



781 Bench-top Signal Conditioner

The model 781 is a precision, two-channel bench-top signal conditioner for use with all Jewell miniature tilt sensors. Powerful electronics generate balanced AC sensor excitation for up to two tilt channels (X and Y), then amplify, rectify and filter sensor response to produce a high-level DC output signal. Output is ± 8 VDC single-ended (± 16 VDC differential).

Units conveniently come with two switchable gain and filter settings (high/low; on/off) for added signal processing flexibility. The 781 also includes an amplifier for one LM35 temperature sensor. All units include calibration when ordered with Jewell Instruments miniature tilt sensors. Rugged and reliable, the 781 is an ideal choice for any laboratory application.



TECHNICAL SPECIFICATIONS

INPUT CHANNELS	Two Tilt Channels (X and Y tilt), One LM35 Temp. Sensor			
OUTPUT SIGNALS	± 8 VDC Single-ended (± 16 VDC differential)			
GAIN SETTINGS	Two switchable gains, 10:1 ratio			
STANDARD CALIBRATION	Sensor Type 755-series 756-series	High-Gain 0.1 μ radian/mV 0.1 $^{\circ}$ /V	Low-Gain 1.0 μ radian/mV 1.0 $^{\circ}$ /V	Range ± 8000 μ radian $\pm 8.0^{\circ}$
OUTPUT FILTERS	Filter "On" = 7.5 sec; Filter "Off" = 0.05 sec1; Roll-off = 6 dB/octave			
TEMPERATURE OUTPUT	0.1 $^{\circ}$ C/mV (single-ended)			
OUTPUT IMPEDANCE	270 Ohms			
POWER REQUIREMENTS	± 11 to ± 15 VDC @ +11 and -6 mA, 250 mV ripple max., reverse polarity protected			
CONNECTIONS	Dual screw-terminal barrier strips on rear panel			
ENVIRONMENTAL	-25 $^{\circ}$ to +70 $^{\circ}$ C Operation, -30 $^{\circ}$ C to +100 $^{\circ}$ C Storage, 0-90% humidity non-condensing			
MATERIALS	Painted Aluminum			
DIMENSIONS AND WEIGHT	3.5 x 5 x 8.4 inches (88 x 127 x 213 mm), 2 lb (0.9 kg)			
ACCESSORIES	1 m cable included			

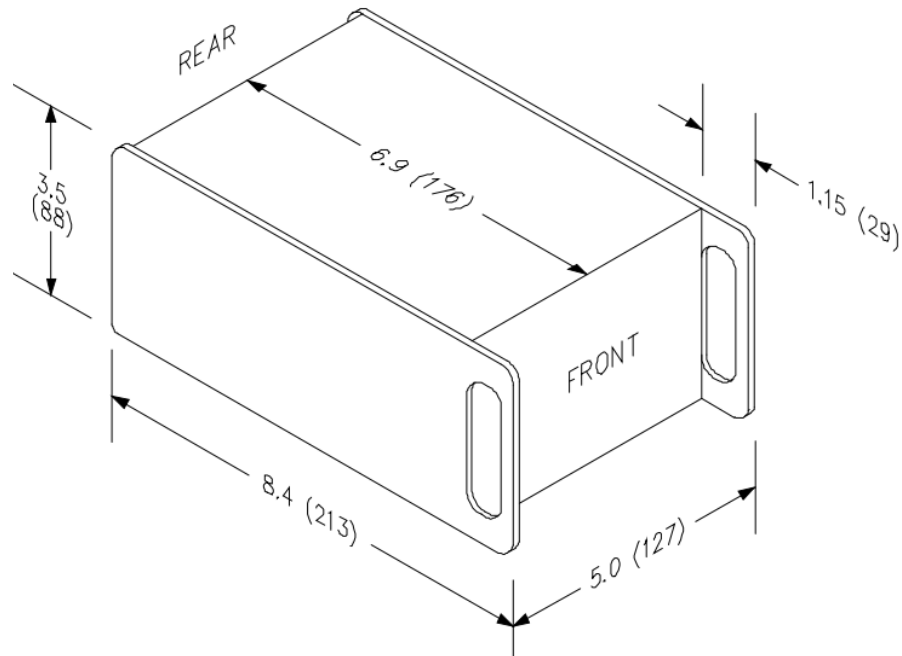
Specifications subject to change without notice on account of continued product development

