Analog signal or RS485 to PWM Isolation Converter

Features:

>> Accuracy, linearity error level: 0.1,0.2,0.5 level
>> 4-20mA / 0-5V / 0-10V and other standard signal input
>> Optional RS485 communication input, support MODBUS protocol
>> PWM signal output, PWM frequency optional
>> PWM output drive capacity up to 5A
>> Signal input / signal output: 3000VDC isolation
>> Can choose one in one out, one in two out, two in two out
>> Optional 5V, 12V, 15V or 24V DC single power supply
>> The amplitude of the PWM signal is equal to the power supply voltage
>> The auxiliary power supply/PWM signal: non-isolation
>> Fixed screw mounting, plug-in terminal block
>> Size: 120 x 105 x 29mm
>> Industrial temperature range: - 45 ~ +85 ℃

Application:

>> Machine vision lighting control product appearance
>> LED light brightness adjustment
>> Solenoid valve, proportional valve linear actuator
>> Analog motor controller
>> Electromagnetic drive coil or high power load
>> RS-485 remote device control

Products Listing:

DIN□□ IAP – V(A)□ – P□ – PWM□

Channel	Input Signal	Power Supply	Output Signal
DIN11: one in one out	V1：0-5V	P1:24VDC	PWM1:50Hz
DIN12：one in two out	V2：0-10V	P2:12VDC	PWM2:100Hz
DIN22：two in two out	V3：0-75mV	P3:5VDC	PWM3:1KHz
	V4：0-2.5V	P4:15VDC	PWM4:10KHz
	Vz：user-defined	Pz: user-defined	PWM5:100KHz
	A1：:0-1mA		PWMz: user-defined
	A2：0-10mA		
	A3：0-20mA		
	A4：4-20mA		
	Az：user-defined		
	RS485：RS485 interface		

Samples:

1. One in one out Input signal:0-10V Power Supply:24VDC Output Signal:100Hz PWM
   Type No.: DIN11 IAP V2-P1-PWM2

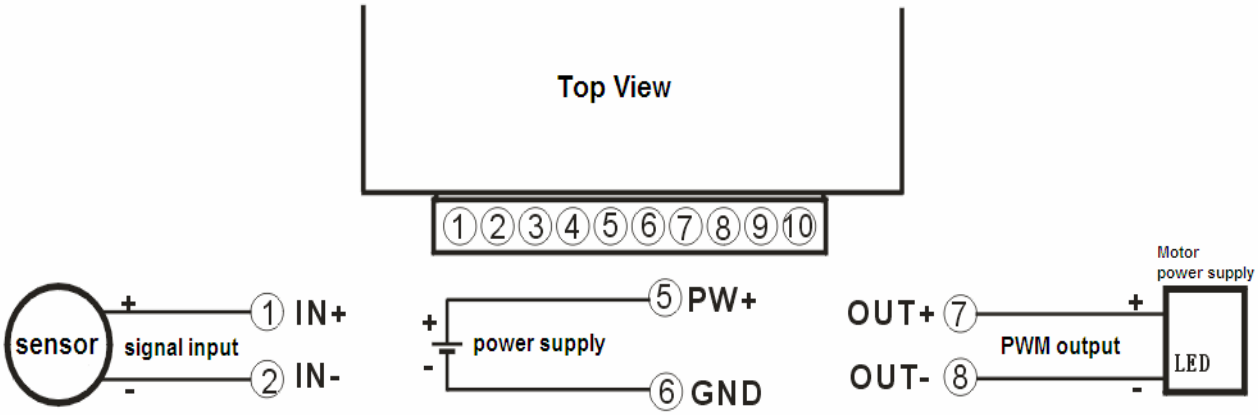
2. One in two out Input signal:0-10V Power Supply:12VDC Output Signal:100KHz PWM
   Type No.: DIN12 IAP V2-P2-PWM5
3. One in one out Input signal:RS485 Power Supply:24VDC Output Signal: 100KHz PWM
   Type No.:DIN11 IAP RS485-P1-PWM5
4. One in one out Input signal:0-10V Power Supply:12VDC Output Signal:5KHz PWM
   Type No.: DIN11 IAP V2-P2-PWMz (PWMz:5KHz)

General Parameters:

