



## **BA380 - Basic Conductivity Meter - Users Manual**

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# SECTION 1 - Introduction

## Description

The BA380 is a simple-to-operate basic conductivity meter. Despite its simplicity, the use of automatic temperature compensation means an accuracy of  $\pm 1\%$ .

## Unpacking

Verify that you have received all equipment. If you have any questions about the shipment, please call EDT Direct ION Ltd. or your agent.

When you receive the shipment, inspect the container for any signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the agent.

## Note

The carrier will not honour any claims unless all shipping material is saved for their examination. After examining and removing contents, save packing material in the event that re-shipment be necessary.

The following items are packed in the box:

- |                          |   |                      |   |                  |
|--------------------------|---|----------------------|---|------------------|
| BA380 Conductivity Meter | • | Calibration Plug     | • | Cell, K=1/cm     |
| Cell Holder              | • | Calibration Solution | • | Power Adaptor 9V |
| Battery                  | • | Operator Manual      |   |                  |

## Setting Up - AC Operation

Only use the approved power adaptor supplied

Check that the adaptor is the correct voltage for your power supply

Plug the adaptor into the power socket at the back of the meter, then connect to the AC supply.

## Battery Installation

Approximately 24 hours of continuous use is afforded by the 9V battery.

The BAT flag appears on the display to indicate a low battery.

To install or replace the battery, slide off the back cover

Remove the old battery and insert a new one ensuring that the polarity is correct

Replace back cover.

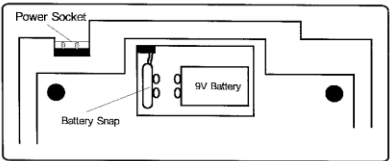


Figure 1. Bottom view of instrument showing power connections

## **Instrument Test Procedure**

- 1.** Switch on using the Power dial.
- 2.** Ensure that the calibration plug is connected to the cell socket on the back of the meter.
- 3.** Using the Range control, select the 2000 range.
- 4.** Adjust the Cal control on the back panel until the display reads 1000 and remains stable.
- 5.** Change the range to 20K. Display should read 1.00
- 6.** Change the range to 200K. Display should read 1.0
- 7.** Change range to 200. Over range condition is indicated by the Figure 1 in the left hand digit of the display.

## **A Note on Conductivity Cells**

### **Platinum Plate Cells.**

These cells use two platinum cell plates coated with a thin layer of platinum oxide.

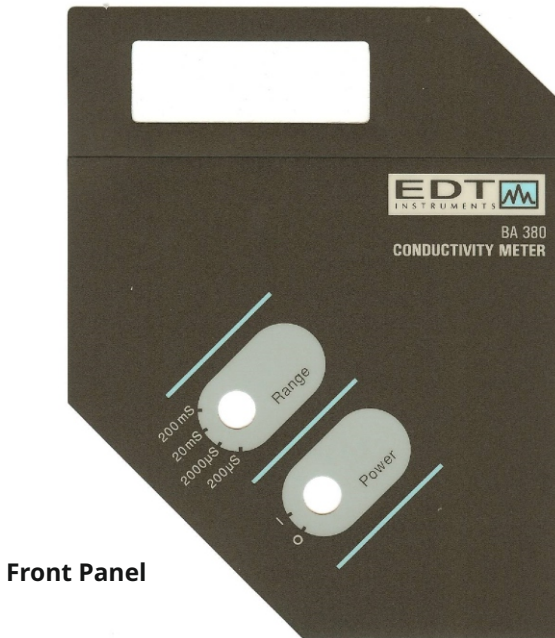
It is important not to touch the surface of the plates (while in use or when cleaning) since any surface damage could result in the linearity of the cell being affected.

For this reason, these cells are not suitable for samples containing suspended solids. If damage does occur, the cells can be re-coated (see Section 7).

### **Graphite Plate Cells**

These cells have graphite cell plates in an epoxy housing. The rugged construction of the cells means they are suitable for both industrial and field applications. Cleaning the cells is easy, using a bottle brush and weak detergent solution.

## Section 2 - Calibration and Measurement



For accurate measurements, stir all standards and samples. Always rinse the cell and blot dry between transfer from one solution to another to prevent contamination.

