

# Installation Instructions

## **Electronics, display, and cover replacement**

J22 and JT33 TDLAS gas analyzers





## Table of Contents

<b>1 About this document.....</b>	<b>4</b>		
1.1 Document function .....	4		
1.2 Symbols .....	4		
1.3 Documentation .....	5		
1.4 U.S. export compliance .....	6		
<b>2 Basic safety instructions.....</b>	<b>7</b>		
2.1 Requirements for personnel .....	7		
2.2 Intended use .....	7		
2.3 Product safety.....	8		
<b>3 Overview of spare parts sets .....</b>	<b>9</b>		
3.1 Controller spare parts .....	9		
3.2 Product identification .....	10		
<b>4 Replacing cover components.....</b>	<b>11</b>		
4.1 Replacing the window, electronics cover, and cover O-ring .....	11		
<b>5 Replacing electronic components .....</b>	<b>12</b>		
5.1 Opening the electronics compartment, removing the module carrier and opening the module cartridge .....	13		
		5.2 Replacing the power supply module .....	13
		5.3 Replacing I/O modules 2 and 3 .....	14
		5.4 User configurable input/output .....	14
		5.5 Replacing the main electronics module I/O 1....	15
		5.6 Replacing the micro SD Card .....	15
		5.7 Replacing the module cartridge and interconnection circuit board .....	16
		5.8 Input and output variants .....	17
		<b>6 Replacing the display, connection terminals, and T-DAT memory .....</b>	<b>18</b>
		6.1 Replacing the display.....	19
		6.2 Replacing connection terminals.....	20
		6.3 Replacing T-DAT memory.....	20
		<b>7 Repair .....</b>	<b>21</b>
		7.1 Spare parts.....	21
		7.2 Endress+Hauser Service.....	21
		7.3 Return .....	21
		7.4 Disposal.....	21



# 1 About this document

## 1.1 Document function





This document outlines replacement instructions for electronic and display components of the J22 and JT33 TDLAS gas analyzers.

## 1.2 Symbols





### 1.2.1 Warnings





Structure of Information	Meaning
 <b>WARNING</b> <b>Causes (/consequences)</b> Consequences of noncompliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
 <b>CAUTION</b> <b>Causes (/consequences)</b> Consequences of noncompliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
<b>NOTICE</b> <b>Cause/situation</b> Consequences of noncompliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

### 1.2.2 Safety symbols

Symbol	Meaning
	PROTECTIVE EARTH GROUND - Symbol indicates the connection point of the ground wire from the main power source.
	Hazardous voltage and risk of electric shock.
	INVISIBLE LASER RADIATION - Avoid exposure to the beam. Class 3R Radiation Product. Refer servicing to manufacturer-qualified personnel.
	The Ex mark signals to Authorities Having Jurisdiction and end-users in Europe that the product complies with the essential ATEX Directive for explosion protection.

### 1.2.3 Communication-specific symbols

Symbol	Meaning
	<b>Permitted:</b> Procedures, processes or actions that are permitted.
	<b>Forbidden:</b> Procedures, processes or actions that are forbidden.
	<b>Tip:</b> Indicates additional information.
	Reference to documentation

Symbol	Meaning
	Reference to page
	Reference to graphic
	Notice or individual step to be observed
1., 2., 3. ...	Series of steps
	Result of a step

### 1.3 Documentation

All documentation is available:

- On the Endress+Hauser mobile app: [www.endress.com/supporting-tools](http://www.endress.com/supporting-tools)
- In the Downloads area of the Endress+Hauser website: [www.endress.com/downloads](http://www.endress.com/downloads)

This document is an integral part of the document package, which includes:

Part number	Document type	Description
GP01198C	Description of device parameters	Reference for parameters, providing a detailed explanation of each individual parameter of the operating menu
BA02152C	Operating Instructions	A complete overview of the operations required to install, commission and maintain the J22 TDLAS gas analyzer.
BA02297C	Operating Instructions	A complete overview of the operations required to install, commission and maintain the JT33 TDLAS gas analyzer.
KA01655C	Brief Operating Instructions	Short instructions for standard installation and commissioning of the JT33 TDLAS gas analyzer.
SD03286C	Special Documentation	Description, guidelines, and procedure for validation of TDLAS gas analyzers.
EA01501C	Installation Instructions	Instructions for replacing measurement components for the J22 TDLAS gas analyzer.
EA01426C	Installation Instructions	Installation instructions for the J22 and JT33 TDLAS gas analyzer firmware upgrade.
XA02708C	Safety Instructions	Requirements for installing or operating the J22 related to personnel or equipment safety.
XA03086C	Safety Instructions	Requirements for installing or operating the J22 TDLAS gas analyzer related to personnel or equipment safety for INMETRO (Brazil) certification.
XA03087C	Safety Instructions	Requirements for installing or operating the J22 TDLAS gas analyzer related to personnel or equipment safety for CML (Japan) certification.
XA03090C	Safety Instructions	Requirements for installing or operating the J22 TDLAS gas analyzer related to personnel or equipment safety for KC: ATEX/IECEx Zone 1 certification.
XA03211C	Safety Instructions	Requirements for installing or operating the J22 TDLAS gas analyzer related to personnel or equipment safety for PESO: ATEX/IECEx Zone 1 certification (for India).
XA03137C	Safety Instructions	Requirements for installing or operating the JT33 related to personnel or equipment safety.
TI01607C	Technical Information	<b>Planning aid for your device.</b> The document contains all the technical data on the J22 TDLAS gas analyzer.

