Data Logger Systems
FOR THERMAL PROCESS VALIDATION

- Washer-disinfectors and washer-disinfectors for endoscopes
- Transport and storage monitoring for sterile utilities
- Steam and gas sterilizers
- Bed pan washer
- DAC Universal
Easy and reliable routine control and validation

Validation
Reproducible test that a process permanently generates the required results. Validation is a clear evidence that procedures, processes, equipment items, materials or systems actually cause the expected results.

Routine control
Routine control is a periodical test to determine the performance of the equipment. It is the verification that the limits are in accordance to the validation. The frequency depends on device and process.

Requirement for reprocessing of medical devices
Reprocessing of medical devices coming to an intended application as low-germ or sterile is to perform. By using the manufacturer’s instructions with suitable validated processes and procedures, that the success of this procedure is reproducible and do not endanger the safety and health of patients, users and third parties.

Data logger system
ebro is specialist for measuring systems for flexible and reliable measurement and documentation systems for routine control and validation of various thermal processes in the medical field, the pharmaceutical industry and the food industry.

Our product range covers easy to use data logger of the EBI 10 / EBI 100 series and of the EBI 11 series, which are placed directly in the process. An intuitive, TÜV certified software to routine testing or validation of processes assists to evaluate your process data.

In addition, we offer you the certified EBI 16 system to perform the daily Bowie&Dick-Tests with a clear “fail” or “passed” result.
Data Logger Systems Made in Germany

Our data loggers offer ways to validate many different thermal processes in the medical, pharmaceutical and food sector.

An independent routine control is also possible.

Validation of thermal processes with temperature and pressure data loggers

<table>
<thead>
<tr>
<th>Medical Sector</th>
<th>Pharmaceutical Sector</th>
<th>Food Sector</th>
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</thead>
<tbody>
<tr>
<td>• Washer-disinfectors</td>
<td>• Steam sterilizers</td>
<td>• Retorts</td>
</tr>
<tr>
<td>• Washer-disinfectors for endoscopes</td>
<td>• Stability chambers</td>
<td>• Pasteurization</td>
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<tr>
<td>• Bed pan washers</td>
<td>• Cold storage</td>
<td>• Spiral-Cooker / Cooler</td>
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<tr>
<td>• Steam sterilizers</td>
<td>• Validation of store houses</td>
<td>• Transport facilities</td>
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<tr>
<td>• Gas sterilizers</td>
<td>• Incubators</td>
<td>• Refrigerators</td>
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<tr>
<td>• Ethylene oxide</td>
<td>• Medicine refrigerators</td>
<td>• Smokehouses</td>
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<tr>
<td>• Formaldehyde</td>
<td>• Laboratories</td>
<td>• Ovens</td>
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<td>• H₂O₂</td>
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<td>• Full water autoclaves</td>
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<td>• Blood banks</td>
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<td>• Medicine refrigerators</td>
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Conformance

Our systems are compliant with the relevant standards and guidelines

<table>
<thead>
<tr>
<th>Standard</th>
<th>Description</th>
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<tbody>
<tr>
<td>DIN EN ISO 17665</td>
<td>Sterilization of health care products - Moist heat - Requirements for the development, validation and routine control of a sterilization process for medical devices</td>
</tr>
<tr>
<td>DIN EN 285</td>
<td>Sterilization - Steam sterilizers - Large sterilizers</td>
</tr>
<tr>
<td>DIN EN ISO 15883</td>
<td>Washer disinfectors - General requirements, terms and definitions and tests</td>
</tr>
<tr>
<td>DIN EN 13060</td>
<td>Small steam sterilizers</td>
</tr>
<tr>
<td>DIN EN ISO 11135</td>
<td>Sterilization of health care products - Ethylene oxide - Requirements for the development, validation and routine control of a sterilization process for medical devices</td>
</tr>
<tr>
<td>DIN EN ISO 25424</td>
<td>Sterilization of medical devices - Low temperature steam and formaldehyde - Requirements for development, validation and routine control of a sterilization process for medical devices</td>
</tr>
<tr>
<td>DIN EN ISO 11140-4</td>
<td>Sterilization of health care products - Chemical indicators - Class 2 indicators as an alternative to the Bowie and Dick-type test for detection of steam penetration</td>
</tr>
</tbody>
</table>
Validation sets and routine control sets

Due to the different requirements for routine control and validation processes, there are differently compiled sets at ebro.

