HEDY

HDOM-IO-Logic

User Manual

（V1.0）

Guangzhou HEDY Industrial Automation CO., Ltd.

Contents

1 Introduction

1.1 Product description

There are IO terminal function and user customization function for HDOM-IO-Logic.

IO terminal function: HDOM-IO-Logic has three digital input terminals, an analogue input terminal, two relay output terminals, a digital output terminal, an analogue output terminal and two encoder input terminals. All these terminals can be programmed by the user. HDOM-IO-Logic can provide DC 5V/24V or 10V power supply.

User customization function: HDIAC can develop exclusive application solutions and built in HDOM-IO-Logic for the user. The user can make the HD700 drive as a special drive with customized HDOM-IO-Logic, so as to effectively reduce the user's cost.

The HDOM-Profibus-V0 module is suitable for HD700 drives that the User software version is V2.03 and above. If you have any questions, please contact your supplier or call the technical support hotline: +86-4007-000-885.

1.2 Rating label

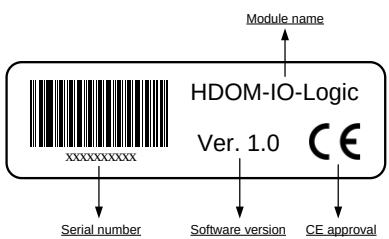


Figure 1-1 HDOM-IO-Logic rating label

1.3 Technical specifications

Terminal specifications as shown in table 1-1:

Type	Terminal name	Technical specifications
Digital input terminals	X1, X2, X3	The common is 0V, input resistance:10K High, low logic threshold: 10V Sampling period: 400ms/1ms
Digital output terminal	DO	Output voltage: 24V Maximum output current: 50mA Updating rate: 400ms/20ms
Relay output terminals	TA, TB	Contact rating: 250VAC/2A (cosφ=1) 250VAC/1A (cosφ=0.4) 30VDC/1A Normally closed Updating rate: 400ms/5ms
Analogue input/output terminal	AI	0～10V, input resistance: 100K 0(4)mA～20mA, load resistance: 188Ω Resolution: 0.1%, Accuracy: 2% Sampling period: 400ms/5ms
	AO	0～10V, maximum output current: 10mA Resolution:0.4%, Accuracy: ±5% 0～20mA/20～0mA/4～20mA/20～4mA, Accuracy: 1%, Updating rate: 400ms/5ms
Power supply reference	0V	—
	10V	Accuracy: 2%, Maximum output current: 10mA
	+P	The common can be 5V or 24V by setting the P09.31 (the default is 5V). Maximum output current: 100mA
Encoder input terminal	EA, EB	Support 5V/24V voltage mode or open collector signal, only for Quadrature Encoder.

Table 1-1 terminal technical specifications

HDOM-IO-Logic uses the drive power supply, meeting ELV.

2 Mechanical installation

2.1 HD700 drive option connector

There is a CN2 slot located on the HD700 drive to make the HDOM-IO-Logic installed on the drive. The installation of HDOM-IO-Logic is illustrated in figure 2-1.

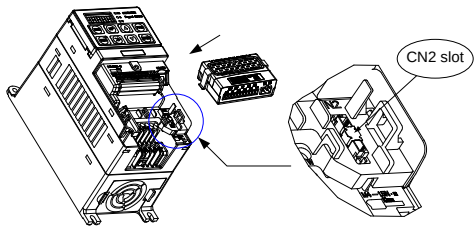


Figure 2-1 CN2 slot

2.2 Dimensions

Model name	H (mm)	W (mm)	D (mm)
HDOM-IO-Logic	70	45	23

Table 2-1 HDOM-IO-Logic dimensions

2.3 General installation

- Before installing HDOM-IO-Logic in any drive, ensure the power supply has been disconnected for at least 10 minutes.
- Check the module appearance. If there is any damage, please contact your supplier.
- Remove the drive terminal cover.
- There is a plastic protective cover on CN2 slot, please remove it carefully.
- Direct the back of the module to CN2.

