



# Professional Data Logger

FOR VALIDATION, ROUTINE CONTROL AND PROCESS MONITORING

MEDICINE  
FOOD  
PHARMACEUTICAL  
LABORATORY

2018

**-ebro-**  
a xylem brand



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Freiburg 01.04.1968. The Breisgau-founded company ebro Electronic used to only produce plug-in power supplies. From the middle of the seventies, ebro® used their own plastic injection department to manufacture police protection vests, as well as the formerly popular "Telegen" television lightning.

After ebro® moved to their current registered office in Ingolstadt, Bavaria, in 1976, they continued the production of the above-mentioned goods. The core business, developing and manufacturing temperature-measuring instruments, started only in 1980.

Today, ebro® is specialised in high-quality measurement technology such as hand-held meters, thermometers or dataloggers. They are mostly sold in the markets medicine, food, pharmacy, laboratory and industry.

You are looking for products or software to measure temperature, humidity, pH-value, oil quality, pressure and brix? Then you have found your partner in ebro®. From measuring and recording to analysing, we are offering quality goods and solutions.



# KompetenzCentrum ebro

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Demands for solid technical Know How transfer are permanently increasing and therefore the requests for training and special workshops are on the rise. 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 and workshops.

Theory and practice combined are the key to our successful transfer. Our instructors are all experts in their own fields. The aim is to achieve an in-depth understanding of hardware and software alike.

If you feel that you prefer an In-House seminar in your own facilities we are open to discussions and flexible to offer you a customized training program to match your demands. Please feel free in contacting us to tell us about your desired time schedule, what the training course should cover and how many participants will attend. We will gladly send you an offer.

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2018**

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**February 28th 2018** and  
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**20%**

A banner image featuring a woman with blonde hair and glasses, wearing a yellow jacket, standing next to a whiteboard. The whiteboard displays the text 'KOMPETENZ CENTRUM: SEMINAR-PROGRAM 2018'. To the right of the woman is a red call-to-action box with white text offering a 20% discount for bookings before February 28th, 2018.

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FOOD

PHARMA-  
CEUTICAL

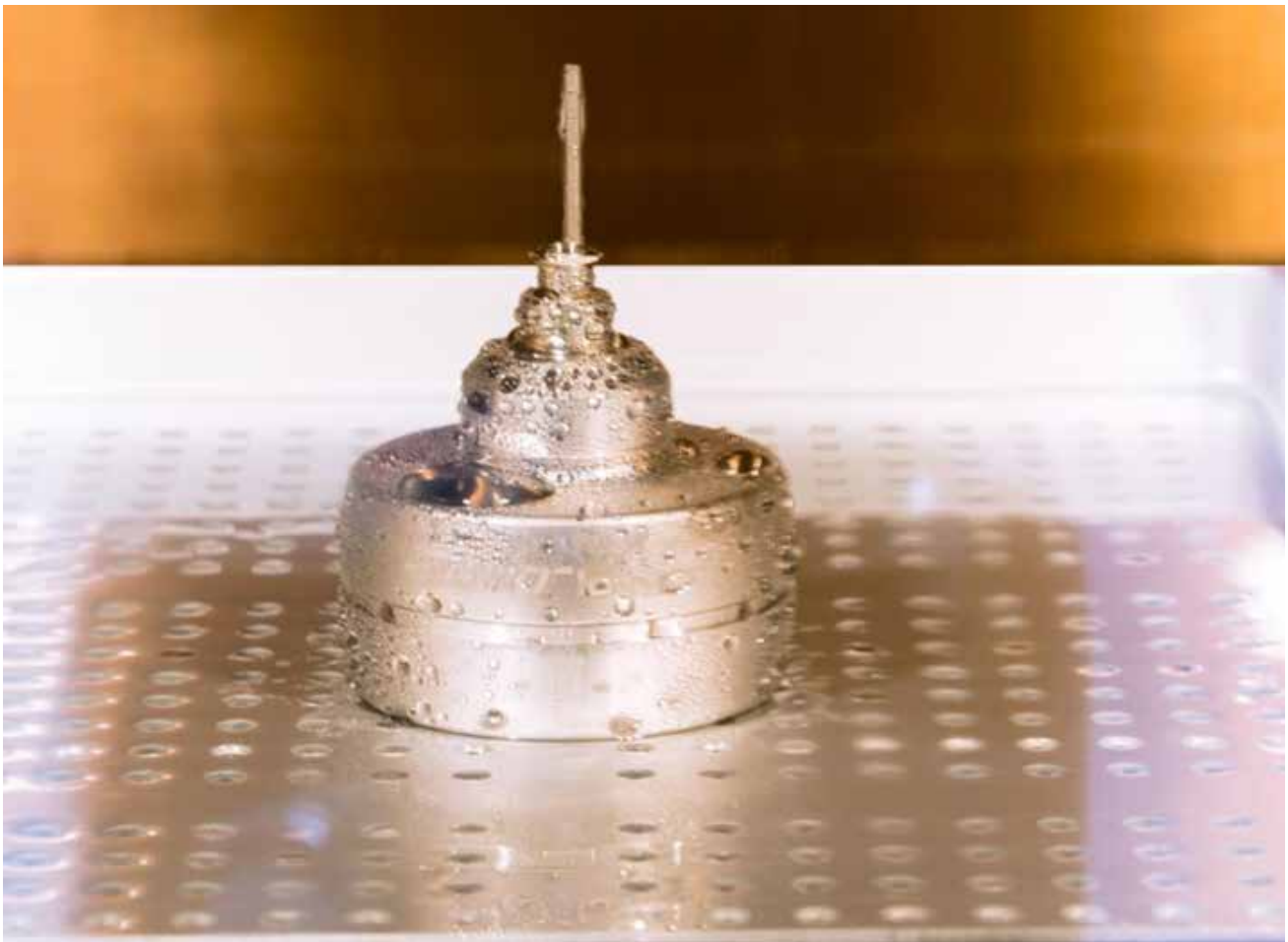
MEDICAL



INDUSTRIAL

## EBI 12 - The new data logger generation

- High quality stainless steel housing
- Application range from -90 °C to 150 °C
- High temperature accuracy up to 0.05 °C
- Extended temperature measurement range -200 °C to +400 °C
- Pressure measurement up to 4,000 mbar
- Precision pressure measurement 0.1 mbar
- High pressure accuracy up to 0.25 mbar
- Humidity measurement from 0% rH to 100% rH
- Conductivity measurement 1 to 2,000  $\mu\text{S}/\text{cm}$
- Radio mode for real-time monitoring
- ATEX approved
- Full compatibility Interface EBI IF-100, EBI IF-150 and EBI IF-200
- Full compatibility to Winlog software



# Data Loggers

ebro offers data loggers for many different applications:



## Operation and Process qualification

### Description:

- Highly accurate temperature, pressure, humidity and conductivity data loggers for thermal validation processes
- Wide range of probe types and configurations
- Wireless data loggers for real time monitoring
- Data loggers for low space

### Applications:

- Process validation in steam sterilizers, autoclaves, in the production of canning, a.s.o.
- Process validation in washer-disinfectors and washer-disinfectors for endoscopes
- $F_0$ -value and  $A_0$ -value calculation
- Process control

## Routine control / Mapping

### Description:

- Highly accurate temperature, pressure, humidity and conductivity data loggers for thermal process control
- Electronic Bowie&Dick-Test according to ISO 17665 and EN 285 / EN 13060
- Data loggers for low space
- Data loggers for regular process controls

### Applications:

- Routine control in steam sterilizers and autoclaves
- Routine control in washer-disinfectors and washer-disinfectors for endoscopes
- Routine control at canning
- Mapping





## Room Monitoring and Process control

### Description:

- Highly accurate temperature, pressure and humidity data loggers
- Standard temperature and humidity data loggers with automatic PDF report generation
- Wireless system to monitor temperature and humidity
- Multichannel Thermo Couple temperature data loggers

### Applications:

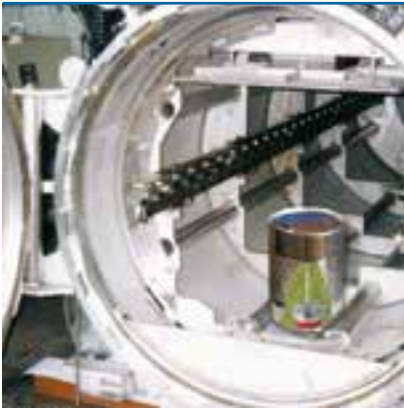
- Room monitoring
- Transport and storage monitoring
- Clean room and freezer monitoring

# Logger systems

and accessories for Process monitoring, Routine control and Validation



## Food



### Applications

- Autoclaves / Sterilizers / Pasteurization Processes
- Continuous Fryers
- Lyophilization
- Hydrostatic Retorts
- Refrigerators / Freezers / Cooling Rooms
- Smokehouse
- Cooker / Cooler (Reel and Spiral)



## Medical



- Steam Sterilization
- Washer disinfectors / bedpan washers
- H<sub>2</sub>O<sub>2</sub>-, LTSF- and EtO- Sterilization
- Depyrogenation / heat tunnel
- Incubators
- Refrigerators / Freezers / Cooling Rooms
- Stability Chambers



## Pharmaceutical



- Steam-, H<sub>2</sub>O<sub>2</sub> and EtO- Sterilization
- Washer disinfectors
- Depyrogenation / heat tunnel
- Lyophilization
- Incubators
- Refrigerators / Freezers / Cooling Rooms
- Climatic Test Chambers / Stability Chambers

## Products



EBI 11 Series



EBI 12 Series



EBI 310 Series



EBI 25 Series



EBI 40



EBI 11 Series



EBI 12 Series



EBI 16



EBI 310 Series



EBI 25 Series



EBI 40



EBI 11 Series



EBI 12 Series



EBI 16



EBI 310 Series



EBI 25 Series



EBI 40

## Process monitoring, Routine Control and Validation easy and safe

### Validation

Is a reproducible proof that a process permanently generates the required results.

