RENISHAW
apply innovation™

SFP2 surface finish probe

Enhanced access and inspection capability for integrated surface finish measurement



The SFP2 probe increases the surface finish measurement ability of the REVO® system, which offers multi-sensor capability providing touch-trigger, high speed tactile scanning and non-contact vision measurement on a single CMM.

Powered by 5-axis measurement technology, the SFP2's automated surface finish inspection offers significant time savings, reduced part handling and greater return on CMM investment.

The SFP2 system consists of a probe and a range of modules and is automatically interchangeable with all other probe options available for REVO, providing the flexibility to easily select the optimum tool to inspect a wide range of features, all on one CMM platform. Data from multiple sensors is automatically referenced to a common datum.

The surface finish system is managed by the same I++ DME compliant interface as the REVO system, and full user functionality is provided by Renishaw's MODUS metrology software.

Key benefits

Unrivalled feature access

SFP2 benefits from REVO's infinite positioning and 5-axis movement, and features an integral motorised C-axis. The SFM variants offer a range of tip arrangements which, combined with the knuckle joint between module and holder, provide access to the features most difficult to reach.

Operator independent data collection

CMM programs can now include automated and operator-independent surface finish measurement. All results, including surface finish data, are recorded and stored in a single location for easy retrieval.

Greater return on investment in CMMs

Integrated surface finish and dimensional inspection can remove the need for dedicated surface measurement equipment, reducing factory footprint, part handling and associated costs.

www.renishaw.com/SFP2

#renishaw

RENISHAW
apply innovation™

Specification

SFM-A1 and SFM-A2 modules		
Surface finish range	0.05 - 6.3 µm Ra	
Surface finish accuracy (of nominal Ra)	± (5% +15 nm)	
Surface forces (nominal)	Skid:	0.2 N
	Stylus tip:	0.003 N
Encoder resolution	1 nm	
Nominal stylus tip protrusion beyond skid	0.5 mm	
Measurement speed	Up to 1 mm/s	
SFM range of adjustment	± 90° at the knuckle joint	

SFP2 probe		
C-axis positioning accuracy	± 0.25°	
C-axis rotation speed	Up to 90°/sec	
Rotational capability	A-axis (from REVO-2):	+120° / -110°
	B-axis (from REVO-2):	Infinite positioning
	C-axis:	± 180˚
Mounting (probe and holder)	Magnetised coupling	

System fefatures		
Probe head	REVO-2 only	
Change rack	MRS2 recommended for full capability	
Software compatibility	UCCsuite 5.2 onwards MODUS 1.8 onwards	
Weight	SFP2 probe:	330 g
	SFH1 holder:	33 g
	SFM-A1 module:	12 g
	SFM-A2 module:	12 g
Operating temperature range	+10 ˚C to +40 ˚C	
Storage temperature range	-25 ˚C to +70 ˚C	
Operating humidity	0% to 80% (non-condensing)	
Calibration and verification artifacts	SFA1:	3.0 µm Ra sinusoid
	SFA2:	0.5 µm Ra sinusoid
	SFA3:	0.4 µm Ra sawtooth
	TFP:	Uses LF TP20 module; PICS interface to SPA3 amplifier
Outputs	MODUS basic:	Ra, Rms(Rq)
	MODUS standard surface texture:	Rt, R3z, Rz, Rz1max, RzDIN, RzJIS, Rseg Rp, Rv Rpm, Rvm, Rc, Rsm
	MODUS advanced surface texture:	Rk, Rpk, Rvk, Rmr, Rmr1, Rmr2, Rpq, Rvq, Rmq, Rvoid, Rvdd, Rvddl, Rcvx, Rcvxl
Sampling rate	4 kHz	

www.renishaw.com/SFP2

#renishaw

+44 (0) 1453 524524 **uk@renishaw.com**

© 2017–2022 Renishaw plc. All rights reserved. RENISHAW® and the probe symbol are registered trade marks of Renishaw plc.
Renishaw product names, designations and the mark 'apply innovation' are trade marks of Renishaw plc or its subsidiaries.
Other brand, product or company names are trade marks of their respective owners.
Renishaw plc. Registered in England and Wales. Company no: 1106260. Registered office: New Mills, Wotton-under-Edge, Glos, GL12 8JR, UK.

WHILE CONSIDERABLE EFFORT WAS MADE TO VERIFY THE ACCURACY OF THIS DOCUMENT AT PUBLICATION, ALL WARRANTIES, CONDITIONS, REPRESENTATIONS AND LIABILITY, HOWSOEVER ARISING, ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

Part no.: H-1000-2284-03-A
Issued: 09.2022

RENISHAW
apply innovation™

Calibration and capability artefacts for SFP2 surface finish probe

Surface finish on CMMs

Surface finish measurement has traditionally involved the use of hand-held sensors or has required the part to be moved onto a costly dedicated measuring machine.

The SFP2 probe for the REVO® 5-axis system changes all this, making surface finish inspection an integral part of CMM measurement, enabling the automatic switching between scanning, optical non-contact and surface finish measurement probe types.

This unique capability allows the surface finish analysis to be fully integrated into a single measurement report.