Part number	Document type	Description
TI01722C	Technical Information	<b>Planning aid for your device.</b> The document contains all the technical data on the JT33 TDLAS gas analyzer.

## 1.4 U.S. export compliance

The policy of Endress+Hauser is in strict compliance with U.S. export control laws as detailed on the website of the [Bureau of Industry and Security](#) at the U.S. Department of Commerce.

## 2 Basic safety instructions

### 2.1 Requirements for personnel

The following requirements must be met regarding specialized technical staff for the mounting, electrical installation, commissioning, maintenance and repair of the measuring devices:

- Specialized technical staff must be trained in instrument safety.
- They must be familiar with the individual operating conditions of the devices.
- In the case of Ex-certified measuring devices, they must also be trained in explosion protection.

Authorization to carry out repairs depends on the measuring device’s approval type. The table below shows the authorized group of people in each case.

**i** Whoever carries out repairs carries full responsibility to ensure that work is performed safely and to the required quality standard. They must also guarantee the safety of the device following repair.

Measuring device approval	Personnel authorized to perform repairs
Without approval	1, 2, 3
With approval (i.e. IECEx)	1, 2, 3
For custody transfer	4

Personnel qualifications referred to in the above table:

- 1 = Qualified specialist on customer side
- 2 = Service technician authorized by Endress+Hauser
- 3 = Endress+Hauser (return measuring device to manufacturer)
- 4 = Check with local approval center if installation/alteration must be performed under supervision

### 2.2 Intended use

- A defective unit can only be replaced with a functioning unit of the same type.
- Substitution of one spare part for another similar spare part (example DC power supply for AC power supply) will void certification of the analyzer.
- Use only original parts designed by Endress+Hauser.

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1. [www.endress.com/deviceviewer](http://www.endress.com/deviceviewer)
2. Enter serial number (ser. no.), search for product data and click Spare Parts.
3. All spare parts for the measuring device are displayed.
4. Determine the order number of the spare parts kit.

**i** The spare parts kit may be used only if the order number of the spare parts kit corresponds to an order number on the spare parts list.

## 2.3 Product safety

The spare part sets and Installation Instructions are used to replace a faulty unit with a functioning unit of the same type. The Operating Instructions for the device must be followed. Modifications to the measuring device are not permitted.

### WARNING

**Comply with national regulations governing mounting, electrical installation, commissioning, maintenance, and repair procedures.**

- ▶ For measuring devices intended for use in hazardous locations, observe the guidelines in the Ex documentation (XA Safety Instructions).
- ▶ In the case of measuring devices in safety-related applications in accordance with IEC 61508 or IEC 61511, commission in accordance with the Operating Instructions after repair.
- ▶ Document the repair procedure. In the case of devices in custody transfer, the custody transfer status no longer applies once the seal has been removed.

All repairs must adhere to the following requirements:

- Replace defective seals only with original seals from Endress+Hauser.
- If threads are damaged or defective, the measuring device must be repaired.
- Threads (e.g. of the electronics compartment cover and connection compartment cover) must be lubricated if an abrasion-proof dry lubricant is not available. Use acid-free, non-hardening lubricant.

### NOTICE

- ▶ For the Service Interface, observe the following safety measures:
  - Do not connect in explosive atmospheres.
  - Only connect to Endress+Hauser service devices.

If spacing is reduced or the dielectric strength of the measuring device cannot be guaranteed during repair work, perform a test on completion of the work (e.g. high-voltage test in accordance with the manufacturer's instructions).



### 3 Overview of spare parts sets

This document provides installation instructions for the following spare parts sets. Before performing repairs, ensure the following:

- Check whether the spare part matches the labeling on the measuring device as described on the cover page.
- Turn the measuring device off before removing internal covers.
- Only open the housing for a brief period. Avoid the penetration of foreign bodies, moisture or contaminants.
- Refer to the instructions for transporting and returning the device, as outlined in the Operating Instructions.

#### 3.1 Controller spare parts

- i** ▪ The order number of the spare part set (on the product package label) can differ from the production number (labeled directly on the spare part).
- You can locate the spare parts by entering the order code, product root, or serial number into the spare parts finder tool under product tools at Endress.com.
- Always keep the installation instructions together with the packaging.

