

8xMPS-A

8-CHANNEL MINIATURE DIFFERENTIAL AND ABSOLUTE PRESSURE SENSOR FOR CAN BUS

Ref: 8xMPS-A-M###-P###

SN:P#####

Software version: v#.##

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

Differential pressure			
Range		-400 to +400	mBar
Sensitive Element		Piezo resistive Cells	
Proof Pressure		1.7	Bar
Resolution	Up to ±250 mBar range	0.01	mBar/bit
	Above ±250 mBar range	0.1	mBar/bit
Max offset error (from 5°C to 105°C)		± 0.1	mBar
Max hysteresis and non-repeatability error (from 5°C to 105°C)		± 0.15	mBar
Max non-linearity error (from 5°C to 105°C)		± 0.1	% FS
Noise	At 10Hz	3	µBar
	At 200Hz	10	
Sampling frequency		800	Hz
Analog filter cut off frequency		200	Hz
Output frequency		1Hz to 200Hz or on trigger	
Absolute pressure			
Range		600 to 1200	mBar
Proof Pressure		2.5	Bar
Resolution		10	µBar/bit
Accuracy (from 5°C to 105°C)		± 1	mBar
Sampling frequency		800	Hz
Analog filter cut off frequency		200	Hz
Output frequency		1Hz to 200Hz or on trigger	
Internal temperature			
Range		-20 to 120	°C
Sampling Frequency		40	Hz
Output frequency		5	Hz
Common			
CAN type		2.0A or 2.0B	-
CAN baudrate		250 to 1000	kbps
Supply Voltage		6 to 30	V
Supply Current (at 12V)		20	mA
Calibrator		MENSOR CPC4000	
Dimensions		40.3 x 32.4 x 9.5	mm
Material		Aluminum	
Weight (without cable)		23	g
Protection		IP64	
Vibration test		20Gpp 5'	
Shock		500	G
Operating Temp		+5 to +125	°C
Storage Temp		-40 to +125	°C

This sensor withstands high humidity. Avoid water entering in the tube as well as condensation, it may block the pressure.
Do not blow into the tubes with the mouth or a compressed air line.

Sensor Readings			
Channel	at ... mbar	at ... mbar	at ... mbar
1			
2			
3			
4			
5			
6			
7			
8			
Absolute	at ... mbar		at ... mbar

Software setup			
CAN type	2.0A	2.0B	-
CAN output	Standard	Multiplexed	-
Baudrate	1 M		bps
Frequency	10		Hz
Rx trig ID	0x7F0		Hex
Tx1 ID	0x3F0		Hex
Tx2 ID	0x3F4		Hex
Tx3 ID	0x3F8		Hex
Tx4 ID	0x3FC		Hex
Sensor ID	0		-
Autozero	Disable	Enable	

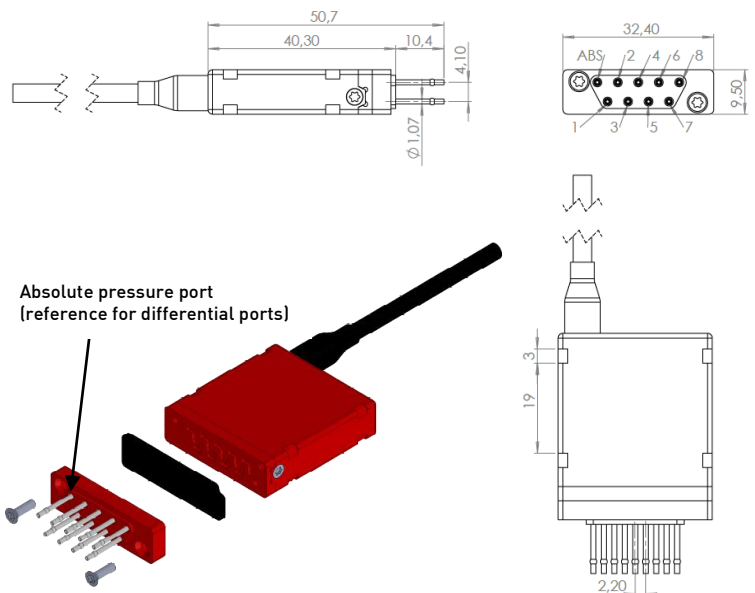
Hardware setup			
termination resistor 120 Ω	Not connected	Connected	-

