

S5138

Ethernet IO Modules

8 Channels Universal AI
16 Channels DO, 6 Channels DI



SHJ

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S5138 is a high quality and low cost analog data acquisition module with 8 universal analog inputs. Each input can be 0-5V,0-10V,0-20mA,thermistor,dry contact, open-collector input,6 isolated digital input and 16 channels isolated open-collector digital output. The digital input can be dry contact, wet contact and open-collector, each input also can be 32-bit counter.S5138 has RS485 and rj45 two type interface,rs485 support standard Modbus RTU protocol and RJ45 support Modbus Tcpi protocol.It can easy integrate with PLC and labview with standard Modbus/Modbus Tcpi protocol

Highlights:

- **Surge-protected analog inputs with 12-bit resolution and 100k sample speed**
- **Input can be any combination of 0-5V,4-20mA,0-10V,NTC 10K thermistor, open-collector and dry contact**
- **The channel number is configurable, can be set up from 1 channel through 8 channels, for analog input and set up from 1 to 6 for digital input, improve sample rate for small count input**
- **Isolated digital inputs can be configured as counter input, total 32 bits,1000Hz**
- **Total 16 channels isolated open-collector digital output**
- **Standard ModBus TCP/IP protocol,easy work with PLC**
- **Standard ModBus protocol allows for up to 254 unique devices on one RS485 network**
- **A lot of spare FLASH can be used to store user's parameters**
- **Can update your firmware via ISP through RS485 network, can provide any hex file to help you finish some logic control**
- **DIN support available**

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:

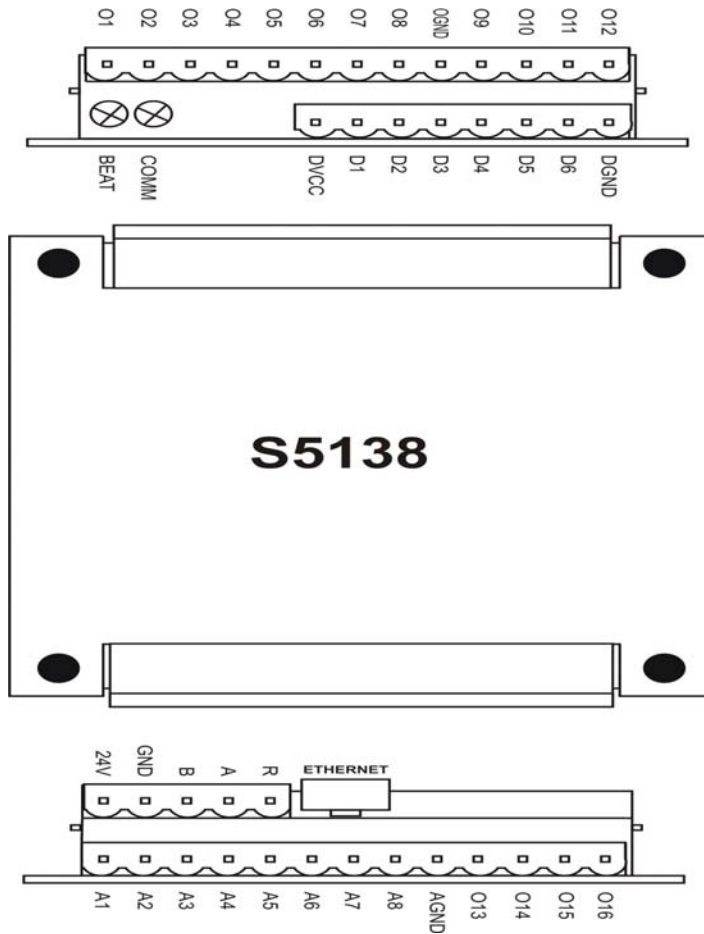
Analog Input Resolution-----12-bit
 Analog Input Channel Number-----8
 Analog Input range-----0-5V,0-10v,0-20mA, thermistor, dry contact,open-collector
 Analog Input Protection-----Lightning,static
 Analog Input Accuracy-----±0.1%
 Analog Input Zero drift-----±3uV/°C
 Analog Input Sample Rate-----60 sample/second(8 channels),900 sample/second(1 channel)

Digital Input Channel Number-----6
 Digital Input Range-----+4V~+36V
 Digital Input Signal-----wet contact, dry contact, open-collector
 Digital Input Counter Frequency-----100Hz@6channels;1000Hz@1channel
 Digital Input Counter Length-----32-bit

