

TYRE PRESSURE SYSTEM



The system consists of a powered pressure sensor with transmitter fitted to a wheel rim, this sends 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. An analogue version is also available.

Electrical

Sensor TX

- Supply voltage 2.5-3.6V (Internal Lithium Thionyl Chloride battery)
- Life 5×10^6 transmissions without battery change (assuming operation at 25°C without dynamic loading)
- Pressure range 4.4 to 30psi gauge (0.3 to 2.068 Bar)
- Pressure accuracy ± 0.15 psi (± 10 mBar) typical, ± 0.3 psi (± 20 mBar) max
- Pressure resolution 0.01 psi/bit (0.69mBar/bit)
- On board KTY13-5 temperature sensor
- Transmission rate (Governed by rate of change of pressure and structure to preserve battery life)

Receiver RX

- Supply voltage 8 to 16Vdc
- Supply current 90mA @ 12V
- CAN bus 2.0B active, 1Mbps
- Recommended CAN card Vector CANcardXL
- Storage capacity 240 sensors

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

- Modulation FM (FSK) encoded serial data
- Nominal frequency 433.920MHz
- Transmission range 15m

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)
<Thermocouple>
<TX count>

Message Type 3 (20.4ms duration)

<Serial No>
<TX Life count>
<Thermocouple>
<TX count>

Rate	Nominal Threshold dp/dt (mBar/s)	dp required (mBar)	Nominal Transmission rate, Hz(s)	Message type
0			0	No TX
1	--	--	0.39 (2.56)	1, 2, 1, 3 cyclically
	1.5	3.8		
2			0.77 (1.30)	1
	4.6	5.8		
3			1.47 (0.68)	1
	37.0	24.7		
4			2.7 (0.37)	1
	123.7	49.5		
5			4.6 (0.22)	1

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

Rates 1-5 apply when the pressure is >0.3Bar 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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Mechanical

CAN Receiver RX

- Aluminium case, hard anodised black
- Total weight 119g (95g without the antenna)
- Connector ASL0-06-05-PN-HE
- Connection

Pin 1	Supply
Pin 2	Ground
Pin 3	CAN +
Pin 4	CAN -
Pin 5	N/C

Analogue Receiver RX

- Aluminium case, hard anodised black
- Total weight 139g (115g without the antenna)
- Connector AS2-10-35PN
- Connection

Pin 1	Supply
Pin 2	Analogue 3
Pin 3	N/C
Pin 4	CAN +
Pin 5	CAN -
Pin 6	N/C
Pin 7	Analogue 2
Pin 8	Analogue Ground
Pin 9	Analogue 1
Pin 10	Ground
Pin 11	Analogue 4
Pin 12	N/C
Pin 13	N/C

Sensor TX

- Standard sensor weight 18g, complete sensor and housing weight 42g
- Valve mounted sensor weight <35g
- Sensor lid, housing and rim housing 6AL4V titanium
- Approximately five factory battery changes per sensor without compromising reliability
- Bespoke designs can be offered to suit the wheel rim profile. Integral to the valve stem and fitted to the rim inside of the tyre, the design can be tailored to the rim to ensure profile is kept to a minimum for ease of tyre mounting.

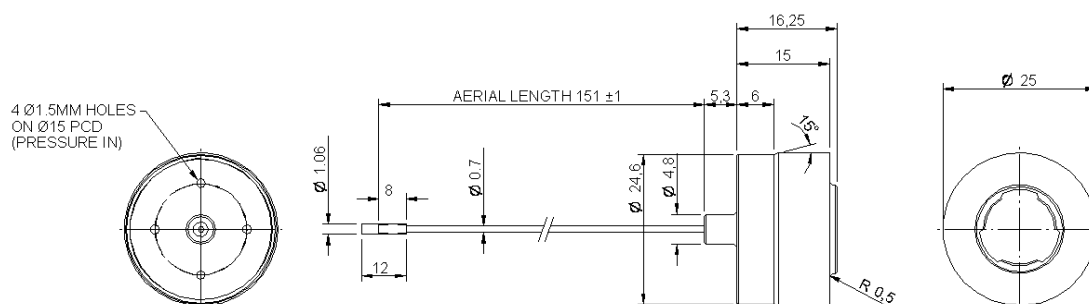
Environmental

Sensor TX

- Resistant to standard Motorsport fluids
- Operating temperature +10 to +135°C
- Vibration 50 to 2500Hz @ 40g 8hrs per axis
- Shock 50g(max), 1/2sine for 11ms, 5 times per axis