Cable : 5X26AWG FEP tinned copper braided cable 250V 200°C

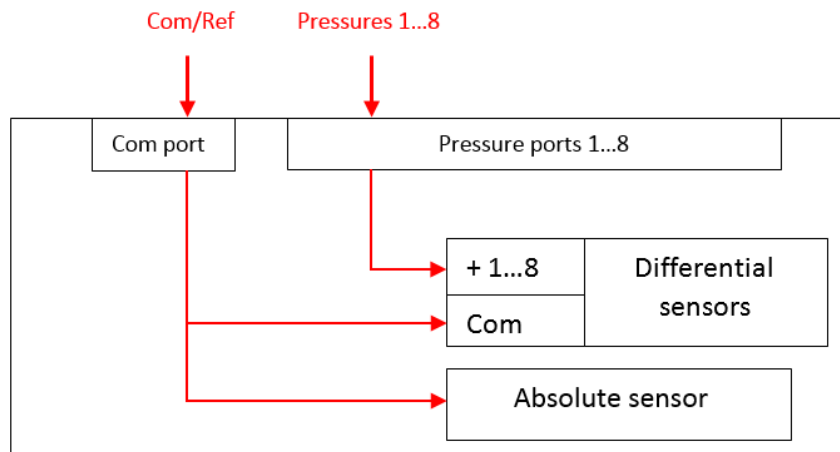
Length: mm Tubing:

Connector:

Colour	Function	Pin
Red	Supply	
Black	0V	
White	CAN Low	
Green	CAN High	
Yellow	Do not connect and isolate	
Braid		



Pressure ports description



CAN overview

Standard CAN Data output

Frame #1		(default Tx1 Frame ID: 0x03F0)				Frequency: 1 to 200Hz		
ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F0	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB
	Differential pressure 1		Differential pressure 2		Differential pressure 3		Differential pressure 4	
	Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit	

Frame #2		(default Tx2 Frame ID: 0x03F4)				Frequency: 1 to 200Hz		
ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F4	MSB	LSB	MSB	LSB	MSB	LSB	MSB	LSB
	Differential pressure 5		Differential pressure 6		Differential pressure 7		Differential pressure 8	
	Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit	

Frame #3		(default Tx3 Frame ID: 0x03F8)		Frequency: 1 to 200Hz				
ID	Byte 0	Byte 1						
0x03F8	MSB	LSB						
	Absolute pressure							
	Unsigned integer 16 bit							
	600mbar + 10μBar/bit							

Frame #4		(default Tx4 Frame ID: 0x03FC)			Frequency: 5Hz			
ID	Byte 0	Byte 1	Byte 2	Byte 3				
0x03FC	MSB	LSB	MSB	LSB				
	Internal Temp. (°C)		Not used					
	Signed integer 16 bit							
	0.1°C/bit							

Multiplexed CAN Data output

Frame #1 (default Tx1 Frame ID: 0x03F0, default Sensor ID: 0x00)

Frequency: 1 to 200Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F0	Sensor ID	Multiplexed Msg ID = 0	MSB	LSB	MSB	LSB	MSB	LSB
			Differential pressure 1		Differential pressure 2		Differential pressure 3	
			Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit	

Frame #2 (default Tx1 Frame ID: 0x03F0, default Sensor ID: 0x00)