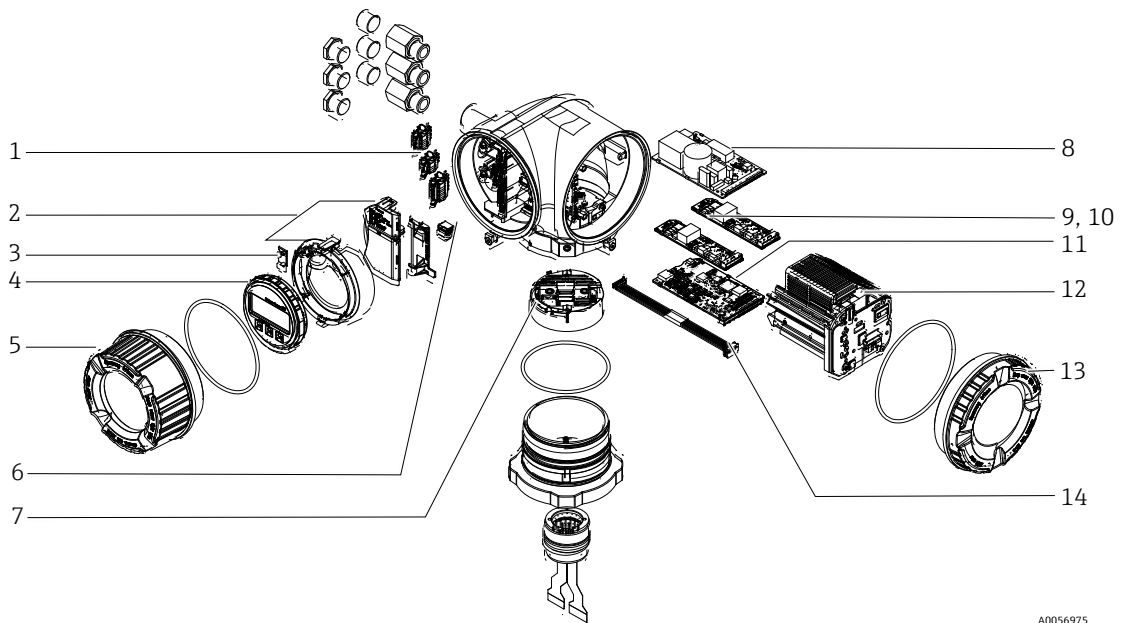


Figure 1: Controller spare parts

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#	Endress+Hauser material number	Description	2-year quantity
1	70188834	Kit, Connection Terminal	
2	70188831	Kit, Protective Cover	
3	70188836	Kit, Memory, Micro SD Card	
4	70188832	Kit, Display Module	
5	70188828	Kit, Cover with Glass, Aluminum	1
6	70188835	Kit, Memory, T-DAT	
7	70188818	Kit, Sensor Electronics 01	
8	70188837	Kit, Power Supply, 100 to 230 VAC	
8	70188838	Kit, Power Supply, 24 VDC	
9	70188839	Kit, I/O Module, Configurable I/O	
10	70188840	Kit, I/O Module, Relay output	
11	70188841	Kit, I/O Module, Slot 1, RS485	







#	Endress+Hauser material number	Description	2-year quantity
11	70206730	Kit, I/O Module, Slot 1, RJ45	
12	70188833	Kit, Module Cartridge	
13	70188829	Kit, Cover, Electronics, Aluminum	
14	70188819	Kit, Cable, Controller Sensor	1

## 3.2 Product identification

### 3.2.1 Manufacturer address

Endress+Hauser  
 11027 Arrow Route  
 Rancho Cucamonga, CA 91730  
 USA  
[www.endress.com](http://www.endress.com)

### 3.2.2 Symbols on measuring device

Symbol	Description
	The Laser Radiation symbol is used to alert the user to the danger of exposure to hazardous visible laser radiation when using the system.
	The High Voltage symbol that alerts people to the presence of electric potential large enough to cause injury or damage. In certain industries, high voltage refers to voltage above a certain threshold. Equipment and conductors that carry high voltage warrant special safety requirements and procedures.
	The CSA certification mark indicates that the product was tested against and met the applicable North American standards requirements.
	The ETL Listed Mark provides proof of product compliance with North American safety standards. Authorities Having Jurisdiction (AHJ) and code officials across the US and Canada accept the ETL Listed Mark as proof of product compliance to published industry standards.
	The WEEE symbol indicates that the product should not be discarded as unsorted waste but must be sent to separate collection facilities for recovery and recycling.
	The CE Marking indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area (EEA).

## 4 Replacing cover components

The electronic components are accessed through the electronics compartment in the aluminum or stainless steel transmitter, as shown below.

**⚠ WARNING**

**The measuring device is energized! Risk of fatal injury from electric shock.**

- ▶ Open the measuring device only when the device is de-energized.

**⚠ CAUTION**

**Hot surfaces! Risk of injury!**

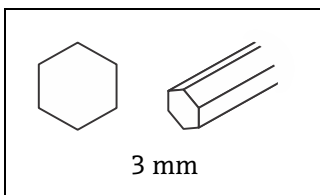
- ▶ Before commencing work: allow the system and measuring device to cool down to a touchable temperature.
- ▶ Before removing the device: set the process to a safe state and purge the pipe of dangerous process substances.
- ▶ After removing the electronics compartment cover: risk of electrical shock due to missing touch protection!