ORDERING CODE

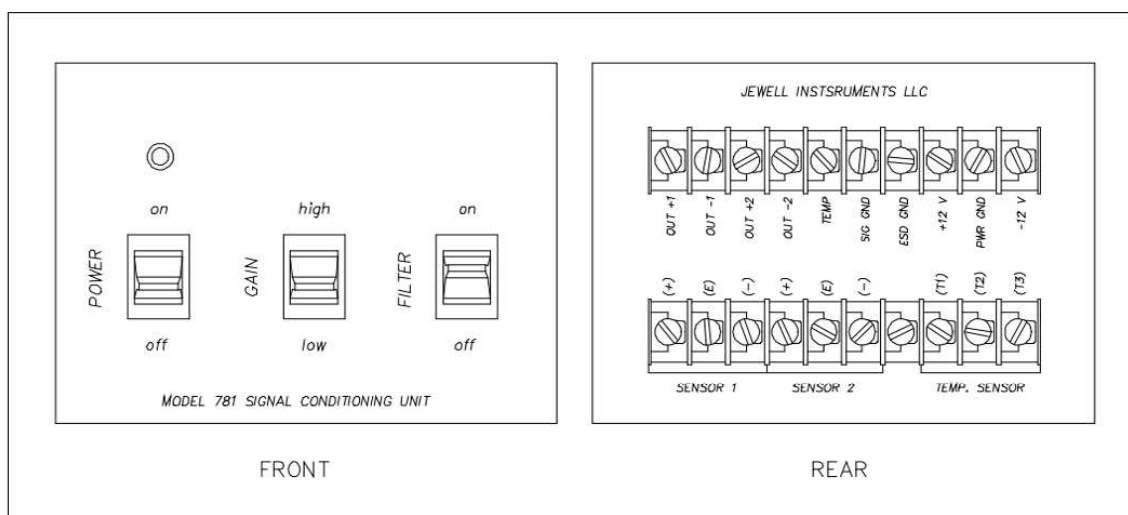
MODEL NO.	PART NO.	DESCRIPTION
781	98781-ROHS	Signal Conditioner, 2 Channel, Benchtop, 2 Gains, 2 Filters, ± 8 VDC Output (Single-ended) ROHS compliant.



DIMENSIONS



PANEL CONFIGURATION



Dimensions: in [mm]

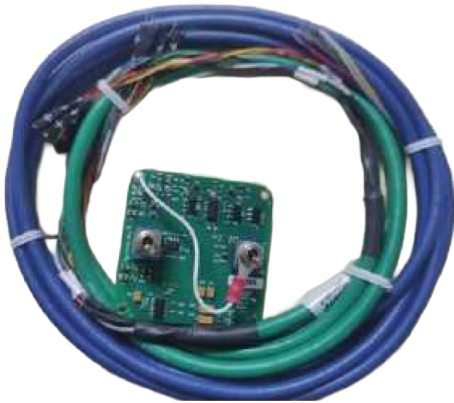


83162

Dual-channel Signal Conditioning Card

The model 83162 is a precision, two-channel signal conditioning card for use with all Jewell miniature tilt sensors. Powerful electronics generate balanced AC sensor excitation for up to two tilt channels (X and Y), then amplify, rectify and filter sensor response to produce a high-level DC output signal. Output is ± 8 VDC single-ended (± 16 VDC differential).

Units conveniently come with two switchable gain and filter settings (high/low; on/off) for added signal processing flexibility. The 83162 also includes an amplifier for one LM35 temperature sensor, and will drive tilt and temperature signals over 1000m cable lengths. All units include calibration when ordered with Jewell Instruments miniature tilt sensors. Use the model 83162 for peak performance from our 755-, 756-, or ceramic tilt sensor packages.



TECHNICAL SPECIFICATIONS

INPUT CHANNELS	Two Tilt Channels (X and Y tilt), One LM35 Temp. Sensor			
OUTPUT SIGNALS	± 8 VDC Single-ended (± 16 VDC differential)			
GAIN SETTINGS	Two switchable gains, 10:1 ratio			
STANDARD CALIBRATION	Sensor Type 755-series 756-series	High-Gain 0.1 μ radian/mV 0.1 $^{\circ}$ /V	Low-Gain 1.0 μ radian/mV 1.0 $^{\circ}$ /V	Range ± 8000 μ radian $\pm 8.0^{\circ}$
OUTPUT FILTERS	Filter "On" = 7.5 sec; Filter "Off" = 0.05 sec1; Roll-off = 6 dB/octave			
TEMPERATURE OUTPUT	0.1 $^{\circ}$ C/mV (single-ended)			
OUTPUT IMPEDANCE	270 Ohms			
POWER REQUIREMENTS	± 11 to ± 15 VDC @ +11 and -6 mA, 250 mV ripple max., reverse polarity protected			
CONNECTIONS	Sensor: Au-plated 100 mil header pins; Power/signal: 3-ft tinned pigtail			
ENVIRONMENTAL	-25 $^{\circ}$ to +70 $^{\circ}$ C Operation, -30 $^{\circ}$ C to +100 $^{\circ}$ C Storage, 0-90% humidity non-condensing			
MATERIALS	Fiberglass PCB, thru-holed soldered components			
DIMENSIONS AND WEIGHT	2.66 x 2.66 x 1.12 inches (includes switches), 30 g			

