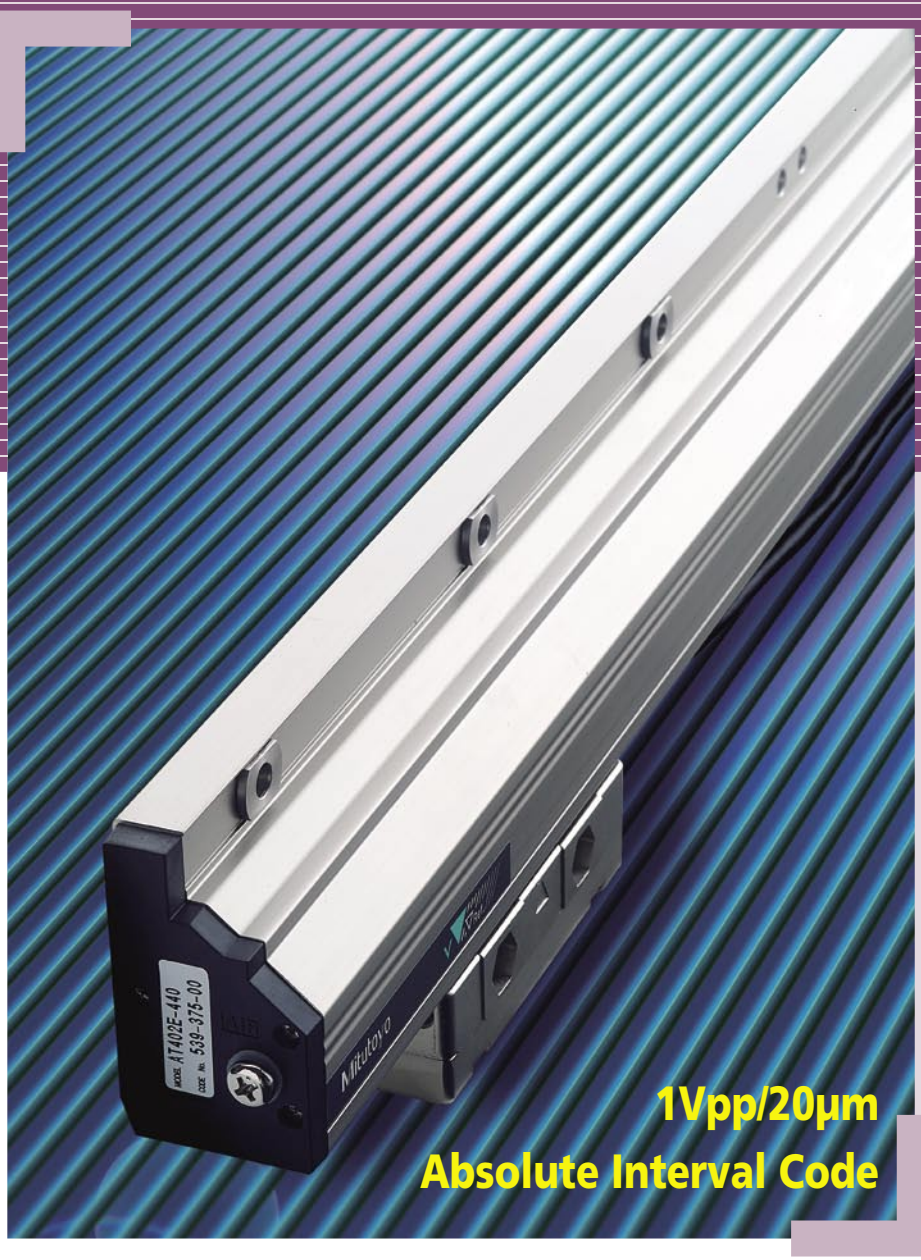
LINEAR SCALE AT402E

Linear encoder for NC feedback system

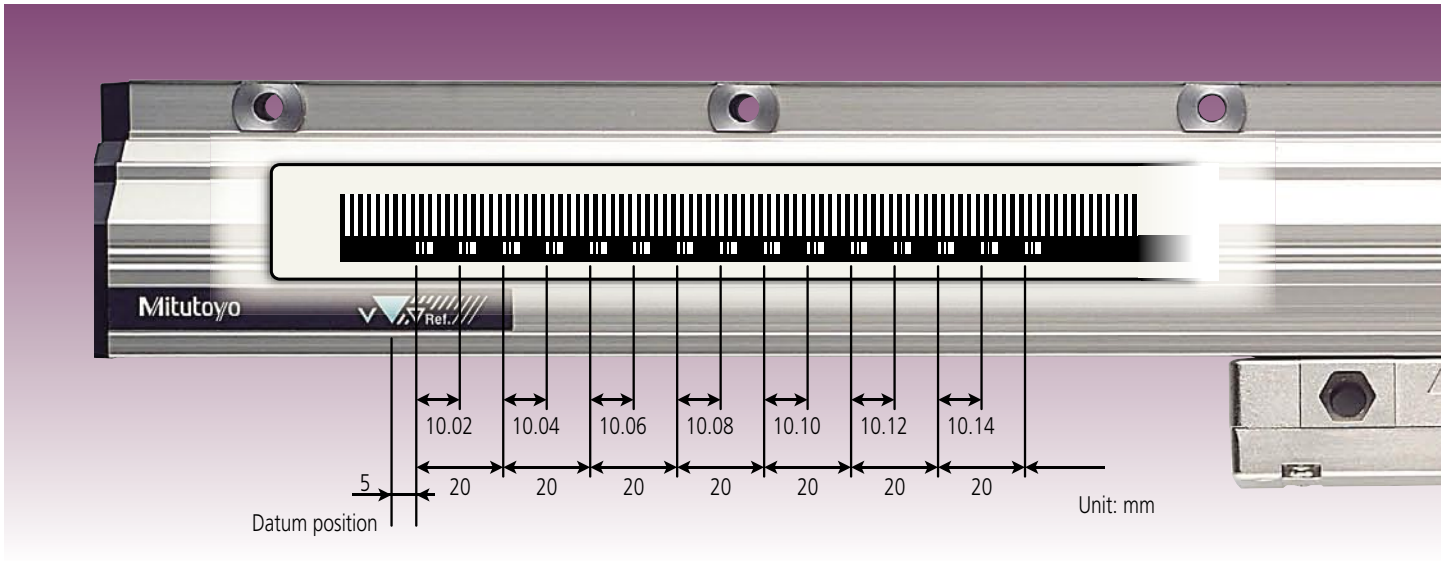
Catalog No. E4287-539



In addition to the high measuring accuracy the world-class vibration resistance (20G) and shock resistance (40G) are achieved.

Mitutoyo

Linear Scale for NC control with high vibration/shock resistance and linear thermal characteristics

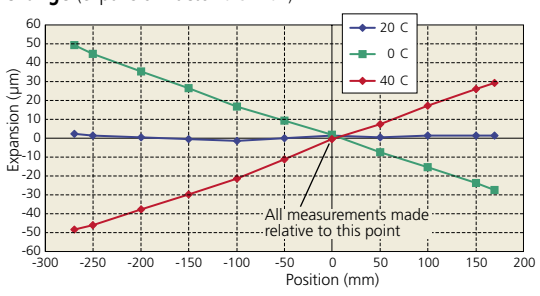


Features

- **Achiving the world-class vibration resistance (20G) and shock resistance (40G) for using with a heavy cutting machine tool.**
- **Multi-point elastic fixing for very linear and smooth expansion and contraction with temperature changes**
- **1Vpp/20µm signal output for high connectivity with various machine controllers.**
- **Absolute Interval Code for a simple and afordable Absolute Measuring System.**
- **High-responce speed of 120m/min**
- **High measuring accuracy of ±2µm (up to 540mm)**

• Thermal characteristics

Scale expansion resulting from ambient air temperature change (expansion factor 8.5×10^{-6})

