



# **SERVICE MANUAL**

## ***STARTER Portable Meter***

### **ST300**

### **ST300C**

### **ST300D**

### **ST400D**



**ST300D**



**ST300**



**ST400D**



**ST300C**



**SERVICE MANUAL**

***STARTER Portable Meter***

***ST300***

***ST300C***

***ST300D***

***ST400D***

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## 1.1 INTRODUCTION

This service manual contains the information needed to perform routine maintenance and service on the Ohaus Starter ST300, ST300C, ST300D and ST400D Series portable meters. Familiarity with the meter's Instruction Manual is assumed. The contents of this manual are contained in five chapters:

**Chapter 1 Getting Started** – Contains information on service facilities, tools and test equipment, specifications, and the mechanical and electronic functions of the meter.

**Chapter 2 Maintenance Procedures** – Contains preventive maintenance procedures and disassembly, repair and replacement procedures.

**Chapter 3 Reset to factory settings** – Explains procedures for resetting the meter to factory default settings.

**Chapter 4 Drawings and Parts Lists** – Contains exploded views of Starter ST300, St300C, ST300D and ST400D portable meters identifying all serviceable components.

## 1.2 DEFINITION OF SIGNAL WORDS AND SYMBOLS.

Safety notes are marked with signal words and warning symbols. These show safety issues and warnings. Ignoring the safety notes may lead to personal injury, damage to the instrument, malfunctions and false results.

### Signal Words

**CAUTION** For a hazardous situation with low risk, resulting in damage to the device or the property or in loss of data, or injuries if not avoided.

**Attention** For important information about the product.

**Note** For useful information about the product.

### Warning Symbols



General Hazard



Electrostatic discharge sensitive

### 1.3 SAFETY PRECAUTIONS.



**CAUTION:** Read all safety warnings before installing, making connections, or servicing this equipment. Failure to comply with these warnings could result in personal injury and/or property damage. Retain all instructions for future reference.

- Service should only be performed by authorized personnel.
- Use electrostatic protection measures when handling the printed circuit board.
- Remove the AAA batteries before cleaning or servicing the equipment.
- Operate the equipment only under ambient conditions specified in the user instructions.
- Do not operate the equipment in hazardous or unstable environments.
- This equipment is intended for indoor use and should only be operated in dry locations.
- Only use original replacement parts and accessories.

### 1.4 SERVICE FACILITIES

To service a meter, the service area should meet the following requirements:

- Should be temperature controlled and meet meter specifications for temperature environmental requirements.
- Must be free of vibrations such as fork lift trucks close by, large motors, air currents or drafts from air conditioning/heating ducts, open windows, people walking by, fans, etc.
- Area must be clean and free of excessive dust.
- Work surface must be stable and level.
- Meter must not be exposed to direct sunlight or radiating heat sources.
- Use an approved Electro-Static Device.

### 1.5 TOOLS AND TEST EQUIPMENT REQUIRED

The service shop should contain the following equipment:

1. Standard hand tools.
2. Digital Voltmeter (DVM).
3. Standard Electronics tool kit.
4. Grounding mat and clip.

1.6 SPECIFICATIONS

Complete specifications for the Ohaus Starter portable meters are listed in Table 1-1. When a meter has been serviced, it must meet the specifications listed in the table. Before servicing the meter, determine what specifications are not met.

TABLE 1-1. SPECIFICATIONS

Model	ST300*	ST300C*	ST300D*
Measurement Range	0.00...14.00 pH -1999...1999 mV 0 ° C...100 ° C	0.0 μ S/cm...199.9 mS/cm 0.1 mg/l...199.9 g/l (TDS) 0 ° C...100 ° C	0.0 to 199.9%; 200 to 400% 0.00 to 19.99; 20.0 to 45.0 mg/L 0.00 to 19.99; 20.0 to 45.0 ppm 0 to 50 ° C
Measurement Resolution	0.01 pH 1 mV 0.1 ° C	Automatic Range 0.1 ° C	0.1%; 1% 0.1 mg/L; 1mg/L 0.01 ppm; 0.1 ppm 0.1 ° C
Barometric Range	NA	NA	375 to 825 mmHg 500 to 1100 mbar 500 to 1100 hPa
Barometric Resolution	NA	NA	1 mmHg 1 mbar 1 hPa
Error Limits	± 0.01 pH ± 1 mV ± 0.5 ° C	± 0.5% of the Measured Value ± 0.3 ° C	± 1%; ± 0.3 ° C
Calibration	3 Points 4Predefined Buffer Group	1 Point 4 Predefined Standards	1 or 2 Points 100% and 0%
Memory	30 Measurements Last Calibration Data	30 Measurements Last Calibration Data	30 Measurements Last Calibration Data
Power Supply	4 AAA > 500 Operating Hours	4 AAA > 250 Operating Hours	4 AAA > 250 Operating Hours
Size/Weight	Approximately 90 W × 150 D x 35 H mm / 0.18 kg (Without Batteries)	Approximately 90 W × 150 D x 35 H mm / 0.16 kg (Without Batteries)	Approximately 90 W × 150 D x 35 H mm / 0.18 kg (Without Batteries)
Display	Liquid Crystal	Liquid Crystal	Liquid Crystal
Input	BNC, Impedance > 10e+12 Ω Cinch, NTC 30 k Ω	Mini-Din	BNC, Cinch, NTC 30 k Ω
Temperature Compensation	ATC & MTC	ATC, Linear: 0.00 %/° C...10.00 %/° C Reference Temperature: 20 & 25 ° C	ATC & MTC
Salinity Compensation	NA	NA	0.0 to 50.0 ppt
IP Protection	IP54	IP54	IP54
Housing	ABS	ABS	ABS