Receiver RX

- Resistant to standard Motorsport fluids
- Operating temperature +10 to +85°C
- Vibration random spectrum for 2 hrs in 1 axis



Description

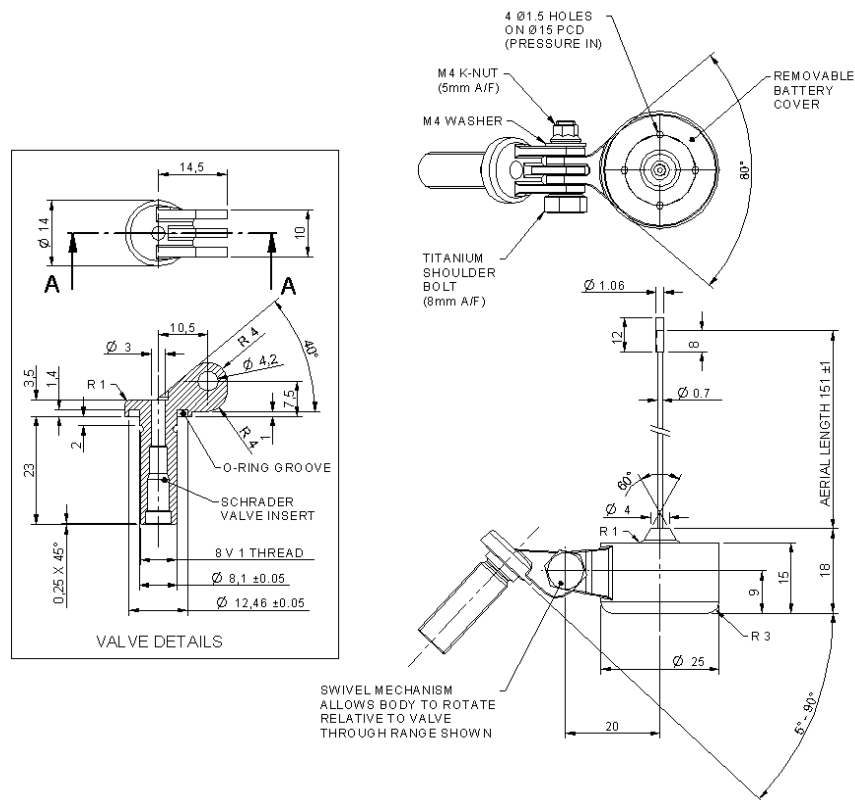
Standard tyre pressure sensor

Order Code

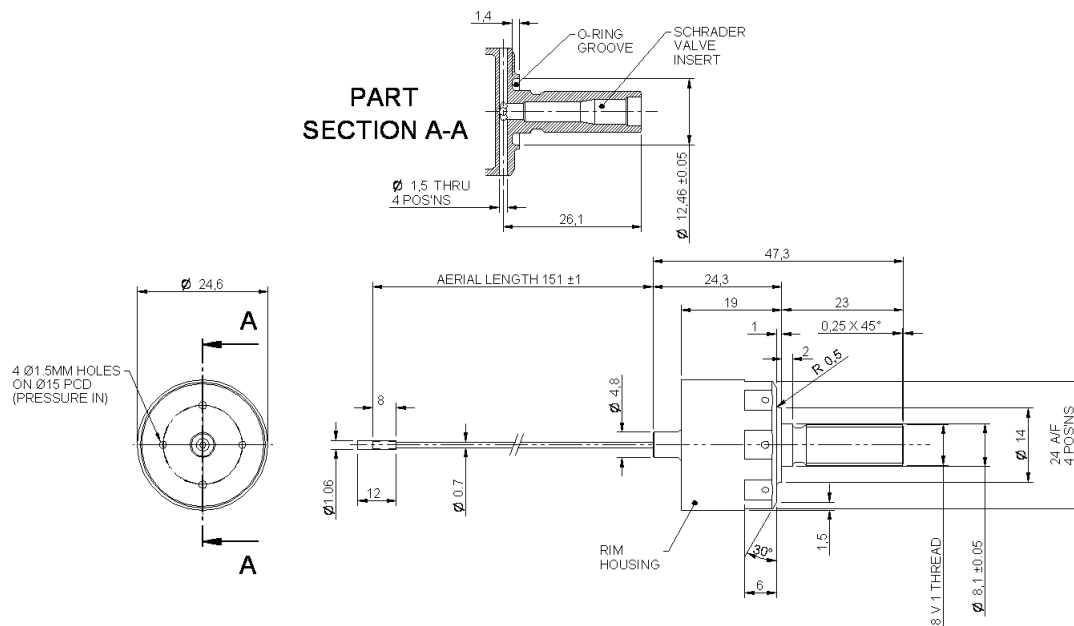
O 030 330 046 001

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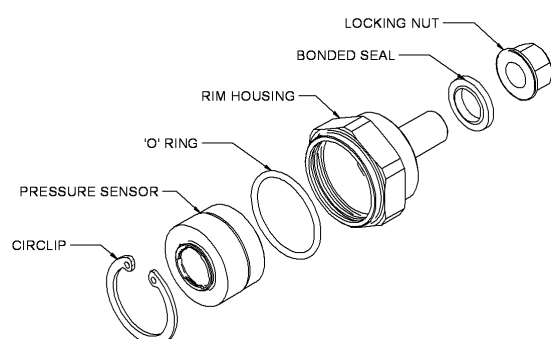
Description	Order Code
Internal valve mounted adjustable tyre pressure sensor	O 030 330 046 034



