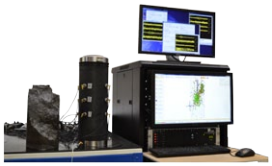
TRANSDUCER OPTIONS TABLE

GDS
www.gdsinstruments.com

	TRANSDUCER	MAIN FUNCTION	COMPATIBLE WITH	RANGE	ROCK/SOIL
	**Hall Effects Transducers**	Greater accuracy strain can be measured by using local strain transducers. Hall Effects are one of the main transducers used for this purpose, they are lightweight and easily mounted onto the specimen's membrane (with the use of pins and glue). There are usually three transducers, two for axial and one for radial strain measurement.	• Static Triaxial Systems • Dynamic Triaxial Systems • Sample sizes 38mm+ (requires access ring)	• 1.7MPa • +/- 3mm	Soil
	**LVDT's Transducers**	Accurate determination of soil stiffness is difficult to achieve in routine laboratory testing. Conventionally, stiffness of a triaxial test specimen is based on external measurements of displacement, which can include a number of extraneous movements. GDS's LVDT transducers are available in two types, low pressure and high pressure, they mount directly onto the specimens membrane to record on-sample small strain measurements of axial and radial strain.	• Triaxial Systems (range from 50mm+ diameter specimens) (requires access ring) • EMDCSS (used for vertical measurement and direct pedestal to topcap measurement)	• Up to 3.5MPa +/-2.5mm, +/-5mm, +/- 10mm • Up to 100MPa +/- 2.5mm, +/- 5mm	Low pressure (Soil) High pressure (Rock)
	**Mid Plane Pore Pressure Transducer**	To increase the accuracy of pore pressure measurement during consolidation and shear, mid-plane pore pressure transducers can be fitted within a triaxial system. The transducers are attached to the side of the specimen with a special grommet that is then sealed against the membrane, ensuring no leaks occur during testing.	• Static Systems • Dynamic Systems (requires access ring)	• 1500kPa	Soil
	**Bender Elements System**	The very small strain response of a soil specimen can be determined through bender element testing. Bender Elements enable the maximum shear modulus (Gmax) of a specimen to be estimated, which is an important parameter for use in geotechnical design and numerical analyses.	• GDSTAS, • ELDYN, • DYNTTS, • HLF range, • GDSTTS • EMDCSS	• 50mm+ diameter specimens	Soil
	**Laser Displacement Sensors**	The lasers take a point measurement of the centre of the specimen at either 2 or 3 locations and provide a specimen profile from outside of the triaxial cell. The point measurement is used to measure the radial deformation during the test. The set up requires a base adaptor and jig to ensure the lasers are perfectly horizontal and correctly positioned.	• Static Triaxial Systems with external rig	• 2 or 3 Lasers	Soil

	**Wet Wet Differential Transducer**	GDS offers two types of Wet Wet transducer. One is used with the HKUST UNSAT method to measure volume change by means of hydrostatic head pressure changes. The other is to measure the back-base pressure differential for permeability testing. Both low range transducers provide highly accurate results.	• HKUST UNSAT • GDSTAS • GDSTTS • DYNTTS • ELDYN	• Up to +/- 1.5kPa (HKUST version) • 200 or 50kPa range (differential pressure transducer for permeability)	Soil/Rock
	**Internal Submersible Load Cells**	Internal submersible load cells can be fitted into new or existing triaxial chambers. Designed to be submersible, the confining pressure does not affect the load readings recorded by the transducer. This in-turn removes friction of the ram and the up-thrust created from the test recordings, creating more accurate results.	• Static Triaxial Systems • Dynamic Triaxial Systems	• Load Cells up to 64MPa with • Loads up to 300kN	Soil/Rock
	**Potentiometer Displacement Transducer**	GDS's Potentiometer Displacement Transducers provide the facility for single or dual electrical output with a body diameter of only 19mm. The transducers are supplied with a spring loaded shaft biased to the fully extended position. Being a potentiometric divide with coated windings, the transducers produce an output with limitless resolution.	All GDS Systems	• +/- 12.5mm to • +/- 25mm • +/- 50mm	Soil/Rock
	**Pore Pressure Transducers**	Pore Pressure Transducers are used to measure pressure during testing. Typically used for pore pressure measurement, the transducers can be combined with remote feedback modules to provide additional reading for cell/back or lower chamber pressure. The transducers connect with a 1/4" BSP male thread to de-airing block and other ports (if required).	All GDS Systems	• Up to 100MPa	Soil/Rock
	**External "S-Beam" Load Cells**	The S-Beam Load Cells are designed to measure load during testing. Non-submersible, these load cells are situated outside of the triaxial cell, between the top of the ram and the reaction bar of the load frame, or attached to a force actuator which can be mounted at various angles in various conditions.	• Static Systems • Force Actuator • GDSAOS	• Up to 100kN	Soil/Soft Rock
	**Acoustic Velocity Transducer**	Acoustic Velocity (AV) sensors are generally used where pressures and load exceed those where bender elements can be used. AV sensors are based on the same principle as bender elements however, the piezo ceramic elements are not exposed to the environment so they can be used at pressures up to 100MPa and loads up to 2MN. Shear wave elements are set in orthogonal directions to allow two shear waves to be generated with different polarisation.	• GDS Triaxial Cells (typically high pressure)	• Up to 100MPa • Up to 2MN	Rock
	**Acoustic Emission Transducers**	The Acoustic Emission transducers enable micro-fractures occurring within a rock specimen during testing to be recorded and analysed. Analysis of rock micro fractures can give information as to the failure mechanisms of a sample under tests well as determining the onset of failure.	• Hoek Cell • GDS Triaxial Cells (Modified base required)	• Up to 100MPa • Up to 2MN	Rock