## CHAPTER 1 GETTING STARTED

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<b>Model</b>	<b>ST400D</b>	
<b>Measurement Range</b>	<b>%</b>	0.0 to 200.0%
	<b>mg/L</b>	0.00 to 20.00mg/L (ppm)
	<b>Temp.</b>	0 to 50 °C
<b>Measurement Resolution</b>	<b>%</b>	0.1%
	<b>mg/L</b>	0.01 mg/L
	<b>Temp.</b>	0.1 °C
<b>Accuracy</b>	± 0.2 mg/L (<8 mg/L) ± 0.3 mg/L (8 to 20 mg/L); ± 0.3 °C	
<b>Barometric</b>	<b>Range</b>	50.0 to 115.0 kPa
	<b>Resolution</b>	0.1 kPa
	<b>Accuracy</b>	1.5 kPa
<b>Temp compensation</b>	ATC	
<b>Salinity compensation</b>	0.0 to 40.0 ppt	
<b>Calibration</b>	1 point or 2 points	
<b>Memory</b>	99 sets, last calibration data	
<b>Power</b>	4 x AAA(LR03) batteries, 12 hrs	
<b>Size/Weight</b>	90 W x 150 D x 35 H mm	
<b>Weight</b>	0.16kg	
<b>Display</b>	liquid crystal	
<b>IP rating</b>	IP54	
<b>T input</b>	Mini-Din	
<b>Materials</b>	ABS	



1.7 METER OPERATION – STARTER ST300

This section contains information on the basic operation of the Starter ST300 meter.

1.7.1 OVERVIEW OF THE CONTROLS

Displays

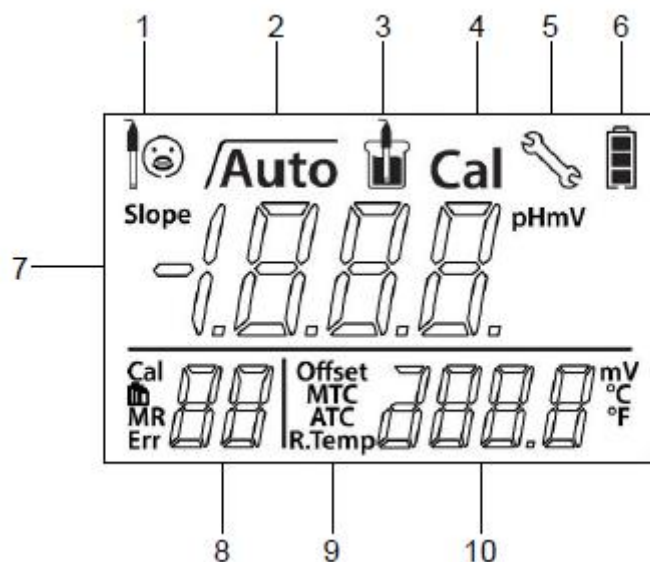











Figure 1-1. ST300 display

1	Electrode condition		
	☺ Slope: more than 95% and offset: ± (0-15) mV Electrode condition is good	☺ Slope: 90-95% or offset: ± (15-35) mV Electrode condition is acceptable	☹ Slope: less than 90% or offset: ± (35-60) mV Electrode condition is not good or needs cleaning
2	Endpoint stability icon  ; Auto endpoint icon		
3	Measurement icon -  ; measurement or calibration is running		
4	Calibration icon - <b>Cal</b> ; calibration in progress		
5	Setup icon -  ; instrument is in the setup mode		
6	Battery status icon shows the condition of the batteries - fully charged, half-charged or fully discharge.		
7	Temperature during measurement or <b>Offset</b> (mV) in calibration		
8	Calibration point <b>Cal</b> / Buffer group  /Memory number <b>MR</b> / Error index <b>Err</b>		
9	Auto temperature compensation - <b>ATC</b> ; Manual temperature compensation - <b>MTC</b>		
10	Temperature during measurement or offset in calibration process		

