### 1 PREPARATION

#### AC210 Series 2-Electrode Carbon Cells

- **Cell Constant K**: 1.00
- **Flow-Through Cells**: Wall-, 1/2 in. NPT thread
- **Language (Manual)**: English

**Table:**

<table>
<thead>
<tr>
<th>Flow-Through Cells</th>
<th>Cell Constant K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall-</td>
<td>1.00</td>
</tr>
</tbody>
</table>

**Note:** Ensure the integral cable (where applicable) does not touch hot or abrasive objects.

### 2 SITING

#### AC211 and AC221 Insertion Cells

- **Note:** For BSP process connections, a parallel thread must be used.

**Diagram:**

- **Insertion Cell Orientation:** Upwards Flow

**Dimensions in mm (in.):**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>AC211</th>
<th>AC221</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>175 (6.9)</td>
<td>74 (2.9)</td>
</tr>
<tr>
<td>Diameter</td>
<td>26.4 (1.04)</td>
<td>22.4 (0.88)</td>
</tr>
</tbody>
</table>

#### AC212 Flow-through Cells

- **Note:** For BSP process connections, a parallel thread must be used.

**Diagram:**

- **Flow Chamber (AC220 Cells only):** Upwards Flow

**Dimensions in mm (in.):**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>AC212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>230 (9.1)</td>
</tr>
<tr>
<td>Diameter</td>
<td>26.4 (1.04)</td>
</tr>
</tbody>
</table>

### 3 OVERALL DIMENSIONS

- **Footprint Specifications:**
  - AC211
  - AC221
  - AC212

**Diagram:**

- **Insertion Cell Orientation:** Upwards Flow

### 4 INSTALLATION

#### AC211 and AC221 Insertion Cells

- **Note:** Overtightening may damage the cell body.

**Diagram:**

- **Flow Chamber (AC220 Cells only):** Upwards Flow

**Dimensions in mm (in.):**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>AC212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>230 (9.1)</td>
</tr>
<tr>
<td>Diameter</td>
<td>26.4 (1.04)</td>
</tr>
</tbody>
</table>

#### AC212 Flow-through Cells

- **Note:** Ensure the integral cable (where applicable) does not touch hot or abrasive objects.

- **Diagram:**

- **Insertion Cell Orientation:** Upwards Flow

**Dimensions in mm (in.):**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>AC212</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>230 (9.1)</td>
</tr>
<tr>
<td>Diameter</td>
<td>26.4 (1.04)</td>
</tr>
</tbody>
</table>

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**Forced Air**: 30°C (86°F) 98% RH

**Humidity**: 98% RH (96°F)

**Tightening**: 35 ft-lb (48 Nm) 38 Nm

**Caution**: Ensure the integral cable (where applicable) does not touch hot or abrasive objects.

**Note**: Allow sufficient clearance for easy removal of cell for cleaning – refer to Section 3 for overall dimensions of cells.

**Diagram**:

- **Insertion Cell Orientation**: Sample always fully immersed
5 ELECTRICAL CONNECTIONS

Caution. While cleaning, do not wet the electrical connection terminals.

6 CLEANING

6.1 Cleaning the Measuring Cell

Conductivity cells require periodic cleaning, the frequency of which depends on the particular application in which they are employed. Although measuring cells are free of contamination when supplied, they should be cleaned prior to installation.

Caution. Do not touch the cell bore by hand or use sharp implements when cleaning the cell.

6.1.1 A210 Series 2-Electrode Carbon Cells

Thoroughly clean the electrode with a 1:1 solution of water and non-ionic detergent using the bottle brush provided. For more tenacious deposits, a 2% hydrochloric acid solution may be used. After cleaning, rinse the cell several times in distilled water and then examine it. Looking through the bore towards a source of illumination, the surface should have an evenly wetted appearance. If the surface has dry patches where the water has ‘peeled’ away this is an indication of the presence of grease and repeated cleaning and rinsing is required until the cell bore is evenly wetted.

6.1.2 A220 Series 2-Electrode Stainless Steel Cells

Unscrew the outer electrode. Thoroughly clean the electrode with a 1:1 solution of water and detergent using the bottle brush provided. For more tenacious deposits, a 2% hydrochloric acid solution may be used.

After cleaning, rinse the cell thoroughly in distilled water and examine it. With a source of illumination shining into the electrode system, the interior surface of the outer electrode and the whole of the central electrode should have an evenly wetted appearance. If the surfaces have dry patches where the water has ‘peeled’ away this is an indication of the presence of grease and repeated cleaning and rinsing is required until the electrodes are evenly wetted. Refit the outer electrode.

6.2 A212 Series 3-Electrode Carbon Cells

When connecting non metal conductivity cells that are isolated from earth (ground), e.g. mounted in plastics, the following terminals to the earth (ground) stud on the analyzer case.

AX211 and AX212 Insertion Cell, Terminal Head Connections

Connections to AX41x, TB82 and 4620 Conductivity Transmitters

<table>
<thead>
<tr>
<th>Sensor A</th>
<th>Sensor B</th>
<th>4620</th>
<th>4820</th>
</tr>
</thead>
<tbody>
<tr>
<td>96</td>
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</tbody>
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Notes.

1. When connecting earthed (grounded) metal conductivity cells, ensure that the cell earth (ground) and the analyzer earth (ground) are at the same potential.
2. The additional white wire is not required and can be cut off.
3. Do not install the black spacer for the black wire.

AC211 and AC212 Flow-through Cell Connections

AC200 series Conductivity cells

Measurement made easy

For more information

Further publications for AC200 conductivity cells are available for download from www.abb.com/measurement or by scanning this code.