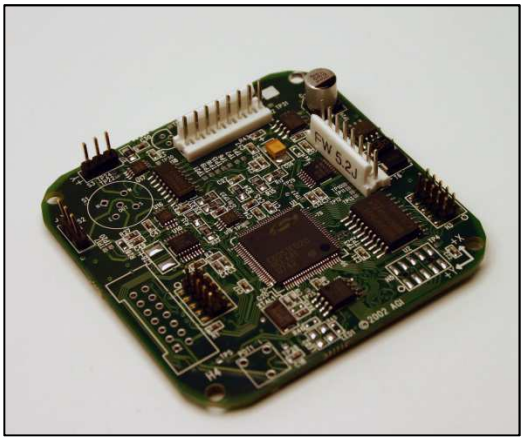
IRIS-SC

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).



Input Channels	Two Tilt Channels (X and Y tilt)
Resolution	16-bit ADC
Output	RS232 and RS422(RS485 Full Duplex) Digital Serial, ASCII
Temperature Output	On-board Temperature Sensor
Sample Rates	User-selectable from 10/second to 1/hour
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.
Environmental	-40° to +85°C operating and storage; 90% humidity, noncondensing
Connections	Three 60cm (2 ft) cables included: Signal (H1), Power (H2), Control Outputs (H3)
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:

Model No.	Description
IRIS-SC	IRIS Signal Conditioning Card, RS232/RS422 Output, 16-bit, Dual Channel, Fixed Gain

Accessories:

Part No.	Description
84063-01	Extra 24-in Cable Assembly, RS232 , H1 Header to DB9-sub Connector
84088-01	Extra 24-in Cable Assembly, RS422 , H1 Header to DB9-sub Connector
84083-01	24-in Tilt Switch Control Cable (Connects to H3 Terminal), Tinned Ends
00254-02	Transformer, 100-240VAC to 12VDC

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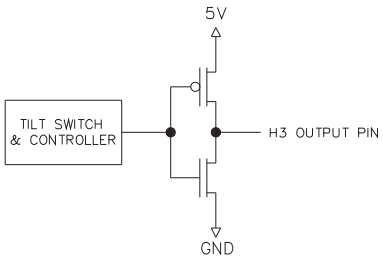
A Full-Featured Signal Conditioner

IRIS-SC is a versatile dual channel signal conditioner. Serial ASCII data are output as either RS232 or RS422(485) signals for recording by an external terminal or computer. Important features are firmware-controlled and user-selectable. These include output data rates and formats, signal averaging, autozero (nulling), and internal data storage (logging). Several output data formats are provided, all of which include X tilt, Y tilt, Temperature and Serial Number information.

A Powerful Control Device

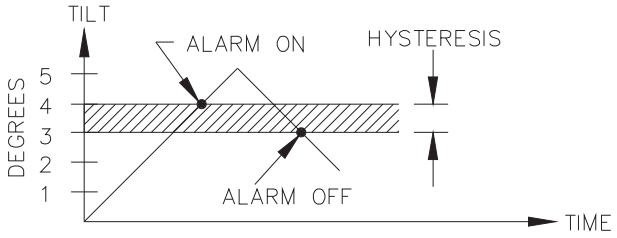
The firmware on the standard IRIS board has 5 user programmable thresholds. When a tilt measurement is taken, it is compared to each of these thresholds: +X tilt, -X tilt, +Y tilt, -Y tilt and tilt in any direction. If the measurement exceeds one or more of the thresholds, the corresponding output pin(s) in the H3 connector, are set high (5V), as shown below. If the threshold is not exceeded, the output remains at 0 Volts. The reference angle for the threshold measurement is selected using the autozero command. Threshold checking may be turned off with a single firmware command when it is not needed.



The standard IRIS firmware also allows the user to set the hysteresis of the control thresholds.

The hysteresis is used as follows: After an H3 output pin is set high, it
is not set low again until the tilt reading has reached a level that is below the threshold by an amount equal to
the hysteresis (see diagram).

IRIS includes 3 additional control output pins in the H3 connector, bringing the total to 8. The 3 additional pins are not active in the regular versions of the product, but may be implemented for your application by custom programming by our software engineers. Each of the 8 control outputs is separately programmable. Another custom option is “normally high” control output instead of the standard “normally low” output. With “normally high” controls the voltage level of the H3 pin is 5V until a threshold is reached, at which time it switches to 0V.



In the regular versions of IRIS the control pins in connector H3 are all set high for approximately 150 milliseconds on power up, after which they reset to their “normally low” value of 0V until a tilt threshold is detected.

