

RSLA absolute high accuracy stainless steel scale

System features

- Single track optical absolute scale
- 30 μm nominal scale pitch ensures exceptional motion control performance
- Robust special composition stainless steel with defined coefficient of thermal expansion ($10.1 \pm 0.2 \mu\text{m/m/}^\circ\text{C}$ @ 20°C)
- Coilable for simple storage and handling
- Available in defined lengths up to 5 m
- $\pm 40 \text{ nm}$ sub-divisional error for smooth velocity control
- Resolution to 1 nm
- Maximum speed of 100 m/s

RSLA absolute high accuracy stainless steel scale is compatible with Renishaw's revolutionary, true absolute optical encoder system, RESOLUTE™.

RSLA stainless steel scale is available in a range of lengths up to 5 m, with 5 m lengths having an overall accuracy better than $\pm 4 \mu\text{m}$ - an industry first! Combined with readheads featuring low sub-divisional error ($\pm 40 \text{ nm}$), advanced optics, resolution to 1 nm and simple installation and setup, RSLA provides outstanding motion control performance.

RSLA offers the ease of use of a tape scale yet has the performance of a glass spar; the scale can be coiled for simple storage and handling yet behaves as a spar once uncoiled. The choice of mechanical or adhesive mounting makes RSLA perfect for long-travel applications where metrology cannot be compromised.

Specifications

Scale	Track	Single, absolute optical track
	Pitch	30 µm
	Form (H x W)	1.5 mm x 14.9 mm
	Maximum length	5 m (See 'Scale part numbers' for available lengths)
	Measuring length	See RSLA installation drawing
	Accuracy (at 20 °C)	±1.5 µm up to 1 m
		±2.25 µm from 1 m to 2 m
		±3 µm from 2 m to 3 m
		±4 µm from 3 m to 5 m
		(includes slope and linearity)
		Calibration traceable to International Standards
	Material	Hardened martensitic stainless steel
	Thermal expansion (at 20 °C)	10.1 ± 0.2 µm/m/°C
	Mounting	Epoxy datum point and adhesive tape or mechanical datum clamp and mounting clips. Adhesive backing tape is included with all scale (nominal thickness 0.2 mm)
	Mass	172 g/m
	Storage	Lengths over 1.13 m are coiled (>600 mm diameter)

For further information on installation and mounting options, please refer to the **RESOLUTE** linear installation guide (M-9553-9128), which is available from your local representative or can be downloaded from www.renishaw.com or www.renishawsupport.com

Resolution, speed and scale lengths

RESOLUTE is available with a variety of resolutions. The choice of resolution depends on the serial protocol being used.

RESOLUTE with **BiSS-C** serial comms is available with 1 nm, 5 nm and 50 nm resolution options.

The maximum reading speed is 100 m/s.

The maximum scale length is determined by the readhead resolution and the number of position bits in the serial word.

Resolution	Maximum scale length (m)		
	36 position bits	32 position bits	26 position bits
1 nm	5*	4.295	0.067
5 nm	5*	5*	0.336
50 nm	5*	5*	3.355

RESOLUTE with **Siemens DRIVE-CLiQ** serial comms is available with 1 nm and 50 nm resolution options.

The maximum reading speed is 100 m/s.

The maximum scale length is determined by the readhead resolution and the number of position bits in the serial word.

Resolution	Maximum scale length (m)	
	34 bit position bits	28 position bits
1 nm	5*	N/A
50 nm	N/A	5*

RESOLUTE with **Mitsubishi** serial comms is available with 1 nm and 50 nm resolution options.

The maximum reading speed is 100 m/s.

The maximum scale length is determined by the readhead resolution and the number of position bits in the serial word.

Resolution	Maximum scale length (m) with 40 position bits
1 nm	2.1
50 nm	5*

RESOLUTE with **Yaskawa** serial comms is available with 1 nm and 50 nm resolution options.

The maximum scale length is determined by the readhead resolution and the number of position bits in the serial word.

Resolution	Maximum scale length (m) with 36 position bits	Maximum reading speed (m/s)
1 nm	1.8	3.6
50 nm	5*	100

RESOLUTE with **Panasonic** serial comms is available with 1 nm, 50 nm and 100 nm resolution options.

For the **Panasonic** protocol, the maximum scale length of 5 m* is available at all resolutions

Resolution	Maximum reading speed (m/s)	
	Panasonic A5 series	Panasonic A6 series
1 nm	0.4	4
50 nm	20	100
100 nm	40	100

RESOLUTE with **FANUC** serial comms is available with 1 nm and 50 nm resolution options.

The maximum reading speed is 100 m/s.

