XN4-E

Digitally controlled remote strain gauge
Extended supply voltage range

SN: X########

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.

Measurement features		
Bridge gauge impedance	120 to 1000	Ω
Max recommended unbalance	120Ω gauge	1.5	mV
	350Ω gauge	2	
	1000Ω gauge	3.5	
Offset drift with temperature	<10	mV
Gain drift with temperature	<0.2	%
Bridge supply voltage	5	V
Analog output		
Output signal	0 to 5	V
Filter	1 pole filter	
Cut-off frequency at –3dB	Default	90	Hz
	On request	Up to 9000	
Digital communication The digital wire Tx/Rx enables to set the following parameters		
Offset	0 to 5	V
Gain	71 to 1270	-
Gain compensation	–2000 to 2000	ppm/°C
Electrical features		
Supply voltage	4.5 to 30	V
Protection	Reverse voltage protection	
Supply current	See table "Supply current"	
Output impedance	100	Ω
Mechanical features		
Dimensions	18 x 10.5 x 3.6	mm
Material	PCB + Epoxy + stainless steel	
Weight	1	g
Environment		
Accuracy temperature	-20 to +125	°C
Operating temperature	-40 to +125	°C
Storage temperature	-40 to +125	°C
Vibration test	20 Gpp 5'	
Shock	500	G

Date		Operator	
Customer			
Order			
Product Ref	XN4-E-##		
SW version	V1.04		

Readings (on a dummy gauge bridge)	
Output at 0mV input	Output at 10mV input
…V	…V

Software setup		
Offset	2.5	V
Gain	200	V/V
Gain compensation	-340	ppm/°C

Bridge impedance	Supply current		
	at 4.5V supply	at 8V supply	at 30V supply
No bridge (amplifier alone)	9 mA	5 mA	3 mA
120Ω	94 mA	49 mA	25 mA
350Ω	39 mA	22 mA	11 mA
1000Ω	20 mA	11 mA	6 mA

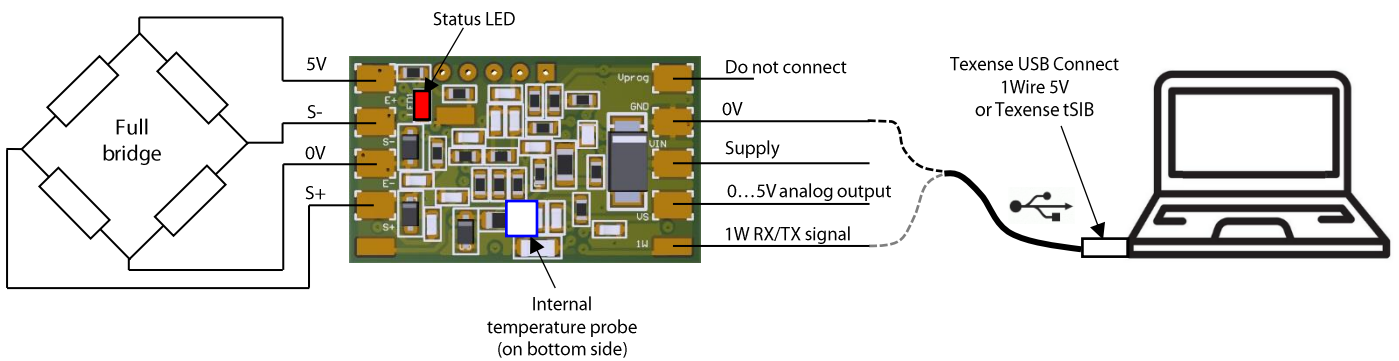A brand of texys GROUP
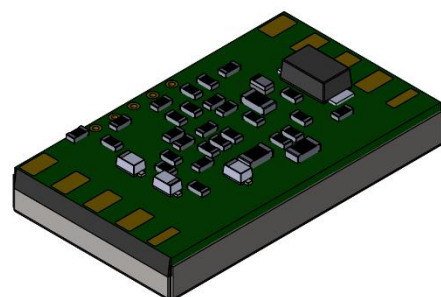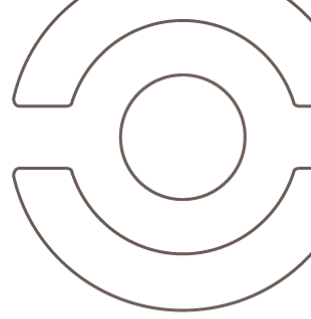
Mechanical drawing
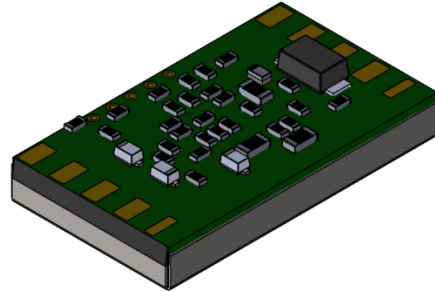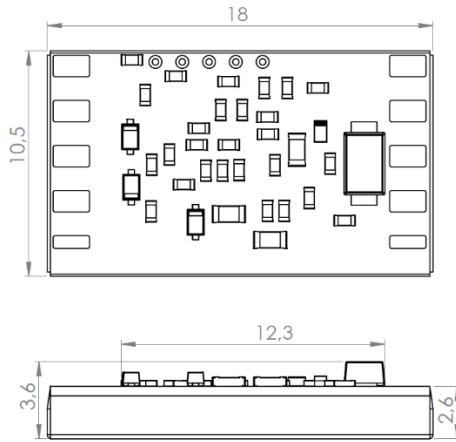
Wiring

