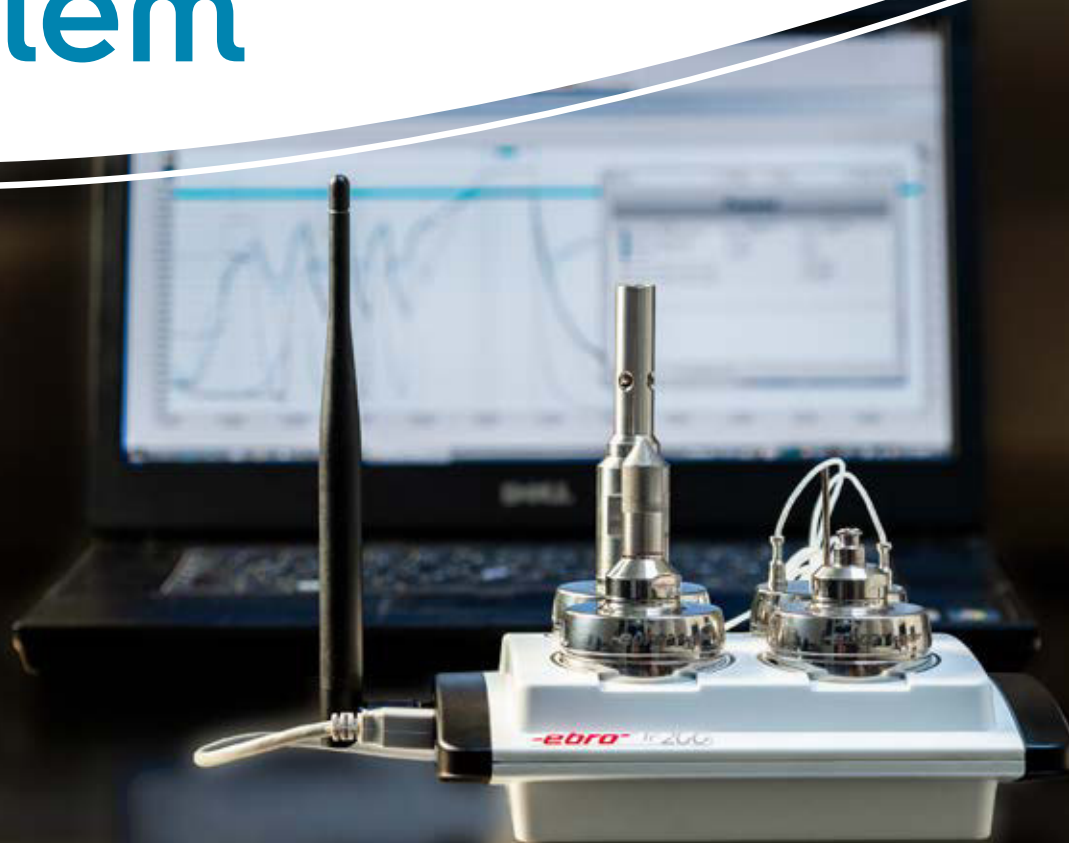




Professional Data Logger

FOR VALIDATION, ROUTINE CONTROL AND PROCESS MONITORING

MEDICINE

FOOD

PHARMACEUTICAL

LABORATORY

2019

-ebro-
a xylem brand

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 validation in low temperature sterilizers such as EtO, LTSF and H_2O_2

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
- H₂O₂-, LTSF- and EtO- Sterilization
- Depyrogenation / heat tunnel
- Incubators
- Refrigerators / Freezers / Cooling Rooms
- Stability Chambers



