

# APASS-16-CAN

16-Tap CAN Absolute Pressure Aero Skin Sensor

SN: P#####

Texense sensors are designed for data logging. Should the users want to include this sensor in a closed loop system, they must undertake total responsibility from doing so.

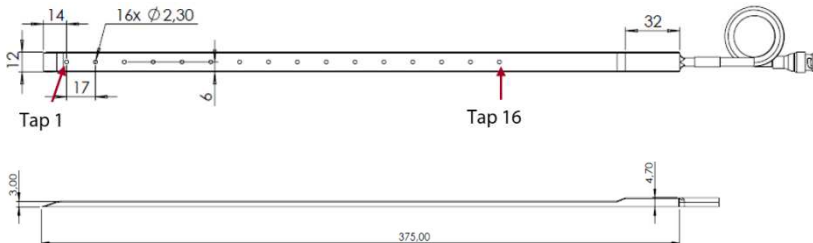
Voltage supply	8 - 36	V
Consumption	42	mA
Number of Pressure taps	16	
Box protection	IP67	
Weight (without cable)	20	g
Distance between Pressure taps	17	mm
Minimum bending radius	40	mm
Measurement range	260 - 1260	mBar
Absolute accuracy @ 25°C/65°C	± 0.5	mBar
Absolute accuracy @ 0°C/65°C	± 1	mBar
Relative accuracy @ 25°C	± 0.025	mBar
Resolution	0.00025	mBar
RMS noise	0.007	mBar
Digital resolution of Pressure	24 bits	
Configurable frequency	1, 10, 25, 50, 100, 140	Hz
Number of Temperature taps	8 with CAN mode 16 with FDCAN mode	
Operating Temperature	-25 to +85	°C
Absolute accuracy	0.5	°C
Digital resolution of Temperature	16 bits	
Configurable frequency	1, 10, 25, 50, 100, 140	Hz
Suggested mounting methods	Double side tape adhesive (3M 926, 12x0.13mm, 16,3 N/cm or 3M 9087, 12x0.26mm, 5.2N/cm)	

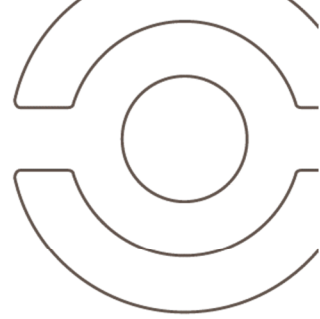
Date		Operator
Order		
Customer		
Product Ref		
Version	SW v# HW v# BOOT v#	

Channel	Sensor readings		
	at 800 mbar	at 1000 mbar	at 1200 mbar
1	...	...	...
2	...	...	...
3	...	...	...
4	...	...	...
5	...	...	...
6	...	...	...
7	...	...	...
8	...	...	...
9	...	...	...
10	...	...	...
11	...	...	...
12	...	...	...
13	...	...	...
14	...	...	...
15	...	...	...
16	...	...	...

Setup parameters		
CAN Type	CAN 2.0A	-
Baudrate	1	Mbps
Data Baudrate	1	Mbps
Frequency	25	Hz
Integration	1	Sample
Rx trig ID	7F0	Hex
Tx0 ID	3F0	Hex
Offset adjustment	Enabled	-

Cable	
4x26 AWG FEP tinned copper braided cable 250V 200°C Length: 1000mm Tubing: 50mm Connector: on request	
Colour	Function
Red	Supply input
Black	0V
White	CAN low
Green	CAN high





## CAN data output: CAN mode

### TX Frame #01: Tx 01 frame ID

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F0 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 1			Pressure tap 2			Temperature tap 1	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #02: Tx 01 frame ID +1

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F1 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 3			Pressure tap 4			Temperature tap 3	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #03: Tx 01 frame ID +2

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F2 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 5			Pressure tap 6			Temperature tap 5	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #04: Tx 01 frame ID +3

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F3 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 7			Pressure tap 8			Temperature tap 7	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #05: Tx 01 frame ID +4

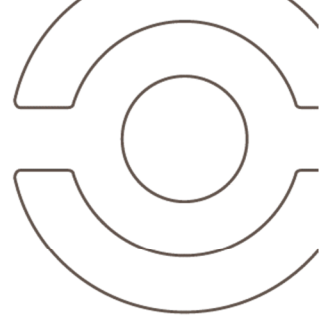
ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F4 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 9			Pressure tap 10			Temperature tap 9	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #06: Tx 01 frame ID +5

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F5 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 11			Pressure tap 12			Temperature tap 11	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	

### TX Frame #07: Tx 01 frame ID +6

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F6 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB
	Pressure tap 13			Pressure tap 14			Temperature tap 13	
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit	



**TX Frame #08: Tx 01 frame ID +7**

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	
0x03F7 (default)	MSB	..	LSB	MSB	..	LSB	MSB	LSB	
	Pressure tap 15			Pressure tap 16			Temperature tap 15		
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			Signed int 16 bits 0.01 °C/bit		