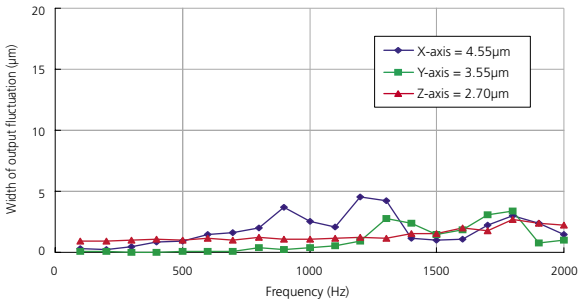


• Absolute Interval Code

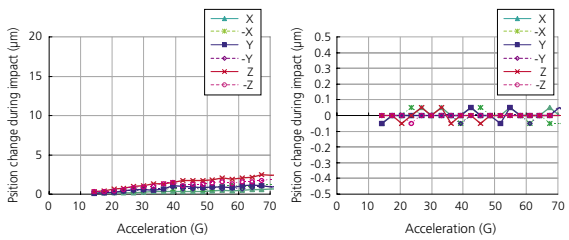
Absolute Interval Code system provides reference marks at every 20mm interval with a 0.02mm offset. This enables unique origin position setting by detection of only two marks (minimum), and the initial setting time required is less.

• World-class vibration/shock resistance

Vibration test at 20G



Shock test at 1/2 sin and 11msec



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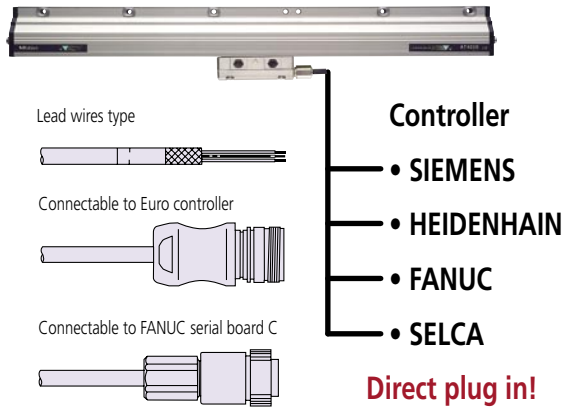
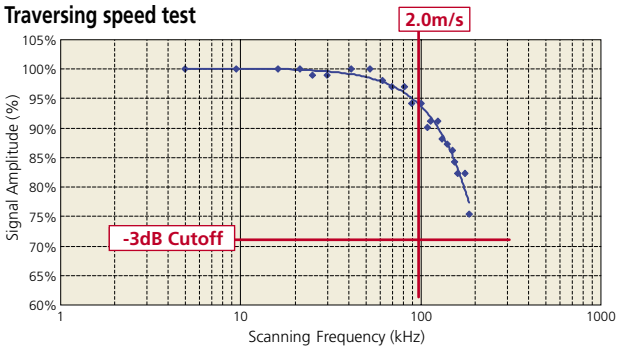
Linear Scale AT402E

• Connectable NC Controller

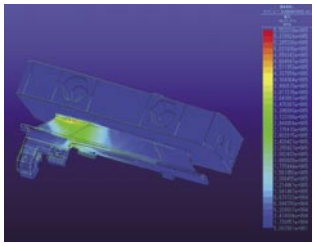


Direct plug in!

• Higher traverse speed performance reserve



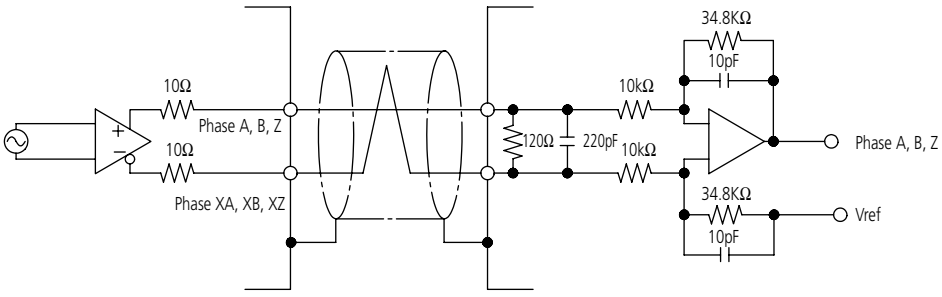
• FEM analysis of AT402E head mold.