Validation is a clear demonstration that processes, equipment, materials, work steps or systems actually lead to the expected results.

### Routine Control

Routine control is a regular 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.

### Continuous Process Monitoring

The continuous process check as a validated status during the commercial manufacturing process ensures that the ongoing process remains under continuous control. The recognition of unplanned deviations from the plan is indispensable to the achievement of the set objectives and the conformity with the requirements.

### EX Area

Hazardous areas (except for mining)

The categories 1 to 3 are classified according to the ATEX Directive 94/9 / EC. The letter "G" stands for gas. In the IEC 60079-0 for electrical components and devices, and thus for approvals according to the IECEx scheme, Equipment Protection Levels (EPL) (German: Device Protection Level) are defined.

Devices according to Category 1G or EPL Ga

Devices must be designed in such a way as to ensure a very high degree of safety. Devices of this category must also ensure the required degree of safety even in the case of infrequent disturbances. Even if there are two faults on the unit, ignition must not occur. They may be used in Zone 0 (Category 1G).

### 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 process and procedures, that the success of this procedure is reproducible and do not endanger the safety and health of patients, user and third parties.

### Data Logger - Systems

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 and the food industry.

Our product range covers easy to use data loggers of the EBI 12 and 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-test with a clear „fail“ or „passed“ result.

## TÜV certified evaluation software Winlog.med and Winlog.validation

With the Winlog.med / Winlog.validation we offer a TÜV certified, FDA 21 CFR Part 11 compliant software. The system is characterized by high data security. The automatic evaluation of the process is possible as well as the manual evaluation.

The software offers the possibility to create user defined evaluations. So it is possible to create individual process parameters and test criteria.



## Conformance

Our Systems are compliant with the relevant standards and guidelines.

|                         |                                                                                                                                                                                                                                       |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DIN EN ISO 17665        | Sterilization of health care products. – Moist heat – Requirements for the development, validation and routine control of a sterilization process for medical devices                                                                 |
| DIN EN 285              | Sterilization – Steam sterilizers – Large sterilizer                                                                                                                                                                                  |
| DIN EN ISO 15883        | Washer disinfectors – General requirements, terms and definitions and tests                                                                                                                                                           |
| DIN EN 13060            | Small steam sterilizers                                                                                                                                                                                                               |
| DIN SPEC 58929          | Operation of small steam sterilizers in health care - Guidelines for validation and routine monitoring of sterilization processes                                                                                                     |
| DIN EN ISO 11135        | Sterilization of health care products – Ethylene oxide – Requirements for the development, validation and routine control of a sterilization process for medical devices.                                                             |
| DIN EN ISO 25424        | Sterilization of medical devices – Low temperature steam and formaldehyde – Requirements for development, validation and routine control of a sterilization process for medical devices.                                              |
| DIN EN ISO 11140-4      | Sterilization of health care products – Chemical indicators – Class 2 indicators as an alternative to the Bowie&Dick-type test for detection of steam penetration.                                                                    |
| DIN EN ISO 9241         | Ergonomics of human-system interaction: Dialogue principles                                                                                                                                                                           |
| DIN 12880               | Electrical laboratory equipment – heaters and incubators                                                                                                                                                                              |
| DIN EN ISO 13408-3      | Aseptic processing of healthcare products -- Part 3: Lyophilization                                                                                                                                                                   |
| DIN EN ISO 14937        | Sterilization of healthcare products -- General requirements for characterization of a sterilizing agent and the development, validation and routine control of a sterilization process for medical devices.                          |
| 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 the part of the FDA regulations about electronic records and electronic signatures, specifies the criteria under which electronic records and electronic signatures can be considered trustworthy and reliable as a paper document |
| FDA 21 CFR Part 210-211 | Defines minimum requirements for the methods to be dispatched in the manufacture, processing, packaging and warehousing of drugs and vaccine and distribution and controls to be used.                                                |
| Guidelines              | Guidelines from DGKH, DGSV and AKI for the validation and routine monitoring of machine cleaning and thermal disinfection processes for medical devices                                                                               |
| Recommendations         | DGKH recommendations for validation and routine monitoring of sterilization processes with moist heat for medical devices                                                                                                             |

## Temperature data logger of EBI 12 series

### General technical specifications for EBI 12 T series

|                                        |                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature: logger          | -90 °C ... +150 °C (-130 °F ... 302 °F)*                                                                                                                                                                                                                                                                    |
| Operating temperature: radio operation | -30 °C ... +150 °C (-22 °F ... 302 °F)                                                                                                                                                                                                                                                                      |
| Temperature accuracy                   | $\pm 1.5$ °C (-200 °C ... -85 °C)*<br>$\pm 0.5$ °C (-85 °C ... -40 °C)*<br>$\pm 0.2$ °C (-40 °C ... 0 °C)*<br>$\pm 0.1$ °C (0 °C ... +120 °C)*<br>$\pm 0.05$ °C (+120 °C ... +140 °C)*<br>$\pm 0.1$ °C (+140 °C ... +150 °C)*<br>$\pm 0.5$ °C (+150 °C ... +250 °C)*<br>$\pm 0.8$ °C (+250 °C ... +400 °C)* |
| Time accuracy                          | < 5 sec (24 h)                                                                                                                                                                                                                                                                                              |
| Temperature resolution                 | 0.01 °C                                                                                                                                                                                                                                                                                                     |
| Memory                                 | Max. 100,000 measurement values (total)*                                                                                                                                                                                                                                                                    |
| Sensor                                 | Pt 1000, Class A                                                                                                                                                                                                                                                                                            |
| Interval                               | 250 ms ... 24 hours.*                                                                                                                                                                                                                                                                                       |
| Measurement mode                       | <ul style="list-style-type: none"> <li>• Endless measurement</li> <li>• Start / stop measurement</li> <li>• Measure upon start temperature</li> <li>• Start immediately until end of memory</li> </ul>                                                                                                      |
| Storage temperature                    | 0 °C ... +125 °C                                                                                                                                                                                                                                                                                            |
| Battery                                | Lithium cell, 3.6 V, user replaceable                                                                                                                                                                                                                                                                       |
| Dimensions (Ø x H)                     | 48 mm x 24 mm**                                                                                                                                                                                                                                                                                             |
| Weight                                 | Approximately 110 g **                                                                                                                                                                                                                                                                                      |
| Housing material                       | 316 L Stainless steel / PEEK                                                                                                                                                                                                                                                                                |
| Protection class                       | IP 68                                                                                                                                                                                                                                                                                                       |
| Certificate                            | Factory calibration certificate                                                                                                                                                                                                                                                                             |

\* Deviating specifications can be found in the product descriptions.

\*\* Dimensions and weight may be different depending on the type.



## EBI 12-T100 Temperature Data Logger with internal temperature sensor



### Application sample

- For process monitoring during convenience food production
- For routine control in badpan washers
- For temperature mappings



### Technical Data

|                   |                                          |
|-------------------|------------------------------------------|
| Measurement range | -90 °C ... +150 °C (-130 °F ... +302 °F) |
| Data memory       | 100,000 measurement values               |

- 1 internal temperature sensor
- Particularly robust

| Type        | Description                 | Part No.  |
|-------------|-----------------------------|-----------|
| EBI 12-T100 | Internal temperature sensor | 1340-6600 |

## EBI 12-T100-EX Temperature Data Logger with internal temperature sensor



### Application sample

- To measure in raw material storage



### Technical Data

|                |                                        |
|----------------|----------------------------------------|
| Use in EX Area | -40 °C ... +85 °C (-40 °F ... +185 °F) |
| Data memory    | 100,000 measurement values             |

*Approximately available from end of Q1 2018*

- 1 internal temperature sensor
- Particularly robust

| Type           | Description                 | Part No.     |
|----------------|-----------------------------|--------------|
| EBI 12-T100-EX | Internal temperature sensor | 1340-6600-EX |

## EBI 12-T101 Temperature Data Logger with internal temperature sensor



### Application sample

- For use in dry ice and in cryogenic
- In bedpan washers and washing machines



### Technical Data

|                   |                                                               |
|-------------------|---------------------------------------------------------------|
| Measurement range | -90 °C ... +105 °C (-130 °F ... +221 °F)                      |
| Accuracy          | ± 0.5 °C (-90 °C ... -40 °C)<br>± 0.3 °C (-40 °C ... +105 °C) |
| Sampling rate     | 1 s ... 24 h                                                  |
| Data memory       | 27,000 measurement values                                     |

- 1 internal temperature sensor
- Particularly robust

| Type        | Description                 | Part No.  |
|-------------|-----------------------------|-----------|
| EBI 12-T101 | Internal temperature sensor | 1340-6601 |

## EBI 12-T21X Temperature Data Logger rigid metal probe



### Application sample

- For process monitoring during convenience food production

### Technical Data

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Measurement range | -40 °C ... +150 °C (-40 °F ... +302 °F)                   |
| Accuracy          | ± 0.1 °C (0 °C ... +150 °C)<br>± 0.3 °C (-40 °C ... 0 °C) |
| Sampling rate     | 1 s ... 24 h                                              |
| Data memory       | 27,000 measurement values                                 |



- 1 external temperature probe, Ø 3 mm
- Radial pointed

| Type        | Description           | Part No.  |
|-------------|-----------------------|-----------|
| EBI 12-T210 | Needle length = 50 mm | 1340-6602 |
| EBI 12-T211 | Needle length = 75 mm | 1340-6603 |

