

Yaw Pitot-S

PRESSURE SENSOR FOR YAW PITOT TUBE

Ref.: YAW PITOT S-##

SN: P##### Software version: v#.##

Texys sensors are designed for data recording. If the user wants to include this sensor in a closed loop system or active control, he must assume all responsibility.

Static [atmospheric] pressure		
Range	600 to 1200	mbar
Accuracy	± 3	mbar
Resolution	0.01	mbar
Sampling frequency	25	Hz
Output frequency	25	Hz
Calibrator	Mensor CPC4000	
Differential Pressures		
Range	-50...+50 or -76...+76	mbar
Sensitive Element	Piezo-resistive cells	
Accuracy at FS	±1	% FS
Resolution	0.01	mbar
Non-linearity / Hysteresis	±0.3	% FS
Max thermal Drift	± 0.5	% FS
Sampling frequency	200	Hz
Output frequency	1, 5, 10, 50 or 100	Hz
Calibrator	Mensor CPC4000	
Yaw angle		
Range	-40 to +40	°
Typical accuracy at 1Hz	±2 (from -25° to +25°) ±4 (from ±25° to ±40°)	°
Board Temperature		
Range	+5 to +105	°C
Accuracy	± 0.3	°C
Resolution	0.1	°C
Sampling frequency	25	Hz
Output frequency	25	Hz
Common		
CAN type	2.0A or 2.0B	
Parameters	Identifiers, Baud rate, Frequency, Termination resistor 120Ω	
Baud rate	125k to 1Mbps	
Supply Voltage	6 to 16V	V
Supply Current (Max)	25	mA
Dimension	60.7 x 37.5 x 16.1	mm
Material	Aluminium	
Weight	35	g
Box protection	IP64	
Vibration test	20Gpp5'	
Shock	500	G
Operating Temp	+5 to +85	°C
Storage Temp	-40 to +125	°C

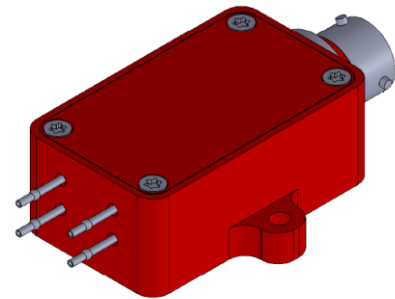
Sensor Readings		
Front Differential Pressure	at	0 mbar
	at	35.00 mbar
	at	70.00 mbar
Yaw Differential Pressure	at	-70.00 mbar
	at	-35.00 mbar
	at	0 mbar
	at	35.00 mbar
	at	70.00 mbar
Static Pressure	at	700.00 mbar
	at	1100.00 mbar

Connector: AS4H06-05PN-HE

Mating connector: ASL606-05SN-HE

Pin	Function
1	Supply
2	0V
3	CAN Low
4	CAN High
5	Reserved

CAN Data parameters		
CAN type	2.0A	-
Baudrate	1M	bps
Frequency	50	Hz
Rx trig ID	7F0	Hex
Tx01 frame ID	3F0	Hex
Tx02 frame ID	3F4	Hex
CAN 120 Ω termination	<input type="checkbox"/> yes <input checked="" type="checkbox"/> no	-
Temperature Unit	Celsius	-
Enable Auto-Zero command	<input checked="" type="checkbox"/> yes <input type="checkbox"/> no	-



Ordering ref.:

YAW PITOT-S - Range(mbar)

50
76

Ex: YAW PITOT-S-76

CAN overview

Data output

Tx Frame #1 (1Hz to 100Hz output rate)

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
0x03F0 (default)	Front Pressure MSB	Front Pressure LSB	Yaw Pressure MSB	Yaw Pressure LSB	Yaw Angle MSB	Yaw Angle LSB
	Front Differential Pressure 0.01 mbar/bit (signed integer 16bits)		Yaw Differential Pressure 0.01 mbar/bit (signed integer 16bits)		Estimated Yaw Angle (0.1deg/bit) (signed integer 16bits)	

Tx Frame #2 (25Hz output rate)

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5
0x03F4 (default)	Not used	Not used	Board Temperature MSB	Board Temperature LSB	Absolute static pressure MSB	Absolute static pressure LSB
			Board Temperature 0.1°C/bit or 0.1°F/bit (signed integer 16bits)		Absolute static pressure 600mbar + 0.01 mbar/bit (unsigned integer 16bits)	