Name	Test Condition	Min.	Type	Max.	Units
Isolation Voltage	50Hz,1min.,leak current 1mA		3000		VDC
Isolation	Input/output: isolation Power supply/output: non-isolation				
Impact Voltage	3.5KV，1.2/50us(peak value)				
Operation Temperature		-25		+85	℃
Operation Humidity	No condensation	10		90	%
Storage Temperature		-45		+85	℃
Storage Humidity		10		95	℃

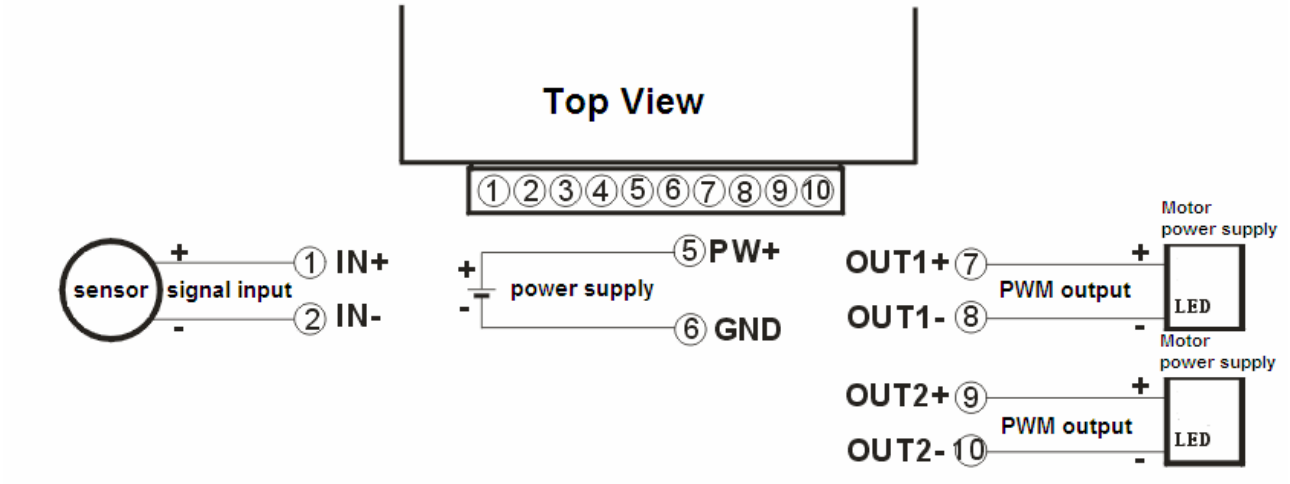
1: analog signal input, one in one out DIN11 Footprint and wire diagram:

PIN	Name	Description	PIN	Name	Description
1	IN+	Signal output+	**7**	OUT+	PWM signal output+
2	IN-	Signal output-	**8**	OUT-	PWM signal output-
3	NC	No connecting	**9**	NC	No connecting
4	NC	No connecting	**10**	NC	No connecting
5	PW+	Power supply+			
6	GND	Power supply-			



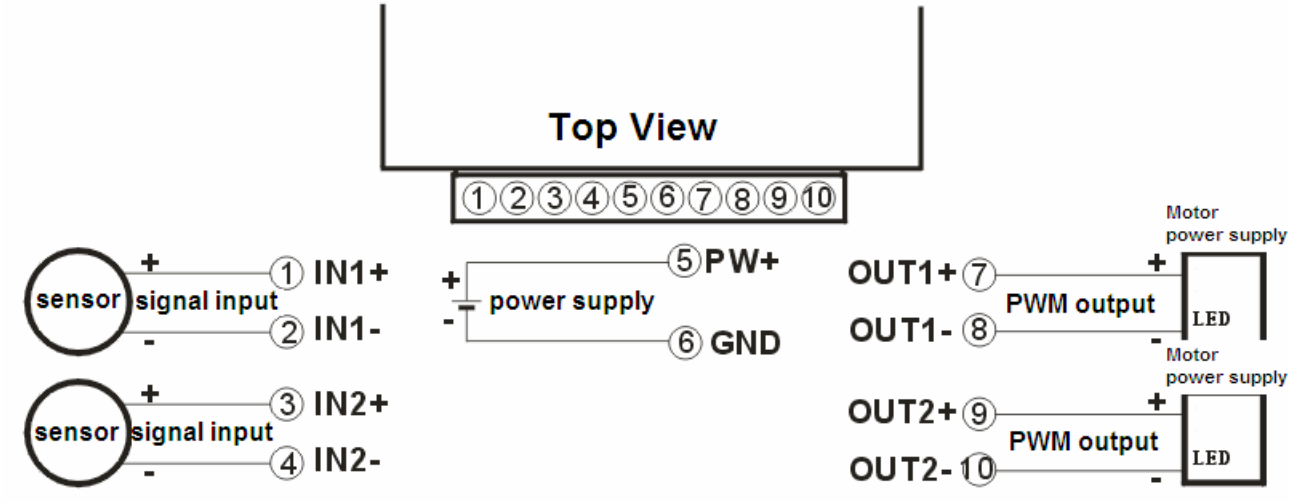
2: analog signal input, one in two out DIN12 Footprint and wire diagram:

PIN	Name	Description	PIN	Name	Description
1	IN+	Signal output+	7	OUT1+	PWM signal output 1+
2	IN-	Signal output-	8	OUT1-	PWM signal output 1-
3	NC	No connecting	9	OUT2+	PWM signal output 2+
4	NC	No connecting	10	OUT2-	PWM signal output 2-
5	PW+	Power supply+			
6	GND	Power supply-			



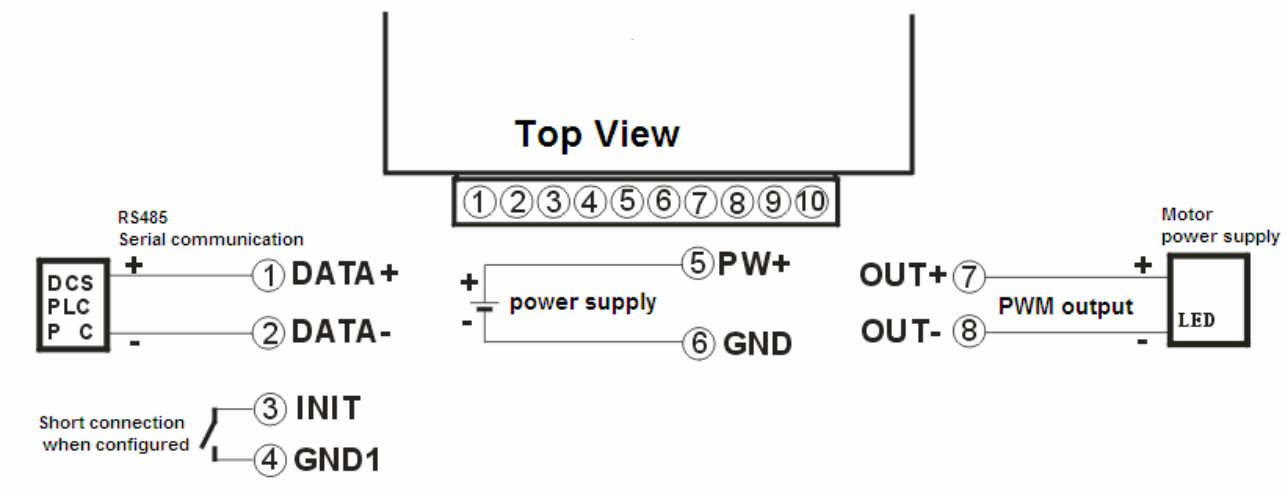
3: analog signal input, two in two out DIN22 Footprint and wire diagram:

PIN	Name	Description	PIN	Name	Description
1	IN 1+	Signal output 1+	7	OUT1+	PWM signal output 1+
2	IN 1-	Signal output 1-	8	OUT1-	PWM signal output 1-
3	IN 2+	Signal output 2+	9	OUT2+	PWM signal output 2+
4	IN 2-	Signal output 2-	10	OUT2-	PWM signal output 2-
5	PW+	Power supply+			
6	GND	Power supply-			



