

EBI 10 High Precision Wireless Data Loggers

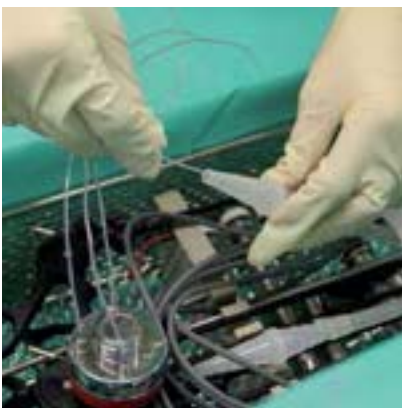
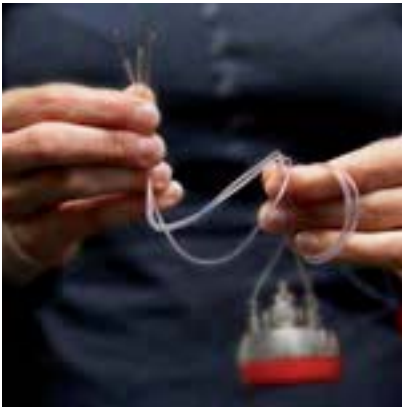
The Perfect Solution for Your Applications

To fit each of your specific processes, ebro offers a wide variety of EBI 10 temperature, pressure and humidity data loggers in many different configurations. For example you have the choice of internal sensors, rigid and bendable metal probes, fully flexible cable probes, Luer-lock or tube connection.

The user can follow the validation process in real time on his PC screen and can stop a faulty process immediately, if necessary, saving much time and effort during process monitoring or validation.

The wireless real time monitoring of hot processes up to +400 °C is suitable for many medical, pharmaceutical, laboratory and industrial applications:

- Wireless validation of processes in sterilizers, washer-disinfectors and washer-disinfectors for endoscopes
- F-value and A_0 -value calculation
- Process monitoring





EBI 10 Wireless Temperature Data Loggers

General technical specifications: valid for all EBI 10 temperature data loggers*

Operating temperature: logger	-85 °C ... +150 °C (-121 °F ... +302 °F)
Operating temperature: radio operation	-30 °C ... +150 °C (-22 °F ... +302 °F)
Operating temperature: EX application (ATEX)	-40 °C ... +85 °C
Temperature accuracy	±0.5 °C (-85 °C ... -40 °C) ±0.2 °C (-40 °C ... 0 °C) ±0.1 °C (0 °C ... +140 °C) ±0.2 °C (+140 °C ... +250 °C) ±0.5 °C (+250 °C ... +400 °C)
Temperature resolution	0.01 °C
Memory	Max. 100,000 measurement values (total)
Sensor: Temperature	Pt 1000
Measurement mode	<ul style="list-style-type: none"> • Endless measurement • Start / stop measurement • Measure upon start temperature • Measure until end of memory • Start immediately until end of memory
Sampling rate	250 msec ... 24 h
Data transmission	Wireless, 2,4 GHz/IEEE 802.15.4
Storage temperature	-20 °C ... +125 °C (-4 °F ... +257 °F)
Battery	Lithium button cell, 3.6 V, replaceable
Dimensions (Ø x H)	48 mm x 24 mm**
Weight	Approximately 70 g **
Housing material	Stainless steel (V4A) / PEEK
Protection class	IP 68

* Please find the exact technical data of each EBI 10 temperature data logger type on the next pages.

** Dimensions and weight just refer to the EBI 10 housing

EBI 10-T100 Temperature Data Logger

Internal sensor



Technical Data

Measurement range	-85 °C ... +150 °C (-121 °F ... +302 °F)
Data memory	100,000 measurement values

- 1 internal temperature sensor

Type	Description	Part No.
EBI 10-T100	Integrated temperature sensor	1340-6100

EBI 10-T21x Temperature Data Logger

Rigid metal probe



Technical Data

Measurement range	-85 °C ... +150 °C (-121 °F ... +302 °F)
Data memory	100,000 measurement values

- 1 external temperature sensor, radial, Ø 3 mm

Type	Description	Part No.
EBI 10-T210	L = 50 mm	1340-6102
EBI 10-T211	L = 75 mm	1340-6103

EBI 10-T23x Temperature Data Logger

Rigid metal probe



Technical Data

Measurement range	-85 °C ... +150 °C (-121 °F ... +302 °F)
Data memory	100,000 measurement values

- 1 external temperature sensor, axial, Ø 3 mm

Type	Description	Part No.
EBI 10-T230	L = 50 mm	1340-6106
EBI 10-T231	L = 75 mm	1340-6107
EBI 10-T232	L = 100 mm	1340-6108
EBI 10-T233	L = 150 mm	1340-6109

EBI 10-T22x Temperature Data Logger Bendable metal probe



Please find suitable thermal isolation boxes for use from +150 °C (+302 °F) on page 20.



