

RSU10 USB interface

This data sheet provides an overview and specifications for the Renishaw RSU10 USB (serial) interface.

The RSU10 accepts differential analogue 1 Vpp sine/cosine signals from an RLE laser interferometer encoder system, interpolates by 16,384 and provides a position reading via a USB output.

When used in combination with a double pass plane mirror interferometer system (PMI) (fundamental period of sinusoids is nominally 158 nm), this results in an LSB of 9.64 picometres at velocities of up to 1 m/sec.

The RSU10 is compatible with the established Renishaw calibration software suite (LaserXL™ and QuickViewXL™) in addition to a software development kit (SDK) which provides customers with the capability to develop their own, application specific software. Note: SDK does not support dynamic data capture (max update rate = 20 Hz).

A TPIN trigger input facility allows data to be captured on receipt of a remotely generated trigger signal. This is particularly useful for recording measurements when the machine under test is moving.

The RSU10 provides an ideal solution for use with test rigs, and when used with QuickViewXL™, allows the live display and capture of dynamic measurement data such as that required for vibration analysis applications.

For applications where air refractive index compensation is required, the RSU10 should be used with an XC-80 environmental compensation unit. If an XC-80 is not used, the default environmental parameters (20 °C, 1013.25 mbar and 50% RH) will be applied.



Kit contents

The RSU10-XX-XX kit comprises:

- RSU10 serial interface
- USB cable (3 m)
- RLU to RSU10 connector cable (1.5 m)
- Laser USB SDK software
- Trigger input connector
- Installation guide

Computer specification

The minimum PC specification recommended for use with the RSU10-XX-XX is:

- 1 GHz processor
- 512 MB RAM
- 20 GB hard disk space
- Windows® XP (SP2 or higher), Windows Vista™ or Windows® 7
- 1024 x 768 pixel screen resolution
- CD-ROM drive
- At least one available USB II port (two if an XC-80 environmental compensation unit is also being used)

USB interface performance

| | | |
|---------------------------|---|---|
| Resolution | 9.64 pm (double pass plane mirror interferometer - PMI) | |
| | 19.28 pm (single pass retroreflector interferometer - RRI) | |
| Maximum velocity | 1 m/s (double pass plane mirror interferometer - PMI) | |
| | 2 m/s (single pass retroreflector interferometer - RRI) | |
| Maximum update rate | 50 kHz (20 Hz only with SDK) | |
| Non-linearity error (SDE) | PMI | 3 nm at < 50 mm/s |
| | | 4 nm at < 1 m/s |
| | RRI | 6 nm at < 100 mm/s |
| | | 8 nm at < 2 m/s |
| Electrical noise (PMI) | < 0.1 nm RMS (100% signal strength) | |
| Power supply required | None - USB powered | |
| Connections | 15-way D-type (interferometer/encoder input) Trigger (input) USB (output) | |
| Operating environment | | |
| Pressure | 650 mbar to 1150 mbar Normal atmospheric | |
| Humidity | 0% to 95% RH Non-condensing | |
| Temperature | 10 °C to 40 °C | |
| Dimensions | 190 mm x 128 mm x 42 mm (7.6 inches x 5.12 inches x 1.68 inches) | |
| Weight | 700 g | RSU10 USB interface with no cables attached |
| | 200 g | RLU to RSU10 cable |
| | 90 g | USB cable |

