

COMBINED TYRE PRESSURE/IR SENSOR



The system consists of a powered pressure and temperature sensor with transmitter fitted to a wheel rim, this sends pressure and temperature data over an RF link to a compact receiver on the car. Sampling rates increase automatically when a change in pressure is detected and the system shuts down below a threshold pressure to preserve battery life. The receiver sends data to the car control via CAN.

Electrical

- Supply voltage 2.5-3.6V (Internal Lithium Thionyl Chloride battery)
- Life >175,000 transmissions when transmitting at 4Hz at a temperature range of +50°C to +130°C
- Transmission rate included in transmitted data
- Battery voltage measured on full load
- Transmission rate: governed by rate of change of pressure and rotation of the wheel. Structured to preserve battery life.

Tyre Pressure

- Pressure range 4.4 to 30psi gauge (0.3 to 2.068 Bar)
- Pressure accuracy ±0.15psi (±10mBar) typical, ±0.3 psi (±20mBar) max
- Pressure resolution 0.01 psi/bit (0.69mBar/bit)

Tyre Temperature (IR Sensor)

- Calibrated temperature range 0°C to +150°C
- Compensated temperature range +40°C to +130°C
- Temperature resolution 0.05°C/bit
- Temperature accuracy ±3°C
- Repeatability ±1°C
- Target distance 300mm max (calibrated at 240mm)

Board Temperature

- On board KTY13-5 temperature sensor
- Temperature sensor range -50°C to +150°C
- Temperature resolution 0.17°C/bit

Each sensor transmits a unique encrypted serial number. A data disc is supplied for each sensor containing the 16bit ID serial number and temperature and pressure calibration points.

RF Specification

- Compatible with MESL CAN receiver
- Modulation FM (FSK) encoded serial data
- Nominal frequency 433.920MHz
- Transmission range 15m (typ)

Message Type 1 (20.4ms duration)

<Serial No>
<Board Temp>
<Pressure>
<TX count>

Message Type 2 (20.4ms duration)

<Serial No>
<Vbatt> (measured on full load)
<Tyre temp (IR sensor)>
<TX count>

Message Type 3 (20.4ms duration)

<Serial No>
<TX Life count>
<Tyre temp (IR sensor)>
<TX count>

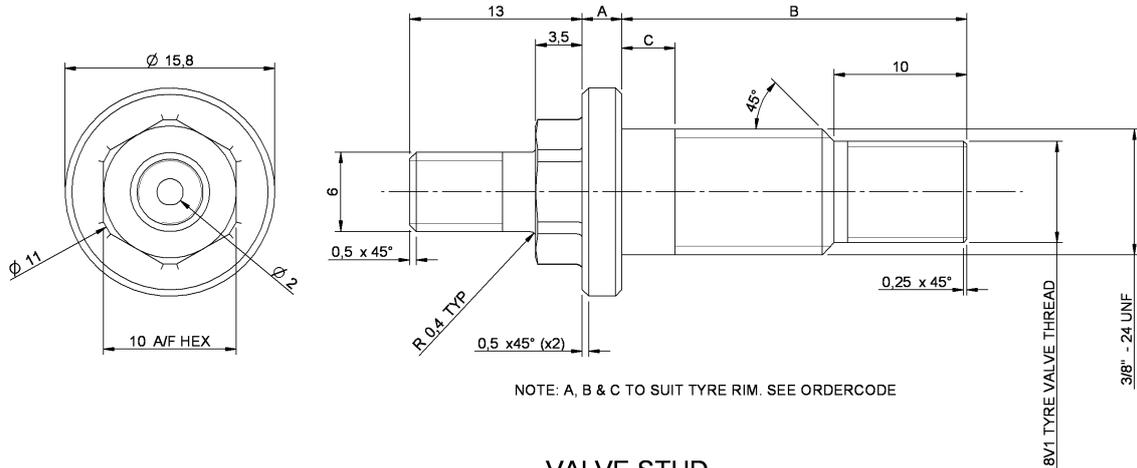
Rate	Inertial switch	Pressure	Nominal Threshold dp/dt (mBar/s)	dp required (mBar)	Nominal Transmission rate, Hz(s)	Message type
0	X	<0.3Bar	--	--	0	No TX
1	LOW	>0.3Bar			0.39(2.56)	1, 2, 1, 3 cyclically
2	HIGH	>0.3Bar	1.5	3.8	4.0(0.25)	1, 2, 3, 2, 3, 2, 3, 2, 3, 2
3	HIGH	>0.3Bar			4.0(0.25)	1, 2, 3, 1, 2, 3, 1, 2, 3, 1

Rate 0 applies when the pressure is <0.3 Bar gauge. Sensor does not transmit but continues to sample the pressure.

Rates 1-3 apply when the pressure is >0.3Bar (0.58psi) gauge.

Rates quoted are for Vsupply = 3.6V and 25°C. Rates slow down linearly with increasing temperature and reducing Vsupply. Rates are ≈ 0.63 quoted values under combined worst case condition of Vsupply = 2.5V and temperature 135°C.

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VALVE STUD

Description	Dimension A	Dimension B	Dimension C	Order Code
Valve stud	3mm	26mm	4mm	O 030 330 990 018