

# Endura AZ40

## Sensor assembly



Smart electronics PCB  
Kit reference: AZ400 769

**Measurement made easy**

Endura AZ40  
sensor assembly

## 1 Introduction

This publication details replacement procedures for the AZ40 Smart electronics PCB (AZ400-769) fitted to Endura AZ40 sensor assemblies. Before carrying out any procedures, read Section 3. These procedures must be carried out by a suitably-trained technician.

Kit contains:

- PCB assembly
- This publication

### Tools required

- Operating instruction [OI/AZ40-EN\\*](#)
- Medium flat-bladed screwdriver
- Small flat-bladed screwdriver
- Small crosshead screwdriver
- 10 in. adjustable spanner (wrench)
- Anti-seize compound (suitable for temperatures up to 200 °C [392 °F])

\*Operating instruction [OI/AZ40-EN](#) contains mandatory safety information and can be downloaded from the link (above) or by scanning this code:



## 2 For more information

Further information is available from:

[www.abb.com/analytical](http://www.abb.com/analytical)

or by scanning these codes:



Sales



Service

## 3 Health & Safety

### 3.1 Safety precautions

Be sure to read, understand and follow the instructions contained within this document before and during use of the equipment. Failure to do so could result in bodily harm or damage to the equipment.



- WARNING – Bodily injury** Installation, operation, maintenance and servicing must be performed:
- by suitably trained personnel only
  - in accordance with the information provided in this document
  - in accordance with relevant local regulations

### 3.2 Potential safety hazards

#### 3.2.1 Process conditions and requirements



**WARNING – Bodily injury**  
**Environmental conditions**



- High air / equipment / structure temperatures, poor air quality and adverse environmental conditions may be present when the process is running.
- It is recommended that the process is shut down before performing these procedures.
- The process must be cool enough to enable shutdown, disconnection and removal of the sensor in a safe manner and in accordance with relevant local regulations.
- Appropriate PPE, including mask and goggles must be worn when preparing the process for these procedures.

#### 3.2.2 Endura AZ40 sensor – fibrous material in probe assembly



**WARNING – Serious damage to health**

**Fibrous material**



- The sensor and probe assemblies (standard and high temperature versions) contain fibrous material that can be a health hazard if airborne.
- The material, predominantly – aluminosilicate refractory fibres, CAS 142844-00-6. Refractory ceramic fibres (RCF) are classified as:
  - Category 1B carcinogen under regulation (EC) No 1272/2008 – the classification, labelling and packaging regulations.
  - Category 2B carcinogen by inhalation by The International Agency for Research on Cancer (IARC).
- When removing the sensor cover and subsequent maintenance activities, exposure to the airborne fibres could occur. ABB have conducted air sampling assessments within the breathing zone of the operator and have identified that an exposure limit of 1 fibre / cubic centimetre is unlikely to occur.
- Exposure to any carcinogen must be kept as low as reasonably practicable.
- Appropriate PPE defined below, must be worn when working with probe assemblies (all installation, replacement, maintenance procedures):
  - A face fit tested, half mask conforming to EN140 (or equivalent) with a level 3 particulate filter conforming to EN 143 (or equivalent).
  - Disposable protective coveralls in accordance with Type 5 ISO 13982-1:2004 (or equivalent).
  - Goggles and gloves.

#### 3.2.3 Endura AZ40 sensor / probe – installation to pressurized process



**DANGER – Serious damage to health / risk to life**  
**Pressurized equipment – do not install / remove / the sensor / probe if the process is at positive pressure**

- Installation, operation, maintenance and servicing of pressurized equipment must be performed:
- by suitably trained personnel only
  - in accordance with the information provided in this document
  - in accordance with relevant local regulations
  - when process conditions are suitable to allow enough to enable installation / maintenance

### 3.2.4 Endura AZ40 sensor – high operational temperature on exposed parts



#### **WARNING – Bodily injury** High temperature on exposed surfaces – see Fig. 3.1

- During operation, exposed sensor surfaces can reach 200 °C (392 °F).
- Ensure suitable PPE is available and is worn before handling the sensor.
- Do not touch exposed surfaces until the sensor / probe is cool enough to handle with PPE.