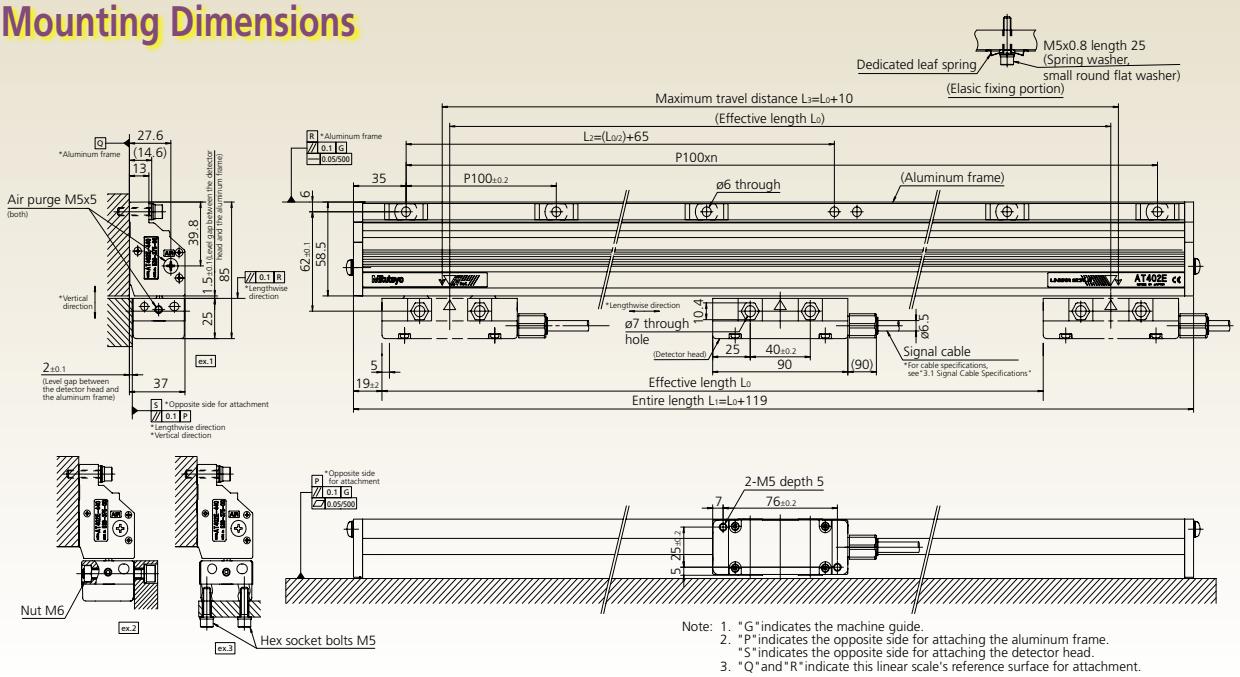
• 1Vpp Signal Output and Output Circuit

Sin wave output signals
• Differential signal amplitude: 1.0Vpp

Scale reference point signals
• Differential signal amplitude: 0.5Vp



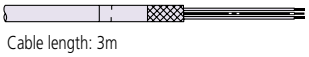
Mounting Dimensions



Note: 1. "G" indicates the machine guide.
2. "P" indicates the opposite side for attaching the aluminum frame.
"S" indicates the opposite side for attaching the detector head.
3. "Q" and "R" indicate this linear scale's reference surface for attachment.

