

S7309
Zigbee digital IO Module
User's Manual



SHJ

Sales: Michael@shjelectronic.com

Support: support@shjelectronic.com

S7309 zigbee digital input module has total 9 channels isolated wet contact or dry contact or open-collector input. And 2 channels universal analog input. Each analog input has lightning and surge protection, the inputs can be any combination of 0-5V,0-10V,4-20mA,dry contact and NTC 10K thermistor. Output use RS485 or ZIGBEE wireless. Zigbee can realize the point-to-point, point-to-multipoint, multipoint-to-multipoint data transmission, can form a star, peer to peer and mesh network structure. Can build huge Zigbee wireless network through setting modules address, signal channel and net ID. The S7302 can work in terminal mode or router mode through configure parameters. Both of Rs485 and Zigbee use the industry standard Modbus/RTU protocol.

Highlights:

- Isolated digital inputs can be configured as 32-bit counter input
- Input can be dry contact, wet contact, open-collector output
- Static ,lightning protection for each input
- The input channel number is configurable, can be set up from 1 channel through 9 channels, improve frequency for small count input
- Surge-protected analog inputs with 12-bit resolution and 100k sample speed ADC
- Input can be any combination of 0-10V,0-5V,4-20mA,NTC 10K thermistor and dry contact
- A lot of spare FLASH can be used to store user's parameters
- RS485 or ZIGBEE for optional
- Zigbee wireless range can up to 3000 meters
- Can detect RS485 or ZIGBEE automatically, no need jumper
- You can tell us your requirement. We will update our firmware even after you received the modules, you can update your modules through RS485/ZIGBEE.

Application:

- ✓ Remote data acquisition
- ✓ Process monitoring
- ✓ Industrial process control
- ✓ Energy management
- ✓ Supervisory control
- ✓ Security systems
- ✓ Laboratory automation
- ✓ Building automation
- ✓ Product testing
- ✓ Direct digital control

Technical data:

Digital input channel number----- 9
 Digital input range-----+4V~+36V
 Digital input protection-----Static, lightning
 Digital input signal-----wet contact, dry contact, open-collector
 Counter frequency-----100Hz@9channels;1000Hz@1channel

Counter length-----	32-bit
ADC Resolution-----	12-bit
Analog input channel number-----	2
Analog input range-----	0~5V,0~10V,4~20mA,10K thermistor, dry contact
Input protection-----	Lightning, static
Accuracy-----	±0.1%
Zero drift-----	±3uV/°C
Output BUS-----	RS485/ZIGBEE with Standard Modbus protocol
Output Protection-----	Lightning,static
Power input-----	9~24V(AC/DC)
Power consumption-----	<0.6W
Ambient temperature:	
Operation-----	-20~85°C(-13~185°F)
Storage-----	-40~100°C(-40~212°F)
Ambient humidity-----	10%~90%RH
Material,enclosure-----	Flame proof plastic
Enclosure rating-----	IP31
Colour-----	Ice Blue
Size-----	100*69*25 mm

Wiring diagram and description:

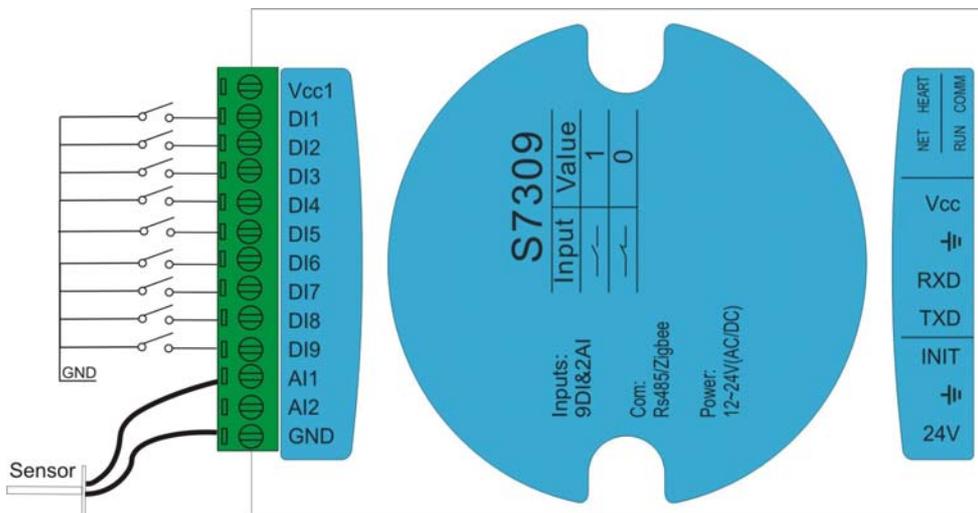


Figure 1 Dry contact input

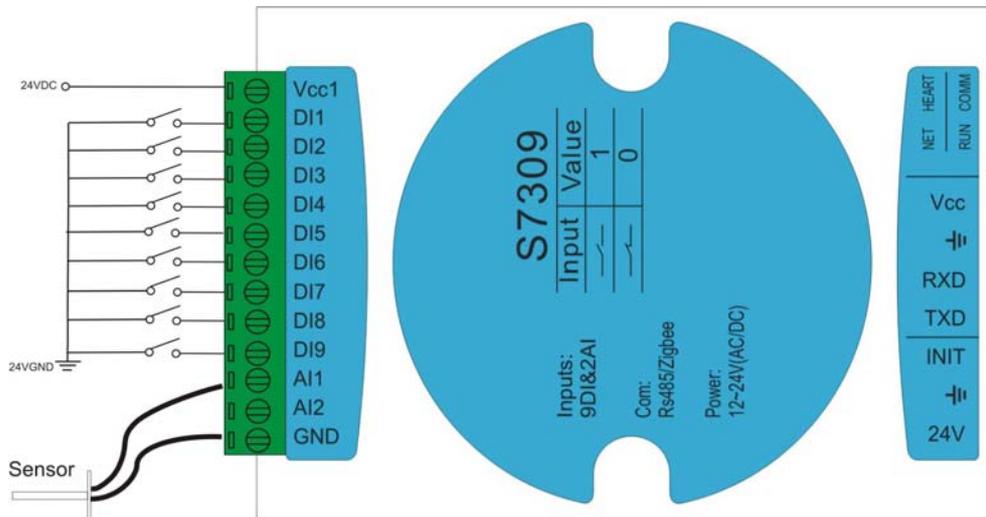


Figure 2 wet contact input

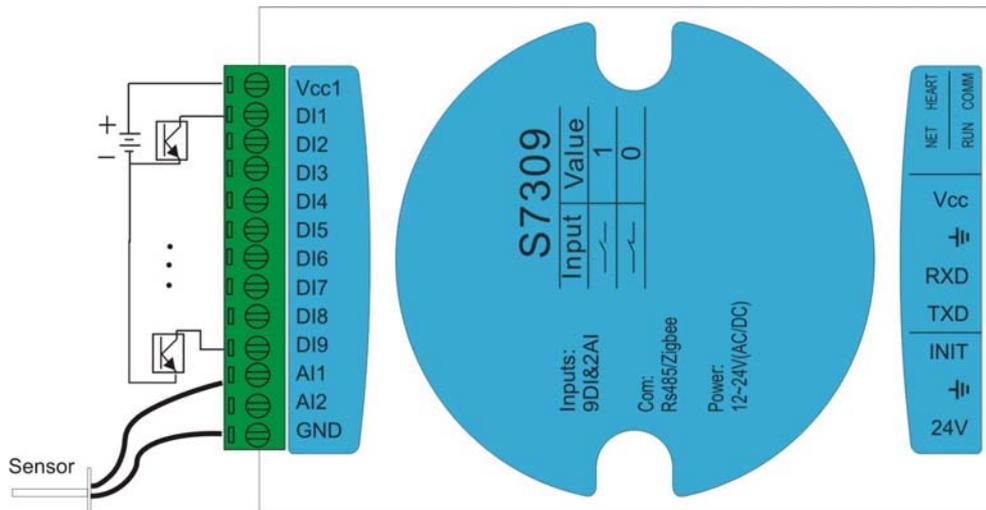


Figure3 open-collector input

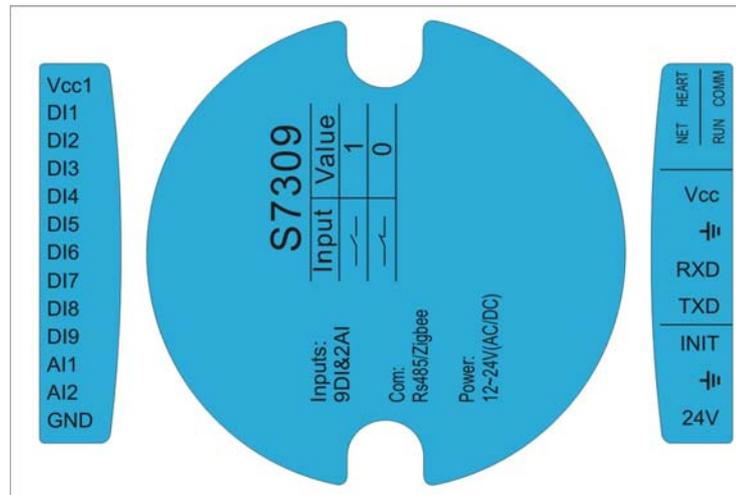


Figure 4 terminal definition

1、 Input wiring

Vcc1: Power source input for digital input 1 through 9

DI1-DI9 Digital input channel 1 through 9

AI1-AI2: Analog input channel 1 to 2

GND: Ground for analog input or dry contact digital input

2、 Power wiring

- DC: 24V, positive end
 GND, negative end
 AC: 24V, hot line
 GND, neutral line

3、 RS232 wiring, here is TTL level, we will provide RS485 to TTL cable

TXD: TXD of MCU, TTL

RXD: RXD of MCU, TTL

GND: System ground

VCC: 5V power supply for Rs485 card, can provide 100mA current for user sensor.

Note: The default communication baudrate is 19200 and default ID is 254, broadcast address is 255. Comm mode is 1 start bit, 8 data bit, 1 stop bit, no parity.

4、 Reset parameter to default

Put the jumper between GND and INIT, the following parameters back to default.

- Address of device: 254
- Baudrate: 19200

■ **NOTE: INIT also can connect a 0-24VDC analog input**

5、 LEDs indication

Heart: Flashing when the system is working