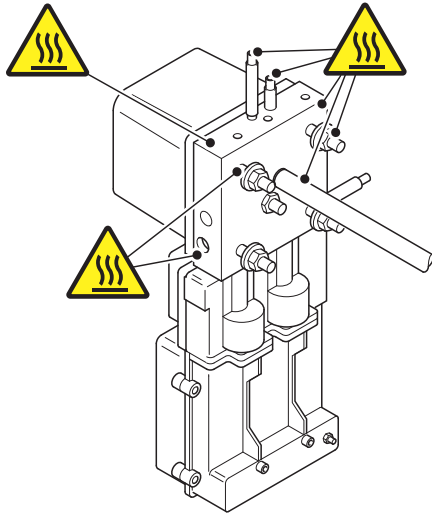


Fig. 3.1 High temperature points on exposed sensor surfaces during operation

### 3.2.5 Endura AZ40 sensor – weight



#### **WARNING – Bodily injury**

- The sensor weighs 9.0 kg (20 lb). When fitted with a probe / filter assembly, the combined sensor / probe weight is dependent on probe length / type plus filter option – refer to Operating instruction OI/AZ40-EN for weight details.
- The sensor / probe assembly must be mounted in accordance with the information supplied in Operating instruction OI/AZ40-EN.
- Suitable lifting equipment must be available when installing / removing the sensor / probe from the process.

### 3.2.6 Endura AZ40 analyzer – electrical



#### **WARNING – Bodily injury**

To ensure safe use when operating this equipment, the following points must be observed:

- up to 240 V AC may be present. Ensure the supply is isolated before removing the terminal cover
- normal safety precautions must be taken to avoid the possibility of an accident occurring when operating in conditions of high pressure and / or temperature

Safety advice concerning the use of the equipment described in this document or any relevant Material Safety Data Sheets (where applicable) can be obtained from the Company, together with servicing and spares information.

### 3.2.7 Product disposal / recycling



#### **PRODUCT RECYCLING / DISPOSAL**

Dispose / Recycle separately from general waste under the WEEE directive.



#### **PRODUCT RECYCLING / DISPOSAL (Europe only)**

Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August 2005. To conform to European local and national regulations (EU Directive 2002/96/EC), European electrical equipment users should now return old or end-of-life equipment to the manufacturer for disposal at no charge to the user.

ABB is committed to ensuring that the risk of any environmental damage or pollution caused by any of its products is minimized as far as possible.



#### **IMPORTANT NOTE**

For return for recycling, please contact the equipment manufacturer or supplier for instructions on how to return end-of-life equipment for proper disposal.

## 4 Isolating the transmitter

Referring to Fig. 4.1.

1. Isolate transmitter (A) from incoming mains power supplies (B).



### **DANGER – Serious damage to health / risk to life**

The transmitter must be isolated from mains power supplies before performing this procedure.

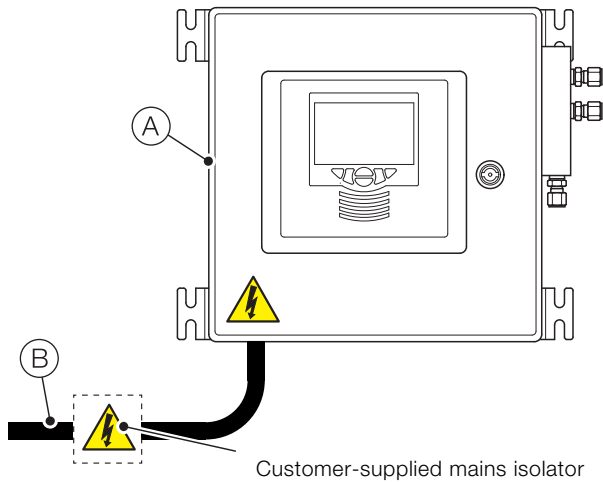


Fig. 4.1 Isolating the transmitter from incoming mains power supplies

## 5 Shutting down / removing the sensor assembly from the process



### **DANGER – Serious damage to health / risk to life**

Allow sufficient time for the sensor assembly to cool before performing these procedures.

