

ZHC0941/0951

Configuration Instructions

Version: 1.0

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Preparation: rs485 to usb tool, computer, configuration software Point-to-point transmission: one-to-one, one-to-many.

For example: one-to-one network; point-to-point transmission between device ZHC0941 and device ZHC0951, the specific operation steps are as follows:

1.1 Open the ZHC0941/51 configuration software

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Help	Learn more			115200 🔻 8	▼][1	▼ None ▼ Port	▼ Refresh Open
Model: ZHC0941		I/O					Q
SN: Device ID	not obtain				DI		-4-
Version: 1001	Select firmware		Off	Off		Off	Off
App ID: 1							
Address:	Fw Table			-2-	AI	-3-	-4-
Spread: 7 🔻	Channel: 1		0			0	
Signal:	SNR:						
Report: To	LoRa 🔻	DI Config					0 🗎
Self Restore: 36	00		Report: Disabled	•]		Reporting time: 0	
Bauderate:	115200 🔻	AL Config					
Byte 8 🔻	Stop: 1 🔻	Ar coning					
Parity: Nc 🔻	Serial heartbeat		Report: Disabled	<u> </u>		Reporting time: 0	
Search	Restart			-2-	Low-pass Data		-4-
Read all	Write all		50	50		50	50
Update	Reset			Re	porting condition	s	

Figure 1 ZHC0941/51 configuration software

1.2 Debug parameters

Connect the ZHC0941 device to the PC, and use the USB to 485 tool to connect to the configuration software.

1.2.1 Get the basic parameters of the device ZHC0941/51

Firstly, we use the RS485 serial port tool to connect the ZHC0941/51 device and the configuration software to obtain the corresponding configuration

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Model: ZHC0941	I/O		СОМ1	
SN: Device ID not obtain		-2- DI	-3- CNCA0	-4-
Version: 1001 Select firmware	Off	Off	Off CNCB0	Off
App ID: 1			COM4	
Address: Fw Table		-2- Al	-3- COM2	-4-
Spread: 7 ▼ Channel: 1	0	0	0 COM2	0
Signal: SNR:			СОМб	
Self Restore: 3600	DI Config		сом7	
	Report: Disabled		Reporting til COM12	
Bute 8 T Stop: 1 T	Al Config		СОМВ	
Parity: Nc Serial heartbeat	Report: Disabled	_	Reporting time: 0	
Search Restart		Low-pass Data		-4-
Read all Write all	50	50	50	50
Update Reset	(Reporting conditio	ns	

Figure 2 Get device default configuration 1

As shown above:

1.

①Select the corresponding 485 serial port (port) and open it

2 search equipment

③After the search is successful, read the default configuration of the device with one click (read a configuration separately, and then read the corresponding configuration bar with the right mouse button)

2. The default address of the device is 55 (the address can be set by yourself during debugging). The device that configures the network needs to change the device address to a different 1-FF.

IOTROUTER			About 🗸 (E) log 🛛 🗕 🗖 🗙
Help Learn more		115200 🔻 🖲 👻	1 ▼ None ▼ COM12	Refresh Close
Model: ZHC0941	I/O			0
SN: 0941220118030159		-2- DI		-4-
Version: 1005 Select firmware	Off	Off	off	off
App ID: 1 2				
Address: 0x55 Fw Table		-2- Al		-4-
Spread: 7 🔻 Channel: 1	10	10	10	10
Signal: 0 SNR: 0				
Report: To LoRa 🔻	DI Config			O
Self Restore: 0	Report: Enable	•	Reporting time: 30	
Bauderate: 115200 🔻	Al Config			
Byte 🛛 🔻 Stop: 🗍 🔻				
Parity: Nc 🔻 Serial heartbeat	Report: Ebable		Reporting time: 30	
Search Restart		-2- Low-pass	Data -3-	-4-
Read all Write all	50	50	50	50
Update Reset	(i	Reporting co	nditions	

1.2.2 Set device ZHC0941 networking parameters

Figure 3 Configuration ZHC0941 Operation Point 1

As shown above:

1. Application ID: The device settings of the network are consistent (range 0-100)

2. Address: The default address of the device is 55 (the address can be set by yourself during debugging). The device that configures the network needs to be changed to a different address. Here we set the 0941 address to 55 (range 1-FF)

3. Spread spectrum: the networking equipment settings are the same

(Spread 7-12, 7 means fastest data transmission and the shortest transmission distance, 12 means the slowest transmission data and the largest transmission distance)

4. Channel: The setting of the networking equipment is consistent (range 0-31)

5. After confirming that the above parameters are filled in, click one-key write. After writing, one-key read the device configuration to check whether the writing is successful. After confirming that the writing is successful, restart the device to take effect.

