

- HPHT fibre optic gauge
- No downhole electronics
- All metal sealing
- Long life at extreme temperature
- High multi-drop capability
- Annulus, tubing or ported pressure configurations
- Low profile 3/4" design
- Low Cost



SmartPort is a low profile 3/4" fibre optic P/T gauge. Pressure is communicated via a small pressure port on the gauge body to SmartPort's novel internal optical sensing mechanism where pressure and temperature measurements are made using two fibre Bragg grating sensors. Annulus pressure and temperature are simply measured by leaving the pressure port open to the wellbore. For formation pressure and temperature measurements, the low profile gauge can be deployed open hole behind the casing. For tubing pressure and temperature measurements, SmartPort can be attached to a gauge mandrel with the use of dual metal o-ring or c-ring seals. Pressure from alternative locations can be communicated to SmartPort via a tube which seals to the gauge at the mandrel interface.

Multiple SmartPorts can be multiplexed on a 1/4" downhole cable to which the gauges are sealed using pressure testable swaged connections. Optical connection between SmartPort gauges is made using our 3/4" SmartLink product www.smartfibres.com/docs/SmartLink.pdf Up to 15 SmartPort gauges can be multiplexed on every 2 fibres. So, for instance, 30 gauges can be deployed using a 4 fibre main cable and one downhole 'Y' splitter.

For HT and/or HP application with increased stability, an HPHT SmartPort is under development. Contact us for further details.

SmartPort Specifications

Measurement	Pressure and Temperature of annulus, tubing or ported fluid					
Working Pressure Range (psi / bar)	1,000/69	1,450/100	5,075/350	10,150/700	15,000/1,034	20,000/1,379
Overload Pressure	150 %FS					
Working Temperature Range (°F / °C)	0 to 400 / -20 to 200 (> 400 / 200 to follow)					
Pressure Accuracy (psi / mbar)	< 0.1 %FS					
	1/69	1.5/100	5/350	10/700	15/1,034	20/1,379
Pressure Resolution at 0.1 Hz (psi / mbar)	< 0.005 %FS					
	0.05/3.4	0.07/5	0.25/17.5	0.5/35	0.75/52	1/69
Temperature Accuracy (°F / °C)	0.2 / 0.1					
Pressure Measurement Drift	at 140 °F / 60 °C			Immeasurable		
	at 260 °F / 125 °C			0.1 %FS/yr*		
	at 400 °F / 200 °C			0.5 %FS/yr*		
Multi-drop capability	Up to 24 gauges per 2 fibres					
Wetted Parts	Inconel					

SmartPort Variant	Sensor type	Upper connection	Lower connection	Diameter in (mm)	Length in (mm)	Weight Lb (kg)
SPPT	In-line	2 fibre pigtails	2 fibre pigtails	0.75 (19)	15.7 (400)	1.48 (0.67)
SPPT1	In-line	2 fibre pigtails	Splicing chamber	0.75 (19)	30.6 (778)	2.78 (1.26)
SPPT2	In-line	Splicing chamber	Splicing chamber	0.75 (19)	45.5 (1,156)	4.09 (1.86)
TSPPT	Terminal	2 fibre pigtails	None	0.75 (19)	10.8 (275)	0.98 (0.45)
TSPPT1	Terminal	Splicing chamber	None	0.75 (19)	25.7 (653)	2.29 (1.04)

Smart Fibres maintains a policy of continuous improvement so specifications may change without notice.

* Expected performance, not yet verified