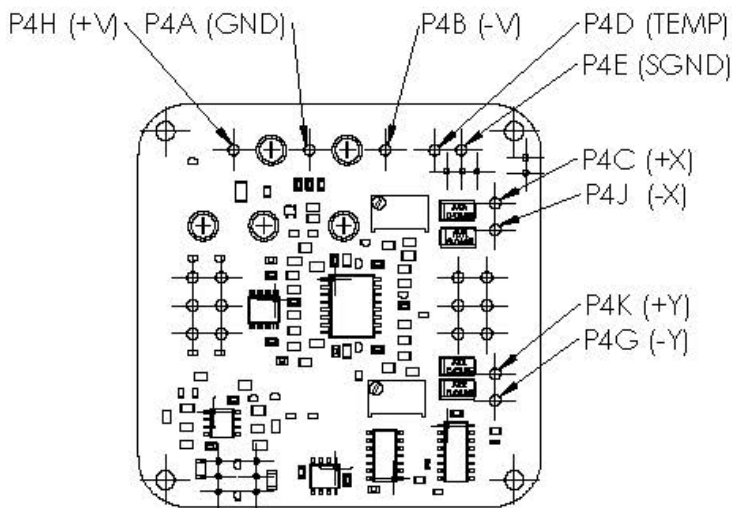
Specifications subject to change without notice on account of continued product development

ORDERING CODE

PART NO.	DESCRIPTION
600-00017-ROHS	Dual Channel Signal Conditioning Card, Square, 2 Gains, 2 Filters, ± 8 VDC Output (Single-ended)

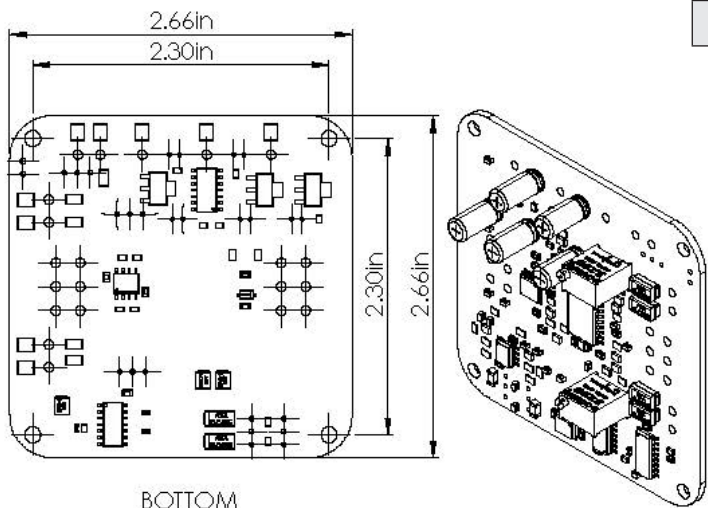


DIMENSIONS



TOP

A	POWER GROUND
B	- V IN
C	SIG + X
D	TEMPERATURE OUT
E	SIGNAL GROUND
G	SIG + Y
H	H +V IN
J	SIG - X
K	SIG - Y



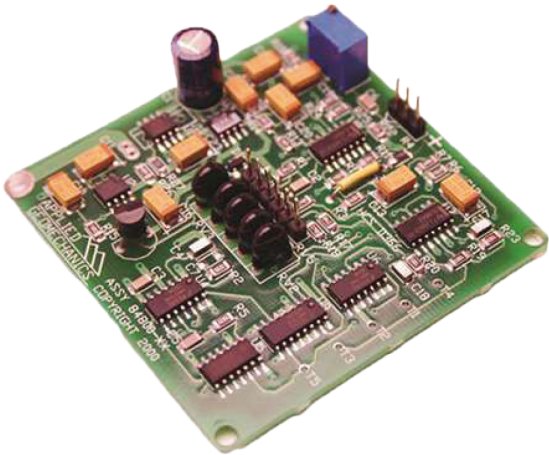
BOTTOM



84800
Single-channel Signal Conditioning Card

The model 84800 is a compact, high performance signal conditioner for use with all miniature tilt sensors. Each 84800 conditioning card will drive one tilt channel (X or Y), and one LM35 temperature sensor. Output is a stable ± 5 VDC voltage (± 10 VDC differential). Units also include a built-in 1.75 sec low-pass Butterworth filter for superior noise rejection (specify custom filter times on order), and the square form factor allows for easy packaging in OEM and end-user assemblies.

Use the 84800 signal conditioning card for peak performance from any of our 755-series, 756- or Ceramic Miniature Tilt Sensors.



TECHNICAL SPECIFICATIONS

INPUT CHANNELS	Two Tilt Channels (X and Y tilt), One LM35 Temp. Sensor		
OUTPUT SIGNALS	± 5 VDC Single-ended (± 10 VDC differential)		
GAIN SETTINGS	Fixed gain		
STANDARD CALIBRATION	Sensor Type 755-series 756-series 84053 Ceramic 84064-02 Ceramic	Scale Factor 0.1°/V 1.0°/V 0.6°/V 10°/V	Range $\pm 0.5^\circ$ $\pm 5.0^\circ$ $\pm 3.0^\circ$ $\pm 50^\circ$
OUTPUT FILTERS	2-pole Butterworth low-pass filter, roll-off = 12 dB/octave		
TEMPERATURE OUTPUT	0.1°C/mV (single-ended)		
OUTPUT IMPEDANCE	270 Ohms		
POWER REQUIREMENTS	8 to 18 VDC@ 8 mA typical, 250 mV ripple max.; reverse polarity protected		
CONNECTIONS	Sensor: Au-plated 100 mil header pins; Power/signal: J1 100 mil header pins		
ENVIRONMENTAL	-25° to +70°C Operation, -30°C to +100°C Storage, 0-90% humidity non-condensing		
MATERIALS	Fiberglass PCB, surface mount components		
DIMENSIONS AND WEIGHT	2.47 x 2.47 x 0.63 inches (63 x 63 x 16 mm), 0.75oz (21 g)		
MATERIALS	Fiberglass PCB, thru-holed soldered components		
DIMENSIONS AND WEIGHT	2.66 x 2.66 x 1.12 inches (includes switches), 30 g		

