

INFRASTRUCTURE MONITORING SENSORS

Air Quality- (ppm)

Crack and Joint meters – (mm)

Convergence Monitors – displacement (mm)

Extensometers – (cm)

Fibre optic strain gauges (μm)

GNSS- Global Displacement/ Deformation (mm)

Inclinometers- Tilt ($^\circ$) displacement (mm)

INSAR remote sensing - deformation (mm), Imagery

Laser Scanning – Deformation (mm)

Load Cells – Pressure (KPa)

Noise Monitors - dB(A)

Piezometers – Pore water pressure- Level (cm) Pressure (KPa)

Pressure cells – Earth pressure (KPa and MPa)

Pressure transducers – (KPa)

Seismic Accelerometers- acceleration (mm/s^2)

Settlement plates (mm)

Shape Accel Arrays- Tilt ($^\circ$) displacement (mm)

Stress meters – Stress (KPa)

Surface displacement Markers (mm)

Temperature probes ($^\circ\text{C}$)

Tilt sensors – Tilt ($^\circ$) displacement (mm)

Total Stations – Displacement/ Deformation (mm)

UAV/ drone mapping / inspection – Quantities and deformation (mm), Imagery

Vibration – Velocity PPV and VDV (mm/s)

Video camera CCTV- Imagery

Water Level sensors – Level (cm) Pressure (KPa)

Weather Stations – air temperature, air pressure, wind, humidity, rainfall.

b) Dams and Reservoirs

- Crack and Joint meters – (mm)
- Convergence Monitors – displacement (mm)
- Fibre optic strain gauges (μm)
- GNSS- Global Displacement/ Deformation (mm)
- Inclinometers- Tilt ($^\circ$) displacement (mm)

- INSAR remote sensing - deformation (mm), Imagery
- Laser Scanning – Deformation (mm)
- Load Cells – Pressure (KPa)
- Pendulums - Tilt (°) displacement (mm)
- Piezometers – Pore water pressure- Level (cm) Pressure (KPa)
- Pressure cells – Earth pressure (KPa and MPa)
- Pressure transducers – (KPa)
- Seismic Accelerometers- acceleration (mm/s^2)
- Shape Accel Arrays- Tilt (°) displacement (mm)
- Stress meters – Stress (KPa)
- Water Level sensors – Level (cm) Pressure (KPa)
- Extensometers – (cm)
- Settlement plates (mm)
- Surface displacement Markers (mm)
- Temperature probes (°C)
- Tilt sensors – Tilt (°) displacement (mm)
- Total Stations – Displacement/ Deformation (mm)
- UAV/ drone mapping / inspection – Quantities and deformation (mm), Imagery
- Vibration – Velocity PPV and VDV (mm/s)
- Video camera CCTV- Imagery
- Weather Stations – air temperature, air pressure, wind, humidity, rainfall.
- Air Quality- (ppm)
- Crack and Joint meters – (mm)
- Convergence Monitors – displacement (mm)
- Fibre optic strain gauges (μm)

- GNSS- Global Displacement/ Deformation (mm)
- Inclinometers- Tilt ($^{\circ}$) displacement (mm)
- INSAR remote sensing - deformation (mm), Imagery
- Laser Scanning – Deformation (mm)
- Load Cells – Pressure (KPa)
- Piezometers – Pore water pressure- Level (cm) Pressure (KPa)
- Pressure cells – Earth pressure (KPa and MPa)
- Pressure transducers – (KPa)
- Seismic Accelerometers- acceleration (mm/s^2)
- Shape Accel Arrays- Tilt ($^{\circ}$) displacement (mm)
- Stress meters – Stress (KPa)
- Water Level sensors – Level (cm) Pressure (KPa)
- Extensometers – (cm)
- Settlement plates (mm)
- Surface displacement Markers (mm)
- Temperature probes ($^{\circ}\text{C}$)
- Tilt sensors – Tilt ($^{\circ}$) displacement (mm)
- Total Stations – Displacement/ Deformation (mm)
- UAV/ drone mapping / inspection – Quantities and deformation (mm), Imagery
- Vibration – Velocity PPV and VDV (mm/s)
- Video camera CCTV- Imagery
- Weather Stations – air temperature, air pressure, wind, humidity, rainfall.

a) Mining

- Air Quality- (ppm)
- Crack and Joint meters – (mm)

- Convergence Monitors – displacement (mm)
- Fibre optic strain gauges (μm)
- GNSS- Global Displacement/ Deformation (mm)
- Inclinometers- Tilt ($^\circ$) displacement (mm)
- INSAR remote sensing - deformation (mm), Imagery
- Laser Scanning – Deformation (mm)
- Load Cells – Pressure (KPa)
- Noise Monitors - dB(A)
- Piezometers – Pore water pressure- Level (cm) Pressure (KPa)
- Pressure cells – Earth pressure (KPa and MPa)
- Pressure transducers – (KPa)
- Seismic Accelerometers- acceleration (mm/s^2)
- Shape Accel Arrays- Tilt ($^\circ$) displacement (mm)
- Stress meters – Stress (KPa)
- Water Level sensors – Level (cm) Pressure (KPa)
- Extensometers – (cm)
- Settlement plates (mm)
- Surface displacement Markers (mm)
- Temperature probes ($^\circ\text{C}$)
- Tilt sensors – Tilt ($^\circ$) displacement (mm)
- Total Stations – Displacement/ Deformation (mm)
- UAV/ drone mapping / inspection – Quantities and deformation (mm), Imagery
- Vibration – Velocity PPV and VDV (mm/s)
- Video camera CCTV- Imagery
- Weather Stations – air temperature, air pressure, wind, humidity, rainfall.