**NOTICE**

**Risk of damaging the electronic components!**

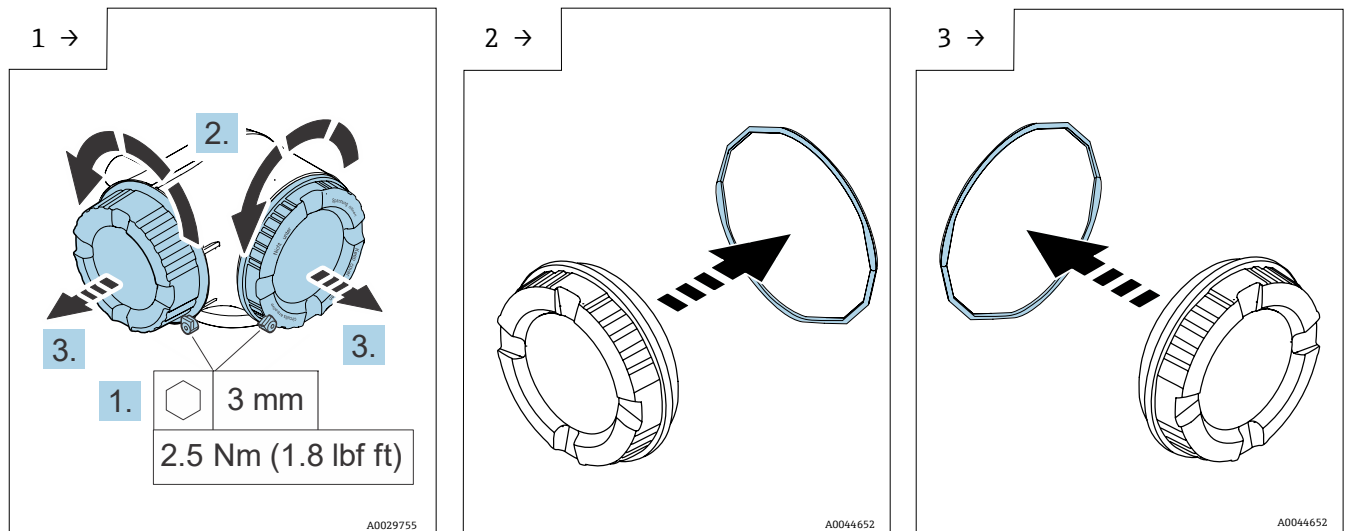
- ▶ Ensure you have a working environment protected from electrostatic discharge.

**Tools list**



### 4.1 Replacing the window, electronics cover, and cover O-ring

Ensure the threads and O-ring are lightly coated with grease compatible with elastomer materials.



#### 4.1.1 Reassembling the seal and cover

Reassembly is carried out in reverse order.

## 5 Replacing electronic components

The electronic components are accessed through the electronics compartment in the aluminum or stainless steel transmitter, as shown below.

### WARNING

**The measuring device is energized! Risk of fatal injury from electric shock.**

- ▶ Open the measuring device only when the device is de-energized.

### CAUTION

**Hot surfaces! Risk of injury!**

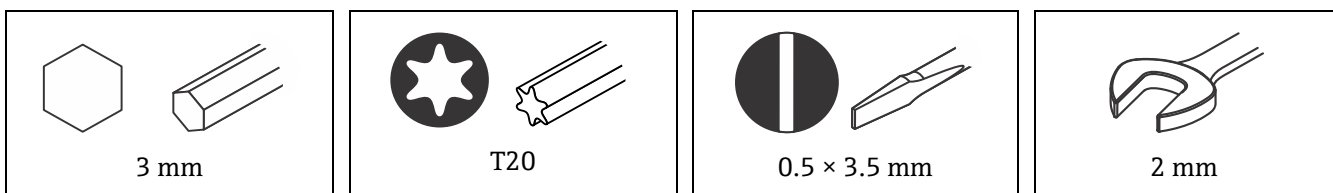
- ▶ Before commencing work: allow the system and measuring device to cool down to a touchable temperature.
- ▶ Before removing the device: set the process to a safe state and purge the pipe of dangerous process substances.
- ▶ After removing the electronics compartment cover: risk of electrical shock due to missing touch protection!