Calibration and capability artefacts

Renishaw provides a range of products that support the use of REVO SFP2 surface finish measurement probes on CMMs.

The artefact plates are used for calibrating surface finish modules, independently verifying the calibration, checking linearity and tip condition monitoring.

Additionally, Renishaw's condition checking artefact can be used to position optical flats and calibration plates throughout the CMM volume. This may be useful in assessing a machine's capability for surface roughness measurement.

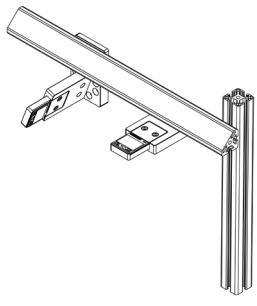
The TFP tip find probe comprises a TP20 probe with low force module. It is used to map the SFP2 probe C-axis and calibrate the geometry of module / holder configurations.



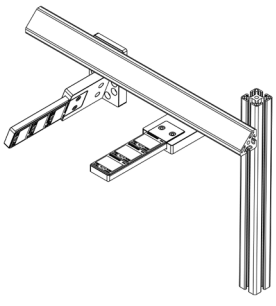
Key benefits

* Comprehensive range of tools to support surface finish measurement on CMMs
* Calibration of the full range of surface finish modules
* Independent linearity and calibration verification plus tip condition monitoring
* Machine capability testing and fault finding

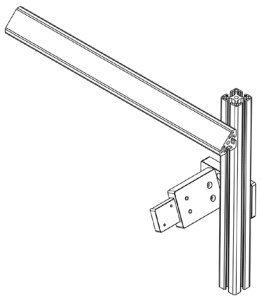
Single artefact on MRS2 rail



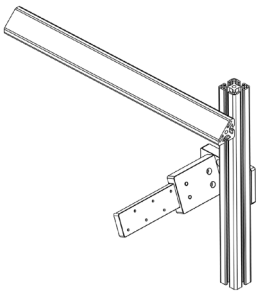
Triple artefact on MRS2 rail



Single artefact on MRS2 leg



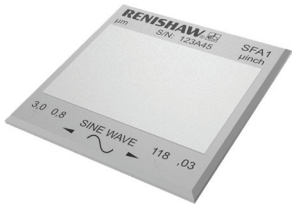
Triple artefact on MRS2 leg



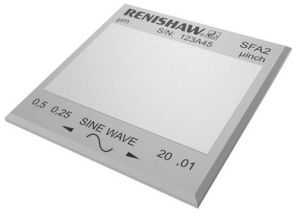
RENISHAW
apply innovation™

Specification

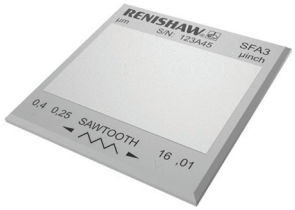
Calibration plate SFA1 *	
Function	Used for calibrating SFM surface finish modules.
Surface details	3.0 µm Ra sinusoidal profile. Electroformed nickel surface.
Traceability	UKAS calibration certificate provided.



Checking plate SFA2 *	
Function	Used for checking calibration linearity.
Surface details	0.5 µm Ra sinusoidal profile. Electroformed nickel surface.
Traceability	UKAS calibration certificate provided.



Verification plate SFA3 *	
Function	Used for periodic tip condition checking.
Surface details	0.4 µm Ra saw tooth profile. Electroformed nickel surface.
Traceability	UKAS calibration certificate provided.



CMM condition checking artefact OFA **	
Function	A service tool for verifying machine capability and fault finding. It houses six optical flats located within a cube and has mounting holes for additional calibration and checking artefacts.
Surface details	λ/20 fused silica optical flat Diameter 50 mm
Traceability	Optical flats are supplied with calibration certificates.



Location options:

* SFA1, SFA2 and SFA3 can be fixed to an MRS2 rail, MRS2 leg or the OFA artefact. These artefacts and mounts can be supplied within comprehensive system kits or individually.

** OFA can be mounted directly to the bed of a CMM, to a fixture plate or to a universal calibration tower. The OFA is available to special order only. Contact Renishaw for availability.

www.renishaw.com/SFP2

#renishaw

+44 (0) 1453 524524 **uk@renishaw.com**

© 2019–2022 Renishaw plc. All rights reserved. RENISHAW® and the probe symbol are registered trade marks of Renishaw plc.
Renishaw product names, designations and the mark 'apply innovation' are trade marks of Renishaw plc or its subsidiaries.
Other brand, product or company names are trade marks of their respective owners.
Renishaw plc. Registered in England and Wales. Company no: 1106260. Registered office: New Mills, Wotton-under-Edge, Glos, GL12 8JR, UK.

WHILE CONSIDERABLE EFFORT WAS MADE TO VERIFY THE ACCURACY OF THIS DOCUMENT AT PUBLICATION, ALL WARRANTIES, CONDITIONS, REPRESENTATIONS AND LIABILITY, HOWSOEVER ARISING, ARE EXCLUDED TO THE EXTENT PERMITTED BY LAW.

Part no.: H-1000-2500-02-A
Issued: 09.2022