TABLE 1-2. Control functions ST300

Button	Press & release 	Press & hold for 3 seconds 
	<ul style="list-style-type: none"> <li>- Start or endpoint measurement</li> <li>- Confirm setting, store entered value</li> </ul>	<ul style="list-style-type: none"> <li>- Turn auto endpoint on / off </li> </ul>
	<ul style="list-style-type: none"> <li>- Start calibration</li> </ul>	<ul style="list-style-type: none"> <li>- Review the latest calibration data (slope, offset)</li> </ul>
	<ul style="list-style-type: none"> <li>- Meter turn on</li> <li>- Return to measurement screen</li> </ul>	<ul style="list-style-type: none"> <li>- Meter turn off</li> </ul>
	<ul style="list-style-type: none"> <li>- Store current reading to memory</li> <li>- Increase value during setting</li> <li>- Scroll up through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Recall stored data</li> </ul>
	<ul style="list-style-type: none"> <li>- Switch between pH and mV measuring modes</li> <li>- Decrease value during setting</li> <li>- Scroll down through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Enter setup mode</li> </ul>
		<ul style="list-style-type: none"> <li>- Start self-diagnosis</li> </ul>

- Notes:**
- <sup>1</sup> Short Press: Press less than 1 seconds.
  - <sup>2</sup> Long Press: Press and hold for more than 2 seconds.
  - <sup>3</sup> Press and hold the **Off** button until OFF is displayed, then release the button.

1.8 METER OPERATION – ST300C

This section contains information on the basic operation of the ST300C meter.

1.8.1 OVERVIEW OF THE CONTROLS

Displays

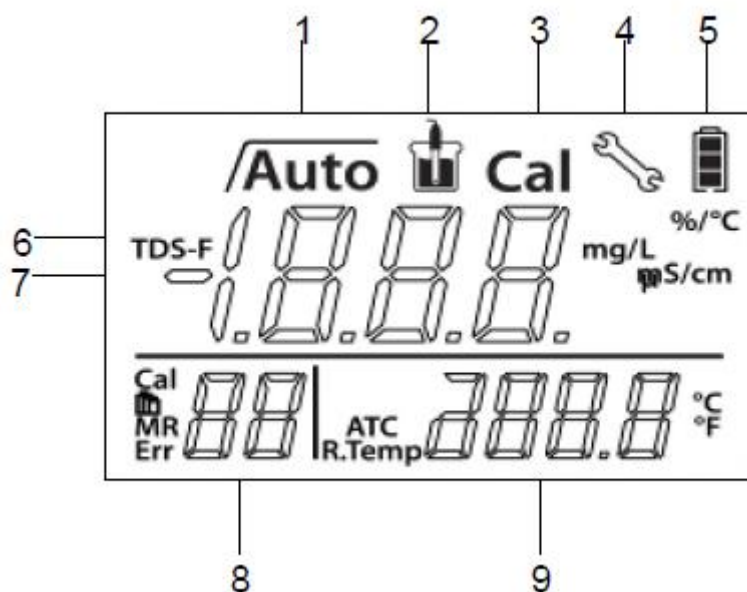

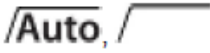







Figure 1-2. ST300C display

1	Endpoint stability icon $\overline{\quad}$ ; Auto endpoint icon $\overline{\text{Auto}}$
2	Measurement icon - ; measurement or calibration is running
3	Calibration icon - <b>Cal</b> ; calibration in progress
4	Setup icon - ; instrument is in the setup mode
5	Battery status icon shows the condition of the batteries - fully charged, half-charged or fully discharge.
6	TDS factor in the setup mode
7	Conductivity / TDS / Cell Constant
8	Calibration point <b>Cal</b> / Buffer group  /Memory number <b>MR</b> / Error index <b>Err</b>
9	Temperature during measurement or reference temperature in setup mode

TABLE 1-3. Control functions ST300C

Button	Press & release	Press & hold for 3 seconds
	<ul style="list-style-type: none"> <li>- Start or endpoint measurement</li> <li>- Confirm setting, store entered value</li> </ul>	<ul style="list-style-type: none"> <li>- Turn auto endpoint on / off</li> </ul> 
	<ul style="list-style-type: none"> <li>- Start calibration</li> </ul>	<ul style="list-style-type: none"> <li>- Review the latest calibration data: cell constant</li> </ul>
	<ul style="list-style-type: none"> <li>- Meter on</li> <li>- Back to measurement screen</li> </ul>	<ul style="list-style-type: none"> <li>- Meter off</li> </ul>
	<ul style="list-style-type: none"> <li>- Store current reading to memory</li> <li>- Increase value during setting</li> <li>- Scroll up through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Recall stored data</li> </ul>
	<ul style="list-style-type: none"> <li>- Switch between conductivity and TDS measuring modes</li> <li>- Decrease value during setting</li> <li>- Scroll down through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Enter setup mode</li> </ul>
	<ul style="list-style-type: none"> <li>- Start self-diagnosis</li> </ul>	

- Notes:**
- <sup>1</sup> Short Press: Press less than 1 seconds.
  - <sup>2</sup> Long Press: Press and hold for more than 2 seconds.
  - <sup>3</sup> Press and hold the **Off** button until OFF is displayed, then release the button.

1.9 METER OPERATION – ST300D

This section contains information on the basic operation of the Starter 3100C meter.