Auto-Zero command

Command input frame

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F1	0xFF	-	-	-	-	-	0x00 or 0x01	0x01

0x00: volatile autozero
0x01: non-volatile autozero

Acknowledge output frame

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F3	0xFF	Serial Number				0x00	0x00	0x01

This command can be used to reset the 2 pressure sensors channels. This mechanism can be enabled or disabled (please refer to “Enable Auto-Zero command” of the CAN parameters tab). Each time the sensor will receive the above CAN frame, the autozero function will be launched (except during first second after power-on). When autozero function is launched, a “customer offset” is set up and added for each channel on top of factory calibration.

If Byte 6 value is 0x00:

Those “Customer offsets” will be stored in volatile memory. Therefore, they will be lost when switching OFF the sensor and they will be initialized to 0 when switching ON the sensor.

If Byte 6 value is 0x01:

Those “Customer offsets” will be stored in non-volatile memory. Therefore, they will be saved in memory when switching OFF the sensor.

Absolute pressure offset adjustment

Command input frame

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F1	0xFF	-	MSB	LSB	-	-	-	0x02
			Desired absolute static pressure 600mbar + 0.01mbar/bit (unsigned integer 16bits)					

Acknowledge output frame

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F3	0xFF	Serial Number				0x00	0x00	0x02

This command can be used to adjust the offset on absolute pressure static channel. This mechanism can be enabled or disabled (please refer to “Enable Auto-Zero command” of the CAN parameters tab). Each time the sensor will receive the above CAN frame, the offset adjustment function will be launched (except during first second after power-on). When offset adjustment function is launched, a “customer offset” is set up and added for each channel on top of factory calibration. This “Customer offset” will be stored in non-volatile memory. Therefore, they will be keep in memory when switching OFF the sensor.

Changing parameters

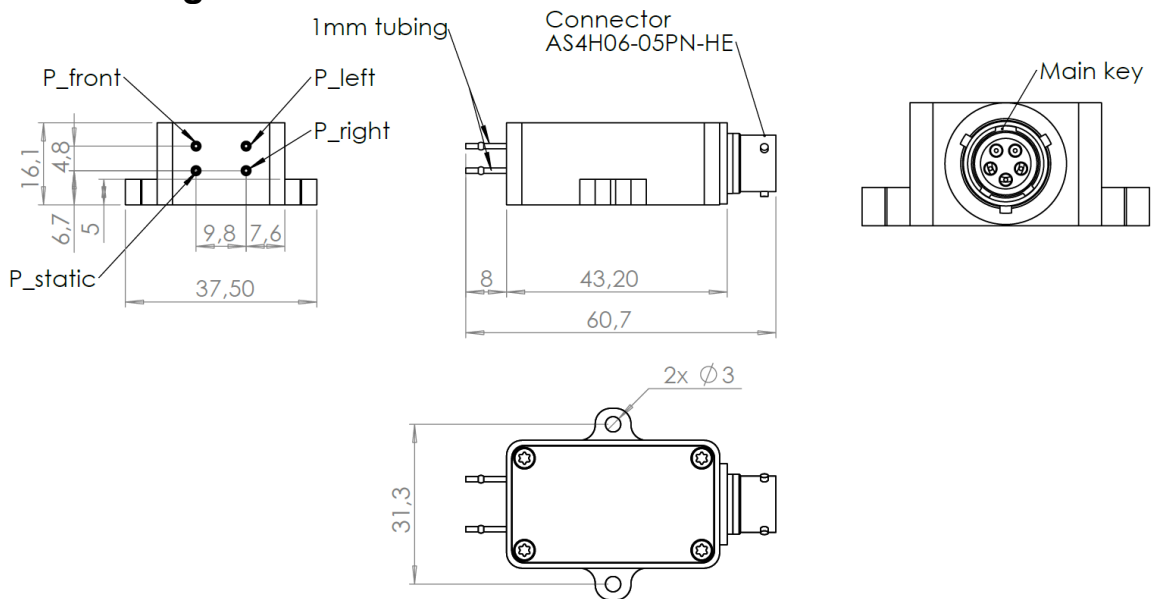
Must be setup according to Texense's CAN protocol, or by using the Texense Android Smart Tool (tAST®) with your android device. Contact us at info@texense.com