**TX Frame #09: Tx 01 frame ID +8**

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F8 (default)	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB
	N/A		N/A		N/A		DIAG	
	N/A		N/A		N/A		Unsigned int 16 bits See below	

## CAN data output: CAN FD mode

**TX Frame #01: Tx 01 frame ID (48 Bytes)**

ID	B0	B1	B2	B3	B4	B5	...	B45	B46	B47
0x03F0 (default)	MSB	...	LSB	MSB	...	LSB	...	MSB	...	LSB
	Pressure tap 1			Pressure tap 2			...	Pressure tap 16		
	Signed int 24 bits 0.0002441 mbar/bit			Signed int 24 bits 0.0002441 mbar/bit			...	Signed int 24 bits 0.0002441 mbar/bit		

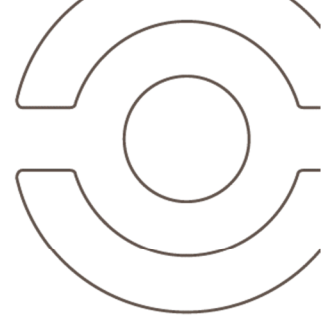
**TX Frame #02: Tx 01 frame ID +1 (32 Bytes)**

ID	B0	B1	B2	B3	...	B30	B31
0x03F1 (default)	MSB	LSB	MSB	LSB	...	MSB	LSB
	Temperature tap 1		Temperature tap 2		...	Temperature tap 16	
	Signed int 16 bits 0.01 °C/bit		Signed int 16 bits 0.01 °C/bit		...	Signed int 16 bits 0.01 °C/bit	

**TX Frame #03: Tx 01 frame ID +2 (8 Bytes)**

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F2 (default)	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB
	N/A		N/A		N/A		DIAG	
	N/A		N/A		N/A		Unsigned int 16 bits See below	

A faulty sensor is indicated by a 1 on the DIAG word. Each bit in the word correspond to a sensor. The least significant bit corresponds to the first sensor and the most significant bit to the 16<sup>th</sup> sensor.



Both commands below can be enabled or disabled with parameter “Enable Offset adjustment command” of the CAN parameters table.

## 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 pressure channels. 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 kept in memory when switching OFF the sensor.

## Absolute pressure offset homogenization

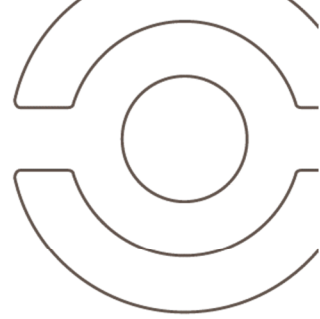
### Command input frame

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F1	0xFF	-	-	-	-	-	-	0x03

### 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	0x03

This command can be used to adjust all pressure to obtain the same result across all taps. The target pressure to normalize is the mean average of all taps.



## Changing parameters

Must be setup according to Texense's CAN protocol, or by using the Texense Smart Interface Box (tSIB\*).  
Contact us at [info@texense.com](mailto:info@texense.com)

### CAN Parameters:

N°	Parameter	Raw values	values	Comments
0x00	CAN Baudrate	0x00	1 Mbps	default
		0x01	500 Kbps	
0x01	CAN data Baudrate*	0x00	2 Mbps	default
		0x01	1 Mbps	
0x02	CAN Type	0x00	CAN 2.0A	default
		0x10	CAN 2.0B	
		0x20	FD CAN 2.0A	
		0x30	FD CAN 2.0B	
0x03	CAN Emission frequency	0x01	Rx frame trig	Request mode - 20Hz max.
		0x01	1Hz	default
		0x02	10Hz	
		0x03	25 Hz	
		0x04	50 Hz	
		0x05	100 Hz	
0x06	140 Hz			
0x04	Rx trig frame ID	if CAN2.0A: 0 to 0x7F0		MSB
0x05		if CAN2.0B: 0 to 0xFFFF (except 0x7F1 and 0x7F3)		LSB
				Default: 0x07F0
0x06	Tx01 frame ID	if CAN2.0A: 0 to 0x7F0		MSB
0x07		if CAN2.0B: 0 to 0xFFFF except 0x7F1 and 0x7F3		LSB
				Default: 0x03F0
0x08	Enable Offset adjustment command	0	Disabled	Default
		1	Enabled	
		0xFF (255)	Factory reset	
0x09	Reserved			Always write 0x00
0x0A	Software version	-		Read only
0x0B	Hardware version	-		Read only
0x0C	Boot version	-		Read only
0x0D	Nb of sample for integration (rolling average)	0x00	1 sample (no integration)	Default
		0x01	16 samples (sampling rate 140Hz)	
		0x02	32 samples (sampling rate 140Hz)	
		0x03	64 samples (sampling rate 140Hz)	

\* Only used in CAN FD mode. Ignored otherwise.