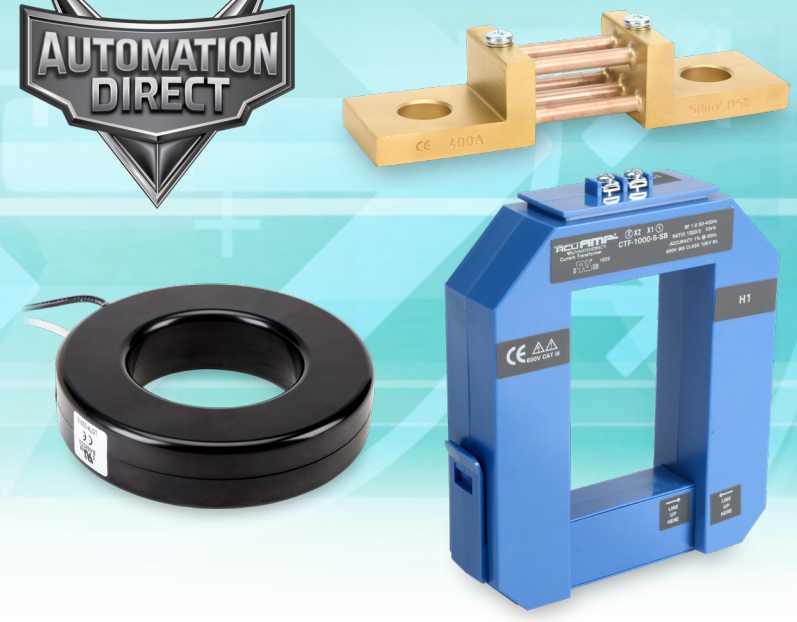
CURRENT TRANSFORMERS AND SHUNTS

BUYING GUIDE





WHAT DO THEY DO?

Current transformers (CTs) and DC current shunts convert high electrical currents into proportional current or voltage signals that can be measured by compatible meters, power monitoring devices, PLCs, and control systems.

CTs use electromagnetic induction to measure AC current without making a direct electrical connection to the monitored conductor. DC current shunts use precision resistance elements to produce a voltage drop proportional to the measured current.

By enabling accurate high-current measurement, these devices support applications such as energy management, load monitoring, equipment diagnostics, and process control.

Key Functions and Benefits

- **Current Measurement and Monitoring:** Proportional current or voltage signals support current indication, continuous monitoring, trending, and integration with industrial control systems.
- **Electrical Isolation**: Current transformers provide galvanic isolation between the monitored conductor and connected measuring equipment, electrically separating the power circuit from connected instrumentation.

Topics

» What Do They Do?
» Applications
» How to Choose
» Product Category Overview
» Product Lineup

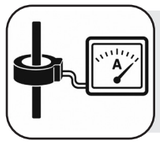
- **Installation Flexibility**: Solid core CTs are well suited for new installations, while split core CTs can be installed around existing conductors without disconnecting wiring. DC current shunts are installed directly in the measured current path.
- **Equipment and System Monitoring**: Current measurements provide insight into electrical loads and equipment operation, helping users identify abnormal conditions, optimize performance, troubleshoot issues, and support predictive maintenance efforts.

CT and Shunt Outputs

Current transformers typically provide a proportional AC secondary current output, while DC current shunts produce a small DC voltage drop proportional to the measured current. The connected meter or monitoring device must be compatible with the output type and measurement range.

APPLICATIONS

Current transformers and DC current shunts provide a practical way to measure high AC and DC currents in machinery, electrical panels, power distribution systems, and other equipment using compatible meters, monitoring devices, and control systems. Their measurement signals support applications ranging from simple current indication and load monitoring to energy management, equipment diagnostics, and automated process control.



Current Indication and Display: CTs and DC current shunts can be paired with compatible analog or digital panel meters to provide convenient local indication of measured current.



Equipment and Load Monitoring: Monitoring current provides a simple way to verify equipment operation and identify changes in electrical load that may indicate overloads, underloads, jams, or other abnormal operating conditions.



Energy Monitoring: Current measurements can be used by compatible power and energy monitoring equipment to track electrical loads, monitor consumption, and identify usage trends in industrial and commercial facilities.



Automation and Process Control: Current measurement signals can be integrated with PLCs and control systems for load monitoring, process feedback, alarms, and control actions based on measured current.