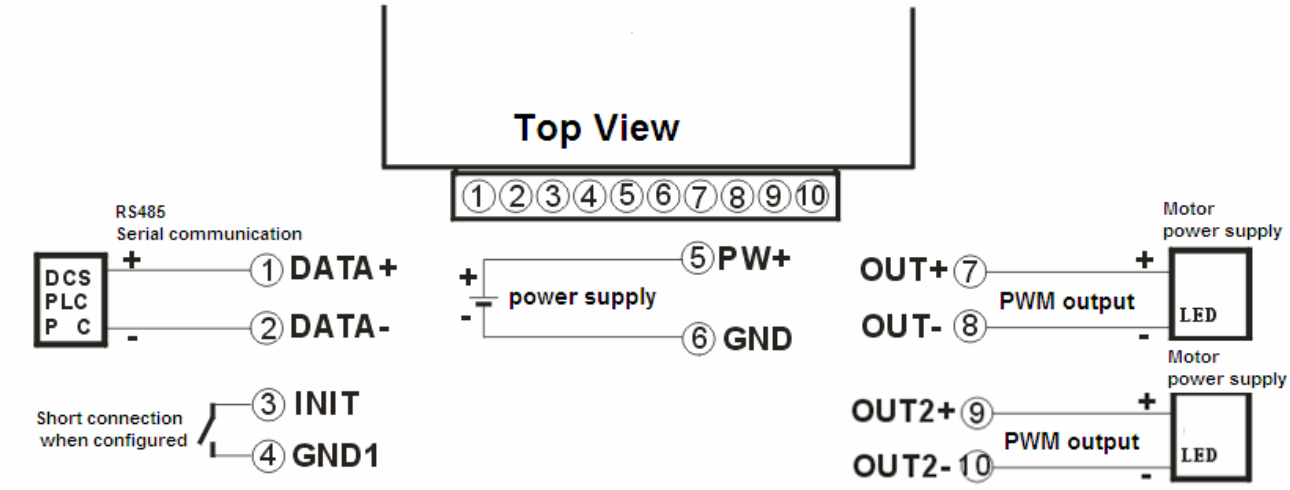
4: RS485 input, one channel signal out DIN11 Footprint and wire diagram:

PIN	Name	Description	PIN	Name	Description
1	DATA+	RS485 signal +	7	OUT+	PWM signal output +
2	DATA-	RS485 signal -	8	OUT-	PWM signal output -
3	GND1	RS485 signal ground	9	NC	No connecting
4	INIT	Initial state setting	10	NC	No connecting
5	PW+	Power supply+			
6	GND	Power supply-			



5: RS485 input, two channel signal out DIN12 Footprint and wire diagram:

PIN	Name	Description	PIN	Name	Description
1	DATA+	RS485 signal +	7	OUT 1+	PWM signal output 1+
2	DATA-	RS485 signal -	8	OUT 1-	PWM signal output 1-
3	GND1	RS485 signal ground	9	OUT 2+	PWM signal output 2+
4	INIT	Initial state setting	10	OUT 2-	PWM signal output 2-
5	PW+	Power supply+			
6	GND	Power supply-			



MODBUS RTU communication protocol:

Note: only RS485 input as this communication protocol.

Module default protocol is MODBUS RTU communications protocol, the default address is 01, baud rate is 9600, data format is 10bits, 1 start bit, 8bits data bit, 1 stop bit, no check.

If you forget the module address and baud rate, you can shorten INIT(PIN3) to GND2(PIN4), and then restart the module power supply, the module restored to the default state temporarily: address 01, baud rate is 9600.

Users can query the address, baud rate and communication protocol register 40201-40203, get the module actual address, baud rate and communication protocol, also you can follow the need to modify the address, baud rate and communication protocol. Please note MODBUS communication please set register 40203 to 1, otherwise it can not MODBUS communication. When the INIT(PIN 3) is turned off to GND1(PIN 4), restart the module power supply, the module will re-set the actual address and baud rate to run.

Supports MODBUS RTU communication protocol Function Code 03(Read Holding Registers) and Function Code 06(set a single Register), command format as standard MODBUS RTU protocol.

Example 1: If the module address is 01, hexadecimal sent: 010300000001840A, to get the register data 40001.

