

RVI20 Vacuum compatible plane mirror interferometer

For the fibre optic laser encoder

Renishaw's RLE fibre optic laser encoder uses interferometry to provide high resolution, high linearity position feedback.

This data sheet describes the vacuum compatible plane mirror interferometer.

To complete the interferometer configuration when using this component a target plane mirror is required, in addition to an RLD10-A3-XX detector head which contains the fringe detection scheme and integral beam steerers. For more information on the RLD10 see www.renishaw.com/RLE.



The RVI20-X3-P0 is designed to mount inside a vacuum chamber with the laser measurement beam entering through a suitably positioned viewport.

General outline and dimensions

Dimensions in mm (inches)

Overall dimensions:

Length: 46.1 (1.82)
Depth: 40.1 (1.58)
Height: 20 (0.79)

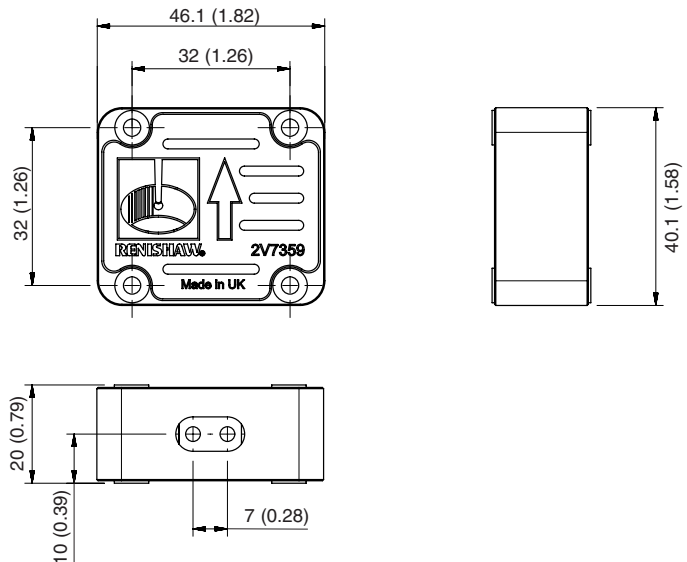
Fixings:

Detector head

4 off M3 x 0.5 x 35 mm or 5-40-UNC x 1³/₈ cap head screws on a 38 mm square pitch.

Interferometer

4 off M3 x 0.5 x 35 mm or 5-40-UNC x 1³/₈ cap head screws on a 32 mm square pitch



RVI20 Vacuum compatible interferometer operating parameters

Axis travel	PMI	0 m to 1.0 m
Optical signal period	PMI	$\lambda/4$ (158 nm)
System non-linearity error (SDE)* *excluding interface	PMI	< ± 2.5 nm below 50 mm/sec with > 70% signal strength < ± 7.5 nm at 1 m/sec with > 50% signal strength
Thermal drift coefficient	< 100 nm/°C	Measured by mounting mirror and interferometer close together on a low thermal expansion glass base and changing the temperature
Beam diameter	3 mm	
Beam separation	7 mm	Centre to centre
Beam alignment tolerance for plane mirror (1 m axis)	± 25 arcseconds	Tolerance applies to both pitch and yaw during operation
Component weight	0.25 kg	
Operating environment	UHV vacuum compatible	