1.9.1 OVERVIEW OF THE CONTROLS

Displays

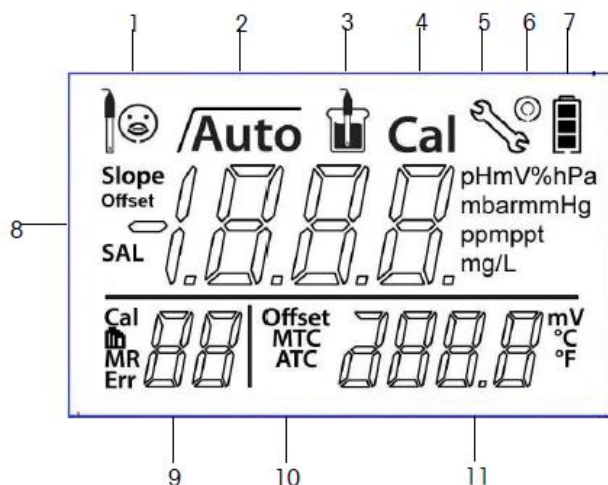

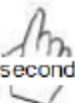

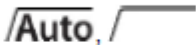







Figure 1-3. ST300D display

1	Electrode condition	
	☺ Slope: 80-125% Electrode condition is very good	☹ Slope: 60-80% Electrode condition is not so good, needs attention or cleaning
2	√ Displays when manual endpoint, need to press button-Read to lock the reading, √Auto means auto endpoint mode, meter judges the endpoint (reading is stable) and locks the reading automatically.	
3	Measurement icon -  ; measurement or calibration is running	
4	Calibration icon - <b>Cal</b> ; calibration in progress	
5	Setup icon  - instrument is in the setup mode	
6	Power always on icon -  Meter will not automatically turn off after 10 minutes no operation.	
7	Battery status icon - fully charged, half-charged or fully discharged	
8	ppm, mg/L or % for DO reading or calibration; mbar, hPa or mmHg for pressure entry; ppt for salinity entry	
9	Calibration point <b>Cal</b> / Buffer group  /Memory number <b>MR</b> / Error index <b>Err</b>	
10	Auto temperature compensation - <b>ATC</b> ; Manual temperature compensation - <b>MTC</b>	
11	Temperature during measurement or reference temperature in setup mode	

TABLE 1-4. Control functions ST300D

Button	Press & release 	Press & hold for 3 seconds 
	<ul style="list-style-type: none"> <li>- Start or endpoint measurement (manual endpoint mode)</li> <li>- Confirm setting, confirm entered value for setting</li> </ul>	<ul style="list-style-type: none"> <li>- switch between auto endpoint and manual endpoint mode</li> </ul> 
	<ul style="list-style-type: none"> <li>- Start calibration</li> </ul>	<ul style="list-style-type: none"> <li>- Review the latest calibration data</li> </ul>
	<ul style="list-style-type: none"> <li>- Meter turn on</li> <li>- Back to measurement screen</li> </ul>	<ul style="list-style-type: none"> <li>- Meter turn off</li> </ul>
	<ul style="list-style-type: none"> <li>- Store current reading to memory</li> <li>- Increase value during setting</li> <li>- Scroll up through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Recall stored data</li> </ul>
	<ul style="list-style-type: none"> <li>- Switch between ppm, mg/L and % measuring modes</li> <li>- Decrease value during setting</li> <li>- Scroll down through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Enter setup</li> </ul>
		<ul style="list-style-type: none"> <li>- Start self-diagnosis</li> </ul>

1.10 METER OPERATION – ST400D

This section contains information on the basic operation of the Starter 3100C meter.

1.10.1 OVERVIEW OF THE CONTROLS

Displays

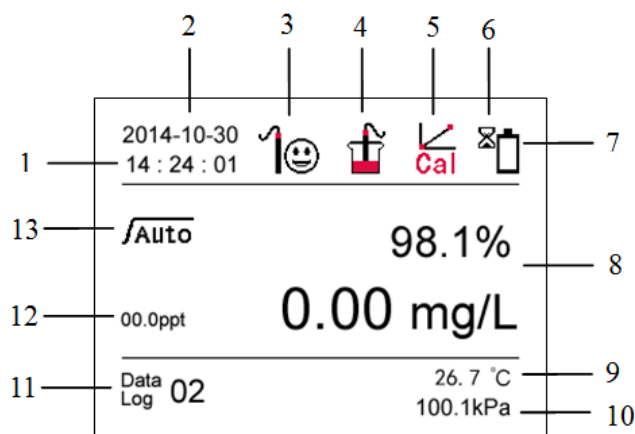









Figure 1-4. ST400D display

1	Time: HH:MM:SS	
2	Date: YYYY-MM-DD	
3	 calibration data: $ K-1  \leq 0.3$ and $ B  < 0.1$ Probe condition is very good	 calibration data: $0.3 \leq  K-1  \leq 0.4$ and $ B  < 0.1$ Probe condition is acceptable.
4	Measurement icon - measurement (calibration) is running	
5	Calibration icon - calibration is running	
6	Power state icon, include power always on icon  , means meter will not automatically turn off; and auto-off icon  which means after 10 minutes no operation meter will turn off(see 4.4); power state icon position is at the top-left of the battery status icon.	
7	Battery status icon – the charged status of the battery	
8	DO reading: mg/L and %	
9	Temperature during measurement or in calibration process	
10	Barometric pressure during measurement or in calibration process	
11	Data log: memory number	
12	ppt for salinity entry	