01	03	00	00	00	01	84	0A
Module address	Read holding register	Register address High	Register address low	Register quantity high	Register quantity low	CRC check low	CRC check high

If module reply: **0103021388B512 read data:** 0x1388, converted to hexadecimal is 5000,5000 / 10000 = 0.5. indicating that the current output PWM is 50%.

01	03	02	13	88	B5	12
Module address	Read holding register	Data Bytes	Data High	Data Low	CRC check low	CRC check high

Example 2: Set module channel 1 output PWM is 80%, you can send the following command:

If the module address is 01, hexadecimal sent: 010600001F40800A

01	06	00	00	1F	40	80	0A
Module address	Set a single register	Register address High	Register address low	Data High	Data Low	CRC check low	CRC check high

If module reply: **010600001F40800A** , it means the setting is successful

01	06	00	00	1F	40	80	0A
Module address	Set a single register	Register address High	Register address low	Data High	Data Low	CRC check low	CRC check high

Register Description:

Address 4X（PLC）	Address （PC，DCS）	Data	Property	Data Explanation
40001	0000	Out1	Read/write	1st channel PWM output value, Integer, range 0 to 10000
40002	0001	Out2	Read/write	2nd channel PWM output value, Integer, range 0 to 10000
40003	0002	Sout1	Read/write	1st channel PWM output value, Integer, range 0 to 10000
40004	0003	Sout2	Read/write	2nd channel PWM output value, Integer, range 0 to 10000
40011	0010	Out1 Frequency	Read/write	Integer, value range 1 ~ 310 1~300 represents 1K Hz ~ 300KHz, (note: the actual output frequency may be biased) 301:10Hz 302:20Hz 303:50Hz 304:60Hz 305:100Hz 306:200Hz 307:300Hz 308:500Hz 309:600Hz 310:user-defined
40012	0011	Out2 Frequency	Read/write	
40201	0200	Module address	Read/write	Integer, effective after restart, range 0x0000-0x00FF
40202	0201	Baud rate	Read/write	Integer, effective after restart, Range 0x0004-0x000A 0x0004 = 2400 bps, 0x0005 = 4800 bps 0x0006 = 9600 bps, 0x0007 = 19200 bps 0x0008 = 38400 bps, 0x0009 = 57600 bps 0x000A = 115200bps
40203	0202	Protocol	Read/write	Integer, effective after restart, Factory default is 1, 1 means MODBUS protocol 0 means ASCII protocol

Table 5 MODBUS RTU register description

How to set module character communication protocol:

1. Shorting INIT (PIN 3) and GND1 (PIN 4), and then restart power supply, the module restored to the default state: address 01, baud rate is 9600. Checking address and baud rate register 40201-40203, setting the module address and baud rate, then setting the communication protocol to 0, that is, ASCII code communication protocol.
2. Take off INIT (PIN 3) to GND1 (PIN 4), and then restart power supply, the module will enter the ASCII code protocol. According to the above set address and baud rate communication can be.

Character protocol command set

Note:

1. In some cases, many commands use the same command format. To ensure that you use a command in the address is correct, if you use the wrong address and this address represents another module, then the command will take effect in another module, resulting in an error.
2. Command must be entered in uppercase letters.

1、Set channel N PWM output value command

Description: Set module channel N PWM output value. N is 0 for the first channel, and N is 1 for the second channel.

Command Format：**#AAN(data)(cr)**

Parameters: # delimiter character. Hexadecimal 23H

AA module address, range is 00-FF(hexadecimal). Factory address is 01, converted to hexadecimal ASCII code for each character. Such as address 01 into hexadecimal are 30H and 31H.

N channel code 0 or 1. Converted into hexadecimal are 30H and 31H

(data) Represents the PWM data of the channel N to be set. Range 000.00 ~ 100.00, representing PWM from 0% to 100%.

(cr) is the terminating character, carriage return (0DH)

Response **:** **>(cr)** command is valid.

?AA(cr) invalid command or illegal operation.

Parameter Description: > delimiter character.

(cr) terminating character, carriage return (0Dh)

There is no response if the module is format error or communication error or address does not exist, the module does not respond.

Example: command (character format) **#010+050.00(cr)**

(Hexadecimal format) **233031302B3035302E30300D**

Response (character format) **> (cr)**

(Hexadecimal format) **3E0D**

Description: Set channel 1 output PWM to 50% at address 01H module

2、Set channel N power on or reset PWM output value command

Description: Sets the power-up PWM output value for module channel N. N is 0 for the first channel, and N is 1 for the second channel.