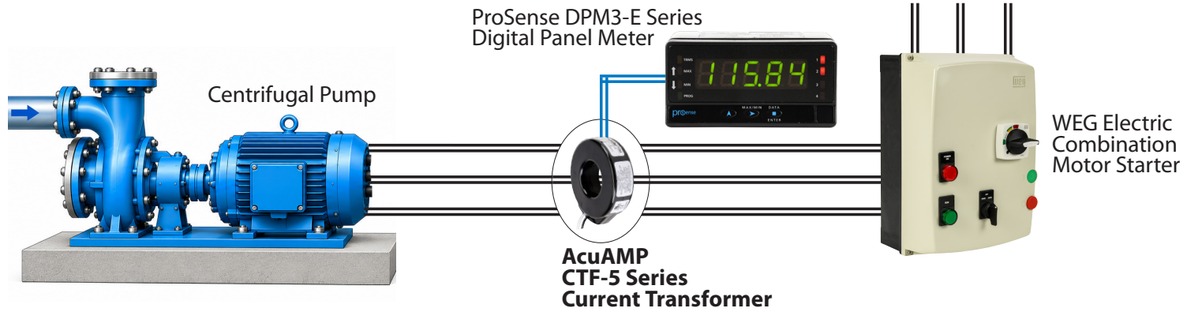
Troubleshooting and Diagnostics: Current measurements help identify operational changes, compare loads between circuits or machines, verify performance, and troubleshoot electrical or mechanical problems.



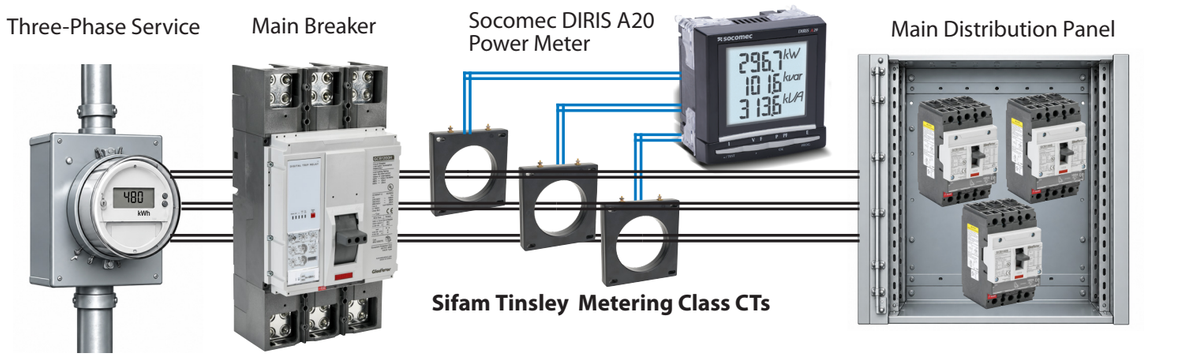
DC System Monitoring: DC current shunts provide current measurement for battery systems, charging equipment, DC power supplies, DC motor circuits, renewable energy systems, and other high-current DC applications.

APPLICATION EXAMPLES:

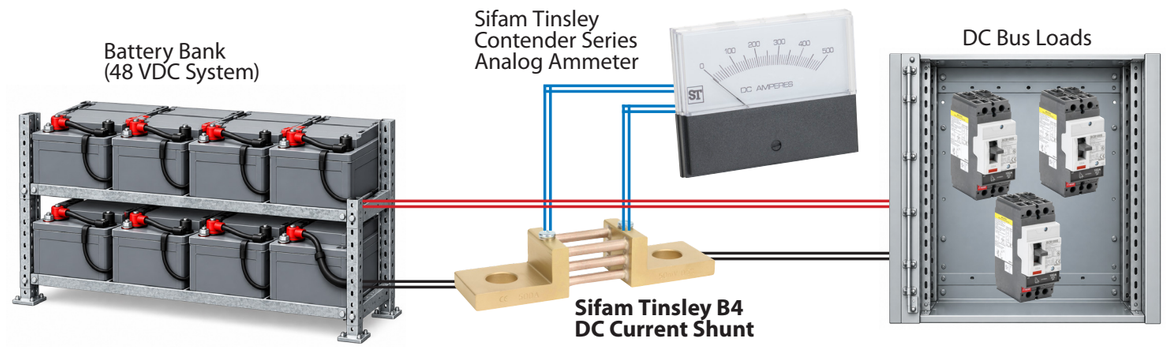
- **Pump Current Monitoring**: Current transformers measure AC motor current to monitor pump operating load. A digital panel meter provides local indication to help identify abnormal loading or changing pump conditions.



- **Electrical Distribution Monitoring**: Metering-class current transformers provide phase-current measurements to a power meter, helping facility personnel monitor system loading and energy use.