## EBI 12-T23X Deep Temperature Data Logger

### rigid metal probe



#### Application sample

- Ideal for use in canning for pasteurization control

#### Technical Data

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Measurement range | -40 °C ... +150 °C (-40 °F ... +302 °F)                   |
| Accuracy          | ± 0.1 °C (0 °C ... +150 °C)<br>± 0.3 °C (-40 °C ... 0 °C) |
| Sampling rate     | 1 s ... 24 h                                              |
| Data memory       | 27,000 measurement values                                 |

- Axial pointed, M5 Thread
- 1 external temperature probe, Ø 3 mm
- Various needle length available

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T230 | Needle length = 50 mm  | 1340-6606 |
| EBI 12-T231 | Needle length = 75 mm  | 1340-6607 |
| EBI 12-T232 | Needle length = 100 mm | 1340-6608 |
| EBI 12-T233 | Needle length = 150 mm | 1340-6609 |

## EBI 12-T43X Temperature Data Logger

### rigid metal probes



#### Application sample

- Ideal for use in canning for pasteurization control

#### Technical Data

|                   |                                                           |
|-------------------|-----------------------------------------------------------|
| Measurement range | -40 °C ... +150 °C (-40 °F ... +302 °F)                   |
| Accuracy          | ± 0.1 °C (0 °C ... +150 °C)<br>± 0.3 °C (-40 °C ... 0 °C) |
| Sampling rate     | 1 s ... 24 h                                              |
| Data memory       | 2 x 13,500 measurement values                             |

*Approximately available from end of Q2 2018*

- Axial pointed, M5 Thread
- 2 external temperature probes, Ø 3 mm
- Various needle length available

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T430 | Needle length = 50 mm  | 1340-6614 |
| EBI 12-T431 | Needle length = 75 mm  | 1340-6615 |
| EBI 12-T432 | Needle length = 100 mm | 1340-6616 |
| EBI 12-T433 | Needle length = 150 mm | 1340-6617 |

## EBI 12-T46X Bottle Logger

### rigid metal probe



#### Application sample

- Ideal for use in bottles

#### Technical Data

|                   |                                         |
|-------------------|-----------------------------------------|
| Measurement range | -40 °C ... +150 °C (-40 °F ... +302 °F) |
| Accuracy          | ± 0.3 °C (-40 °C ... +150 °C)           |
| Sampling rate     | 1 s ... 24 h                            |
| Data memory       | 2 x 13,500 measurement values           |

*Approximately available from end of Q2 2018*

- Axial, blunt, M10 thread
- 1 external temperature probe, Ø 6 mm
- 1 external temperature probe, Ø 3 mm
- Various needle lengths available

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T461 | Needle length = 135 mm | 1340-6623 |
| EBI 12-T462 | Needle length = 190 mm | 1340-6624 |
| EBI 12-T463 | Needle length = 245 mm | 1340-6625 |
| EBI 12-T464 | Needle length = 270 mm | 1340-6626 |
| EBI 12-T465 | Needle length = 300 mm | 1340-6627 |

## EBI 12-T22X Temperature Data Logger

### bendable metal probe



#### Application sample

- Measurement in drain of sterilizers
- In oven (protected by Thermal-Isolation-Box)

#### Technical Data

|                   |                                                                                                                                |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Measurement range | <b>EBI 12-T220:</b> -200 °C ... +200 °C (-328 °F ... +392 °F)<br><b>EBI 12-T221:</b> -200 °C ... +400 °C (-328 °F ... +752 °F) |
| Data memory       | 100,000 measurement values                                                                                                     |

- 1 external temperature probe, Ø 1.5 mm
- Radial arranged

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T220 | Needle length = 250 mm | 1340-6604 |
| EBI 12-T221 | Needle length = 500 mm | 1340-6605 |

## EBI 12-T220-EX Temperature Data Logger *bendable metal probe*



Application sample

- EtO sterilization

### Technical Data

|                |                                        |
|----------------|----------------------------------------|
| Use in EX Area | -40 °C ... +85 °C (-40 °F ... +185 °F) |
| Data memory    | 100,000 measurement values             |

*Approximately available from end of Q1 2018*



- 1 external temperature probe, Ø 1,5 mm
- Radial arranged

| Type           | Description            | Part No.     |
|----------------|------------------------|--------------|
| EBI 12-T220-EX | Needle Length = 250 mm | 1340-6604-EX |

## EBI 12-T24X Temperature Data Logger *bendable metal probe*



Application sample

- In washer disinfectors
- H<sub>2</sub>O<sub>2</sub> sterilization

### Technical Data

|                   |                                           |
|-------------------|-------------------------------------------|
| Measurement range | -200 °C ... +200 °C (-328 °F ... +392 °F) |
| Data memory       | 100,000 measurement values                |

- 1 external temperature probe, Ø 1,5 mm
- Axial arranged

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T240 | Needle Length = 250 mm | 1340-6611 |
| EBI 12-T241 | Needle Length = 500 mm | 1340-6612 |

## EBI 12-T421 Temperature Data Logger

### *bendable metal probes*



#### Application sample

- In oven (in combination with Thermal-Insulation-Box)
- In washer disinfectors

#### Technical Data

|                   |                                           |
|-------------------|-------------------------------------------|
| Measurement range | -200 °C ... +400 °C (-328 °F ... +752 °F) |
| Data memory       | 2 x 50,000 measurement values             |

*Approximately available from end of Q1 2018*

- 2 external temperature probes, Ø 1.5 mm
- Radial arranged

| Type        | Description           | Part No.  |
|-------------|-----------------------|-----------|
| EBI 12-T421 | Needle Length = 500mm | 1340-6630 |

## EBI 12-T441 Temperature Data Logger

### *bendable metal probes*



#### Application sample

- In washer disinfectors
- H<sub>2</sub>O<sub>2</sub> sterilization

#### Technical Data

|                   |                                           |
|-------------------|-------------------------------------------|
| Measurement range | -200 °C ... +200 °C (-328 °F ... +392 °F) |
| Data memory       | 2 x 50,000 measurement values             |

- 2 external temperature probes, Ø 1.5 mm
- Axial arranged

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 12-T441 | Needle Length = 500 mm | 1340-6629 |

## EBI 12-T441-EX Temperature Data Logger *bendable metal probes*



Application sample

- EtO sterilization

### Technical Data

|                |                                        |
|----------------|----------------------------------------|
| Use in EX Area | -40 °C ... +85 °C (-40 °F ... +185 °F) |
| Data memory    | 2 x 50,000 measurement values          |

*Approximately available from end of Q1 2018*

- 2 external temperature probes, Ø 1.5 mm
- Axial arranged

| Type           | Description            | Part No.     |
|----------------|------------------------|--------------|
| EBI 12-T441-EX | Needle Length = 500 mm | 1340-6629-EX |

## EBI 12-T490 Temperature Data Logger *flexible cable probes*



Application sample

- Steam sterilizer

### Technical Data

|                   |                                        |
|-------------------|----------------------------------------|
| Measurement range | -20 °C ... +150 °C (-4 °F ... +302 °F) |
| Data memory       | 2 x 50,000 measurement values          |



- 2 external temperature probes, Ø 1.2 mm
- Radial arranged

| Type        | Description           | Part No.  |
|-------------|-----------------------|-----------|
| EBI 12-T490 | Cable Length = 600 mm | 1340-6634 |

## EBI 12-T690 Temperature Data Logger *flexible cable probes*



Application sample

- Steam sterilizer

### Technical Data

|                   |                                        |
|-------------------|----------------------------------------|
| Measurement range | -20 °C ... +150 °C (-4 °F ... +302 °F) |
| Data memory       | 4 x 25,000 measurement values          |

- 4 external temperature probes, Ø 1.2 mm
- Radial arranged

| Type        | Description           | Part No.  |
|-------------|-----------------------|-----------|
| EBI 12-T690 | Cable Length = 600 mm | 1340-6635 |

## EBI 12-T47X Temperature Data Logger *flexible cable probes*



Application sample

- Steam sterilizer

### Technical Data

|                   |                                        |
|-------------------|----------------------------------------|
| Measurement range | -20 °C ... +150 °C (-4 °F ... +302 °F) |
| Data memory       | 2 x 50,000 measurement values          |

- 2 external temperature probes, Ø 1.2 mm
- Axial arranged

| Type        | Description             | Part No.  |
|-------------|-------------------------|-----------|
| EBI 12-T470 | Cable Length = 600 mm   | 1340-6640 |
| EBI 12-T471 | Cable Length = 1,200 mm | 1340-6644 |

## EBI 12-T671 Temperature Data Logger *flexible cable probes*



Application sample

- Steam sterilizer

### Technical Data

|                   |                                        |
|-------------------|----------------------------------------|
| Measurement range | -20 °C ... +150 °C (-4 °F ... +302 °F) |
| Data memory       | 4 x 25,000 measurement values          |

- 4 external temperature probes, Ø 1.2 mm
- Axial arranged

| Type        | Description             | Part No.  |
|-------------|-------------------------|-----------|
| EBI 12-T671 | Cable Length = 1,200 mm | 1340-6645 |

