Displacement Monitoring

Typical applications include:
- Façade Monitoring
- Tunnel Wall Monitoring
- Dam Monitoring
- Retaining Structure Monitoring
- Embankment Monitoring
- Party Wall Monitoring
- Excavation Monitoring
- Foundation Monitoring

Commonly used instrumentation detailed below:
- LVDT
- Potentiometer
- Laser
- Ultrasonic
- Extensometer

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## LVDT

<table>
<thead>
<tr>
<th>Variables measured</th>
<th>Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.5mm to 470mm</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±0.025mm</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.01mm</td>
</tr>
</tbody>
</table>

**System operation**
- Automated

**Data access**
- Remotely or on site

**Reading frequency**
- Sub second

### Additional Information:
- Suited for use on medium to long term projects.
- Accurate & reliable measurement system.
- No electrical contact, therefore almost infinite resolution & extended sensor life.
- LVDT (Linear Variable Displacement Transducer) contains 3 coils, 1 primary and 2 secondary. The position of the moveable magnetic core in relation to these coils transfers current between the primary and secondary coils, which results in an electrical output that can be converted to read displacement in mm.
Potentiometer

Variables measured | Displacement (mm)
--- | ---
Range | 25mm to 300mm
Accuracy | ±0.0125mm (±0.05% full scale)
Resolution | 0.01mm (0.04% full scale)
System operation | Automated
Data access | Remotely or on site
Reading frequency | Sub second

Additional Information:

- Suited for use on short to medium term projects.
- Reading frequency > 1 min.
- Cheap, simple & accurate.
- As the crack width changes, the connection rod within the potentiometer body moves which causes a change in electrical output. This change in electrical output is converted to mm displacement.
Laser

<table>
<thead>
<tr>
<th>Variables measured</th>
<th>Displacement (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range</td>
<td>0.1m to 100m</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±2mm (±0.002% full scale)</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1mm (0.0001% full scale)</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±0.5mm (±0.0005% full scale)</td>
</tr>
<tr>
<td>System operation</td>
<td>Automated</td>
</tr>
<tr>
<td>Data access</td>
<td>Remotely or on site</td>
</tr>
<tr>
<td>Reading frequency</td>
<td>Sub second</td>
</tr>
</tbody>
</table>

**Additional Information:**
- Suited for use on short to long term projects.
- Reading frequency 50Hz.
- Accurate, non-contact measurement system, ideal for use in difficult to access areas.
- Displacement readings are taken off the immediate area of focus only.
Ultrasonic

Variables measured       Displacement (mm)
Range                    0.2m to 4m
Accuracy                 ±0.4mm (±0.01% full scale)
Resolution               0.05mm (0.00125% full scale)
Repeatability            ±0.2mm (0.005% full scale)
System operation         Automated
Data access              Remotely
Reading frequency        Sub second

Additional Information:
- Suited for use on short to long term projects.
- Reading frequency 13Hz.
- Cheap, accurate, non-contact measurement system, ideal for use in difficult to access areas.
- Displacement readings are taken off a wider area of focus.
- Can be used under water, and to measure movement through different media.
More detail available if required:

- Extensometers (rod / magnetic / tape)

Please get in touch if you would like more information.