### 5.1 Shutting the sensor assembly down at the process

Referring to Fig. 5.1.

1. Close the air supply valve (A) and shut down the test gas line (B) at the supply.

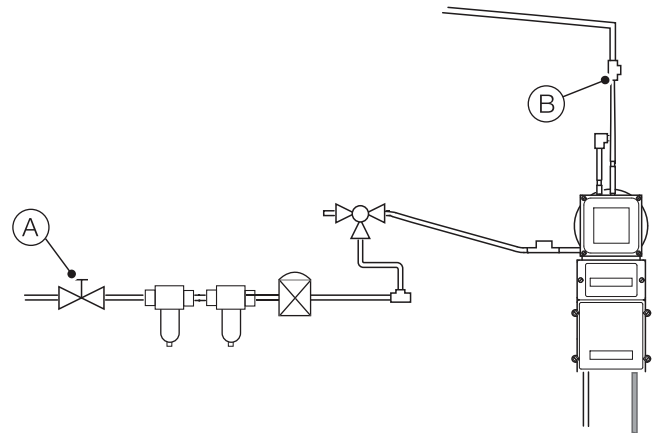


Fig. 5.1 Shutting down instrument air and test gas supplies

### 5.2 Disconnecting the sensor air and test gas supplies at the process

Referring to Fig. 5.2:

1. Disconnect air line (B) and test gas line (C) at sensor (D).

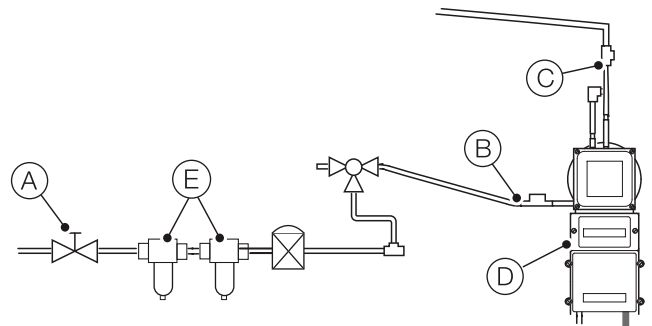


Fig. 5.2 Disconnecting instrument air and test gas supplies

### 5.3 Removing the Smart electronics PCB cover at the process



#### **DANGER – Serious damage to health / risk to life**

Allow sufficient time for the sensor assembly to cool before performing this procedure.



#### **DANGER – Serious damage to health / risk to life**

The transmitter must be isolated from mains power supplies before performing this procedure.

Referring to Fig. 5.3:

1. Unscrew 4 (captive) cover retaining screws (A) using a medium flat-bladed screwdriver and remove cover (B). (When re-fitting the cover, apply a light coating of an anti-seize compound (suitable for temperatures up to 200 °C [392 °F]) to the threaded ends of cover retaining screws (A).)



#### **IMPORTANT (NOTE)**

Check the PCB cover seal. If it needs replacing or has bonded to the mating surfaces of the sensor assembly, perform steps 2 and 3. If the seal can be re-used, perform step 4 onwards.

2. If seal (C) has bonded to the smart electronics enclosure body, remove it and clean the mating surface thoroughly.
3. Fit a new seal (D) into the recess of the new smart electronics cover.
4. Place cover (B) in a clean dry area ready for re-fitting.

