

- Robust design based on inductive technology
- Sleeve or threaded core options
- Optimal sensor length to cylinder stroke ratio
- 8mm transducer body diameter
- Internal or external threaded flange options
- Measurement range 25-1000mm
- Integrated signal conditioning electronics
- Analog output (ICT800) – 0.5-4.5Vdc or 0.2-4.8Vdc
- CAN output (ICT820) – SAE J1939
- Approaching end-of-stroke signalling
- Hydraulic fluid temperature measurement
- Self-diagnostics and safety outputs
- Sealing to IP69K



The ICT800 & 820 range of contactless In-cylinder Linear Transducers offers an unmatched combination of ruggedness and long life. The non-contacting, inductive sensing design provides superior resistance to shock and vibration that other technologies, such as magnetostrictive, simply can't match; as well as eliminating the potential reliability issues related to contacting parts used in potentiometer based products.

Two core configurations provide the designer the following options. Sleeved core - cylinder rods can be simply machined to accommodate the sleeve, which also gives the option of retro-fitting existing servo-cylinders with an upgrade to ICT technology. Threaded core - provides the designer with the minimum transducer body size and simplified installation requiring minimal machining.

Because inductive sensing elements can provide measurement right up to the end-stops, there are no dead zones meaning the overall sensor length can be as close as possible to the cylinder's stroke. This, coupled with careful mechanical design, eases accommodation of the sensor into cylinders where space is at a premium. Furthermore, with a transducer body of only 8mm the ICT800 & 820 are well suited for use on small-bore

actuators; while offering a choice of internal or threaded external flange mounting configurations to suit tie-rod, welded and rear clevis-mounted cylinder types in stroke ranges from 25 to 1000mm.

The signal conditioning electronics, which can operate from a 5Vdc or an 8-30Vdc supply and across a wide temperature range, are integrated into the mounting flange and provide analog or CAN SAE J1939 output options. The analog output can be chosen to provide output ranges of 0.5-4.5Vdc or 0.2-4.8Vdc, while the CAN models have multiple Node ID, Baud Rate and Frame Rate configurations, thereby allowing simple integration with existing networks.

To maximise sensor safety, internal diagnostic circuits monitor for correct operation and if an error is detected this is communicated via an out-of-range analog signal or with a CAN message. In addition, the CAN versions are able to provide information on hydraulic fluid temperature, as well as having programmable end-stops and indication that the cylinder is approaching the end of travel, so allowing automatic soft-stopping. Dependent on electrical connector configuration, environmental protection levels of IP69K can be achieved.

## SPECIFICATIONS

### SUPPLY

SUPPLY VOLTAGE	5Vdc $\pm$ 0.1Vdc and 8-30Vdc
SUPPLY CURRENT	< 80mA
OVER VOLTAGE	40Vdc
REVERSE POLARITY PROTECTED	Yes
POWER-ON TIME	< 1s
CONNECTIONS	Integrated M12 connector, cable through gland or flying leads

### OUTPUT - ICT800

OUTPUT VOLTAGE	0.5-4.5Vdc $\pm$ 0.2% or 0.2-4.8Vdc $\pm$ 0.2%
LOAD RESISTANCE	1k $\Omega$ min.
SHORT CIRCUIT PROTECTION	Output to GND
RESOLUTION	12-bit
OUTPUT NOISE	< 1mV rms
INPUT/OUTPUT DELAY	< 10ms
FREQUENCY RESPONSE	100Hz @ -3dB

### OUTPUT - ICT820

OUTPUT	CAN SAE J1939
BAUD RATE	50, 125, 250, 500 or 1000 kbits/s
FRAME RATE	10-100ms in steps of 10ms
RESOLUTION	13-bit
OUTPUT NOISE	$\pm$ 1-bit
INPUT/OUTPUT DELAY	Selected Frame Rate

### ICT800 & ICT820

LINEARITY	< $\pm$ 0.1%
TEMPERATURE COEFFICIENT	< $\pm$ 300ppm
VELOCITY	2m/s in ISO VG32 mineral oil
EMC	Directive 2004/108/EC
OPERATING TEMPERATURE	-40°C to 125°C (105°C cable version)
STORAGE TEMPERATURE	-40°C to 85°C limited by packing material
VIBRATION	EN60068-2-64 (9gn rms)
SHOCK	2500g survival
WORKING PRESSURE	670bar
BURST PRESSURE	1000bar
PULSED PRESSURE	0bar to 470bar in 1s for 100,000 cycles
WORKING FLUIDS	Mineral, synthetic, fire retardant & ECO fluids
SEALING	IP67 M12 connector, IP69k cable & IP66 flying lead
MECHANICAL LIFE	Contactless
MTTFD	203 years