The applications for the different sets are clearly displayed in the table below. So it is possible to choose the suitable set for your application at a glance.

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<td>1340-6570</td>
<td>1340-6571</td>
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<td>1340-6079</td>
<td>1340-6080</td>
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**Routine control in**

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<tbody>
<tr>
<td>Bed pan washer</td>
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<tr>
<td>Washer disinfectors</td>
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<td>Sterilizer &lt; 60 l</td>
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<td>Sterilizer &gt; 60 l</td>
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<td>Sterilizer &gt; 60 l BD*</td>
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<tr>
<td>Sterilizer &gt; 60 l BD*/ ✓</td>
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**Validation of processes in**

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<td>DAC Universal</td>
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* Bowie&Dick-Test

**SL 1010 Temperature data logger set**

*Independent routine control in bed pan washers according to ISO 15883*

Easy to use set for temperature monitoring and the determination of pH- or conductivity values.

**Characteristics:**

- Automatic calculation of the $A_0$-values
- Generation of reports with clear result

**The set contains:**

- 1 x Temperature data logger EBI 100-T100
- 1 x Interface EBI IF 150
- Software Winlog.med
- Aluminum carrying case
- 1 x pH- and conductivity tester

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>SL 1010</td>
<td>Temperature data logger set</td>
<td>1340-6570</td>
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</tbody>
</table>
SL 1110 Temperature- / Pressure data logger set

*Independent routine control in washer disinfectors and washer disinfectors for endoscopes (ISO 15883) as well as steam sterilizers (ISO 17665)*

Easy to use set for temperature and pressure control in washer disinfectors and sterilizers. Determine of pH- or conductivity values of the cleaning phase or disinfection phase in washer disinfectors. Determine of conductivity in feed water of sterilizers.

**Characteristics:**
- Automatic calculation of the \( A_0 \)-values
- Calculation of the F value
- Calculation of the saturated steam temperature
- Generation of reports with clear result

**The set contains:**
- 1 x Temperature-/pressure data logger EBI 100-TP231 with Luer-Lock-connector
- 1 x Silicone protection box AL 101 for loggers
- 1 x Interface EBI IF 150
- Software Winlog.med
- Aluminum carrying case
- 1 x pH- and conductivity tester

**Applicable as measuring equipment according to Annex 9 of the German Guideline “Machine Preparation of Medical Devices”**

Method to ensure the cleaning and disinfecting performance between initial commissioning and validation.

SL 1520 EBI 16 Bowie&Dick-Test set

*Electronic Bowie&Dick-Test system for steam sterilizers (EN 285 / ISO 17665)*

For the realization of Bowie&Dick-Test or the vacuum test in accordance with the standards EN 285 und ISO 17665. Certified according to EN ISO 11140-4.

**Characteristics:**
- For small and large sterilizers
- Generation of reports with clear result

**The set contains:**
- 1 x Electronic Bowie&Dick-Test EBI 16
- 1 x Interface EBI IF 150
- Software Winlog.med
- Aluminum carrying case

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<tr>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>SL 1110</td>
<td>Temperature- / Pressure data logger set</td>
<td>1340-6571</td>
</tr>
<tr>
<td>SL 1520</td>
<td>EBI 16 Bowie&amp;Dick-Test set</td>
<td>1340-6198</td>
</tr>
</tbody>
</table>
SL 1620 EBI 16 Routine control set
*Electronic Bowie&Dick-Test system for steam sterilizers and a temperature- / pressure data logger for routine control*

For the realization of Bowie&Dick-Test or the vacuum test in accordance with the standards EN 285 und ISO 17665 and routine control in washer disinfectors and washer disinfectors for endoscopes (ISO 15883) as well as steam sterilizers (ISO 17665). EBI 16 is certified according to EN ISO 11140-4.