Technical Data

Measurement range	-85 °C ... +400 °C (-121 °F ... +752 °F)
Data memory	100,000 measurement values

- 1 external temperature sensor, radial, bendable, Ø 1.5 mm

Type	Description	Part No.
EBI 10-T220	L = 250 mm	1340-6104
EBI 10-T221	L = 500 mm	1340-6105

EBI 10-T24x Temperature Data Logger Bendable metal probe



For a suitable silicone protection box, please see page 20.



Technical Data

Measurement range	-85 °C ... +400 °C (-121 °F ... +752 °F)
Data memory	100,000 measurement values

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

Type	Description	Part No.
EBI 10-T240	L = 250 mm	1340-6111
EBI 10-T241	L = 500 mm	1340-6112

EBI 10-T441 Temperature Data Logger Bendable metal probes



For a suitable silicone protection box, please see page 20.



Technical Data

Measurement range	-85 °C ... +400 °C (-121 °F ... +752 °F)
Data memory	2 x 50,000 measurement values

- 2 external temperature sensors, axial, bendable, Ø 1.5 mm

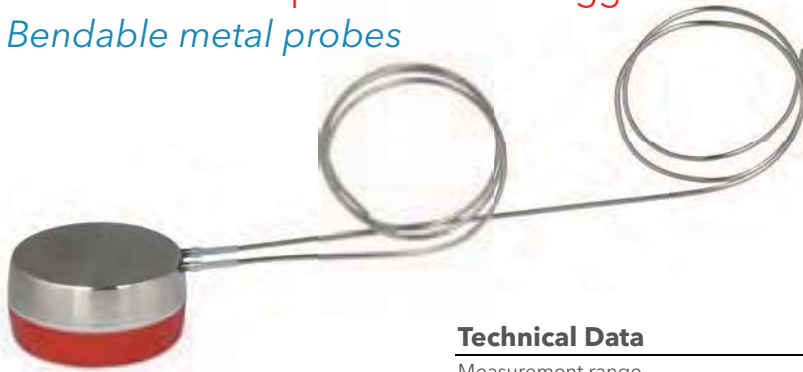
Type	Description	Part No.
EBI 10-T441	L = 500 mm	1340-6129

EBI 10-T421 Temperature Data Logger

Bendable metal probes



Please find suitable thermal isolation boxes for use from +150 °C (+302 °F) on page 19.



- 2 external temperature sensors, radial, bendable, Ø 1.5 mm

Technical Data

Measurement range	-85 °C ... +400 °C (-121 °F ... +752 °F)
Data memory	2 x 50,000 measurement values

Type	Description	Part No.
EBI 10-T421	L = 500 mm	1340-6130

EBI 10-T471 Temperature Data Logger

Flexible cable probes



- 2 external temperature sensors, axial, flexible, Ø 1.2 mm

Technical Data

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

Type	Description	Part No.
EBI 10-T471	L = 1200 mm	1340-6144

EBI 10-T490 Temperature Data Logger

Flexible cable probes



- 2 external temperature sensors, radial, flexible, Ø 1.2 mm

Technical Data

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

Type	Description	Part No.
EBI 10-T490	L = 600 mm	1340-6134

EBI 10-T671 Temperature Data Logger Flexible cable probes



- 4 external temperature sensors, axial, flexible, Ø 1.2 mm

Technical Data

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

Type	Description	Part No.
EBI 10-T671	L = 1200 mm	1340-6145

EBI 10-T690 Temperature Data Logger Flexible cable probes



- 4 external temperature sensors, radial, flexible, Ø 1.2 mm

Technical Data

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

Type	Description	Part No.
EBI 10-T690	L = 600 mm	1340-6135



EBI 10 Wireless Temperature / Pressure Data Loggers

General technical specifications: valid for all EBI 10 temperature / pressure data loggers

