

## HEAT-PULSE FLOWMETER PROBE

The heat-pulse flowmeter sonde is used to measure low flow rates which may lie below threshold limits of conventional impeller tools.

### PRINCIPLE OF MEASUREMENT:

The probe contains a horizontal wire-grid heating element and thermistors located above and below it. Apertures in the tool permit the free flow of well fluid through the assembly. Pulses of electric current are applied to the heating grid under surface command, warming fluid in the vicinity of the grid. The warm fluid front migrates towards the thermistors where it is detected. Depending on the direction of flow, either upper or lower thermistor detects the warm fluid front first. The time taken to reach the detector gives an indication of flowrate.

### FEATURES

- Detection of very low vertical flow rates
- Auto-null command cancels tool offsets prior to each measurement
- Optional natural gamma and casing-collar locator (CCL)

### MEASUREMENTS

- Flow
- Natural gamma
- Casing collar locator (CCL)

### APPLICATIONS

- Water**
- Vertical flow measurement within the boreholes
- Identification of permeable zones in water wells
- Location of permeable zones in water wells

### OPERATING CONDITIONS

- Borehole type:** Open/cased hole, water-filled
- Centralisation:** recommended
- The probe is designed for stationary measurements only. Normal logging consists of a series of stationary point measurements across the zone of interest.

### SPECIFICATIONS

- Diameter:** 50mm
- Length:** 2.24m
- Weight:** 9.4kg
- Max. temperature:** 70°C  
(extended ranges available)
- Max. pressure:** 20MPa  
(extended ranges available)
- Measurement range:** 0.1 to 3m/min
- Natural-gamma detector:** 50mm x 25mm NaI(Tl) scintillation crystal

### SALES INFORMATION

- Probe:**
- 25 073 000 Heat-pulse flowmeter probe
- 25 074 000 Heat-pulse flowmeter probe with natural gamma
- 25 075 000 Heat-pulse flowmeter probe with CCL
- Accessories:**
- 21 001 000 Centraliser range 90mm - 180mm
- 21 002 000 Centraliser range 180mm - 260mm
- 21 003 000 Centraliser range 260mm - 342mm
- 21 004 000 Centraliser range 342mm - 472mm
- 20 070 000 Natural-gamma calibrator without source
- 30 010 000 3.7MBq <sup>137</sup>Cs source for natural-gamma calibrator