**Characteristics:**
- For small and large sterilizers
- Routine control in washer disinfectors, washer disinfectors for endoscopes and steam sterilizers
- Automatic calculation of the $A_0$-values
- Calculation of the $F_0$-value
- Calculation of the saturated steam temperature
- Generation of reports with clear result

**The set contains:**
- 1 x Electronic Bowie&Dick-Test EBI 16
- 1 x EBI 100-TP231 Temperature-/pressure data logger with Luer-Lock-connector
- 1 x Interface EBI IF 150
- Software Winlog.med
- Aluminum carrying case

<table>
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<tr>
<th>Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>SL 1620</td>
<td>EBI 16 Routine control set</td>
<td>1340-6573</td>
</tr>
</tbody>
</table>

SL 2000 Complete validation set washer disinfector
*Validation of processes in washer disinfectors according to ISO 15883*

**Characteristics:**
- Automatic calculation of the $A_0$-values
- Generation of reports with clear result

**The set contains:**
- 1 x EBI 10-T220 temperature data logger
- 2 x EBI 10-T441 temperature data logger
- 1 x EBI 10-TP231 temperature-/pressure data logger
- 1 x 4-port Interface EBI IF 200 with USB connection and antenna
- TÜV certified Software Winlog.validation
- Aluminum carrying case

The flexible 1,5mm sensors can be positioned on and inside the instruments.

<table>
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<tr>
<td>SL 2000</td>
<td>Complete validation set washer disinfector</td>
<td>1340-6072</td>
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</tbody>
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6
The set contains:

- 5 x EBI 10-T471 temperature data logger with Silicon protection box AL 107
- 1 x EBI 10-TP453 temperature-pressure data logger with Silicon protection box AL 101
- 1 x 4-port Interface EBI IF 200 with USB connection and antenna
- TÜV certified Software Winlog.validation
- 12 x holding clamps for sensors
- Aluminum carrying case

SL 3100 Complete validation set small sterilizer
Validation of processes in small steam sterilizers according ISO 17665

Characteristics:

- For sterilizers according ISO 13060 (small steam sterilizer)
- Calculation of the \( F_0 \) value
- Calculation of the saturated steam temperature
- Generation of reports with clear result

The set contains:

- 1 x EBI 10-TP453 temperature-pressure data logger with silicon protection box AL 101
- 1 x 4-port Interface EBI IF 200 with USB connection and antenna
- TÜV certified Software Winlog.validation
- 6 x holding clamps for sensors
- Aluminum carrying case

SL 3000 Complete validation set small sterilizer
Validation of processes in all steam sterilizers according ISO 17665

Characteristics:

- For sterilizers according EN 285 (large sterilizer)
- For sterilizers according ISO 13060 (small sterilizer)
- Calculation of the \( F_0 \) value
- Calculation of the saturated steam temperature
- Generation of reports with clear result

Type Description Part No.
SL 3000 Complete validation set small sterilizer 1340-6079

Type Description Part No.
SL 3100 Complete validation set small sterilizer 1340-6080
SL 3300 Complete validation set medical/dental

*For realization of different validations of various thermal processes in DAC UNIVERSAL, in small steam sterilizers according to ISO 17665 as well as washer disinfectors according to ISO 15883*

**Characteristics:**
- For steam sterilizers according to ISO 13060 (small sterilizer)
- For washer disinfectors and endoscope washer disinfectors according to ISO 15883
- For DAC Universal according to ISO 13060 and ISO 15883
- Automatic calculation of the $A_0$-values
- Calculation of the $F_0$ value
- Calculation of the saturated steam temperature
- Generation of reports with clear result

