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RELA30 absolute linear high-accuracy scale



RELA30 ZeroMet™ absolute scale is manufactured from near zero thermal expansion material ensuring the high level of accuracy is maintained across the full temperature range.

RELA30 offers certified ±1 µm accuracy for up to 1 metre, combined with low thermal expansion ZeroMet to suit the most demanding precision applications. The high performance of the scale is augmented by Renishaw's RESOLUTE absolute optical readhead offering ±40 nm sub-divisional error, resolution to 1 nm, low noise (jitter) and a maximum speed of 100 m/s.

RELA30 provides good dirt immunity and ease of set-up, whilst offering levels of performance previously only available from delicate fine pitch systems.

- **Single-track optical absolute scale**
- **Robust ZeroMet™ offers 0.75 ±0.35 µm/m/°C (at 20 °C) thermal expansion plus ease of handling and installation**
- **±1 µm guaranteed accuracy up to 1 metre**
- **30 µm nominal scale pitch ensures exceptional motion**
- **Scale mounting options: self-adhesive or clips and clamps**
- **Available in lengths up to 1.7 m**
- **Compatible with RESOLUTE absolute readheads**

RELA30 scale specifications

Description	High stability, low-expansion nickel-iron alloy ZeroMet spar scale for use with RESOLUTE readheads
Pitch	30 µm
Form (height × width)	1.6 mm × 14.9 mm (excluding adhesive)
Accuracy (at 20 °C)	Certified to ±1 µm up to 1 m, ±1 µm/m for lengths > 1 m. Calibration traceable to International Standards
Coefficient of thermal expansion (at 20 °C)	0.75 ±0.35 µm/m/°C
Mass	184 g/m
Available lengths	20 mm to 1.7 m (available in increments of 10 mm)
Measuring length	See 'RELA30 installation drawing (adhesive mount)' on page 4
Mounting	Epoxy datum point and adhesive tape or mechanical datum clamp and mounting clips.

For further information on installation and mounting options, refer to the *RESOLUTE RELA30/RSLA30 high-accuracy absolute linear encoder system* installation guide (Renishaw part no. M-9553-9128), which is available from the website at **www.renishaw.com/resolutedownloads**.

Maximum scale lengths

The maximum scale length depends upon the serial interface, readhead resolution and the number of position bits.

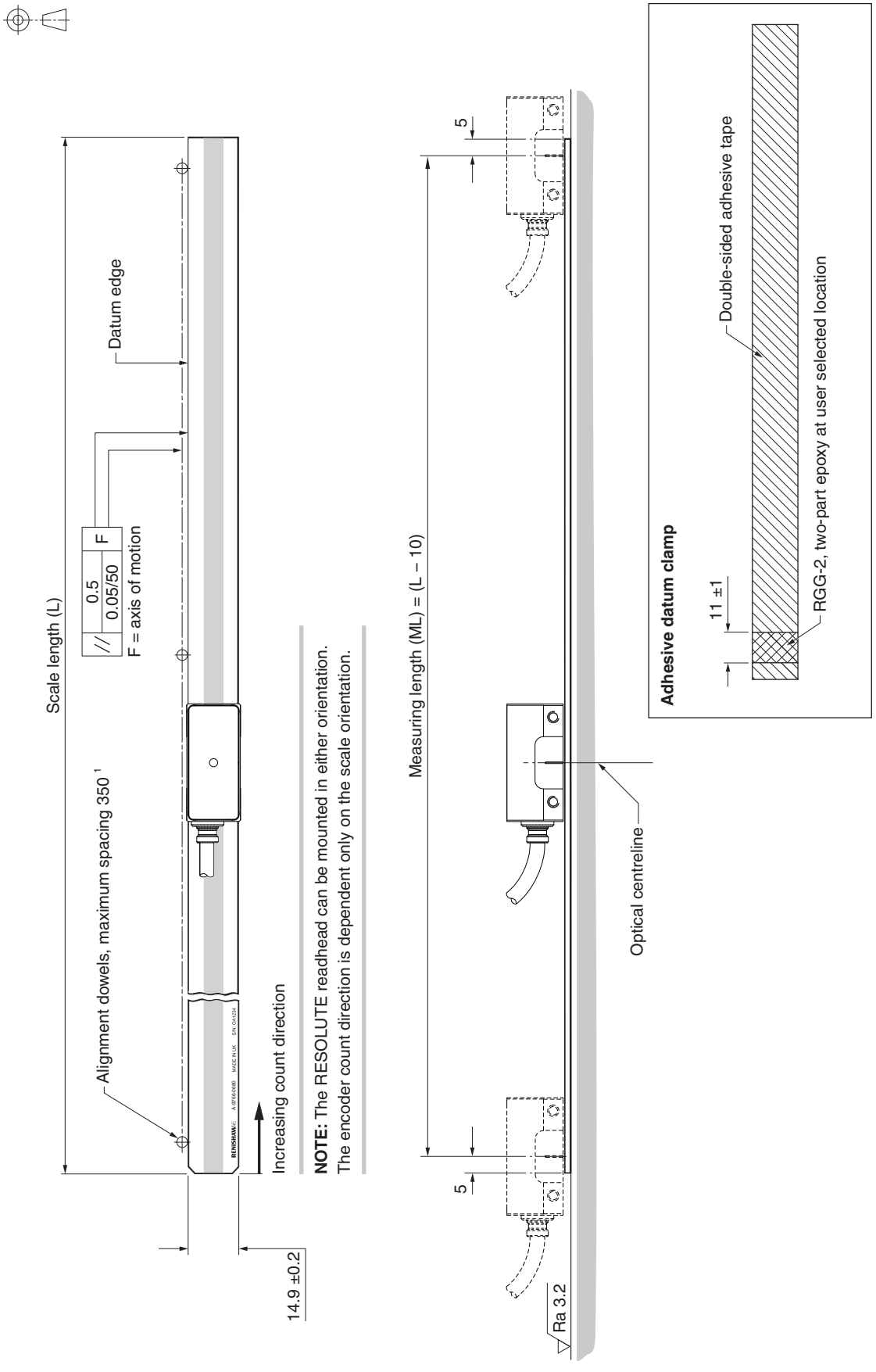
The table below shows the maximum scale length for each system:

		Resolution			
Serial interfaces	**Position bits**	**1 nm**	**5 nm**	**50 nm**	**100 nm**
BiSS C (uni-directional)	26 bit	67 mm	336 mm	1.7 m	-
	32 bit	1.7 m	1.7 m	1.7 m	-
	36 bit	1.7 m	1.7 m	1.7 m	-
FANUC	37 bit	1.7 m	-	1.7 m	-
Mitsubishi	40 bit	1.7 m	-	1.7 m	-
Panasonic	48 bit	1.7 m	-	1.7 m	1.7 m
Siemens DRIVE-CLiQ	28 bit	-	-	1.7 m	-
	34 bit	1.7 m	-	-	-
Yaskawa	36 bit	1.7 m	-	1.7 m	-

NOTE: RELA30 scale is available in lengths up to 1.7 m. For longer linear scale lengths consider RSLA30 scale (lengths up to 5 m), RTLA30 scale (lengths up to 21 m) or RKLA30-S scale (lengths up to 21 m). The data sheets for these alternative scales are available at **www.renishaw.com/resolutedownloads**.

RELA30 installation drawing (adhesive mount)

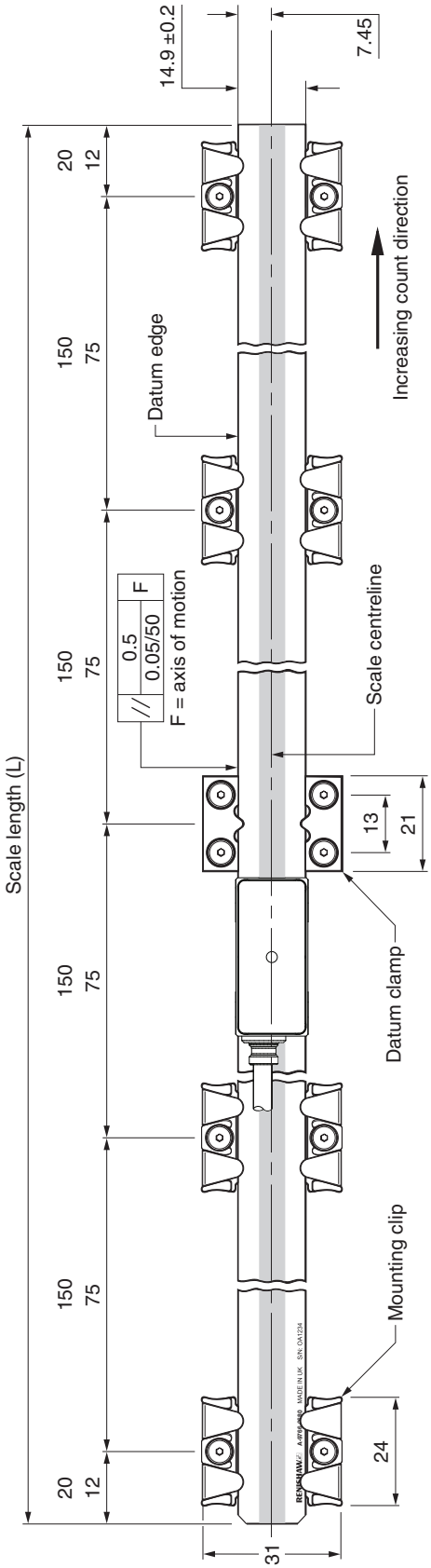
Dimensions and tolerances in mm

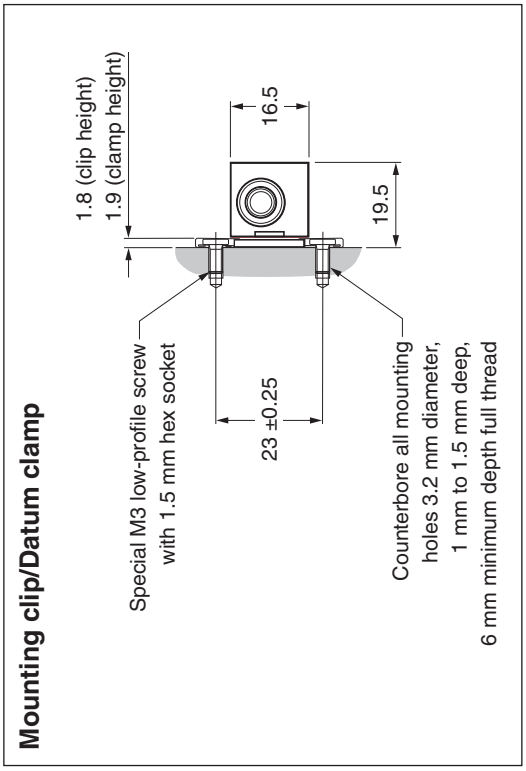


1 When the RELA30 scale is to be mounted vertically, position the dowels so that the datum edge is supported.

RELA30 installation drawing (clip/clamp mounted)

Dimensions and tolerances in mm





NOTES:

- For lengths 80 ≤ L ≤ 190 ensure that the scale is clamped or clipped in the middle as well as at both ends.
- The installation should use the least number of clips as possible.
- For lengths not specified, contact your local Renishaw representative for further advice.
- Care should be taken to ensure sufficient clearance between the readhead/mounting bracket and clips/datum clamp.