Operating temperature: radio operation	0 °C ... +150 °C (+32 °F ... +302 °F)
Operating temperature: EX application (ATEX)	0 °C ... +85 °C
Accuracy: Temperature	±0.1 °C (0 °C ... +140 °C) ±0.2 °C (+140 °C ... +150 °C)
Resolution: Temperature	0.01 °C
Accuracy: Pressure	±10 mbar (50 mbar ... 150 mbar) ±10 mbar (2050 mbar ... 2250 mbar) ±10 mbar (3000 mbar ... 3250 mbar) ±15 mbar (for the remaining measurement range)
Resolution: Pressure	1 mbar
Memory	Max. 100,000 measurements (total)
Sensor: Temperature	Pt 1000
Sensor: Pressure	Piezo resistive pressure sensor (temperature compensated)
Measurement mode	<ul style="list-style-type: none"> • Endless measurement • Start / stop measurement • Measure upon start temperature • Measure until end of memory • Start immediately until end of memory
Sampling rate	250 msec ... 24 h
Data transmission	Wireless, 2,4 GHz/IEEE 802.15.4
Storage temperature	0 °C ... +125 °C (+32 °F ... +257 °F)
Battery	Lithium button cell, 3.6 V, replaceable
Dimensions (Ø x H)	48 mm x 24 mm**
Weight	Approximately 70 g **
Housing material	Stainless steel (V4A) / PEEK
Protection class	IP 68 / NEMA 6P

* Please find the exact technical data of each EBI 10 temperature/pressure data logger type on the next pages.

** Dimensions and weight just refer to the EBI 10 housing

EBI 10-TP230 Temperature / Pressure Data Logger Rigid metal probe



- 1 external temperature sensor, axial, Ø 2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	2 x 33,400 measurement values

Type	Description	Part No.
EBI 10-TP230	L = 40 mm	1340-6154

EBI 10-TP221 Temperature/Pressure Data Logger

Bendable metal probe



For a suitable silicone protection box, please see page 20.

- 1 external temperature sensor, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	2 x 33,400 measurement values

Type	Description	Part No.
EBI 10-TP221	L = 500 mm	1340-6153

EBI 10-TP321 Temperature/Pressure Data Logger

Bendable metal probes



For a suitable silicone protection box, please see page 20.

- 2 external temperature sensors, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	3 x 25,000 measurement values

Type	Description	Part No.
EBI 10-TP321	L = 500 mm	1340-6161

EBI 10-TP322 Temperature/Pressure Data Logger

Bendable metal probes and Luer-Lock connection



- 2 external temperature sensors, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	3 x 25,000 measurement values

Type	Description	Part No.
EBI 10-TP322	L = 500 mm	1340-6164

EBI 10-TP421 Temperature/Pressure Data Logger

Bendable metal probes



For a suitable silicone protection box, please see page 20.

- 3 external temperature sensors, axial, bendable, Ø 1.5 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	4 x 20,000 measurement values

Type	Description	Part No.
EBI 10-TP421	L = 500 mm	1340-6162

EBI 10-TP450/452 Temperature/Pressure Data Logger

Flexible cable probes



- 3 external temperature sensors, axial, flexible, Ø 1.2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	4 x 20,000 measurement values

Type	Description	Part No.
EBI 10-TP450	L = 600 mm	1340-6142
EBI 10-TP452	L = 1200 mm	1340-6146

EBI 10-TP460 Temperature/Pressure Data Logger

Flexible cable probes



- 3 external temperature sensors, radial, flexible, Ø 1.2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	4 x 20,000 measurement values

Type	Description	Part No.
EBI 10-TP460	L = 600 mm	1340-6148

EBI 10-TP231 Temperature/Pressure Data Logger

Luer-Lock connection



- 1 external temperature sensor, axial, Ø 2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... +4000 mbar
Data memory	2 x 33,400 measurement values

Type	Description	Part No.
EBI 10-TP231	L = 40 mm	1340-6155

EBI 10-TP111 Temperature/Pressure Data Logger

Luer-Lock connection



- 1 internal temperature sensor
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	2 x 33,400 measurement values

Type	Description	Part No.
EBI 10-TP111	Luer-Lock connection	1340-6156

EBI 10-TP451/453 Temperature/Pressure Data Logger

Luer-Lock connection



- 3 external temperature sensors, axial, flexible, Ø 1.2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	4 x 20,000 measurement values

Type	Description	Part No.
EBI 10-TP451	L = 600 mm	1340-6143
EBI 10-TP453	L = 1200 mm	1340-6147

EBI 10-TP200 Temperature/Pressure Data Logger

Tube connection and M10x1 internal thread



- 1 external temperature sensor, axial, Ø 2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: temperature	0 °C ... +150 °C (+32 °F ... +302 °F)
Measurement range: pressure	1 mbar ... 4000 mbar
Data memory	2 x 33,400 measurement values

Type	Description	Part No.
EBI 10-TP200	Tube connection	1340-6152

EBI 10 Temperature/Pressure Data Logger for Low-temperature Sterilization Processes

EBI 10-TPX9X Precision Pressure Logger

High precision pressure measurement down to 0.1 mbar



EBI 10-TP190-EX

- 1 internal or 1 external temperature sensor, axial, Ø 2 mm
- 1 internal pressure sensor, piezo resistive