There is no need for any balco, nickel, or manganin wires. There is no need for zero or sensitivity adjustment or compensation. The compensation is done on XN4-E side.


Note: it is also possible to build half bridge and quarter bridge versions by adding resistors. Please refer to XN4 operating manual for complete information.

Remote application

In case the gauge bridge is remote from the XN4-E amplifier, it is possible to use an external temperature probe close to the gauges to compensate the gauge temperature. The temperature probe is fitted close to the gauges to insure proper compensation. Only use **15kΩ NTC Thermistor (15kΩ at 25°C, Beta = 4000).** The external probe is automatically detected if connected and will be considered instead of internal one.

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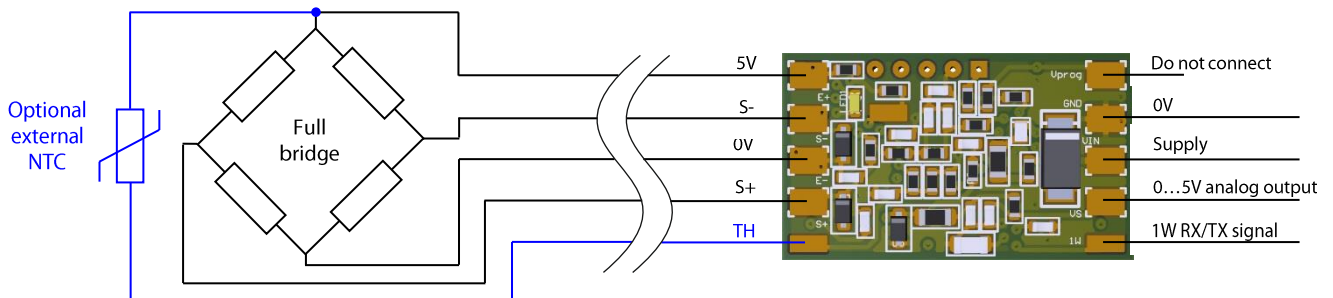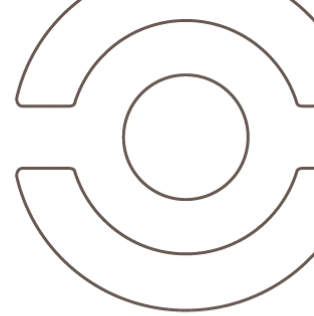
Bandwidth

The bandwidth must be specified at ordering (see § ordering information) and can only be tuned in factory during production process.

Digital offset temperature compensation

To compensate the offset drift, a self-learning procedure is available. This procedure involves to apply a specified temperature ramp in an oven and can be started thanks to the digital communication. See XN4 operating manual for complete information.

Digital gain temperature compensation

To compensate the sensitivity drift, we recommended to use the following parameters:

Material of strain gauged part	Usual coefficient (%/°C)	ppm/°C
Steel (default)	-0.033	-340
Titanium	-0.050	-500
Aluminum	-0.059	-590
No compensation (if XN4 is used with a compensated gauge bridge)	0	0

Digital communication

Drivers
It is necessary to download a VCP driver (Virtual Com Port) FTR232R to convert the USB port in Serial COM Port at the following address: https://ftdichip.com/drivers/vcp-drivers/ .See information at https://ftdichip.com/document/installation-guides/

Software
Use HyperTerminal (for Windows): www.hilgraeve.com/htpe/download.html or Teraterm: https://tera-term.en.softonic.com/ or any other COM port management software.

Settings
38400 bauds, 8 bits data, no parity, 1 bit stop, no flow control, recommended font Courrier New.

See XN4 operating manual for complete information.

Ordering information

Ordering ref:

XN4-E– *Cut-off frequency at -3dB*

40: 40Hz
90: 90Hz (default)
190: 190Hz
9000: 9kHz
Other on request

ex: XN4-E-90

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