- **DC Battery Monitoring**: DC current shunts measure battery charge and discharge current, allowing an ammeter to provide local indication without routing full load current through the meter.



HOW TO CHOOSE

Selecting the right current transformer or DC current shunt starts with the type and level of current being measured and the requirements of the connected instrumentation. Consider the following factors to choose a device that provides the appropriate measurement signal and fits the installation.

1. **AC or DC Current:** Determine whether the application requires AC or DC current measurement. Current transformers are used for AC circuits, while DC current shunts provide a proportional millivolt signal for monitoring DC current.

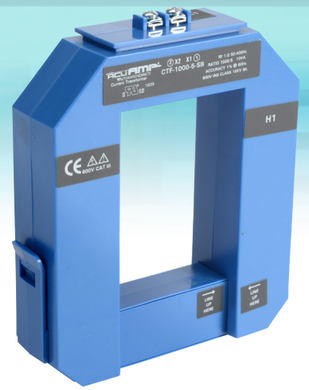
2. **Current Rating:** Select a CT or shunt with a current rating that accommodates both normal operating current and the maximum current to be measured. For best measurement performance, choose a rating appropriately matched to the expected operating range.

3. **Output Compatibility:** Match the device output to the input requirements of the connected meter, controller, or monitoring equipment. CTs typically provide a proportional 0-5A AC secondary current output, while DC shunts provide low-level millivolt signals.

4. **System Frequency:** For AC applications, ensure the CT is rated for the operating frequency of the monitored circuit. Most power systems operate at 50 or 60 Hz, but supported frequency ranges vary by model.

5. **CT Core Style:** Solid core CTs require the conductor to be routed through the transformer during installation. Split core CTs open to fit around existing conductors, making them well suited for retrofits and installations where disconnecting wiring is impractical.

6. **Conductor and Aperture Size:** Verify that the CT opening accommodates the conductor or busbar being monitored while providing adequate installation clearance.



7. **Accuracy:** Choose an accuracy class appropriate for the application. General load monitoring and current indication may require less accuracy than energy metering, power analysis, or other applications requiring more precise measurement.

8. **Burden Rating:** When using a CT, add up everything connected to its output: the meter's input and the wiring. That total burden must stay within the CT's rated burden, or the readings will suffer. The CT can also overheat if the burden is excessive.

9. **Wiring Considerations:** Consider the distance between the CT or shunt and the connected instrumentation. Wire resistance contributes to CT burden, while proper wiring practices help maintain accurate measurement of low-level shunt signals.

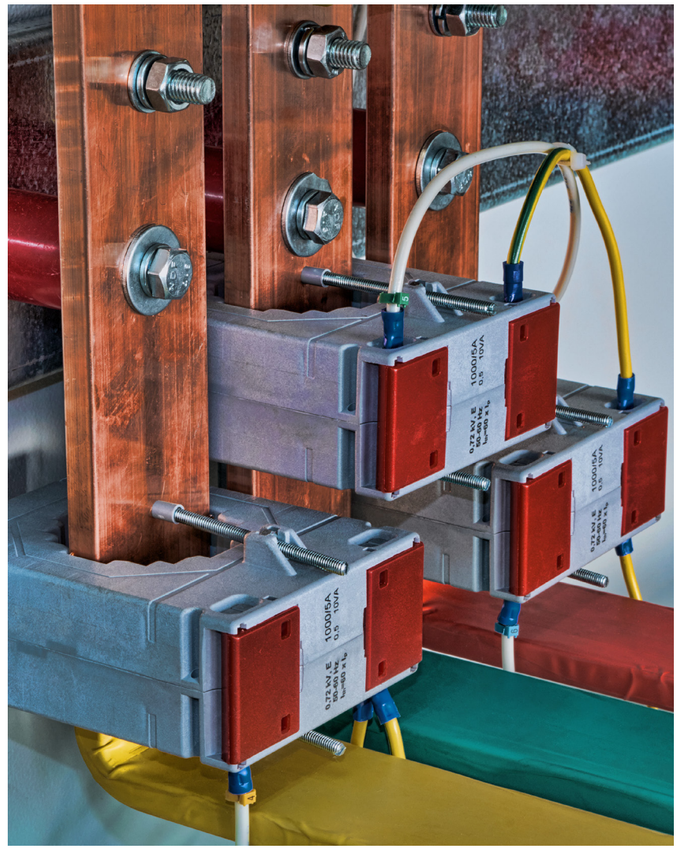
10. **Safety and Insulation Ratings:** Verify that applicable voltage, insulation, and electrical ratings are appropriate for the monitored circuit and installation.