**The set contains:**
- 2 x EBI 11-T235 mini temperature data logger, needle length = 25 mm
- 2 x EBI 11-T236 mini temperature data logger, needle length = 80 mm
- 1 x EBI 11-T237 mini temperature data logger, needle length = 165 mm
- 1 x EBI 11-P111 mini pressure data logger
- 1 x Sealing kit for EBI 11
- 1 x 4-port Interface EBI IF 300
- TÜV certified Software Winlog.validation
- Aluminum carrying case

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<tr>
<th>Type</th>
<th>Description</th>
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<tr>
<td>SL 3300</td>
<td>Complete validation set medical/dental</td>
<td>1340-6082</td>
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</tbody>
</table>
AL 3300 DAC adapter set for validation

For the validation of thermal processes and cleaning process in DAC UNIVERSAL in accordance to ISO 17665 / ISO 15883

Characteristics:

- Test according to ISO 15883 and ISO 13060
- All tests with original customer lid. A real validation with user parts
- No heavy additional lids needed
- Very reproducible, all sensors and instruments are always at the same position
- Complete validation with thermal testing, test soil and real contaminated instruments possible
- Data loggers of the SL 3300 are compatible

The set contains:

- 1 x Logger mount
- 1 x PCD test body
- 5 x M12x100 worst case load including adapter
- Carrying case

Available Spring 2017

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<thead>
<tr>
<th>Type</th>
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<tr>
<td>AL 3300</td>
<td>DAC adapter set for validation</td>
<td>1340-6052</td>
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</tbody>
</table>
Data logger and systems for special application

Steam penetration test

Certified by an independent laboratory according to ISO 11140-4.

The EBI 16 Data logger together with the evaluation software Winlog.med is a very reliable and easy-to-use electronic measuring system. A comprehensive routine control of steam sterilizers can be performed by using electronic Bowie&Dick-Test according to ISO 17665 / EN 285. In addition to check steam penetration, also the relevant parameters of sterilization are controlled. A vacuum test can also be performed with this unit.

The EBI 16 is designed so that a usage of 500 cycles or 2 years without calibration or service is guaranteed.

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<th>Type</th>
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<tr>
<td>EBI 16</td>
<td>Bowie&amp;Dick test EBI 16</td>
<td>1340-6197</td>
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</table>
H₂O₂ Sterilization (Plasma)

**EBI 10-TPX9X Very high precision pressure logger**

*Very high precision pressure measurement starting at 0.1 mbar*

In the process of the H₂O₂ sterilizer, a very precise pressure measurement is necessary.

The system is working at a pressure in the field of 1 mbar abs.

Due to the very low working pressure close to the vacuum a special measuring system is required. For this range the EBI 10-TP X9X is designed.

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<tr>
<th>Type</th>
<th>Description</th>
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<tr>
<td>EBI 10-TP190-EX</td>
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<td>1340-6165-EX</td>
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<tr>
<td>EBI 10-TP291-EX</td>
<td>L = 40 mm</td>
<td>1340-6166-EX</td>
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</table>

Ethylene oxide sterilization

**EBI 10-TH100-EX Temperature-/humidity data logger**

*Resistant against EtO*

In the EtO sterilization cycle the performance depends on the relative humidity and the temperature during the process. Therefore, it is important to monitor these parameters during the process and document it.

With the EBI 10 TH-100-EX the temperature and the relative humidity can be monitored with one device.

The sensors are very resistant against the aggressive environment of the EtO sterilization, this allows to validate the process.

The sensors can be changed by user.

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<th>Description</th>
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<tr>
<td>EBI 10-TH100-EX</td>
<td>Temperature-/humidity data logger</td>
<td>1340-6171-EX</td>
</tr>
</tbody>
</table>
Spypach endoscope dummy

ÖGSV (Austrian Society for Sterile Supply) and type approved according to ISO 15883.

This reliable system consists of user-friendly mini data loggers and an Endoscope-Dummy that can be placed directly in the processes. The set also contains a TÜV certified evaluation software package.