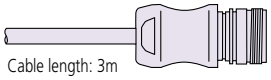
Order No. (w/o cable)	Order No. (w/ 3m cable A)	Order No. (w/ 3m cable B)	Order No. (w/ 3m cable C)	Effective length Lo	Entire length L1	L2	Maximum traveling stroke L3	n
539-371-00	**539-371-01**	**539-371-02**	**539-371-03**	140	259	135	259	2
539-373-00	**539-373-01**	**539-373-02**	**539-373-03**	240	359	185	359	3
539-374-00	**539-374-01**	**539-374-02**	**539-374-03**	340	459	235	459	4
539-375-00	**539-375-01**	**539-375-02**	**539-375-03**	440	559	285	559	5
539-376-00	**539-376-01**	**539-376-02**	**539-376-03**	540	659	335	659	6
539-377-00	**539-377-01**	**539-377-02**	**539-377-03**	640	759	385	759	7
539-378-00	**539-378-01**	**539-378-02**	**539-378-03**	740	859	435	859	8
539-379-00	**539-379-01**	**539-379-02**	**539-379-03**	840	959	485	959	9
539-380-00	**539-380-01**	**539-380-02**	**539-380-03**	940	1059	535	1059	10
539-381-00	**539-381-01**	**539-381-02**	**539-381-03**	1040	1159	585	1159	11
539-382-00	**539-382-01**	**539-382-02**	**539-382-03**	1140	1259	635	1259	12
539-383-00	**539-383-01**	**539-383-02**	**539-383-03**	1240	1359	685	1359	13
539-384-00	**539-384-01**	**539-384-02**	**539-384-03**	1340	1459	735	1459	14
539-385-00	**539-385-01**	**539-385-02**	**539-385-03**	1440	1559	785	1559	15
539-386-00	**539-386-01**	**539-386-02**	**539-386-03**	1540	1659	835	1659	16
539-387-00	**539-387-01**	**539-387-02**	**539-387-03**	1640	1759	885	1759	17
539-388-00	**539-388-01**	**539-388-02**	**539-388-03**	1740	1859	935	1859	18
539-389-00	**539-389-01**	**539-389-02**	**539-389-03**	1840	1959	985	1959	19
539-390-00	**539-390-01**	**539-390-02**	**539-390-03**	2040	2159	1085	2159	21
539-391-00	**539-391-01**	**539-391-02**	**539-391-03**	2240	2359	1185	2359	23
539-392-00	**539-392-01**	**539-392-02**	**539-392-03**	2440	2559	1285	2559	25
539-393-00	**539-393-01**	**539-393-02**	**539-393-03**	2640	2759	1385	2759	27
539-394-00	**539-394-01**	**539-394-02**	**539-394-03**	2840	2959	1485	2959	29
539-395-00	**539-395-01**	**539-395-02**	**539-395-03**	3040	3159	1585	3159	31

Cable A: Lead wires type



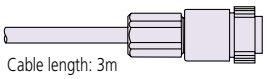
Cable length: 3m

Cable B: Connectable to Euro controller



Cable length: 3m

Cable C: Connectable to FANUC serial board C

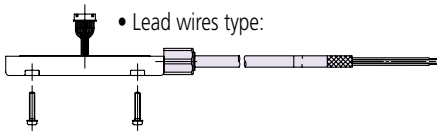


Cable length: 3m

Specifications

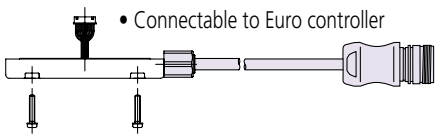
Effective length L_0 (mm):	140, 240, 340, 440, 540, 640, 740, 840, 940, 1040, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2640, 2840, 3040
Detecting method:	Optoelectronic linear encoder
Signal output:	1Vpp (4-phase sin wave), Differencial origin point pulse (Absolute Inteval Code - Distance Code compatible -)
Signal pitch:	20µm
Maximum responce speed:	120m/min (sin wave with -3dB amplitude
Indication accuracy (20°C):	±2µm (L_0: 140 to 540mm), ±3µm (L_0: 640 to 940mm), ±3µm/1m (L_0: 1040 to 3040mm)
Coefficient of linear expansion:	$8.5x10^{-6}$/°C
Temperature (operation):	0°C to 45°C, 20%PH to 80%PH (with no condensation)
Temperature (storage):	-20°C to 70°C, 20%PH to 80%PH (with no condensation)
Vibration resistance:	20G (55 to 2000Hz)
Shock resistance:	40G (1/2Sin 11ms)
Power supply:	DV5V±5%
Power consumption:	120mA
Dust/water protection:	IP53 level
Nozzle for air supply:	Provided

Signal cable



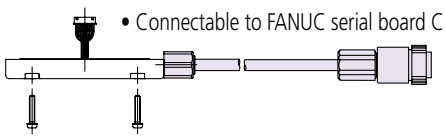
• Lead wires type:

No.09AAC071A (1m)
No.09AAC071B (3m)
No.09AAC071C (6m)
No.09AAC071D (9m)



• Connectable to Euro controller

No.09AAC079A (1m)
No.09AAC079B (3m)
No.09AAC079C (6m)
No.09AAC079D (9m)



• Connectable to FANUC serial board C

No.09AAC073A (1m)
No.09AAC073B (3m)
No.09AAC073C (6m)
No.09AAC073D (9m)

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring

Sensor Systems

Testing Equipments and Seismometer

Digital Scale and DRO Systems

Small Tool Instruments and Data Management

Specifications are subject to change without notice.

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