11. **Mounting and Installation:** Review mounting style, terminal orientation, connection requirements, and overall dimensions to ensure the device fits the available space and installation method.

12. **Operating Environment:** Confirm that temperature ratings and other environmental specifications are suitable for the installation location.

PRODUCT CATEGORY OVERVIEW

Category	What it does	When to Choose This	Typical Applications	Key Selection Factors
Solid Core AC Current Transformers	Measures AC current and provides a proportional 5 A secondary signal for a compatible monitoring device	For cost-effective AC current measurement in installations where the conductor can be routed through the transformer	Motor current monitoring; pump dry-run monitoring; conveyor monitoring; panel metering; power monitoring	Primary current rating; conductor/ aperture size; 5 A secondary compatibility; mounting/installation requirements
Split Core AC Current Transformers	Measures AC current and provides a proportional 5 A secondary signal, with a core that opens to fit around an existing conductor or busbar	For existing AC installations where disconnecting or rerouting the conductor is undesirable, particularly with larger cables or busbars	Retrofit current monitoring; electrical panels; large conductors and busbars; panel meters and power monitoring	Primary current rating; conductor/ busbar size; sensing aperture; 5 A secondary compatibility; available installation space
DC Current Shunts	Measures high DC current by producing a small voltage drop proportional to the current flowing through the shunt	For DC current measurement when a direct, accurate measurement of higher current is needed and the monitoring device accepts a shunt signal	DC power systems; battery systems; DC drives and motors; charging systems; DC panel metering	Current rating; 50 mV output compatibility; meter/shunt rating match; installation in the current path; mounting requirements



ACUAMP®

sifam tinsley PRECISION INSTRUMENTATION

SOLID CORE AC CURRENT TRANSFORMERS

Series/Type	Best For	Key Attributes	Primary Benefit	Price Tier
CTF-5 Series	General-purpose AC current monitoring and metering	50–400 A; ±1% accuracy on most models; medium-size sensing window	Economical choice for common industrial current monitoring applications	$$
CTF-7 Series	Higher-current and power monitoring	400–1000 A; ±1% accuracy; larger sensing window	Combines higher-current capability with instrumentation-grade measurement	$$$
2RL/2SFT Series	Panel meters and general-purpose current measurement	25–400 A; multiple accuracy ratings; compact sensing windows	Cost-effective choice for lower-current measurement and indication	$
19RL/19SHT Series	High-current power and energy metering requiring greater measurement performance	400–2500 A; ANSI Metering Class; large sensing window; higher continuous rating factors on selected models	Handles large conductors and high currents while providing metering-grade measurement	$$$$





ACUAMP CTF-5 SERIES SOLID CORE CURRENT TRANSFORMERS

STARTING AT $26.00

AcuAMP CTF-5 series solid core AC current transformers provide a cost-effective solution for monitoring electrical current in industrial equipment and power distribution systems. Designed for use with compatible metering and monitoring equipment, these transformers support applications such as electrical load monitoring, equipment diagnostics, and process monitoring.

- 50 to 400 A current ratings provide options for common AC current monitoring requirements
- 0–5 A AC secondary output provides a standard signal for compatible meters and monitoring devices
- ±1% accuracy on 100–400 A models supports reliable current measurement; 50 A models provide ±2% accuracy
- 1.56-inch sensing window accommodates a range of conductor sizes
- Pass-through or panel-mount styles provide installation flexibility
- Self-powered operation eliminates the need for a separate power supply
- 50–400 Hz frequency range supports standard AC power monitoring applications
- Made in the USA

ACUAMP CTF-7 SERIES SOLID CORE CURRENT TRANSFORMERS

STARTING AT $48.50

AcuAMP CTF-7 series solid core AC current transformers provide reliable current measurement for higher-current industrial equipment and electrical distribution systems. Designed for applications involving larger electrical loads and conductors, these transformers support electrical load monitoring, equipment diagnostics, and power monitoring.



- 400 to 1000 A current ratings support higher-current AC monitoring requirements
- 0–5 A AC secondary output supports integration with compatible current monitoring equipment
- ±1% accuracy across the entire series supports consistent current measurement
- Wide 2.50-inch sensing window accommodates larger conductors
- Pass-through or panel-mount options accommodate different installation requirements
- Self-powered design simplifies installation by eliminating external power requirements
- 50–400 Hz frequency range accommodates common AC power monitoring requirements
- Made in the USA





SIFAM TINSLEY 2RL/2SFT SERIES SOLID CORE CURRENT TRANSFORMERS

STARTING AT $19.50

Sifam Tinsley 2RL/2SFT series solid core ANSI AC current transformers provide a simple, cost-effective solution for measuring AC current with panel meters, power meters, and other compatible instrumentation. They are well suited for electrical load monitoring, equipment diagnostics, and general industrial current measurement applications.

