AC Current Transducers

Current Transducers are designed to provide an analog signal proportional to the AC current for monitoring, data logging and panel meter applications. NK Technologies' current transducers offer a choice of 0–5 VDC, 0–10 VDC or 4–20 mA average responding or True RMS outputs. Self-powered and split-core options make these a cost-effective choice as a PLC input in motor status applications or where VFDs are involved.

Features:

- Average responding or True RMS output
- Jumper-selectable ranges
- Solid-core, split-core and large aperture models

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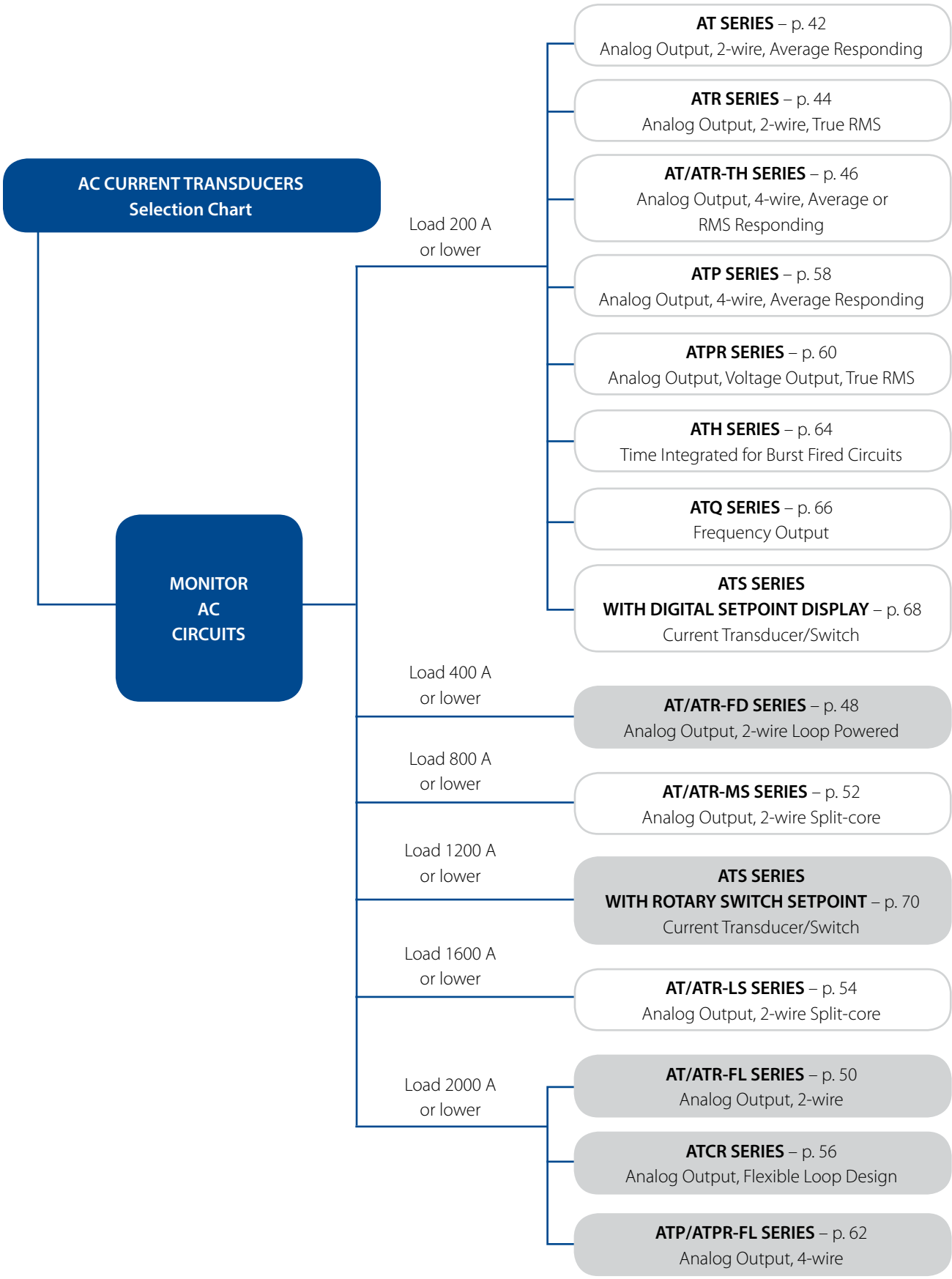

AC CURRENT TRANSDUCERS
Selection Chart
MONITOR
AC
CIRCUITS
Load 200 A
or lower
AT SERIES – p. 42
Analog Output, 2-wire, Average Responding
ATR SERIES – p. 44
Analog Output, 2-wire, True RMS
AT/ATR-TH SERIES – p. 46
Analog Output, 4-wire, Average or
RMS Responding
ATP SERIES – p. 58
Analog Output, 4-wire, Average Responding
ATPR SERIES – p. 60
Analog Output, Voltage Output, True RMS
ATH SERIES – p. 64
Time Integrated for Burst Fired Circuits
ATQ SERIES – p. 66
Frequency Output
ATS SERIES
WITH DIGITAL SETPOINT DISPLAY – p. 68
Current Transducer/Switch
Load 400 A
or lower
AT/ATR-FD SERIES – p. 48
Analog Output, 2-wire Loop Powered
Load 800 A
or lower
AT/ATR-MS SERIES – p. 52
Analog Output, 2-wire Split-core
Load 1200 A
or lower
ATS SERIES
WITH ROTARY SWITCH SETPOINT – p. 70
Current Transducer/Switch
Load 1600 A
or lower
AT/ATR-LS SERIES – p. 54
Analog Output, 2-wire Split-core
Load 2000 A
or lower
AT/ATR-FL SERIES – p. 50
Analog Output, 2-wire
ATCR SERIES – p. 56
Analog Output, Flexible Loop Design
ATP/ATPR-FL SERIES – p. 62
Analog Output, 4-wire

AT SERIES
AC Current Transducers

AT Series AC Current Transducers combine a current transformer and signal conditioner into a single package. These current transducers have jumper-selectable current input ranges and industry standard 4–20 mA, 0–5 VDC or 0–10 VDC outputs. The AT Series AC Current Transducers are designed for application on 'linear' or sinusoidal AC loads and are available in a split-core case or two types of solid-core cases.

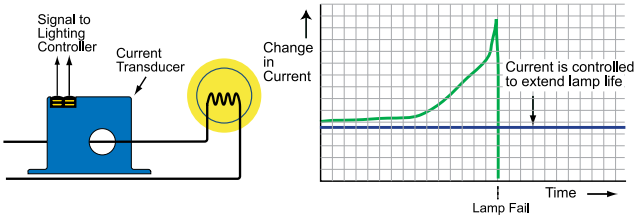
AC Current Transducer Applications

Automation Systems
- Analog current reading for remote monitoring and software alarms.

Data Loggers
- Self-powered transducer helps conserve data logger batteries.

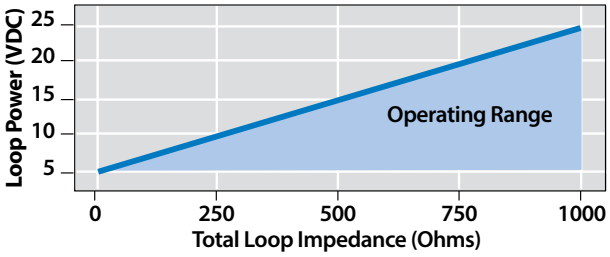
Panel Meters
- Simple connection displays power consumption.

Preventative Maintenance of a Critical Lighting System



For additional Application Examples, go to www.nktechnologies.com/applications

AT Series Power Supply



AC Current Transducer Features

Accurate
- Factory matched and calibrated single piece transducer is more accurate than traditional two-piece field installed solutions.

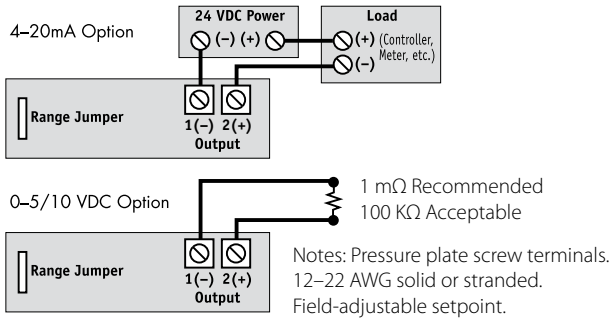
Average Responding
- "Average Responding" algorithm gives an RMS output on pure sine waves. Perfect for constant speed (linear) loads.

Jumper-selectable Ranges
- Reduces inventory.
- Eliminates zero and span pots.

Isolation
- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

UL/cUL and CE Approved
- Accepted worldwide.

AC Current Transducer Connections



Notes: Pressure plate screw terminals.
12–22 AWG solid or stranded.
Field-adjustable setpoint.

OEMs Test & Evaluation Units for OEMs
Free program expedites evaluation process. See page 3 for details.

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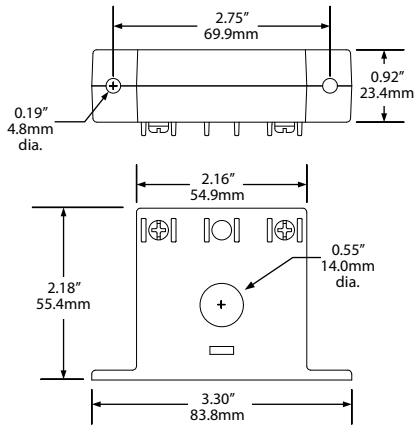
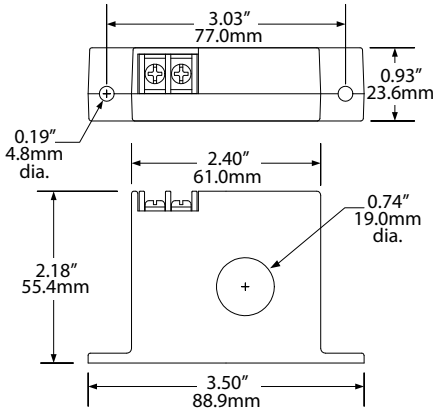
AC Current Transducer Dimensions

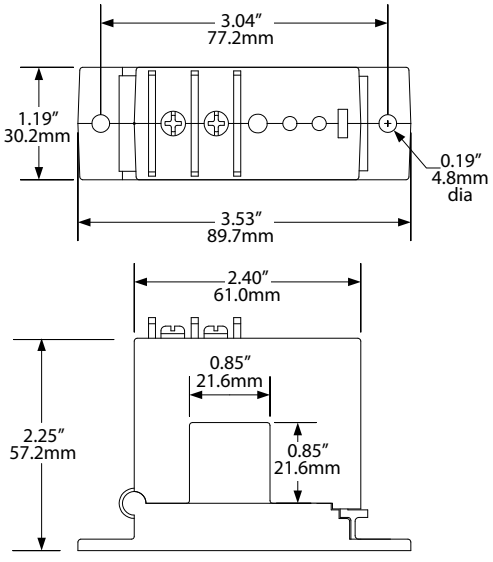
FF Case



FT Case



SP Case



AC Current Transducer Specifications

	-005 MODEL	-010 MODEL	-420 MODEL
Power Supply	None, self-powered		5–40 VDC, loop-powered
Output Signal	0–5 VDC	0–10 VDC	4–20 mA
Output Limit	8.2 VDC	15 VDC	32 mA
Output Impedence	1 megohm min., 100 KΩ add 1.3% error		Contact factory for power requirements
Accuracy	1.0% FS		
Response Time (90% step change)	100 ms		300 ms
Frequency Range	50–60 Hz		20–100 Hz*
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV		
Input Range	0–200 A Field-selectable; custom ranges available, consult factory		
Case	UL94 V-0 Flammability Rated		
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing		
Listing	UL/cUL, CE		

*For sinusoidal waveforms only. Select ATR Transducers for distorted waveforms.

AC Current Transducer Ordering Information

Sample Model Number: AT1-005-000-SP

AC current transducer, 10/20/50 A range, self-powered with a 0–5 VDC output in a split-core case. (DIN rail adapters are included)

	(1)		(2)			(3)			(4)	
AT		–						–		

(1) Full Scale Range

0	2 & 5 A (4–20 mA only)
1	10, 20, 50 A
2	100, 150, 200 A

(2) Output Signal

420	4–20 mA
005	0–5 VDC
010	0–10 VDC

(3) Power Supply

24L	24 VDC loop-powered (4–20 mA output ONLY)
000	Self-powered (0–5/0–10 VDC output ONLY)

(4) Case Style

FF	Solid-core, front terminal
FT	Solid-core, top terminal
SP	Split-core

ATR SERIES
AC Current Transducers

ATR Series AC Current Transducers combine a current transformer and a True RMS signal conditioner into a single package. These current transducers provide True RMS output on distorted waveforms found on VFD or SCR outputs, and on linear loads in "noisy" power environments. The ATR Series AC Current Transducers are available in a solid- or split-core case.