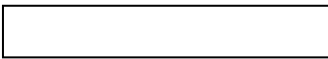
CAN parameters:

Address	Parameter	Raw values	values	Comments	
0x00	CAN type A or B (11 or 29bits ID)	0x00	CAN2.0A (standard)	default	
		0x10	CAN2.0B (extended)		
0x01	CAN baudrate	0x00	1Mbps	default	
		0x01	500 Kbps		
		0x02	250 Kbps		
		0x03	125 Kbps		
0x02	CAN output frequency	0x00	Rx frame trig	Request mode - 20Hz max.	
		0x01	1 Hz		
		0x02	5 Hz	default	
		0x03	10 Hz		
		0x04	50 Hz		
		0x05	100 Hz		
0x03	Rx trig frame ID	if CAN2.0A: 0 to 0x7F0		MSB	Default 0x07F0
0x04		if CAN2.0B: 0 to 0xFFFF (except 0x7F1 and 0x7F3)		LSB	
0x05	Tx01 frame ID	if CAN2.0A: 0 to 0x7F0		MSB	Default 0x03F0
0x06		if CAN2.0B: 0 to 0xFFFF (except 0x7F1 and 0x7F3)		LSB	
0x07	Tx02 frame ID	if CAN2.0A: 0 to 0x7F0		MSB	Default 0x03F4
0x08		if CAN2.0B: 0 to 0xFFFF (except 0x7F1 and 0x7F3)		LSB	
0x09	CAN termination 120Ω resistor	0	Not connected	default	
		1	Connected		
0x0A	Enable Auto-Zero command	0	Disable	default	
		1	Enable		
0x0B	Temperature Unit	0	Fahrenheit (0.1°F / bit)	default	
		1	Celsius (0.1°C / bit)		

For complete information, contact us at info@texense.com

Mechanical design:





Yaw Pitot-T

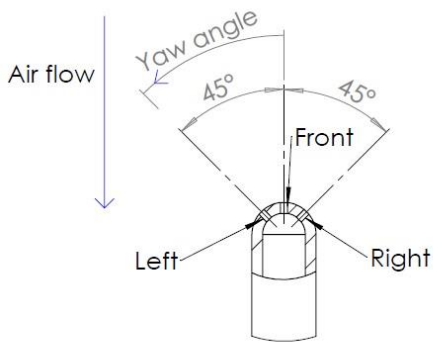
YAW PITOT TUBE

Ref.: YAW PITOT-T-###/##

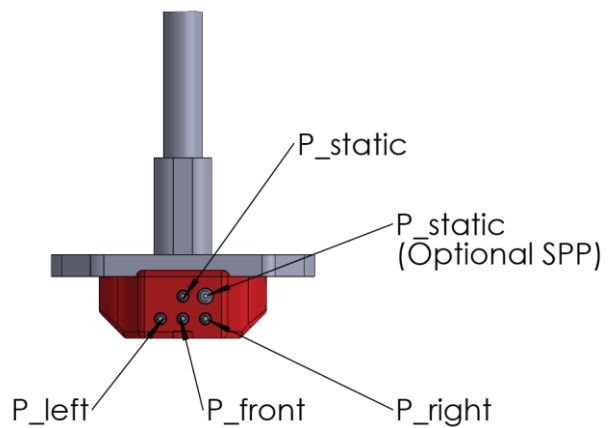
SN: P#####

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Common		
Dimension	See drawing	mm
Material	Aluminium	
Weight	150mm tube	55
	300mm tube	78
Housing Protection	IP64	
Vibration test	20Gpp5'	
Shock	500	G
Operating Temp	+5 to +85	°C
Storage Temp	-40 to +125	°C
Pressure ports		
Standard ports tube Ø	1	mm
Optional SPP tube Ø	1.6	mm



$$\text{Yaw angle} = f((P_{\text{left}} - P_{\text{right}}) / (P_{\text{front}} - P_{\text{static}}))$$



Ordering ref.:

