LINEAR SCALE ABS AT715
ABSOLUTE Linear Encoder for DRO Systems

ABSOLUTE® electromagnetic induction type linear encoder technology gives the AT715 excellent resistance to dust and water for enhanced machine tool usability.
High environmental resistance linear encoder system
Absolute Linear Scale ABS AT715 & KA Counter

Features: Absolute Linear Scale ABS AT715
- Employs ABSOLUTE® electromagnetic induction system to achieve IP67 environmental resistance.
- Detects and outputs an absolute position - no reference point setup needed at every power-on.
- An abnormal calculation doesn’t accumulate even if the calculation mistake is generated by the influence of an electric noise.
- It is the most suitable scale to mount on the X-axis of a small lathe.
  2 mounting directions of the scale main unit allows easy to mount on a machining tool with the difficult mounting position.

Specifications
Detecting system: Electromagnetic induction system*
*Patented in Japan, USA, India, China, Europe
Resolution: 0.005mm / 0.001mm
  (switchable by KA counter setting)
Effective range: 100mm - 1800mm
Accuracy (20°C): ±5μm (Effective length L0: 100~500mm) ±7μm (Effective length L0: 600~1800mm)
Response speed: 50m/min (max.)
Dust/water protection: IP67
Sliding force: Less than 5N
Applicable displays: KA counter and KLD-200 counter (with limit signal output function)
Extension cable: 2m: 09AAB674A
  (optional, total cable length is less than 15m.) 7m: 09AAB674B

<table>
<thead>
<tr>
<th>Order No.</th>
<th>Model</th>
<th>L0 (mm)</th>
<th>L1 (mm)</th>
<th>L2 (mm)</th>
<th>L3 (mm)</th>
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L0: Effective length
L1, Ls: Mounting hole pitch
Ls, L1, Lx: Middle support positions
Lx: Maximum travel length
Lx: Total length
Cable: Signal cable length
KA Counter for standard/lathe applications, high performance to cost ratio and easy to use

Specifications

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<tr>
<th>Order No.</th>
<th>120V AC</th>
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<th>174-175A</th>
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Scale input ports 2-3
Resolution 0.001mm, 0.005mm, 0.001", 0.0005" (selectable)
Display 7-digit LED and a negative [-] sign

Functions
- Zero-setting, ABS/INC coordinate selection, Preset, 1/2 calculation, mm/inch conversion, Counting direction setting, Diameter display, Addition of 2-scale data, Zero approach machining, Bolt-hole circle machining, Pitch machining, Touch-signal probe input

Applicable scale unit AT100 series and ABS AT715
Power supply 100V-240V AC, 50/60Hz
Operating temperature 0°C to 40°C
Mass 1.1kg, 1.2kg

Optional accessory
- RS-232C codeout unit: 09CAB217
- Touch signal probe: 938140 (ø20mm shank)
- Linear scale adapter (SS): 09AAA207
- Digimatic micrometer head adapter (square wave): 09AAA207 (for MHD-25 series)
- External load box (1-axis)*: 09CAB231 (for MHD-50 series)
- Linear gage adapter (square wave with origin point mark): 09ACB393
- Linear gage adapter (square wave): 09ACB913
- Adapter for AT211 (square wave): 09ACB391
- Adapter for ST scale (square wave): 09ACE392
- Extended cable for external: 09ACF941
- External load box (1-axis)*: 937326
- External load box (2-axis)*: 937327
- External load box (3-axis)*: 937328
- External zero-set box (1-axis)*: 936551
- External zero-set box (2-axis)*: 936551
- External zero-set box (3-axis)*: 936552

* RS-232C unit (09CAB217) and extended cable for external (09ACF941) are required.

Dimensions

External control

KA counter

D-SUB25 pin

External zero-set box

D-SUB9 pin

External load box

External zero-set box

Mounting stud L (M5)
**Zero-setting**
The display can be set to “0” (zero) at any scale position.

**Preset**
This function allows the user to enter a numeric value on the counter display. Any preset value can be retrieved whenever necessary.

**Resolution setting**
The most suitable resolution can be selected to meet measuring applications. Available resolutions depend upon the Counter to be used.

**Counting direction setting**
The counting up direction can be selected.

**mm/inch conversion**
The counting unit can be changed between “mm” and “inch” (or between “mm” and “E = 1/25.4mm”) depending on the model.

**1/2 calculation**
This function halves the display value.

**Lower digit blanking out**
Unnecessary lower digits (up to 9 digits of the lowest digits) can be blanked out.

**Memory backup**
The backup battery retains the most recent display value even when the counter is off.

**Pitch machining**
This mode allows the line between any two points in the X-Y plane to be divided into any number of equally spaced divisions.

**Absolute/incremental coordinate selection**
For each axis, the measured value can be displayed in either absolute (ABS) or incremental (INC) coordinates. This function is useful by enabling incremental mode operations to be performed while the workpiece datum point is retained ready to use for operations based on absolute mode coordinates.

**Scale reference point setting**
The distance from a scale reference point to the machine origin can be registered as an offset value, and will be retained even when the power is off (hold function). When the power is turned on again, the machine origin (or machining datum) can be easily recalled (set function).

**Diameter display**
This convenient feature can be used to directly display the diameter of a workpiece during a turning operation on a lathe.

**Addition of 2-scale data**
If a machine has two slides, each with its own scale, this function can be used to sum the two values to display the total workpiece displacement.

**Linearity error compensation**
Machine errors caused due to workpiece weight, inaccurate table adjustment, etc., can be linearly compensated to reduce the positioning error.

**Bolt-hole circle machining**
Drilling positions along the circumference of a bolt-hole circle in the absolute zero approach mode can be easily displayed by entering the center coordinates, diameter, and number of divisions of the base circle.

**Zero approach machining [INC mode]**
Zero approach machining can be repeated at a preset interval without error. Since the counter keeps the total displacement in the absolute coordinate system, cumulative error is automatically eliminated at each tool position.

**Smoothing**
Smoothing makes the display value easier to read when a minimum reading fluctuates due to machine vibration.

**RS-232C Interface Unit**
The EIA standard RS-232C connector provides data transfer to/from a personal computer with an RS-232C Interface Unit. Not only can coordinate data be output from this connector, but it can also receive signals from the personal computer to perform zero setting, presetting, etc.
KLD-200 Counter with limit signal outputs

- A 1-axis counter dedicated to sending signals when a linear scale displacement value and a preset limit value coincide.
- Two types of limit setting are available: 2 step and 4 step
- AT715 and AT100 series linear scales can be connected.

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<thead>
<tr>
<th>Order No.</th>
<th>Type of limit setting</th>
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* for UK** For Australia**** For China/**** For Korea

Specifications are subject to change without notice.

Note: All information regarding our products, and in particular the illustrations, drawings, dimensional and performance data contained in this pamphlet, as well as other technical data are to be regarded as approximate average values. We therefore reserve the right to make changes to the corresponding designs, dimensions and weights.

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