PROBOTS
www.probots.co.in

This HX700 works on 9-12V DC and converts a 24-bit ±20mV differential analog signal to an RS485 digital signal. It is useful for full-bridge electronic scale, load cell sensor signal conversion and data acquisition in industrial applications

This analogue-to-digital converter module is a low-cost, reliable full-bridge load cell signal AD conversion integrated circuit board module that supports zero calibration, weight calibration, and ADC readiness through configuration software. Its communication protocol is HEX code, two's complement, and address can be set through a DIP switch. That load cell signal converter module can be connected to a maximum of 16 sets of devices at the same time. It is an ideal precision weighing sensor signal conversion module for developers or users.
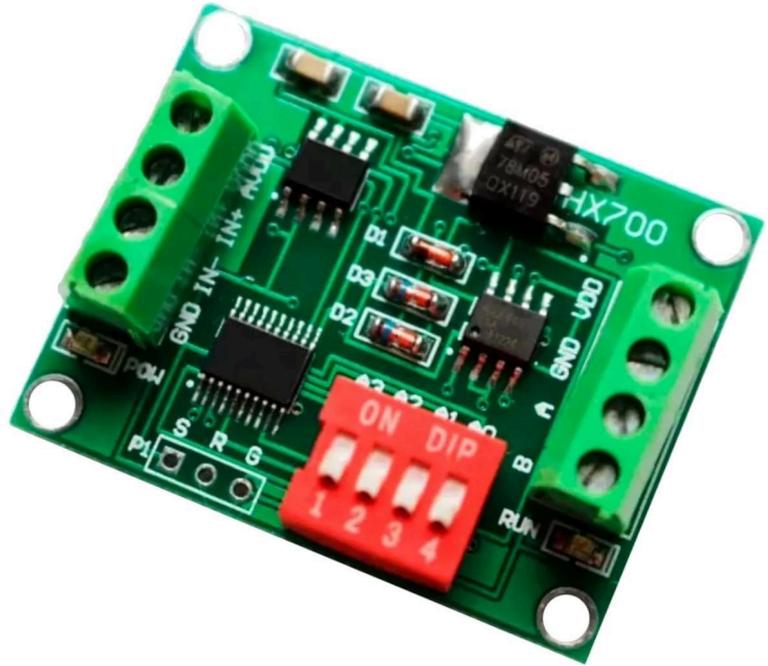
Features

- 24-bit high accuracy AD conversion, high reliability and accuracy.
- ±20mV differential signal input.
- 9-12V wide range power supply, low power consumption.
- Weight unit display: mg, g, kg, T.
- The address is settable through the DIP switch.
- HEX code data communication protocol.
- Simple high efficiency reliable design, high sensitivity, and fast response.
- Ideal to do further development and integration.

Applications

- Electronic scale sensor signal AD conversion.
- Weighing sensor signal data acquisition and transmission.
- Force, pressure, displacement, torque signal data conversion.
- Weighing sensor signal data monitoring.

Table of Contents

1. Technical Specifications

Parameter	Specifications
Input	±20mV differential signal input, full-bridge load cell signal input
Data Accuracy	24 bit
Refresh Frequency	80Hz refresh data
Excitation voltage	5VDC
Operating voltage	9-12VDC
Operating current	<10mA
Communication Protocol	HEX Code, two's complement
Data Format	9600bps baud rate, no checksum, 8-bit data, 1 stop bit

2. Pinout

Terminals Definition

Terminal Code No	Description
P2 Terminal block	
12V	9-12V operating power supply +
GND	9-12V operating power supply -
A	RS485 non-inverting interface, connect to RS485 A
B	RS485 inverting interface, connect to RS485 B

CH1 Terminal block	
VDD	Electronic scale power supply + (usually red wire)
I+	Electronic scale non-inverting input (usually green wire)
I-	Electronic scale inverting input (usually white wire)
GND	Electronic scale power supply - (usually black wire)

3. Operating Instructions

Read Weight Data

Send Command

Module Address (1 byte)	Command (1 byte)	Checksum (1 byte)
A0H	51H	F1H

Checksum: do checksum to the data in front of checking byte, retain low 8 byte data.

Response Command:

Module Address (1 byte)	Product code no (1 byte)	Electric scale unit (1 byte)	Electric scale weight (4 bytes)	Checksum (1 byte)
A0H	A1H	00H	00H, 00H, 00H, 00H	41H

* Product code no: Hexadecimal digit A1H

*Electric scale unit: 0=mg, 1=g; 2=kg; 3=T.

*Electric scale weight: 4 bytes long integer, composed of 32 bit binary digits, higher bit is in front.

Output weight (Unit)= Electric scale weight data (unit)/100

* When receiving the command correctly, response command accordingly; otherwise, do not send response command.

