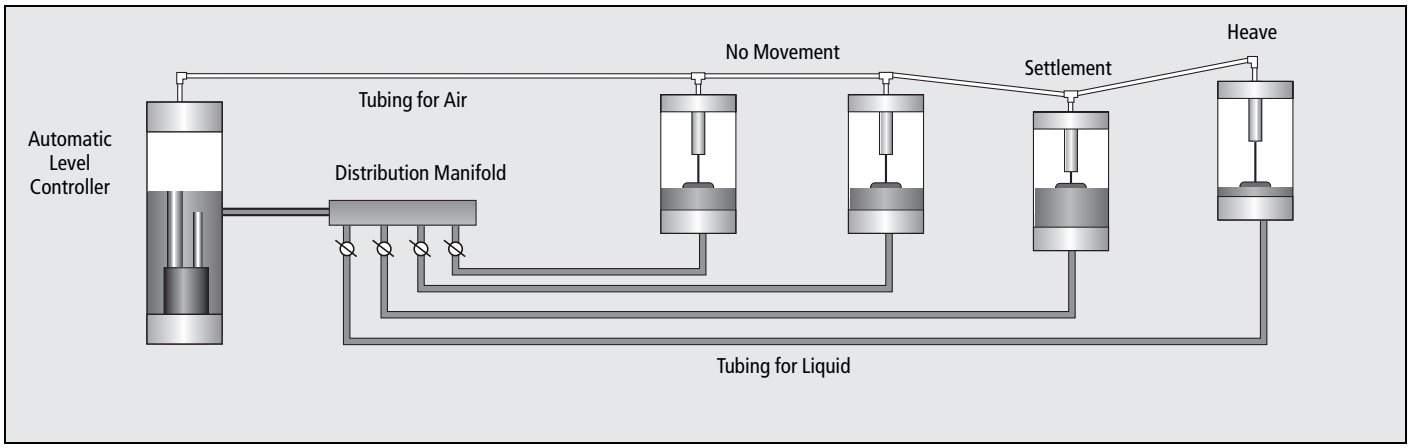
# Multipoint Liquid Level System




## Applications

The multipoint liquid level system from Interfels is used to monitor small changes in the elevation of settlement gauges that are distributed around a structure.

Typical applications include:

- Monitoring differential settlements in structures affected by nearby excavation and tunneling.
- Controlling compensation grouting.

## Operation

Components of the system include an automatic level controller, tubing, and a number of settlement gauges.

The automatic level controller is installed at a stable location outside the area affected by settlement. The settlement gauges are fixed to the structure at selected locations at the approximate elevation of the level controller. Tubing connects each settlement gauge to the automatic level controller.

Liquid is pumped into the tubing and gauges until the liquid within each gauge rises to the same elevation as the liquid in the level controller. The level controller then holds the elevation of the liquid constant by means of a pump, reservoir, and overflow unit.

Sensors monitor the height of the liquid within each gauge. When settlement or heave occurs, the sensor detects an apparent change in the height of the liquid. In fact, the gauge and sensor have moved relative to the elevation of the liquid surface, which has remained constant.

The system is connected to a data logger that provides continuous monitoring and stores readings in memory. Settlement or heave is calculated by comparing the current reading from each sensor to the reference level and applying corrections for temperature.

## Advantages

**Accurate Readings:** The liquid level system can provide an accuracy of ±0.3 mm.

**Settlement Profiles:** Measurements provided by the settlement gauges can be used to compute settlement profiles.

**Automatic Data Collection:** The settlement system can be connected to a data acquisition system for full-time, unattended monitoring. The logger stores both level and temperature readings. MultiMon software can be used to process and display the data graphically in near-real time.

## SETTLEMENT GAUGE

**Gauge with 50 mm range . . . . . 116.1105**
**Gauge with 100 mm range . . . . . 116.1110**
**Protective Cover . . . . . 116.1150**

Each gauge includes a displacement sensor with float, a temperature sensor, and a mounting plate. Does not include tubing or signal cable.

**Sensor Type:** LVDT.

**System Accuracy:** ± 0.3 mm.

**Diameter:** 100 mm.

**Total Height:** 440 mm.

## AUTOMATIC LEVEL CONTROLLER

**Automatic Level Controller . . . . . 116.1410**
**Distribution Manifold . . . . . 116.1460**

Automatic level controller consists of overflow unit with controller. Distribution manifold is required to connect tubing.

## TUBING

**Tubing for Liquid . . . . . .116.1510**
**Tubing for Air . . . . . .116.1520**
**PVC Signal Cable . . . . . .116.1505**

Tubing for liquid runs from the distribution manifold to each settlement gauge. Tubing for air runs from the reference gauge to the first settlement gauge and then from gauge to gauge. Signal cable runs from each settlement gauge to a data logger. Signal cable is shielded cable with six tinned-copper conductors and PVC jacket.

## DATA LOGGER

**Campbell Scientific CR10X:** The size and configuration of the liquid level system will determine the components required for the data logger system. Options include a custom-written monitoring program. See separate data sheet for CR10X part numbers and specifications.

**MultiMon Software:** MultiMon software is used to process and present data in near real time. See separate data sheet for MultiMon.

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rev. 1 11/16/2011