AC Current Transducer Applications

VFD Controlled Loads
- Monitoring VFD output indicates how the motor and attached load are operating.

SCR Controlled Loads
- Accurate measurement of phase angle fired (time proportioned) SCRs.
- Current measurement gives faster response than temperature measurement.

Switching Power Supplies and Electronic Ballasts
- True RMS sensing is the most accurate way to measure power supply or ballast input power.

AC Current Transducer Features

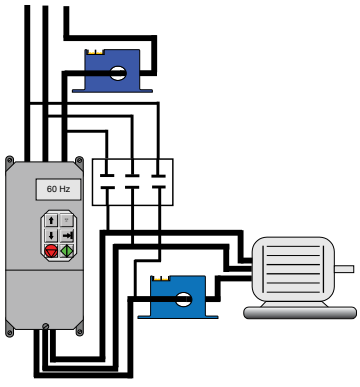
True RMS Output
- True RMS technology is accurate on distorted waveforms like VFD or SCR ouputs.

Jumper-selectable Ranges
- Reduces inventory.
- Eliminates zero and span pots.

Isolation
- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

UL/cUL and CE Approved
- Accepted worldwide.

Monitoring a Motor Driven with a VFD



Use the ATR current transducer on the line or load side of the drive and the signal will be accurate in either position.

For additional Application Examples, go to www.nktechnologies.com/applications

Selecting the right transducer:

The current waveforms of a typical linear load is a pure sine wave. In VFD and phase angle fired SCR applications, however, output waveforms are rough approximations of a sine wave. There are numerous spikes and dips in each cycle. ATR transducers use a mathematical algorithm called "True RMS" which integrates the actual waveforms over time. The output is the amperage component of the true power (heating value) of the AC current waveforms. True RMS is the only way to accurately measure distorted AC waveforms. **Select ATR transducers for nonlinear loads in "noisy" power environments.**

OEMs **Test & Evaluation Units for OEMs**
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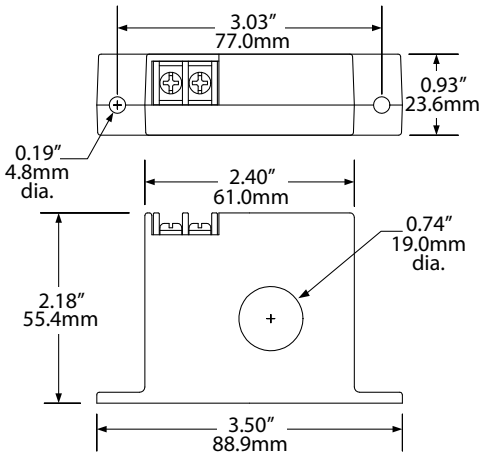
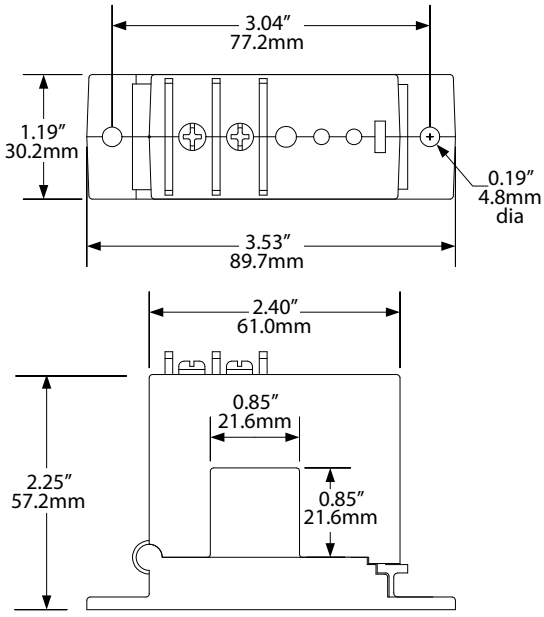
AC Current Transducer Dimensions

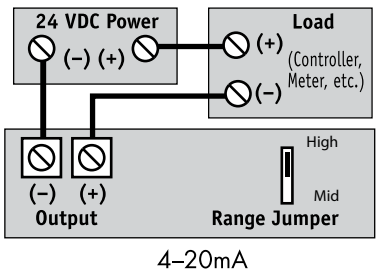
FT Case



SP Case



AC Current Transducer Connections



Notes:
Deadfront captive screw terminals (-SP case).
12–22 AWG solid or stranded.
Observe polarity.

AC Current Transducer Specifications

Power Supply	24 VDC (12–40 VDC)
Output Signal	4–20 mA loop-powered, average or True RMS
Output Limit	23 mA
Output Impedence	<750 Ω @ 24 VDC
Accuracy	1.0% FS
Response Time	600 ms (to 90% step change)
Frequency Range	10–400 Hz
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Input Range	0–200 A (adjustable); consult factory for custom ranges
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATR1-420-24L-SP

True RMS AC current transducer, 10/20/50 A ranges, 4–20 mA output, 24 VDC loop-powered in a split-core case. (DIN rail adapters are included)

	(1)		(2)				(3)				(4)	
ATR		–	**4**	**2**	**0**	–	**2**	**4**	**L**	–		

(1) Full Scale Range

0	2, 5 A
1	10, 20, 50 A
2	100, 150, 200 A

(2) Output Signal

420	4–20 mA

(3) Power Supply

24L	24 VDC loop-powered (4–20 mA output ONLY)

(4) Case Style

FT	Solid-core, top terminals
SP	Split-core

AT/ATR-TH SERIES
Current Transducer

AT/ATR-TH Series Current Transducers are the latest innovation for monitoring three-phase loads, motors, machines or buildings. The large triple-aperture solid-core design allows for a quick and easy installation. Just thread the conductors through the sensing windows (apertures) and reconnect on the other side. The transducer outputs are powered from an excitation voltage of 24 VAC or DC, or optionally 120 VAC, isolated from the monitored circuit. Three outputs are proportional to the AC current in each phase and a fourth represents the average of the three. Each are available at any time. The sensor mounts on a back panel or a DIN rail and is designed to accommodate wire sizes for loads up to 200 amps.

Current Transducer Applications

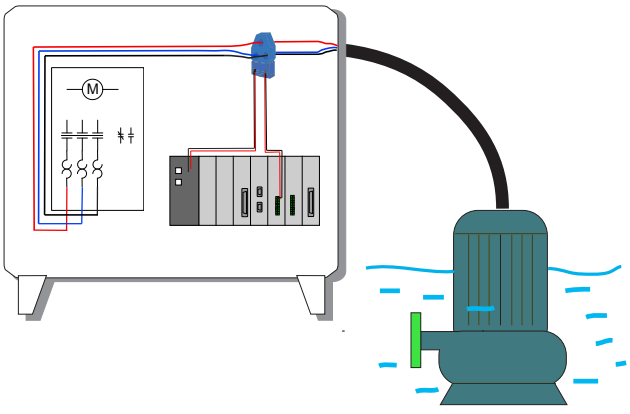
Monitor Large Machines
- Detect over or under current conditions before they cause break downs or interlock one process with another.

Water Delivery and Treatment
- Detect open discharge lines.
- Sense clogged filters or blocked intake to pumps.
- Measure increased current to show failing bearings or pump impeller cavitation.

Generators
- Shed noncritical loads when demand reaches a set level.

Load Imbalance
- Monitor motor current draw which should be nearly equal in all three phases. A difference of 10% signifies trouble.

Submersible Pump Application



Current Transducer Features

Analog Signal Proportional to AC Current
- Both average responding and True RMS models available.
- Compatible with most automation and control systems.
- One output represents the current in each phase. A fourth produces a signal proportional to the average of the current in all three phases.

Externally Powered
- Simple and reliable connection.

Factory Calibrated and Warranted For Five Years
- Choice of ranges : 0–10 to 0–200 amps.
- Designed for longest life and reliability.

Solid-core Case
- Sensing windows provide ample space for single or multiple conductors per phase.

DIN Rail or Panel Mount
- Snap onto DIN rail or attach with screws to a panel for secure mounting.*

Designed to meet UL, cUL and CE
- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

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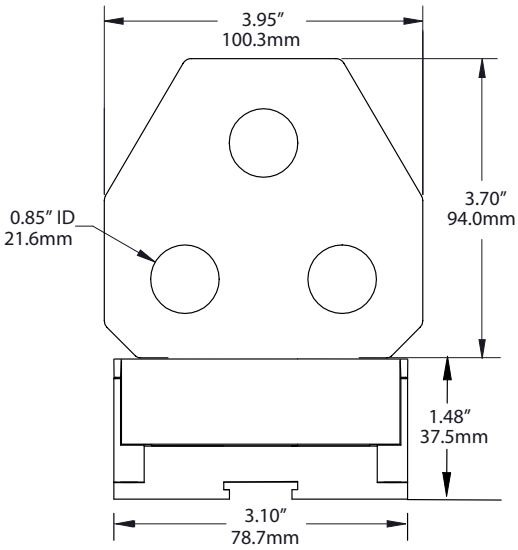
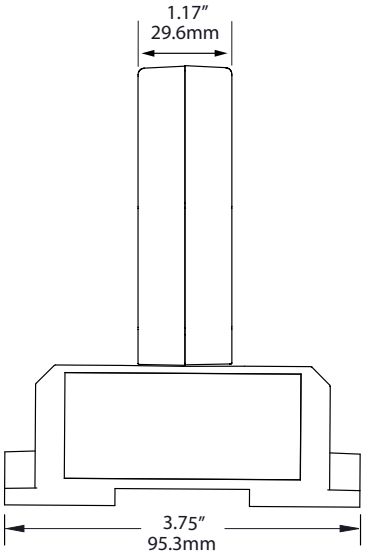
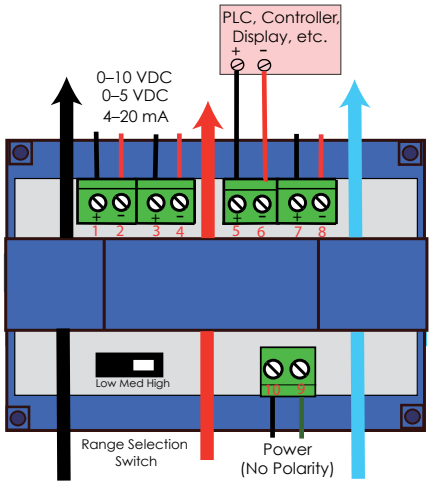
Current Transducer Dimensions





Current Transducer Connections



Current Transducer Specifications

Power Supply		• 24 VAC/DC (22–28 V) • 120 VAC (108–132 VAC)
Power Consumption		<6 VA
Output		Three Individual analogs proportional to current in each phase, one analog proportional to the average of the three current levels.
Signal Impedance		• 4–20 mA: <500 Ω • 0–5/10 VDC >2K Ω
Response Time		220 ms (90% step change)
Ranges (Range selection made with a slide switch.)	1	0–10, 15 and 30 A
	2	0–30, 50, 100 A
	3	0–100, 150, 200 A
Working Voltage		600 VAC
Frequency Range		50–60 Hz. (Avg.), 30–100 Hz (RMS)
Case		UL94 V-0 Flammability Rated
Environmental		-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings		Designed to meet UL, cUL and CE

Ordering Information

Sample Model Number: ATR2-420-24U-TH, AC RMS current transducer, 0–100 A range, 4–20 mA output, 24 VAC/DC, 3 hole solid–core case, DIN rail mount.

	(1)		(2)		(3)				(4)				(5)	
AT		-		-				-				-	**T**	**H**

(1) Output Type

	Average responding (blank)
R	True RMS

(2) Range

1	0–10, 15 and 30 A
2	0–30, 50, 100 A
3	0–100, 150, 200 A

(3) Output Type

420	4–20 mA
005	0–5 VDC
010	0–10 VDC

(4) Power Supply

24U	24 VAC/DC externally powered
120	120 VAC externally powered

(5) Case

TH	Three-hole, solid-core, base terminals, DIN rail or panel mount

AT/ATR-FD SERIES
AC Current Transducers

AT/ATR-FD Series AC Current Transducers provide a current sensor and analog output signal conditioning in a single package. The large, easy-to-install solid-core design allows for quick installation even in applications where there are multiple conductors per phase. Just thread the conductor through the extra large aperture and reconnect on the other side. The transducer output is powered from excitation voltage of around 24 VDC, using just two wires. The sensor mounts on a back panel or a DIN rail, and is designed to accommodate wire sizes for loads up to 400 A.

