

## 6 Disassembly and reassembly

### 6.1 Disassembly guidelines

Field service of the module frame is limited to replacing faulty circuit boards or mechanical parts only.

**WARNING** Attempting a field repair on a PCB or a factory sealed component or assembly could jeopardize the safe and effective operation of the module, and void the warranty.

NOTE: The BISx Digital Signal Processing Unit is not field repairable. Do not disassemble the BISx Unit.

NOTE: Only a qualified service technician should perform field replacement procedures.

NOTE: Perform the checkout procedure described in chapter [3. Maintenance and checkout](#) each time after you have opened the module casing.

#### 6.1.1 ESD precautions

All external connectors of the module are designed with protection from ESD damage. However, if the module requires service, exposed components and assemblies inside are susceptible to ESD damage. This includes human hands, non-ESD protected work stations, or improperly grounded test equipment. The following guidelines may not guarantee a 100% static-free workstation, but can greatly reduce the potential for failure of any electronic assemblies being serviced:

- Discharge any static charge you may have built up before handling semiconductors or assemblies containing semiconductors.
- A grounded, antistatic wristband or heel strap should be worn at all times while handling or repairing assemblies containing semiconductors.
- Use properly grounded test equipment.
- Use a static-free work surface while handling or working on assemblies containing semiconductors.
- Do not remove semiconductors or assemblies containing semiconductors from antistatic containers until absolutely necessary.
- Do not slide semiconductors or electrical/electronic assemblies across any surface.
- Do not touch semiconductor leads unless absolutely necessary.
- Semiconductors and electronic assemblies should be stored only in antistatic bags or boxes.
- Handle all PCB assemblies by their edges.
- Do not flex or twist a circuit board.

#### 6.1.2 Before disassembly

- Note the positions of any wires or cables. Mark them if necessary to ensure that they are re-assembled correctly.
- Save and set aside all hardware for reassembly.

### 6.1.3 Required tools



- torx screwdriver, T10
- flat blade screwdriver
- pincers
- antistatic wristband

## 6.2 Disassembly and reassembly procedure

Disassembling the E-BIS module (see the exploded view of the module in chapter [7. Service parts](#)):

### 6.2.1 Replacing the front cover

1. Detach the front cover of the module by releasing the snaps that hold the front cover to the front chassis unit by using a small flat blade screwdriver. There are 2 snaps on both sides of the module and 1 snap on the top.

### 6.2.2 Replacing the interface board

1. Remove the front cover.
2. Remove the two screws (T10) from the back of the module.
3. While pressing the release latch, pull the module casing slowly backwards and remove it from the main body.
4. Detach the interface board by removing the two screws located near the front chassis unit. Disconnect the membrane keyboard cable and pull out the front chassis unit.

### 6.2.3 Reassembling the module

Reverse the order of the disassembly steps.

Check that:

- screws are tightened properly
- cables are connected properly
- there are no loose objects inside the module