## Temperature / Pressure Data Loggers EBI 12 series

### General technical specifications: valid for all EBI 12-TP data loggers

|                                                                 |                                                                                                                                                                                                  |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature: pressure logger                          | 0 °C ... +150 °C (+32 °F ... +302 °F)                                                                                                                                                            |
| Accuracy: temperature                                           | ±0.1 °C (0 °C ... +120 °C)<br>±0.05 °C (+120 °C ... +140 °C)<br>±0.1 °C (+140 °C ... +150 °C)                                                                                                    |
| Accuracy: pressure                                              | ±10 mbar (50 mbar ... 150 mbar)<br>±10 mbar (2,050 mbar ... 2,250 mbar)<br>±10 mbar (3,000 mbar ... 3,250 mbar)<br>±15 mbar (for the remaining measurement range)                                |
| Resolution: temperature                                         | 0.01 °C                                                                                                                                                                                          |
| Resolution: pressure                                            | 1 mbar                                                                                                                                                                                           |
| Data memory                                                     | Max. 100,000 measurements (total)                                                                                                                                                                |
| Sensor: temperature                                             | Pt 1000, Class A                                                                                                                                                                                 |
| Sensor: pressure                                                | Piezoresistive pressure sensor (temperature compensated)                                                                                                                                         |
| Sampling rate                                                   | 250 ms ... 24 h                                                                                                                                                                                  |
| Measurement mode                                                | <ul style="list-style-type: none"> <li>• Endless measurement</li> <li>• Measure upon start time</li> <li>• Start immediately until end of memory</li> <li>• Start- / Stop measurement</li> </ul> |
| Storage temperature                                             | 0 °C ... +125 °C (+32 °F ... +257 °F)                                                                                                                                                            |
| Time accuracy (24h)                                             | < 5 sec                                                                                                                                                                                          |
| Battery                                                         | Lithium cell, 3.6 V, user replaceable                                                                                                                                                            |
| Dimensions (Ø x H)                                              | 48 mm x 32 mm*                                                                                                                                                                                   |
| Weight                                                          | Approximately 120 g *                                                                                                                                                                            |
| Housing material                                                | 316 L Stainless steel / PEEK                                                                                                                                                                     |
| Protection class                                                | IP 68                                                                                                                                                                                            |
| Certificate                                                     | Factory calibration certificate                                                                                                                                                                  |
| * Dimensions and weight may be different depending on the type. |                                                                                                                                                                                                  |



EBI 12-TP222 Temperature / Pressure Data Logger  
*bendable metal probe and Luer-Lock-Connection*



Application sample

- Washer disinfectors
- Sterilizer

Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 2 x 33,400 measurement values         |

- 1 external temperature probe, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type         | Description                                  | Part No.  |
|--------------|----------------------------------------------|-----------|
| EBI 12-TP222 | Needle Length = 500 mm, Luer-Lock-Connection | 1340-6653 |



## EBI 12-TP231 Temperature / Pressure Data Logger rigid metal probe and Luer-Lock-Connection



Application sample

- Washer disinfectors
- Sterilizer

### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 2 x 33,400 measurement values         |

- 1 external temperature probe, axial, Ø 1.95 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type         | Description           | Part No.  |
|--------------|-----------------------|-----------|
| EBI 12-TP231 | Needle Length = 40 mm | 1340-6655 |

## EBI 12-TP231-EX Temperature / Pressure Data Logger rigid metal probe and Luer-Lock-Connection



Application sample

- EtO sterilizer

### Technical Data

|                             |                                      |
|-----------------------------|--------------------------------------|
| Use in EX Area              | 0 °C ... +85 °C (+32 °F ... +185 °F) |
| Measurement range: pressure | 1 ... 4,000 mbar                     |
| Data memory                 | 2 x 33,400 measurement values        |

Approximately available from end of Q1 2018

- 1 external temperature probe, axial, Ø 1.95 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type            | Description           | Part No.     |
|-----------------|-----------------------|--------------|
| EBI 12-TP231-EX | Needle Length = 40 mm | 1340-6655-EX |

EBI 12-TP234 Temperature / Pressure Data Logger  
tube connection and M 10x1 internal thread



Application sample

- Drainages

Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 2 x 33,400 measurement values         |

- 1 external temperature probe, axial, Ø 1.95 mm
- 1 internal pressure sensor with tube connection

| Type         | Description           | Part No.  |
|--------------|-----------------------|-----------|
| EBI 12-TP234 | Needle Length = 40 mm | 1340-6652 |

EBI 12-TP322 Temperature / Pressure Data Logger  
bendable metal probes with Luer-Lock-Connection



Application sample

- Washer disinfectors
- Sterilizer

Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 3 x 25,000 measurement values         |

- 2 external temperature probes, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type         | Description          | Part No.  |
|--------------|----------------------|-----------|
| EBI 12-TP322 | Luer-Lock-Connection | 1340-6664 |

## EBI 12-TP422 Temperature / Pressure Data Logger *bendable metal probes with Luer-Lock-Connection*



### Application sample

- Washer disinfectors
- Sterilizer

### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 4 x 20,000 measurement values         |

- 3 external temperature probes, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type         | Description                                  | Part No.  |
|--------------|----------------------------------------------|-----------|
| EBI 12-TP422 | Needle Length = 500 mm, Luer-Lock-Connection | 1340-6662 |

## EBI 12-TP45X Temperature / Pressure Data Logger *flexible cable probes*



### Application sample

- Sterilization

### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 4 x 20,000 measurement values         |

- 3 external temperature probes, axial, flexible, Ø 1.2 mm
- 1 internal pressure sensor with Luer-Lock-Connection

| Type         | Description                                   | Part No.  |
|--------------|-----------------------------------------------|-----------|
| EBI 12-TP451 | Cable Length = 600 mm, Luer-Lock-Connection   | 1340-6643 |
| EBI 12-TP453 | Cable Length = 1,200 mm, Luer-Lock-Connection | 1340-6647 |

## EBI 12-TP460 Temperature / Pressure Data Logger *flexible cable probes*



Application sample

- In limited spaces e.g. in containers

### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 ... 4,000 mbar                      |
| Data memory                    | 4 x 20,000 measurement values         |

- 3 external temperature probes, radial, Ø 1.2 mm
- 1 internal pressure sensor

| Type         | Description           | Part No.  |
|--------------|-----------------------|-----------|
| EBI 12-TP460 | Cable Length = 600 mm | 1340-6648 |

## EBI 12-TPX9X Precision Pressure Logger *high precision pressure measurement down to 0.1 mbar*



In the process of H<sub>2</sub>O<sub>2</sub> Sterilizers a very precise pressure measurement is necessary. The system works with pressures down to 1 mbar abs. A Highly accurate pressure data logger is necessary caused by the very low pressure nearly by vacuum.



### Technical Data

|                                |                                                                                                                                                                            |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement range: temperature | 0 °C ... +85 °C (+32 °F ... +185 °F)                                                                                                                                       |
| Measurement range: pressure    | 0.1 ... 1,050 mbar (0.1 ... 788 Torr)                                                                                                                                      |
| Accuracy: temperature          | ±0.1 °C                                                                                                                                                                    |
| Accuracy: pressure             | ± 0.25 mbar (0.1 mbar ... 50 mbar)<br>± 5% of measured value (50 mbar ... 100 mbar)<br>± 1% FS (100 mbar ... 1,050 mbar)                                                   |
| Resolution: temperature        | 0.01 °C                                                                                                                                                                    |
| Resolution: pressure           | 0.1 mbar                                                                                                                                                                   |
| Data memory                    | <b>TP190:</b> 50,000 measurement values<br><b>TP290:</b> 2 x 33,400 measurement values                                                                                     |
| Sensor: temperature            | Pt 1000                                                                                                                                                                    |
| Sensor: pressure               | Piezoresistive pressure sensor                                                                                                                                             |
| Measurement mode               | <ul style="list-style-type: none"> <li>• Endless measurement immediately</li> <li>• Start / Stop measurement</li> <li>• Measure immediately until end of memory</li> </ul> |
| Operating temperature          | 0 °C ... +85 °C                                                                                                                                                            |
| Max. operating pressure        | 0.1 mbar ... 2,000 mbar abs.                                                                                                                                               |
| Battery                        | Lithium cell, 3.6 V, user replaceable                                                                                                                                      |
| Dimensions (D x H)             | 48 mm x 35 mm                                                                                                                                                              |
| Housing material               | 316 L Stainless steel / PEEK                                                                                                                                               |
| Protection class               | IP 68                                                                                                                                                                      |

- 1 internal or 1 external temperature sensor, Ø 1.95 mm
- 1 internal pressure sensor

| Type         | Description           | Part No.  |
|--------------|-----------------------|-----------|
| EBI 12-TP190 | Internal temp. sensor | 1340-6665 |
| EBI 12-TP290 | Needle Length = 40 mm | 1340-6666 |

## EBI 12-TC230 Temperature / Conductivity Data Logger

### Conductivity measurement



In processes like e.g. washer disinfectors, the measurement of conductivity in the last dishwater is required. This is reasonably done in the running process without any interruption.



