AcuCT 5A Series

5A Split-Core Current Transformer Installation Guide



RoHS COMPLIANT

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Please read this installation guide carefully before installation, operation, and maintenance of the AcuCT 5A Series current transformers.

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The following symbols appear throughout this documentation and on the AcuCT 5A Series, in addition to the electrical warning of danger or safety risk during the installation and operation of the current transformers.



Electrical Shock Hazard: Contains information about procedures which must be followed to prevent the risk of electric shock and danger that can result in personal injury or death.



Safety Warning: Contains information about circumstances which if not considered may result in personal injury or death.



Info: An advance notice to provide additional information before an action is taken by the user.

Installation and maintenance of the AcuCT 5A Series shall only be performed by qualified, competent professionals who have received training and have experience with high voltage and current devices.

Accuenergy shall not be responsible or liable for any damage caused by improper installation and/or operation.

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Safety and Critical Handling Requirements



Electrical Hazard

Do Not Leave the Secondary Current Transformer Circuit Open on Energized Conductors.

For 1 A and 5 A secondary CTs, the secondary circuit must be connected to the meter/relay input or safely shorted before the primary conductor is energized. An open secondary can develop hazardous voltage and may damage equipment or create a shock hazard.

Current Transformer Installation Safety

- De-energize the primary conductor whenever possible before installing, removing, or repositioning the CT.
- Use lockout/tagout, arc-flash PPE, and site-approved live-work procedures where applicable.
- Confirm that the CT rated voltage, current ratio, output type, burden, and environmental ratings are suitable for the installation.
- Inspect the CT before installation. Do not use a CT with cracked housing, damaged hinge/latch, missing thumb screw, contaminated core faces, damaged secondary leads, or signs of overheating.
- Ensure the maximum current of the conductor does not exceed the CT's rated current.
- Install indoors only unless the datasheet for the exact model and configuration states otherwise.
- Do not modify the CT housing, core mating surfaces, lead wires, mounting hardware, or insulation system.
- Ensure CTs installed around conductors do not occupy more than 75% of the available wiring space cross-sectional area, in accordance with applicable electrical codes.

Installation Requirements and Operating Limits

Parameter	Specifications	Operating Limits
Rated Voltage	600VAC	Do not use above the approved circuit voltage rating.
Frequency Range	50 / 60Hz (Standard) 50 - 400 Hz (400 Hz Model Only)	Confirm the frequency of the monitored system is within range.
Operating Temperature	-15°C to 60°C (5°F to 140°F)	Confirm ambient conditions inside the enclosure.
Humidity	0% to 95% RH, Non-Condensing	Prevent condensation and water ingress.
Current Range	5% - 120% of Rated Current	Select CT ratio that matches expected operating current.
Secondary Output	1 A or 5 A	Use only with compatible 1 A or 5 A CT inputs.

Introduction

Overview

The AcuCT 5A Series is a split-core CT family intended for retrofit or new installations where the primary conductor can pass through the CT window without disconnecting the conductor. The AcuCT 5A series supports standard 1 A or 5 A secondary output.

Model	Rated Primary Current Options	Rated Secondary Output Options	Window Size	Exterior Dimensions	Mounting Accessory
AcuCT-0812	50A, 100A, 150A, 200A, 250A, 300A, 400A	1A, 5A	21mm x 31mm (0.83" x 1.22")	89mm x 105mm x 40 mm (3.50" x 4.13" x 1.57")	ACUBRAC-SP1
AcuCT-2031	250A, 400A, 500A, 600A, 800A, 1000A	1A, 5A	50mm x 80 mm (1.97" x 3.15")	114mm x 145mm x 50mm (4.49" x 5.71" x 1.97")	ACUBRAC-SP2
AcuCT-3147	1000A, 1200A, 1600A	1A, 5A	80mm x 120 mm (3.15" x 4.72")	144mm x 185mm x 50mm (5.67" x 7.28" x 1.97")	ACUBRAC-SP2
AcuCT-3163	2000A, 2500A, 3000A, 4000A, 5000A	1A, 5A	80mm x 160 mm (3.15" x 6.30")	176mm x 247mm x 70mm (6.93" x 9.72" x 2.76")	ACUBRAC-SP3

CT Orientation, Polarity, and Wiring Identification

Correct orientation is required for positive real power, correct power factor sign, and correct phase relationship between current and voltage inputs.

Info

CT Polarity Should Not be Inferred.

If commissioning shows negative power, reversed power factor, or incorrect phase angle, verify both CT orientation and voltage phase assignment. Only swap S1/S2 or reverse the CT after confirming the wiring diagram and metering configuration.

Markings	Installation Instructions
P1 / Source Side	Primary conductor enters the CT from the P1 side. P1 normally faces the source side of the circuit.
P2 / Load Side	Primary conductor exits toward P2. Direction arrow points toward the load.
S1 / Positive Secondary	Connect the white secondary lead to the positive or high CT input of the meter.
S2 / Negative Secondary	Connect the black secondary lead to the negative or return CT input of the meter or relay.
Core Mating Faces	Keep clean and fully closed. Any gap or contamination can cause ratio error and phase error.
Knurled Thumb Screw	Used to release and secure the split-core CT assembly. Tighten by hand until the core is fully seated, ensuring to not overtighten.

