Specifications

Power Required	24VAC/DC (18-30V) 40-70mA
Output Type	Solid State Switch and Analog output combination
Contact Rating	1A @ 240VAC maximum
Contact Response Time	0.50 sec. 5% over set point 0.20 sec. 50% over set point 0.15 sec. 100% over set point
Hysteresis	Constant 5% of setpoint
Set Point Ranges (contact change)	1-50 Amps (ATS1) 4-200 Amps (ATS2)
Setpoint Adjust	Single turn potentiometer Set point displayed on sensor
Analog Signal	4-20mA - 500 ohm max. impedance 0-5 VDC -5K ohm min. impedance 0-10VDC -5K ohm min. impedance
Analog Response	<0.30 sec. 90% step change <0.40 sec. 100% step change
Accuracy	+/-1%, Average responding
Isolation Voltage	Designed to UL508, 1,270 VAC Tested to 5,000 VAC
Frequency Range	40-100 Hz
Sensing Aperture	0.75 inches (19mm)
Operating Environmental	-4 to122 DegF (-20 to 50 DegC) 0-95% RH, Non Condensing
Listings	Designed to meet UL508 and CE RoHS compliant

Description

The ATS series current relays are externally powered AC current sensors which utilize a revolutionary method to set the point where the primary current actuates the solid state output. By turning a potentiometer, the set point will be changed. An LED display on the top of the sensor shows the value in amps where the contact will change. In addition, the ATS sensor produces an analog signal (choice of 4-20mA, 0-5 or 0-10VDC) to be used as an input to a PLC, panel meter, data acquisition system or similar. Models with output ranges of 0-50 or 0-200 amps can be selected.

Model Number Key

ATS 1- 420 - NOAC - 24U - FL

CASE STYLE:
FL - Solid Core

POWER SUPPLY:
24U - 24 VAC/DC

OUTPUT:
NOAC - Normally Open solid state contac
1A @ 240VAC maximum
NCAC - Normally Closed solid state cont
1A @ 240VAC maximum

ANALOG OUTPUT:
420 - 4 to 20 mA
005 - 0-5VDC
010 - 0-10VDC

RANGE:
1 - 0-50 Amps AC (set point 1-50A)
2 - 0-200 Amps AC (set point 4-200A)

SENSOR TYPE:
ATS - AC current operated switch, LED display of the adjustable trip point.

Know Your Power

Other NK Technologies Products Include:
AC & DC Current Transducers
AC & DC Current Operated Switches
1ϕ & 3ϕPower Transducers
Current & Potential Transformers (CTs&PTs)

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NK Technologies

INSTRUCTIONS

ATS SERIES

AC Current Operated Relay
Single Range with Solid State Output and Analog Signal

Quick "How To" Guide

1. Mount the sensor to a suitable surface if required
2. Run the wire to be monitored through aperture.
3. Connect output wiring.
   A. Use up to 14 AWG copper wires.
   B. Ensure the power supply voltage matches the model you are installing.

   C. Energize the power to the sensor.
4. Adjust Setpoint.
   A. LED will display the RMS value of AC current which will cause the output to change state.
   B. Turn the potentiometer until your target current value is displayed.
5. Analog Signal Output
   A. The analog outputs are powered from the sensor power source.
   B. The signal is proportional to the sensor range selected.

ATS-FL Inst. Rev 1 12/13 P/N 893020010

Installation

ATS Series are externally powered, current-operated switches with 0-50 A or 0-200 A analog signal. The contact trips when sensed current level exceeds the adjusted setpoint. The normally open contact closes on current rise, the normally closed contact opens on current rise. The output resets when current falls 5% below the set point.
The contact alarm point can be used by itself, or the analog signal can be used alone or both can be used together. There is no need to short the analog output if it is not used.

ATS sensors can be located in the same environment as motors, contactors, heaters, pull-boxes, and other electrical enclosures. The sensor can be installed in any position using the screw holes in the mounting tabs, or hung directly on wires using a wire tie. Ensure at least one inch clearance exists between sensor and other magnetic devices.
Run wire to be monitored through aperture (opening) in the sensor. The direction that the wire passes through the opening is not important.
Connect the output contact to the load to be switched, being sure that the load does not exceed the capacity of the output contact. The contact is solid state, and will be able to control any AC circuit up to from 2 to 240 VAC, and up to one amp at any voltage.
Connect the power supply voltage to the appropriate terminals, being sure that the supplied power matches the sensor designed voltage. Energize the sensor power supply.
Initially the LED display will show the range maximum.
Set the desired trip point by turning the potentiometer counter-clockwise. The display will show the amount of AC current needed to trip the output.
A normally open contact will close at this setpoint, and a normally closed contact will open.