#### Technical Data

|                                 |                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement range: temperature  | 0 °C ... +125 °C (+32 °F ... +257 °F)                                                                                                                                      |
| Measurement range: conductivity | 1 ... 2,000 µS/cm                                                                                                                                                          |
| Accuracy: temperature           | ± 0.1 °C                                                                                                                                                                   |
| Accuracy: conductivity          | ± 0,5µS/cm (1 ... 100 µS/cm )<br>± 1 % measurement values (100 ... 2,000 µS/cm )                                                                                           |
| Data memory                     | 2 x 50,000 measurement values                                                                                                                                              |
| Sensor: temperature             | Pt 1000                                                                                                                                                                    |
| Sensor: conductivity            | Conductivity electrode                                                                                                                                                     |
| Measurement mode                | <ul style="list-style-type: none"> <li>• Endless measurement immediately</li> <li>• Start / Stop measurement</li> <li>• Measure immediately until end of memory</li> </ul> |
| Operating temperature           | 0 °C ... +125 °C (+32 °F ... +257 °F)                                                                                                                                      |
| Battery                         | Lithium cell, user replaceable                                                                                                                                             |
| Dimensions (D x H)              | 48 mm x 130 mm                                                                                                                                                             |
| Housing material                | 316 L Stainless steel / PEEK                                                                                                                                               |
| Protection class                | IP 68                                                                                                                                                                      |

- 1 external temperature probe
- 1 external conductivity probe

*Approximately available from end of Q1 2018*

| Type         | Description           | Part No.  |
|--------------|-----------------------|-----------|
| EBI 12-TC230 | Needle Length = 40 mm | 1340-6667 |

## EBI 12-TH100 Temperature / Humidity Data Logger

### insensitive against chemicals



#### Technical Data

|                                   |                                                                                                                                                                            |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement range: temperature    | -20 °C ... +85 °C (-4 °F ... +185 °F)                                                                                                                                      |
| Measurement range: humidity       | 0% rF ... 100% rF                                                                                                                                                          |
| Accuracy: temperature             | ± 0.1 °C                                                                                                                                                                   |
| Accuracy: humidity                | ± 2% rH, non-condensing at 25 °C                                                                                                                                           |
| Resolution: temperature           | 0.01 °C                                                                                                                                                                    |
| Resolution: humidity              | 0.1 % rH                                                                                                                                                                   |
| Data memory                       | 2 x 50,000 measurement values                                                                                                                                              |
| Measurement channels: temperature | external (Pt 1000)                                                                                                                                                         |
| Measurement channels: humidity    | (capacitive); combined sensor replaceable                                                                                                                                  |
| Measurement mode                  | <ul style="list-style-type: none"> <li>• Endless measurement immediately</li> <li>• Start / Stop measurement</li> <li>• Measure immediately until end of memory</li> </ul> |
| Storage temperature               | -20 °C ... +70 °C (-4 °F ... +158 °F)                                                                                                                                      |
| Battery                           | Lithium cell (3.6 V), user replaceable                                                                                                                                     |
| Dimensions (D x H)                | 48 mm x 70 mm                                                                                                                                                              |
| Housing material                  | 316 L Stainless steel / PEEK                                                                                                                                               |
| Protection class                  | IP 52                                                                                                                                                                      |

- 1 external temperature sensor (Pt 1000)
- 1 external humidity sensor (capacitive)
- Combined sensor replaceable

| Type         | Description          | Part No.  |
|--------------|----------------------|-----------|
| EBI 12-TH100 | Temperature/Humidity | 1340-6671 |

## EBI 12-TH100-EX Temperature / Humidity Data Logger usable with EtO



- 1 external temperature sensor (Pt 1000)
- 1 external humidity sensor (capacitive)
- Combined sensor replaceable

### Technical Data

|                                   |                                                                                                                                                                            |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Use in EX area                    | -20 °C ... +85 °C (-4 °F ... +185 °F)                                                                                                                                      |
| Accuracy: temperature             | ± 0.1 °C                                                                                                                                                                   |
| Accuracy: humidity                | ± 2% rH, non-condensing at 25 °C                                                                                                                                           |
| Resolution: temperature           | 0.01 °C                                                                                                                                                                    |
| Resolution: humidity              | 0.1 % rH                                                                                                                                                                   |
| Data memory                       | 2 x 50,000 measurement values                                                                                                                                              |
| Measurement channels: temperature | external (Pt 1000)                                                                                                                                                         |
| Measurement channels: humidity    | (capacitive); combined sensor replaceable                                                                                                                                  |
| Measurement mode                  | <ul style="list-style-type: none"> <li>• Endless measurement immediately</li> <li>• Start / Stop measurement</li> <li>• Measure immediately until end of memory</li> </ul> |
| Operating temperature             | -20 °C ... +70 °C                                                                                                                                                          |
| Battery                           | Lithium cell, 3.6 V, user replaceable                                                                                                                                      |
| Dimensions (D x H)                | 48 mm x 70 mm                                                                                                                                                              |
| Housing material                  | 316 L Stainless steel / PEEK                                                                                                                                               |
| Protection class                  | IP 52                                                                                                                                                                      |

*Approximately available from end of Q1 2018*

| Type            | Description          | Part No.     |
|-----------------|----------------------|--------------|
| EBI 12-TH100-EX | Temperature/Humidity | 1340-6671-EX |

## EBI 12-T480 Temperature Data Logger with strip to connect an external sensors



Sometimes it is necessary to record data with independent probes.

### Technical Data

|                       |                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement range     | -200 °C ... +400 °C (-328 °F ... +732 °F)                                                                                                                                  |
| Data memory           | 2 x 50,000 measurement values                                                                                                                                              |
| Measurement mode      | <ul style="list-style-type: none"> <li>• Endless measurement immediately</li> <li>• Start / Stop measurement</li> <li>• Measure immediately until end of memory</li> </ul> |
| Operating temperature | -90 °C ... +150 °C (-130 °F ... +302 °F)                                                                                                                                   |
| Battery               | Lithium cell, 3.6 V, user replaceable                                                                                                                                      |
| Dimensions (D x H)    | 46 mm x 35 mm                                                                                                                                                              |
| Housing material      | 316 L Stainless steel / PEEK                                                                                                                                               |
| Protection class      | IP 52                                                                                                                                                                      |



- Strip for 2 external Pt 1000 sensors

| Type        | Description    | Part No.  |
|-------------|----------------|-----------|
| EBI 12-T480 | Terminal strip | 1340-6633 |

# Data Loggers and Systems for special applications

## EBI 16 Electronic Bowie&Dick-Test accordance to DIN EN 285 / ISO 17665 / ISO 11140-4



The EBI 16 Data Logger forms together with the evaluation software Winlog.med an easy to use and reliable electronic measurement system.



This allows implementing a comprehensive routine control of steam sterilizers by means of the electronic Bowie&Dick-Test according to EN 285 / DIN EN ISO 17665. In addition to checking the penetration of steam, the relevant sterilization parameters are also checked.

A vacuum test can also be carried out with this device.

The EBI 16 is designed to ensure the use of 500 cycles or 2 years without calibration or service.

### Technical Data

|                               |                                       |
|-------------------------------|---------------------------------------|
| Measurement range temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| pressure                      | 1 mbar ... 4,000 mbar                 |
| Accuracy temperature          | ± 0.1 °C                              |
| pressure                      | ± 15 mbar                             |
| Resolution temperature        | 0.01 °C                               |
| pressure                      | 1 mbar                                |
| Data memory                   | 6,750 measurement values              |
| Sampling rate                 | 1 sec                                 |
| Measurement mode              | Start / Stop measurement              |
| Sensor: temperature           | Pt 1000                               |
| Sensor: pressure              | Piezoresistive pressure sensor        |
| Operating temperature         | 0 °C ... +150 °C                      |
| Storage temperature           | 0 °C ... +125 °C                      |
| Start temperature             | +15 °C ... +35 °C                     |
| Protection class              | IP68                                  |
| Battery                       | Lithium cell (3,6 V), replaceable     |
| Battery lifetime              | Up to 2 Years                         |
| Dimension (D x H)             | 90 mm x 150 mm                        |
| Housing material              | 316 L Stainless steel / PEEK          |
| Weight                        | Approx. 500 g (incl. battery)         |
| Calibration                   | Factory calibration certificate       |

*Accordance to EN ISO 11140-4 certified by an independent laboratory*

- **Reliable:** clear, reproducible measurement results
- **Accurate:** high-resolution graphical cycle display
- **Secure:** digital data recording and storage
- **Easy:** to use and evaluate

| Type   | Description                | Part No.  |
|--------|----------------------------|-----------|
| EBI 16 | Electronic Bowie&Dick-Test | 1340-6697 |

## Accessories and Interface-Sets



**Battery replacement set AL 120**  
for EBI 12

Consisting of 3 batteries, 6 O-rings with grease and opening tool EBI 12



**AL 121 opening tool EBI 12**

To open the data loggers e.g. for battery change

**Battery set AL 104**  
for EBI 12

Consisting of 3 batteries, 8 O-rings with grease



**AL 122 eyelet ring EBI 12**

For securing the EBI 12 data loggers in process



**Holding clamps probes**

To hold the flexible cable probes of the EBI 12 data loggers.



**AL 190 Silicone cable strap**

To hold the flexible cable probes of the EBI 12 data loggers

## Silicone protection box

- Protects EBI 12 Data Loggers against heat peaks
- Protects EBI 12 Data Loggers against mechanical damage
- Extends the life of EBI 12 Data Loggers



### Silicone protection box AL 101

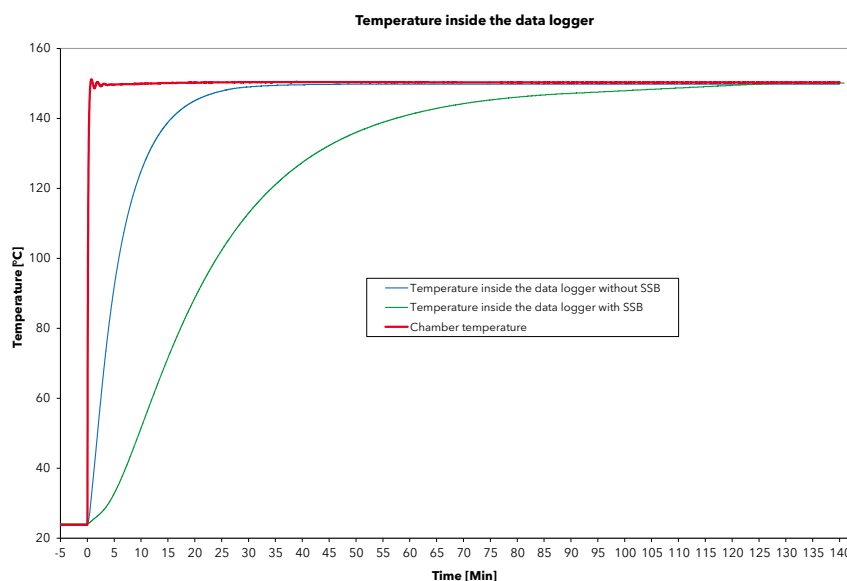
for e.g.  
EBI 12-TP222,  
EBI 12-TP322,  
EBI 12-TP422 and  
EBI 12-TP45x