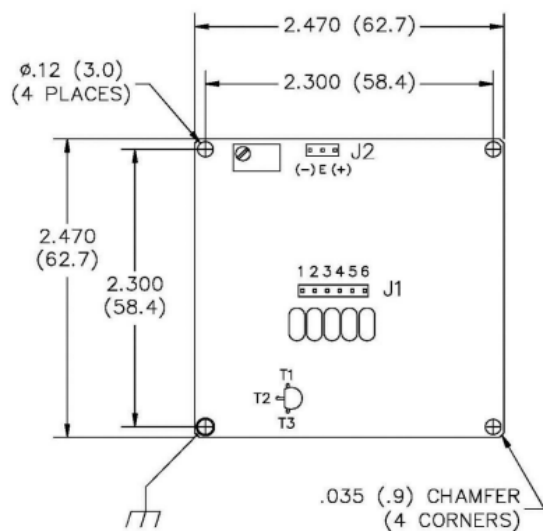
Specifications subject to change without notice on account of continued product development



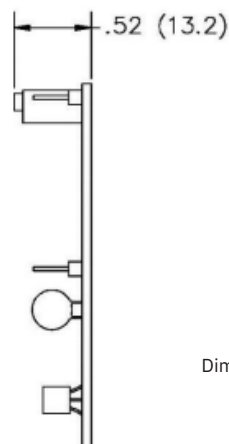
ORDERING CODE

MODEL NO.	FILTER f (Hz)	TYPICAL TIME CONSTANT (s)
84800-01-ROHS	0.183	1.750
84800-02-ROHS	1.829	0.175
84800-03-ROHS	0.638	0.500
84800-04-ROHS	0.318	1.000
84800-05-ROHS	0.064	5.000

DIMENSIONS



PIN OUTS	
1	8-18 VDC
2	SIG GND
3	PWR GND
4	+Tilt
5	-Tilt (differential)
6	Temperature



Dimensions: in [mm]

The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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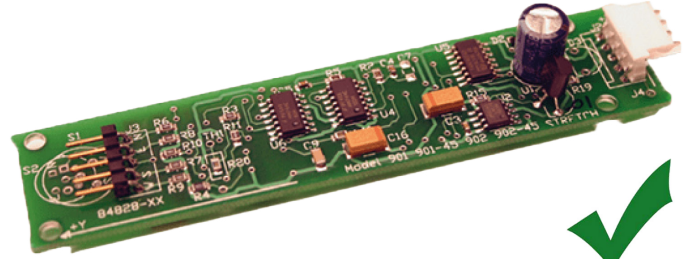
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84828

Slimline Signal Conditioning Card

The model 84828 Slimline Signal Conditioning Card is compact, analog signal conditioner miniature tilt sensors. Each 84828 card operates one single axis tilt sensor. Its slim, compact design makes the 84828 ideal for OEM applications where space is limited. Tilt output is measured as a ± 4 VDC signal (calibrated range is ± 2.5 VDC). Units are also available with 0-5VDC output. Jewell provides factory calibration for all 84828 signal conditioning electronics when ordered with our 84053 and 84064 Ceramic, or Model 755- and 756- miniature tilt sensors. Use the 84828 signal conditioner in custom instrument packages, robotics, ROV pitch/roll control, and more.



TECHNICAL SPECIFICATIONS

INPUT CHANNELS	1 Tilt Channel (X or Y)		
OUTPUT SIGNALS	± 4 VDC (standard calibration over ± 2.5 VDC)		
GAIN SETTINGS	Fixed gain		
STANDARD CALIBRATION	Sensor Type	Scale Factor	Range
	755-series	0.2°/V	$\pm 0.5^\circ$
	756-series	2.0°/V	$\pm 5.0^\circ$
	84053 Ceramic	1.2°/V	$\pm 3.0^\circ$
	84064-02 Ceramic	20°/V	$\pm 50^\circ$
OUTPUT FILTERS	0.15 sec		
TEMPERATURE OUTPUT	0.1°C/mV, 0°C = 0 mV (standard version), 0°C = 2.5 V (0-5V output version)		
POWER REQUIREMENTS	+8 to +24 VDC (standard version); +10.5 to +26.5 VDC (0-5V version); 7 mA, 250 mV ripple max., reverse polarity protected		
ENVIRONMENTAL	-25 to +70°C operation and storage, 0-80% humidity noncondensing		
MATERIALS	Fiberglass PCB, surface mount components		
DIMENSIONS AND WEIGHT	(see drawing), 0.5 oz (15 g)		

