

**Pressure range**

1MPa ✓

**Volume capacity**

200cc ✓

**Optional Smart Keypad**



# Enterprise Level Pressure/ Volume Controller (ELDPC)



## What is it?

The GDS Enterprise Level Pressure/Volume Controller (ELDPC) is a general-purpose water pressure source and volume change gauge. With a maximum pressure of 1000kPa and a volumetric capacity of 200cm<sup>3</sup>, the ELDPC fits neatly in the GDS range of pressure controllers below the premiere product namely the Advanced Pressure Controller (ADVDP) and the mid-range Standard Pressure Controller (STDDPC). Table 1 shows a comparison between devices (see page 2).

## What are its uses?

The ELDPC provides an extremely cost-effective replacement for conventional soil mechanics laboratory pressure sources and volume change gauges. It is ideal as a back pressure or cell pressure source where it can also measure the change in volume of the test specimen.

In line with existing GDS pressure controllers the ELDPC does not require a supply of compressed air to function. Configured both with or without the optional keypad, the device can be controlled directly from a computer using its own full speed USB 2.0 interface.

With the addition of the optional Smart Keypad the ELDPC can be configured as a completely stand-alone device. In this stand-alone mode, the instrument is a constant pressure source which can replace traditional laboratory pressure sources such as mercury column, compressed air, pumped oil and dead weight devices. It is also a volume change gauge resolving to 1 cu mm.

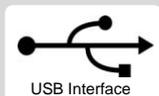
The reduced size of the ELDPC compared to any other controller in the GDS range makes it ideally suited for life in a commercial testing laboratory where bench space is usually at a premium. The ELDPC automatically protects itself from pressure and volume over-ranges.

Intuitive PC based software supplied allows full controller functionality to be accessed by means of the full speed USB 2.0 interface. The instrument may also be controlled via the optional Smart Keypad without the need of a PC.

The ELDPC is fully RoHS Compliant.

### Technical specification

- **Pressure range:** 1 MPa
- **Volumetric capacity (nominal):** 200cc for all pressure ranges
- **Resolution of measurement:** pressure = 1kPa, volume = 1cu mm
- **Accuracy of measurement:** pressure: <0.25% full range, Volume: < 0.4% measured value with <+/- 50mm<sup>3</sup> backlash
- **Closed-loop microprocessor control of pressure:** regulated to +/- 1kPa
- **Closed-loop microprocessor control of volume:** regulated to +/- 1cu mm
- **Size:** 550mm x 100mm x 125mm
- **Weight:** 5.5kg (empty)
- **Power:** Supply: 100-240V AC, 50-60Hz, 0.7A. Max Consumption: 20W. Typical Consumption: <12W.
- **Ambient temperature range:** 10°C to 30°C
- **Relative humidity:** 20% to 80% non condensing
- **User interface:** PC based software or Optional Smart Keypad featuring state-of-the-art Organic LED display technology with 180 degree viewing angle and 16 key input with audio feedback
- **Computer interface:** Full speed USB 2.0 compatible interface
- **Maximum operational speed:** Ultra high speed Fill/Empty up to 1500 cu mm/sec
- **Onboard processing:** 40 MIPS 16 bit DSC



## How do you use it?

The instrument may be controlled via a PC or by using the optional Smart Keypad.

### Via a PC

Simply install the GDS software onto your windows based PC and plug the instrument in via the USB interface. The windows based application will then allow you to operate the device. A display window shows the current pressure and volume.

For example, to set a constant pressure type "500" into the Pressure textbox and press enter or click Seek Pressure. The controller will then seek to a target pressure of 500kPa. The current pressure and volume are displayed above.

### Using a Smart Keypad

Simply plug the Smart Keypad (see Fig. 1) into the ELDPC and the Smart Keypad will automatically recognise the controller and display the current pressure and volume.

For example, to set a constant pressure merely type "500" using the membrane keypad – the Smart Keypad will display the text "500 kPa". Pressing the green enter key will cause the controller to seek to the target pressure of 500kPa. The current pressure will be displayed in the top right corner.

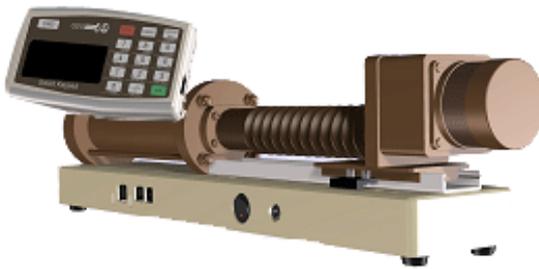


Fig. 1 ELDPC configured for use from a PC without the keypad. Optional keypad shown inset.

## How does it work?

Liquid (normally deaerated water) in a cylinder is pressurised and displaced by a piston moving in the cylinder. The piston is actuated by a ball screw turned in a captive ball nut by an electric motor and gearbox that move rectilinearly on a ball slide (see Fig. 2).

Pressure is measured by an integral solid state transducer. Control algorithms are built into the onboard microcontroller to cause the controller to seek to a target pressure or step to a target volume change. Volume change is measured by counting the steps of the incremental motor.

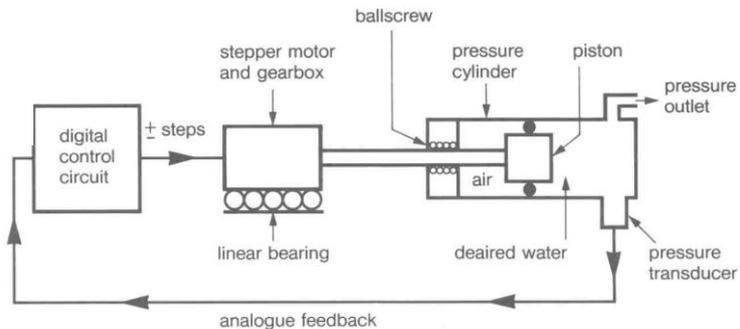


Fig. 2 Operational schematic of ELDPC

### Why buy ELDPC?

- Lowest cost GDS pressure/volume controller to date
- May be configured with or without the Smart Keypad
- Volume resolution = 1 cu mm (0.001cc)
- Pressure resolution = 1 kPa
- Can be used stand alone (with Smart Keypad), or computer controlled
- Compressed air not required
- Compatible with GDSLAB control and acquisition software

	ELDPC	STDDPC v2	ADVDPCC
Available Pressure Ranges (MPa)	1	1, 2, 3 or 4	0.1, 0.5, 1, 2, 4, 16, 32, 64, 128 or 150
Volume capacity	200cm <sup>3</sup>	200cm <sup>3</sup>	200 or 1000cm <sup>3</sup>
Pressure accuracy	0.25%FRO	0.15%FRO	<0.1%FRO
Volume accuracy	0.4% measured +/- 50mm <sup>3</sup>	<0.25% measured +/- 30mm <sup>3</sup>	<0.1% measured +/- 12mm <sup>3</sup>
Data acquisition	1 channel 12 bit	1 or 2 Channel 14 bit	1 or 2 Channel 13 bit Enhanced to 14 bit
Communication	USB	USB	RS232 or IEEE488
Keypad & Display	Optional	Included as standard	Included as standard
Size (mm)	550mm x 100mm x 125mm	620mm x 100mm x 140mm	860mm x 230mm x 220mm

Table 1 Comparison between the Enterprise Level (ELDPC), Standard (STDDPC v2) and Advanced (ADVDPCC) pressure/volume controllers.