YAW PITOT T - L(mm) / α(°) - SPP

150/90

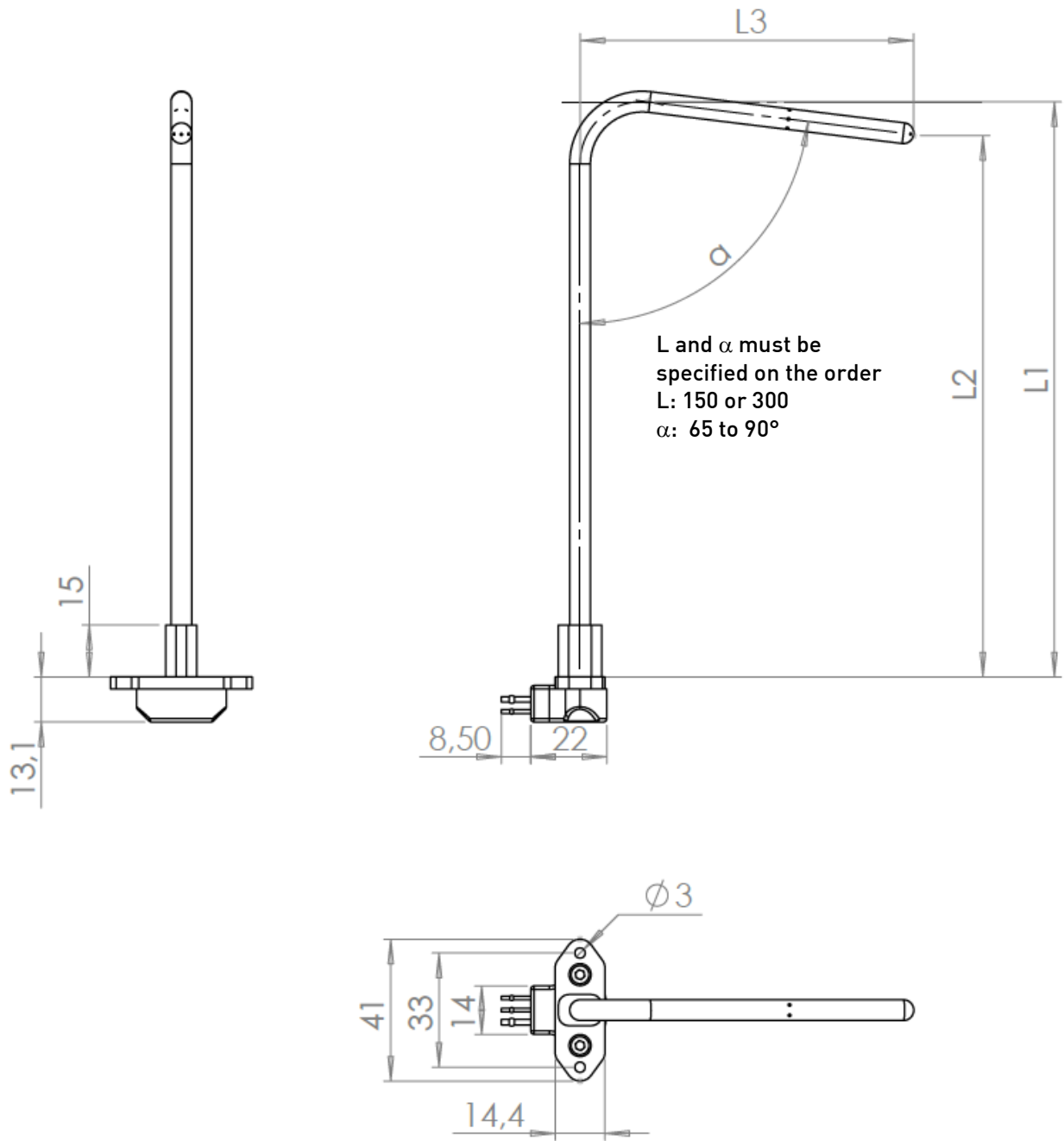
300/90

...

Option SPP: Static Pressure Port

Ex: YAW PITOT T-150/90-SPP

Mechanical design:



L (mm) ordering	α (°) ordering	L1 (mm)	L2 (mm)	L3 (mm)
150	90	150	148	92
150	80	150	132	91
150	70	150	115	86
300	90	300	198	92
300	80	300	182	91
300	70	300	165	86

Accuracy:

- Length: ± 2 mm
- Angle: $\pm 1^\circ$