

Electronic Scale AD Converter Module with RS485 Port

HX700

BRT HX700 Electronic scale module is a low cost reliable load cell signal AD conversion integrated circuit board module. It accepts +/-40mV differential signal input and output digital RS485 signal. It supports data communication with upper PC through RS485 port, and address can be set through DIP switch. That load cell signal converter module can be connected to max. 16 sets of device at the same time. It is widely used in electronic scale, load cell sensor signal conversion and data acquisition.

Main Features

- 24 bit high accuracy AD Conversion, high reliable and accuracy.
- $\pm 40\text{mV}$ differential signal input.
- 9-12V wide range power supply, low power consumption.
- Weight unit display: mg, g, kg, T.
- Address is settable through DIP switch.
- HEX code data communication protocol.
- Simple high efficiency reliable design, high sensitivity, fast response.
- Ideal to do further development and integration.

Typical Applications

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

Technical Parameters

Terms	TYP Value
Input	$\pm 40\text{mV}$ differential signal input, full scale $\pm 40\text{mV}$
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.

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)

* Do ensure right polarity connection, then power on; otherwise it may cause permanent damage to the module. The wire color is only for reference, please do wire connection correctly based on actual electronic scale wire definition.

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

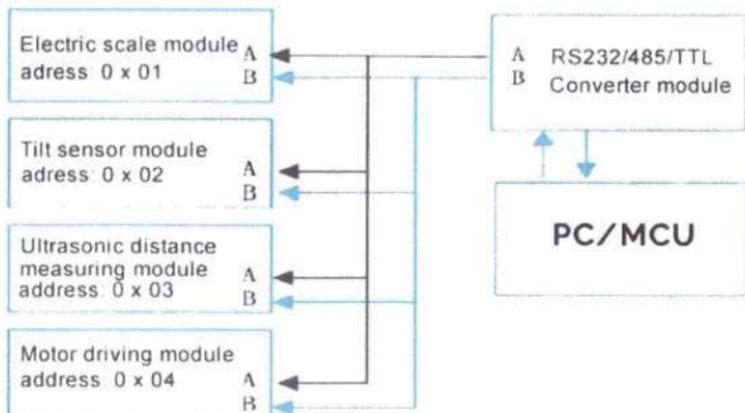
* Electric scale CH1 channel data: 4 bytes long integer, composed of 32 bit binary digits, higher bit is in front.

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

DIP Switch Address

No.	Device ADD.		DIP Switch			
	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

Referential 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].

Important Notes:

1. Please do read the user manual firstly, otherwise, wrong operation may do damage to that module.
2. Please select right matched COM port when connecting that AD module to PC, and make sure PC COM port is normal.
3. Next click open port to start communication.
4. When connecting that module to weight sensor, please do Zero Calibration firstly.
5. Then add poise/weight, type the weights value in software [Calib Weights] column, select correct matched weight unit, next click [Calib Weights] to do Weight/Span calibration.

*The specification is subject to change without notice. For technical support, please send mail to: brightwinelectronics@hotmail.com