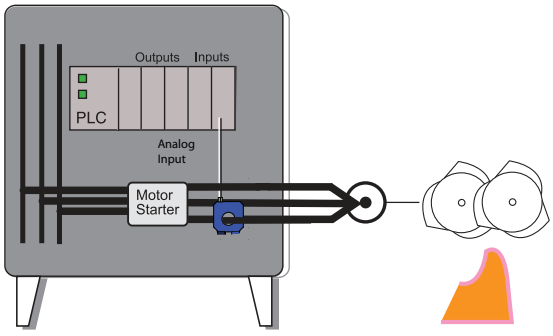
AC Current Transducer Applications

Monitor Large Machines
- Detect over or undercurrent conditions before they cause breakdowns or interlock one process with another.

Water Delivery and Treatment
- Detect open discharge lines.
- Sense clogged filters or blocked intake to pumps.
- Measure increased current to show failing bearings or pump impeller cavitation.

Generators
- Shed noncritical loads when demand reaches a set level.

Shredders



Monitor a shredding operation to measure current usage, enabling automatic shut down if the blades become jammed or overloaded.

For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

4–20 mA Analog Signal Proportional to AC Current
- Both average responding and True RMS models available.
- Compatible with most automation and control systems.

2-Wire Loop Powered
- Simple and reliable connection.

Factory Calibrated with Five Year Warranty
- Choice of three ranges : 0–200, 300 or 400 A.
- Designed for longest life and reliability.

Solid-core Case
- Sensing window provides ample space for a bus bar, a single conductor or multiple conductors.

DIN Rail or Panel Mount
- Simply snap onto DIN rail* or attach with screws to a panel for secure mounting.

UL/cUL and CE Approved
- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

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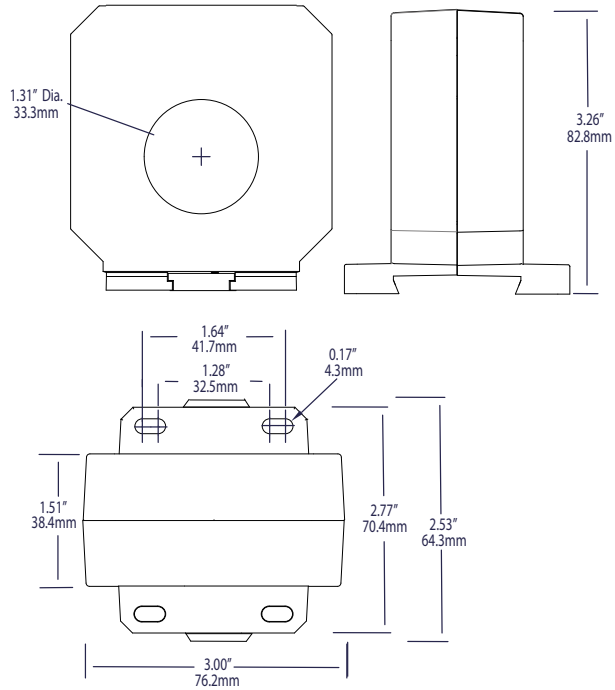
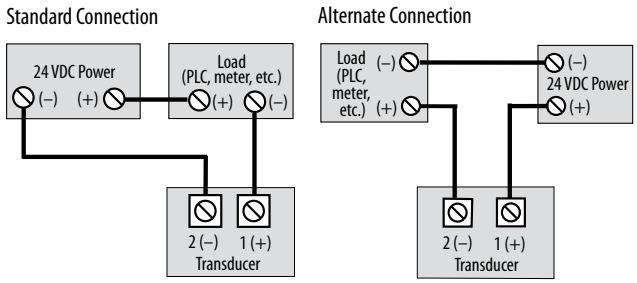
AC Current Transducer Dimensions

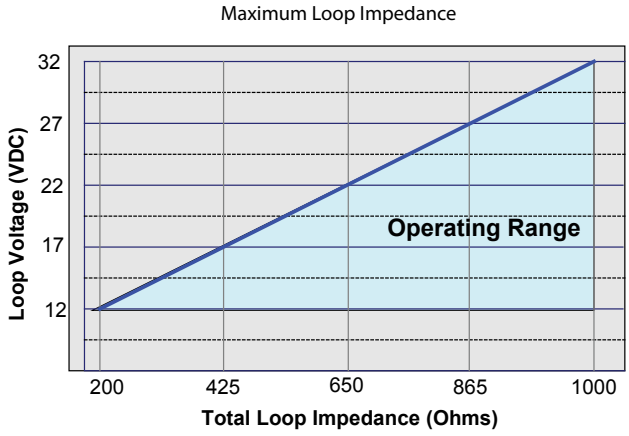


AC Current Transducer Connections

Single Transducer Installation



Loop Power Requirement



$$\text{Loop impedance (ohms)} = \frac{\text{V (supply voltage)} - 7.5\text{V}}{0.025\text{A}}$$

AC Current Transducer Specifications

Power Supply	Loop-powered
Power Consumption	<2 VA
Output Signal	4–20 mA loop-powered, average or True RMS (max. 28 mA)
Output Impedence	<660 Ω @ 24 VDC
Accuracy	1.0% FS
Response Time (90% step change)	• AT: 300 ms • ATR: 1.4 sec.
Range	• AT2: 0–200 A • AT3: 0–300 A • AT4: 0–400 A
Frequency Range	• AT: 40–400 Hz • ATR: 20–400 Hz
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATR2-420-24L-FD

AC True RMS current transducer, 0–200 A range, 4–20 mA output, 24 VDC loop-powered, solid-core case, DIN rail mounting.

	(1)		(2)		(3)			(4)			(5)	
AT		–		–	4	2	0	2	4	L	F	D

(1) Output Type

	Average Responding (Blank)
R	True RMS

(2) Range

2	0–200 A
3	0–300 A
4	0–400 A

(3) Output

420	4–20 mA

(4) Power Supply

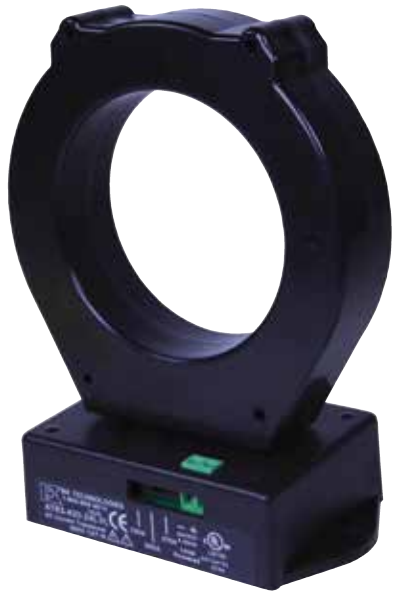
24L	24 VDC loop-powered

(5) Case Style

FD	Solid-core, top terminals, DIN rail or panel mounting

AT/ATR-FL SERIES
AC Current Transducers

AT/ATR-FL Series AC Current Transducers combine a current transformer and a signal conditioner into a single package for applications from 100 A to 2000 A. The AT version is Average Responding for use on linear (sinusoidal) loads. The ATR version is True RMS for use on distorted waveforms found in VFD or SCR ouputs. The AT/ATR-FL Series AC Current Transducers are available in a solid-core case.



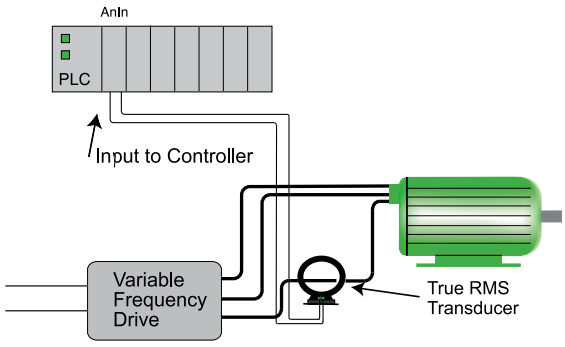
AC Current Transducer Applications

Large Pumps
- Detect dry run electronically.

Power Generation
- Measure the output of generators.

Electric Heating Elements
- Monitors heater loads.
- Faster response than temperature sensors.

Motor Load Monitoring



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

Large Aperture
- Accommodates large conductors or wire bundles.

Select the Right Output
- True RMS technology is accurate on distorted waveforms like those associated with VFD or SCR outputs.
- Average Responding for use with linear, sinusoidal waveforms.

Jumper-selectable Ranges
- Reduces inventory.
- Eliminates zero and span pots.

Isolation
- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

UL/cUL and CE Approved
- Accepted worldwide.

Selecting the right transducer:

The current waveforms of a typical linear load is a pure sine wave. AT transducers measure the peaks of these sine waves, then calculate the average amperage. This works well on constant speed linear loads in "clean" power environments. Select AT transducers for strictly linear loads on "clean" power.

VFD and SCR output waveforms are rough approximations of a sine wave. There are numerous spikes and dips in a mathematical algorithm called "True RMS," which integrates the actual waveforms over time. The output is the amperage component of the true power (heating value) of the AC current waveforms. True RMS is the only way to accurately measure distorted AC waveforms. **Select ATR transducers for nonlinear loads on "noisy power."**

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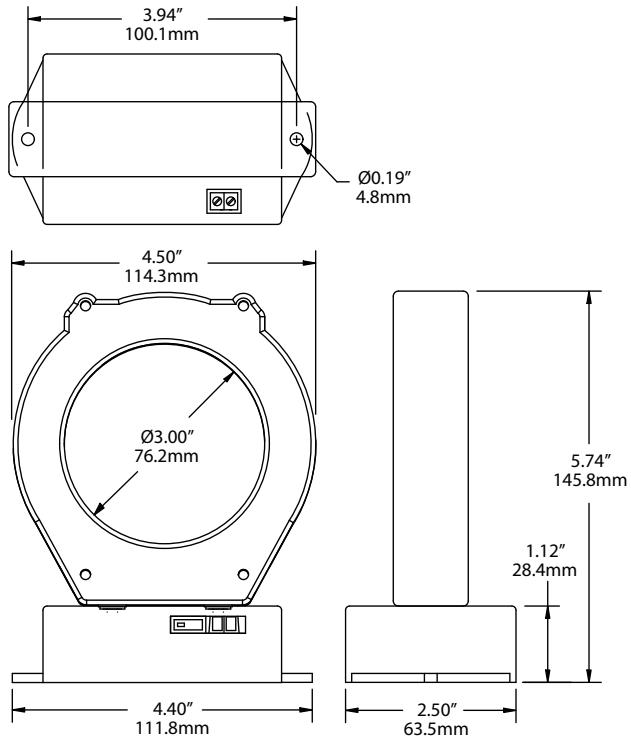
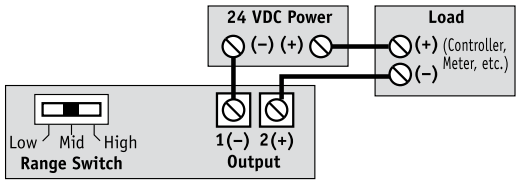
AC Current Transducer Dimensions

FL Case



AC Current Transducer Connections



Notes:
Deadfront captive screw terminals.
12–22 AWG solid or stranded.
Observe polarity.

AC Current Transducer Specifications

Power Supply	24 VDC
Output Signal	4–20 mA loop-powered, average or True RMS
Output Limit	23 mA
Output Impedence	<750 Ω @ 24 VDC
Accuracy	1.0% FS, True RMS
Measurement	True RMS or Average Responding (see ordering information)
Response Time	600 ms (to 90% step change)
Frequency Range	• ATR: 10–400 Hz • AT: 50–60 Hz, sinusoidal
Isolation Voltage	UL listed to 600 VAC, tested to 5 KV
Input Range	• AT/ATR2: 100, 133, 200 A • AT/ATR3: 375, 500, 750 A • AT/ATR4: 1000, 1333, 2000 A
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATR3-420-24L-FL

True RMS AC current transducer, 24 VDC, powered with a 4–20 mA output, 375/500/750 A ranges in a solid-core case.

	(1)		(2)		(3)			(4)			(5)	
AT		–		–	**4**	**2**	**0**	–	**2**	**4**	**L**	–	**F**	**L**

(1) Measurement

R	True RMS
	Average Responding (blank)

(2) Full Scale Range

2	100, 133, 200 A
3	375, 500, 750 A
4	1000, 1333, 2000 A

(3) Output Signal

420	4–20 mA

(4) Power Supply

24L	24 VDC loop-powered

(5) Case Style

FL	Solid-core

AT/ATR-MS SERIES
AC Current Transducers

AT/ATR-MS Series Current Transducers combine a current sensing element and signal conditioner into a single package. The large, easy-to-install split-core design allows for installation over existing conductors without the need to disconnect the load, even in applications where there are multiple conductors per phase. Whether installing over existing conductors or in a new control system, installation is very simple and quick. Just remove the top portion of the sensing ring, place the conductors inside, and snap the top back in place. The transducer uses two wires to connect to the power supply or the load (a programmable logic controller, a panel meter, or a data acquisition system).

