High performance tensile instrument gives a precise forecast of yarn runability for high performance processes with a testing speed of 400 m/min.

**Elements of the USTER® TENSOJET 5 installation**

1. Test unit
   - Sensor for force and elongation
   - Sensor temperature and humidity
2. Control unit
3. Printer
4. Table with touchscreen and integrated waste box

**Basic installation**

**Options**

5. Package truck
6. Calibration device ISOINSPECT (no illustration)
Basic installation

Overall Installation

Functions

– Measurement of tensile strength and elongation of staple fiber yarns
– Analysis, evaluation and storage of measurement values
– Automatic check of all measured values
– Yarn classification based on the USTER® STATISTICS
– Editor for customizing reports and setting of mill limits
– Filter functions for quick data selection and for the preparation of long-term reports

Included in the delivery

– Test unit
– Control unit
– Touchscreen
– Printer
– Application software
– Table

Subsystem of the USTER® TENSOJET 5 basic version:

Test unit (1)

General
instrument type

– Recommended for staple fiber yarns 5–150 tex
(Nm 7 to 200; Nec 4 to 119)
– Special staple fiber yarns on request: especially for linen yarns, plied yarns, waxed yarns, technical yarns, silk yarns, slub or fancy yarns, high-volume yarns
– It is not recommended to measure core yarns

Measuring principle

Constant rate of extension CRE

Testing method

Simple tensile test.
Testing capacity 30 000 per hour at 400 m/min testing speed

Force measuring arrangement

Practically inertialess electronic force measurement

Elongation measuring arrangement

– Electronic elongation measurement
– Measuring accuracy for force and elongation measurement:
  for force ±1% (above 100 cN) or ±1 cN (below 100 cN),
  and for elongation ±1%

Clamp speed

200 and 400 m/min

Pre-tension

Adjustable between 5 and 500 cN
### Technical Data

**Test lengths**  
500 mm (necessary yarn length 800 mm/break)

**Force measuring range**  
0.7 – 30 N

**Elongation measuring range**  
3 – 30 %

**Yarn changer**  
- Automatic selection of the yarn from the sample into the measuring zone  
- Setup of 24 samples, finishing of the incomplete test after end of the test

**Control unit (2) Computer software**  
- USTER® TENSIOJET 5 intuitive touch application software  
- Windows Embedded 8.1 operating system  
- System pre-configured and locked down  
- Simple full system update process

**Computer hardware**  
- Industrial computer with Intel processor  
- 3 internal hard drives for data security and system redundancy  
- 1 TB test data storage

**Computer accessories**  
- Large easy to read touchscreen monitor  
- Laser printer
Application software

Reports

Type of report
– Standard test report of the measurement series
– USTER® Quality Report (summary of the key data and the test results on one page; quality certificate)
– Pre-defined table reports and graphical reports for different application
– Long-term reports

Display and printout of the reports
Live view report during the measurement
– Analysis tool with all measured data and graphical output
– Smart view report for exceptions and outliers
– Automatic printout possibility after the measurement

Limit values
Setting of customized limits according to the USTER® STATISTICS, standard deviation, relative and absolute count
– Automatic verification of the measured value
– Measured values which exceed the limit will be marked with red or purple color in the report

Numerical results

Breaking force
Maximum force value measured during the tensile test

Breaking elongation
Elongation at maximum breaking force value

Tenacity
Breaking force in relation to the yarn count of the sample

Breaking work
Work done to break (enclosed area below the force/elongation characteristic curve up to the point of breaking force)

Statistics

Statistical values
– Mean value
– Standard deviation s
– Coefficient of variation CV
– Q95 % confidence interval
– Minimum value
– Maximum value
  Percentage values – 0.01 / 0.05 / 0.1 / 0.5 and 1 % of the total breaks are smaller or equal to the indicated force, elongation and work
– Number of isolated weak places
– USP™ (USTER® STATISTICS Percentile)
– UTRexp (expected traditional tensile value
  USTER® TENSORAPID, testing speed: 5 m/min, test length: 500 mm)

USTER® STATISTICS
– Comparison of measured values with the USTER® STATISTICS
– Material-dependent USTER® STATISTICS are stored in the data-base
– Setting of limit values based on the USTER® STATISTICS
<table>
<thead>
<tr>
<th>Graphic output of results</th>
<th>Stroke diagram</th>
<th>Available for breaking force and elongation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Histogram</strong></td>
<td>Available for force and elongation</td>
</tr>
</tbody>
</table>
|                           | **Force/elongation scatter plot** | – Show all single measurements as individual points in scatter plot  
– Easier detection of the sample due to different colors |
|                           | **Spectrogram** | – Available for force and elongation  
– Pre-condition: needs 200 within tests per sample |
| **Data protection**       | **Backup**    | Automatic backup to dedicated internal hard drive every 15 minutes |
| **Input of data, output of results, languages, units** | **Dialog and report languages** | English, German, French, Italian, Spanish, Portuguese, Turkish, Russian, Chinese or Japanese can be selected (other languages on request) |
|                           | **Possible units** | – Force values:  
DN, N, cN, kgf, gf, lbf, ozf  
– Yarn count:  
ktx, tex, dtex, denier, Nm, Nec, Nel, New, grn/yd, Y.S.W.  
– Tenacity:  
mN/tex, cN/tex, gf/denier, Rkm, CSP, MPA |
| **System security**       | **Protection function** | – System protected from viruses, network and other security threads  
– Remote support capabilities built in  
– Diagnostic tools with extensive event logging  
– Automated system recovery |
General ambient conditions

Room climate

The ambient conditions must be maintained in order to avoid any influencing of the test material according to ISO 139 (2015)
- Humidity: 65±4 %
- Temperature: 20±2 °C

Room climate

Installation data

Electrical connection

Single-phase mains with protective conductor

Mains voltage range

100 – 240 VAC

Mains frequency

50/60 Hz

Power consumption

Maximum 1000 VA (all units and motors switched on)

Compressed air consumption

40 m³/h with normal pressure (atmospheric pressure)

Compressed air connection

- Air quality: according to ISO 8573.1, class 3
- Min. pressure at inlet of air filter regulator: 6 bar
- Max. pressure at inlet of air filter regulator: 10 bar

Dew point

2 to 3 °C or lower at atmospheric pressure

Oil content

Oil-free, or residual oil content < 1 mg/m³

Solids content

< 5 mg/m³, particle size < 5 mm

Noise level of the suction nozzle

Maximum 70 dB(A) at 1 m distance, depending on the yarn, count noise can be lower

Weight of the installation

Tester

153 kg

Table with waste yarn container

103 kg

Complete system

290 kg
Space required for the USTER® TENSOJET 5
Uster Technologies has made all possible efforts to ensure that all information is accurate at the time of publication. Hereby it is declared that alterations to the product may be possible at any time. In these cases the information contained in this technical datasheet is subject to change without notice.

December 2017