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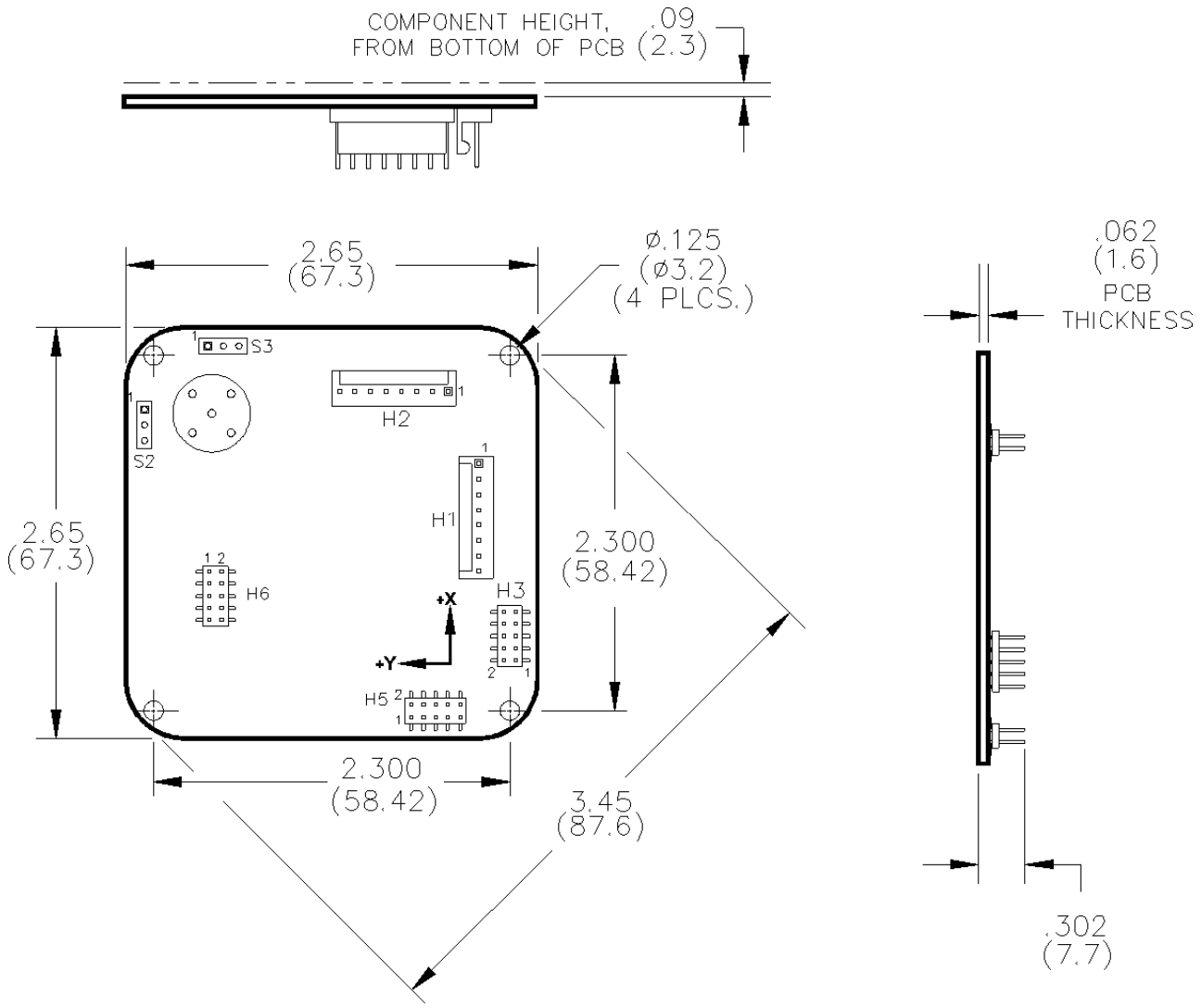
Dimensions:



Dimensions in inches (mm)

Pin-outs:

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

H2 Pin	Function
1	V+
2	GND
3	GND
4	--
5	--
6	--
7	Analog X-out
8	Analog Y-out

H3 Pin	Function
1	-X tilt threshold
2	+X tilt threshold
3	-Y tilt threshold
4	+Y tilt threshold
5	Optional threshold*
6	Optional threshold*
7	Optional threshold*
8	Threshold in any direction
9	Ground
10	3.3 VDC output

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