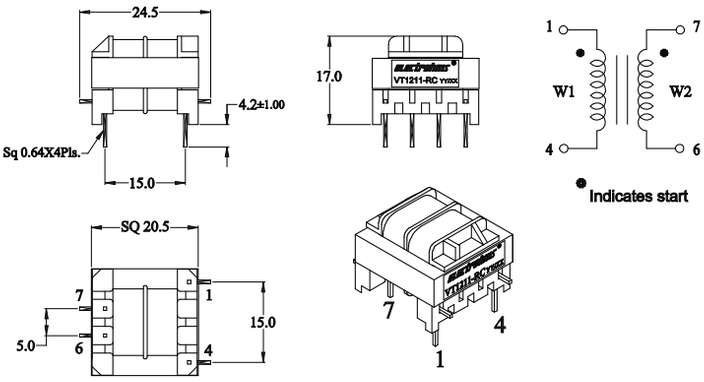
TERMINATION DETAILS	
F	Finish
S	Start

VT1090



TERMINATION DETAILS	
F	Finish
S	Start

VT1211



TERMINATION DETAILS	
F	Finish
S	Start

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