TDR2

Pile Integrity Testing System

TDR2 is a lightweight and rugged, self-contained pile integrity testing system.

This highly versatile pile integrity test system can be used to test pre-cast concrete, cast-in-place concrete and timber piles of varying dimensions.

TDR2 can locate anomalies including shaft restraints, overbreak, cracks, reductions in sections and zones of poor quality concrete. This innovative system can also measure pile length, pile stiffness and mobility to further assess concrete quality and pile section.

Using solid state memory the TDR2 unit is built for security and speed of operation, with a backlit screen for working in dark environments. Supplied with a tough case and high quality waterproof connectors as standard, the unit can be easily transported and used in inclement weather conditions.

Software

The TDR2 system is supplied with a powerful software analysis programme, to enable more detailed analysis of changes in the pile section and the influence of soil.

The TPAP software is an easy to use platform for analysing results and producing reports. Piles are tabulated and automatically sorted into numerical order, and test results can then be accessed directly from the table. Analysis of pile length can be carried out either in the velocity or mobility views and interpretation can be confirmed using the simulation and impedance log modules, removing subjective elements.

Benefits

- Fast testing of 200 plus piles per day
- Operates for up to 8 hours on full charge
- Storage for over 700 results
- Simulation software for analysis of pile and soil properties
- Compliant with ASTM D5882 and AFNOR NFP94-160-2 & 4
- James Fisher Testing Services calibration service available

Simulation modules

This powerful tool can be used to predict the mobility curve using soil and pile properties. It can also be used to assess piles with anomalies by using curve matching in real-time. Up to 10 geotechnical layers can be input to simulate real ground conditions.

Impedance log

The pile shaft impedance is separated from soil effects and plotted against depth. This can effectively be viewed as a pile cross section profile. Often, complex time domain results can be resolved using this method.

How it works

The Transient Dynamic Response (TDR) test is a rapid method of assessing the integrity of both pre-cast and cast in-situ concrete piles.

After ensuring that the concrete in the pile head is visually free of loose materials and contaminants, a geophone sensor is placed in contact with the pile head and struck axially using the systems force response hammer.

The response of both transducers is measured simultaneously, and the velocity and force signals and processed and displayed on the test unit.

By assuming a wave speed velocity it is possible to calculate the pile length. Reflections can also be obtained from acoustic anomalies within the pile shaft. At low frequencies the response is generally linear allowing measurement of the dynamic pile head stiffness.

TDR2 unit	
Features	Twin channel hand held spectrum analyser Daylight viewable screen Tactile large keys for operating with gloves Low power with long battery life Flash memory for instant start up and power down On-site length and stiffness measurement Rugged lightweight unit with waterproof connectors
Keypad	Sealed, colour coded and full alphanumeric keypad, tactile and audio feedback
Operating temperature	0°C to +50°C
Display	Monochrome LCD transflective with back light Contrast keypad, adjustable backlit display with auto-off 122mm x 77mm with protective plate
Acquisition	2 channel, 16 bit acquisition at 25KHz sample rate Pre-trigger on both channels Auto-ranging gain feature
Frequency range	0Hz to 5000Hz
Storage	700+ results, 3 data sets per pile with full header information - site, pile no, diameter, operator, transducers and date / time stamp
Displays	Velocity vs time Force vs time Force vs frequency Mobility vs frequency
Accuracy - black tip	Frequency - 0-1000Hz, ±0.5% Mobility - 20-800Hz, ±15% Mobility - 800-1000Hz, ±50%
Power	Battery - 1.2V NiMH rechargeable AA cells Auto power off and battery indicator
Battery life	8 hours + on full charge
Charge time	Approx 6 hours
Charging	External wall plug-in charger for 100/110/250VAC inputs (trickle charge) External cigar plug-in charger for 12VDC inputs (fast charge)
Dimensions	L 218mm x W 187mm x D 55mm
Weight	1.35kg

TDR impulse hammer	
Type	Constant current load cell
Weight	1.2kg with fibre glass shaft
Nominal output	0.15 Volts/N
Frequency range	0-1000Hz (black tip) / 500-5000Hz (aluminium tip)
Range	0-10,000N

TDR geophone	
Type	Vertical SM-6
Natural frequency	4.5Hz
Nominal output	30 volts/m/sec
Operating temperature	-30°C to +60°C

All of our equipment is supplied fully calibrated to UK national standards.

TDR2 user training

We provide full training for all equipment purchased from JFTS. Our training sessions are created and led by our in-house experts, providing you with the skills and knowledge needed to operate the equipment safely, efficiently and with confidence.

We offer classroom and site training within the UK, on-site training overseas and virtual classroom training. No matter what your needs or technical experience we can provide the right training solution for your requirements.