### NOTICE

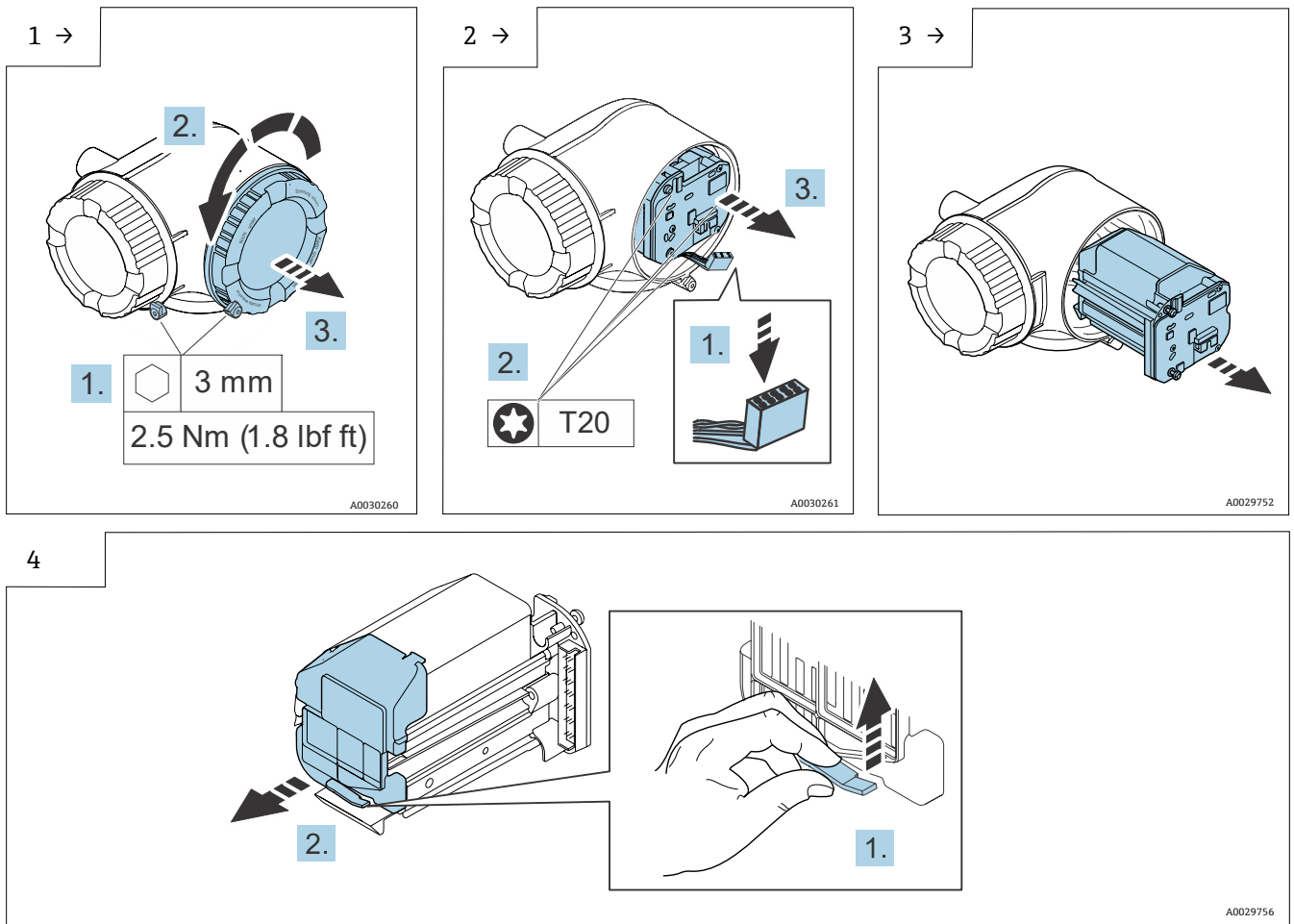
**Risk of damaging the electronic components!**

- ▶ Ensure you have a working environment protected from electrostatic discharge.

### Tools list



## 5.1 Opening the electronics compartment, removing the module carrier and opening the module cartridge

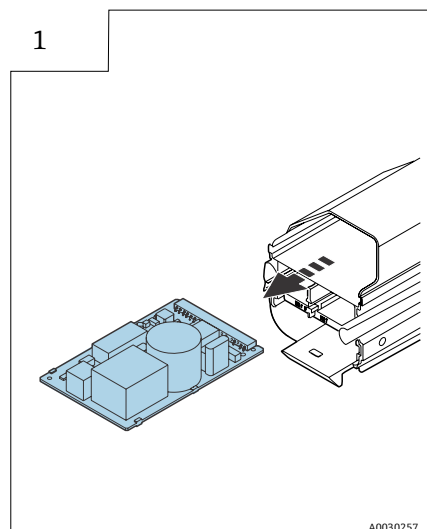


### 5.1.1 Reassembling the module carrier

Reassembly is carried out in reverse order.

## 5.2 Replacing the power supply module

Proceed as described in Section 5.1 and illustrated in the diagram below.

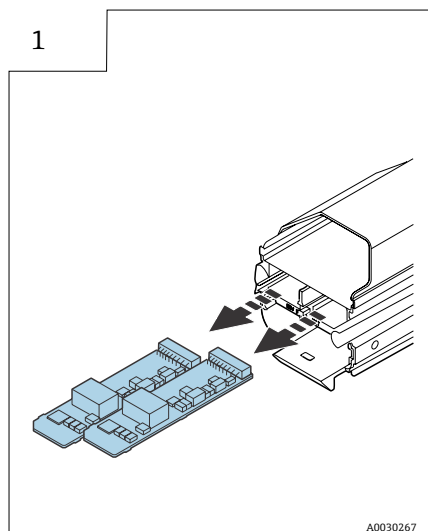


### 5.2.1 Reassembly of the power supply module

Reassembly is carried out in reverse order.