Ø 78 mm,  
Height: 50 mm

### Silicone protection box AL 107

for e.g.  
EBI 12- T24x,  
EBI 12-T441,  
EBI 12- T67x und  
EBI 12-T471

Ø 78 mm,  
Height: 44 mm



## Thermal Insulation Boxes

- Usable from +150 °C ... +400 °C
- Thermal protection of data loggers
- Stainless steel

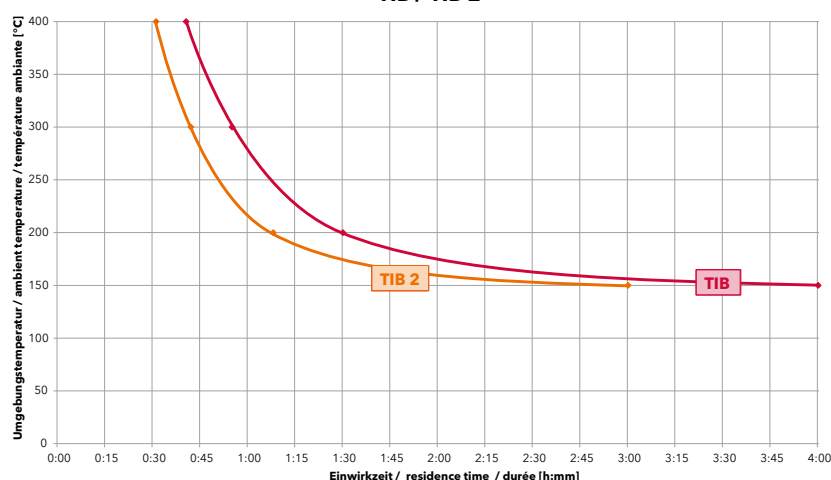


### Thermal insulation boxes EBI TIB and EBI TIB 2

for EBI 12-T221 and EBI 12-T421

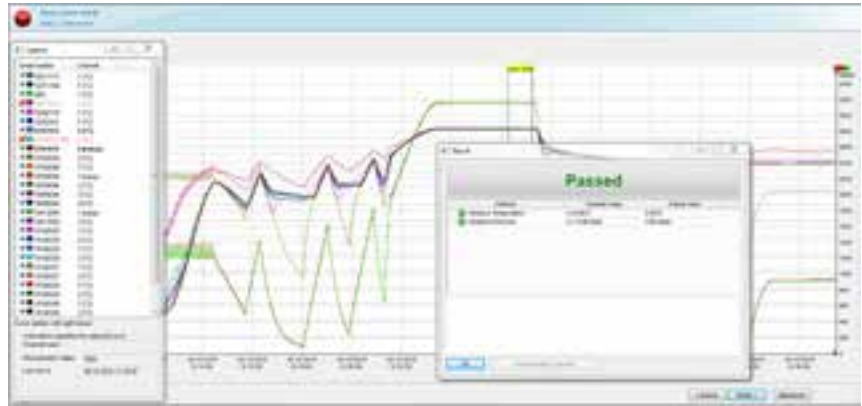
- EBI TIB: 160 mm x 160 mm x 82 mm
- EBI TIB 2: 160 mm x 160 mm x 60 mm

### Grenzbedingung / limit condition / condition aux limites TIB / TIB 2



## AL 285 **Logger-Check** For thermal validation *DAC UNIVERSAL*

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



### EN ISO 17665-1, paragraph 9.1.4

Verification of the calibration value of the measuring instrument that is used for the validation of the sterilization process at process condition.

- Easy and reproducible test with automatic generation of reports.
- The tests are stored permanently in the database





**Set SI 1100**

for EBI 12 and EBI 11

- 2-port Interface IF 100
- Software Winlog.pro
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- Includes antenna



**Set SI 1200**

for EBI 12

- 4-port Interface IF 200
- Software Winlog.pro
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- Includes antenna



**Set SI 2100**

for EBI 12 and EBI 11

- 2-port Interface IF 100
- Software Winlog.med
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- Includes antenna



**Set SI 2110**

for EBI 12

- 4-port Interface IF 200
- Software Winlog.med
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- Includes antenna



**Set SI 2150**

for EBI 12 and EBI 16

- 1-port Interface IF 150
- Software Winlog.med
- USB connection
- Colored LEDs signaling programming, readout and incorrect development



**Set SI 3200**

for EBI 12

- 4-port Interface IF 200
- Software Winlog.validation
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- Includes antenna



**AL 112**

for IF100 and IF 200

- Developed for real time monitoring
- AL 112 is a cable with 3 m length
- Antenna placement in the field of the door seal of a sterilizer or washer-disinfector
- Antenna steam-tight
- It is possible by a sealing to introduce it in the chamber



**Can adapter set  
EBI DA-Set**

With this adapter set you can fix the data loggers at cans or plastic bags. Designed for data loggers of the EBI 12 series with axial, radial or external probes. Hereby you assure the use to ensure proper probes placement.



**Can adapter EBI DA**  
for bottle loggers  
(see page 14)



**Bottle adapter EBI FL-S**  
silicone  
for bottle loggers  
(see page 14)



**Grommets for sensor fixing EBI NI-140**  
Allows precise mounting of the  
logger sensor  
in cans and glass.



**Compression fitting EBI KV-3**  
Allows precise mounting of the  
logger sensor  
in glass (caps).

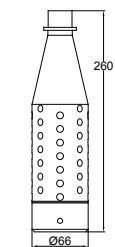
## Dummy bottle

Please find EBI 12-T23X Temperature data logger from page 13.

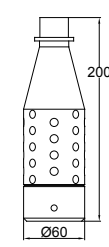
The dummy bottles can be screwed to the ground. This allows the EBI 12 to be positioned within the bottle.



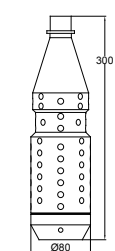
Dummy C



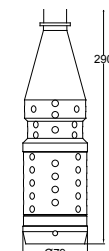
Dummy 0,5 l



Dummy E



Dummy 1 l



Dummy 0,7 l

| Type       | Description                                                | Part No.  |
|------------|------------------------------------------------------------|-----------|
| SI 1100    | Set: Interface EBI IF 100 and Software Winlog.pro          | 1340-6061 |
| SI 1200    | Set: Interface EBI IF 200 and Software Winlog.pro          | 1340-6062 |
| SI 2100    | Set: Interface EBI IF 100 and Software Winlog.med          | 1340-6064 |
| SI 2110    | Set: Interface EBI IF 200 and Software Winlog.med          | 1340-6095 |
| SI 2150    | Set: Interface EBI IF 150 and Software Winlog.med          | 1340-6193 |
| SI 3200    | Set: Interface EBI IF 200 and Software Winlog.validation   | 1340-6068 |
| AL 100     | Silicone protection box for EBI 12 Temperature Data Logger | 1340-6020 |
| AL 101     | Silicone protection box for EBI 12 Pressure Data Logger    | 1340-6021 |
| AL 102     | Silicone protection box for EBI 12 Temperature Data Logger | 1340-6022 |
| AL 120     | Battery change set for EBI 12                              | 1100-0130 |
| AL 121     | Battery change tool (2 parts) EBI 12                       | 1100-0131 |
| AL 122     | Eyelet ring EBI 12                                         | 1100-0132 |
| AL 104     | Battery set for EBI 12                                     | 1100-0118 |
| AL 106     | Silicone protection box for EBI 12 Temperature Data Logger | 1340-6023 |
| AL 107     | Silicone protection box for EBI 12 Temperature Data Logger | 1340-6024 |
| AL 112     | Antenna steam sterilizer                                   | 1340-6007 |
| AL 190     | Silicone cable strap set                                   | 1248-0190 |
| AL 285     | Logger-Check                                               | 1248-0285 |
| Clamp      | Holding clamps for probes                                  | 1340-0005 |
| 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 |
| EBI DA     | Can adapter for bottle loggers                             | 1340-1963 |
| EBI DA-Set | Can adapter set for bottle loggers                         | 1340-1984 |
| EBI FL-S   | Bottle adapter, silicone                                   | 1340-1961 |
| EBI NI-140 | Grommets for sensor fixing up to 140 °C (100 pieces)       | 1340-1988 |
| EBI KV-3   | Compression fitting                                        | 1340-2005 |
| Dummy C    | Dummy Bottle POM 220x65mm                                  | 1340-2255 |
| Dummy 0,5L | Dummy Bottle POM 0,5l                                      | 1340-2256 |
| Dummy E    | Dummy Bottle POM 200x60mm                                  | 1340-2257 |
| Dummy 1L   | Dummy Bottle POM 1l                                        | 1340-2258 |
| Dummy 0,7L | Dummy Bottle POM 0,7l                                      | 1340-2259 |

## Mini Temperature Data Loggers EBI 11 Series

### General technical specifications: valid for all EBI 11-T logger types

|                         |                                                                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature   | -30 °C ... +150 °C (-22°F ... +302 °F)                                                                                                                                                           |
| Accuracy                | ±0.2 °C (-30 °C ... +0 °C)<br>±0.1 °C (0 °C ... +150 °C)                                                                                                                                         |
| Time accuracy (24h)     | < 5 sec                                                                                                                                                                                          |
| Resolution: temperature | 0.01 °C                                                                                                                                                                                          |
| Data memory             | 15,000 measurements (total)                                                                                                                                                                      |
| Sensor                  | Pt 1000, Class A                                                                                                                                                                                 |
| Sampling rate           | 1 sec ... 24 h                                                                                                                                                                                   |
| Measurement mode        | <ul style="list-style-type: none"> <li>• Endless measurement</li> <li>• Start- / Stop measurement</li> <li>• Measure upon start time</li> <li>• Start immediately until end of memory</li> </ul> |
| Storage temperature     | 0 °C ... +60 °C (+32 °F ... +140 °F)                                                                                                                                                             |
| Battery                 | Lithium button cell, 2 x BR1225 A, 3V, replaceable                                                                                                                                               |
| Dimensions (Ø x H)      | 16,5 mm x 24 mm*                                                                                                                                                                                 |
| Weight                  | Approximately 45 g *                                                                                                                                                                             |
| Housing material        | Stainless Steel (V4A)                                                                                                                                                                            |
| Protection class        | IP 68                                                                                                                                                                                            |
| Certificate             | Factory calibration certificate                                                                                                                                                                  |

\* Dimensions and weight may be different depending on the type.