Frequency: 1 to 200Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F0	Sensor ID	Multiplexed Msg ID = 1	MSB	LSB	MSB	LSB	MSB	LSB
			Differential pressure 4		Differential pressure 5		Differential pressure 6	
			Signed integer 16 bit		Signed integer 16 bit		Signed integer 16 bit	

Frame #3 (default Tx1 Frame ID: 0x03F0, default Sensor ID: 0x00)

Frequency: 1 to 200Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x03F0	Sensor ID	Multiplexed Msg ID = 2	MSB	LSB	MSB	LSB	MSB	LSB
			Differential pressure 7		Differential pressure 8		Absolute pressure	
			Signed integer 16 bit		Signed integer 16 bit		Unsigned integer 16 bit	
			600mbar + 10µBar/bit					

Frame #4 (default Tx4 Frame ID: 0x03FC, default Sensor ID: 0x00)

Frequency: 5Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3
0x03FC	Sensor ID	Multiplexed Msg ID = 0	MSB	LSB
			Internal Temp. (°C)	
			Signed integer 16 bit	
			0.1°C/bit	

CAN Data input

Trig frame on CAN request mode

Rx Frame (default Rx Frame ID: 0x07F0)

Max frequency: 200Hz

ID	Byte 0	Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7
0x07F0	Sensor ID	Multiplexed Msg ID	-	-	-	-	-	-
	ID or 0xFF (all sensors)	0,1,2 or 0xFF (all Msg)						

Auto-Zero command for differentials pressures

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
		Unsigned integer 32 bit						

This command can be used to re-zero all 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 one of the above CAN frames, 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.

Offset adjustment command for absolute pressure

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 pressure					
			Unsigned integer 16 bit					
			600mbar + 10μBar/bit					

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
		Unsigned integer 32 bit						

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 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.

Changing parameters

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

CAN parameters:

N°	Parameter	Raw values	values	Comments	
0x00	Type CAN	0x00	CAN 2.0A	Default	
		0x01	CAN 2.0B		
0x01	Baudrate	0x00	1 Mbps	Default	
		0x01	500 Kbps		
		0x02	250 Kbps		
0x02	Emission frequency AND Standard CAN	0x00	Rx frame trigger mode	Fast response (max 320us)	
		0x01	1 Hz		
		0x02	5		
		0x03	10	Default	
		0x04	50		
		0x05	100		
		0x06	200		
0x03	Rx frame ID	if CAN2.0A: 0x1 to 0x7F0		MSB	Default
0x04		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	0x07F0
0x05	Tx1 frame ID	if CAN2.0A: 0x1 to 0x7F0		MSB	Default
0x06		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	0x03F0
0x07	if Standard CAN:	if CAN2.0A: 0x1 to 0x7F0		MSB	Default
0x08	Tx2 frame ID	if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	0x03F4
0x09	if Standard CAN:	if CAN2.0A: 0x1 to 0x7F0		MSB	Default
0x0A	Tx3 frame ID	if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	0x03F8
0x0B	Tx4 frame ID	if CAN2.0A: 0x1 to 0x7F0		MSB	Default
0x0C		if CAN2.0B: 0x1 to 0xFFFF (except 0x7F1 to 0x7F3)		LSB	0x03FC

Sensor parameters:

0x0D	Enable Auto-zero	0x00	Disabled	Default
		0x01	Enabled	
0x0E	Data format	0x00	Standard (3 frames)	Default
		0x01	Multiplexed (4 frames)	
0x0F	Sensor ID	If standard mode: unused If multiplexed mode: from 0x00 to 0xFE		Default 0x00

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

Ordering ref:

8xMPS-A- M_{Range} - P_{Range}

50	: -50 mBar	+50 mBar
70	: -70 mBar	+70 mBar
150	: -150 mBar	+150 mBar
250	: -250 mBar	+250 mBar
350	: -350 mBar	+350 mBar
400	: -400 mBar	+400 mBar

Ex: 8xMPS-A-M350-P70