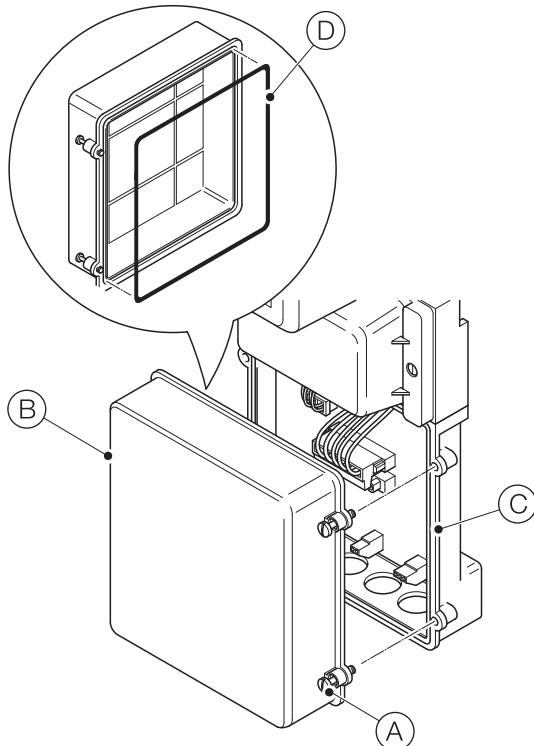


Fig. 5.3 Disconnecting instrument air and test gas supplies

### 5.4 Disconnecting Smart electronics PCB power and signals connections at the process

Referring to Fig. 5.4:

1. Disconnect mains cable (A) from terminal block (B).
2. Disconnect signal cable (C) from terminal block (D).
3. Disconnect thermocouple cables (E) from terminal block (F).
4. If optional blowback is fitted, disconnect cable (G) from terminal block (H).

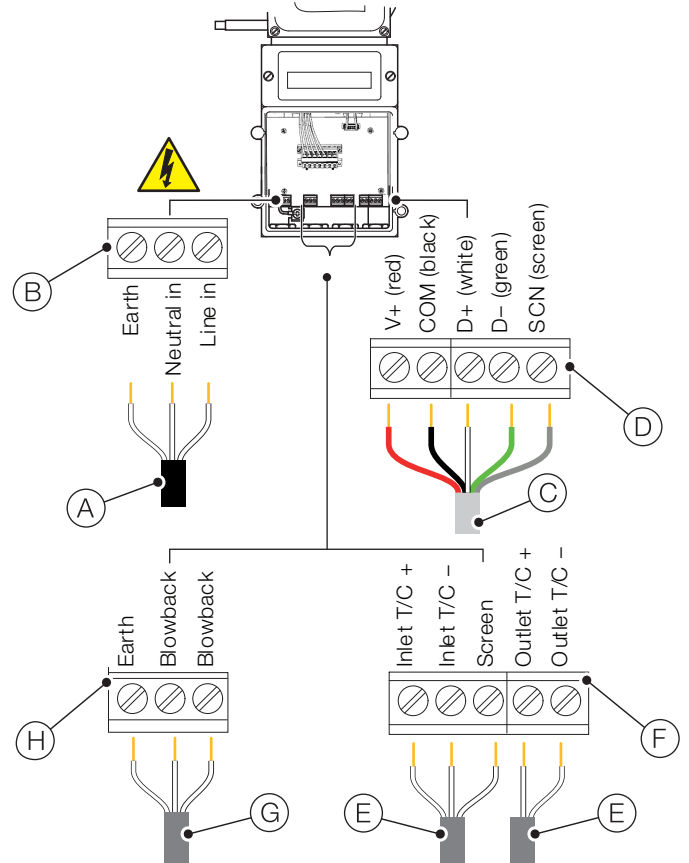


Fig. 5.4 Disconnecting power and signals connections at the process

## 5.5 Removing the sensor assembly from the process



### **DANGER – Serious damage to health / risk to life**

Allow sufficient time for the sensor assembly to cool before performing this procedure.

Referring to Fig. 5.5:

1. Use a 10 in. adjustable spanner (wrench) to remove 4 nuts, washers and lockwashers (A) securing sensor assembly (B) to mounting flange (C). Set items aside for re-use. (When re-installing the sensor assembly at the process, apply a light coating of an anti-seize compound (suitable for temperatures up to 200 °C [392 °F]) to the threaded ends of nuts (A).)
2. Carefully remove the sensor assembly and the attached probe (including filter assembly) from the process.
3. Temporarily cover process opening until the sensor assembly is ready to be re-installed.