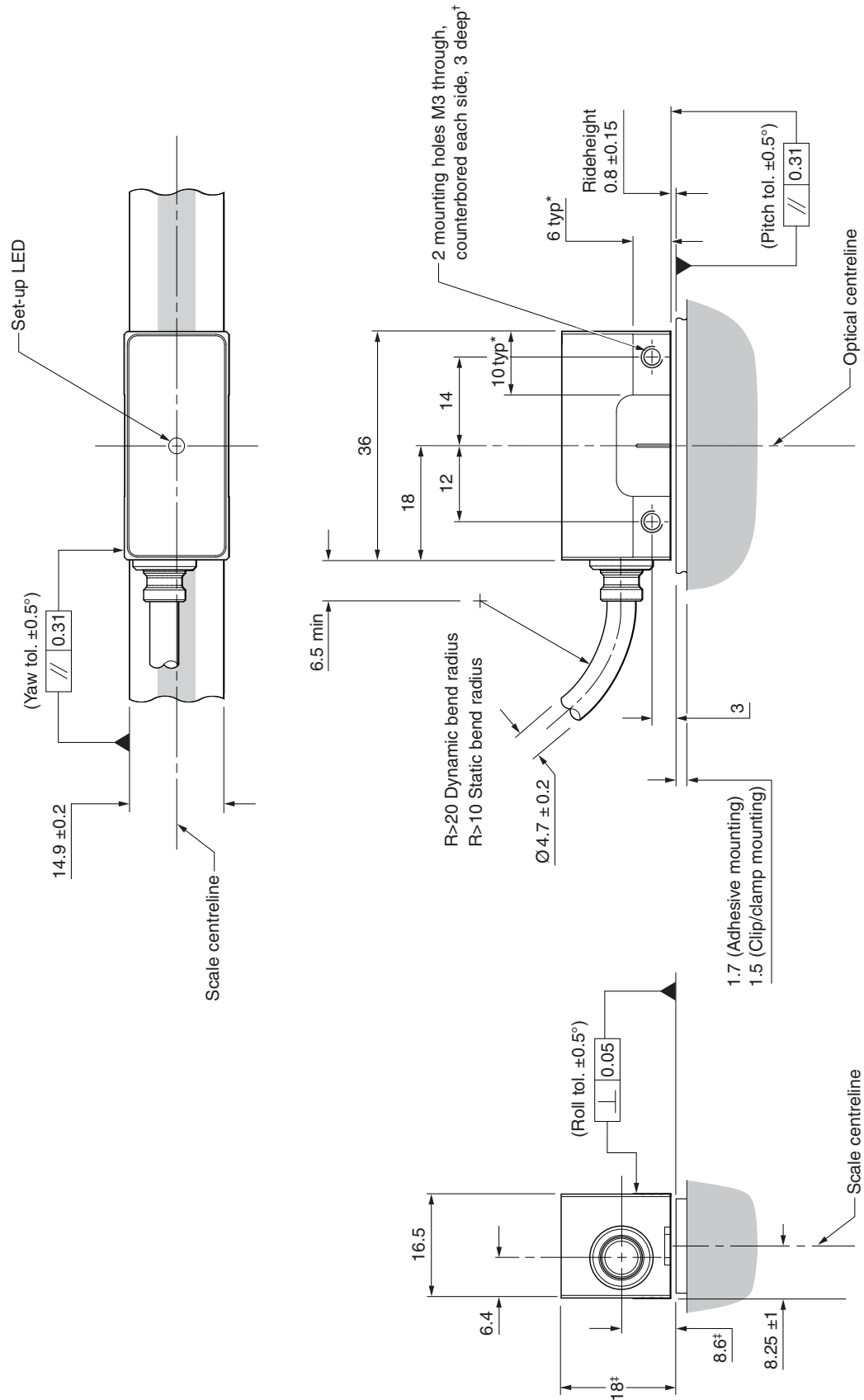
For the **FANUC** protocol, the maximum scale length of 5 m* is available at all resolutions

*RSLA scale is available up to 5 m. For longer lengths, consider RTLA scale (up to 21 m).

For alternative longer length scales visit www.renishaw.com

RESOLUTE installation drawing (on RSLA scale)