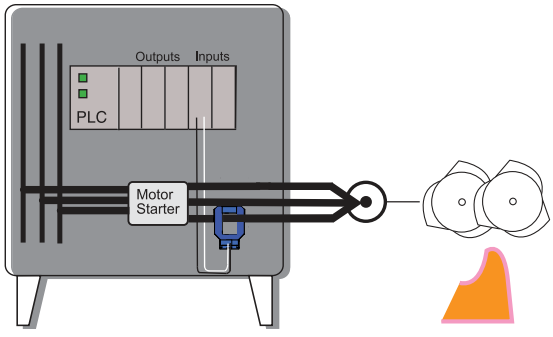
AC Current Transducer Applications

Monitor Large Machines
- Measure the current use to detect over or undercurrent conditions before they cause break downs.

Water Delivery and Treatment
- Detect open discharge lines.
- Locate clogged filters or blocked intake to pumps.

Grinding and Shredding
- An analog output will allow the control system designer to allow brief periods of drive overload when the processed product varies in density. If the blades hit something foreign (e.g. steel when the machine is designed to reduce paper), then the control will alarm or shut down the process.

Shredder Monitoring



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

Industry Standard Output
- 4–20 mA signal proportional to the AC current.
- Compatible with most automation systems.

Loop-powered
- Use the "live zero" output to verify proper connections, where the sensor output is 4 mA with no current through the sensing ring.

Factory Calibrated
- Eliminates zero and span potentiometer adjustment.

Split-core Case
- Sensing window provides ample space for bus bar, single or multiple conductors.

DIN Rail Mounted Case*
- Simply snaps onto DIN rail for secure mounting.

UL/cUL and CE Approved
- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

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Free program expedites evaluation process. See page 3 for details.

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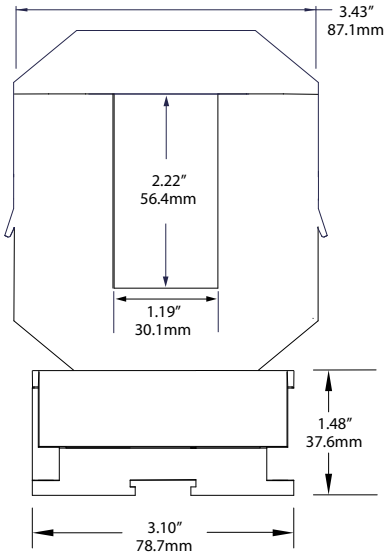
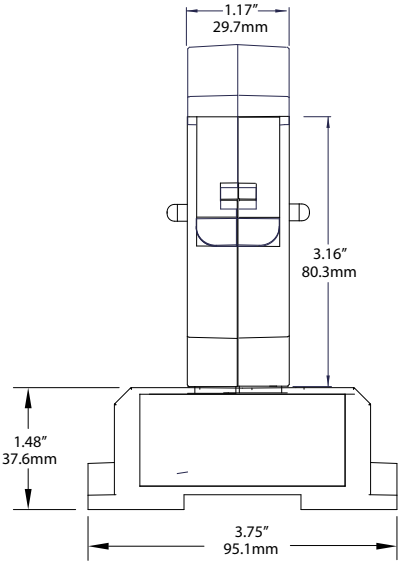
AC Current Transducer Dimensions

MS Case

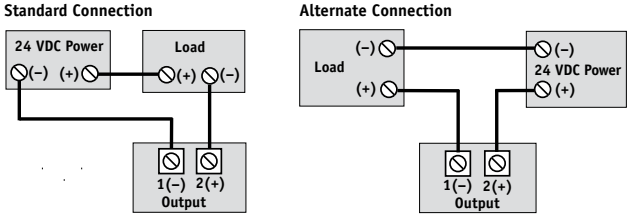




Note: Drawings are not to scale

AC Current Transducer Connections

Single Transducer Installation



AC Current Transducer Specifications

Power Supply	24 VDC nominal (12–32 VDC)
Output Signal	4–20 mA loop-powered, average or True RMS
Output Limit	23 mA
Output Impedence	<750 Ω @ 24 VDC
Accuracy	1.0% from 10–100% of range
Response Time	600 ms (90% step change)
Range	2: 0–200 A 4: 0–400 A 6: 0–600 A 8: 0–800 A
Frequency Range	• AT: 50/60 Hz (average responding) • ATR: 20–400 Hz (True RMS responding)
Isolation Voltage	UL tested to 2000 VAC isolation, monitored conductor to output terminals
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATR6-420-24L-MS

AC current transducer, 0–600 A range, True RMS output 4–20 mA, loop-powered, medium split-core case, DIN rail mounting.

	(1)		(2)		(3)			(4)			(5)	
AT		–		–	4	2	0	2	4	L	M	S

(1) Measurement

	Average responding output signal (blank)
R	True RMS responding output for distorted current

(2) Range

2	0–200 A
4	0–400 A
6	0–600 A
8	0–800 A

(3) Output Type

420	4–20 mA

(4) Power Supply

24L	24 VDC Loop-power (12–32 VDC)

(3) Case Style

MS	Split-core, base terminals, DIN rail mounting

AT/ATR-LS SERIES
AC Current Transducers

AT/ATR-LS Series Current Transducers combine a current transformer and signal conditioner into a single package. The large, easy-to-install, split-core design allows for installation over existing conductors without the need to disconnect the monitored load, even in applications where there are multiple conductors per phase. For new installations, the process is just as easy. Just remove the top portion of the sensing ring, place the conductors inside, and snap the top back in place. The transducer uses two wires to connect to the power supply and the load (a programmable logic controller, a panel meter or a data acquisition system).

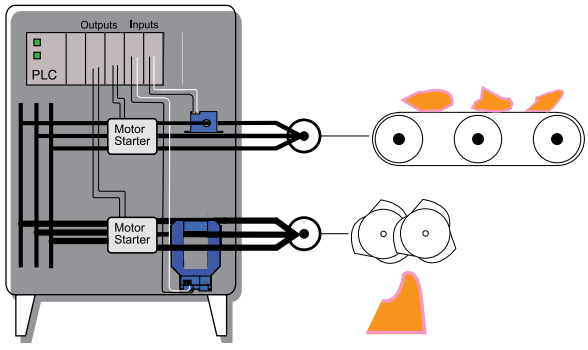
AC Current Transducer Applications

Monitor Large Machines
- Measure the current use to detect over or undercurrent conditions before they cause break downs.

Water Delivery and Treatment
- Detect open discharge lines.
- See clogged filters or blocked intake to pumps.

Generators
- Keep the power system running by monitoring the output.

Grinder/Shredder Application



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

Industry Standard Output
- 4–20 mA signal proportional to the AC current.
- Compatible with most automation systems.

Loop-powered
- Use the "live zero" output to verify proper connections (sensor output with no current flowing confirms the system is ready to go).

Factory Calibrated
- Eliminates zero and span potentiometer adjustment.

Split-core Case
- Sensing window provides ample space for bus bar, single or multiple conductors.

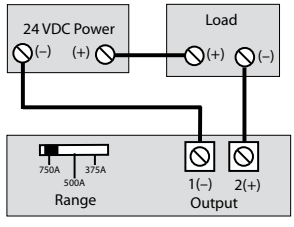
DIN Rail Mounted Case*
- Simple snap onto DIN rail for secure mounting.

UL/cUL and CE Approved
- Accepted worldwide.

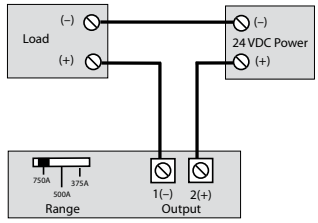
*For information on the DIN rail accessories kit, see page 140.

AC Current Transducer Connections

Standard Connection



Alternate Connection



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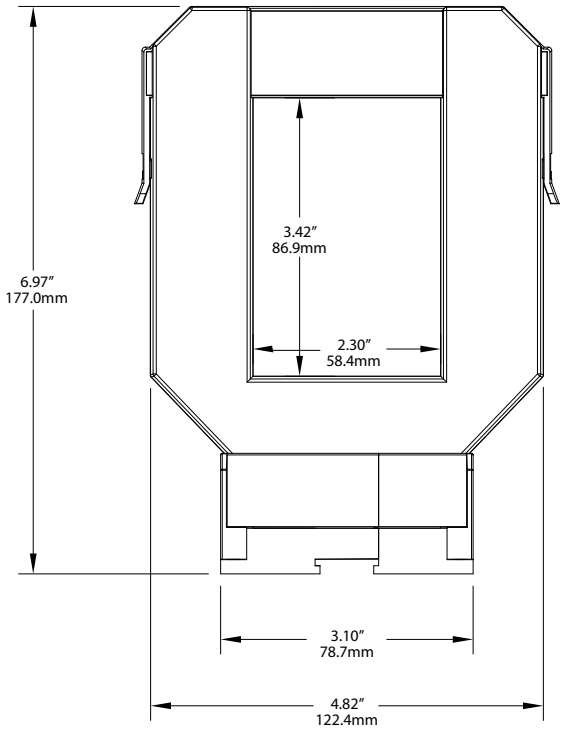
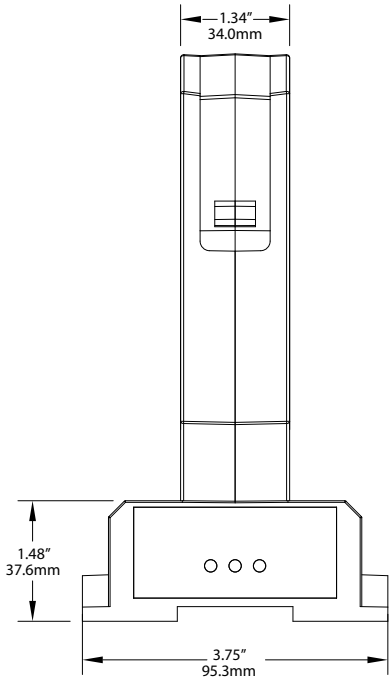
AC Current Transducer Dimensions

LS Case





Note: Drawings are not to scale

AC Current Transducer Specifications

Power Supply	24 VDC nominal (12–32 VDC)
Output Signal	4–20 mA loop-powered, average or True RMS
Output Limit	23 mA
Output Impedence	<750 Ω @ 24 VDC
Accuracy	1.0% FS
Response Time	600 ms (90% step change)
Range	8: 0–800 A 10: 0–1000 A 12: 0–1200 A 16: 0–1600 A
Frequency Range	• AT: 50/60 Hz (average responding) • ATR: 20–400 Hz (True RMS responding)
Isolation Voltage	UL tested to 2000 VAC isolation, monitored conductor to output terminals
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATR10-420-24L-LS

AC current transducer, 0–1000 A range, True RMS output 4–20 mA, loop-powered, large split-core case, DIN rail mounting.

	(1)	(2)		(3)			(4)			(5)	
AT				4	2	0	2	4	L	L	S

(1) Measurement

	Average responding (blank)
R	True RMS responding output for distorted current

(2) Range

8	0–800 A
10	0–1000 A
12	0–1200 A
16	0–1600 A

(3) Output Type

420	4–20 mA

(4) Power Supply

24L	24 VDC loop-powered

(5) Case Style

LS	Split-core, base terminals, DIN rail mounting

ATCR SERIES
AC Current Transducers

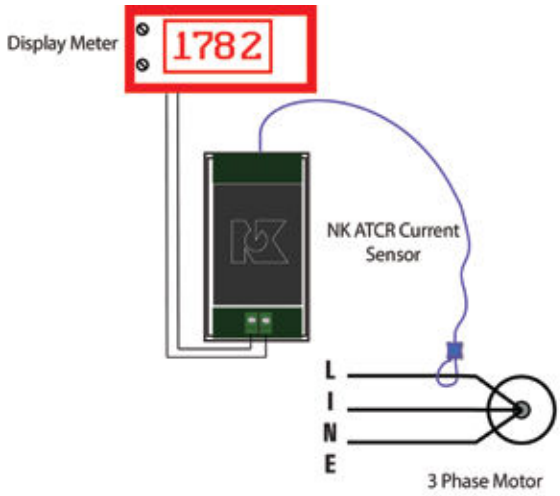
ATCR Series AC Current Transducers combine a sensing coil and a True RMS signal conditioner as a matched, factory-calibrated set. The ATCR Series AC Current Transducers are designed to produce an analog 4–20 mA signal proportional to AC current up to 2000 A. The coil opens to pass over the installed conductors. When connected to a controller or data logger, the sensor output is directly proportional to the primary current.