- Push HDOM-IO-Logic into the CN2 slot located on the drive.

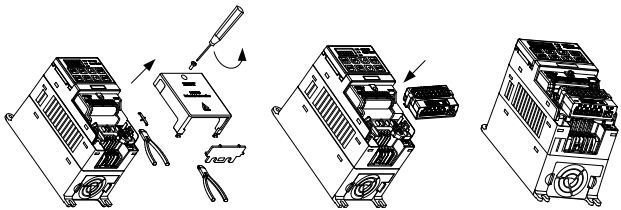
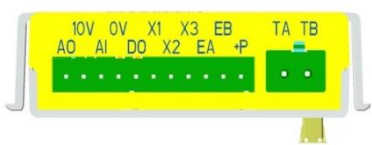


Figure 2-2 HDOM-IO-Logic installation diagram

3 Electrical installation

3.1 Terminal configuration

HDOM-IO-Logic terminals are shown in figure 3-1.



AO	10V	AI	0V	DO	X1	X2	X3	EA	EB	+P	TA	TB

Figure 3-1 HDOM-IO-Logic front view

3.2 Control cable

Recommended user control cables that wire size is 0.5mm^2 to 0.75mm^2 for terminal wiring. The maximum wire size of control cable is 1.5mm^2 for relay output terminal wiring.

3.3 Wiring

3.3.1 Digital input terminal

The common of HDOM-IO-Logic digital input terminals is 0V. Connection modes are shown in the following table.

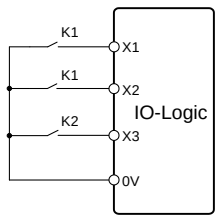
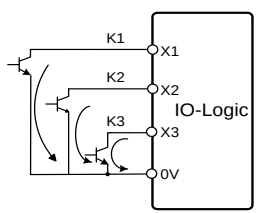
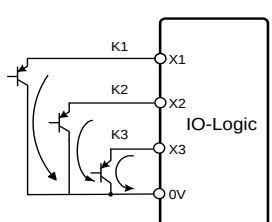
Connection	Internal power supply
Switch type	
OC (NPN)	
OC (PNP)	

Table 3-1 digital input terminal connection

3.3.2 Digital output terminal

The digital output terminal is OC type (+24V output).

When use the digital output to drive the rail winding, please take care the polarity of the rail winding of the relay, and use the snubber devices by the winding.

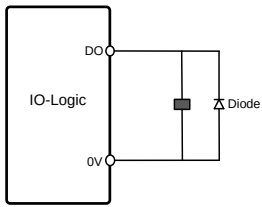


Figure 3-2 digital output terminal connection

3.3.3 Analogue input terminal

Analogue input mode can be selected by setting P19.17. Refer to chapter 4 for the description of P19.17.

Wiring distance should be as short as possible. When the analogue input signal is severely interfered, install a filtering capacitor or common mode choke between the analogue input signal and 0V.

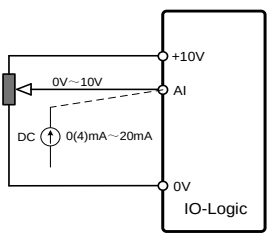


Figure 3-3 analogue input terminal connection

3.3.4 Analogue output terminal

Analogue output mode can be selected by setting P19.38. Refer to chapter 4 for the description of P19.38.

When analogue output is voltage signal (0V to 10V), the maximum output current is 10mA. The resolution is 0.4% and the accuracy is 0.5%. Wiring distance should be as short as possible.

When analogue output is current signal 0(4) mA to 20mA, the accuracy is 1%.

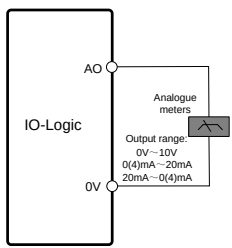


Figure 3-4 analogue output terminal connection

3.3.5 Encoder input terminal

The encoder input terminal can process voltage output signal and OC signal.

