



# SMALL SENSOR OUTSTANDING PERFORMANCE...

## Application description

Years of successful collaboration between Ipetronik GmbH & Co. KG and STS Sensor Technik Sirmach AG have resulted in a further development of mobile measurement technology with the market launch of another new pressure sensor for the automotive industry STS is closing the gap for analog pressure sensors following the joint development of the CANpressure pressure sensor. In the endurance tests of new vehicles, the operation of all installed components and the way in which they interact is tested under real conditions. As well as using the well-known CANpressure, Ipetronik also uses analog pressure sensors for pressure monitoring in test vehicles.

There are two requirements for the new analog pressure sensor: to have the smallest possible construction and function over a wide operating temperature range. When used in the engine compartment of test vehicles, the focus is first and foremost on the TEB. The sensor excels here with a TEB of 1.% FS over a temperature range of -40...125°C and at a nominal pressure range of 10bar. Further specifications can be seen in the table below.

## Requirements

Pressure ranges:	0...10 bar	Output signal:	0,5...4,5 V DC
Pressure type:	absolute	Power supply:	5,5...28 V DC
Process connection:	3/8-24 UNJF-3A, SW16	Accuracy:	0,25% FS
Version:	welded	Temperature range:	-40...125 °C
Electrical connection:	PUR cable	Diameter:	∅ 17,5 mm
Cable length:	1 m	Length:	47,35 mm



### Approach

Building on the proven technology of the ATM.1ST pressure sensors, the development department took the following approach: it miniaturised the layout of the electronics without compromising the operating temperature range or TEB (total error band). In addition to the electrical changes made, a new design solution had to be developed. The main challenges here were posed by the small construction combined with the welded / elastomer-free assembly of the pressure measuring cell. As it was possible to build on existing, proven solutions in terms of both the mechanics and electronics, the development department was able to successfully devise a new miniature analog pressure sensor that meets all customer requirements in full.

### Specifications

Description	range
Pressure type	Absolute, sealed gauge
Pressure range [bar]	10
Overload	3xFS
Burst pressure [bar]	200
Accuracy [ $\pm$ % FS], (typ. / max.)	0.25 / 0.5
TEB [ $\pm$ % FS], (typ. / max.)	1.0 / 1.5
Dynamic behaviour	1ms (10...90%FS)
Ambient temperature	-40...125 °C
Process temperature	-40...150 °C
Start-up time	170 ms
Pressure connection	3/8-24UNJF-3A
Housing material	1.4435 / 1.4404
Length	48 mm
Diameter	17,5 mm
Spanner size	16 mm
Weight	approx. 40 g
IP protection	67
Tightening torque (max.)	30 Nm
Electrical connection	PUR cable
Allocation	white:+Vin brown:Pout yellow:GND
Connection diagram	

Output signal	0.5...4.5 V DC (not ratiometric)
Supply voltage	5.5...28 V DC
Current consumption	3 mA
Insulation resistance	50 M $\Omega$ @ 500 V DC
Permissible load	$\geq$ 5 k $\Omega$
Vibration resistance	40 g (4...2,000 Hz / +/- 10 mmpp)
Shock	1,000g (pulse duration 6 s)