SL 1200 Endoscope set routine control BASIC

System for the routine control in washer-disinfectors for endoscopes.

The set contains:

- 1 x Spypach dummy BASIC
- 1 x EBI 11-T235 temperature data logger
- 1 x EBI 11-P111 pressure data logger
- 1 x 4-port Interface EBI IF 300
- TÜV certified Software Winlog.med
- Aluminum carrying case

SL 1220 Endoscope set validation PROFESSIONAL

Flexible data logger system for the validation of thermal processes in washer-disinfectors for endoscopes according ISO 15883.

The set contains:

- 1 x Spypach dummy Professional
- 3 x EBI 11-T235 temperature data logger
- 1 x EBI 11-P111 pressure data logger
- 4-port Interface EBI IF 300
- TÜV certified Software Winlog.validation
- Aluminum carrying case

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<th>Type</th>
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<tr>
<td>SL 1200</td>
<td>Endoscope set routine control BASIC</td>
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<tr>
<td>SL 1220</td>
<td>Endoscope set validation PROFESSIONAL</td>
<td>1340-6085</td>
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</table>
Dummy Sets BASIC, Classic, Professional without data logger

### Type Description Part No.

**Spypach**

**Dummy Basic**
- spypach Endoskop-Dummy “spo-pro” Basic
- 1340-6086

**Dummy Classic**
- spypach Endoskop-Dummy “spo-pro” Classic
- 1340-6087

**Dummy Professional**
- spypach Endoskop-Dummy “spo-pro” Professional
- 1340-6088

Dummy Sets BASIC, Classic, Professional without data logger

Routine control in washer disinfector for endoscopes with pressure chamber system or individual channel system.

**Spypach endoscope-dummy “spo-pro” Basic**

Routine control in washer disinfector for endoscopes with pressure chamber system or individual channel system. With an additional leak test simulation.

**Spypach endoscope-dummy “spo-pro” Classic**

Routine control and validation in washer disinfector for endoscopes with pressure chamber system or individual channel system. With an additional leak test simulation and the possibility to simulate almost all of the used endoscopes.

**Spypach endoscope-dummy “spo-pro” Professional**

General technical specifications*

- **Operating temperature:**
  - logger: -85 °C … +150 °C (-121 °F … +302 °F)
  - pressure: 0 °C … +150 °C (+32 °F … +302 °F)
  - low pressure: 0 °C … +150 °C (+32 °F … +302 °F)
- **Operating temperature in EX-ambient (ATEX):** up to +85 °C (+32 °F … +185 °F)
- **Accuracy:**
  - temperature: ±0.1 °C (0 °C ... +140 °C)
  - pressure: ±10 mbar
  - low pressure: ±0.25 mbar
  - humidity: ±2 % rF, non-condensing at 25 °C (10 % rH ... 90 % rH)
- **Resolution:**
  - temperature: 0.01 °C
  - pressure: 1 mbar
  - low pressure: 0.1 mbar
  - humidity: 0.1 % rH
- **Memory:** Max. 100,000 measurements (total)
- **Sensor:**
  - temperature: Pt 1000
  - pressure: Piezoresistive pressure sensor (temperature compensated)
  - humidity: Sensor capacitive
- **Interval:** 250 ms ... 24 Std.
- **Battery:** Lithium cell 3.6 V replaceable
- **Dimension:** (Ø x H) 48 mm x 24 mm**
- **Weight:** Approx. 70 g**
- **Housing:** Stainless steel (V4A), PEEK

**Technical Data Data Logger**

*You will find the exact specifications of each type of data logger in the catalogue.