Write ZERO Calibration

Module Address (1 byte)	Command (1 byte)	Checksum (1 byte)
A0H	52H	F2H

ZERO Calibration: the data before adding any weight to the electric scale.

Checksum: do checksum to the data in front of checking byte, retain low 8 byte data.

Response Command

Module Address (1 byte)	Command (1 byte)	Checksum (1 byte)
A0H	52H	F2H

* When receiving the command correctly, response command accordingly; otherwise, do not send response command.

Write Poise/Weight Calibration

Send Command

Module Address (1 byte)	Command (1 byte)	Electric scale weight calibration unit (1 byte)	Electric scale weight (4 bytes)	Checksum (1 byte)
A0H	53H	00H	00H, 00H, 00H, 00H	F3H

*Poise/Weight Calibration: data measured after adding poise/weight, must write poise weight and unit.

*Electric scale unit: 0=mg, 1=g; 2=kg; 3=T.

*Electric scale weight: 4 bytes long integer, composed of 32 bit binary digits, higher bit is in front.

Output weight (Unit)= Electric scale weight data (unit)/100

* When receiving the command correctly, response command accordingly; otherwise, do not send response command.

Response Command

Module Address (1 byte)	Command (1 byte)	Checksum (1 byte)
A0H	53H	F3H

Read CH1 Channel Data

Send Command

Module Address (1 byte)	Command (1 byte)	Checksum (1 byte)
A0H	54H	F4H

Checksum: do checksum to the data in front of checking byte, retain low 8 byte data.

Response Command

| Module Address (1 byte)	Electric scale CH1 channel ADC data (4 bytes)	Checksum (1 byte)
A0H	00H, 00H, 00H, 00H	F4H

* Electric scale CH1 channel data: 4 bytes long integer, composed of 32 bit binary digits, higher bit is in front.

* When receiving the command correctly, response command accordingly; otherwise, do not send response command.

DIP Switch Address

	Device ADD.		DIP Switch			
No.	Integer	HEX	A3	A2	A1	A0
1	160	A0	OFF	OFF	OFF	OFF
2	161	A1	OFF	OFF	OFF	ON
3	162	A2	OFF	OFF	ON	OFF
4	163	A3	OFF	OFF	ON	ON
5	164	A4	OFF	ON	OFF	OFF
6	165	A5	OFF	ON	OFF	ON
7	166	A6	OFF	ON	ON	OFF
8	167	A7	OFF	ON	ON	ON
9	168	A8	ON	OFF	OFF	OFF
10	169	A9	ON	OFF	OFF	ON
11	170	AA	ON	OFF	ON	OFF
12	171	AB	ON	OFF	ON	ON
13	172	AC	ON	ON	OFF	OFF
14	173	AD	ON	ON	OFF	ON
15	174	AE	ON	ON	ON	OFF
16	175	AF	ON	ON	ON	ON

Application Circuits
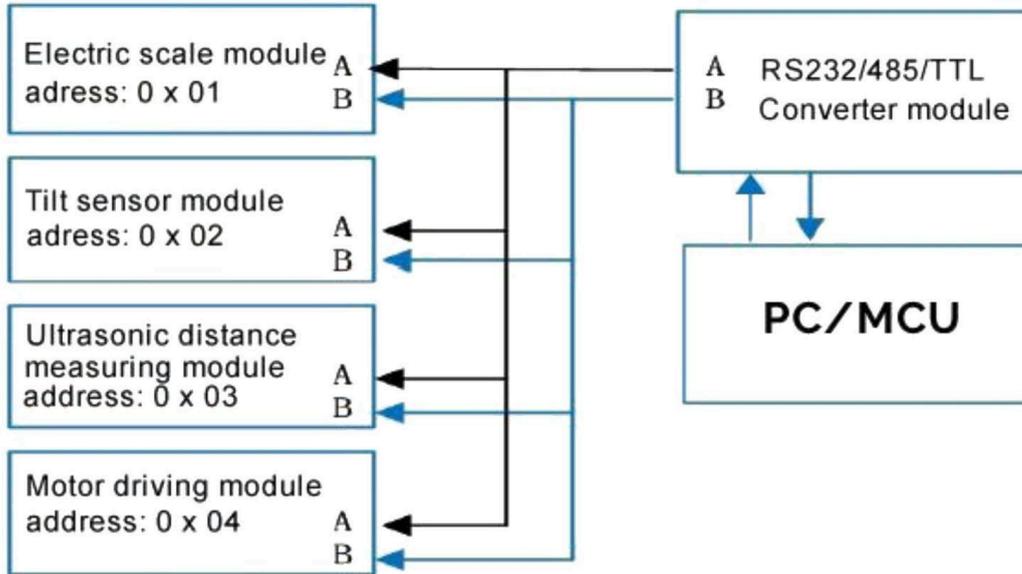
Configuration Software (English version)
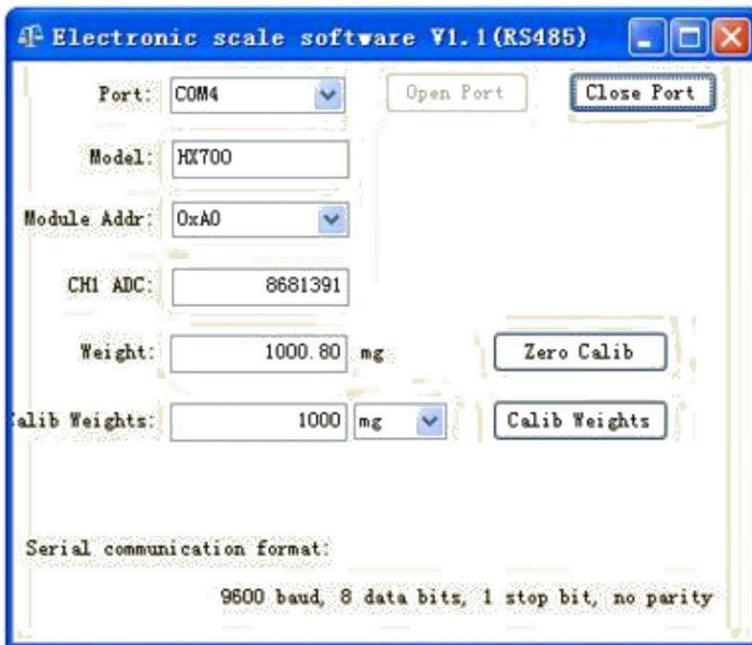
[Port]: PC serial port no