Technical Data

Measurement range: Pressure	0.1 to 1050 mbar
Measurement range: Temperature	0 °C ... +85 °C
Accuracy: Pressure	0.25 mbar (0.1 to 50 mbar) ±5 % of measured value (50 to 100mbar) 1 % FS (100 to 1050 mbar)
Accuracy: Temperature	±0.1 °C (0 °C to +85 °C)
Resolution: Pressure	0.1 mbar
Resolution: Temperature	0.01°C
Data memory	50,000 (TP190) or 33,400 (TP291) measurement values
Sampling rate	250 ms to 24 h
Measurement mode	<ul style="list-style-type: none"> • Endless measurement immediately • Measure immediately until end of memory • Start / stop measurement
Sensor	Pt 1000, piezoresistive pressure sensor
Interface	Wireless 2.4 GHz / IEEE 802.15.4
Operating temperatur	0 to + 85 °C
Battery	Lithium cell 3,6 V replaceable
Dimension (D x H)	46 x 35 mm
Housing material	Stainless steel (V4A), PEEK
Protection class	IP68/NEMA 6P

Type	Description	Part No.
EBI 10-TP190-EX	Internal	1340-6165-EX
EBI 10-TP291-EX	L = 40 mm	1340-6166-EX

EBI 10 Wireless Temperature / Humidity Data Logger

EBI 10-TH100 Temperature / Humidity Data Logger in standard atmospheres



Filter caps for the protection of the humidity probe available; see page 142.

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

Technical Data

Temperature measurement range	-40 °C ... +85 °C (-40 °F ... +185 °F)
Humidity measurement range	0 % rH... 100 % rH
Temperature accuracy	0.1 °C
Humidity accuracy	± 2 % rH, non-condensing at 25 °C (10 % rH ... 90 % rH)
Temperature resolution	0.01 °C
Humidity resolution	0.1 % rH
Data memory	100,000 measurements (50,000 per channels)
Measurement channels	1 external temperature channel (Pt 1000), 1 humidity channel (capacitive); combined sensor replaceable
Measurement mode	<ul style="list-style-type: none"> • Endless measurement • Start / stop measurement • Start immediately until end of memory
Storage temperature	-20 °C ... +70 °C (-4 °F ... +158 °F)
Battery	Lithium cell 3,6 V replaceable
Dimensions (l x w x h)	46 x 48 x 70 mm
Housing material	Stainless steel (V4A), PEEK
Protection class	IP 52

Type	Description	Part No.
EBI 10-TH100	Temperature/humidity data logger	1340-6171
AH 300	Stainless steel sintered filter for EBI 10-TH100	1340-5625
AL 175	Sensor EBI10-TH100	1341-6145

Accessories, Interfaces and Software for EBI 10

Please find complete validation sets from page 43.

Holding clamps to hold the flexible cable probes of the EBI 10 wireless data loggers. Available in the SL 3000 data logger set (see page 45) or on request.



Battery changing set AL 103

for EBI 10 and EBI 100
Consisting of 3 batteries, 3 O-rings with grease, cross slot screw driver, silicone grip and silicone protection box cover for battery exchange.

AL 104 Battery Set

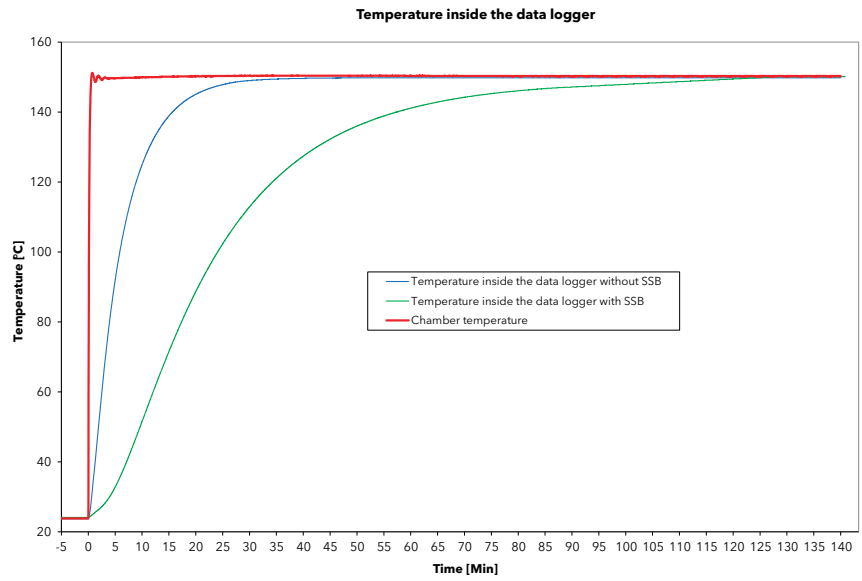
for EBI 10 and EBI 100
Consisting of 3 batteries and 4 O-rings with grease.