- 25 to 400 A current ratings provide options for lower-current AC measurement and monitoring
- Standard 0–5 A AC secondary output interfaces with compatible panel meters and instrumentation
- Accuracy ratings down to ±1% provide reliable current measurement for monitoring and metering applications
- 1.05- or 1.13-inch sensing windows accommodate different conductor sizes, depending on case style
- Choice of pass-through or panel mounting supports flexible installation
- 50–400 Hz frequency range supports current measurement across a range of AC applications

SIFAM TINSLEY 19RL/19SHT SERIES SOLID CORE AC CURRENT TRANSFORMERS

STARTING AT $53.00

Sifam Tinsley 19RL/19SHT series solid core ANSI AC current transformers are designed for power monitoring and energy measurement applications where precise measurement is essential. These transformers are well suited for industrial power distribution, energy management, and electrical system monitoring.



- 400 to 2500 A current ratings support measurement in higher-current AC systems
- ANSI Metering Class accuracy supports applications requiring high measurement accuracy and minimal phase-angle error
- 0–5 A AC secondary output supports integration with compatible power meters and monitoring systems
- 4.25-inch sensing window accommodates large conductors and busbars
- Pass-through or panel-mount configurations provide installation flexibility
- Continuous rating factors up to 2.0 allow selected models to continuously monitor currents above their nominal rating
- 50–400 Hz operating range supports industrial power and energy monitoring applications

SPLIT CORE AC CURRENT TRANSFORMERS

Series/Type	Best For	Key Attributes	Primary Benefit
CTF Series	Retrofit and new installations where conductors cannot easily be disconnected	150–1000 A; medium and large sensing windows; split-core design	Installs around existing conductors and busbars for easier installation and retrofit applications



ACUAMP CTF SERIES SPLIT CORE AC CURRENT TRANSFORMERS

STARTING AT $94.00

AcuAMP CTF series split core AC current transformers provide a convenient solution for adding current measurement to new or existing electrical systems.

- 150 to 1000 A current ratings provide options for a wide range of AC current monitoring requirements
- Standard 0–5 A AC secondary output supports current measurement using compatible meters and instrumentation
- Accuracy ratings down to ±1% support reliable current measurement
- SA and SB case styles provide different sensing window sizes to accommodate conductors and busbars
- Self-powered operation eliminates the need for an external power supply
- Split core design simplifies installation around existing conductors and busbars without disconnecting them

DC CURRENT SHUNTS

Series/Type	Best For	Key Attributes	Primary Benefit
B4 Series	DC current measurement with compatible panel meters and instrumentation	20–500 A; 50 mV output; Class 0.5 accuracy; DIN-rail or busbar mounting	Provides precise DC current measurement using a proportional low-level voltage signal



SIFAM TINSLEY B4 SERIES DC CURRENT SHUNTS

STARTING AT $22.50

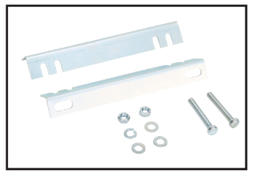
Sifam Tinsley B4 series DC current shunts enable precise measurement of high DC currents by producing a small voltage drop that is proportional to the current. A compatible shunt-rated ammeter measures this voltage and displays the corresponding current value, allowing high current to be measured without passing directly through the meter.

- 20 to 500 A current ratings provide options for a wide range of DC current measurement requirements
- 0–50 mV DC output provides a proportional signal for compatible shunt-rated ammeters
- Class 0.5 accuracy provides precise current measurement
- Manganin resistance elements maintain stable resistance over temperature changes for consistent measurement accuracy
- 20 A model includes an insulating base and cover for convenient 35-mm DIN rail mounting
- 75–500 A models mount directly to copper busbars for high-current installations

CURRENT TRANSFORMER ACCESSORIES

SPARE PARTS & ACCESSORIES

Current transformer accessories include mounting hardware for Sifam Tinsley 19SHT series AC current transformers.



Sifam Tinsley mounting hardware for 19SHT series current transformers

This buying guide was drafted with AI assistance and edited by the AutomationDirect Technical Marketing Team