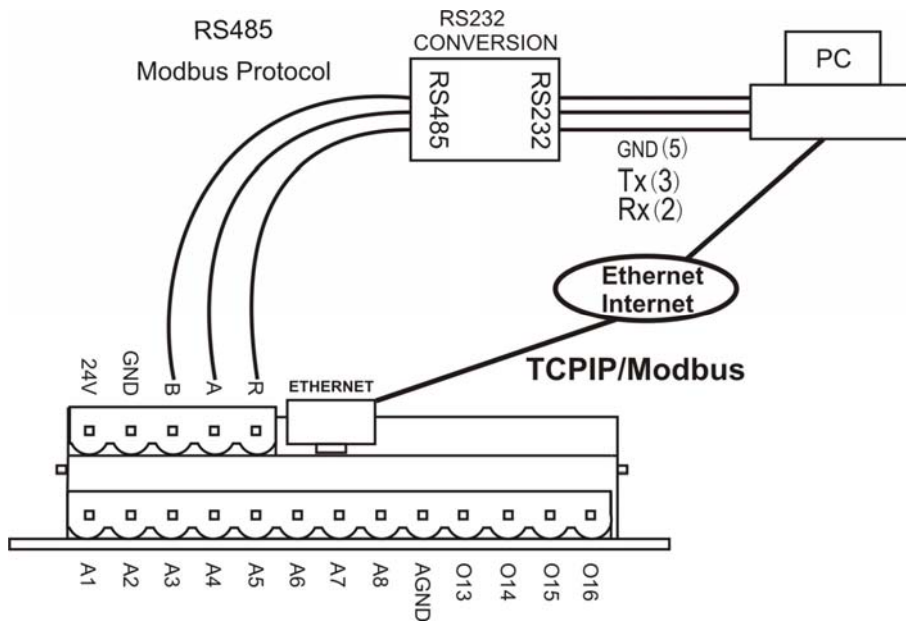
Output channel number-----16
 Output signal-----open-collector
 Output current-----maximum 40mA

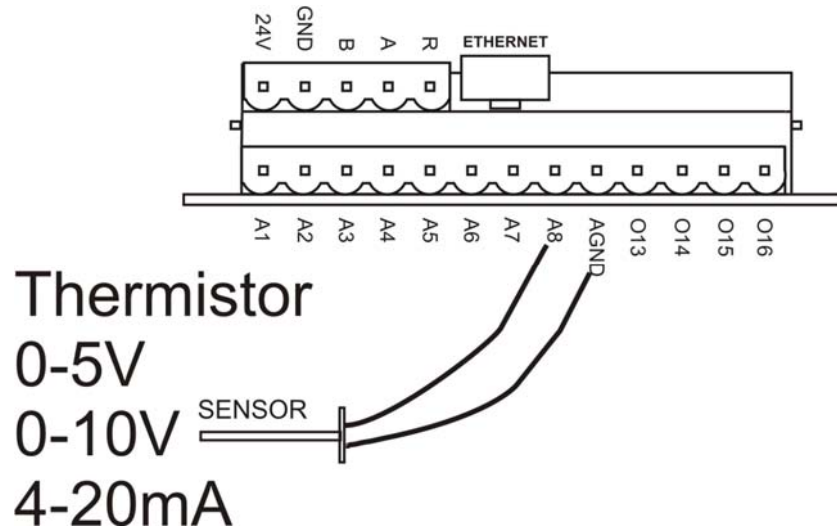
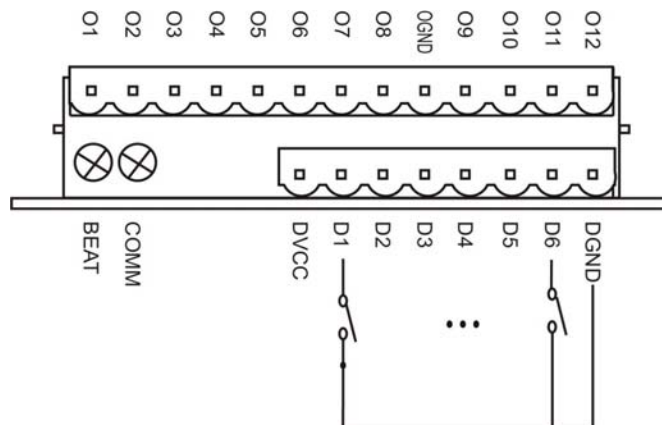
Output BUS-----Ethernet/RS485
 RS232/RS485 protocol-----MODBUS/RTU
 Ethernet protocol-----MODBUS/TCPIP
 Output Protection-----Lightning,static
 Power input-----15~24V(AC/DC
 Power consumption-----<0.6W
 Ambient temperature:
 Operation----- -20~85°C (-4~185°F)
 Storage----- -40~125°C (-40~257°F)
 Ambient humidity-----10%~90%RH
 Material,enclosure-----Flame proof plastic
 Enclosure rating-----IP31
 Colour-----White/Black
 Size-----115*90*43 mm