If used, connect a panel meter or controller input module to the analog output terminals of the ATS sensor. The sensor output will produce a signal proportional to the AC current flowing in the monitored circuit.
The ATS1-420-NOAC-24U-FL will give an output signal of 4mA with the monitored circuit off, rising to 20mA at 50 amps.
The ATS2-420-NOAC-24U-FL will give an output of 4mA with the monitored circuit off, rising to 20mA at 200 amps.

Output Wiring

Connect control or monitoring wires to the sensor. Use up to 14 AWG copper wire and tighten terminals to 5 inch-pounds torque. Be sure the output load does not exceed the switch rating.

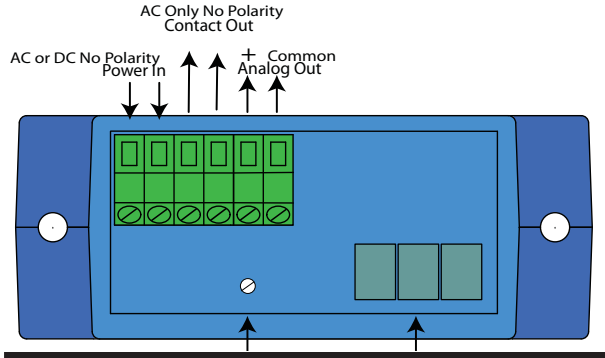
CAUTION Incandescent lamps can have "Cold Filament Inrush" current of up to 10 times their rated amperage. Use caution when switching lamps with solid state "contacts".

Setpoint Adjustment

ATS Series setpoint is adjusted using a a single turn potentiometer. The LED three digit display will show the amount of current needed to cause the output to change state. The setpoint adjustment can be done before the monitored load is energized, improving the safety of the installation. The sensor must be powered to operate the display.
The adjustment is made by turning the screw clockwise to raise the setpoint, counter clockwise to decrease the setpoint. The ATS1 models can be set to trip at any current level from one to 50 amps. The ATS2 or models can be set to trip between four and 200 amps.

Analog Signal

The analog output is proportional to the full range of the sensor, either 0-50 or 0-200 amps AC. This signal is powered from the sensor power and no other external (loop) power is needed. Once the sensor is powered with no primary AC current through the sensing window, the output will read 4mA (or 0VDC). The output signal will rise as the current increases, up to 20mA (or 5VDC or 10VDC). The ATS1 will produce this signal at 50 amps, and the ATS2 will produce the signal at 200 amps.
The zero and span calibration is done at the factory, and there is no need to make any adjustments in the field.
The analog signal is average responding, with accuracy of +/-1% of scale when the current wave shape is sinusoidal. If the current wave shape is distorted by a variable frequency drive or an SCR heating control, an RMS responding device would be better suited and produce a signal with higher accuracy.



Trouble Shooting

1. **Sensor is always tripped**
   A. The setpoint may be too low. *Turn the potentiometer CW to a higher setting.*
   B. Switch has been overloaded and contacts are burned out. *Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).*
2. **Sensor will not trip**
   A. The setpoint may be too high. *Turn the potentiometer CCW to a lower value.*
   B. Monitored current is below minimum required. *This sensor can be set to trip at a minimum of 1 amp (ATS1) or 4 amps (ATS2). Loop the conductor through the sensing window twice to reduce the trip point to 0.5 (or 2) amps.*
   C. Switch has been overloaded and "contacts" are burned out. *Check the output load, remembering to include inrush on inductive loads (coils, motors, ballasts).*
   D. Current is DC or of a lower frequency than 40 hertz *The sensor can be used to monitor 40-100 hertz AC current only.*
3. **Sensor analog signal stays at 4mA (zero voltage)**
   A. The connection to the load (panel meter, PLC etc.) may be reversed. *Try reversing polarity.*
   B. The monitored load is not on. *Check to be sure there is voltage at the load terminals.*
   C. The monitored load is DC or the frequency is below 40 hertz. *The ATS can only be used to monitor AC current.*
   D. There is more than one phase through the aperture. *Thread only one current carrying conductor through the aperture, or multiple conductors connected to the same phase. Do not pass the grounding wire through the sensor. The neutral can be monitored if the load is single phase, but do not install both hot and neutral.*