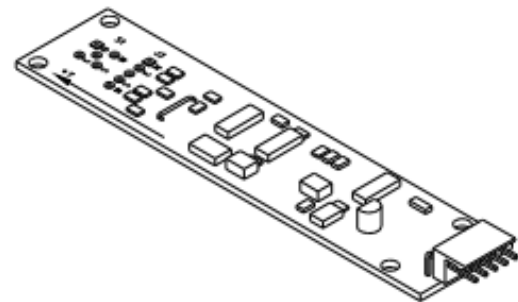
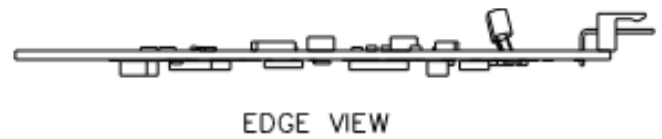
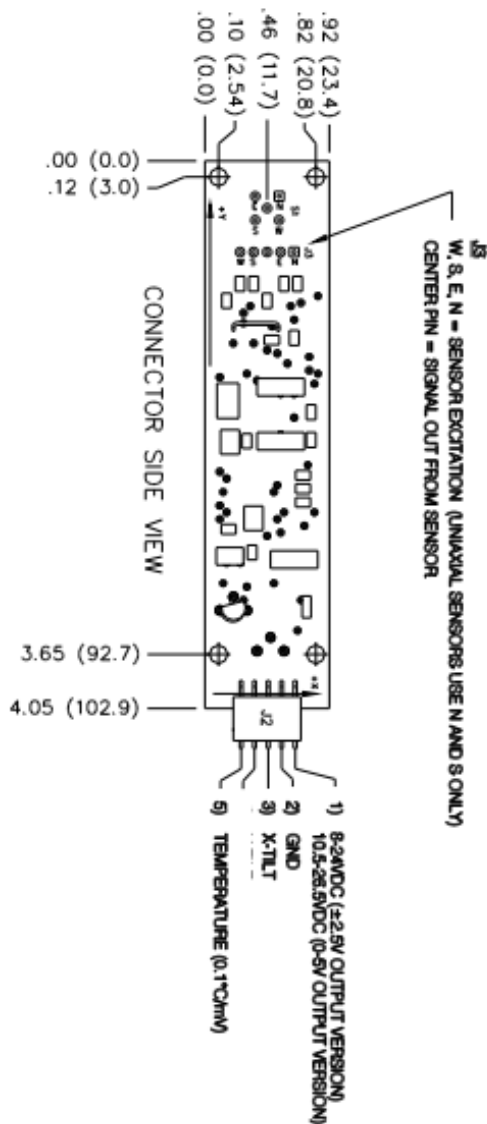
Specifications subject to change without notice on account of continued product development

ORDERING CODE

MODEL NO.	PART NO.	DESCRIPTION
84828	F84829-02	Slimline Signal Conditioning Card, Analog, Single Channel, Fixed Gain and Filter, ± 4 V (Single ended, nominal); ROHS compliant
70382-03	70382-03	Miniature Tilt Sensor Hookup Cable, 9-conductor (3 twisted shielded triples), specify required length on order



DIMENSIONS



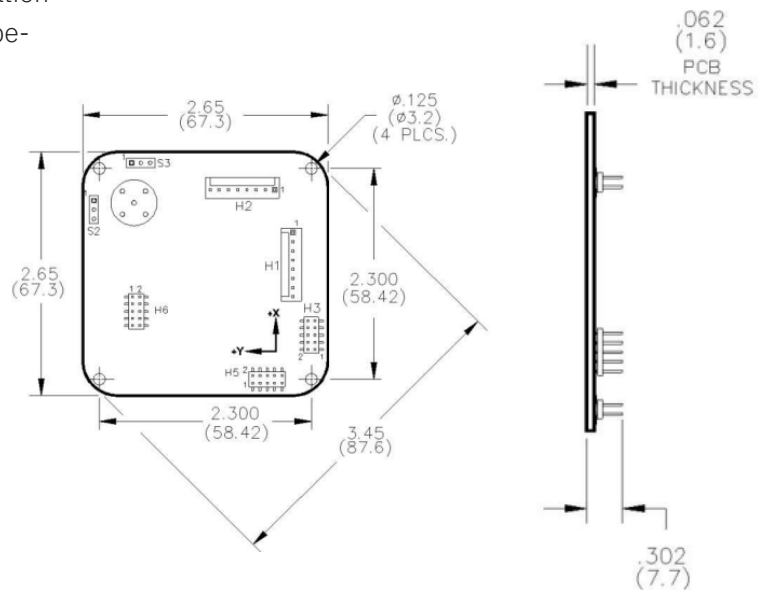
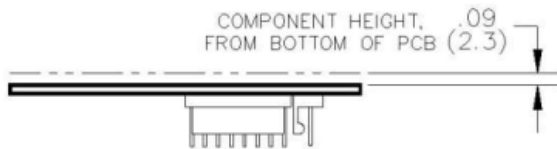
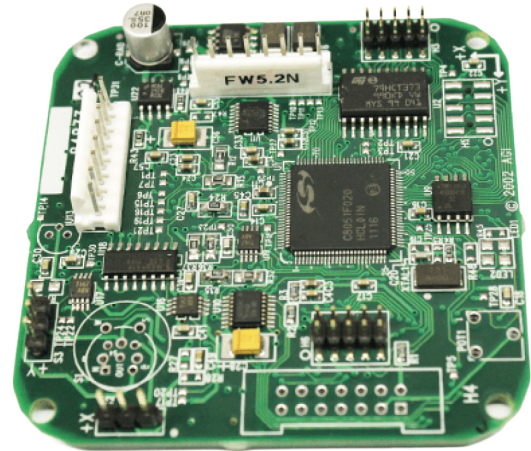
Dimensions: in [mm]



