AT/ATR 3 & 4 Series

‘AT/ATR 3 & 4’ transducers from NK Technologies combine a high capacity current transformer and a signal conditioner into a single package. 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 outputs. Available in a solid or split core case.

High Current Transducers

Applications

Large Pumps
Detect dry run electronically.

Generation
Measure the output of generators.

Electric Heating Elements
— Monitors heater load.
— Faster response than temperature sensors.

Features

Large Aperture
Accommodates large conductors or wire bundles.

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

Three Jumper Selectable Ranges
— Reduces inventory.
— Eliminates zero and span pots.

Isolation
Magnetic isolation protects installers and systems.

Easy Installation
Single piece with integral mounting brackets makes for a simple, solid installation.

UL, CUL and CE Approval
Accepted worldwide.

Selecting the right transducer:
The current waveform 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 a “clean” power environment. 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 each cycle. ATR Transducers use a mathematical algorithm called “True RMS,” which integrates the actual waveform over time. The output is the amperage component of the true power (heating value) of the AC current waveform. True RMS is the only way to accurately measure distorted AC waveforms. Select ATR transducers for nonlinear loads on “noisy” power.
## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Signal</td>
<td>4–20mA, Loop-powered</td>
</tr>
<tr>
<td>Output Limit</td>
<td>23mA</td>
</tr>
<tr>
<td>Accuracy</td>
<td>1.0% FS accuracy, True RMS</td>
</tr>
<tr>
<td>Measurement</td>
<td>True RMS or Average Responding (see Ordering Information)</td>
</tr>
<tr>
<td>Response Time</td>
<td>500mS (to 90% of step change)</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>AT: 10–400Hz, AT: 50–60Hz, Sinusoidal</td>
</tr>
<tr>
<td>Power Supply</td>
<td>24VDC Nominal, 40VDC Maximum</td>
</tr>
<tr>
<td>Isolation Voltage</td>
<td>600VAC</td>
</tr>
<tr>
<td>Input Ranges</td>
<td>AT: ATR3: 375, 500, 750A, ATR4: 1000, 1333, 2000A</td>
</tr>
<tr>
<td>Sensing Aperture</td>
<td>3.0&quot; (76mm) dia.</td>
</tr>
<tr>
<td>Case</td>
<td>UL 94 Flammability rated</td>
</tr>
<tr>
<td>Environmental</td>
<td>-4 to 122°F (-20 to 50°C), 0–95% RH, non-condensing</td>
</tr>
<tr>
<td>Listings</td>
<td>UL 508 Industrial Control Equipment (USA &amp; Canada), CE (Pending)</td>
</tr>
</tbody>
</table>

## Power Supply

- **Operating Range**
  - Minimum Loop Supply: $V_L = \frac{12 \text{VDC} \times (R_L \times 0.020A)}{R_L}$
  - Total Loop Resistance (Ohms)

- **Total Loop Impedance** (Ohms)
  - 0 to 1000

## Connections

- **Load** (Controller, Meter, etc.): (+) (–)
- **24 VDC Power** (–) (+)
- **Low / Mid / High Range Switch**
- **Output** 1(–) 2(+) 3(–) 4(+) 5(–) 6(+) 7(–) 8(+)

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

## Ordering Information

**Example: ATR3-420-24L-FL**

- True RMS AC current transducer, 24VDC powered with a 4-20mA output, 375, 500 and 750 amp range in a fixed core case.*

- **Measurement**
  - True RMS
  - Average Responding (Blank)

- **Full Scale Ranges**
  - 375, 500, 750A
  - 1000, 1333, 2000A

- **Output Signal**
  - 420, 4-20mA

- **Power Supply**
  - 24L, 24VDC, Loop-powered

- **Case**
  - FL Fixed Core

*Split core version available in the Spring of 2000.