Comm: Flashing when serial port communication

NET: Will flash in Configuration mode, keep lighting when enter a wireless network successfully

RUN: Will flash in Configuration mode. Will flash when Zigbee module in working mode.

Modbus register list: Note: * means default value

Address	Bytes	Value range		Description	Property	
		Min	Max			
0-3	4	1	4294967295	Serial number, unique for each product	R	
4-5	2	100	65535	Firmware version number	R	
6	1	1	254	Device address	R/W	
7	2	7309	7309	Product model	R	
8	1	1	255	Hardware version	R	
9	2	12	576	Baudrate setting	R	
				Value		Buadrate
				12		1200
				24		2400
				48		4800
				96		9600
				192*		19200
				384		38400
			576	57600		
				For example: write 96 to register 9 to set the baudrate 9600.		
10-99	-	-	-	Reserved	-	
100	2	0	512	Status for digital input channel 1 through 9, 0 = contact active,1 = contact inactive.Bit0 correspond to channel 1,bit1 correspond to channel 2 etc.	R	
101	2	0	65535	High word for counter input 1	R/W	
102	2	0	65535	Low word for counter input 1,value of counter = (101) *65536 + (102)	R/W	
103	2	0	65535	High word for counter input 2	R/W	
104	2	0	65535	Low word for counter input 2,value of counter = (103) *65536 + (104)	R/W	

Continue...