AC Current Transducer Applications

Monitor Large Machines
- Monitoring resistive or inductive load to detect current.
- Industry standard 4–20 mA output for connection to PLC or data loggers.

Flexible Coil Surrounds Conductors Without Disturbing Wiring
- Install over bus bars, or single or multiple conductors easily.
- Fast response to changes in operating conditions.

Two-Wire Loop-powered Output



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

True RMS Output
- True RMS technology is accurate on distorted waveforms like VFD or phase angle-fired SC outputs.

Single Range
- No chance of field range selection errors.
- Eliminates zero and span pots.

Isolation
- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

Compact DIN Rail Mounted Case*
- Space saving 35 mm wide enclosure mounts quickly.

UL/cUL and CE Approved
- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

AC current monitoring of large loads:

Loads drawing large amounts of power are connected to the supply using large wire or a bus bar. Disconnecting the conductors and threading them through a solid sensing ring or current transformer is difficult and time consuming. With this new design, the sensing is accomplished using a coil without a magnetically permeable core. This allows the installer to pass the coil around the conductors after they are connected without the need to disconnect. The coil is attached to a signal conditioning circuit, and the output signal is powered from the 24 VDC nominal loop voltage. Simple, easy to install, the ATCR Current Sensor can monitor sinusoidal or distorted current waveforms at frequencies to 400 Hz, and is designed for industrial uses.

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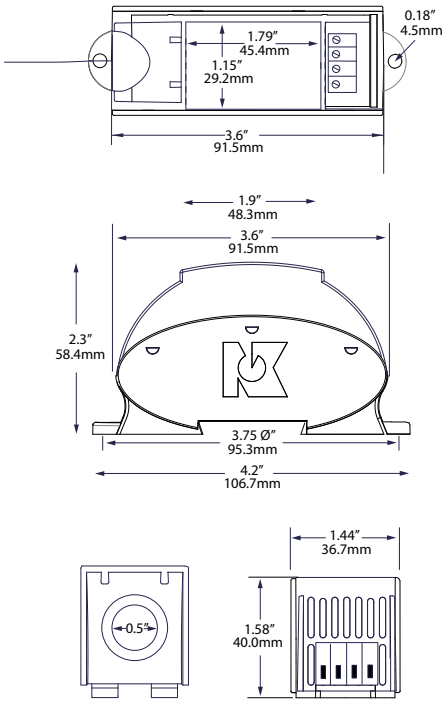
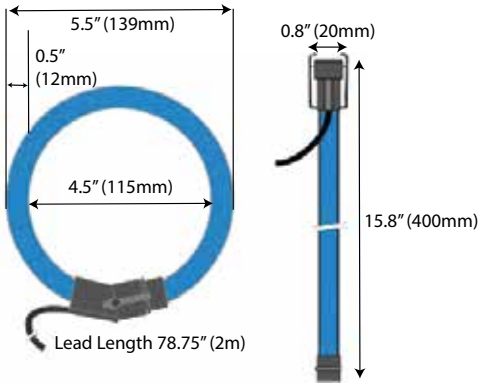
AC Current Transducer Dimensions

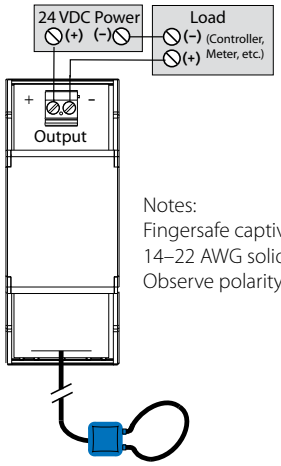
Base



Coil



AC Current Transducer Connections



Notes:
Fingersafe captive screw terminals.
14–22 AWG solid or stranded.
Observe polarity.

AC Current Transducer Specifications

Power Supply	24 VDC nominal (12–36 VDC)
Output Signal	4–20 mA loop-powered, True RMS
Output Limit	23 mA
Output Impedence	<750 Ω @ 24 VDC
Accuracy	1.0% from 10–100% of range
Response Time	600 ms (90% step change)
Frequency Range	40–400 Hz
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Input Range	Single range, custom ranges available; consult factory
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL, CE

AC Current Transducer Ordering Information

Sample Model Number: ATCR1-420-24L-D

True RMS AC current transducer, 500 A range, 4–20 mA output, 24 VDC loop-powered, coil sensor connected to DIN rail mounting case.

	(1)		(2)			(3)			(4)
ATCR		–	**4**	**2**	**0**	–	**2**	**4**	**L**	–	**D**

(1) Full Scale Range

1	500 A
2	1000 A
3	1500 A
4	2000 A

(2) Output Signal

420	4–20 mA

(3) Power Supply

24L	24 VDC loop-powered

(4) Case Style

D	Coil connected to DIN rail mounting case

ATP SERIES
AC Current Transducers

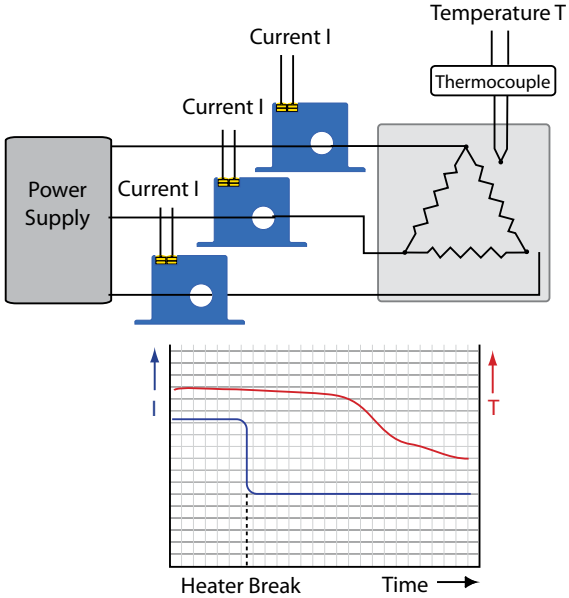
ATP Series AC Current Transducers sense currents from 0–200 A and provide a proportional analog VDC or mA output. Externally powered by 120 VAC/DC or 24 VAC/DC, the ATP Series AC Current Transducers eliminate the need for costly power supplies or voltage rectifiers inside the control panel. Designed for motor control applications with standard sinusoidal waveforms, these transducers feature user-selectable input ranges, a choice of outputs and split-core or solid-core cases.

AC Current Transducer Applications

Commercial and Industrial Motor Control Centers

- 120 VAC/DC power supply option allows for powering off of readily available supplies; ideal for pumping, water/wastewater, boiler and other industrial applications.
- Eliminates the need for 24 VDC power supply or AC rectifiers within the control panel; saves space, material and labor associated with power supplies.

Heater Failure Detection



For additional Application Examples, go to www.nktechnologies.com/applications

OEMs **Test & Evaluation Units for OEMs**
Free program expedites evaluation process. See page 3 for details.

AC Current Transducer Features

Fast, Accurate RMS Measurement

- Unique 'average responding' algorithm provides RMS output on pure sine wave and constant speed loads, offering improved accuracy over two-piece solutions.

Jumper-selectable Input Ranges

- Each unit has multiple input range capability and can be used for a variety of applications, reducing the need for separate models.

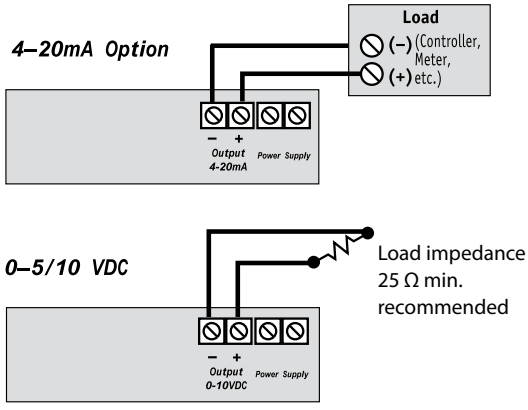
Isolation Output

- Output is magnetically isolated from the input for enhanced safety and elimination of insertion losses.

Designed for UL/cUL and CE Approval

- Accepted worldwide.

AC Current Transducer Connections



Notes:
Terminals are deadfront captive screw terminals.
Use 12–22 AWG solid or stranded.

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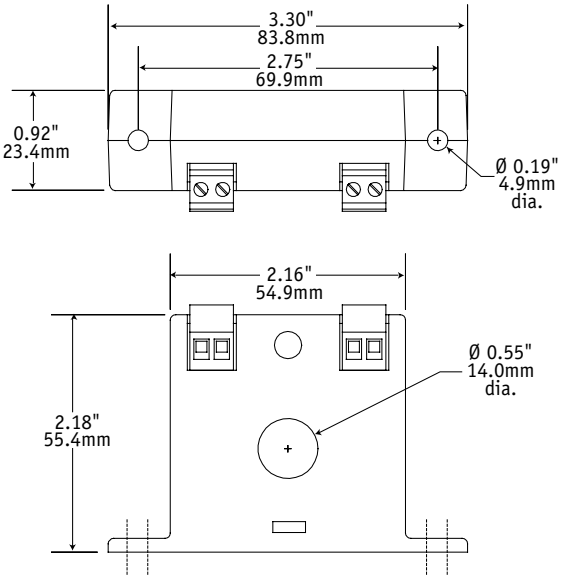
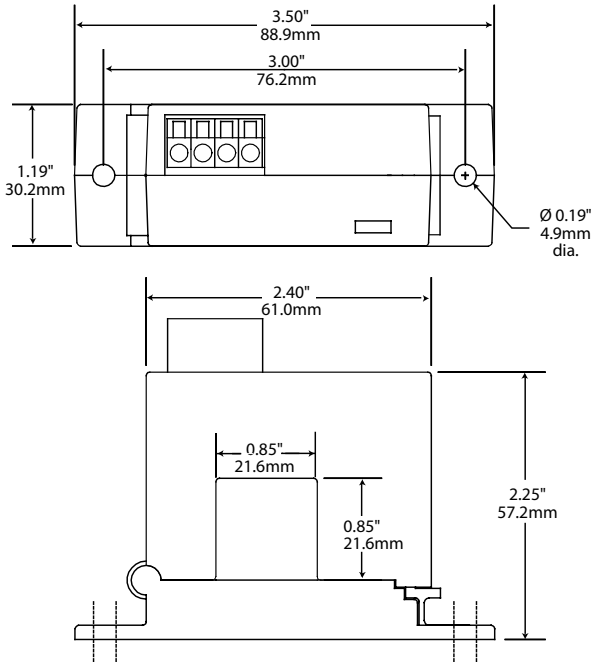
AC Current Transducer Dimensions

FF Case



SP Case



AC Current Transducer Specifications

Power Supply	• 120 VAC/DC (108–132 V) • 24 VAC/DC (22–26 V)
Power Consumption	<2 VA
Output Signal	• -005 Model: 0–5 VDC • -010 Model: 0–10 VDC • -420 Model: 4–20 mA
Output Limit	• -005 Model:112% (5.6 V) • -010 Model: 112% (11.2 V) • -420 Model: 112% (22.4 mA)
Output Impedence	25 KΩ min.: VDC models 500 Ω max.: 4–20 mA models
Accuracy	1.0% FS
Response Time	100 ms (10–90% step change)
Frequency Range	40–100 Hz standard
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Input Range	0–200 A jumper-selectable
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL and CE approval

AC Current Transducer Ordering Information

Sample Model Number: ATP1-420-120-SP

Powered AC current transducer, jumper-selectable 0–10/20/50 A range, 4–20 mA output, 120 VAC/DC power supply, split-core case. (DIN rail adapters are included)

	(1)		(2)			(3)			(4)	
ATP		–			–			–		

(1) Full Scale Range

0	2, 5 A
1	10, 20, 50 A
2	100, 150, 200 A

(2) Output Signal

005	0–5 VDC
010	0–10 VDC
420	4–20 mA

(3) Power Supply

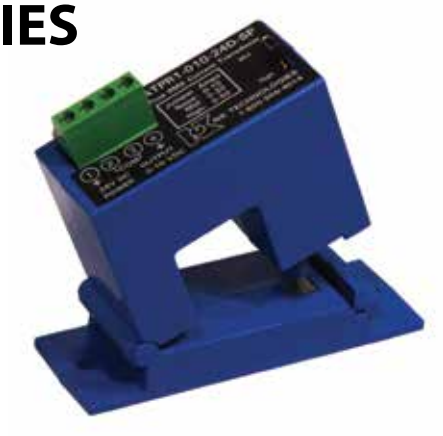
120	120 VAC/DC
24U	24 VAC/DC with isolated output

(4) Case Style

FF	Solid-core
SP	Split-core

ATPR VOLTAGE OUTPUT SERIES

AC Current Transducers



ATPR AC Current Transducers combine a current transformer with a True RMS signal conditioner in a single package. These current transducers produce a 0–5 or 0–10 VDC True RMS output on distorted waveforms found in the output of variable frequency drives, phase angle fired heating controls and on linear loads in "noisy" power environments. The ATPR Series AC Current Transducers are available in split-core case only.