Command Format：**#AASN(data)(cr)**

Parameters: # delimiter character. Hexadecimal 23H

AA module address, range is 00-FF(hexadecimal). Factory address is 01, converted to hexadecimal ASCII code for each character. Such as address 01 into hexadecimal are 30H and 31H.

S Indicates to set the PWM output value after power-up or reset

N channel code 0 or 1. Converted into hexadecimal are 30H and 31H

(data) Represents the PWM data of the channel N to be set. Range 000.00 ~ 100.00, representing PWM from 0% to 100%.

(cr) is the terminating character, carriage return (0DH)

Response **:** **>(cr)** command is valid.

?AA(cr) invalid command or illegal operation.

Parameter Description: > delimiter character.

(cr) terminating character, carriage return (0Dh)

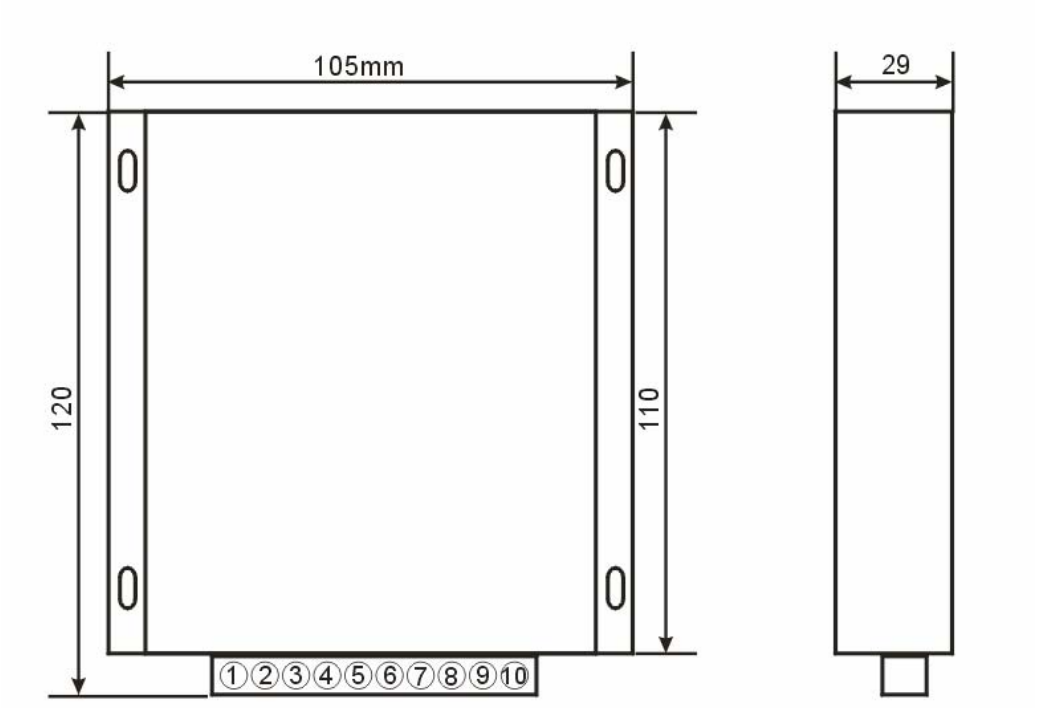
There is no response if the module is format error or communication error or address does not exist, the module does not respond.

Example: command **#01S0+010.00(cr)**

Response **> (cr)**

Description: Set channel 1 power-on output PWM value is 10% at address 01D module

Size(unit:mm)



Note:

1. Before using, according to packing lists, and product labels, check the quantity, models and specifications
2. When measure the signal directly, please set the terminal tighten
3. There are no damaged insulation, conductive dust and corrosive fumes of metal in the environment
4. Installation pitch ≥10mm
5. We have adjusted well, do not adjust arbitrarily
6. Two years warranty. But if clients damage products by themselves or tear off any labels on the product, we can not exchange
7. Products can not been used in strong magnetic field
8. Internal no anti-lightning circuit
9. Specifications subject to change without notice