**Dimensions and weight shall relate only to the EBI10 housing.**
pH- and Conductivity Meter

PHT 830 pH Meter
*Determine of pH- value of the cleaning phase in washer disinfectors according to ISO 15883*

**Characteristics:**
- Configuration directly on device
- Graphic LCD display with backlight
- Logging function
- Temperature compensated
- Software connection with IF 830 Winlog.pro, Winlog.med, Winlog.validation

**Technical Data**

| Measurement range | pH: | 0 pH … 14 pH |
| Resolution pH: | 0.01 pH |
| Accuracy pH: | ± 0.03 (± 2 pH-units) |
| Memory | 4000 measurements |
| Temperature range | -10 °C … +100 °C |

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<td>PHT 830 SET 1</td>
<td>pH Meter with plastic electrode</td>
<td>1340-5812</td>
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CT 830 Conductivity Meter
*Determine of conductivity value of the disinfection phase in washer disinfectors according to ISO 15883. Determine of conductivity in feed water of sterilizers according to EN 285 / ISO 17665 / ISO 13060*

**Characteristics:**
- Configuration directly on device
- Graphic LCD display with backlight
- Logging function
- Temperature compensated
- Software connection with IF 830 Winlog.pro, Winlog.med, Winlog.validation

**Technical Data**

| Measurement range | pH: | 0 … 200 µS |
| Resolution µS: | 0 … 2000 µS |
| Accuracy µS: | ± 0.1 µS, 1 µS, 0.01 mS, 0.1 mS |
| Memory | 4000 measurements |
| Temperature range | -10 °C … +100 °C |

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT830 SET</td>
<td>Conductivity meter</td>
<td>1340-5835</td>
</tr>
</tbody>
</table>
Evaluation software Winlog.med and Winlog.validation

Our TÜV certified software is compliant to the relevant standards

<table>
<thead>
<tr>
<th>Type</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Winlog.med</td>
<td>for routine control</td>
<td>1340-2363</td>
</tr>
<tr>
<td>Winlog.validation</td>
<td>for routine control and validation</td>
<td>1340-2394</td>
</tr>
</tbody>
</table>

DIN EN ISO 9241  Ergonomic requirements for office work with visual display terminals

ISO/IEC 25051  Software engineering - Systems and software Quality Requirements and Evaluation (SQuaRE) - Requirements for quality of Ready to Use Software Product (RUSP) and instructions for testing

FDA 21 CFR Part 11  is a part of the FDA regulations on electronic records and electronic signatures. It defines the criteria under which electronic records and electronic signatures are considered trustworthy, reliable, and equivalent to paper records.

Winlog.med

for routine control

High performant reporting and analysis software for easy and reliable routine control in pharmacy and medicine.

- In 16 languages available
- TÜV certified
- User-friendly
- High precision measurements
- Automatic report generation
- Automatic user-defined calculations
- Automatic identification of process cycles
- Creation of user-defined templates for specific devices and thermal processes
- Three-dimensional demonstration of sensor placement or placement of the sensors directly on an application image possible
- FDA 21 CFR Part 11

Winlog.validation

for routine control and validation

High performant reporting and analysis software for the high requirements of the validation and qualification in pharmacy and medicine.

- In 16 languages available
- TÜV Industrial Services certified
- User-friendly
- High precision measurements
- Automatic report generation
- Automatic user-defined calculations
- Automatic identification of process cycles
- Creation of user-defined templates for specific devices and thermal processes
- Three-dimensional demonstration of sensor placement or placement of the sensors directly on an application image possible
- FDA 21 CFR Part 11
- IQ / OQ available
The software Winlog.validation is for programming and readout of ebro data logger as well as for evaluation of the measured values. The software guides you step by step through the process of validation and evaluates automatically the measurement.

For use only in routine control there is a special version available. The Winlog.med has all the features of the Winlog.validation that are required for successful, fast and easy routine control.

Flexible Report Generation
Whether you need a short process report or a table report with all measurement data – ebro’s Winlog software makes it easy.

The software provides you with these options:

- Audit trail
- Setup report
- Compact process report
- Detailed process report
- Table process report
- Export to XLS, XLSX, PDF, RTF possible.