TABLE 1-5. Control functions ST400D

Button	Press & release	Press & hold for 2 seconds 
	<ul style="list-style-type: none"> <li>- Start or endpoint measurement (manual endpoint mode)</li> <li>- Confirm setting, confirm entered value for setting</li> </ul>	<ul style="list-style-type: none"> <li>- switch between auto endpoint and manual endpoint mode</li> </ul>
	<ul style="list-style-type: none"> <li>- Start calibration</li> </ul>	<ul style="list-style-type: none"> <li>- Review the latest calibration data</li> </ul>
	<ul style="list-style-type: none"> <li>- Meter turn on</li> <li>- Back to measurement screen</li> </ul>	<ul style="list-style-type: none"> <li>- Meter turn off</li> </ul>
	<ul style="list-style-type: none"> <li>- Store current reading to memory</li> <li>- Increase value during setting</li> <li>- Scroll up through the memory</li> </ul>	<ul style="list-style-type: none"> <li>- Recall stored data</li> </ul>
	<ul style="list-style-type: none"> <li>- Enter setup screen</li> <li>- Scroll down through the memory</li> </ul>	
		<ul style="list-style-type: none"> <li>- Reset factory setting</li> </ul>



### 2.1 PREVENTIVE MAINTENANCE

**ATTENTION:** remove the AAA batteries before cleaning the meter.

Ohaus meters are precision instruments and should be carefully handled, stored in a clean, dry, dust-free area, and cleaned periodically.

The meter housing may be cleaned with a cloth dampened with a mild detergent if necessary.

Do not use solvents, chemicals, alcohol, ammonia or abrasives to clean the housing or control panel.

### 2.2 SERVICE STRATEGY

All parts of the Starter 300, 300C, 300D and 400 are designed to be replaced rather than repaired. This includes the Main Printed Circuit Board (PCB). For an illustrated list of replaceable parts, see Chapter 5.

### 2.3 OPENING THE METER

Use these procedures in order to replace the Printed Circuit Board and CR2032 battery, if applicable.



**CAUTION:** Observe precaution for handling electrostatic sensitive devices.

#### 2.3.1 Separating the Top and Bottom Housings

Common hand tools are sufficient to disassemble the Starter 300, 300C, 300D and 400 meter.

1. Remove any electrodes connected to the portable meter.
2. Remove the battery compartment and any batteries in the battery compartment. Handle the rubber ring inside the battery compartment with care.

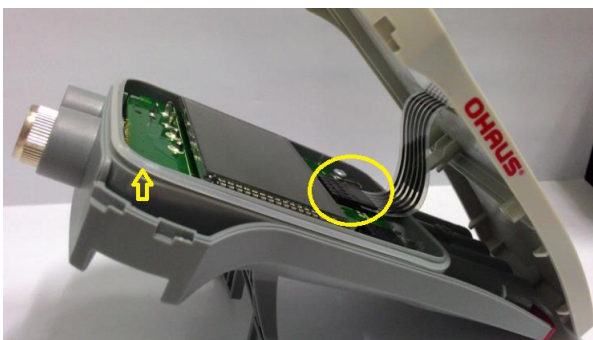


3. Turn the meter over. Remove the five screws holding the Housing in place. (See Figure 2-1.)



Figure 2-1. Screws (marked with yellow circles) that secure the housing.

4. Before separating the top housing from the bottom housing remove the keypad membrane connector which connected to the main PCBA. Take note and handle the housing rubber ring with care.



5. Separate Top Housing from Bottom Housing.

### 2.4 Removing/Replacing the PCB



**CAUTION:** Observe precaution for handling electrostatic sensitive devices.

If the PCB are suspected of being faulty, it should be replaced, as follows:

1. Separate the top and bottom housing as in 2.3.1.
2. Remove the two screws securing the main PCBA to the bottom housing. (See Figure 2-2)

Figure 2-2. Screws (marked with yellow circles) that secure the main PCBA to bottom housing.



3. After removing the two screws gently remove the battery spring from the housing in order to lift up and replace the main PCBA. (See Figure 2-3)

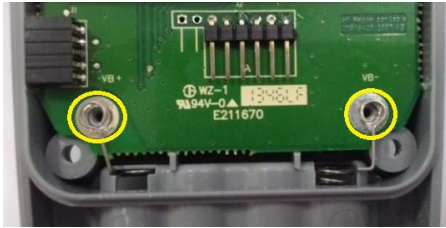


Figure 2-3. Battery spring (marked with yellow circles).