1. Select the appropriate range for the calibration standard in use. **E.g.** for 0.01M KCl, which has a conductivity of  $1413 \mu\text{S}/\text{cm}$  at  $25^\circ\text{C}$  select the 2000 range.
2. Connect cell to the socket at the back of the meter and switch Power dial from 0 to 1
3. Place the cell in the standard solution and wait for the reading to stabilise.
4. Adjust the Cal control until the value of the standard is displayed.
5. Transfer probe to sample and record stable reading.

### Section 3 - Troubleshooting

Symptom	Probable Cause
No display	Battery is flat or not installed Power supply disconnected
'BAT' flag displayed	Battery Low
Display reads Zero	Cell not immersed in solution Cell has a faulty connection causing an open circuit
Drifting readings	Inconsistent or lack of stirring Contaminated cell
Erratic readings or over range in all ranges with cal plug attached	Return meter for servicing

- Error Codes:
- PRO—Temperature Probe malfunctioning
  - E4—Factory calibration lost
  - E8—Serial Code Error

In the event of a malfunction, it is important to pinpoint the problem to either the meter or the cell. If a spare cell is available, substitute it for the one in use.

There are no user serviceable parts in this instrument. Please ensure that the instrument, together with all accessories, is returned to EDT Direct ION Ltd or the agent with a full description of the symptoms. No attempt should be made to repair the meter.

### Section 4 - Specifications

Conductivity Ranges and Resolution	00.0—199.9µS/cm 000—1999 µS/cm 00.0—19.99mS/cm 00.0—199.9mS/cm
Accuracy	±1% of reading
Temperature compensation range	0-50°C
Reference Temperature	25°C
Display	12.7mm LCD
Power	9V Battery or power adaptor
Instrument Size	210 x 150 x 88mm
Instrument Weight	550g

## Section 5 - Conductivity Cells

All cell listed have ATC. Standard cable length is 1 metre. Other cable lengths are available on request.

### Dip Cells

### Flow Cells

Part No	Type	Range	Cell	Use
CDE5001-GD1	Glass K=1 (12mm)	100µS-100mS	Platinum plates	General use
CDE5002-PD1	Polymer K=1 (12mm)	100µS-100mS	Platinum plates	General use
CDE5014-GD0.1	Glass K=0.1(12mm)	0.01µS-100µS	Platinum plates	Pure Water
CDE5004-EP10	Epoxy K=10 (25mm)	100mS-2000mS	Graphite plates	Industrial & Field
CDE5010-ED1	Epoxy K=1 (25mm)	100µS-100mS	Graphite plates	Industrial & Field
CDE5011-ED0.1	Epoxy K=.1 (25mm)	0.01µS-200mS	Graphite plates	Industrial & Field
CDE5019-ED1	Epoxy K=1 (12mm)	100µS-100mS	Graphite plates	General use

Part No	Type	Range	Cell Type	Use
CDE5005-GF1	Glass K=1(12mm)	100µS-100mS	Platinum plates	General use
CDE5008-EF10	Epoxy K=10 (25mm)	100mS-2000mS	Graphite plates	Industrial & Field
CDE5012-FD1	Epoxy K=1 (25mm)	100µS-100mS	Graphite plates	Industrial & Field
CDE5013-FD0.1	Epoxy K=(25mm)	0.01µS-200mS	Graphite plates	Industrial & Field

## Appendix 1- Cell Constants

Conductivity cells with different cell constants can be used to achieve greater accuracy or used to make difficult measurements easier. Selection of the correct cell constant is dependent on the conductivity range of the sample. Conductivities of various waters and common solutions, together with the most suitable cell constants are given below.

### K=0.1/cm

For measurement of solutions with very low conductivity e.g.: pure water, de-mineralise water; distilled water; boiler feed water

### K=1.0/cm

For measurement of solutions with medium conductivity e.g.: Surface water; waste water; diluted salt solutions; fertilizers; electroplating rinses.