Pharmaceutical



- Steam-, H₂O₂ 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	± 1.5 °C (-200 °C ... -85 °C)* ± 0.5 °C (-85 °C ... -40 °C)* ± 0.2 °C (-40 °C ... 0 °C)* ± 0.1 °C (0 °C ... +120 °C)* ± 0.05 °C (+120 °C ... +140 °C)* ± 0.1 °C (+140 °C ... +150 °C)* ± 0.5 °C (+150 °C ... +250 °C)* ± 0.8 °C (+250 °C ... +400 °C)*
Time accuracy	< 5 sec (24 h)
Temperature resolution	0.01 °C
Sensor	Pt 1000, Class A
Interval	250 ms ... 24 hours.*
Measurement mode	• Endless measurement • Start / stop measurement • Measure upon start temperature • Start immediately until end of memory
Storage temperature	0 °C ... +125 °C
Maximum operating pressure	Temperature logger 10 bar (abs)
Minimum operating pressure	L ogger with flexible cable probe 20 mbar (abs)
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.

Product lines



Red line

Blue line

Short Description	• Temperature data logger with external probe less than 2 mm diameter • Data logger with additional units • Special process logger	• All other temperature data logger
Radio mode	Loggers can transfer data during the measurement process	Not possible
Total memory capacity	100,000 values	27,000 values

EBI 12-T100 Temperature Data Logger with internal temperature sensor



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Application sample

- For process monitoring during convenience food production
- For routine control in bedpan washers
- For temperature mappings
- To measure in raw material storage



Technical Data

Measurement range (Use in EX Area)	EBI 12-T100: -90 °C ... +150 °C (-130 °F ... +302 °F) EBI 12-T100-EX: -40 °C ... +85 °C (-40 °F ... +185 °F)
Data memory	100,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C
Radio mode	Not possible

- 1 internal temperature sensor
- Particularly robust

Type	Description	Part No.
EBI 12-T100	Internal temperature sensor	1340-6600
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) ± 0.3 °C (-40 °C ... +105 °C)
Sampling rate	1 s ... 24 h
Data memory	27,000 measurement values
Factory calibration certificate	-20 °C, 0 °C and +60 °C

- 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) ± 0.3 °C (-40 °C ... 0 °C)
Sampling rate	1 s ... 24 h
Data memory	27,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C



- 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) ± 0.3 °C (-40 °C ... 0 °C)
Sampling rate	1 s ... 24 h
Data memory	27,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C



- 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-T285 Temperature Data Logger

bendable, blunt metal probe



Application sample

- For retort maintenance and process monitoring

Technical Data

Measurement range	-40 °C ... +200 °C (-40 °F ... +392 °F)
Accuracy	± 0.2 °C (0 °C ... +150 °C) ± 0.3 °C (-40 °C ... 0 °C) ± 0.5 °C > 150 °C
Sampling rate	1 s ... 24 h
Data memory	100,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

Approximately available from Q2 2019

- 1 external temperature probes, Ø 3 mm
- Axial, blunt

Type	Description	Part No.
EBI 12-T285	Needle length = 2,000 mm	1340-6685

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) ± 0.3 °C (-40 °C ... 0 °C)
Sampling rate	1 s ... 24 h
Data memory	2 x 13,500 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +121 °C

- 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



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Application sample

- Measurement in drain of sterilizers
- In oven (protected by Thermal-Isolation-Box)
- EtO sterilization (ATEX type)

Technical Data

Measurement range (Use in EX Area)	EBI 12-T220: -200 °C ... +200 °C (-328 °F ... +392 °F) EBI 12-T220-EX: -40 °C ... +85 °C (-40 °F ... +185 °F) EBI 12-T221: -200 °C ... +400 °C (-328 °F ... +752 °F)
Data memory	100,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C, +134 °C and +250 °C if the probe length is 500 mm

- 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-T220-EX	Needle Length = 250 mm	1340-6604-EX
EBI 12-T221	Needle length = 500 mm	1340-6605

EBI 12-T24X Temperature Data Logger

bendable metal probe



Application sample

- In washer disinfectors
- H₂O₂ sterilization

Technical Data

Measurement range	-200 °C ... +200 °C (-328 °F ... +392 °F)
Data memory	100,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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 (protected by Thermal-Isolation-Box)
- In washer disinfectors