Standard Split-Core Installation Procedure

Recommended Installation Tools and Materials

- Use appropriate insulated hand tools for the enclosure and voltage class.
- Approved CT shorting block or shorting terminal, if required by the installation standard.
- Cable ties or clamps for secondary lead strain relief.
- Mounting brackets, studs, nuts, washers, or panel hardware as required by the selected mounting method. The mounting brackets and busbar clamping hardware are included with the CT.
- Multimeter and commissioning meter/software for final verification.

Supplied Mounting and Clamping Hardware

The AcuCT 5A Series is supplied with the standard mounting accessories. The table below lists the hardware included with each model.

Component	Description	AcuCT-0812	AcuCT-2031	AcuCT-3147	AcuCT-3163
Mounting Kit	Mounting Bracket Part Number.	ACUBRAC-SP1	ACUBRAC-SP2	ACUBRAC-SP2	ACUBRAC-SP3
Mounting Bracket	29.7 × 16 × 1.5 mm, zinc-plated with one M6 U-shaped slot.	4	4	4	4
Clamping Screw	M5 × 60 mm zinc-plated carbon steel threaded rod.	*	4	4	6
Clamping Nut	M5 nut that seats captive in the molded slot of the CT housing.	*	4	4	6

Note: * Indicates that the item is not supplied with that model. The AcuCT-0812 is supplied with mounting brackets only and does not use busbar clamping hardware.

Split-Core CT Installation

Step 1: System Preparation

De-energize the circuit where possible, apply lockout/tagout, and verify absence of voltage according to site procedures.

Step 2: Verify CT and Conductor

Confirm the CT rating, conductor phase, conductor direction, and available window clearance before opening the CT.

Step 3: Connect CT Secondary Leads

Check the meter wiring diagram to connect the secondary leads, as each meter termination may vary by model and manufacturer. Terminate the CT leads before clamping the CT onto live conductors.

> **Info**
>
> Ensure proper secondary lead routing. Route CT secondary leads away from sharp edges, moving parts, high-temperature surfaces, and high-noise conductors. Keep the secondary wiring as short as practically possible to reduce burden and noise pickup.

Step 4: Open the Split-Core CT

Loosen the knurled thumb screw as depicted in Figure 1 and separate the CT body in the indicated direction as shown in Figure 2. Do not force apart the hinge or core faces.

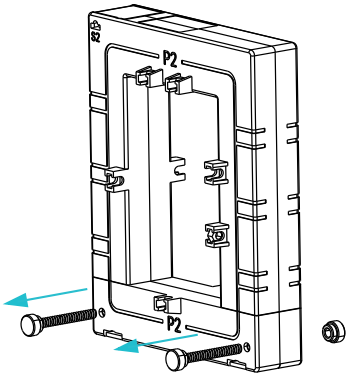


Figure 1 Screw Release of CT

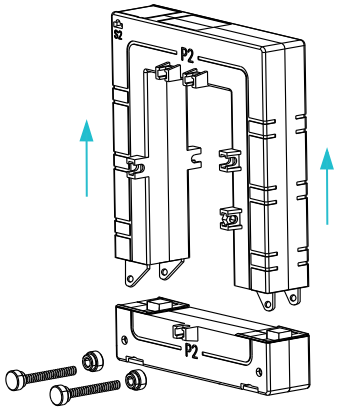


Figure 2 Split-Core CT Body Separation

Step 5: Conductor Position

Place the CT so that the primary conductor enters from P1 to P2. The CT arrow must point towards the load.

Step 6: Center the Conductor

Keep the conductor or busbar centered in the CT window where practical. Avoid contact that pushes the core halves apart.

Step 7: Close and Secure the CT

Fully close the split core and tighten the thumb screw by hand until the mating faces are seated and the frame is secure.

Mounting Bracket Installation (If Applicable)

Mounting kits are included as standard for securing the AcuCT 5A Series to a panel, backplate, or support surface independently from the conductor or busbar. Each mounting kit includes 4 mounting brackets. Each bracket measures 29.7 × 16 × 1.5 mm, is zinc-plated carbon steel, and has one M6 U-shaped slot.

Step 1: Install Mounting Brackets

1. Position the current transformer on the mounting surface and insert the mounting clips into the designated slots near the removable top section and ensure the clips are fully seated as depicted in Figure 3.
2. Secure the mounting base plate using M5 or M6 screws / bolts through the 6 mm elongated mounting holes and tighten until the current transformer is firmly mounted. Refer to Figure 4 for the mounting clip dimensions and clearance requirements.