### K=10/cm

For measurement of solutions with high conductivity e.g.: Strong acid; strong alkali; strong salt solutions; sea water

### Cell Conversion Table

c.g.s. Units	SI Units
K=1.0/cm	K=100.0/m
K=0.1/cm	K=10/m
K=10.0/cm	K=1000/m

Appendix 2 - Calibration Solutions

1413µS/cm @25°C 0.01M KCl

°C	µS/cm	mS/m	°C	µS/cm	mS/m
5	896	89.6	25	1413	141.3
10	1020	102.0	26	1441	144.1
15	1147	114.7	27	1468	146.8
16	1173	117.3	28	1496	149.6
17	1199	119.9	29	1524	152.4
18	1225	122.5	30	1552	155.2
19	1251	125.1	31	1571	157.1
20	1278	127.8	32	1609	160.9
21	1305	130.5	33	1638	163.8
22	1332	133.2	34	1667	166.7
23	1359	135.9	35	-	-
24	1386	138.6	36	-	-

12.88mS/cm @25°C 0.1M KCl

°C	µS/cm	mS/m	°C	µS/cm	mS/m
5	8220	822	25	<b>12880</b>	<b>1288</b>
10	9330	933	26	13130	1313
15	10480	1048	27	13370	1337
16	10720	1072	28	13620	1362
17	10950	1095	29	13870	1387
18	11190	1119	30	14120	1412
19	11430	1143	31	-	-
20	11670	1167	32	-	-
21	11910	1191	33	-	-
22	12150	1215	34	-	-
23	12390	1239	35	-	-
24	12640	1264	36	-	-

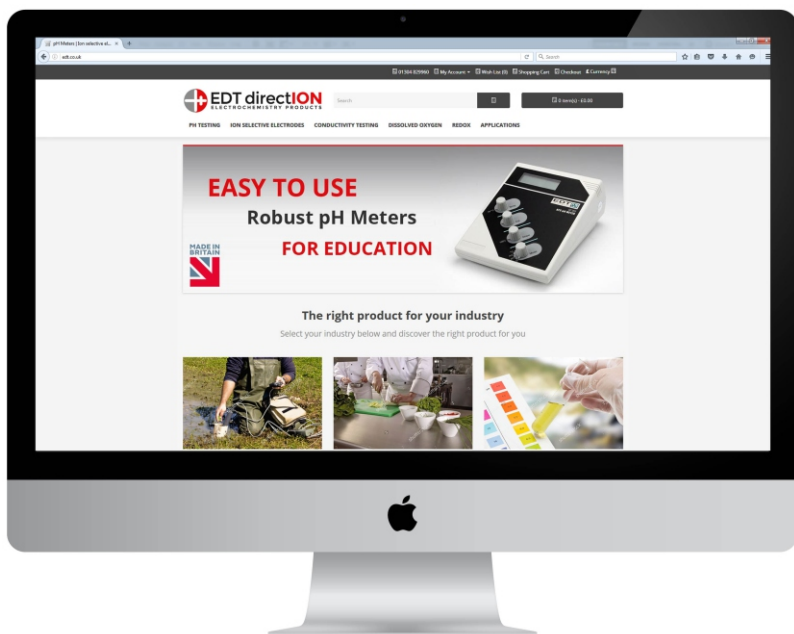
2.765mS/cm @25°C — 0.02M KCl

°C	mS/cm	mS/m	°C	mS/cm	mS/m
5	1.752	175.2	25	2.765	276.5
10	1.994	199.4	26	2.819	281.9
15	2.243	224.3	27	2.873	287.3
16	2.294	229.4	28	2.927	292.7
17	2.345	234.5	29	2.981	298.1
18	2.397	239.7	30	3.036	303.6
19	2.449	244.9	31	3.091	309.1
20	2.501	250.1	32	3.146	314.6
21	2.553	255.3	33	3.201	320.1
22	2.606	260.6	34	3.256	325.6
23	2.659	265.9	35	3.312	331.2
24	2.712	271.2	36	3.368	336.8

2111.8mS/cm @25°C — 0.02M KCl

°C	mS/cm	mS/m	°C	mS/cm	mS/m
5	74.14	7.41	25	111.80	11.18
10	83.19	8.32	26	113.77	11.38
15	92.52	9.25	27	115.74	11.57
16	94.41	9.44	28	-	-
17	96.31	9.63	29	-	-
18	98.22	9.82	30	-	-
19	100.01	10.01	31	-	-
20	102.07	10.21	32	-	-
21	104.00	10.40	33	-	-
22	105.54	10.55	34	-	-
23	107.89	10.79	35	-	-
24	109.84	10.98	36	-	-

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