AC Current Transducer Applications

VFD Controlled Loads

- Monitor the output of variable frequency driven loads, even when the unit is in bypass mode.

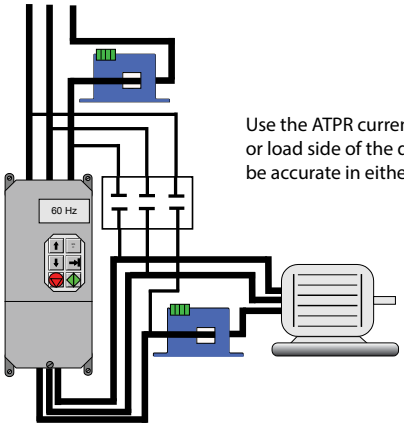
SCR Controlled Loads

- Accurate measurement of phase angle fired heating controls.
- Current measurement produces a quicker response to element failure than temperature controls.

Switching Power Supplies and Electronic Ballasts

- True RMS sensing is the most accurate way to measure power supply and ballast input power.

Monitoring a Variable Frequency Drive



Use the ATPR current transducer on the line or load side of the drive and the signal will be accurate in either position.

For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

True RMS Sensing

- Sensor output is proportional to the current flowing in the circuit, even with high distortion or harmonic loads.
- Compatible with most automation systems.

External Powered

- Provides the highest degree of accuracy and response.

Range-selectable

- One sensor covers a wide variety of loads.
- Field-selectable ranges keep spare part inventory at a minimum and allow for changes in load conditions.

Split-core Case

- Simple installation, release the latch and snap over the conductor.

DC Voltage Output

- Perfect for data acquisition systems, panel meters or controllers with only voltage inputs available.

Built-in Mounting Feet

- Simple, two-screw panel mounting or attach with DIN rail brackets (included).*

Designed for UL/cUL, CE Approval

- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

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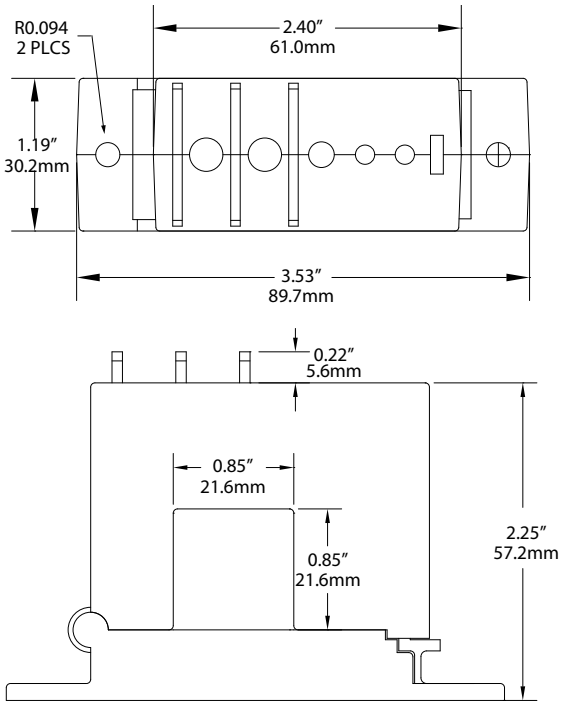
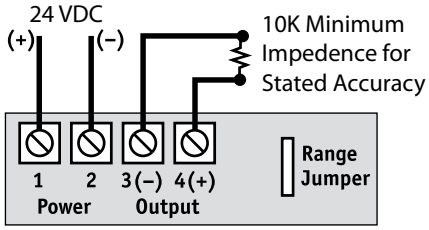
AC Current Transducer Dimensions

SP Case



AC Current Transducer Connections



AC Current Transducer Specifications

Power Supply	24 VDC (20–28 VDC)
Power Consumption	<2 VA
Output Signal	• 0–5 VDC, proportional to True RMS current • 0–10 VDC, proportional to True RMS current
Output Impedence	10 KΩ min.
Response Time	600 ms
Frequency Range	10–400 Hz
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL and CE approval

AC Current Transducer Ordering Information

Sample Model Number: ATPR1-010-24D-SP

True RMS AC current transducer, 10/20/50 A FS input ranges, 0–10 VDC output, 24 VDC power supply, split-core case. (DIN rail adapters are included)

	(1)		(2)				(3)				(4)	
ATPR		–				–	**2**	**4**	**D**	–	**S**	**P**

(1) Full Scale Range

0	2, 5 A
1	10, 20, 50 A
2	100, 150, 200 A

(2) Output Type

005	0–5 VDC, True RMS
010	0–10 VDC, True RMS

(3) Power Supply

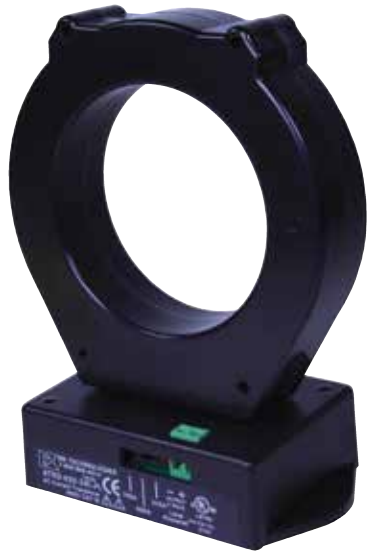
24D	24 VDC

(4) Case Style

SP	Split-core

ATP/ATPR-FL SERIES
AC Current Transducers

ATP/ATPR-FL Series AC-Current Transducers are large-format solid-core transducers designed for high current applications from 200 A to 2000 A. Powered by 120 VAC or 24 VAC/DC, the ATP/ATPR-FL Series takes advantage of available power supplies and eliminates the need for costly control power transformers. Options include average responding and True RMS versions, 0–5/10 VDC or 4–20 mA analog outputs and switch-selectable input ranges.



AC Current Transducer Applications

Commercial and Industrial MCC's
- Fits conveniently in motor control centers, senses current on industrial motors and provides analog inputs back to PLC or controller.

VFD or SCR Controlled Loads, Electronic Ballasts
- Helpful in monitoring VFD-controlled motors to provide operational status. Provides accurate measurement of ballast input power and phase angle fired SCRs.

Large Pumping Applications
- Ideal for proof-of-flow in water/wastewater, boiler and other industrial pumping applications 150 HP and over. 120 VAC/DC or 24 VAC/DC supply options allow for powering off of readily available supply, eliminating need for CPTs.

Power Distribution Centers (PDCs)
- Monitors current output on commercial generation equipment and serves as a current input for use in power consumption calculations.

AC Current Transducer Features

Large Aperture
- Accommodates large conductors or wire bundles.

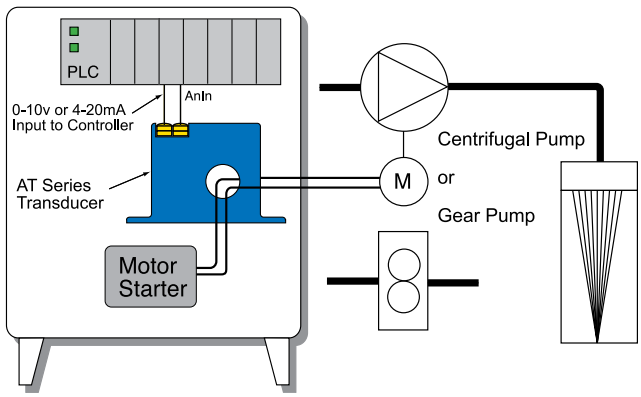
Select the Right Output
- True RMS technology is accurate on distorted waveforms like those associated with VFD or SCR outputs.
- Average Responding for use with linear, sinusoidal waveforms.

Jumper-selectable Ranges
- Reduces inventory.
- Eliminates zero and span pots.

Isolation
- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

Designed for UL/cUL, CE Approval
- Accepted worldwide.

Centrifugal Pump Monitoring



OEMs **Test & Evaluation Units for OEMs**
Free program expedites evaluation process. See page 3 for details.

For additional Application Examples, go to www.nktechnologies.com/applications

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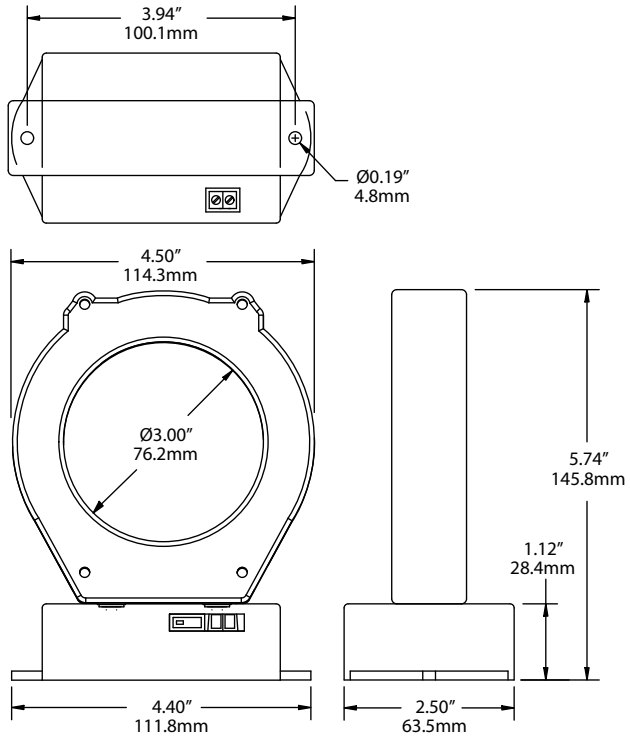
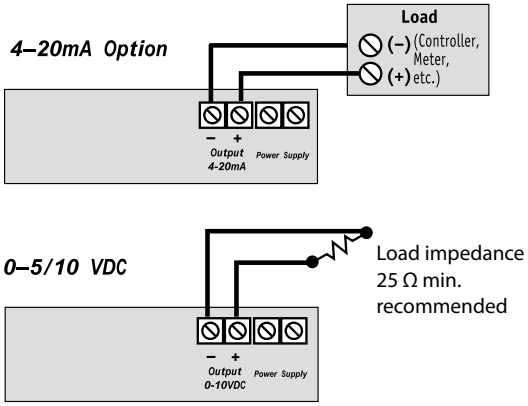
AC Current Transducer Dimensions

FL Case



AC Current Transducer Connections



Notes:
Terminals are deadfront captive screw terminals.
Use 12–22 AWG solid or stranded.

AC Current Transducer Specifications

Power Supply	• 120 VAC/DC (108–132 V) • 24 VAC/DC (22–26 V)
Power Consumption	<2 VA
Output Signal	• -005 Model: 0–5 VDC • -010 Model: 0–10 VDC • -420 Model: 4–20 mA
Output Limit	• -005 Model: 112% (5.6 V) • -010 Model: 112% (11.2 V) • -420 Model: 112% (22.4 mA)
Output Impedence	25 KΩ min.: VDC models 500 Ω max.: 4–20 mA models
Accuracy	1.0% FS
Response Time	• ATP: 100 ms (10–90% step change) • ATPR: 600 ms (10–90% step change)
Frequency Range	• ATP: 40–100 Hz, sinusoidal • ATPR:10–400 Hz
Isolation Voltage	UL listed to 600 VAC, tested to 5 KV
Input Range (switch-selectable)	• ATP3/ATPR3: 0–375 A/500 A/750 A • ATP4/ATPR4: 0–1000 A/1333 A/2000 A
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL and CE approval

AC Current Transducer Ordering Information

Sample Model Number: ATPR-3-420-120-FL

True RMS AC current transducer, 120 VAC/DC, powered with a 4–20 mA output, 375/500/750 A ranges in a solid-core case.