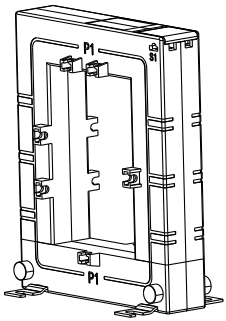


Figure 3 Mounting Clips in AcuCT-2031

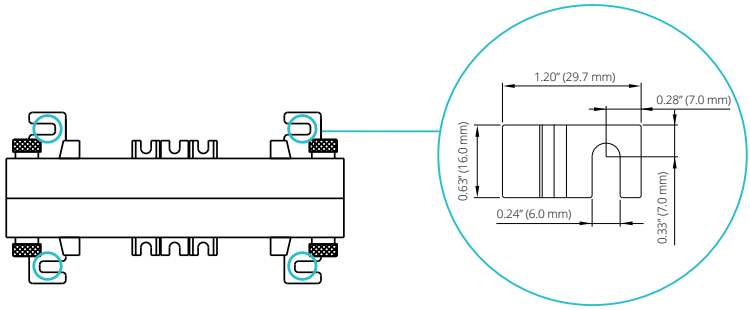


Figure 4 Top-View of the AcuCT-2031

Info

The brackets are intended to support and stabilize the CT. They should not be used to force the CT onto an oversized conductor or to compensate for incorrect CT sizing.

Info

For normal phase-current measurement, install the CT around one phase conductor or one phase busbar only. Do not pass both line and neutral, or multiple different phases, through the same CT.

Busbar Clamp Installation (If Applicable)

For AcuCT-2031, AcuCT-3147, and AcuCT-3163, clamping hardware is used to secure the busbar inside the current transformer window. The mounting accessory kit includes 4 clamping screws and 4 nuts for the AcuCT-2031 and AcuCT-3147, and 6 screws and 6 nuts for the AcuCT-3163. Each clamping screw is an M5 × 60 mm zinc-plated carbon steel threaded rod. The AcuCT-0812 does not use busbar clamping hardware.

Step 1: Install Clamping Screws

1. Place the busbar in the current transformer window and insert a nut into each molded slot in the CT housing. The slot holds the nut captive and prevents it from rotating, so no wrench or second tool is required.
2. Insert the clamping screws from both sides through the nut. Fit a clamping knob to each screw on the busbar side as depicted in Figure 5.
3. Tighten the clamping knob evenly until the busbar is secure and cannot move.

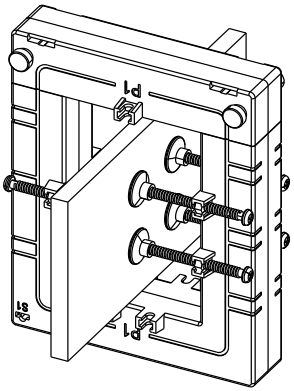


Figure 5 Busbar Clamped After Installation

Safety Warning

Avoid mechanical stress. The CT must not carry the weight of unsupported busbars or cables. Provide independent mechanical support for the conductor or busbar where required. Excess mechanical stress may loosen connections, cause insulation damage, or result in conductor movement under fault conditions, which can lead to electric shock or arc-flash.

Warnings and Installation Considerations

Incorrect Installation Risk

Improper installation may result in inaccurate measurements, negative or reverse readings, reducing system reliability.

Common Installation Errors

Frequent errors observed are installing the CT backwards with incorrect polarity or simultaneously clamping the CT around multiple different phase conductors or mixing current and voltage phases. If the latch is not properly closed, it leaves the CT partially open leading to incorrect readings.

Best Practices

Accuracy Optimization

To achieve optimal performance, keep the CT core clean and fully closed. The AcuCT 5A Series meets accuracy specifications but place the conductor in center within the window to ensure maximum accuracy. Use cable ties to hold the CT in position and align the conductor. Maintain correct phase alignment with voltage inputs.

Wiring Practices

Route the CT secondary leads away from high-voltage conductors and avoid unnecessary lead extensions. To avoid noise interference, use twisted shielded wiring.

Installation Consistency

Maintain a consistent CT orientation across all measured phases and clearly label the CT, such as Phase A, B, C or R, Y, B. If possible, complete the wiring prior to CT installation.

CT Secondary Safety

Condition	5 A, 1 A Secondary
Open-Circuit Risk	High
Shorting Required	Yes
Connect Leads Before Installation	Recommended

Commissioning Checklist

Check	Acceptance Criteria	Result
Mechanical Closure	• CT core fully closed • Thumb screw installed and secure	Pass / Fail
Orientation	• P1 / Source side and arrow-to-load direction confirmed	Pass / Fail
Secondary Polarity	• White lead connected to S1 / positive input • Black lead connected to S2 / negative input	Pass / Fail
Ratio Setting	• Meter ratio matches CT order code and primary current rating	Pass / Fail
Phase Mapping	• Current phase correctly corresponds to voltage phase	Pass / Fail
Reading Magnitude	• Current reading matches expected load current within tolerance	Pass / Fail
Power Sign	• kW and power factor signs are correct under normal load	Pass / Fail
Lead Strain Relief	• Secondary leads secured and protected from sharp edges, moving parts, and high-noise conductors	Pass / Fail
Abnormal Condition	• No abnormal heat, vibration, smell, noise, or visible damage	Pass / Fail

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