IRIS-SC

Digital Signal Conditioning Card

The IRIS-SC digital signal conditioning card is a powerful control device designed for use with all Jewell miniature tilt sensors. Output is ASCII RS232 or RS422(485) serial. Standard firmware includes five user-programmable alarm/trigger thresholds for tilts tilt switch/control applications. When a selected threshold is reached, the circuitry sets the output high on one of the pins in the H3 control connector. Other firmware features include user programmable data output rates, sample averaging, autozero (nulling), and baud rate. The IRIS-SC can also log up to 22,000 samples to internal memory for data dump/download on user command. All IRIS-SC units include calibration when ordered with Jewell miniature tilt sensors (specify calibrated range on order).



PIN OUTS / H1	
1	V+
2	GND
3	Tx (RS232)
4	Rx (Rs232)
5	Tx+ (RS422)
6	Tx- (RS422)
7	Rx- (RS422)
8	Rx+ (RS422)

PIN OUTS / H2	
1	V+
2	GND
3	GND
4	-
5	-
6	-
7	Analog X-out
8	Analog Y-out

PIN OUTS / H3	
1	-X tilt threshold
2	+X tilt threshold
3	-Y tilt threshold
4	+Y tilt threshold
5	Opt. threshold*
6	Opt. threshold*
7	Opt. threshold*
8	Threshold in any direction
9	GND
10	3.3 VDC outut

*Custom Firmware Only



■ TECHNICAL SPECIFICATIONS

INPUT CHANNELS	Two Tilt Channels (X and Y tilt)
OUTPUT SIGNALS	RS232 and RS422(RS485 Full Duplex) Digital Serial, ASCII
RESOLUTION	16-bit ADC
SAMPLE RATES	User-selectable from 10/second to 1/hour
TEMPERATURE OUTPUT	On-board Temperature Sensor
DATA STORAGE	512 kB of nonvolatile Flash Memory available* (approx. 22,000 samples)
BAUD RATE	9600 (default), 19200, 28800, 57600, 115200, 230400
DATA FORMAT	NMEA XDR, Trimble TCM, Ashtech, Simple (X, Y, temp., S/N)
CONTROL OUTPUTS	8 TTL-compatible CMOS control outputs (0-5 VDC); 20mA source Power per channel (not to exceed 100mA across all 8 channels)
POWER REQUIREMENTS	7-28 VDC @ 27 mA, 250 mV ripple max., reverse polarity and surge protected.
CONNECTIONS	Four 24-in cables included: Two for signal (H1, one for RS232 and another for RS485); Power (H2); Control Output (H3)
ENVIRONMENTAL	-40° to +85°C operating and storage; 90% humidity, noncondensing
DIMENSIONS AND WEIGHT	67 x 67 x 25mm max. (2.6 x 2.6 x 1.0 inches); 31g (1.1 oz)

Specifications subject to change without notice on account of continued product development

■ ORDERING CODE

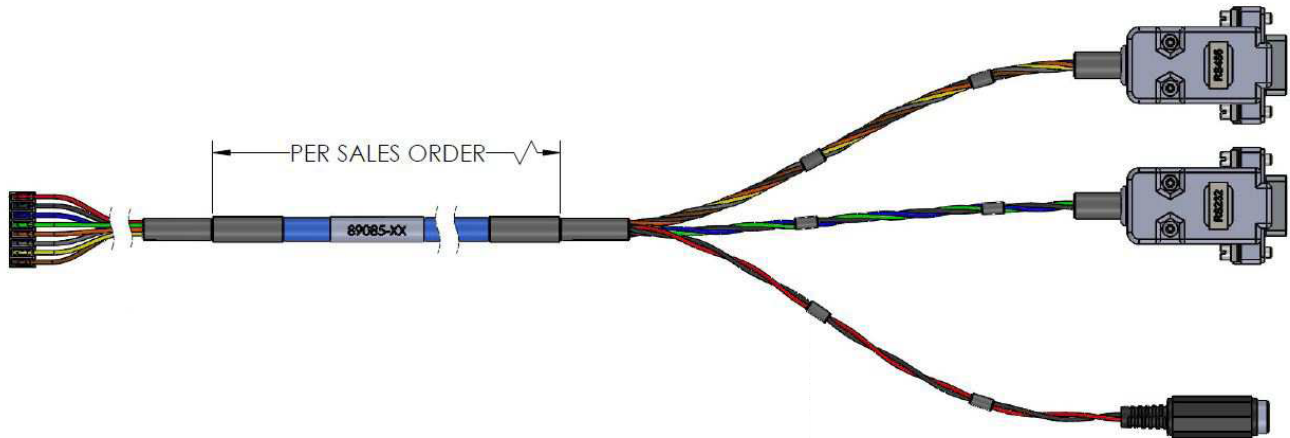
PART NO.	DESCRIPTION
600-00022-ROHS	IRIS signal conditioner with required accessories below