Terminals +P and 0V can provide all kinds of power supply for the encoder.

The encoder working voltage can be 5V or 24V by setting the P09.31.

The encoder output signal type can be selected by setting P19.26.

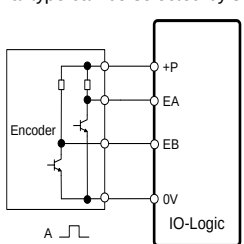


Figure 3-5 encoder connection for voltage output signal

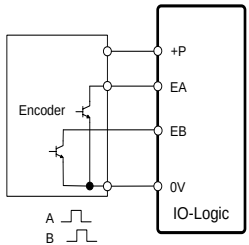


Figure 3-6 encoder connection for OC signal

4. Parameters

4.1 Set-up parameters

- The indicator LED of HDOM-IO-Logic displays red after the drive powered on.
- When the LED flashes green, it means that the module is working.
- If the light keeps on red (about 1 to 5 minutes), it means that communications between the module and the drive is abnormal. Please check if the installation is correct. If the installation is correct, please contact your supplier or call 4007-000-885.
- Access menu P19 and the value of P19.01 is 201. It means that optional module connected with the drive is HDOM-IO-Logic.
- At the first time using HDOM-IO-Logic, please set P00.24 to 1, load the factory default.
- Set up the other parameters as required, see the next section for parameter descriptions.

4.2 Parameter descriptions

The following parameter description includes:

Parameter ID: parameter code

Parameter name: simple explanation of the parameter.

Parameter range: the range of the parameter's content, in【 】is the default value.

Change mode: to define if the parameter can be modified, and under what condition can change the parameter.

Run&Stop Write & Read can be done at running and stopping.

Stop Only Write & Read can be done only at stopping.

Actual Read only

Parameter	Parameter name	Range【Default】	Change mode
P19.01	Module ID code	0～999【0】	Actual

The module ID code indicates the type of module installed in to the CN2 slot.

Code	Module name
101	HDOM-Profibus-V0
201	HDOM-IO-Logic
Other	Reserved

🕮Note：

- When no Module is fitted in the relevant slot this parameter is zero.
- When no Module is fitted in the relevant slot, only display P19.01. The other Menu19 parameters are not displayed.
- HDOM-IO-Logic do not support hot fit and unfit.

- Module type encoding rules:

The hundred	The decade	The unite
1: Fieldbus type	0：Profibus type	1: HDOM-Profibus-V0
		2～9: Reserved
	1～9: Reserved	1～9: Reserved
2: Logic extension type	0：IO-Logic type	1: HDOM-IO-Logic
		2～9: Reserved
	1～9: Reserved	1～9: Reserved
3～9: Reserved	0～9: Reserved	1～9: Reserved

According to the encoding rules, the module ID code for HDOM-IO-Logic is 201.

Parameter	Parameter name	Range【Default】	Change mode
P19.02	X1 function select	P00.00～P18.08【0.00】	Stop Only
P19.03	X2 function select	P00.00～P18.08【0.00】	Stop Only
P19.04	X3 function select	P00.00～P18.08【0.00】	Stop Only

Select the function of digital input terminals X1, X2, X3 respectively.

The usage is similar to the drive digital input terminals'.

Parameter	Parameter name	Range【Default】	Change mode
P19.05	Analogue input function select	P00.00～P18.08【0.00】	Stop Only

Select the function of AI.

Parameter	Parameter name	Range【Default】	Change mode
P19.06	Encoder input function select	P00.00～P18.08【0.00】	Stop Only

Select the function of encoder input.

Orthogonal input signal of encoder (EA, EB) is processed as a percentage

(P19.29) of encoder maximum speed (P19.28), and then after encoder input scaling (P19.30) get the value that can be used by the user directly. This parameter can be used to assign this value to any unprotected parameters (call destination).

