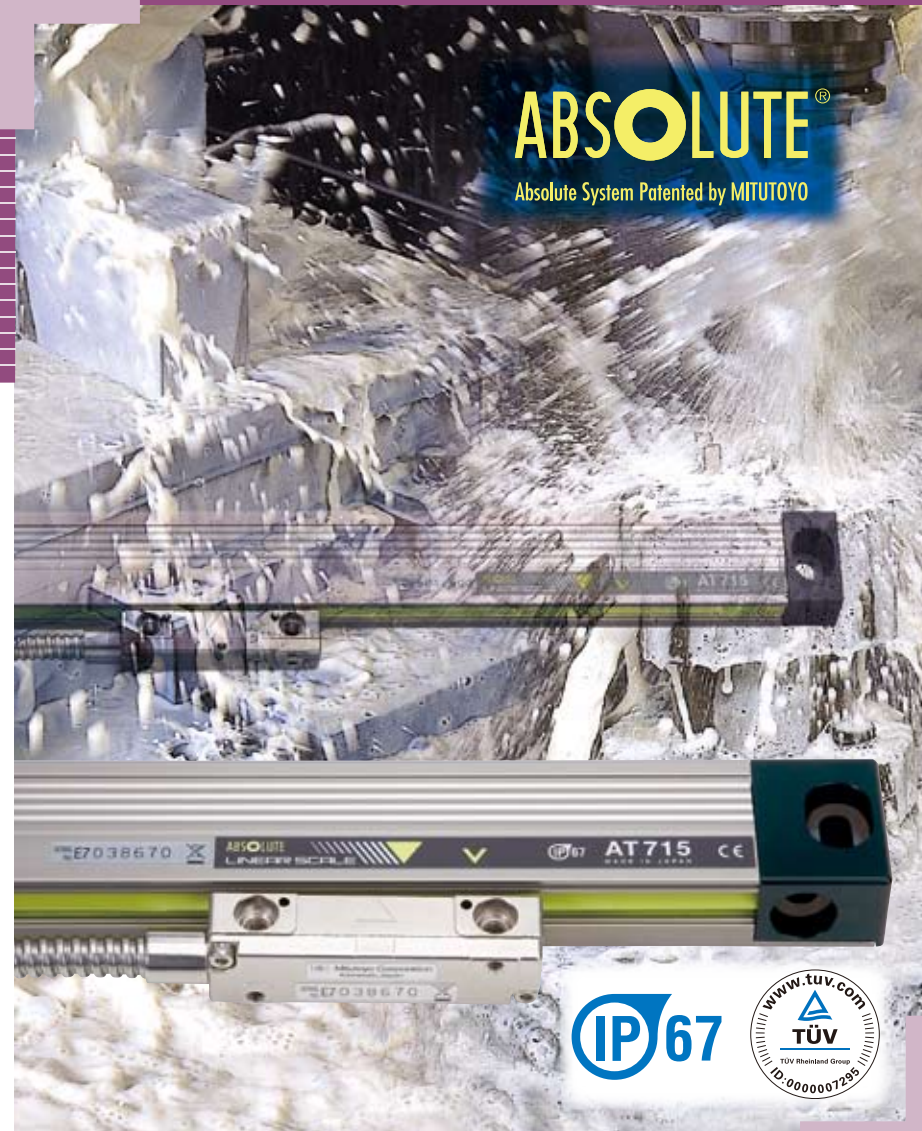


LINEAR SCALE ABS AT715

ABSOLUTE Linear Encoder for DRO Systems

Catalog No. E4296-539



ABSOLUTE® electromagnetic induction type linear encoder technology gives the AT715 excellent resistance to dust and water for enhanced machine tool usability.