■ ACCESSORIES

PART NO.	DESCRIPTION (INCLUDED WITH PN 600-00022-ROHS)
84833-02	IRIS Signal Conditioning Card, RS232/RS422
84063-01	24-in Cable Assembly, RS232 , H1 Header to DB9-sub Connector
84063-02	24-in Cable Assembly, Power (H2)
84088-01	24-in Cable Assembly, RS422 , H1 Header to DB9-sub Connector
84083-01	24in Tilt Switch Control Cable (Connects to H3 Terminal), Tinned Ends
00254-02	Transformer, 100-240VAC to 12VDC
00255-02	JACK DC POWER, 5.5MM O.D. X 2.1MM
89085-03	IRIS RS232&RS422 BREAKOUT CBL 3M



■ CONNECTOR CABLE (PART# 89085-03)



PIN OUTS / IDC TABLE	
#	FUNCTION
1	POWER
2	GND
3	TX
4	RX
5	TX+
6	TX-
7	RX-
8	RX+

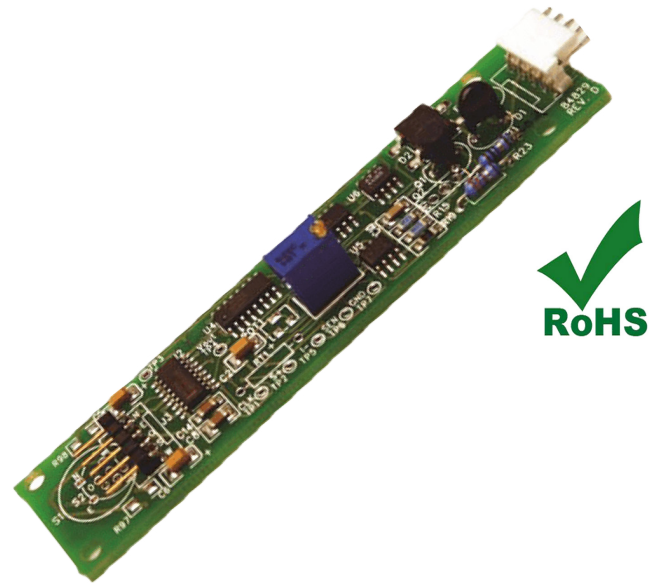
PIN OUTS / DB-9 & POWER JACK TABLE	
POWER JACK	
PIN	FUNCTION
INSIDE	POWER
OUTSIDE	GND
DB-9 (RS422)	
5	GND
3	TX+
4	TX-
2	RX+
1	RX-
DB-9 (RS232)	
2	TX
3	RX
5	GND



TULIP-SC

4-20mA Signal Conditioning Card

The Tulip-SC is a precision 4-20mA signal conditioning card miniature tilt sensors. Each Tulip-SC card operates one single axis tilt sensor. Tilt output is measured as a 4-20mA output. The Tulip-SC is current loop powered, so measurements can be made over long cable lengths using an economical 2-wire pair. Units also come with an on-board thermistor for measuring temperature. Jewell provides factory calibration for all Tulip-SC electronics when ordered with our 84053 and 84064 Ceramic, or Model 755- and 756- miniature tilt sensors.



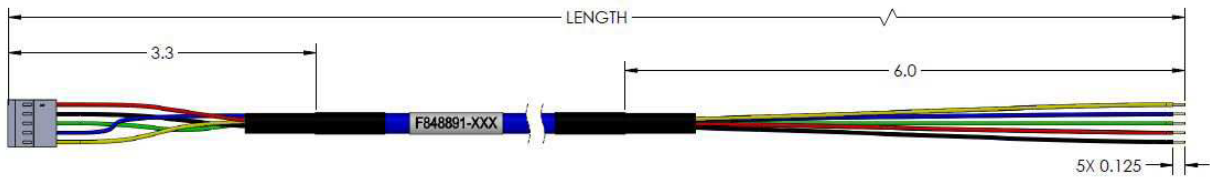
TECHNICAL SPECIFICATIONS

INPUT CHANNELS	1 Tilt Channel (X or Y)		
OUTPUT SIGNALS	4-20mA, 2-wire Current Loop		
GAIN SETTINGS	Fixed gain		
STANDARD CALIBRATION	Sensor Type	Scale Factor	Range
	755-series	0.0625°/mA	±0.5°
	756-series	0.625°/mA	±5.0°
	84053	0.375°/mA	±3.0°
	84064-02	6.25°/mA	±50°
OUTPUT FILTERS	0.15 sec		
TEMPERATURE OUTPUT	2500-Ohm thermistor, on-board (type-B curve)		
POWER REQUIREMENTS	(0.02 Ampere x R + 10 VDC) < Vs < 29 VDC		
ENVIRONMENTAL	-40 to +85°C operation and storage, 0-90% humidity noncondensing		
MATERIALS	Fiberglass PCB, surface mount components		
DIMENSIONS AND WEIGHT	4.05 x 0.92 x 0.51 in (103 x 23.4 x 13 mm), 0.5 oz (15 g)		