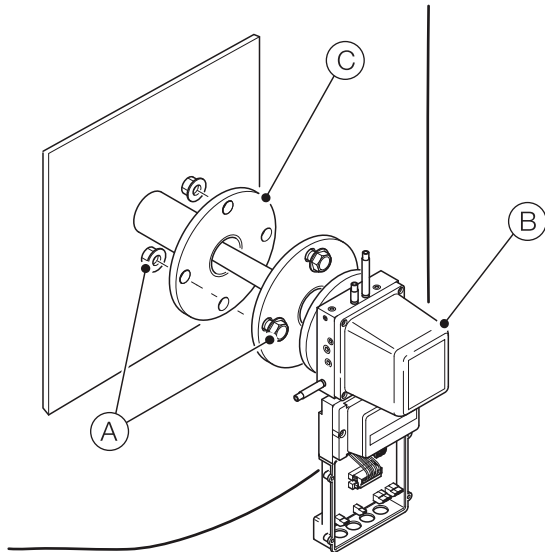


Fig. 5.5 Removing the sensor assembly from the process

## 6 Replacement procedure

Referring to Fig. 6.1:

1. To remove connector (A), use a small flat-bladed screwdriver to unscrew 2 x connector retaining screws (B) (one either side of the block).
2. To remove connector (C), hold open 2 x spring catches (D) (one either side of the block) and carefully unplug the connector.
3. Use a small crosshead screwdriver to unscrew 4 PCB retaining screws (E) and remove and discard PCB (F).



### PRODUCT RECYCLING / DISPOSAL

Dispose / Recycle separately from general waste under the WEEE directive.

Retain screws for re-use.

4. Locate the new PCB in the Smart electronics housing and use a small crosshead screwdriver to secure 4 PCB retaining screws (E) in place.
5. Carefully press connector (C) in place.
6. Carefully plug connector (A) in place and use a small flat-bladed screwdriver to secure 2 x connector retaining screws (B) (one either side of the block).
7. Re-install the sensor assembly at the process by reversing the removal procedure – refer to Section 5.5.
8. Re-connect the power and signals connections at the process by reversing the disconnection procedure – refer to Section 5.4, page 5.
9. Re-fit the Smart electronics PCB cover at the process by reversing the removal procedure – refer to Section 5.3, page 5.
10. Prepare the sensor assembly for operation by reversing the shutdown and isolation procedures – refer to Sections 5.1 and 5.2 (page 4).

11. Power up the transmitter by reversing the transmitter isolation procedure – refer to Sections 4, page 4.
12. Refer to Operating instruction OI/AZ40-EN to restore the analyzer to full operational condition.

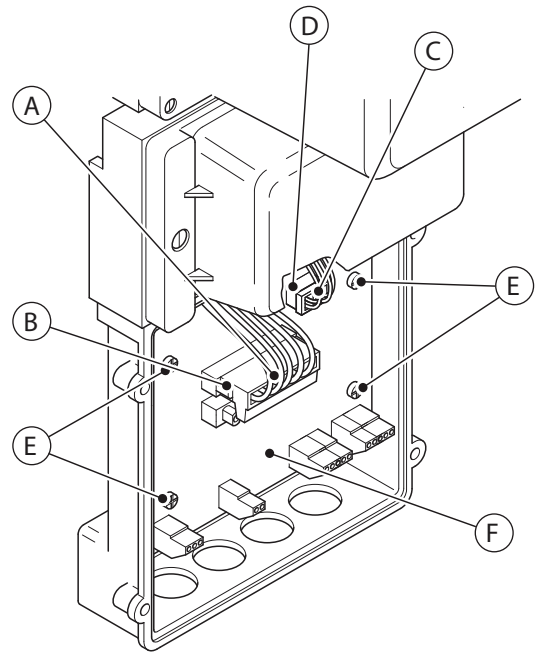


Fig. 6.1 Replacing the Smart electronics PCB

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