

Data Sheet – FBS900

FBS900 Fibre Bending Module

Measurement system for the determination of bending moment in single fibres.

Single cantilever measurement against a polished stainless steel pin.

Sample rotation to enable measurements to be taken over a range of orientations.

Measurement accuracy to better than 1mg.

Fully compatible with the ALS1500 automated sample loading module and FDAS765.

System Description.

General Information.

The FBS900 is a miniature fibre bending instrument suitable for both the study of natural and man made fibres. The measurement is based on the bending of a single cantilever against a stainless pin. The FBS900 is a stand-alone instrument with manual sample loading. However, sample throughput can be dramatically increased through the addition of the ALS1500 sample loading module. This automated module will also load samples to the FDAS765, so that both dimensional and bending moment can be measured in a single sequence. The standard sample cassette holds up to 50 mounted fibres, which can be measured automatically without user intervention.

Control Unit.

The FBS900 uses the universal control unit (UV1000) which supports the range of Dia-Stron fibre testing instrumentation. The commonality of the control unit permits the addition of the ALS1500 automated sample module and the FDAS765 for the measurement of fibre dimensions. The control unit has no user interface and all methods are entered through the PC applications software.

Fibre Bending Measurement Module.

The mechanical system comprises a sample support arm that is driven vertically downwards by a high resolution micro-drive (see specifications). In addition to the vertical movement, the samples may be rotated to enable the bend measurements to be taken at different orientations. The samples are driven against a stainless steel pin of 0.5mm diameter, mounted on a force sensor. The force sensor is a micro-balance offering excellent resolution combined with a robust and reliable construction. Samples are prepared using a special two-part plastic mount. One half of the mount has alignment grooves to ensure the fibre is correctly positioned and that the exact length of the cantilever is known. The fibre is then clamped in place by a “snap-on” top mount. The sample pocket is designed for accurate positioning of the fibres and to hold them in place during measurement, including rotation.

UvWin PC Applications Software.

The FBS900 is operated by UvWin PC application, which is a 32-bit software programme written for Windows™ NT 2000 & XP. The instrument protocols are selected from user interactive dialogues and the software includes method options for specific applications, data display and

storage. Data export to other PC applications is through formatted text files suitable for import into Excel and other similar software. Specific bend analysis tools are also offered in the software.

UvWin supports the complete range of Dia-Stron fibre testing instruments, including the automated sample loading modules, so giving a familiar Windows platform over the range of applications.

Specifications.

Force Sensing System:

Maximum Bending Force: 400mg
Load Cell Resolution: 0.01mg
Load cell accuracy: 1mg
Load cell linearity; $\pm 0.08\%$ full scale
Data capture rate: 10Hz

Linear Fibre Movement:

Movement speed: 0.01 to 1.25mm/sec
Movement range: 15mm
Movement repeatability: 0.1 microns
UvWin resolution: 1 micron

Fibre Rotation Movement:

Rotational Range : 0-360 degrees
Rotational accuracy: ± 2 degrees 50mm

Software compatibility: Windows 2000, NT, & XP

Communications: RS232, USB serial adapter

Power: Universal supply 85-265vac, 47-63Hz, 100W

System Components:

UV1000 Control Unit.

FBS900 Bending Module.

PU1100 Pneumatics Control Unit

UvWin PC Applications Software including manuals (supplied on CD).

Fibre Mounting System

Mains cord and serial cable.

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