	(1)		(2)		(3)				(4)				(5)	
ATP		–		–				–				–	F	L

(1) Measurement

R	True RMS
	Average Responding (blank)

(2) Full Scale Range

3	375, 500, 750 A
4	1000, 1333, 2000 A

(3) Output Signal

005	0–5 VDC
010	0–10 VDC
420	4–20 mA

(4) Power Supply

24U	24 VAC/DC
120	120 VAC/DC

(5) Case Style

FL	Solid-core

ATH SERIES

AC Current Transducer with Time Integration

US Patent 8589101

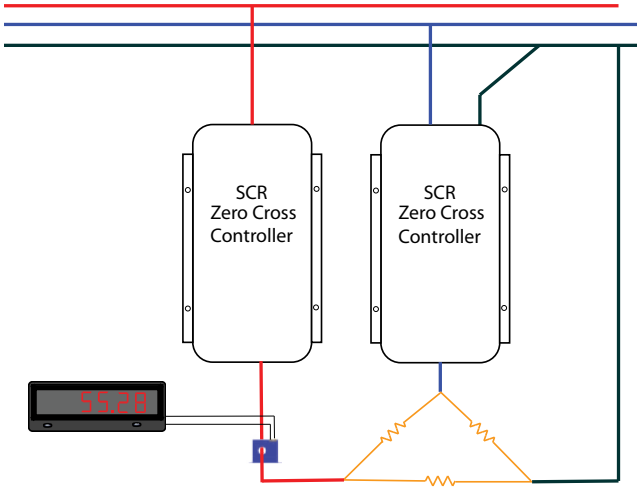
ATH Series (patented) AC Current Transducers are the latest innovation from NK Technologies. Monitoring the current or power controlled by silicon-controlled rectifiers (SCRs) can be a challenge, especially the current used by heaters. When used to monitor zero-crossing (burst) fired SCRs, the ATH will provide an output signal directly proportional to the RMS amperage. Zero-crossing fired controls allow current to flow to the circuit for as short of a time period as one cycle, and off for several cycles. Most current sensors will not work well when there is no current present. This capability is important in case a heating element fails but the process continues operating, which could result in scrapped material.

AC Current Transducer Applications

Electrical Heaters

- Faster response than temperature sensors.
- Simplest method to monitor pulsed waveforms.

Burst-Fired Heating Controls



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

Industry Standard Outputs

- 4–20 mA, 0–5 or 0–10 VDC.
- Compatible with most automation systems.

External Powered

- Split-core models available powered with 24 VAC or DC.
- Solid-core models powered with 24 VAC or DC or 120 VAC.

Factory Calibrated

- No need for zero and span adjustment potentiometers.

RMS Output

- Accurate measurement of sinusoidal or pulsed current wave shapes.

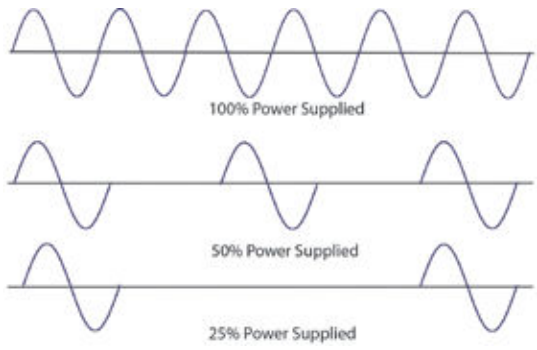
Built-in Mounting Feet

- Simple, two-screw panel mounting or attach with DIN rail brackets (ncluded).*

Designed for UL/cUL and CE Approval

- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.



ATH AC current transducers will produce a signal proportional to the current used even when the controller is supplying power in one cycle increments. This is quite common as the "burst-fired" zero crossing witching method produces less harmonic distortion than phase-angle fired controls.

OEMs **Test & Evaluation Units for OEMs**
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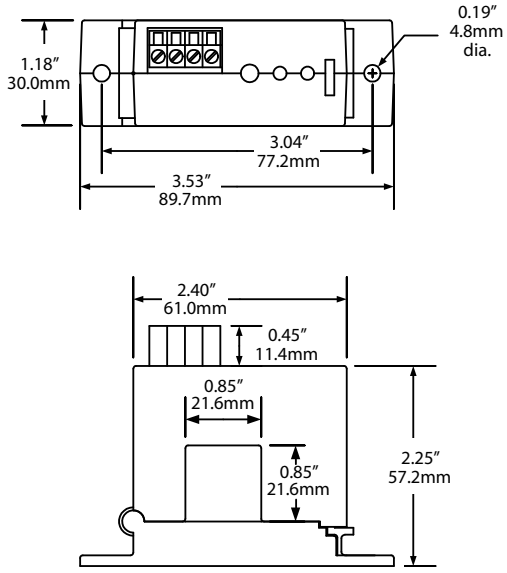
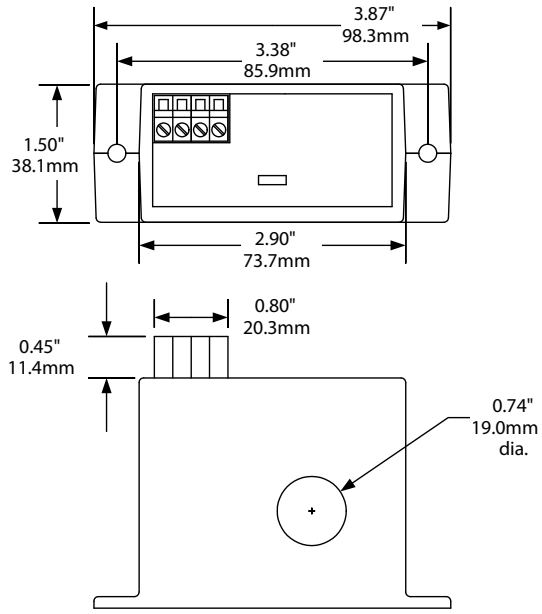
AC Current Transducer Dimensions

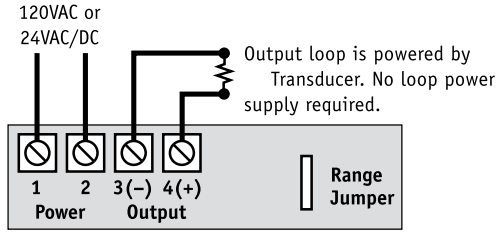
SP Case



FL Case



AC Current Transducer Connections



AC Current Transducer Specifications

Power Supply	• 120 VAC (108–132 V) solid-core only • 24 VAC/DC (22–26 V) solid or split-core
Consumption	<2 VA
Output Signal	• 4–20 mA (20 mA maximum) • 0–5 VDC (5 VDC maximum) • 0–10 VDC (10 VDC maximum)
Output Impedence	• 0–5 or 0–10 VDC: 10 KΩ min. • 4–20 mA: 500 Ω max.
Accuracy	1% FS
Response Time	• 600 ms max., 250 ms at 100% power • PWM Cycle Period: 12 ms (minimum), 54 sec (maximum)
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL and CE approval

AC Current Transducer Ordering Information

Sample Model Number: ATH1-420-24U-SP

AC current transducer, time proportioned, 4-20 mA output, 24 VAC or DC power supply, split-core case. (DIN rail adapters are included)

	(1)		(2)			(3)			(4)	
ATH		–						–		

(1) Range

0	2 and 5 A
1	10, 20 and 50 A
2	100, 150 and 200 A

(2) Output Type

420	4–20 mA
005	0–5 VDC
010	0–10 VDC

(3) Power Supply

24U	24 VAC or DC
120	120 VAC

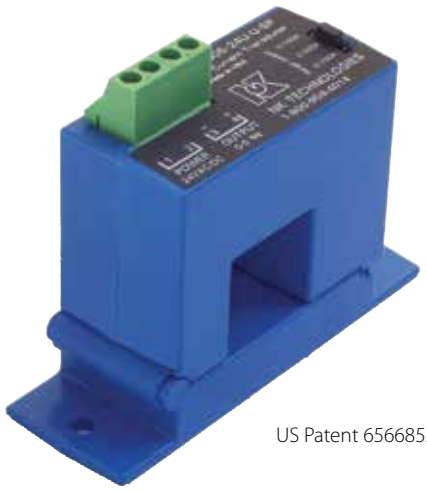
(4) Case Style

SP	Split-core
FL	Solid-core

ATQ SERIES

Frequency Output AC Current Transducers

ATQ Series AC Current Transducers have a patented frequency output design used as an input to high-speed counter or frequency PLC modules, panel meters or programmable relays. Use where no analog inputs are available. Eight ranges, from 0–2 to 0–200 A, across three models provide the best available resolution. The ATQ Series AC Current Transducers are designed with a split-core case for easy installation.



US Patent 6566855

AC Current Transducer Applications

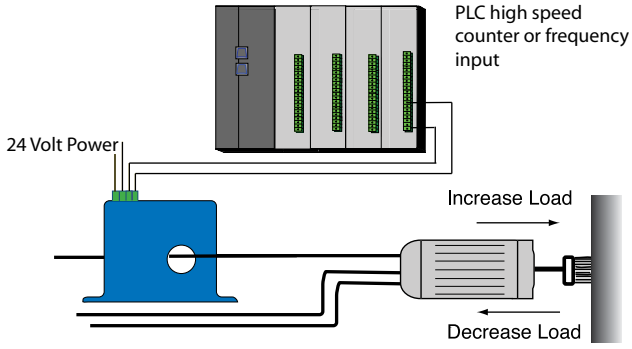
Motion and Motor Control

- Pump, grinder, and fan motor status monitoring.
- Belt jam sensing in conveyor applications.
- Motor control in deburring/brush operations.
- Detect strain, acts as an electronic shear pin.

Current Measurement

- Measure current use in machine tools, polishing, and cutting operations where a small PLC has sufficient capacity to accept the sensor inputs measuring speed, time of use and electrical demands of the equipment.

Frequency Output Control



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

True RMS Output

- True RMS technology is accurate on distorted waveforms like VFD or SCR outputs.

Jumper-selectable Ranges

- Reduces inventory.
- Eliminates zero and span pots.

Isolation

- Output is magnetically isolated from the input for safety.
- Eliminates insertion loss (voltage drop).

Easy Installation

- Split-core case means the monitored conductor does not need to be disconnected to install the sensor.

OEMs **Test & Evaluation Units for OEMs**
Free program expedites evaluation process. See page 3 for details.

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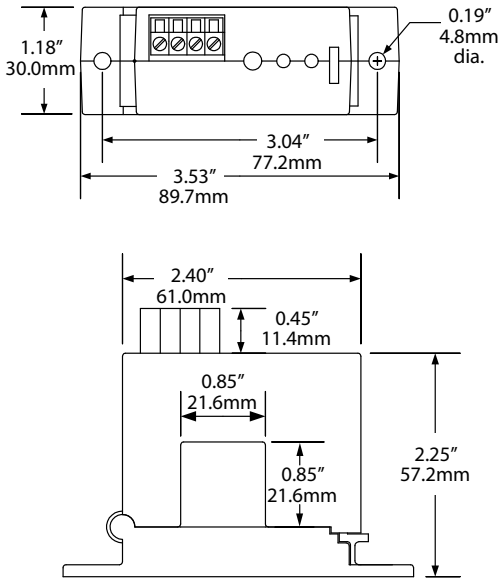
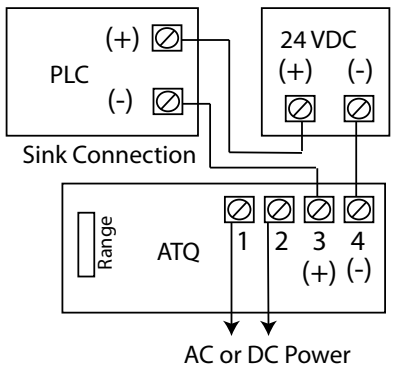
AC Current Transducer Dimensions

SP Case

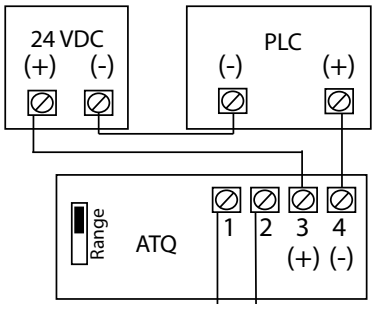


AC Current Transducer Connections

Sinking Input Connection



Sourcing Input Connection



AC Current Transducer Specifications

Power Supply	24 VAC/DC (19–26 V)
Power Consumption	<1 VA
Output Signal	• 5 KHz at full range current • 10 KHz at full range current
Response Time	100 ms (to 90% step change)
Frequency Range	6–100 Hz
Input Frequency	40–400 Hz
Pulse Width	On: 40 microseconds Off: Variable
Isolation Voltage	Tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing

AC Current Transducer Ordering Information

Sample Model Number: ATQ1-05K-24U-SP

AC current transducer, 5K frequency at 10, 20 or 50 A, split-core case. (DIN rail adapters are included)

(1)	(2)	(3)	(4)
ATQ [ ] – [ ][ ][ ] –	2	4	U	–	S	P

(1) Range

0	2 and 5 A
1	10, 20, 50 A
2	100, 150, 200 A

(2) Frequency Output

05K	5K Hz
10K	10K Hz

(3) Power Supply

24U	24 VAC/DC power (external)

(4) Case Style

SP	Split-core

ATS SERIES

AC Current Transducer/Switch with Digital Setpoint Display

ATS Series AC Current Sensors combine a current operated switch and transducer into a single package. The FL model features a digital display that gives visual indication of the setpoint for greater accuracy. The sensor provides a solid-state contact which will change state when the current exceeds an adjustable level or falls below the normal running current. This means reduced installation time, plus the option to have local control of a starter coil while at the same time sending the analog signal back to a controller housed in a separate cabinet.