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Help Learn more		115200 🔻 8	▼ 1 ▼ None ▼	M8 Refresh Close
Model: ZHC0951	I/O			0
SN: 0951220118030164			- DO3-	.4.
Version: 1005 Select firmware	Always O	Always O	Always O	Always O
App ID: 1		Open all	Open close	
Address: 0x55 Fw Table			- 40	
Spread: 7 🔻 Channel: 1		-2-	-3-	-4-
Signal: 0 SNR: 0 K				0
Report: To LoRa 💌		Write	Read	
Self Restore: 3600	DO Config			B 0
Bauderate:	n (Faabla		.	
Byte 8 🔻 Stop: 1 💌	Keport: Enable		Kestart state: L	Jerault
Parity: Nc 🔻 Serial heartbeat		-2- Outp	ut hold time(s) -3-	-4-
Search Restart	0	0	0	0
Read all Write all		De	fault output	
Update Reset	-1- Dirablad =	-2-	-3- Dirablad =	-4- Dirablad

1.2.3 Set device ZHC0951 networking parameters

Figure 4 Configuration 0951 Operation Point 1

As shown above:

1. Application ID: The device settings of the network are consistent (range 0-100)

2. Address: The default address of the device is 55 (the address can be set by yourself during debugging). The device that configures the network needs to be changed to a different address. Here we set the 0951 address to 56 (range 1-FF)

3. Spread spectrum: the networking equipment settings are the same

(Spread 7-12; 7 means fastest data transmission and the shortest transmission distance, 12 means the slowest transmission data and the largest transmission distance)

4. Channel: The setting of the networking equipment is consistent (range 0-31)

5. After confirming that the above parameters are filled in, click one-key write. After writing, one-key read the device configuration to check whether the writing is successful. After confirming that the writing is successful, restart the device to take effect.

Note: The addresses of each device in the network must be different.

1.2.4 Test whether the networking is successful

IOTROUTER				About 🗸 🗐 log 📔 🗕	· = ×	
Help Learn more		115200 💌 8	▼ 1 ▼ None	COM8 Refres	h Close	[L 8 2022/5/12 16:18:12] 55 04 00 00 00 04 FC 10 [L 13 2022/5/12 16:18:13] 55 04 08 00 04 00 04 00 04
Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmware App ID: 1	1/O -1- Always O	-2- Always O Open all	DO .3. Always O Open close	4. Always C		12 13 2022/5/12 Tenters 13 35 04 06 00 04 00 04 00 04 00 04 A2 38 [L 13 2022/5/12 Te58824] 55 04 08 00 0A 00 0A 00 0A 00 0A A2 38
Address: 0x56 Fw Table Spread: 7 V Channel: 1 Signal: -54 SNR: 13 Report: To LoRa V		-2- O Write	AO -3- 0 Read			
Bauderate: 115200 V Byte 8 V Stop: 1 V Parity: Nc V Serial heartbeat	DO Config Report: Enable	Outpu	Resta It hold time(s)	rt state: Default 🔻	99	55 04 00 00 00 04
Search Restart Read all Write all Update Reset	-l-	0 Def:	ault output -3-	- 0 -]	☐ Timer 1000 Send S: 16 R: 26

Figure 5 Network Test

As shown above:

1. Use the 485 tool to connect to one of the devices (we connected to ZHC0951 here as example), and open the log bar of ZHC0951;

2. Send a data command to read the device AI of ZHC0941 (address 55), if there is a reply, the networking is successful.

(If there are two 485 tools, you can connect the two devices to the computer at the same time and open the log bar to send data to each other. The fact that the two devices can receive each other's data also proves that the networking is successful)