4. After removing the battery spring gently lift up the main PCBA and slide downwards in order to remove the PCBA from the bottom housing.

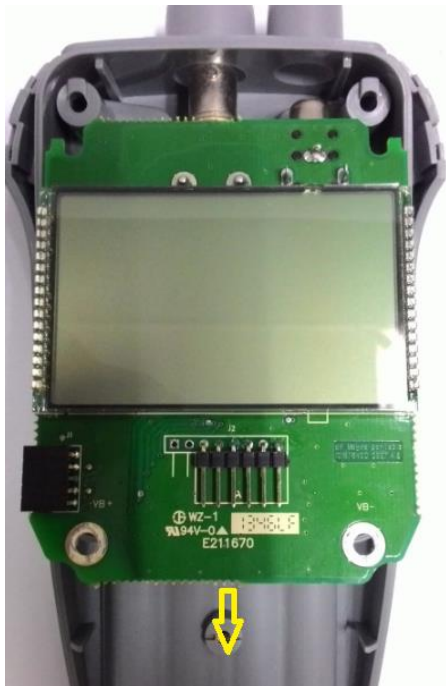


Figure 2-4. Replacing main PCBA.

5. Replaced with a new main PCBA.
6. Reconnect the battery spring and install back the two screws which securing the main PCBA to bottom housing.
7. Insert back the housing rubber ring in position.
8. Re-install the top housing.

### 2.5 Replacing ST400D Main PCBA Internal Battery.



**CAUTION:** Observe precaution for handling electrostatic sensitive devices.

ST400D equip with date and time features so there is a replaceable button battery type CR2032 on the main PCBA.

1. Follow instruction 2.3.1 Separating the Top and Bottom Housing.
2. Follow instruction 2.4 Removing/Replacing the PCB.
3. Flip the Main PCBA, locate the battery and replaced it.
4. Check and re-set the date and time if necessary. (Kindly refer to ST400D Instruction Manual).



Figure 2-5. Location of the battery at the back of the main PCBA. (Type CR2032)



### 3.1 Recover factory settings

For ST300, ST300C and ST300D proceed as below:

- When the meter is off, press and hold button-**Read** & button-**Cal** & button-**Exit** simultaneously for 3 seconds, the screen displays *RSF* and blinks, means “Reset”. Then we have 2 choice:
  - ❖ Press button-**Read** to reset factory settings (MTC, slope and offset, etc.).

Or press button-**Exit** to quit the setting and turn off the meter.

For ST400D proceed as below:

- Switch ON the meter.
- Press button- and button- simultaneously to enter the Reset Factory Setting screen.
- Meter screen will show as below where respective information is back to Factory Default.

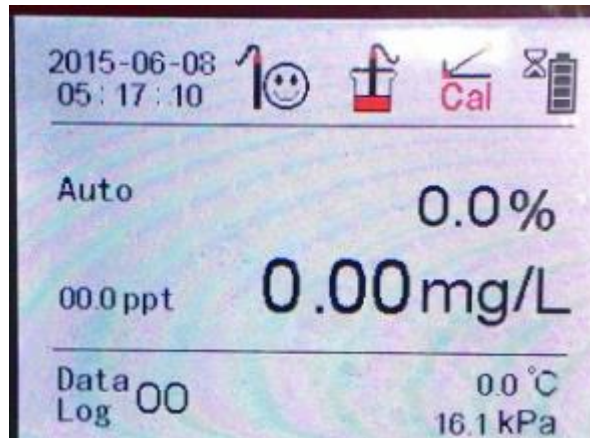


Figure 3-1. ST400D Factory Default Screen.

**3.2 Error message**

**3.2.1 Error message ST300**

Error 0	Memory access error	Reset to factory settings
Error 1	Self-diagnosis failed	Repeat the self-diagnosis procedure and make sure that you finish pressing all five keys within two minutes.
Error 2	Measured values out of range	Check if the electrode is properly connected and placed in the sample solution.
Error 3	Measured buffer temperature out of range (<5 or >40 °C)	Keep the pH buffer temperature within the range for calibration
Error 4	Offset out of range offset > 60mV or < - 60 mV	Make sure the pH buffer is correct and fresh; Clean or replace the pH electrode.
Error 5	Slope out of range	Make sure the buffer is correct and fresh; Clean or replace the pH electrode.
Error 6	Meter cannot recognize the buffer	Make sure the buffer is correct and fresh; check if the buffer has not been used more than once.
Error 9	The current data set has already been stored once	An endpoint reading can only be stored once. Perform a new measurement to store.

TABLE 3-1. ST300 Error Message.

**3.2.2 Error message ST300C**

Error 0	Memory access error	Reset to factory settings
Error 1	Self-diagnosis failed	Repeat the self-diagnosis procedure and make sure that you finish pressing all five keys within two minutes.
Error 2	Measured values out of range	Check if the electrode is properly connected and placed in the sample solution.
Error 3	Measured buffer temperature out of range (<5 or >40 °C)	Keep the pH buffer temperature within the range for calibration
Error 4	Offset out of range offset > 60mV or < - 60 mV	Make sure the pH buffer is correct and fresh; Clean or replace the pH electrode.
Error 9	The current data set has already been stored once	An endpoint reading can only be stored once. Perform a new measurement to store.