- Only special low-profile screws should be used. Screws are provided with all clips/datum clamps and spares can be supplied if required.
- Measuring length (ML) = (L – 10).

Scale part numbers

Part number	Available lengths	Available in increments of	Ordering instructions
A-9766-xxxx	20 mm to 1700 mm	10 mm	xxxx is the length in mm. Ordering A-9766-0450 for example will result in a length of 450 mm.

Scale accessory part numbers

Self-adhesive mounting accessories

Part description	Part number	Product image
Adhesive backing tape (5 m) (nominal thickness 0.2 mm)	A-9584-2111	
Adhesive backing tape applicator Aids the application of the adhesive backing tape to the scale	A-9584-0601	
RGG-2 two part epoxy adhesive Used to create a datum point	A-9531-0342	

Clip/clamp mounting accessories

Part description	Part number	Product image
Mounting clips [1]	A-9584-2049	
Datum clamp kit [1]	A-9584-2050	
Replacement M3 screws A pack of 25	A-9584-2047	
Spare clip setting shim	M-9584-0928	

[1] Ultra-high vacuum (UHV) and extra wide clip and clamp accessories are available. Contact your local Renishaw representative for more information.

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Compatible products

RELA30



RESOLUTE standard readheads



RESOLUTE UHV
(Ultra-high vacuum) readheads



RESOLUTE FS
(Functional Safety) readheads [1]



[1] Only adhesive mounted RELA30 scales are Functional Safety compatible. RELA30 mounted with clips and clamps are not approved for Functional Safety systems.

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