## 5.3 Replacing I/O modules 2 and 3

Proceed as described in Section 5.1 and illustrated in the diagram below.



### 5.3.1 Reassembly of the I/O modules 2, 3


Reassembly is carried out in reverse order.

-  An overview of the I/O module versions and the relevant slots is provided in the table in Section 5.8.
- The I/O modules must be inserted into the same slots.

## 5.4 User configurable input/output

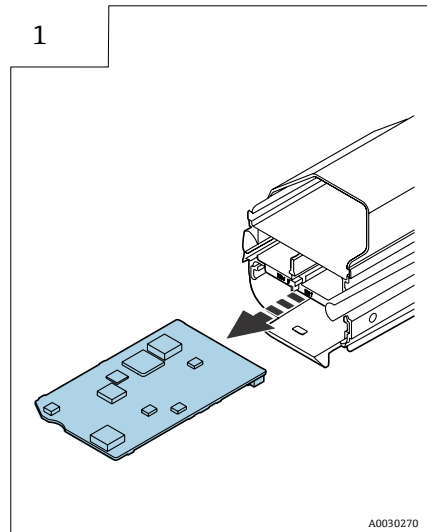
One input or output is user-configurable (configurable I/O) during device commissioning. The following inputs and outputs are available for assignment through the display or web server:

- Choice of current output: 4 to 20 mA (active), 0/4 to 20 mA (passive)
- Switch output
- Choice of current input: 4 to 20 mA (active), 0/4 to 20 mA (passive)
- Status input

-  For detailed information on the output and input versions, see *Communications* in the Technical Information for the analyzer.

## 5.5 Replacing the main electronics module I/O 1

Proceed as described in Section 5.1 and illustrated in the diagram below.

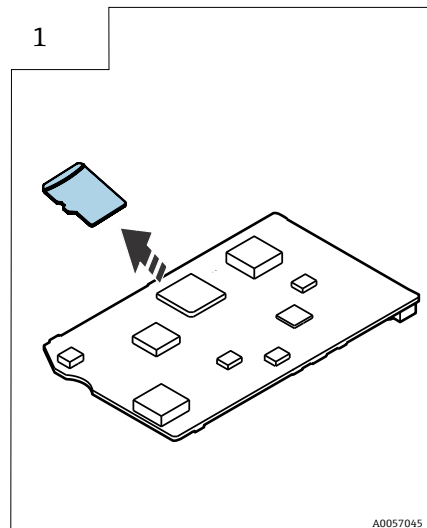


### 5.5.1 Reassembling main electronics module I/O 1

Reassembly is carried out in reverse order.

## 5.6 Replacing the micro SD Card

Proceed as described in Section 5.1 and 5.5 to remove the main electronics module I/O 1. The micro SD card is found on bottom of module I/O 1.

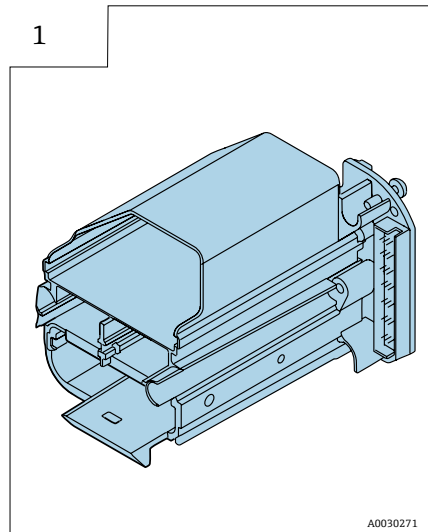


### 5.6.1 Reassembling of the micro SD Card

Reassembly is carried out in reverse order.

## 5.7 Replacing the module cartridge and interconnection circuit board

Proceed as described in Sections 5.1, 5.2, 5.3, 5.5, and as illustrated in the diagram below.



**i** The I/O modules must be inserted into the same slots.

### 5.7.1 Reassembling the module cartridge and interconnection circuit board

Reassembly is carried out in reverse order.



## 5.8 Input and output variants

Depending on the order code option selected for input/output 1, 2 or 3, different options are available. Only one option can be selected for each input/output 1 to 3. Use the tables below to understand the current build of your analyzer.

Output / Input 1 (J22 Feature 090, JT33 Feature 120)	Possible Options
Modbus RTU over RS485 (2-wire)	1
Modbus TCP over Ethernet (RJ45)	2

Output / Input 2 (J22 Feature 100, JT33 Feature 130)	Possible Options
None	N
Configurable I/O <sup>1</sup>	1
Relay output	2

Output / Input 3 (J22 Feature 110, JT33 Feature 140)	Possible Options
None	N
Configurable I/O <sup>1</sup>	1
Relay output	2

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<sup>1</sup> Configurable I/O can be configured by customer for 4-20mA input, output (active or passive), or digital status/switch output.

## 6 Replacing the display, connection terminals, and T-DAT memory

The display, connection terminals, and T-DAT memory are accessed through the display and wiring compartment in the aluminum or stainless steel transmitter, as shown below.