AC Current Transducer Applications

Electronic Proof of Operation

- Current operated switches eliminate the need for multiple pipe or duct penetrations and are more reliable than electromechanical pressure or flow switches.

Conveyors

- Detect jams and overloads.
- Interlock multiple conveyor sections.

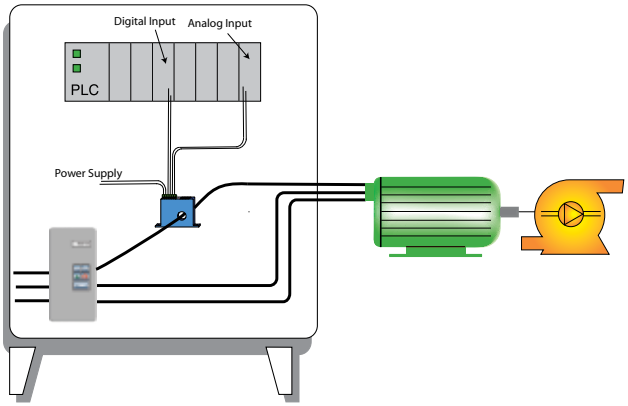
Pump Control

- Provides signal to measure current and shuts down the pump if the current rises over the setpoint.

Cooling Towers

- Analog monitors time of use and contact opens if a filter clogs.

Pump Jam & Suction Loss Protection



AC Current Transducer Features

Solid-state Output

- N.O. or N.C. solid-state switch for control circuits up to 240 VAC.
- Compatible with most automation systems.

External Powered

- Allows for higher accuracy.

Easily Adjustable and Precise Setpoint

- Speeds startup.

Analog Output

- Measures the current used at all times.

LED Display

- Provides quick visual indication of where the contact changes. Display flashes on and off when current has exceeded the setpoint.
- Easiest and most accurate setpoint adjustment available.

Built-in Mounting Feet

- Simple, two-screw panel mounting or attach with DIN rail brackets (included).*

Designed for UL/cUL, CE Approval

- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

For additional Application Examples, go to www.nktechnologies.com/applications

OEMs **Test & Evaluation Units for OEMs**
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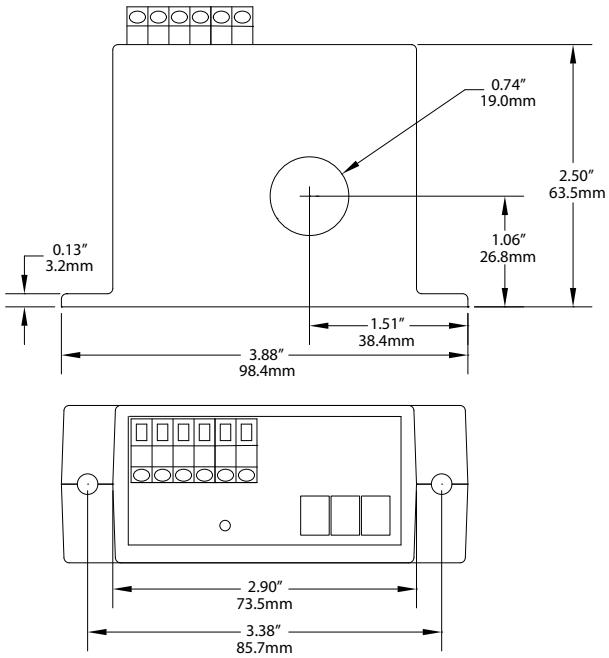
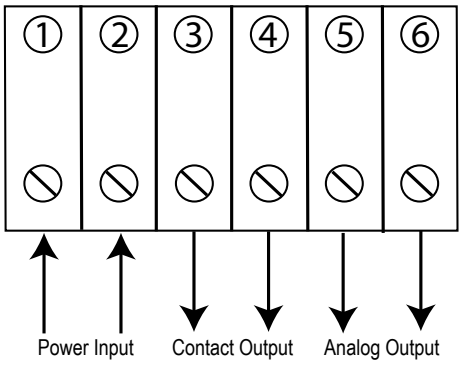
AC Current Transducer Dimensions



AC Current Transducer Connections



Display shows the trip point, and flashes when AC current exceeds that value. A trip point of 15 A is displayed as 015.

AC Current Transducer Specifications

Power Supply	24 VDC (18–28 V)
Power Consumption	40–70 mA
Input Range	• ATS1: 0–50 A • ATS2: 0–200 A
Output Signal	• 4–20 mA: 500 Ω max. • 0–5 or 0–10 VDC: 5 KΩ max.
Output Limit	5/10 VDC; 20 mA
Output Impedence	• 4–20 mA: 500 Ω max. • 0–5 or 0–10 VDC: 5 KΩ max.
Accuracy	+/-1.0% FS
Analog Response Time	250ms to 90% step change
Switch Response Time	• <500 ms for 5% over setpoint • <200 ms for 50% over setpoint • <150 ms for 100% over setpoint
Hysteresis	5%
Frequency Range	40–400 Hz
Setpoint Range	• ATS1:1–50 A (adjustable) • ATS2: 4–200 A (adjustable)
Output	Isolated solid-state relay
Output Rating	1.0 A @ 240 VAC
Isolation Voltage	Tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	Designed for UL/cUL, CE approval

AC Current Transducer Ordering Information

Sample Model Number: ATS1-420-NOAC-24U-FL

Adjustable AC current operated switch/transducer, normally open, solid-core case. (DIN rail adapters are included)

(1)	(2)	(3)	(4)	(5)
ATS [ ] –	[ ][ ][ ] –	[ ][ ][ ][ ] –	2 4 U –	F L

(1) Range

1	0–50 Analog, 1–50 switch adjustment
2	0–200 Analog, 4–200 switch adjustment

(2) Analog Signal Type

420	4–20 mA (powered by sensor)
005	0–5 VDC
010	0–10 VDC

(3) Output Contact

NOAC	Normally Open, closes on current rise, AC control only
NCAC	Normally Closed, opens on current rise, AC control only

(4) Power Supply

24U	24 VAC or DC

(5) Case Style

FL	Solid-core

ATS SERIES

AC Current Transducer/Switch with Rotary Switch Setpoint

The ATS Series AC Current Sensors combine a current operated switch and transducer into a single package for use in AC current applications up to 1200 A. The large sensing window provides complete isolation between the primary circuit and the controls. The DIN rail mounting makes installation a breeze, and provides a very secure mounting that is resistant to conductor movement.

AC Current Transducer Applications

Large AC Motor Loads

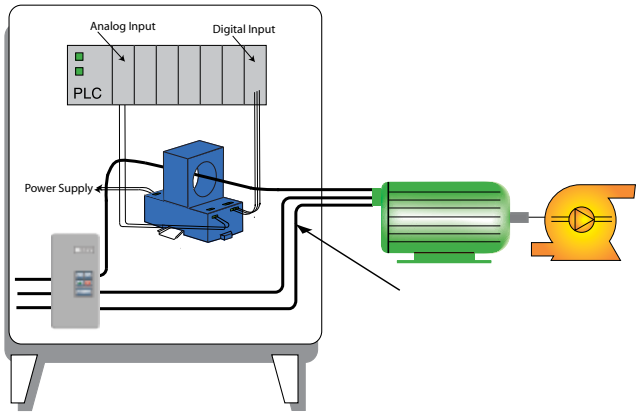
- Produces an analog signal at all times to detect increases or decreases in current.
- Provides limit alarm contacts for over or undercurrent conditions.
- Extra large aperture allows for single or multiple conductor passage.

Main Service Entrance

- Allows a viewer to see the amount of current used at any time when connected to a standard panel meter.

Generators

- Measure the AC current produced or consumed.
- Detect mechanical problems before failure occurs.



For additional Application Examples, go to www.nktechnologies.com/applications

AC Current Transducer Features

Easily Established Relay Actuation Point

- Patented rotary switch setpoint selection.
- Trip point indicated on the labeling.

Isolation

- Output is magnetically isolated from the input for safety.
- Eliminates insertion losses, no added burden.

Analog Signal Available At All Times

- 4–20 mA signal proportional to 0–1200 AC A.
- Reduces components by combining transducer and limit alarm (current switch).
- Analog signal powered from the sensor; no loop powered required.

DIN Rail Mounted Case*

- Integral DIN rail mount with spring loaded mounting clips.
- Makes installation a snap.

Failsafe Relay Action

- Single Pole Double Throw Relay changes state with power to the sensor.
- LED indication if power is removed from the sensor or primary current exceeds the adjustable trip point.
- Field-adjustable time delay from 0.5 to 12 seconds.

UL/cUL Approved

- Accepted worldwide.

*For information on the DIN rail accessories kit, see page 140.

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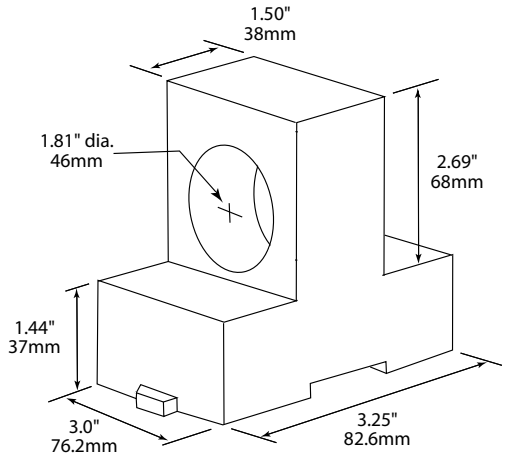
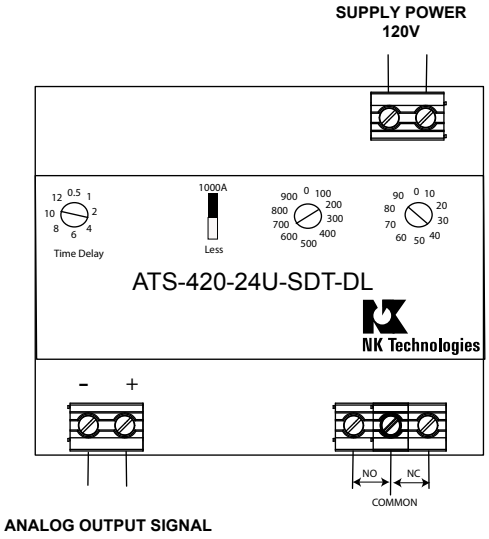
AC Current Transducer Dimensions



AC Current Transducer Connections



ANALOG OUTPUT SIGNAL

AC Current Transducer Output Type

Single pole, double throw relay-adjustable from 10 to 1200 A in 10 A increments. 4–20 mA signal proportional to 0–1200 A. Analog signal capped at 6 mA when trip point <150 A, 8 mA if trip point <300 A, 23 mA if the trip point is 310 or higher.

Notes:
Dead front captive screw terminals.
12–22 AWG solid or stranded.
Observe polarity.

AC Current Transducer Specifications

Power Supply	• 120 VAC (108–132 V) • 24 VAC/DC (22–26 V)
Power Consumption	<2 VA
Input Range	0–1200 A
Output Signal	4–20 mA 600 Ω max.
Output Limit	23 mA
Output Impedence	650 Ω maximum
Accuracy	1.0% FS
Analog Response Time	600 ms to 90% step change
Relay Response	200 ms to 90% step change
Hysteresis	5%
Frequency Range	10–100 Hz
Setpoint Range	10–1200 A
Output	Electromechanical SPDT relay
Output Rating	1.0 A @ 125 VAC, 2 A @ 30 VDC
Isolation Voltage	UL listed to 1270 VAC, tested to 5 KV
Case	UL94 V-0 Flammability Rated
Environmental	-4 to 122°F (-20 to 50°C) 0–95% RH, non-condensing
Listings	UL/cUL

AC Current Transducer Ordering Information

Sample Model Number: ATS-420-SDT-24D-DL
Solid-core AC current operated switch / transducer combination, 0–1200 A range, 4–20 mA analog output, 24 VDC powered, adjustable relay trip point.

	(1)		(2)			(3)			(4)			(5)	
AT	S	–	4	2	0	–	S	D	T	–				–	D	L

(1) Full Scale Range

S	Combination (switch and transducer)

(2) Output Signal

420	4–20 mA Note: maximum output depends on setpoint

(3) Contact Type

SDT	SPDT Relay

(4) Power Supply

24D	24 VDC
120	120 VAC

(5) Case Style

DL	Solid-core, DIN rail mounting