TABLE 3-2. ST300C Error Message.

3.2.3 Error message ST300D

Error 0	Memory access error	Reset to factory settings
Error 1	Self-diagnosis failed	Repeat the self-diagnosis procedure and make sure that you finish pressing all five keys within two minutes.
Error 2	Measured values out of range	Make sure that the electrode setting cap has been removed and the electrode is properly connected and placed in the sample solution.
Error 3	Measured buffer temperature out of range (<0°C or >50 °C)	Keep the standard buffer temperature within the range for calibration or measurement.
Error 4	Cal 2 out of range	Make sure the buffer is correct and fresh; Clean or replace the DO electrode.
Error 5	Cal 1 out of range	Make sure the buffer is correct and fresh; Clean or replace the DO electrode.
Error 9	The current data set has already been stored once	A measurement can only be stored once. Perform a new measurement to store a new data set.

TABLE 3-3. ST300D Error Message.

3.2.4 Error message ST400D

Low battery	If low battery, the battery icon will blink to show need new battery. Then turn off after 10 seconds.
Communication fail	When do calibration or new cap parameter input, meter will detect if the probe is connected properly. If not, meter displays " Fail, please confirm the STDO21 probe is connected"
Measured temperature out of range (< -5°C or >55 °C)	Meter will display "Temperature Out of Range!"  Please keep the sample temperature within the range for measurement.
Calibration out of range	Meter displays "Calibration Fail".   K-1  >0.4 or a  B  >0.1  You may need to do a proper calibration again, if calibration data is still not good, you may need to replace a new probe cap or probe.

## CHAPTER 4 RESET TO FACTORY SETTINGS

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Recall memory fail	Meter displays "No Data" When recall memory while no data memorized yet.
The current data set has already been stored once	Meter displays" Already saved!" A measurement can only be stored once. Perform a new measurement to store a new data set.

TABLE 3-4. ST400 Error Message.



This section of the manual contains exploded views of the Starter ST300, ST300C, ST300D and ST400D portable meter. The exploded view drawings are designed to identify the parts which can be serviced on the portable meter in the field.

**NOTE:**

**Attention:** In all cases where a part is replaced, the meter must be thoroughly checked after the replacement is made. The meter **MUST** meet the parameters of all applicable specifications in this manual.

Step to confirm the meter operates within specification:

1. Obtain a known good working condition electrode and buffer solution in hand.
2. Link the electrode to the portable meter, perform a calibration. After completed the calibration do a measurement and compare with the meter specification.

If further technical information is needed, please contact your local Ohaus distributor, or:

[www.ohaus.com](http://www.ohaus.com)

Ohaus Corporation  
7 Campus Drive  
Suite 310  
Parsippany, NJ 07054 USA

Tel: +1 973-377-9000  
Fax: +1 973-593-0359

In the United States call toll free, 800-526-0659 between 8:00 a.m. and 6:00 p.m. EST.

