

S3401

1 Channel 12-bit Analog Output Module

User's Manual



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S3401 has total 1 channel current and voltage output. The current and voltage can output at the same time. Can read back the voltage output to ensure the output take action. S3401 can output gradually through slew rate control and has default output when power up, all parameters store in nonvolatile RAM. Output BUS is RS485 with surge protection. The modules are slave devices that can be easily controlled via the RS485 serial interface using the industry standard Modbus protocol.

Highlights:

- Multiple output range setting, 0-10V,0-5V,0-20mA,4-20mA
- The analog output can be read back
- Jumper to select external power for current output for big load
- Surge-protected and isolated Rs485 ensure reliability
- 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
- Isolated RS485, non-isolated RS485, RS232 for optional
- You can tell us your requirement and we will update our firmware even after you received the modules, you can update your modules via ISP through RS485 BUS.

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:

Resolution-----12-bit
 Output channel number-----1
 Output signal-----Current/Voltage
 Output Range-----0-10V,0-5V,0-20mA,4-20mA
 Accuracy:
 Current Output-----±0.1% of FSR
 Voltage Output-----±0.2% of FSR
 Voltage Read Back Accuracy-----±0.05% of FSR
 Zero Drift:
 Current Output-----±0.2uA/°C
 Voltage Output-----±30uV/°C

Output Slope Rate:

Current Output-----	0.125 – 128 mA/sec
Voltage Output-----	0.0625 – 64 V/sec
Current Load Resistor-----	0 to 300
Current Load Resistor at External Power-----	0 to 600
External Power Range-----	6-24VDC
Output BUS-----	RS485 with Standard Modbus protocol
Power input-----	15~24V(AC/DC)
Power consumption-----	<0.6W
Ambient temperature:	
Operation-----	0~70°C (32~158°F)
Storage-----	-20~85°C (-4~185°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:

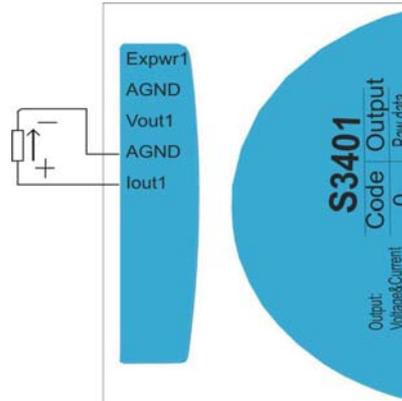


Figure 1 wiring for current output

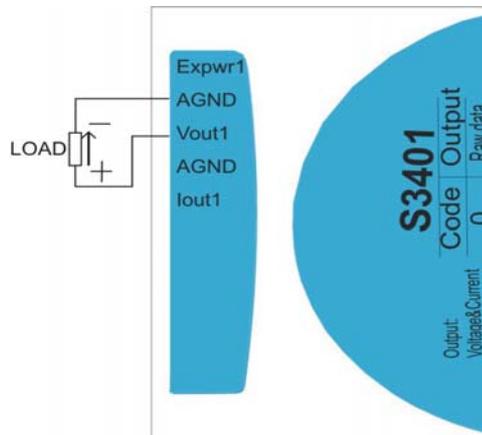


Figure 2 wiring for voltage output

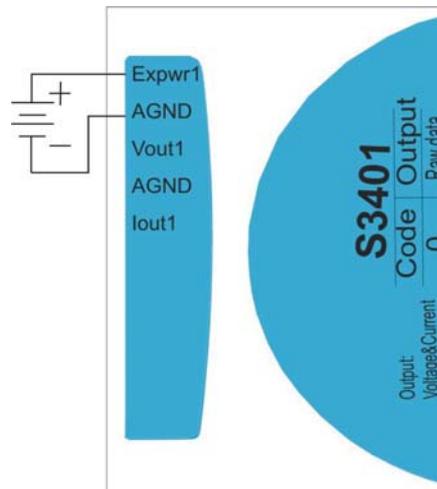


Figure 3 wiring for external power input

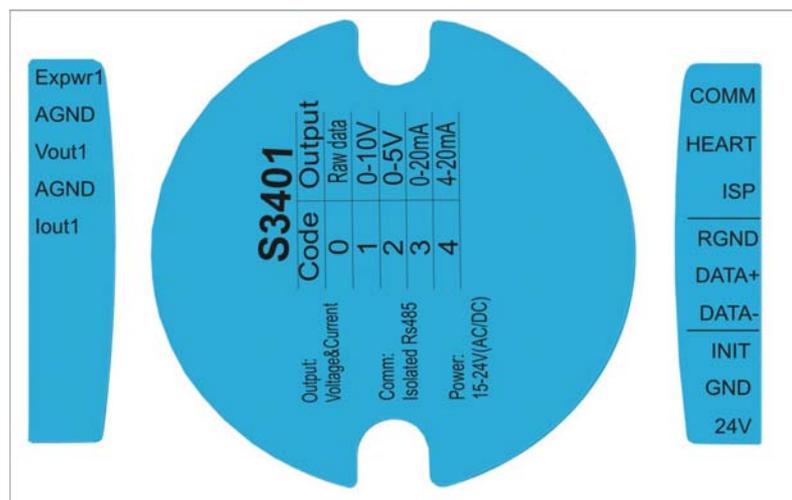


Figure 4 terminal definition

1、 Output wiring

Expwr1: external power input for current , positive

Iout1: Current output channel 1

Vout1: Voltage output channel 1

AGND: Ground for current and voltage output

2、 Power wiring

DC: 24V, positive end

GND, negative end

AC: 24V, hot line
GND, neutral line

3、 RS485 wiring

DATA+: connect to A end of RS485

DATA-: connect to B end of RS485

RGND: connect to earth if necessary

4、 Reset parameter to default

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

- Address of device: 254
- Baudrate:19200

5、 LEDs indication

ISP: The module in ISP mode, can update hex in this mode.

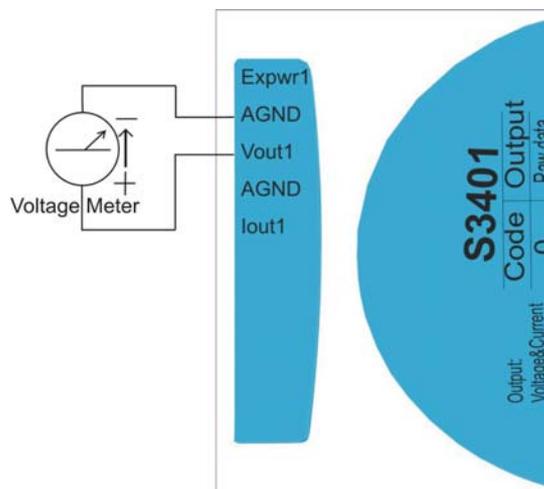
Heart: Flashing when the system is working

Comm: Flashing when serial port communication is working

Calibration:

Voltage calibration:

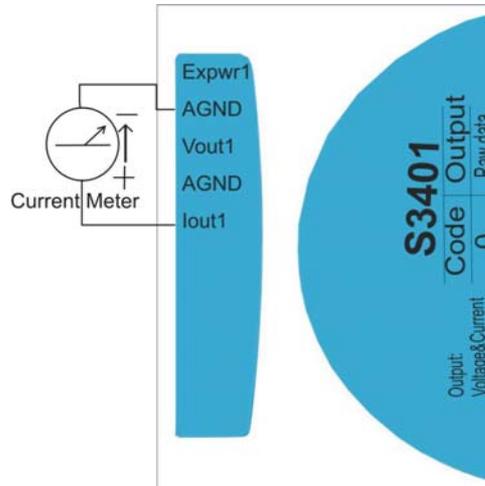
1. Attach a voltage meter refer to the following picture.



2. Power up the module and wait 30 minutes.
3. Write 1 to the corresponding range setting register
4. Write 0 to output register
5. Get the reading from multimeter and write down to paper, RD1
6. Write 10000 to output register
7. Get the reading from multimeter and write down to paper, RD2
8. Write $RD1 \times 1000$ to the corresponding minimum calibration register
9. Write $RD2 \times 1000$ to the corresponding maximum calibration register

Current calibration:

1. Attach a current meter refer to the following picture.



2. Power up the module and wait 30 minutes.
3. Write 3 to the corresponding range setting register
4. Write 0 to output register
5. Get the reading from multimeter and write down to paper, RD1
6. Write 20000 to output register
7. Get the reading from multimeter and write down to paper, RD2
8. Write $RD1 \times 1000$ to the corresponding minimum calibration register
9. Write $RD2 \times 1000$ to the corresponding maximum calibration register

Table 1 : Slew rate table

Code	V/sec	mA/sec	Code	V/sec	mA/sec
0	Change instantly		6	2.0	4.0
1	0.0625	0.125	7	4.0	8.0
2	0.125	0.25	8	8.0	16.0
3	0.25	0.5	9	16.0	32.0
4	0.5	1.0	10	32.0	64.0
5	1.0	2.0	11	64.0	128.0

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	3401	3401	Product model	R	
8	1	1	255	Hardware version	R	
9	2	12	1152	Baudrate setting	R/W	
				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	1	4	4	Gain range setting.	R	
11-99	-	-	-	Reserved	-	
100	2	0	20000	Analog output, dependent on the corresponding range setting. Value for raw data is 0 through 4095,value for engineering units should mutiple 1000.For example, you want output 0.05V,should write 50 to the corresponding output register.	R/W	
102	1	0	4	Output range setting.0 = raw data, 1 = 0-10V,2 = 0 – 5V,3 = 0 – 20mA,4 = 4 – 20mA.	R/W	
104	1	0	11	Slew rate setting. See table 1.	R/W	
106	2	0	20000	Power up analog output, dependent on the corresponding range setting.	R/W	
108	2	0	25000	The minimum reading from multimeter when calibrate analog output channel 1	R/W	
109	2	0	25000	The maximum reading from multimeter when calibrate analog output channel 1	R/W	
112	2	0	10000	Read back. Analog output 1,the voltage should divided by 1000	R	