System Requirements
To enable the software to operate smoothly, your computer must meet the following requirements:

Hardware requirements:
- Processor speed minimum 1 GHz
- Working memory 1 GB
- 1 GB free hard disc space
- USB (Universal Serial Bus)

Software requirements:
- Operating System Microsoft®
  - Windows Vista (32 Bit and 64 Bit)
  - Windows 7 (32 Bit and 64 Bit)
  - Windows 8 (32 Bit and 64 Bit)
  - Windows 10 (32 Bit and 64 Bit)
Refrigerator- storage- and area monitoring

EBI 25 series/EBI 300 series
Temperature and humidity monitoring is very important in many sectors in the medical, pharmaceutical and food markets.
- To eliminate condensation on sterile utility
- For temperature monitoring at sensitive or perishable goods

With the logger of EBI 25 series it is possible to monitor complete applications such as the monitoring of medical refrigerators

EBI 25 Data logger
- High precision measurement of temperature and humidity (dependent of logger type)
- Wide range up to 500 m in the field
- Long battery lifetime
- Easy installation

EBI 25-T-SET
Wireless temperature data logger set
- 3 x EBI 25-T data logger
- Evaluation software Winlog.wave
- Interface
- 3 x wall mounts

EBI 25-TE-SET
Wireless temperature data logger set
- 3 x EBI 25-TE data logger
- Evaluation software Winlog.wave
- Interface
- 3 x wall mounts

Basisstation: Interface IF 400
- Collect and safe the data of all connected EBI 25 data logger
- Saves up to 576 measurements per logger

Evaluation software: Winlog.wave
Winlog.wave: Basic version for single PC

Technical specification: for all types of EBI 25 data logger

<table>
<thead>
<tr>
<th>Specification</th>
<th>EBI 25-T-SET</th>
<th>EBI 25-TE-SET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution: Temperature</td>
<td>0,1 °C</td>
<td>0,1 °C</td>
</tr>
<tr>
<td>Resolution: Humidity (only humidity data logger)</td>
<td>0,1% rH</td>
<td>0,1% rH</td>
</tr>
<tr>
<td>Sampling rate</td>
<td>1 min. up to 24 h., adjustable</td>
<td>1 min. up to 24 h., adjustable</td>
</tr>
<tr>
<td>Radio frequency</td>
<td>868 MHZ</td>
<td>868 MHZ</td>
</tr>
<tr>
<td>Battery</td>
<td>Lithium cell 3,6 V replaceable</td>
<td>Lithium cell 3,6 V replaceable</td>
</tr>
<tr>
<td>Battery lifetime</td>
<td>Up to 2 years (depending on measurement and transmission rate)</td>
<td>Up to 2 years (depending on measurement and transmission rate)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40 °C ... +85 °C</td>
<td>-40 °C ... +85 °C</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-30 °C ... +60 °C</td>
<td>-30 °C ... +60 °C</td>
</tr>
</tbody>
</table>
Monitoring of the temperature and relative humidity

EBI 300 TH Multi-Use USB data logger with external humidity and temperature probe

- During validation, the monitoring of environmental conditions is required according to ISO 17665
- To detect a possible condensation during transport of sterile goods
- For temperature monitoring at sensitive or perishable goods

**Technical Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range Measurement / operating temperature</td>
<td>-30 °C ... +70 °C</td>
</tr>
<tr>
<td>Range Humidity</td>
<td>0% rF ... 100% rH</td>
</tr>
<tr>
<td>Accuracy Temperature (intern)</td>
<td>± 0.5 °C (- 20 °C ... + 40 °C)</td>
</tr>
<tr>
<td></td>
<td>± 0.8 °C for the remaining range</td>
</tr>
<tr>
<td>Accuracy Temperature (extern)</td>
<td>± 0.5 °C (+ 20 °C ... + 40 °C)</td>
</tr>
<tr>
<td></td>
<td>± 1.0 °C for the remaining range</td>
</tr>
<tr>
<td>Accuracy Humidity</td>
<td>± 3% between 10% rF ... 90% rH (at 25 °C)</td>
</tr>
<tr>
<td></td>
<td>± 5% for the remaining range</td>
</tr>
<tr>
<td>Resolution Temperature</td>
<td>0.1 °C</td>
</tr>
<tr>
<td>Resolution Humidity</td>
<td>0.1% rH</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>129 x 33 x 14mm</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP 20</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBI 300 TH</td>
<td>Multi-Use USB data logger with external humidity and temperature probe</td>
<td>1340-6334</td>
</tr>
</tbody>
</table>