Mitutoyo

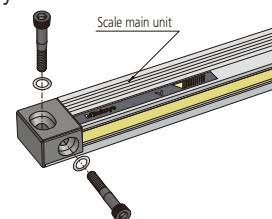
High environmental resistance linear encoder system

Absolute Linear Scale ABS AT715 & KA Counter



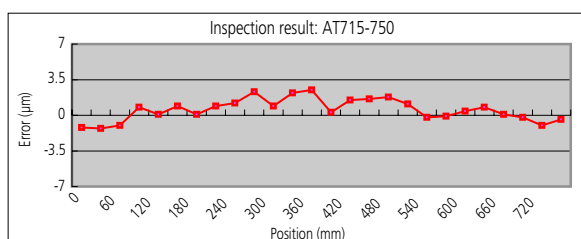
Features: Absolute Linear Scale ABS AT715

- 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 L ₀ : 100~500mm) ±7μm (Effective length L ₀ : 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.)	5m: 09AAB674B 7m: 09AAB674C

Order No.	Model	L ₀ (mm)	L ₁ (mm)	L ₂ (mm)	L ₃ (mm)	L ₄ (mm)	L ₅ (mm)	L ₆ (mm)	L ₇ (mm)	L ₈ (mm)	Cable (m)
539-801	AT715-100	100	120	258	242	278	—	—	—	—	3.5
539-802	AT715-150	150	170	308	292	328	—	—	—	—	3.5
539-803	AT715-200	200	220	358	342	378	—	—	—	—	3.5
539-804	AT715-250	250	270	408	392	428	—	—	—	—	3.5
539-805	AT715-300	300	330	468	452	488	—	—	—	—	3.5
539-806	AT715-350	350	380	518	502	538	—	—	—	—	3.5
539-807	AT715-400	400	430	568	552	588	—	—	—	—	3.5
539-808	AT715-450	450	480	618	602	638	—	—	—	—	3.5
539-809	AT715-500	500	540	678	662	698	339	331	—	—	3.5
539-811	AT715-600	600	640	778	762	798	389	381	—	—	3.5
539-813	AT715-700	700	740	878	862	898	439	431	—	—	3.5
539-814	AT715-750	750	780	918	902	938	459	451	—	—	3.5
539-815	AT715-800	800	840	978	962	998	489	481	—	—	3.5
539-816	AT715-900	900	940	1078	1062	1098	539	531	—	—	3.5
539-817	AT715-1000	1000	1040	1178	1162	1198	589	581	—	—	5
539-818	AT715-1100	1100	1140	1278	1262	1298	—	—	430	—	5
539-819	AT715-1200	1200	1240	1378	1362	1398	—	—	460	—	5
539-820	AT715-1300	1300	1340	1478	1462	1498	—	—	490	—	5
539-821	AT715-1400	1400	1440	1578	1562	1598	—	—	530	—	5
539-822	AT715-1500	1500	1540	1678	1662	1698	—	—	560	—	5
539-823	AT715-1600	1600	1640	1778	1762	1798	889	881	430	215	5
539-824	AT715-1700	1700	1740	1878	1862	1898	939	931	460	230	5
539-825	AT715-1800	1800	1840	1978	1962	1998	989	981	560	280	5