Parameter	Parameter name	Range【Default】	Change mode
P19.07	Relay function select	P00.00～P18.08【0.00】	Run&Stop

Select the function of relay.

It can be used to select the parameter that the relay reflects the state of.

Parameter	Parameter name	Range【Default】	Change mode
P19.08	Digital output select	P00.00～P18.08【0.00】	Run&Stop

Select the function of the digital output.

It can is used to select the parameter that the digital output reflects the state of.

Parameter	Parameter name	Range【Default】	Change mode
P19.09	Analogue output select	P00.00～P18.08【0.00】	Run&Stop

Select the function of the analogue output.

It is can be used to select the parameter converted to analogue output out-putting from the analogue output terminal.

Parameter	Parameter name	Range【Default】	Change mode
P19.10	X1 invert	0 (OFF)～1 (ON)【0】	Run&Stop
P19.11	X2 invert	0 (OFF)～1 (ON)【0】	Run&Stop
P19.12	X3 invert	0 (OFF)～1 (ON)【0】	Run&Stop

P19.10 to P19.12 inverts X1 to X3 respectively when these parameters are set to 1.

Parameter	Parameter name	Range【Default】	Change mode
P19.13	Reserved	—	—

Parameter	Parameter name	Range【Default】	Change mode
P19.14	X1 state	0 (OFF)～1 (ON)	Actual
P19.15	X2 state	0 (OFF)～1 (ON)	Actual
P19.16	X3 state	0 (OFF)～1 (ON)	Actual

P19.14 to P19.16 can be used to display terminals X1 to X3 input states respectively.

Parameter	Parameter name	Range【Default】	Change mode
P19.17	Analogue input mode select	0～6【6】	Stop Only

Analogue input is voltage/current input. This parameter setting must match the terminal connection mode.

Parameter value	Mode
0	0mA to 20mA
1	20mA to 0mA
2	4mA to 20mA
3	20mA to 4mA
4	Reserved
5	Reserved
6	0V to +10V

📖Note:

When P19.17 is set to 2 or 3, P19.24 (analogue input current disconnected display) is set to 1 if the analogue input current value is less than 3mA.

Parameter	Parameter name	Range【Default】	Change mode
P19.18	Analogue input offset	-100.0%～100.0%【0.0%】	Run&Stop

An offset can be added to the analogue input with a range from -100% to 100%. If the sum of the analogue input and the offset exceeds ±100%, the result is limited to ±100%.

Parameter	Parameter name	Range【Default】	Change mode
P19.19	Analogue input scaling	0.000～20.000【1.000】	Run&Stop

This parameter can be used to scale the analogue input if so desired.

Parameter	Parameter name	Range【Default】	Change mode
P19.20	Analogue input filtering time	0.00s～10.00s【0.10s】	Run&Stop

This parameter is used to apply a filtering time to analogue input.

If the value of this parameter increases, the filtering effect is stable but the processing time gets longer and the response becomes slow. If the value of this parameter decreases, the filtering effect tends to weaken but the processing time gets shorter.

Parameter	Parameter name	Range【Default】	Change mode
P19.21	Analogue input invert	0 (OFF)～1 (ON)【0】	Run&Stop

This parameter can be used to invert the analogue input (the analogue multiply by -1).

Parameter	Parameter name	Range【Default】	Change mode
P19.22	Analogue input upper limit	0.0%～100.0%【100.0%】	Run&Stop

Parameter	Parameter name	Range【Default】	Change mode
P19.23	Analogue input lower limit	0.0%～P19.22【0.0%】	Run&Stop

If offsetting (P19.18), scaling (P19.19) or inverting (P19.21) the analogue input, the absolute value of its operation result will be limited to between the value of P19.23 and P19.22.

Parameter	Parameter name	Range【Default】	Change mode
P19.24	Analogue input current disconnected display	0～1	Actual

When P19.17 is set to 2 or 3, this parameter is set to 1 if the analogue input current value is less than 3mA.