EBI 11-T230 to T233 **Mini Temperature Data Logger**  
*rigid metal probe*



**Technical Data**

|                                |                                         |
|--------------------------------|-----------------------------------------|
| Measurement range: temperature | -30 °C ... +150 °C (-22 °F ... +302 °F) |
| Data memory                    | 15,000 measurement values               |

- 1 external temperature probe, axial, pointed, Ø 3 mm
- Probe with M5 external thread

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 11-T230 | Needle Length = 20 mm  | 1340-6290 |
| EBI 11-T231 | Needle Length = 50 mm  | 1340-6292 |
| EBI 11-T233 | Needle Length = 100 mm | 1340-6293 |

EBI 11-T235 to T237 **Mini Temperature Data Logger**  
*rigid metal probe*



**Technical Data**

|                                |                                         |
|--------------------------------|-----------------------------------------|
| Measurement range: temperature | -30 °C ... +150 °C (-22 °F ... +302 °F) |
| Data memory                    | 15,000 measurement values               |

- 1 external temperature probe, axial, blunt, Ø 1.95 mm
- Probe with M5 external thread

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 11-T235 | Needle Length = 25 mm  | 1340-6270 |
| EBI 11-T236 | Needle Length = 80 mm  | 1340-6271 |
| EBI 11-T237 | Needle Length = 165 mm | 1340-6272 |

## EBI 11-T240 Mini Temperature Data Logger *bendable metal probe*



### Technical Data

|                                |                                         |
|--------------------------------|-----------------------------------------|
| Measurement range: temperature | -30 °C ... +150 °C (-22 °F ... +302 °F) |
| Data memory                    | 15.000 measurement values               |

- 1 external temperature probe, axial, bendable, Ø 1.5 mm

| Type        | Description            | Part No.  |
|-------------|------------------------|-----------|
| EBI 11-T240 | Needle Length = 250 mm | 1340-6291 |



## Mini Temperature / Pressure Data Loggers EBI 11 Series

### General technical specifications: valid for all EBI 11-P logger types

|                         |                                                                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating temperature   | 0 °C ... +150 °C (+32 °F ... +302 °F)                                                                                                                                                            |
| Accuracy: temperature   | ±0.1 °C (0 °C ... +150 °C)                                                                                                                                                                       |
| Accuracy: pressure      | ±15 mbar (0 mbar ... 4,000 mbar)<br>±20 mbar (4,000 mbar ... 10,000 mbar)                                                                                                                        |
| Time accuracy (24h)     | < 5 sec                                                                                                                                                                                          |
| Resolution: temperature | 0.01 °C                                                                                                                                                                                          |
| Resolution: pressure    | 1 mbar                                                                                                                                                                                           |
| Data memory             | 7,500 measurement values per channel                                                                                                                                                             |
| Sensor: temperature     | Pt 1000, Class A                                                                                                                                                                                 |
| Sensor: pressure        | Piezoresistive (temperature compensated)                                                                                                                                                         |
| Sampling rate           | 1 sec ... 24 h                                                                                                                                                                                   |
| Measurement mode        | <ul style="list-style-type: none"> <li>• Endless measurement</li> <li>• Start- / Stop measurement</li> <li>• Measure upon start time</li> <li>• Start immediately until end of memory</li> </ul> |
| Storage temperature     | 0 °C ... +60 °C (+32 °F ... +140 °F)                                                                                                                                                             |
| Battery                 | Lithium, 2x BR1225A, 3V, user replaceable                                                                                                                                                        |
| Dimensions (Ø x H)      | 16,5 mm x 48 mm*                                                                                                                                                                                 |
| Weight                  | Approximately 45 g *                                                                                                                                                                             |
| Housing material        | Stainless Steel (V4A)                                                                                                                                                                            |
| Protection class        | IP 68                                                                                                                                                                                            |
| Certificate             | Factory calibration certificate                                                                                                                                                                  |

\* Dimensions and weight may be different depending on the type.



## EBI 11-P100 Mini Temperature / Pressure Data Logger internal sensor



### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 mbar ... 10,000 mbar                |
| Data memory                    | 2 x 7,500 measurement values          |

- 1 internal temperature sensor
- 1 internal pressure sensor

| Type        | Description                | Part No.  |
|-------------|----------------------------|-----------|
| EBI 11-P100 | Without pressure connector | 1340-6295 |

## EBI 11-P111 Mini Temperature / Pressure Data Logger Luer-Lock connection



### Technical Data

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 mbar ... 10,000 mbar                |
| Data memory                    | 2 x 7,500 measurement values          |

- 1 internal temperature sensor
- 1 internal pressure sensor

| Type        | Description          | Part No.  |
|-------------|----------------------|-----------|
| EBI 11-P111 | Luer-Lock connection | 1340-6296 |

EBI 11-TP110 Mini Temperature / Pressure Data Logger  
M5 thread connection



**Technical Data**

|                                |                                       |
|--------------------------------|---------------------------------------|
| Measurement range: temperature | 0 °C ... +150 °C (+32 °F ... +302 °F) |
| Measurement range: pressure    | 1 mbar ... 10,000 mbar                |
| Data memory                    | 2 x 7,500 measurement values          |

- 1 internal temperature sensor
- 1 internal pressure sensor

| Type         | Description | Part No.  |
|--------------|-------------|-----------|
| EBI 11-TP110 | M5 thread   | 1340-6297 |



## Accessories for EBI 11 and 12



**Set SI 1100**  
for EBI 12 and EBI 11

- 2-port Interface IF 100
- Software Winlog.pro
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- With antenna



**Set SI 1300**  
for EBI 11

- 4-port Interface IF 300
- Software Winlog.pro
- USB connection
- Colored LED signalling programming, readout and incorrect development



**Set SI 2100**  
for EBI 12 and EBI 11

- 2-port Interface IF 100
- Software Winlog.med
- USB connection
- Colored LEDs signaling programming, readout and incorrect development
- With antenna



**Set SI 3300**  
for EBI 11

- 4-port Interface IF 300
- Software Winlog.validation
- USB connection
- Colored LED signalling programming, readout and incorrect development





**Battery change set AL 113**  
for EBI 11

Suitable for 3 battery exchanges; contains 6 batteries, 3 O-rings with grease and changing tools.



**AL 114 can/bag adapter set**  
for EBI 11-T230, EBI 11-T231 and EBI 11- T233



**Bottle adapter set AL 115**  
for EBI 11-T230



**Sealing kit EBI11-Valiset**

The set contains 5 seals. Developed for DAC universal and spypach dummy .

| Type        | Description                                                        | Part No.  |
|-------------|--------------------------------------------------------------------|-----------|
| SI 1100     | Set: EBI IF 100 interface and Winlog.pro software                  | 1340-6061 |
| SI 1300     | Set: EBI IF 300 interface and Winlog.pro software                  | 1340-6063 |
| SI 2100     | Set: EBI IF 100 interface and Winlog.med software                  | 1340-6064 |
| SI 3300     | Set: EBI IF 300 interface and Winlog.validation software           | 1340-6069 |
| AL 113      | Battery changing set for EBI 11                                    | 1100-0120 |
| AL 113L     | Battery changing set for EBI 11                                    | 1100-0125 |
| AL 114      | Can / bag adapter set for EBI 11-T230, EBI 11-T231 and EBI 11-T233 | 1340-6298 |
| AL 115      | Bottle adapter set for EBI 11-T230                                 | 1340-6299 |
| Sealing kit | Sealing kit EBI11-Valiset                                          | 1340-0006 |



## Validation-, routine- and Process control sets

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

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

|                                   | SL 1011   | SL 1111   | SL 1201   | SL 1521   | SL 1621   | SL 1221   | SL 2001   | SL 3001   | SL 3101   | SL 3301   | SL 4011   | SL 4102   | SL 4121   |
|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                                   | 1250-1011 | 1250-1111 | 1250-1201 | 1250-1521 | 1250-1621 | 1250-1221 | 1250-2001 | 1250-3001 | 1250-3101 | 1250-3301 | 1250-4011 | 1250-4102 | 1250-4121 |
| <b>Routine control in</b>         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Bedpan washer                     | ✓         |           |           |           |           |           |           |           |           |           |           |           |           |
| Washer disinfectant               |           | ✓         | ✓         |           | ✓         | ✓         |           |           |           |           |           |           |           |
| Endoscope washer disinfectant     |           | ✓         | ✓         |           |           | ✓         |           |           |           |           |           |           |           |
| Sterilizer < 60 l                 |           | ✓         | ✓         | BD *      | BD */ ✓   | ✓         |           |           |           |           |           |           |           |
| Sterilizer > 60 l                 |           | ✓         | ✓         | BD *      | BD */ ✓   | ✓         |           | ✓         |           | ✓         |           |           |           |
| <b>Validation of Processes in</b> |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Washer disinfectant               |           |           |           |           |           |           | ✓         |           |           | ✓         |           |           |           |
| Endoscope washer disinfectant     |           |           |           |           |           | ✓         | ✓         |           |           | ✓         |           |           |           |
| Sterilizer < 60 l                 |           |           |           |           |           |           | ✓         | ✓         | ✓         | ✓         |           |           |           |
| Sterilizer > 60 l                 |           |           |           |           |           |           |           |           | ✓         |           |           |           |           |
| DAC Universal                     |           |           |           |           |           |           |           |           |           | ✓         |           |           |           |
| <b>Process control in</b>         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Pasteurization cans               |           |           |           |           |           |           |           |           |           |           | ✓         |           |           |
| Pasteurization bottles            |           |           |           |           |           |           |           |           |           |           |           | ✓         | ✓         |