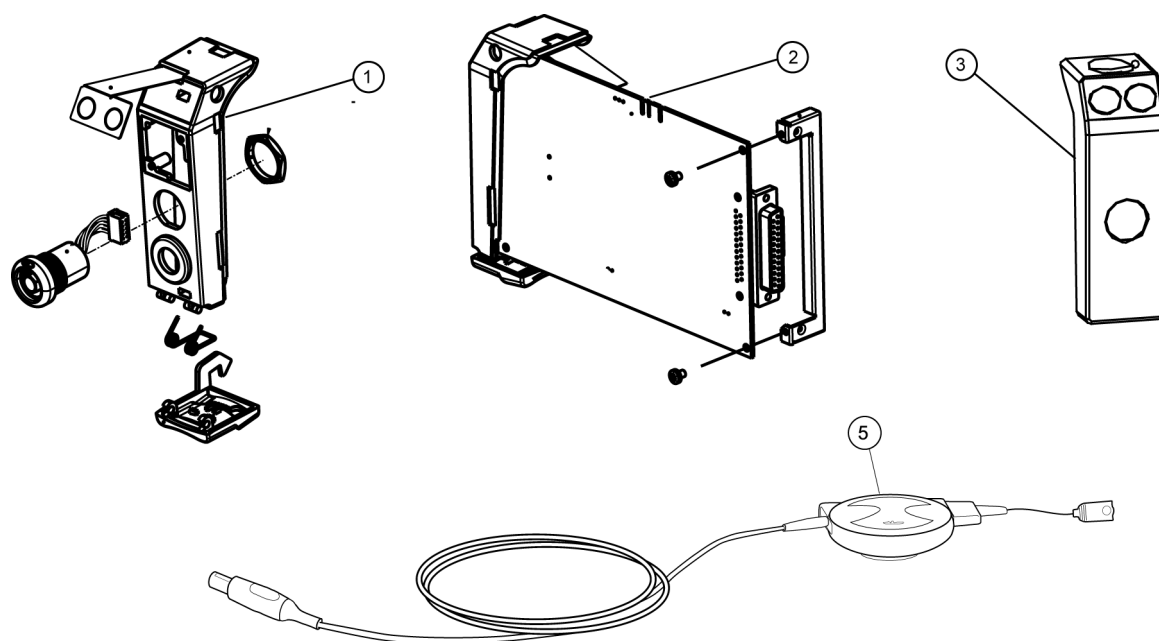
## 7 Service parts

### 7.1 Ordering parts

To order parts, contact GE Healthcare. Contact information is available at [www.gehealthcare.com](http://www.gehealthcare.com). Make sure you have all necessary information at hand.

NOTE: Perform the checkout procedure described in chapter [3. Maintenance and checkout](#) each time after you have opened the module casing.

## 7.2 BIS Module, E-BIS



Item	Description	Order No.
1	E-BIS-01, Front Chassis Kit, FRU <ul style="list-style-type: none"> <li>- Front Chassis</li> <li>- Membrane Keyboard</li> <li>- Connector Unit</li> <li>- Latch</li> <li>- Torsion Spring</li> </ul>	M1206390
2	E-BIS-01, Interface Board, FRU <ul style="list-style-type: none"> <li>- Interface Board</li> <li>- Metal Frame</li> <li>- 2 mounting screws</li> </ul>	M1206391
2	E-BIS-01-JA, Interface Board, FRU <ul style="list-style-type: none"> <li>- Interface Board (Japanese Version)</li> <li>- Metal Frame</li> <li>- 2 mounting screws</li> </ul>	M1233348

Item	Description	Order No.
3	E-BIS-01, Front Cover, FRU - Front Cover	M1203601-S
4	E-Modules, Hardware Kit, FRU - 2 mounting screws for Metal Frame - 2 mounting screws for Interface Board - 2 mounting screws for Module Casing - Latch - Torsion Spring - Membrane Keyboard	M1206392
5	BISx Digital Signal Processing Unit - Patient Interface Cable, PIC plus - Integral BISx unit cable	M1206545

# Maintenance check form

## BIS Module, E-BIS

Customer	Monitor	S/N
Service		S/N
Service engineer	Software	
Planned maintenance <input type="checkbox"/> Corrective maintenance <input type="checkbox"/>	Module type	S/N

Prior to testing verify all equipment is calibrated via "Cal" labeling and record Cal Due Dates

Measuring equipment / test gases used:				
Equipment / tool / gas:	Manufacturer:	Model/Type/Part No:	Serial Number/ID:	Cal Due Date:

**PASS = Test passed**

**N.A. = Test not applicable**

**FAIL = Test failed**

	PASS	N.A.	FAIL		PASS	N.A.	FAIL	
3.1. Visual inspections	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Result $\mu\text{A}$ IEC, EN / UL	Limits $\mu\text{A}$ IEC, EN / UL			
3.2. Electrical safety tests	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
Patient (source) leakage current test	S.F.C ground open				< 50 $\mu\text{A}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	S.F.C neutral open				$\leq$ 50 $\mu\text{A}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	N.C				$\leq$ 10 $\mu\text{A}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Patient (sink) leakage current test	using a test body				$\leq$ 10 $\mu\text{A}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	using a patient cable				$\leq$ 50 $\mu\text{A}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3. Functional check						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.2. BIS tests						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.3.3. Test completion						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Notes			

Used service parts			

Signature	Date
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