[Close Port]: disconnect connection to PC.

[Open Port]: connect the module to PC.

[Model]:   Model No of AD converter module

[Module Addr.]: address of AD converter module

[CH1 ADC.]: ADC value of channel#1.

[Weight]: weight value measured

[Zero Calib]: click to do Zero calibration.

[Calib Weights]: click to do Span calibration after adding poise/weight.

* Please do type right weight value and select right weight unit before click [Calib weights].

Terms and Conditions Agreement
Read and understand this section before using the product

Please read and understand this catalogue before purchasing the products. Please consult your ProMax sales/technical representative if you have any questions or comments.

Warranties.

(a) Warranty. ProMax does not offer any warranty/guarantee/replacement/returns for products once sold. Since these products are used in research/testing/production with other components, it is beyond our scope to determine the working of our product in your application. ProMax disclaims all other warranties, express or implied.

(b) Limitations. ProMax MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCTS. THE BUYER ACKNOWLEDGES THAT IT ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE.

ProMaxfurther disclaims all warranties and responsibility of any type for claims or expenses based on infringement by the Products or otherwise of any intellectual property right.

(c) Buyer Remedy. ProMax sole obligation hereunder shall be, at ProMax's election, to (i) replace (in the form originally shipped with Buyer responsible for labor charges for removal or replacement thereof) the non-complying Product, (ii) repair the non-complying Product, or (iii) repay or credit Buyer an amount equal to the purchase price of the non-complying Product; provided that in no event shall ProMax be responsible for warranty, repair, indemnity or any other claims or expenses regarding the Products unless ProMax analysis confirms that the Products were properly handled, stored, installed and maintained and not subject to contamination, abuse, misuse or inappropriate modification or any other reason. Return of any Products by Buyer must be approved in writing by ProMax before shipment. ProMaxCompanies shall not be liable for the suitability or unsuitability or the results from the use of Products in combination with any electrical or electronic components, circuits, system assemblies or any other materials or substances or environments. Any advice, recommendations or information is given orally or in writing, are not to be construed as an amendment or addition to the above warranty. See http://www.probots.co.in/ or contact your ProMax representative for published information.

Limitation on Liability; Etc.

ProMax COMPANIES SHALL NOT BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR PRODUCTION OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED IN CONTRACT, WARRANTY, NEGLIGENCE OR STRICT LIABILITY.

Further, in no event shall liability of ProMaxCompanies exceed the individual price of the Product on which liability is asserted. Suitability of Use. ProMax Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, ProMaxwill provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE ProMax PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

Programmable Products.

ProMax Companies shall not be responsible for the user's programming of a programmable Product, or any consequence thereof. Performance Data.

Data presented in ProMax Company websites, catalogs and other materials is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of ProMax's test conditions, and the user must correlate it to actual application requirements. Actual performance is subject to the ProMax's Warranty and Limitations of Liability.

Change in Specifications.

Product specifications and accessories may be changed at any time based on improvements and other reasons. It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without any notice. When in doubt, special part numbers may be assigned to fix or establish key specifications for your application. Please consult with your ProMax's representative at any time to confirm actual specifications of purchased Product. Errors and Omissions. Information presented by ProMax Companies has been checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical or proofreading errors or omissions.