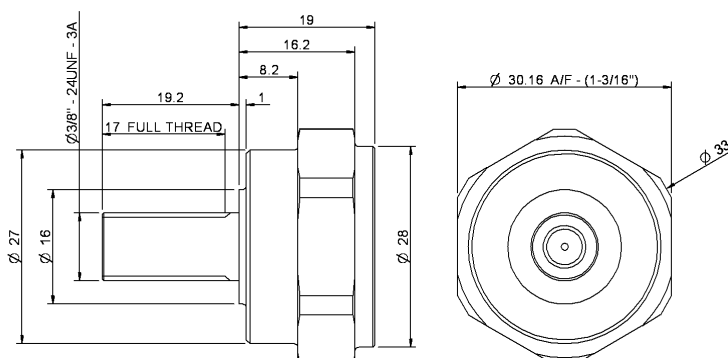
Description	Order Code
Internal valve mounted tyre pressure sensor	O 030 330 046 035

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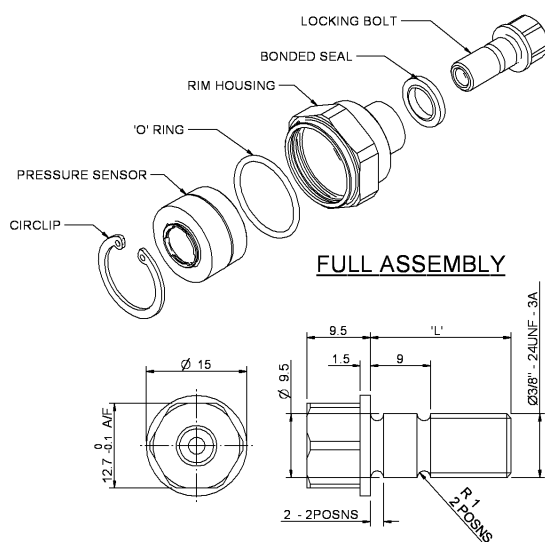


FULL ASSEMBLY

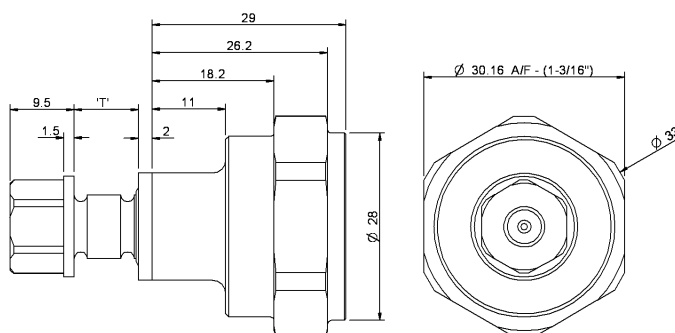


RIM HOUSING

Description	Order Code
Nut-fixed rim housing (including housing, bonded seal, 'o'ring, circlip and K nut)	O 030 330 046 004