\* Bowie&Dick-Test

# Data Logger Sets



Complete Data Logger Sets for Process control and Monitoring, for Routine Control, Mapping and against Acceptable Quality Limit (AQL)

---

## Description:

- Data Loggers with evaluation software and extensive equipment
- FDA 21 CFR Part 11 conform software

---

## Applications:

- Process control, Monitoring and routine control in steam sterilizers, washer disinfectors, washer disinfectors for endoscopes as well as bedpan washers.
- Implementation of the electronic Bowie&Dick-Test.
- Process and routine control of pasteurization and bottle cleaning processes
- Process and routine control in cooking processes
- Process and routine control in other thermal processes in the food, pharma or medical sector

---

## Advantages:

- Fully automatic and tamper-proof evaluation
- Individual evaluation by user-defined evaluations
- Wide range of wireless data loggers for different applications
- Highly flexible temperature cable probe
- High precision Pt 1000 temperature sensors
- High accuracy up to  $\pm 0,05$  °C
- TÜV certified, FDA 21 CFR Part 11 conform software
- 2 years warranty





## Complete Data Logger Sets for Operation and Process Qualification

---

### Description:

- Data Loggers for validation with evaluation software and extensive equipment
- TÜV certified
- FDA 21 CFR Part 11 conform software

---

### Applications:

- Operation and Process Qualification in pasteurization and bottle cleaning processes.
- Operation and Process Qualification in steam sterilizers, washer disinfectors, washer disinfectors for endoscopes as well as DAC-Universal
- Operation and Process Qualification in cooking processes
- Operation and Process Qualification in other thermal processes in the food, pharma or medical sector

---

### Advantages:

- Fully automatic and tamper-proof evaluation
  - Individual evaluation by user-defined evaluations
  - Wide range of wireless data loggers for different applications
  - Highly flexible temperature cable probe
  - High precision Pt 1000 temperature sensors
  - High accuracy up to  $\pm 0,05$  °C
  - TÜV certified, FDA 21 CFR Part 11 conform software
  - 2 years warranty
-

## Data Logger Sets for process- and charge control, for routine control, mapping and Acceptable Quality Limit (AQL)

- **EBI 11 Mini Data Logger Sets**

SL 1201: for washer-disinfectors for endoscope (see page 45)

SL 400X: for temperature monitoring in cans (see page 47)

SL 4102: for temperature monitoring in bottles (see page 48)

- **EBI 16 Bowie&Dick-Test Sets**

according to EN 285 / ISO 17665

SL 1521: for steam sterilizers (see page 46)

SL 1621: for steam sterilizers and washer-disinfectors (see page 46)

- **EBI 12 Precision Data Logger Sets**

For process and routine control of food and pharma processes as well as medical processes according to the German guideline.

SL 1011: for bedpan washers (see page 44)

SL 1111: for steam sterilizers and washer-disinfectors (see page 45)

SL 401X: for temperature monitoring in tins (see page 48)

SL 412X: for temperature monitoring in bottles and cans (see page 49)

SL 4211: for temperature monitoring in different applications (see page 49)

The sets can individually be expanded or compiled yourself from one or more data loggers (EBI 11, EBI 16 or EBI 12), the appropriate interface and the corresponding software. Talk to us!

### SL 1011 Temperature Data Logger Set

For temperature monitoring and  $A_0$  value calculation in bedpan washers



#### The set contains:

- 1 x EBI 12-T100 Temperature data logger (see page 11)
- Winlog.med Software
- EBI IF 150 Interface
- Carrying case „SYSTAINER“
- pH & conductivity tester (see page 57)



| Type    | Description                               | Part No.  |
|---------|-------------------------------------------|-----------|
| SL 1011 | EBI 12 data logger set for bedpan washers | 1250-1011 |

SL 1111 **Temperature / pressure data logger set**  
for temperature and pressure monitoring as well  
as for  $A_0$  value calculation in steam sterilizers,  
washer-disinfectors and washer-disinfectors for  
endoscopes



**The set contains:**

- 1 x EBI 12-TP231 Pressure / temperature data logger with Luer-Lock connection (see page 21)
- AL 101 Silicone protection box for loggers
- Winlog.med Software
- EBI IF 150 Interface
- Carrying case „SYSTAINER“
- pH & conductivity tester (see page 57)



| Type    | Description                                                          | Part No.  |
|---------|----------------------------------------------------------------------|-----------|
| SL 1111 | EBI 12 Data logger set for steam sterilizers and washer-disinfectors | 1250-1111 |

SL 1201 **Routine Control Set**  
for Washer-Disinfectors for Endoscopes



For the routine control of washer-disinfectors for endoscopes 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 contains:**

- 1 x EBI 11-T235 Mini temperature data logger, needle length: 25 mm
- 1 x EBI 11-P111 Mini pressure data logger
- Sealing kit DAC-validation set
- EBI IF 300, 4-port Interface
- Winlog.med, evaluation software
- spypach Endoscope-Dummy "spo-pro" Basic
- Aluminum carrying case EBI TAK ALU



| Type    | Description                         | Part No.  |
|---------|-------------------------------------|-----------|
| SL 1201 | Endoscope set routine control BASIC | 1250-1201 |

## SL 1521 EBI 16 Bowie&Dick-Test Set for steam sterilizers certified according to ISO 11140-4



### The set contains:

- 1 x Bowie&Dick-Test EBI 16 (see page 27)
- Winlog.med software
- EBI IF 150 interface
- Carrying case „SYSTAINER“

| Type    | Description                                      | Part No.  |
|---------|--------------------------------------------------|-----------|
| SL 1521 | EBI 16 Bowie&Dick-Test Set for steam sterilizers | 1250-1521 |

## SL 1621 EBI 16 Bowie&Dick-Test and Process Control Set for steam sterilizers and washer-disinfectors



### The set contains:

- 1 x Bowie&Dick-Test EBI 16 (see page 27)
- 1 x EBI 12-TP231 Temperature / pressure data logger (see page 21)
- Winlog.med software
- EBI IF 150 interface
- Carrying case „SYSTAINER“

| Type    | Description                                                              | Part No.  |
|---------|--------------------------------------------------------------------------|-----------|
| SL 1621 | EBI 16 Bowie&Dick-Test Set for steam sterilizers and washer-disinfectors | 1250-1621 |

## SL 400X EBI 11 Mini Data Logger Set for Pasteurization and Sterilization

*for temperature monitoring in cans*



### The set contains:

- 1 x EBI 11-T23x Mini temperature data logger, needle length: 20 mm, 50 mm or 100 mm
- AL 114 can adapter set
- EBI IF 100 interface
- Winlog.pro software
- Carrying case „SYSTAINER“



Mini Temperature Data Logger, 1-channel  
Type

|             |                       |
|-------------|-----------------------|
| EBI 11-T230 | Needle length: 20 mm  |
| EBI 11-T231 | Needle length: 50 mm  |
| EBI 11-T233 | Needle length: 100 mm |

| Type    | Description                                          | Part No.  |
|---------|------------------------------------------------------|-----------|
| SL 4002 | EBI 11-T230 Set for pasteurization and sterilization | 1250-4002 |
| SL 4003 | EBI 11-T231 Set for pasteurization and sterilization | 1250-4003 |
| SL 4004 | EBI 11-T233 Set for pasteurization and sterilization | 1250-4004 |

## SL 401X EBI 12 Data Logger Set for Pasteurization and Sterilization for temperature monitoring in tins



### The set contains:

- 1 x EBI 12-T23X Temperature data logger, needle length: 50 mm, 75 mm, 100 mm or 150 mm
- EBI DA-SET Can Adapter
- EBI IF 100 Interface
- Winlog.pro Software
- Carrying case „SYSTAINER“



| Type    | Description                                          | Part No.  |
|---------|------------------------------------------------------|-----------|
| SL 4011 | EBI 12-T230 set for pasteurization and sterilization | 1250-4011 |
| SL 4012 | EBI 12-T231 set for pasteurization and sterilization | 1250-4012 |
| SL 4013 | EBI 12-T232 set for pasteurization and sterilization | 1250-4013 |
| SL 4014 | EBI 12-T233 set for pasteurization and sterilization | 1250-4014 |

## SL 4102 EBI 11 Mini Data Logger Set for Pasteurization for temperature monitoring in bottles



### The set contains:

- 1 x EBI 11-T230 Mini temperature data logger, needle length: 20 mm
- AL 115 Bottle adapter set
- EBI IF 100 interface
- Winlog.pro software
- Carrying case „SYSTAINER“

| Type    | Description                                         | Part No.  |
|---------|-----------------------------------------------------|-----------|
| SL 4102 | EBI 11-T230 Mini data logger set for pasteurization | 1250-4102 |