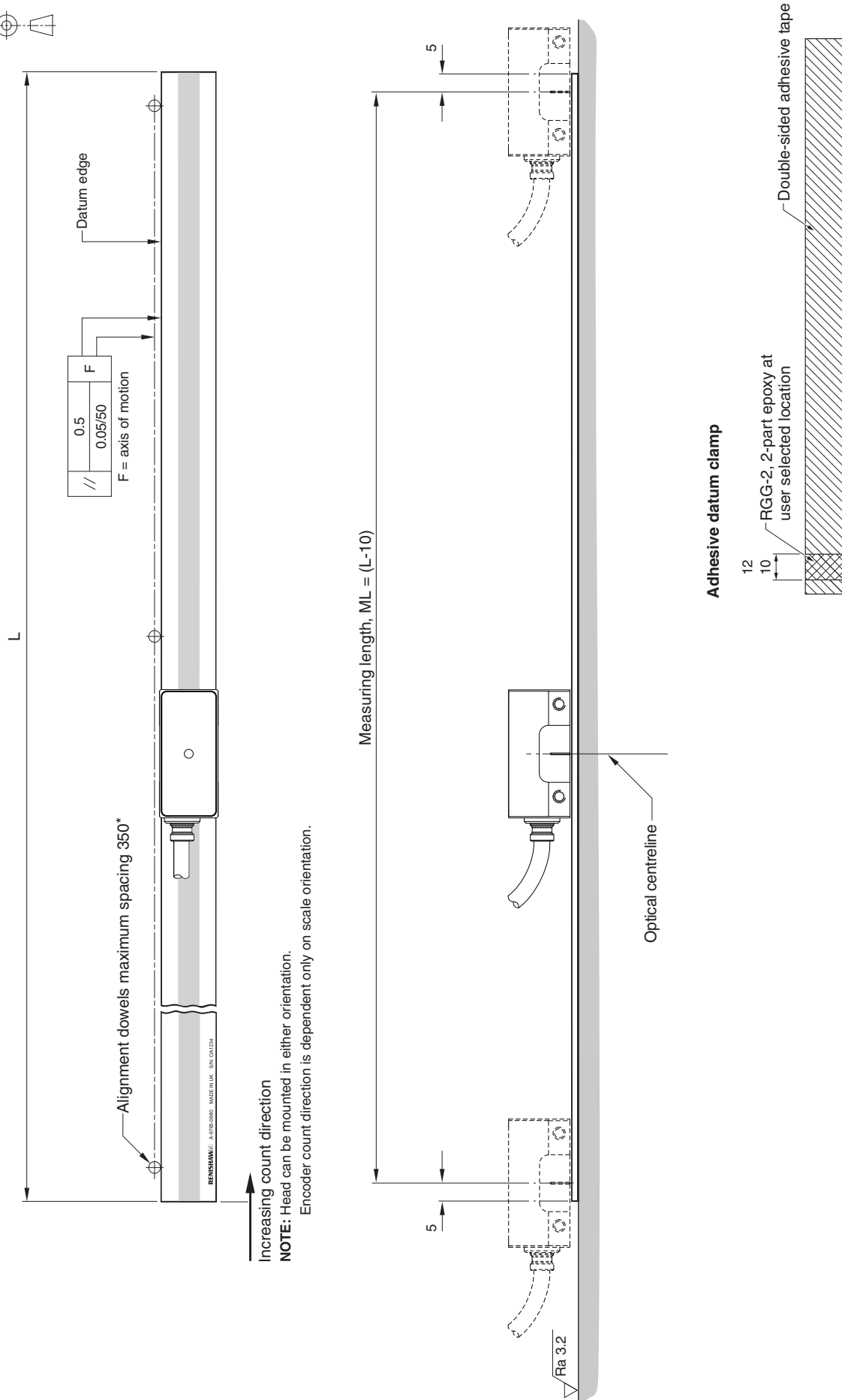
Dimensions and tolerances in mm



* Extent of mounting faces. † Recommended thread engagement 5 min (8 mm including counterbore). Recommended tightening torque 0.5 to 0.7 Nm. ‡ Dimensions from scale surface

RSLA installation drawing (adhesive mount)

Dimensions and tolerances in mm



NOTE: Adhesive mounted scale should not be reused after installation.

*When scale is to be mounted vertically, position the dowels so that the datum edge is supported.

Scale part numbers

Part number is A-9765-xxxx where xxxx is the total scale length in mm (see available lengths in table below)

Actual spar length (mm)

0020	0150	0530	1000	1700	2700	4000
0030	0180	0580	1030	1800	2800	4100
0040	0200	0630	1130	1900	2900	4200
0050	0230	0680	1200	2000	3000	4300
0060	0280	0730	1230	2100	3100	4400
0070	0330	0780	1270	2200	3200	4500
0080	0380	0830	1330	2300	3400	4600
0100	0430	0880	1430	2400	3500	4700
0120	0480	0930	1500	2500	3700	4900
0130	0500	0980	1600	2600	3800	5000

RSLA compatible readhead

RSLA



RESOLUTE



Installation guide M-9553-9128

Data sheet BiSS L-9517-9448

FANUC L-9517-9442

Mitsubishi L-9517-9454

Panasonic L-9517-9460

Siemens DRIVE-CLiQ L-9517-9524

Yaskawa L-9517-9436

RESOLUTE UHV



Data sheet L-9517-9530

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