LOCKING BOLT



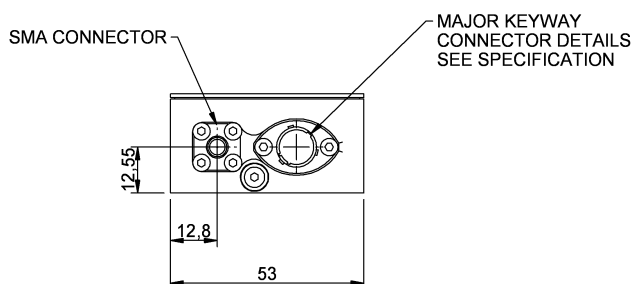
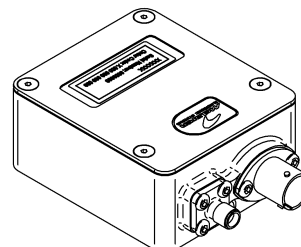
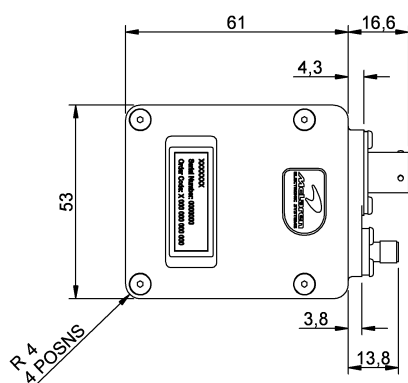
RIM HOUSING with LOCKING BOLT AND BONDED SEAL FITTED

L = 18.5mm (short bolt), compatible for rim thickness 'T' = 7.62mm±0.5mm

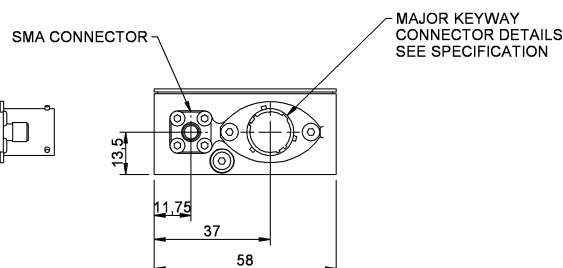
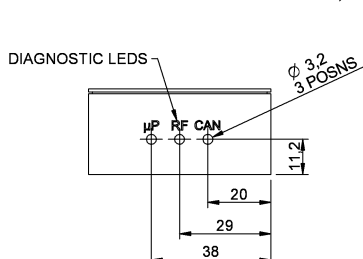
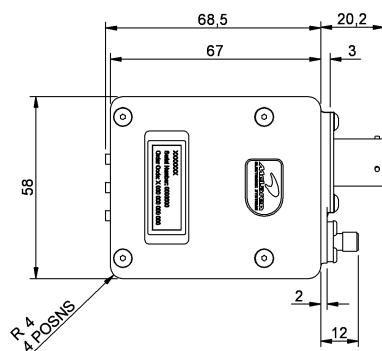
L = 21.0mm (long bolt), compatible for rim thickness 'T' = 10.16mm±0.5mm

Description	Order Code
Bolt-fixed Rim Housing Assembly (including housing, bonded seal, 'o' ring and circlip – bolts to be ordered separately)	O 030 330 046 008
Long locking bolt	O 030 330 990 010
Short locking bolt	O 030 330 990 011
Spare Rim Kit Parts	
Removal Tool	O 030 330 990 003
Dowty Bonded Seal	O 030 330 990 004
Circlip (for retaining sensor in housing)	O 030 330 990 005
Internal O Ring (for sealing sensor into housing)	O 030 330 990 006
"K" nut (for locking rim housing to rim)	O 030 330 990 007

TYRE PRESSURE SYSTEM



Description	Order Code
CAN linked tyre pressure receiver (with antenna included)	O 030 330 046 024
CAN receiver connection lead	O 030 330 990 012



Description	Order Code
Analogue linked tyre pressure receiver (with antenna included)	O 030 330 046 030
Analogue receiver connection lead	O 030 330 990 017
Additional Receiver Parts	
Antenna (spare)	O 030 330 990 008
CANcard (for connecting the receiver to a PC for sensor configuration)	O 030 330 990 015

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