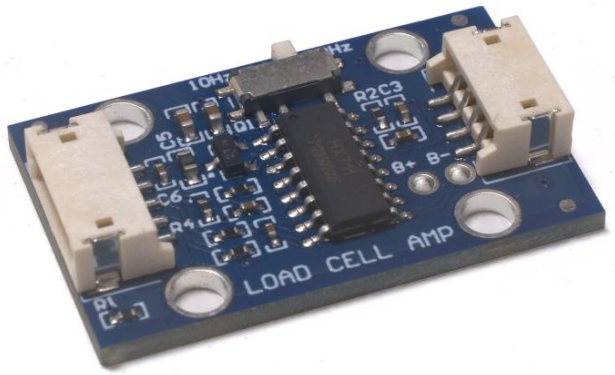
HX711C

Load Cell Amplifier



RoHS

FEATURES

- **Single Channel**
- **24-bit Analog to Digital Converter**
- **Programmable Gain of 64 and 128**
- **Selectable Data Rate with On-board Switch**
- **2.6 – 5.5 VDC Supply Voltage**
- **Low Power Operation with Power Down Mode**
- **Small Form Factor**
- **Simple Connection (4/5 pin Connector)**

INTERFACE

- **4 Wire SPI**

APPLICATIONS

- **Weighing Scales**
- **Industrial Process Control**
- **Portable Instrumentation**
- **Smart Transmitters**

AVIALABLE ACCESORIES

- **5 pin Sensor Cable**
- **4 pin Data Cable**
- **Mounting Hardware**

GENERAL DESCRIPTION

The HX711C is a simple Load Cell Amplifier designed for direct connection to Wheatstone bridge sensors. With its small form factor and multi-purpose connector, the Load Cell Amplifier allows for easy site installation and sensor connection.

The HX711C uses a low power, low noise, 24-bit resolution amplifier for high precision measurements with programmable gain and data rates. Gain is selectable from 64 and 128 and is set in software. Data Rate is selectable with the on-board switch. Simply slide the switch to the desired data rate for the application.

The HX711C Load Cell Amplifier accepts 2.6-5.5 VDC input voltage which is also used to supply the external bridge sensor. External sensor and amplifier IC have on-board filtering for stable, low noise operation. Connections are made simple through the use of 4 pin and 5 pin connectors mounted directly on the amplifier.

Communication is achieved by interacting with the Two-Wire interface. Simply connect the pins (SCLK and DATA) to a microcontroller or a serial interface and use readily available libraries to set gain and collect data from the amplifier. Please see SPI Interface for more information.

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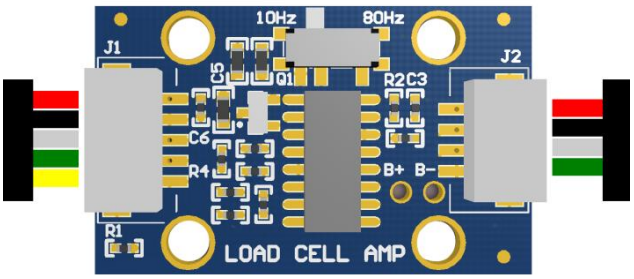
ELECTRICAL PARAMETERS

Parameter	Value	Unit
Power Supply Voltage (VCC)	2.6 – 5.5	V
Nominal Current	1.5	mA
Power Down Current	0.5	uA
Common Mode Input	GND + 1.2 VCC – 1.3	V V
Output Settling Time	400	ms
Input Offset Drift (Gain = 128)	0.2	mV
Temperature Drift (Gain = 128)	±5	ppm/°C
Input Common Mode Rejection (Gain = 128)	100	dB
Power Supply Rejection (Gain = 128)	100	dB

CONNECTION



RED	Excitation +		**RED**	VCC
BLACK	Excitation -		**BLACK**	GND
WHITE	Output -		**WHITE**	DOUT
GREEN	Output +		**GREEN**	SCK
YELLOW	Shield			

In most applications, the Shield cable is left open and not connected to the load cell. However, when operating in environments with heavy machinery and high electromagnetic interference, connecting the Shield improves stability and EMC performance.

To isolate Shield and electronics further, remove resistor R1.

COMMUNICATIONS

The HX711C utilizes a simple two-wire interface which can be connected directed to a microcontroller.

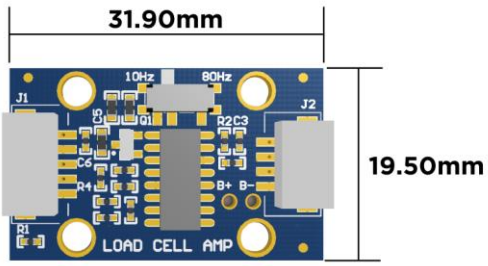
When data is not ready, DOUT is kept high and SCK is low. When data is ready DOUT set low. Data can then be retrieved by clocking in 25-27 clock pulses on the SCK pin. Each clock pulse shifts out one bit starting with the MSB until all 24 bits are shifted. The 25th clock pulse will pull DOUT back to high.

The last clock cycles indicates the Gain selection for the next conversion cycle. The Gain can be selected as shown in the table below. There must be no less than 25 and no more than 27 clock pulses in one conversion cycle to ensure proper operation of the serial interface. The first conversion after Reset will always be with a Gain of 128.

SCK Clock Pulses	Gain
25	128
27	64

Third party libraries are available for simple communication for HX711C amplifier. Please contact our sales representative for references

POWER DOWN MODE

The HX711C can be placed into power down mode by keeping SCK pin high for more than 60us. By returning the SCK to low, the amplifier will reset and resume normal operation. During low power mode, the external bridge sensor and the amplifier for minimal power consumption.

MECHANICAL DRAWING