Transducers and Adapters

for Vanguard circuit breaker analyzers

Vanguard Instruments Company, Inc.

www.vanguard-instruments.com
Vanguard Digital Linear transducers are designed to precisely measure circuit breaker contact linear motion. Using an optical encoder, the linear transducer can measure distances up to 25” with a 0.01” resolution. Our robust design measures velocity up to 41 ft/sec (12.5 m/sec).

Neither calibration nor setup is required when this transducer is used with a compatible Vanguard Time Travel Analyzer (DigitMR/CT-7000/CT-8000 CB analyzer family).

Vanguard linear travel transducers are available in 10” (P/N 9087-UC) and 25” (P/N 9088-UC) travel lengths. 30” travel or different lengths of travel are also available up on request.
Transducers

**Linear Digital Transducers**

### Breaker Timer Accessories

#### Technical Specifications

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<tr>
<th>Part No</th>
<th>Description</th>
<th>Physical Specifications</th>
<th>Physical Travel</th>
<th>Accuracy</th>
<th>Resolution</th>
<th>Velocity</th>
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<tr>
<td>9087-UC</td>
<td>10&quot; Linear Transducer</td>
<td>17&quot; (43.2 cm) L with 10.5&quot; (26.7 cm) x 4.5&quot; (11.4 cm) mounting base</td>
<td>0 ¬ 10 inches max (0 ¬ 25.4 cm max)</td>
<td>0.1% of reading ±0.1&quot; (2.54 mm)</td>
<td>±0.01&quot; (±0.25 mm)</td>
<td>41 ft/sec (12.5 m/sec)</td>
</tr>
<tr>
<td>9088-UC</td>
<td>25&quot; Linear Transducer</td>
<td>31.5&quot; (80 cm) L with 10.5&quot; (26.7 cm) x 4.5&quot; (11.4 cm) mounting base</td>
<td>0 ¬ 25 inches max (0 ¬ 63.5 cm max)</td>
<td>0.1% of reading ±0.1&quot; (2.54 mm)</td>
<td>±0.01&quot; (±0.25 mm)</td>
<td>41 ft/sec (12.5 m/sec)</td>
</tr>
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</table>
Vanguard Instruments offers two timing rods for use with our digital transducers. The Long Linear Transducer Timing Rod (P/N 8000-0214) is compatible with the Vanguard 25” Digital Linear Transducer (P/N 9088-UC), and the Short Linear Transducer Timing Rod (P/N 8000-0156) is compatible with the Vanguard 10” Digital Linear Transducer (P/N 9087-UC). Both timing rods are constructed of 303 stainless steel and feature 10-32 threaded ends.
The ABB 72PM Timing Rod with Flexible Coupling (P/N 8000-0215) can be connected to a Vanguard Digital Linear Transducer and is used for timing an ABB 72PM circuit breaker.
Rotary transducers translate the rotary motion of a circuit breaker’s linkage shaft to the linear motion of the circuit breaker’s main contact. Vanguard rotary transducers employ optical encoders that can detect rotary position with a maximum velocity of 100 revolutions per second. Vanguard offers three rotary transducers, each of which is furnished with a drill chuck adapter and two adapter shafts with 8mm and 10mm threading, respectively. The included accessories can be used to connect the transducers to a wide range of circuit breakers in the field.
**Breaker Timer Accessories**

**Transducers**

**Type 1 Rotary Digital Transducer**

**technical specifications**

**type 1 rotary digital transducer**
(part no 9125-UC)

<table>
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<tr>
<th>Parameter</th>
<th>Specification</th>
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<tr>
<td>physical travel</td>
<td>0 – 1,800 degrees</td>
</tr>
<tr>
<td>accuracy</td>
<td>0.1% of reading ±0.36 degree</td>
</tr>
<tr>
<td>resolution</td>
<td>±0.36 degree</td>
</tr>
<tr>
<td>velocity</td>
<td>100 rev/sec max</td>
</tr>
</tbody>
</table>

**views above shown with typical drill chuck**
Breaker Timer Accessories Transducers

Type 2 Rotary Digital Transducer

technical specifications

type 2 rotary digital transducer
(part no 9090-UC)

| physical travel | 0 - 1,800 degrees |
| accuracy        | ±0.1% of reading ±0.36 degree |
| resolution      | ±0.36 degree |
| velocity        | 100 rev/sec max |

VIEWS ABOVE SHOWN WITH TYPICAL DRILL CHUCK

Type 2 shown with adapter
Transducers

Type 3 Rotary Digital Transducer

technical specifications

type 3 rotary digital transducer

with magnetic mount
(part no 9091-UC)

- **physical travel**: 0 – 1,800 degrees
- **accuracy**: ±0.1% of reading ±0.36 degree
- **resolution**: ±0.36 degree
- **velocity**: 100 rev/sec max

VIEWS ABOVE SHOWN WITH TYPICAL DRILL CHUCK
The linear resistor transducer (part no 9093-UC) is designed for measuring small displacements. A typical application for this transducer is to measure circuit breaker vacuum bottle displacement (0.25” - 0.50”). This resistor transducer can interface directly to the Vanguard CT-7000 S3 and CT-8000 S3 via the resistor transducer input channels.
Transducers

Transducer Adapters

**RESISTOR TRANSDUCER ADAPTER**
part no 9095-UC

The Vanguard Resistor Transducer Adapter (RTA) can be used to connect any resistor type transducer to the digital transducer channel of a Vanguard circuit breaker analyzer. The RTA also features a 3-pin SwitchCraft connector that can directly interface with ABB resistor transducers.

Connected to an ABB AHMB resistor-type transducer

**DOBLE TRANSDUCER ADAPTER**
part no 9084-UC

The Doble Transducer Adapter can be used to interface any Doble travel transducer to a Vanguard circuit breaker analyzer.

Connected to a Doble rotary transducer
Instruments designed and developed by the hearts and minds of utility electricians around the world.

Vanguard Instruments Company (VIC), was founded in 1991. Currently, our 28,000 square-foot facility houses Administration, Design & Engineering, and Manufacturing operations. From its inception, VIC’s vision was, and is to develop and manufacture innovative test equipment for use in testing substation EHV circuit breakers and other electrical apparatus.

The first VIC product was a computerized circuit breaker analyzer, which was a resounding success. It became the forerunner of an entire series of circuit breaker test equipment.

Since its beginning, VIC’s product line has expanded to include microcomputer-based, precision micro-ohmmeters, single and three phase transformer winding turns-ratio testers, transformer winding-resistance meters, mega-ohm resistance meters, and a variety of other electrical utility maintenance support products.

VIC’s performance-oriented products are well suited for the utility industry. They are rugged, reliable, accurate, user friendly, and most are computer controlled. Computer control, with innovative programming, provides many automated testing functions. VIC’s instruments eliminate tedious and time-consuming operations, while providing fast, complex, test-result calculations. Errors are reduced and the need to memorize long sequences of procedural steps is eliminated. Every VIC instrument is competitively priced and is covered by a liberal warranty.

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