Technical Data

Measurement range	-200 °C ... +400 °C (-328 °F ... +752 °F)
Data memory	2 x 50,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C, +134 °C and +250 °C

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

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

EBI 12-T441 Temperature Data Logger

bendable metal probes



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Application sample

- In washer disinfectors
- H₂O₂ sterilization
- EtO sterilization (ATEX type)

Technical Data

Measurement range	EBI 12-T441: -200 °C ... +200 °C (-328 °F ... +392 °F)
(Use in EX Area)	EBI 12-T441-EX: -40 °C ... +85 °C (-40 °F ... +185 °F)
Data memory	2 x 50,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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	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
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

- 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

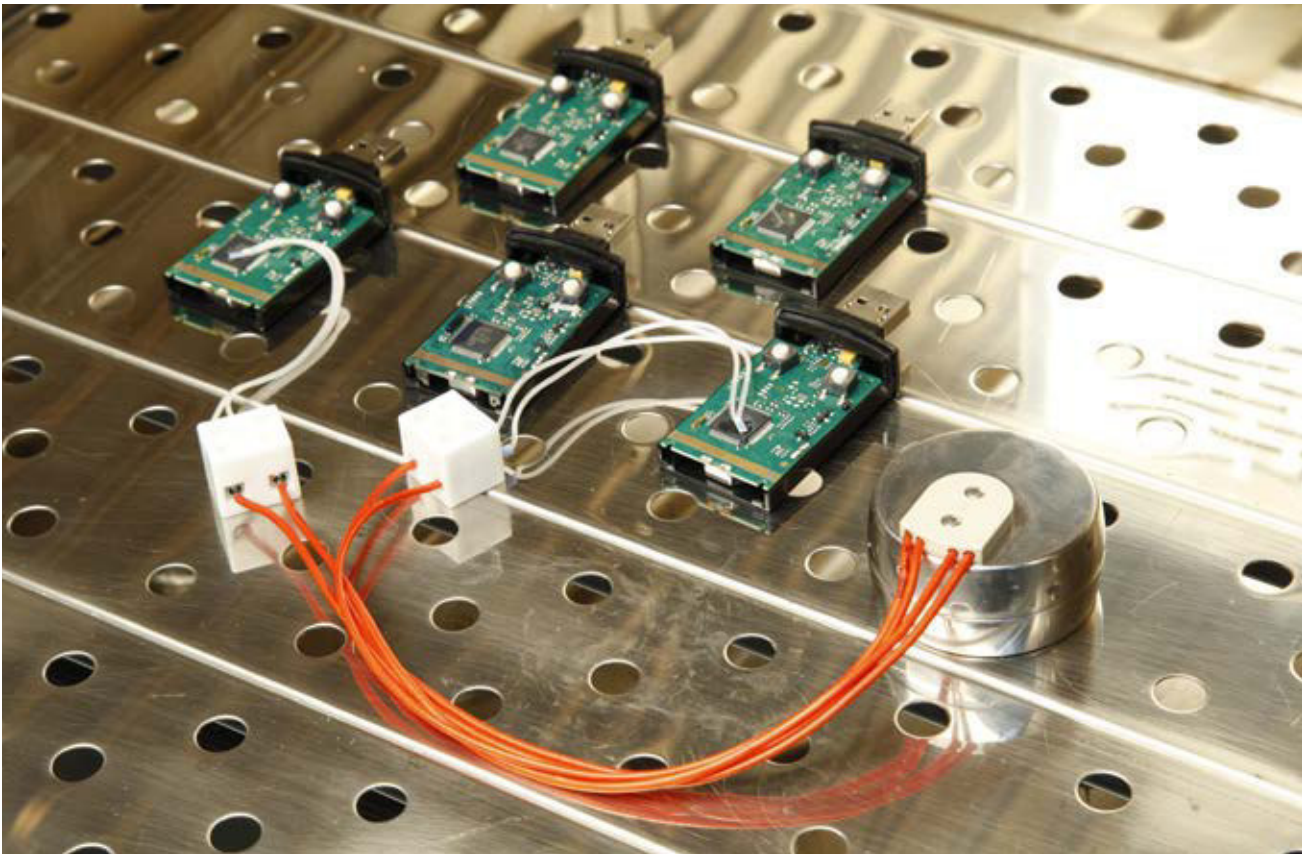


Technical Data

Measurement range	-20 °C ... +150 °C (-4 °F ... +302 °F)
Data memory	4 x 25,000 measurement values
Factory calibration certificate	-20 °C, 0 °C, +60 °C and +134 °C

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

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

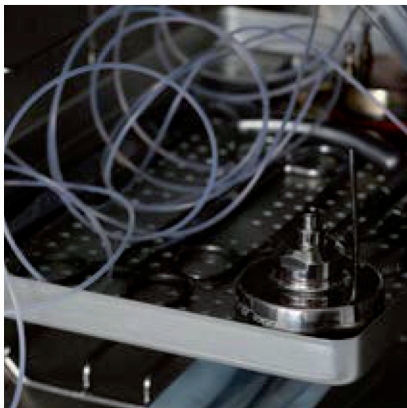


Fast measurement accurately placed during production or storage

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)
	±0.05 °C (+120 °C ... +140 °C)
	±0.1 °C (+140 °C ... +150 °C)
Accuracy: pressure	±10 mbar (50 mbar ... 150 mbar)
	±10 mbar (2,050 mbar ... 2,250 mbar)
	±10 mbar (3,000 mbar ... 3,250 mbar)
	±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, C class A
Sensor: pressure	Piezoresistive pressure sensor (temperature compensated)
Sampling rate	250 ms ... 24 h
Measurement mode	• Endless measurement • Measure upon start time • Start immediately until end of memory • Start- / Stop measurement
Storage temperature	0 °C ... +125 °C (+32 °F ... +257 °F)
Maximum operating pressure	Pressure logger: 7 bar (abs)
Minimum operating pressure	Logger with flexible cable probe: 20 mbar (abs)
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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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-TP226 Temperature / Pressure Data Logger bendable metal probe



