

# PICOTURN<sup>®</sup>-2G

## Rotational Speed Sensors

Accurate Technologies Inc. (ATI) offers the PICOTURN 2G rotational speed sensor for turbochargers. Compared to optical or magnetic sensing systems, the PICOTURN system is proven as a rugged, reliable, simple, accurate and cost effective solution. The system's functional principle is a 1MHz pulse induction with eddy current discrimination, using a compressor mounted solenoid sensor that detects and counts compressor vanes individually, generating a standard TTL/CMOS output signal. Maximum wheel speed measurement is 400,000 rpm, with a minimum operating speed of 390 rpm.

The open system architecture and the modular system design allow an easy integration into existing measurement systems as a stand-alone solution or optionally with the PT2G-BD or PT2G-BX signal conditioning boxes. The preferred turbo compressor wheel material is aluminum; titanium wheels require individual testing to verify compatibility with the PICOTURN sensor.

The PICOTURN system benefits from high sensitivity, allowing a large distance between sensor and the rotating vanes in the range of 1 at 0.6mm vane thickness. Various sensors are available to accommodate numerous user cases differentiated by the length and thread of the sensor head. The PTSM-H series benefits from enhanced sensitivity, enabling use with titanium wheel and other critical applications where higher temperatures are a priority. The second generation PICOTURN sensing system - the PT2G - is summarized in the following two pages.

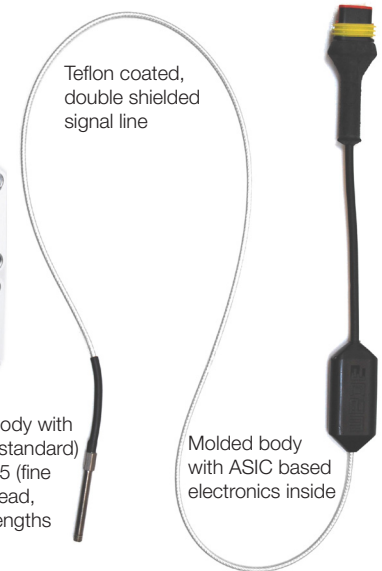


- 1 3-pole threaded plug connector for the sensor element
- 2 Output #2, BNC digital pulses
- 3 Output #1, BNC analog
- 4 5-pole threaded plug connector for supply input and for interface output (wired in parallel to the BNC outputs)



Signal Conditioning Box with display  
Ref. **PT2G-BD**

Signal Conditioning Box with D-Sub-9 (no display)  
Ref. **PT2G-BX**



Sensor body with M5x0.8 (standard) or M5x0.5 (fine pitch) thread, various lengths

Molded body with ASIC based electronics inside

### Sensor Specifications

Temperature	Cable and electronics	-40°C to +180°C* (356°F)
	Sensor tip: Standard H-type	-40°C to +250°C* (482°F) -40°C to +270°C* (518°F)
Dimensions	Fine thread M5x0.5 with various lengths 25mm to 60mm	
	Standard thread M5x0.8 with various lengths 40mm to 70mm	
Length of sensor element and its cable	From body to ASIC	approx. 0.75 meter
	From ASIC to connector	approx. 0.12 meter
	Total length sensor element	approx. 1.00 meter
Extension cable	Max length	10 meters

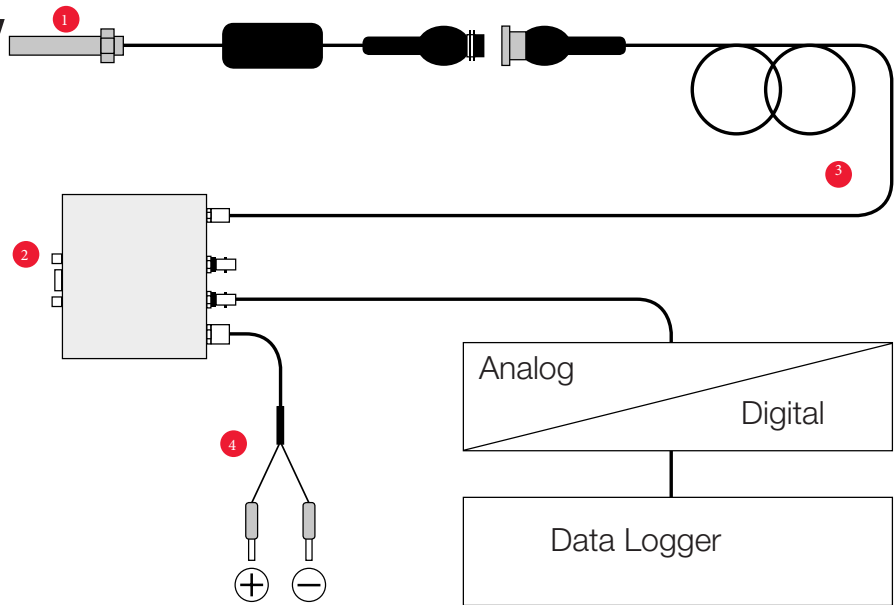
\* Excess temperature tolerated for short periods

### Signal Conditioning Box Specifications

Dimensions	105 x 85 x 30mm
Signal Conditioning -BX (RS-232 option) -BD (display option)	36mA @ 24 V +20mA** 59mA @ 24 V +20mA**
Number of Vanes	1 to 31
Digital Output	TTL/CMOS (One impulse per N vanes, N = 1 to 31)
Analog Output	0.5 to 4.5V
Temperature	-40°C to +85°C
Supply voltage	9 to 36 volts DC

\*\* with sensor

# System Overview



Sensors						
2G (Intelligent sensors with integrated signal processing and TTL output)				Description		
H-types for higher temperature and higher sensitivity: -40°C to +270°C		Standard type: -40°C to +250°C		Sensor length / Thread length	Diameter	Cable length
Part No.	Product	Part No.	Product			
220160015	PT2G-H-SM5.3	220160010	PT2G-SM5.3	60 mm / 54 mm	M5 x 0.8	0.95 m
220160017	PT2G-H-SM5.5	220160020	PT2G-SM5.5	46 mm / 40 mm	M5 x 0.8	0.95 m
220160018	PT2G-H-SM5.6	220160006	PT2G-SM5.6	75 mm / 69 mm	M5 x 0.8	0.95 m
220160016	PT2G-H-SM5F.2	220160004	PT2G-SM5F.2	41 mm / 25 mm	M5 x 0.5	0.95 m
220160013	PT2G-H-SM5F.3	220160012	PT2G-SM5F.3	56 mm / 40 mm	M5 x 0.5	0.95 m
220160014	PT2G-H-SM5F.5	220160008	PT2G-SM5F.5	76 mm / 60 mm	M5 x 0.5	0.95 m

Accessories		
Part No.	Product	Description
202400005	PT2G-BX	Power supply and Signal conditioning box with RS232 interface
202400009	PT2G-BD	Power supply and Signal conditioning box with display
220190007 220190004 220190002 220190003	PT2G-XS-01.5 PT2G-XS-03 PT2G-XS-05 PT2G-XS-10	Adapter cable, interconnecting PT2G-SM... PT2G-B... signal conditioning box
		1.5 m length 3 m length 5 m length 10 m length
220100001 220100002	PT2G-C-2B PT2G-C-2U	Power supply cable, 4 mm “banana” connectors, 2 m length Power supply cable, open end, 2 m length
220100006	PT2G-C-BNCM8	Cable, connecting PT2G-BD as a display box to a PICOTURN-BM box. 1 m length

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