### WARNING

**The measuring device is energized! Risk of fatal injury from electric shock.**

- ▶ Open the measuring device only when the device is de-energized.

### CAUTION

**Hot surfaces! Risk of injury!**

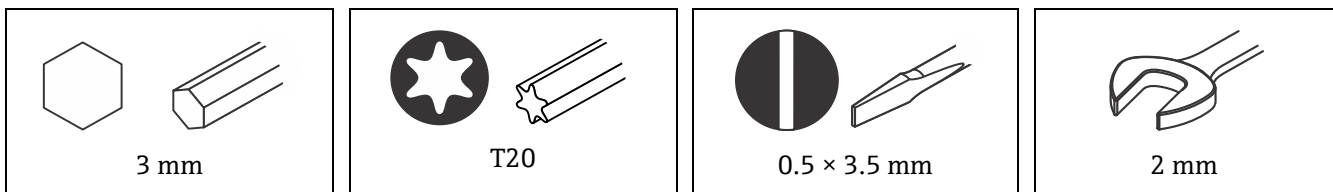
- ▶ Before commencing work: allow the system and measuring device to cool down to a touchable temperature.
- ▶ Before removing the device: set the process to a safe state and purge the pipe of dangerous process substances.
- ▶ After removing the electronics compartment cover: risk of electrical shock due to missing touch protection!

### NOTICE

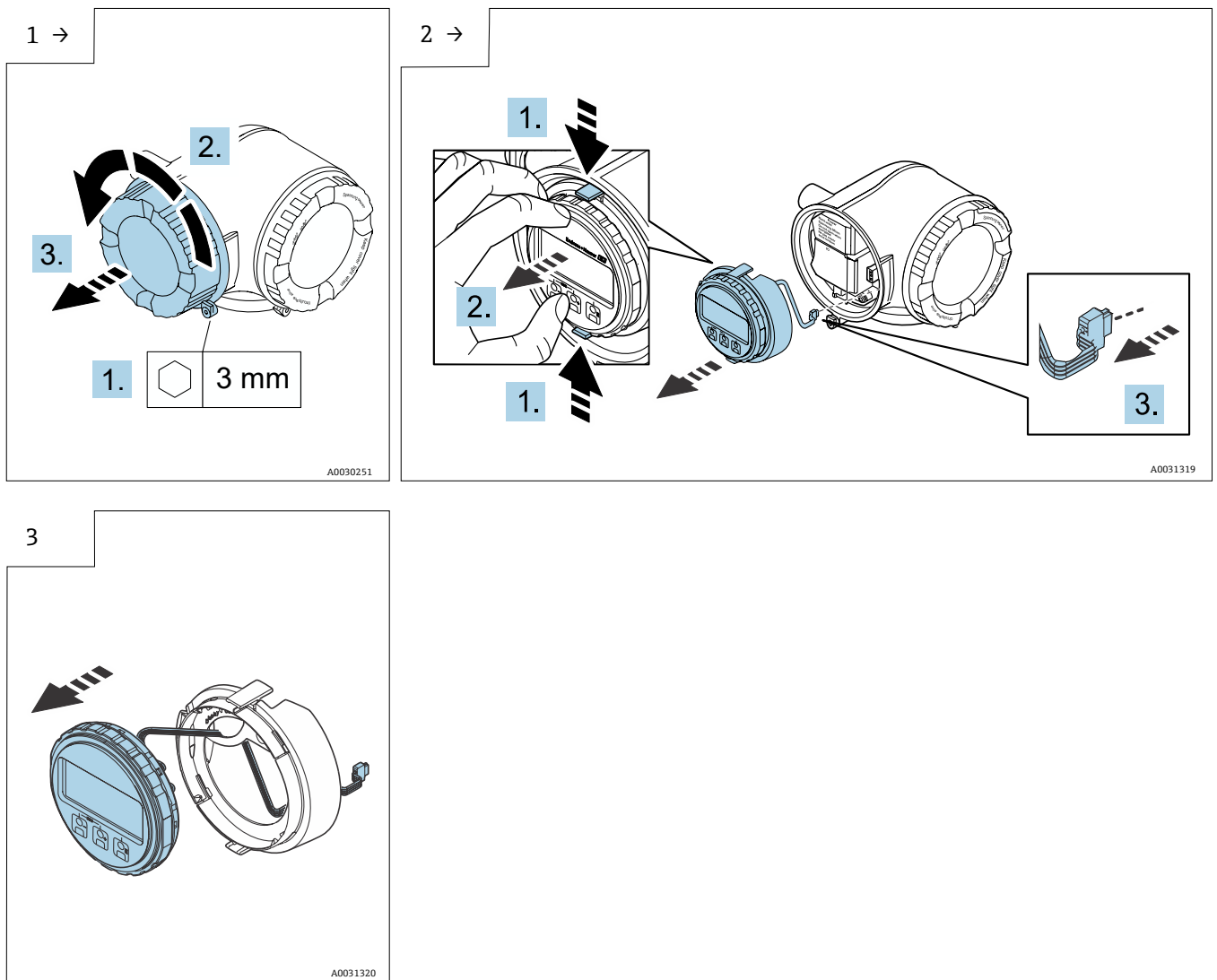
**Risk of damaging the electronic components!**

- ▶ Ensure you have a working environment protected from electrostatic discharge.