L₀: Effective length

L₂, L₃: Mounting hole pitch

L₅, L₆, L₇, L₈: Middle support positions

L₁: Maximum travel length

L₄: Total length

Cable: Signal cable length

Mitutoyo

Linear Scale

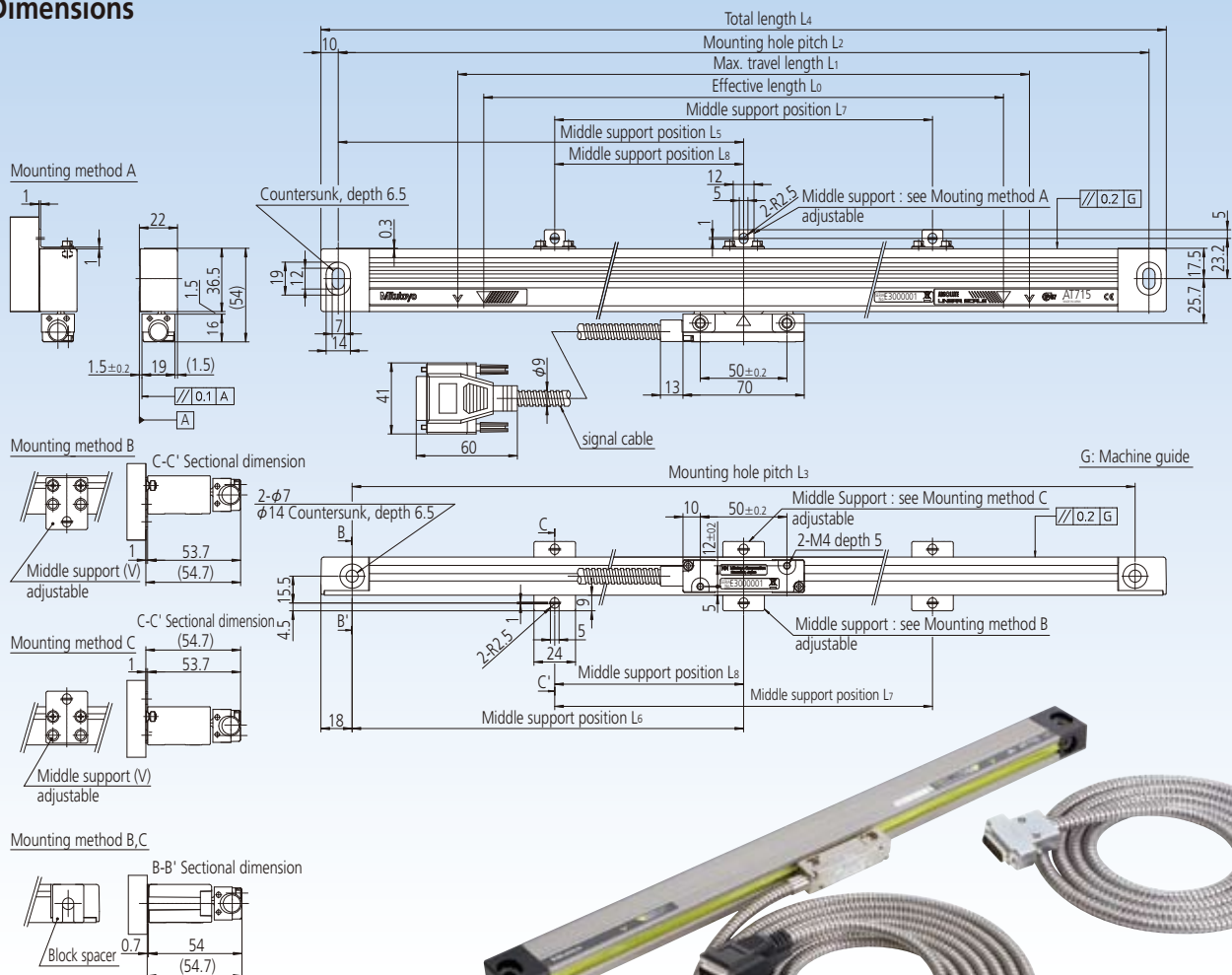


ABSOLUTE®

Absolute System Patented by MITUTOYO



Dimensions



PAT. JP3436510, US6329813, US6400138 P. CN1272620A, EP1014041A1

KA Counter for standard/lathe applications, high performance to cost ratio and easy to use



174-173 / for 1-axis or 2-axis

Specifications

Order No.	120V AC	174-173A	174-175A
	110V AC	174-173B	174-175B
	230V AC	174-173D	174-175D
	240V AC*	174-173E	174-175E
	240V AC**	174-173F	174-175F
	220V AC***	174-173DC	174-175DC
	220V AC****	174-173K	174-175K
Scale input ports	2-1		3
Resolution	0.001mm, 0.005mm, .0001", .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

* for UK/** For Australia/** For China/** For Korea

-1: Available as a 1-axis counter by changing the parameter setting



174-175 / for 3-axis

Optional accessory

RS-232C codeout unit:

09CAB217

Touch signal probe:

938140 (ø20mm shank)

935094 (ø32mm shank)

Linear scale adapter (5S):

09AAA207

Digimatic micrometer head adapter (square wave):

09AAA207 (for MHD-25 series)

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)*:

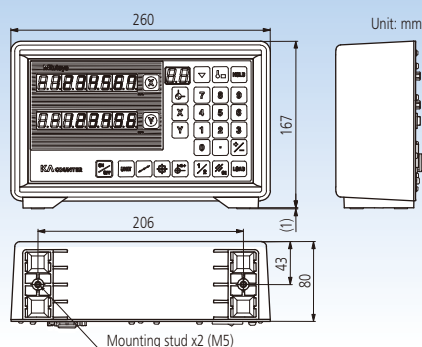
936551

External zero-set box (3-axis)*:

936552

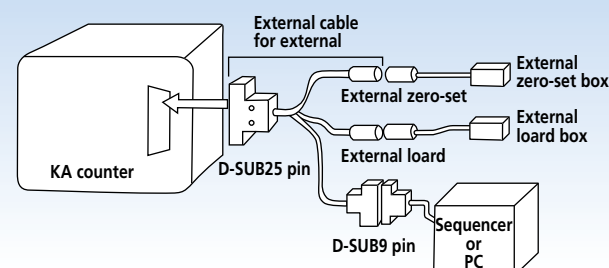
*RS-232C unit (**09CAB217**) and extended cable for external (**09ACF941**) are required.

Dimensions



Mitutoyo

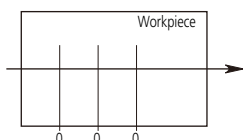
External control



KA Counter

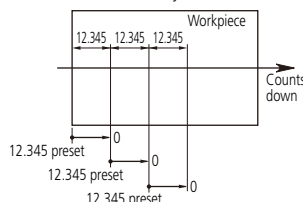
Zero-setting

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.

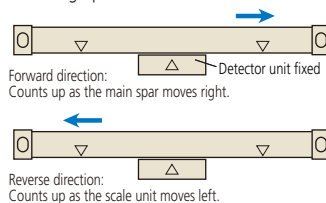


Resolution setting

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.

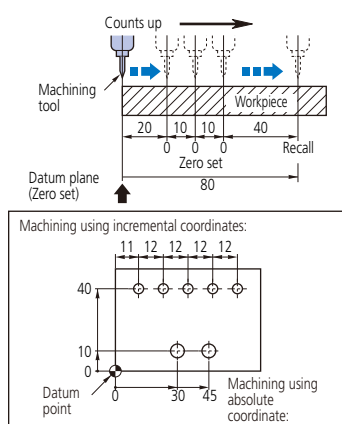
Pitch machining

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



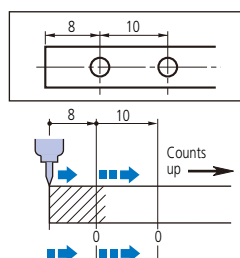
Absolute/incremental coordinate selection

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.



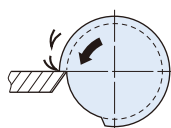
Zero approach machining [INC mode]

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.



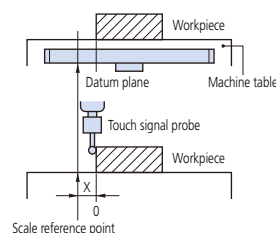
Bolt-hole circle machining

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.



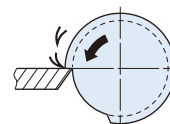
Scale reference point setting

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).



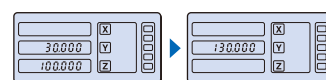
Diameter display

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



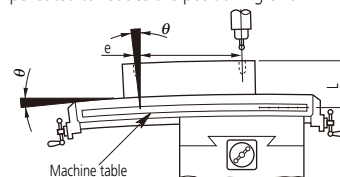
Addition of 2-scale data

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.



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.

Specifications

Order No.	120V	174-146A	174-147A
	230V	174-146D	174-147D
	240V*	174-146E	174-147E
	240V**	174-146F	174-147F
	220V***	174-146DC	174-147DC
	220V****	174-146K	174-147K
Type of limit setting	2 step		4 step
Resolution	0.0005/0.001/0.002/0.005/0.01mm/ .00002"/.00005".0001"/.0002"/0005"/.001"		

* for UK/** For Australia/*** For China/**** For Korea

Specifications are subject to change without notice.

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Test Equipment and
Seismometers

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Small Tool Instruments and
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