

APTS TECHNICAL CHANGE NOTICE

Dear customers,

TRANSPOLIS SAS performs continuous improvements and implements changes to the APTS sensors. In this notice, we want to inform our customers about the latest changes or modifications made to the product. This document indicates the parts and components where changes have been performed. Some changes have been made to harmonize and standardize the manufacturing process. This guideline gives rationales and clarifications to help you understand the benefits of our new APTS sensors.

We remain at your disposal should you need any additional information.

Best regards

Pressure cell and sensitivity

We use a new miniature strain gage pressure cell with new conditioning electronics implemented in the sensor head. It is a 350 Ω +/-10% full bridge (input and output resistance). To be compliant with many data acquisition systems (DAS), we set a fixed bridge excitation voltage of 2.05 VDC. This excitation voltage is obtained whenever the DAS input voltage is in the range 2.4 to 18 VDC. To do this, we used an electronic voltage reference circuit featuring high accuracy, high stability, and low power consumption in a tiny footprint. This allows temperature drift curvature correction techniques which minimize nonlinearity of the voltage change with temperature.

The new range of the pressure cell is 500 kPa / 5 bar (750 kPa safe overload). It is compliant for the maximum peak pressure measured inside dummy abdomens during crash tests.

Each APTS sensor is delivered with a calibration certificate. We perform the calibration from 0 to 4 bar.

The sensitivity is always delivered in mV/bar because the excitation voltage is fixed by design at 2.05 VDC (see above about reference voltage).

Elastomer bladder

In late 2017, the bladder elastomer material was changed because of ROHS non-compliance. A new material has been qualified and the mechanical behaviour has been precisely controlled to guaranty a constant quality of the APTS sensor. The new material guarantees high properties regarding tensile strength, tear resistance, abrasion and ageing.

Cable

Each sensor is delivered with a 9m long cable featuring 6xAWG 28/7 cross section, PTFE orange outer sheath, tinned copper braiding screen, 3.2 outer diameter, 7.5x cable diameter minimum bending radius.

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Rev. 02.01.2020

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Electronic TEDS

A 1-Wire 1024-bit EEPROM chip (DS2431 from Maxim Integrated) is now integrated in the sensor head. It enables the TEDS function according to the IEEE P1451.4 standard. This allows a unique sensor ID and relevant data to be stored in the memory such as serial number, sensitivity, excitation voltage, range, etc. to allow for complete traceability.

Plug

A Lemo plug is systematically delivered with the sensor cable. It is an FGG model straight plug, 00 series, 6.4 mm diameter so the sensor cable comes out through small holes at the base on the blind holes of Q abdomens.

The Lemo plug shall not be removed in any case. It is mandatory to have the Lemo plug for the calibration procedure. If another plug reference is necessary to connect the APTS sensor to the DAS input, you need to provide an adapter cord assembly (option that can be delivered on request by TRANSPOLIS SAS).

The wiring diagram is indicated in the datasheet.

Maintenance and Repair

After first operation of the APTS, the repair and maintenance services are limited to following parts:

- Plug
- Cable
- Bladder replacement only under both following conditions:
 - P/N delivered before 2018
 - and
 - biofidelity criteria out of the limits (ageing effects of the elastomer material)

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