### Tools list



## 6.1 Replacing the display

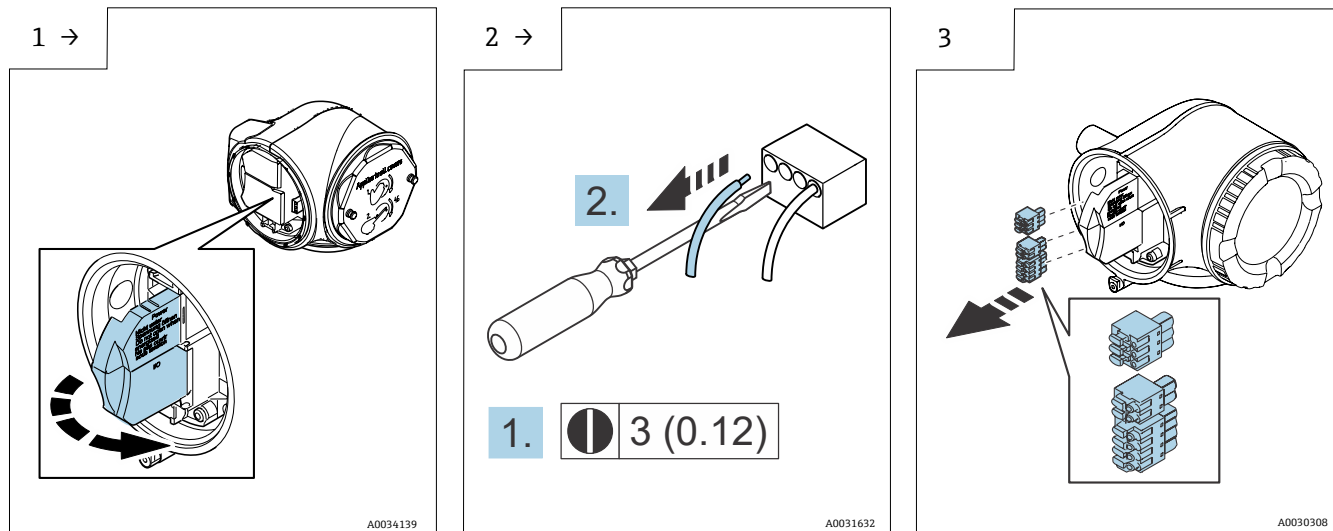


### 6.1.1 Reassembling the display

Reassembly is carried out in reverse order.

## 6.2 Replacing connection terminals

Proceed as described in Section 6.1 and as illustrated in the diagrams below.

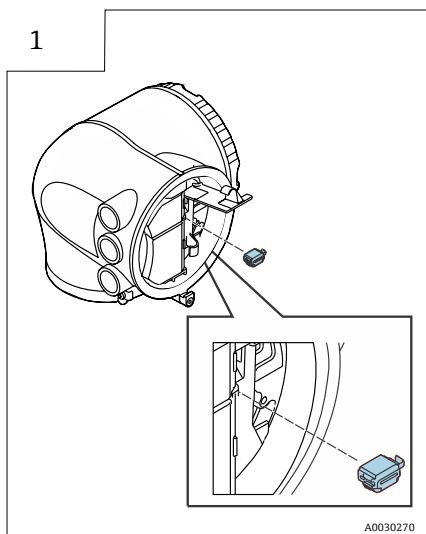


### 6.2.1 Reassembling the transmitter housing

Reassembly is carried out in reverse order.

## 6.3 Replacing T-DAT memory

Proceed as described in Steps 1 and 2 of Section 6.2 to remove the window cover and the display.



### 6.3.1 Reassembling T-DAT memory

Reassembly is carried out in reverse order.

## 7 Repair

Any repairs carried out by the customer or on behalf of the customer must be recorded in a site dossier and kept available for inspectors.

### 7.1 Spare parts

All spare parts for the analyzer, along with their order codes, are listed on the Endress+Hauser website: [www.endress.com/product-tools](http://www.endress.com/product-tools).

### 7.2 Endress+Hauser Service

For Service, refer to our website (<https://www.endress.com/contact>) for the list of local sales channels in your area.

#### 7.2.1 Before contacting Service

Before contacting Service, prepare the following information to send with your inquiry:

- Analyzer serial number (SN)
- Contact information
- Description of the problem or questions

Access to the information above will expedite the response to technical requests.

### 7.3 Return

If returning the analyzer or components is required, obtain a **Service Repair Order (SRO) number** from Service before returning to the factory. Service can determine whether the analyzer can be serviced on site or should be returned to the factory. All returns should be shipped to:

Endress+Hauser  
11027 Arrow Route  
Rancho Cucamonga, CA 91730  
United States

### 7.4 Disposal



If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to Endress+Hauser for disposal under the applicable conditions.

[www.addresses.endress.com](http://www.addresses.endress.com)

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