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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

Approximately available from Q2 2019

- 1 external temperature probe, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor
- Small size

Type	Description	Part No.
EBI 12-TP226	Needle Length = 250 mm	1340-6657

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



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Application sample

- Washer disinfectors
- Sterilizer
- EtO sterilizer (ATEX type)

Technical Data

Measurement range: temperature (Use in EX Area)	EBI 12-TP231: 0 °C ... +150 °C (+32 °F ... +302 °F) EBI 12-TP231-EX: 0 °C ... +85 °C (+32 °F ... +185 °F)
Measurement range: pressure	1 ... 4,000 mbar
Data memory	2 x 33,400 measurement values
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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	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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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 with Luer-Lock-Connection



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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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
Factory calibration certificate	0 °C, +60 °C and +134 °C 100 mbar and 3100 mbar at +25 °C and 3100 mbar at +134 °C

- 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 H₂O₂ 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.



Not for use in steam sterilizer



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) ± 5% of measured value (50 mbar ... 100 mbar) ± 1% FS (100 mbar ... 1,050 mbar)
Resolution: temperature	0.01 °C
Resolution: pressure	0.1 mbar
Data memory	TP190: 50,000 measurement values TP290: 2 x 33,400 measurement values
Sensor: temperature	Pt 1000
Sensor: pressure	Piezoresistive pressure sensor
Measurement cycle	250 ms ... 24 hours
Measurement mode	• Endless measurement immediately • Start / Stop measurement • Measure immediately until end of memory
Operating temperature	0 °C ... +85 °C
Max. operating pressure	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
Factory calibration certificate	0 °C and +60 °C ≤0.5 mbar, 50 mbar at +25 °C and ≤0.5 mbar, 10 mbar, 50 mbar at +60 °C

- 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.