**Characteristics:**

- Simultaneous measurement of temperature and humidity
- Internal temperature probe usable additionally

**Accessories**

AL 285 Logger Check

In combination with the software Winlog.med or Winlog.validation the AL 285 offers you a simple, on site functional check of the measuring channels.

**Available Spring 2017**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL 285</td>
<td>Logger Check</td>
<td>1248-0285</td>
</tr>
</tbody>
</table>
EBI TIB  **Thermal isolation boxes to secure data logger against heat**

The thermal insulation box EBI TIB extended the temperature range dependent on process temperature for a period of time in a range up to +400 °C

**Characteristics:**
- Up to 30 minutes at 400°C
- Thermal protection of the data logger
- EBI 10-T22x and EBI 10-T421
- Usable from +150 °C ... +400 °C
- Stainless steel
- EBI TIB: 160x160x82mm
- EBI TIB 2: 160x160x60mm

### Type Description Part No.

| EBI TIB | Thermal isolation box, 160 x 160 x 82 mm | 1340-1894 |
| EBI TIB 2 | Thermal isolation box, 160 x 160 x 60 mm | 1340-1892 |

**Holding clamps**

To hold the flexible cable probes

The holding clamps protect the sensitive sensors against rotating parts and hold them securely in place

**Characteristics:**
- Secure positioning for probes
- Made of stainless steel
- Reusable
- Temperature resistant

**Cable strap**

Made of silicon to hold the flexible cable probes

The cable straps protect the sensitive sensors against rotating parts and hold them securely in place

**Characteristics:**
- Secure positioning for probes
- Made of stainless steel
- Reusable
- Temperature resistant

**Silicone protection boxes**

Designed to protect the sensitive electronics against short heat spikes or mechanical damage

**Characteristics:**
- Made of silicone
- Protects temperature / pressure logger against heat peaks
- Protects temperature / pressure logger against mechanical damage
- Extends the life of pressure / temperature data loggers

### Type Description Part No.

| Clamp | Clamp for probes | 1340-0005 |
| AL 100 | Silicone protection box for EBI 10 temperature data logger | 1340-6020 |
| AL 101 | Silicone protection box for EBI 10 pressure / temperature data logger | 1340-6021 |
| AL 102 | Silicone protection box for EBI 10 temperature data logger | 1340-6022 |
| AL 190 | Cable strap set silicone | 1248-0190 |
Measurement, recording, evaluation - quality products for the highest demands

ebro, founded in 1968, is a measurement technology specialist for data loggers and hand-held measuring devices. The company from Ingolstadt has established itself as an innovative manufacturer of electronic measurement technology in the fields of medicine, food, pharmacy and industry on the global market.

As a registered trade mark of Xylem Analytics Germany Sales GmbH & Co. KG, ebro offers a wide range of temperature, humidity, pressure, oil quality and other measuring instruments. The company is characterized by innovative solutions and technologies, especially by the development and implementation of measurement technology according to the specification of the customers.

KompetenzCentrum

In the past we received these requests from practically all corners of the world. Due to the establishment of our own training centre here in Ingolstadt which includes especially equipped laboratories and a steam autoclave for testing procedures we offer ideal facilities to run seminars. Theory and practice combined are the key to our successful transfer.

Calibration

We are happy to perform your calibration for temperature, pressure and relative humidity in our DIN EN ISO 17025 accredited DAkkS-laboratory for you.