Address	Bytes	Value range		Description	Property
		Min	Max		
105	2	0	65535	High word for counter input 3	R/W
106	2	0	65535	Low word for counter input 3,value of counter = (105) *65536 + (106)	R/W
107	2	0	65535	High word for counter input 4	R/W
108	2	0	65535	Low word for counter input 4,value of counter = (107) *65536 + (108)	R/W
109	2	0	65535	High word for counter input 5	R/W
110	2	0	65535	Low word for counter input 5,value of counter = (109) *65536 + (110)	R/W
111	2	0	65535	High word for counter input 6	R/W
112	2	0	65535	Low word for counter input 6,value of counter = (111) *65536 + (112)	R/W
113	2	0	65535	High word for counter input 7	R/W
114	2	0	65535	Low word for counter input 7,value of counter = (113) *65536 + (114)	R/W
115	2	0	65535	High word for counter input 8	R/W
116	2	0	65535	Low word for counter input 8,value of counter = (115) *65536 + (116)	R/W
117	2	0	65535	High word for counter input 9	R/W
118	2	0	65535	Low word for counter input 9,value of counter = (117) *65536 + (118)	R/W
119	1	1	100	Respond delay for serial communication, the units is ms and default is 10ms	R/W
120	2	1	30000	Filter time for counter input, the units is 10us and the default is 200us	R/W
121	1	0	255	Disable/enable input, 0 = disable and 1 = enable. Bit0 correspond to input1, Bit1 correspond to input 2 and so on.	R/W
122	1	0	255	Disable/enable input, 0 = disable and 1 = enable. Bit0 correspond to input9	R/W
123	1	0	1	Input status selection.0 = ON/OFF,1 = OFF/ON, default is ON/OFF	R/W
124	2	0	65535	Zigbee module address	R/W
125	1	0	255	Net ID, the default is 255	R/W
126	1	1	7	Net type, 01 = mesh network, 02 = star network, 07 = peer to peer network.. default is 02.	R/W

127	1	1	4	Module type, 01 = center module, 03 = router module, 04 = terminal module. The default is router module.	R/W
128	1	1	3	Transfer mode. 01 = broadcast, 02 = master-slave, 03 = peer to peer. Default is 02.	R/W
129	1	0	15	Signal channel, recommend is 4,9,14,15.	R/W
130	1	0	1	Send parameters to Zigbee module. 1 = send.	R/W
131	1	0	1	Get parameters from Zigbee module. 1 = get.	R/W
132	2	0	4095	Analog input 1 value	R/W
133	2	0	4095	Analog input 1 value	R/W
134	2	0	4095	INIT input analog value	R/W
135	1	0	8	Channel 1 units setting.0* = raw AD sample reading,1 = 0~5V(real value = the current reading / 100,for example, the current reading is 288,the real voltage is 288/100 = 2.88V),2 = 0~10V(real value = current reading / 100),3 = 4~20mA(real value = the current reading / 100),4 = 0~100%,5 = ON/OFF,6 = OFF/ON,7 = 10K thermistor, Celsius(real value = current reading / 10),8 = 10K thermistor, Fahrenheit(real value = current reading / 10).	R/W
136	1	0	8	Channel 2 units setting.0* = raw AD sample reading,1 = 0~5V(real value = the current reading / 100,for example, the current reading is 288,the real voltage is 288/100 = 2.88V),2 = 0~10V(real value = current reading / 100),3 = 4~20mA(real value = the current reading / 100),4 = 0~100%,5 = ON/OFF,6 = OFF/ON,7 = 10K thermistor, Celsius(real value = current reading / 10),8 = 10K thermistor, Fahrenheit(real value = current reading / 10).	R/W
137	1	0	8	INIT units setting.0* = raw AD sample reading,1 = 0~24V(real value = the current reading / 100,for example, the current reading is 288,the real voltage is 288/100 = 2.88V)	R/W
138	1	0	100	Channel 1 Filter factor,0 = no filter,10* is default.	R/W
139	1	0	100	Channel 2 Filter factor,0 = no filter,10* is default.	R/W
140	1	0	100	INIT Filter factor,0 = no filter,10* is default.	R/W
141	2	0	4095	In calibration mode, channel 1 sample data as input 0 volts	R/W

142	2	0	4095	In calibration mode, channel 1 sample data as input is full scale	R/W
143	2	0	4095	In calibration mode, channel 2 sample data as input 0 volts	R/W
144	2	0	4095	In calibration mode, channel 2 sample data as input is full scale	R/W
145	2	0	4095	In calibration mode, INIT sample data as input 0 volts	R/W
146	2	0	4095	In calibration mode, INIT sample data as input is full scale	R/W
147	2	0	1000	Channel 1 in temperature units, use calibrate temperature by adjust the offset	R/W
148	2	0	1000	Channel 2 in temperature units, use calibrate temperature by adjust the offset	R/W

Default Settings:

Device ID: 254, 255 is broadcast address

Data Format: 1 start bit, 8 data bit, 1 stop bit, none parity

Baudrate: 19200