

New encoder software eases motion system set-up, calibration and diagnostics

A powerful component of Renishaw's new SiGNUM™ family of rotary and linear encoders is the PC-based SiGNUM™ software that provides comprehensive calibration, set-up optimisation and real-time diagnostics. The result is both simplified installation of the encoder system and on-going system maintenance, further enhancing a rugged encoder range that delivers levels of performance previously possible only from fine-pitch systems too delicate for many industrial roles.

The SiGNUM™ Si interface is connected to the PC via a USB connector and offers a range of features and benefits, including real time signal monitoring, readhead pitch adjustment, calibration of the encoder reference mark and incremental signals, remote system monitoring, advanced error logging and system configuration analysis.

Users of the SiGNUM™ software are able to monitor signal level and system performance in real time, in several different ways. These include a signal strength meter, Lissajous plot and IRED feedback meter (AGC drive), to assist system optimisation. System monitoring can also take place remotely during real-time closed-loop operation.

Renishaw encoders have a deserved reputation for ease of set-up, and the new software reinforces this advantage by offering an innovative indicator that enables fine adjustment of the readhead pitch, which is particularly useful for readhead set-up on small diameter rings.

A further benefit to users is the ability to undertake quick and simple remote calibration of the reference mark and

incremental signals, with just the press of a button. The calibration data is then saved to disk for fault-finding and to provide system performance history. System error logging is also a powerful feature of the software, with a log made of all alarms or warnings that have occurred since switch-on or the last reset. The warning function alerts the user to conditions that are less than optimum, whilst the alarm indicates when an error has occurred.



Analysis of the SiGNUM™ Si interface is available to users at all times, providing information on system configuration such as resolution, clock frequency, and error and warning outputs.

The SiGNUM™ software is supplied with a technical 'Info' guide which provides basic contextual help and a comprehensive technical guide. The 'Info' guide provides a more detailed explanation of system functions and fault-finding. A multilingual user interface also allows a choice of languages from English, German, Italian and Japanese.

Background on the SiGNUM™ encoder range:

The new SiGNUM™ encoder range offers high accuracy, resolution and repeatability with high speed, high operating temperatures, ultra-low cyclic error and innovative *IN-TRAC*™ optical reference mark, which remains phased over the entire speed and temperature specification. The system offers intelligent signal processing, ensuring excellent reliability and ultra-low cyclic error (typically $<\pm 40$ nm), whilst comprehensive SiGNUM™ software enables optimum set-up and real-time system diagnostics via a PC's USB port.

The SiGNUM™ RESM angle encoder is a one-piece stainless steel ring with 20 micron scale marked directly on the periphery. It features the *IN-TRAC*™ optical reference mark, which repeats, regardless of direction, at operational speeds of over 4,500 rev/min (52 mm diameter) and up to 85 degrees C.

The SiGNUM™ RELM high accuracy linear encoder comprises the SR readhead, Si interface and 20 micron RELM scale, which is offered in defined lengths. Initially available in Invar, which provides a low thermal expansion of 1.4 micron/m/degrees C, the RELM scale is offered with a choice of *IN-TRAC*™ reference mark positions and dual optical limits. Together with the robust, yet highly precise 20 micron spars, this enables the RELM to offer accuracy to ± 1 micron and resolution to 20 nm, satisfying the most demanding precision motion requirements.