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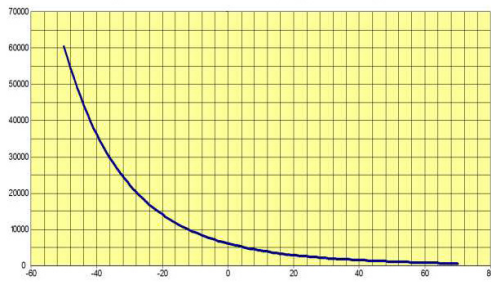
ORDERING CODE

MODEL NO.	PART NO.	DESCRIPTION
TULIP-SC	F880001-002	Tulip Signal Conditioning Card, 4-20mA, Single Channel, Fixed Gain and Filter; ROHS Compliant
CABLE	F848891-01M	1m cable assembly
CABLE	F848891-05M	5m cable assembly
CABLE	F848891-10M	10m cable assembly
CABLE	F848891-25M	25m cable assembly
CABLE	F848891-50M	50m cable assembly



Thermistor Output:

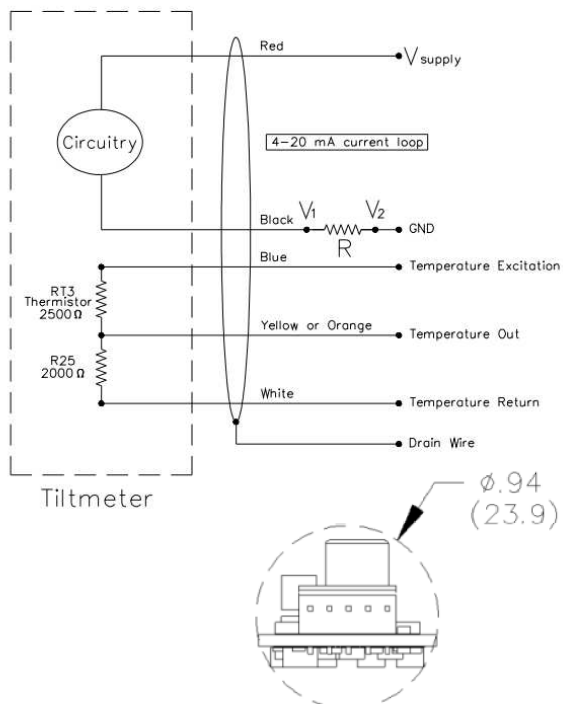
Resistance (ohms) vs. Temp
(U.S. Sensors LR252B1K, Type-B Curve)



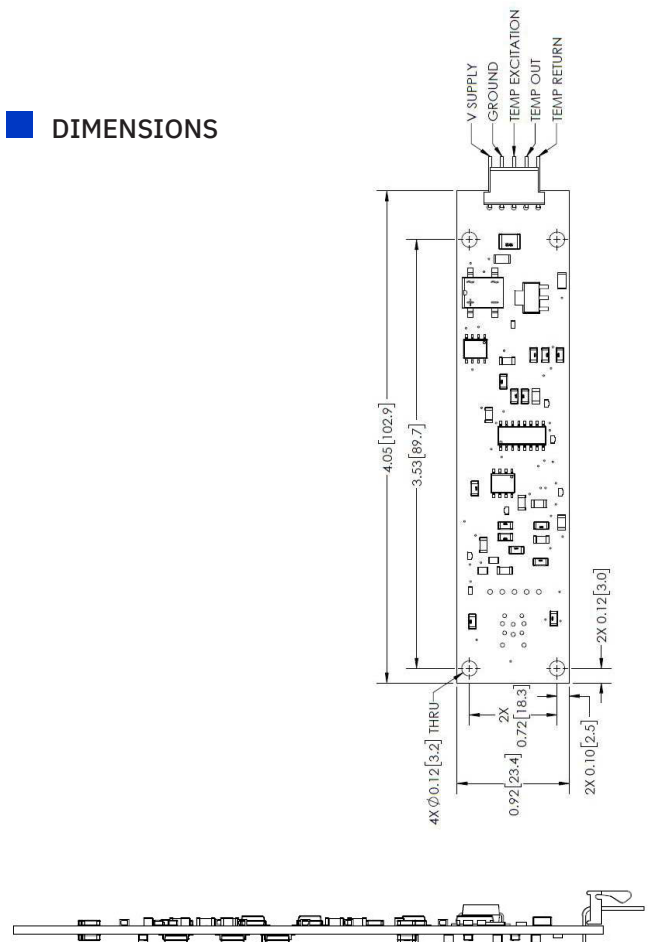
PIN OUTS	
CON. PIN	CLR
1	RED
2	BLACK
3	GREEN
4	BLUE
5	YELLOW

$T = 1/[A + B \ln(RT3) + C \ln(RT3)^3 + D \ln(RT3)^5] - 273.15$
where T is in degrees Celsius and $RT3$ = thermistor resistance.
 $A = 7.34862E-04$; $B = 3.38205E-04$; $C = -1.30862E-07$; $D = 1.21751E-09$

CIRCUIT DIAGRAM



DIMENSIONS



Dimensions: in [mm]