Parameter	Parameter name	Range【Default】	Change mode
P19.25	Analogue input display	0.0%～100.0%	Actual

Parameter	Parameter name	Range【Default】	Change mode
P19.26	Encoder input mode select	0～1【0】	Stop Only

This parameter can be used to set the mode of encoder input.

0: voltage type

1: open collector type

Parameter	Parameter name	Range【Default】	Change mode
P19.27	Encoder pulse number per revolution	0～9999【1024】	Stop Only

This parameter can be used to set encoder pulse number per revolution.

Parameter	Parameter name	Range【Default】	Change mode
P19.28	Encoder maximum speed	0rpm～32000rpm【1500】	Stop Only

This parameter can be used to set the maximum speed of the encoder.

Parameter	Parameter name	Range【Default】	Change mode
P19.29	Encoder input display	-100.0%～100.0%	Actual

This parameter can be used to display the percentage of the encoder maximum speed.

Parameter	Parameter name	Range【Default】	Change mode
P19.30	Encoder input scaling	0.000～20.000【1.000】	Run&Stop

Parameter	Parameter name	Range【Default】	Change mode
P19.31	User 5V/24V select	0～1【0】	Stop Only

Terminal +P on the HDOM-IO-Logic can be 5V or 24V power supply.

If this parameter is set to 0, the output is 5V.

If this parameter is set to 1, the output is 24V.

This power supply can be used as working power supply of the encoder.

Parameter	Parameter name	Range【Default】	Change mode
P19.32	Encoder speed feedback display	-32000rpm～+32000rpm	Actual

This parameter can be used to display the encoder actual speed.

Parameter	Parameter name	Range【Default】	Change mode
P19.33	Relay invert	0～1【0】	Run&Stop

If this parameter is set to 1, the relay state can be inverted.

Parameter	Parameter name	Range【Default】	Change mode
P19.34	Relay state display	0 (OFF)～1 (ON)	Actual

This parameter indicates the relay is open or closed.

0: Open

1: Closed

Parameter	Parameter name	Range【Default】	Change mode
P19.35	Digital output invert	0～1【0】	Run&Stop

If this parameter is set to 1, the digital output state can be inverted.

Parameter	Parameter name	Range【Default】	Change mode
P19.36	Digital output state	0 (OFF)～1 (ON)	Actual

The parameter indicates the state of digital output terminal.

0: output 0V

1: output 24V

Parameter	Parameter name	Range【Default】	Change mode
P19.37	Analogue output scaling	0.000～20.000【1.000】	Run&Stop

This parameter can be used to scale the analogue output if so desired

Parameter	Parameter name	Range【Default】	Change mode
P19.38	Analogue output mode select	0～4【4】	stop only

This parameter is used to select analogue output mode.

Parameter value	Mode
0	0mA to 20mA
1	20mA to 0mA
2	4mA to 20mA
3	20mA to 4mA
4	0 to 10V

Parameter	Parameter name	Range【Default】	Change mode
P19.39	Analogue output display	0.0%～100.0%	Actual

Parameter	Parameter name	Range【Default】	Change mode
P19.40	HDOM-IO-Logic software version	0.00～02.99	Actual

Parameter	Parameter name	Range【Default】	Change mode
P19.41	HDOM-IO-Logic hardware version	0.00～02.99	Actual

Parameter	Parameter name	Range【Default】	Change mode
P19.42 to P19.99	User programmed	—	—

These parameters are reserved for the user programming.

Guangzhou HEDY Industrial Automation CO., Ltd.

Factory address: No.63, Punan Road, Yunpu Industry Park, Huangpu District, Guangzhou, Guangdong, 510760, China

R&D center: Attached Building of Mingzhu Industry&Business, Xinzhong Road, Baishizhou Area, Nanshan District, Shenzhen, 518053, China

Technical Support Hotline: +86-4007-000-885

Web site: Http://IAC.hedy.com.cn