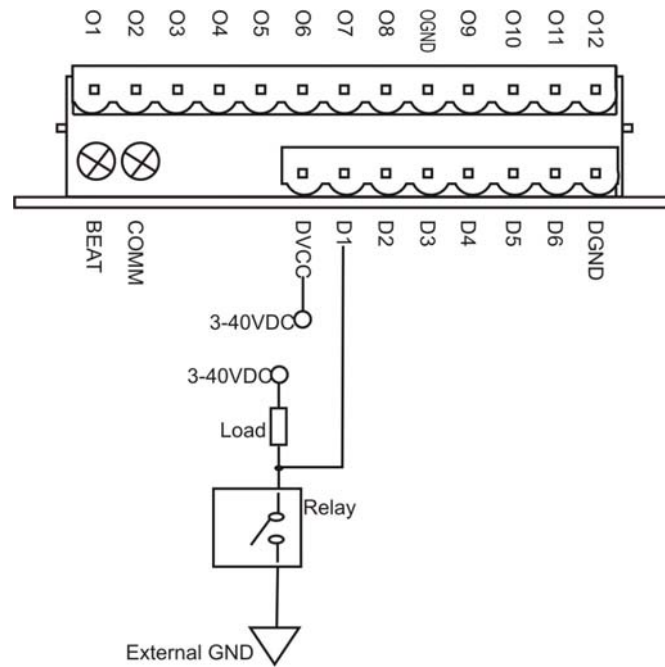
Wiring diagram and description:



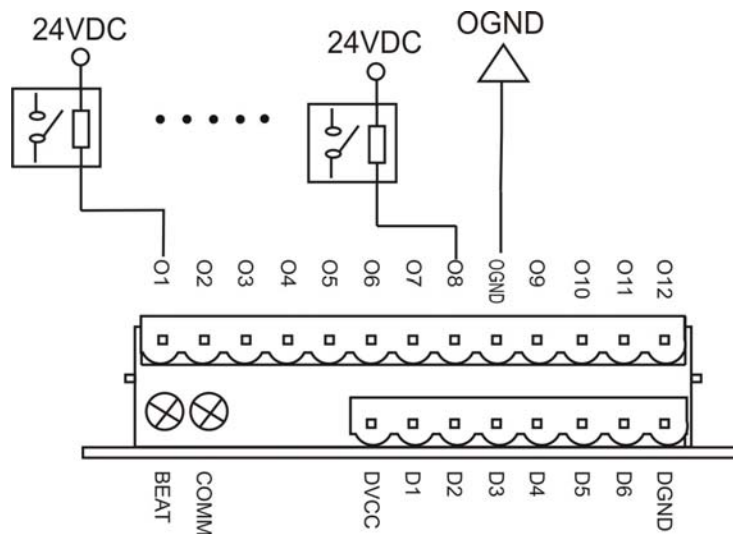
Top view figure



Communication wiring diagram**Analog inputs wiring diagram****Dry contact wiring diagram**



WET contact wiring diagram



Isoalted digital output wiring diagram

Inputs

Each analog input can be jumper-configured in 1 of 4 ways:

- ✧ 0-5V signal
- ✧ 0-10V
- ✧ 0-20mA
- ✧ Dry contact, thermistor, open-collector. thermistor default is 10K NTC, but can custom according

to your sensor type

All digital inputs can be jumper-configured in 1 of 2 ways:

- ✧ Wet contact input
- ✧ Dry contact, open-collector input

PINs and LEDs

Power supply

24VAC: power supply positive input, has reverse protection, accept AC and DC input

- : Power supply negative input

RS485 Port

B: Connect to B of RS485

A: Connect to A of RS485

R: Connect to GND for RS485

Ethernet port

Connect to local Ethernet network through RJ45 cable

Inputs

Analog:

A1 ~ A8: Analog input 1 through 8

AGND: common for analog input 1 through 8, also use for analog output

Digital:

DVCC: Power source input for digital input 1 through 6, wet contact input available

D1 ~ D6: Digital input channel 1 through 6

DGND: common for digital input 1 through 6, available in dry input mode

Outputs

Digital:

O1~O16: Digital output channel 1 through 16

OGND: common GND for digital output 1 through 16

Leds

BEAT: Will flash when system is working

Comm: Will flash when RS485 serial port communication

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, default is 254*	R/W
7	2	5138	5138	Product model	R

8	1	1	255	Hardware version		R
9	2	12	1152	Baudrate setting		R
				Value	Buadrate	
				12	1200	
				24	2400	
				48	4800	
				96	9600	
				192*	19200*	
				384	38400	
				576	57600	
				1152	115200	
For example:write 96 to register 9 to set the baudrate 9600.						
10-99	-	-	-	Reserved		-
100-107	2	0	4095	Analog reading for channel input 1 through 8,the units decided by register 119 through 126		R
108	1	0	255	Status for digital input channel 1 through 6, 0 = contact active,1 = contact inactive.Bit0 correspond to channel 1,bit1 correspond to channel 2 etc.		R
109	2	0	65535	Open-collector output,0 = active,1 = inactive.Bit0 correspond to output 1,bit1 correspond to channel 2 etc.		R/W
110	-	-	-	Reserved		-
111~117	-	-	-	Reserved		-
118	1	0	255	Enable/disable the corresponding channel,0 = disable,1* = enable.Bit0 correspond to channel 1 and Bit7 correspond to channel 8.For example,enable channel 1,2 and disable channel 3 through 8,write 0x03 to register 118.		R/W
119-126	1	0	8	Channel 1 through 8 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
127-134	1	0	100	Channel 1 through 8 Filter factor,0 = no filter,10* is default.		R/W
135,137, 139 ...	2	0	4095	In calibration mode, channel 1 through 8 sample data as input 0 volts		R/W

136,138 140...	2	0	4095	In calibration mode, channel 1 through 8 sample data as input is full scale	R/W
151	-	-	-	Reserved	-
152	-	-	-	Reserved	-
153,155 ...	-	-	-	Reserved	-
154,156 ...	-	-	-	Reserved	-
167~174	2	0	1000	Analog input 1 through 8 in temperature units, use calibrate temperature by adjust the offset	R/W
175	2	0	65535	High word for digital input1 counter	R/W
176	2	0	65535	Low word for digital input1 counter, value of counter = $(175) * 65536 + (176)$	R/W
177	2	0	65535	High word for digital input2 counter	R/W
178	2	0	65535	Low word for digital input2 counter, value of counter = $(177) * 65536 + (178)$	R/W
179	2	0	65535	High word for digital input3 counter	R/W
180	2	0	65535	Low word for digital input3 counter, value of counter = $(179) * 65536 + (180)$	R/W
181	2	0	65535	High word for digital input4 counter	R/W
182	2	0	65535	Low word for digital input4 counter, value of counter = $(181) * 65536 + (182)$	R/W
183	2	0	65535	High word for digital input5 counter	R/W
184	2	0	65535	Low word for digital input5 counter, value of counter = $(183) * 65536 + (184)$	R/W
185	2	0	65535	High word for digital input6 counter	R/W
186	2	0	65535	Low word for digital input6 counter, value of counter = $(185) * 65536 + (186)$	R/W
187	2	0	65535	High word for digital input7 counter	R/W
188	2	0	65535	Low word for digital input7 counter, value of counter = $(187) * 65536 + (188)$	R/W
189	2	0	65535	High word for digital input8 counter	R/W
190	2	0	65535	Low word for digital input8 counter, value of counter = $(189) * 65536 + (190)$	R/W
191	2	1	30000	Filter time for counter input, the units is 10us and the default is 200us	R/W

192	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
193	1	0	1	Input status selection.0 = ON/OFF,1 = OFF/ON, default is ON/OFF	R/W
194	1	0	1	Digital input counter will increase at rising edge or falling edge.0 = rising edge,1 = falling edge, default is rising edge	R/W
195	1	1	100	Respond delay for serial communication, the units is ms and default is 10ms	R/W
196	1	0	1	Default is 0, write 1 enable store counter when power off.	R/W
197	1	0	1	1, rs485 has highest priority;0 ethernet has highest priority	R/W
198	2	0	65535	Unit is second, setting period no communication, reset the module	R/W
199	-	-	-	reserved	-
200-203	1	0	255	Device local IP address, default is 192.168.0.X	R/W
204-207	1	0	255	Gate way address, default I is 192.168.0.1	R/W
208-211	1	0	255	Subnet address, default is 255.25.255.0	R/W
212-217	1	0	255	MAC address	R/W
218	2	0	65535	Port number, default is 502. Write this register also save value of register 200 to 218.	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

There are a INIT jumper inside the board,short INIT then power on S5138,parameters will go to default settings.