4.1 ST300, ST300C and ST300D Portable Meter: PARTS

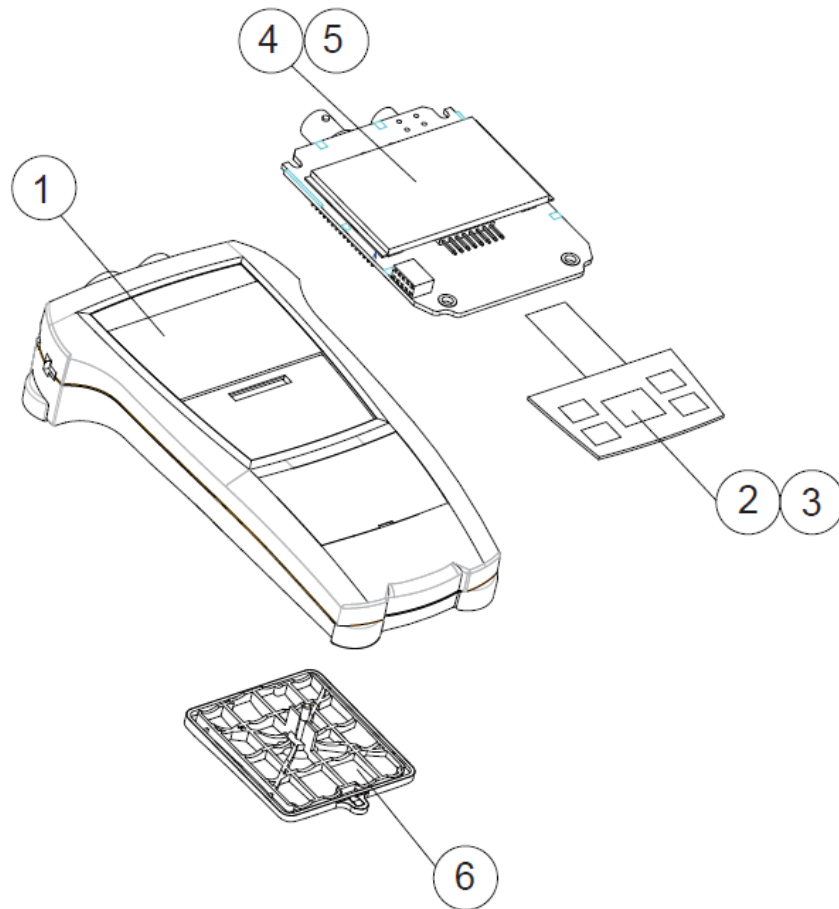


Figure 4-1. ST300, ST300C and ST300D: Parts.

TABLE 4-1 ST300, ST300C and ST300D Meter: PARTS

Drawing Item	Description
1	SP Housing STARTER 300x
2	SP Overlay ST300x EN
3	SP Overlay ST300x ZH
4	SP PCBA ST300x EN
5	SP PCBA ST300x ZH
6	SP Cover Battery

**Note:** For parts numbers, see your local Ohaus distributor, or visit [www.ohaus.com](http://www.ohaus.com).

4.2 ST400D Portable pH Meter: PARTS

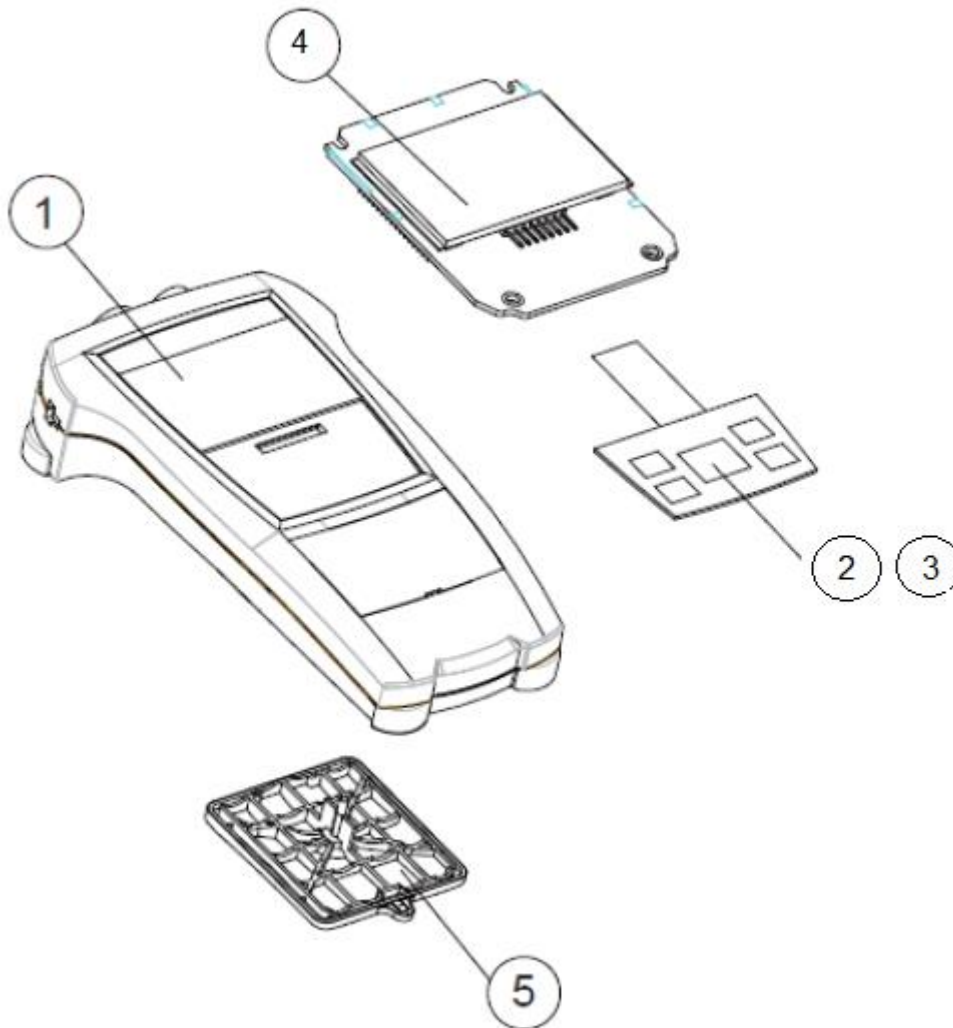


Figure 4-2. ST400D: Parts

TABLE 4-2 ST400D Meter: PARTS

Drawing Item	Description
1	SP Housing STARTER 400D
2	SP Overlay ST400D EN
3	SP Overlay ST400D ZH
4	SP PCBA ST400D
5	SP Cover Battery

Note: For parts numbers, see your local Ohaus distributor, or visit [www.ohaus.com](http://www.ohaus.com).





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