- 1 external temperature probe
- 1 external conductivity probe

Technical Data

Measurement range: temperature	0 °C ... +125 °C (+32 °F ... +257 °F)
Measurement range: conductivity	1 ... 2,000 µS/cm
Accuracy: temperature	± 0.2 °C
Accuracy: conductivity	± 0.5 µS (1 µS/cm .. 20 µS/cm) ± 1.0 µS (20.1 µS/cm .. 100 µS/cm) ± 2.5% of measured value (100.1µS/cm ... 1500µS/cm) ± 5% from the measurement range (remaining range)
Resolution: temperature	0.01 °C
Resolution: conductivity	0.1 µS/cm
Data memory	2 x 50,000 measurement values
Sensor: temperature	Pt 1000
Sensor: conductivity	Conductivity electrode
Measurement mode	• Endless measurement immediately • Start / Stop measurement • Measure immediately until end of memory
Storage temperature	0 °C ... +125 °C (+32 °F ... +257 °F)
Max. operating pressure (burst pressure)	2.5 bar (abs.)
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
Factory calibration certificate	0 °C, +60 °C and +121 °C 5 µS/cm, 100 µS/cm, 1413 µS/cm at +25 °C
Radio mode	Not possible

Approximately available from Q2 2019

Type	Description	Part No.
EBI 12-TC230	Temperature/Conductivity	1340-6667

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	• Endless measurement immediately • Start / Stop measurement • Measure immediately until end of memory
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
Factory calibration certificate	-200 °C, -50 °C, 0 °C, +60 °C, +134 °C, +250 °C and +400 °C

- Strip for 2 external Pt 1000 sensors

Type	Description	Part No.
EBI 12-T480	Temperature Data Logger with terminal strip	1340-6633
PT 1000 Sensor	10 cm wires	1341-1810

EBI 12-TH100-EX Temperature / Humidity Data Logger

usable with EtO



II1G Ex ia IIC T4 Ga



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

Technical Data

Measurement range: Temperature (Use in EX area)	-20 °C ... +85 °C (-4 °F ... +185 °F)
Measurement range: Humidity	0 % rH ... 100 % rH
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	• Endless measurement immediately • Start / Stop measurement • Measure immediately until end of memory
Storage temperature	-20 °C ... +70 °C
Max. operating pressure	2 bar (abs.)
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
Factory calibration certificate	0 °C and +60 °C 32.8 % rF, 52.9 % rF and 75.4 % rF at +25 °C

Type	Description	Part No.
EBI 12-TH100-EX	Temperature/Humidity	1340-6671-EX
AL 175 TH probe	Replacement probe for EBI12-TH100-EX	1341-6145



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 402X: 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 A₀ value calculation in bedpan washers



The set contains:

- 1 x EBI 12-T101 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 A₀ 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
- 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 402X **EBI 12 Data Logger Set for Pasteurization and Sterilization**
for temperature monitoring in tins



The set contains:

- 1 x EBI 12-T43X 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 4021	EBI 12-T430 set for pasteurization and sterilization	1250-4021
SL 4022	EBI 12-T431 set for pasteurization and sterilization	1250-4022
SL 4023	EBI 12-T432 set for pasteurization and sterilization	1250-4023
SL 4024	EBI 12-T433 set for pasteurization and sterilization	1250-4024

SL 412X EBI 12 Data Logger Set for Pasteurization for temperature monitoring in bottles and cans



The set contains:

- 1 x EBI 12-T46X Temperature data logger, needle length: 135 mm, 190 mm, 245 mm, 270 mm or 300 mm
- EBI FL-S Bottle Adapter
- EBI DA Can Adapter
- EBI IF 100 Interface
- Winlog.pro Software
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 4121	EBI 12-T461 Data logger set for pasteurization	1250-4121
SL 4122	EBI 12-T462 Data logger set for pasteurization	1250-4122
SL 4123	EBI 12-T463 Data logger set for pasteurization	1250-4123
SL 4124	EBI 12-T464 Data logger set for pasteurization	1250-4124
SL 4125	EBI 12-T465 Data logger set for pasteurization	1250-4125

SL 4211 EBI 12 Basic Temperature Monitoring Set Temperature monitoring system for different applications



The set contains:

- 1 x EBI 12-T101 Temperature data logger
- EBI IF 100 Interface
- Winlog.pro Software
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 4211	EBI 12 Basic temperature monitoring set	1250-4211

Data Logger Sets for Operation and Process Qualification

- EBI 11 Mini Data Logger Sets
SL 3301: Validation set for DAC Universal, small sterilizers and washer-disinfectors (see page 52)
- EBI 12 Precision Data Logger Sets
SL 2001: for washer-disinfector (see page 50)
SL 3001: for benchtop sterilizers (see page 51)
SL 3101: for large steam sterilizers (see page 51)

The sets can individually be expanded or compiled by 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 2001 Complete Validation Set for washer-disinfectors



For the validation of washer-disinfectors according to ISO 15883.

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

The set contains:

- 1 x EBI 12-T220 Temperature data logger
- 2 x EBI 12-T441 Temperature data loggers
- 1 x EBI 12-TP231 Temperature/pressure data logger
- EBI IF 200, 4-port Interface with USB connection and antenna
- Software Winlog.validation
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 2001	Validation set for washer-disinfectors	1250-2001

SL 3001 **Complete Validation Set** for benchtop steam sterilizers



For the validation of small steam sterilizers according to ISO 17665.

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

The set contains:

- 1 x EBI 12-TP453
Temperature/ pressure data
logger with AL 101 silicone
protection box
- EBI IF 200 4-port Interface
with USB connection and
antenna
- Software Winlog.validation
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 3001	Validation set for small steam sterilizers	1250-3001

SL 3101 **Complete Validation Set** with flexible wired probes for large steam sterilizers



For the validation of steam sterilizers according to ISO 17665.

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

The set contains:

- 5 x EBI 12-T471 Temperature
data loggers with AL 107 silicone
protection boxes
- 1 x EBI 12-TP453 Temperature/
pressure data logger with AL 101
silicone protection box
- EBI IF 200, 4-port Interface with
USB connection and antenna
- Software Winlog. validation
- 2 x AL 190 silicone cable strap sets
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 3101	Validation set for large steam sterilizers	1250-3101

SL 3111 Complete Validation Set with bendable metal probes for large steam sterilizers



For the validation of steam sterilizers according to ISO 17665.

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

The set contains:

- 5 x EBI 12-T441 Temperature data loggers
- 1 x EBI 12-TP 226 Temperature / pressure data logger with AL 101 silicone protection box
- EBI IF 200, 4-port Interface with USB connection and antenna
- Winlog. validation evaluation software
- Carrying case „SYSTAINER“



Type	Description	Part No.
SL 3111	Validation set for large steam sterilizers	1250-3111



Xylem | 'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) a leading global water technology company.

We're a global team unified in a common purpose: creating advanced technology solutions to the world's water challenges. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. Our products and services move, treat, analyze, monitor and return water to the environment, in public utility, industrial, residential and commercial building services settings. Xylem also provides a leading portfolio of smart metering, network technologies and advanced analytics solutions for water, electric and gas utilities. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise with a strong focus on developing comprehensive, sustainable solutions.

For more information on how Xylem can help you, go to www.xylem.com



Xylem Analytics Germany Sales
GmbH & Co. KG, ebro
Peringerstr. 10
85055 Ingolstadt
Germany

Phone +49 841 95478-0
Fax +49 841 95478-80
Internet: www.ebro.com
Email: ebro@xylem-inc.com

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