Silicone protection box AL 100
for e.g. EBI 10-T24x and EBI 10-T441

- Protects temperature logger against heat peaks
- Protects temperature logger against mechanical damage
- Extends the life of temperature data loggers

Ø 78mm, Height: 44mm



Silicone protection box AL 101
for e.g. EBI 10-TP221, EBI 10-TP321 and EBI 10-TP421

- Protects temperature / pressure logger against heat peaks
- Protects temperature / pressure logger against mechanical damage
- Extends the life of pressure/temperature data loggers

Ø 78mm, Height: 50mm



Silicone protection box AL 106
for e.g. EBI 10-T24x, EBI 10-T441 and EBI 10-T421, EBI 10 T22x

- Protects temperature logger against heat peaks
- Protects temperature / pressure logger against mechanical damage
- Extends the life of temperature data loggers

Ø 78mm, Height: 44mm

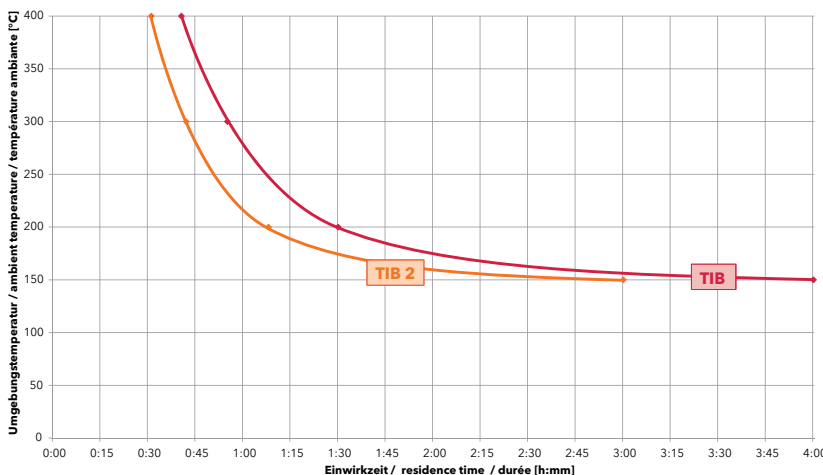


Silicone protection box AL 107
for e.g. EBI 10-T24x, EBI 10-T441, EBI 10-T670 and EBI 10-T671

- Protects temperature logger against heat peaks
- Protects temperature / pressure logger against mechanical damage
- Extends the life of temperature data loggers

Ø 78mm, Height: 44mm

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



Thermal isolation boxes EBI TIB and EBI TIB 2

- for EBI 10-T22x and EBI 10-T421
- Usable from +150 °C ... +400 °C
- Thermal protection of data loggers
- Stainless steel
- EBI TIB: 160 x 160 x 82 mm
- EBI TIB 2: 160 x 160 x 60 mm





Set SI 1100

for EBI 10, EBI 100 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 10 and EBI 100

- 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 10, EBI 100 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 10 and EBI 100

- 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 10, EBI 16 und EBI 100

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



Set SI 3200

for EBI 10 and EBI 100

- 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

Type	Description	Part No.
SI 1100	Set: EBI IF 100 interface and Winlog.pro software	1340-6061
SI 1200	Set: EBI IF 200 interface and Winlog.pro software	1340-6062
SI 2100	Set: EBI IF 100 interface and Winlog.med software	1340-6064
SI 2110	Set: EBI IF 200 interface and Winlog.med software	1340-6095
SI 2150	Set: EBI IF 150 interface and Winlog.med software	1340-6193
SI 3200	Set: EBI IF 200 interface and Winlog.validation software	1340-6068
AL 100	Silicone protection box for EBI 10 temperature data loggers	1340-6020
AL 101	Silicone protection box for EBI 10 pressure data loggers	1340-6021
AL 102	Silicone protection box for EBI 10 temp. data loggers	1340-6022
AL 103	Battery change set for EBI 10 and EBI 100	1100-0117
AL 104	Battery set for EBI 10 and EBI 100	1100-0118
AL 106	Silicone protection box for EBI 10 temp. data loggers	1340-6023
AL 107	Silicone protection box for EBI 10 temp. data loggers	1340-6024
AL 112	Antenna Steam sterilizer	1340-6007
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