2.Set AO to follow AI

2.1 Configure the device

IOTIROUTER	About 🗸 🔄 log 🗕 🗆 X
Help Learn more	115200 🔻 8 💌 1 💌 None 💌 COM12 💌 Refresh 🔤 Close
Model: ZHC0941	AI
SN: 0941220118030159	
Version: 1005 Select firmwa	
App ID: 1	Di Config 🖉 🖉 🖓
Address: 0x55 Fw Table	Report: Disabled Reporting time: 5
Signal: 0 SNR: 0	Al Config
Report: To LoRa 🔻	
Self Restore: 0	Report: Ebable Keporting time: 5
Bauderate: 115200 🔻	Low-pass Data
Byte 8 🔻 Stop: 1 🔻	50 50 50 50
Parity: Nc 🔻 Serial heartbea	Reporting conditions
Search Restart	Irigqer mode Kanqe minimum Kanqe maximum
Read all Write all	
Update Reset	Ursauled · · · · · ·
IOTROUTER	About 🗸 🔄 log 🗕 🗖 🗙
Help Learn more	115200 💌 8 💌 1 💌 None 💌 COM8 🔍 Refresh 🛛 Close
Model: ZHC0951	
SN: 0951220118030164	Report: Uisabled Restart state: Default
Version: 1005 Select firmwa	rt Output hold time(s)) -1234-
App ID: 1	
Address: 0x56 Fw Table	Output hold time(s)
Spread: 7 T Channel: 1	-1234
Beport: To LoBa	Disabled Disabled Disabled Disabled Disabled Disabled Disabled Disabled Disabled Disabled Disabled
Self Restore: 0	
Bauderate: 115200 T	
Byte 8 - Stop: 1 -	Condition Address Input register Out type Out register DO action Threshold AO value
Parity: Nc 🔻 Serial heartbea	
Search Restart	-2- AO follow AI 🔻 0x55 IN2 💌 AO 🔻 OUT2 🔻 Always On 💌 0 0
Read all Write all	-3- AO follow AI 🔻 0x55 IN3 🔻 AO 🔻 OUT3 🔻 Always On 💌 0 0
Update Reset	4 AO follow AI 🔻 0x55 IN4 💌 AO 🔻 OUT4 🔻 Always On 🔻 0 0

Figure 6 Setting device AO1 to follow AI

As shown above:

1. Enable active reporting in the AI basic parameters of ZHC0941. The reporting interval is the reporting cycle time S (seconds), which can be set by yourself, and click Save.

2. Set the 0951 device condition judgment, select AO to follow, and fill in the address 55 of

the 0941 device to be followed, (input register selects IN11, output type selects AO, and output register selects OUT1, which means AO1 follows AI1) Click Save to complete. *Note: If you set up local follow, just change the address to 0, it can be achieved.*

2.2 Data presentation



Figure 7 AO data presentation of device ZHC0951

As shown above:

1. If the value corresponding to the AO of ZHC0951 and the AI input value of the device ZHC0941 is the same, the configuration will follow successfully, and the data refresh speed is determined by the active reporting time;

2. You can also test whether the AO output follows the AI in other ways. For example, you can use a multimeter to print the AO output current value.

3.1 Configure the device

IOTROUTER			About 🗸	🗐 log 🗕 🗖 🗙
Help Learn more		[115200 v][8 v][1 🔻 None 🔻 COM	112 🔻 Refresh Close
Model: ZHC0941	1/0			0
SN: 0941220118030159		DI	2	
Version: 1005 Select firmwa	rt Off	Off	off	off
App ID: 1				
Address: 0x55 Fw Table		-2- AI		-4-
Spread: 7 ▼ Channel: 1	9998	9998	9868	10040 /3
Signal: 0 SNR: 0	۱ <u> </u>		2	
Self Restore: 0	DI Config			
Paudaratar 115200 -	Report: Enable		Reporting time: 5	
Byte 8 T Stop: 1 T	Al Config			C C
Parity: Nc 🔻 Serial heartbea	t Report: Disabled		Reporting time: 5	,
Search Restart	.1.	-2- Low-pass	Data -3-	-4-
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Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Salact firmua	Report: Disabled	115200 ▼ 8 ▼ (▼ Output hold	About ↓ 1 ▼ None ▼ COM Restart state: De time(s))	E log – 🗆 X 18 – Refresh Close
Help Learn more Model: 2HC0951 SN: 0951220118030164 Version: 1005 Select firmwa	Report: Disabled	115200 * 8 * (* Output hold	About ~ 1 • None • COM Restart state: De time(s))	E log – – X 18 Refresh Close
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table	Report: Disabled	115200 • 8 • (• • • • • • • • • • • • • • • • • •	About ✓ 1 ▼ None ▼ COM Restart state: De time(s)) -3- 0	E log – – × Refresh Close
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 T Channel: 1	Report: Disabled	115200 • 8 • 1 • Output hold 0 -2- 0 Output hold -2- Output hold	About ✓ 1 ▼ None ▼ COM Restart state: De time(s)) -3. 0 time(s) -3.	E log – Close
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Spread: 7 * Signal: -67	Report: Disabled	115200 ▼ 8 ▼ 1 ▼ -2- Output hold -2- Disabled ▼	About ~ 1 • None • COM Restart state: De time(s)) -3- 0 time(s) -3- 0 time(s) -3- 0	E log – Close sfault • -4. 0 -4. Disabled •
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 • Channel: 1 Signal: -67 SNR: 12 Report: To LoRa •	Report: Disabled	115200 • 8 • 1 • Output hold -2- 0 0 0 0 0 0 0 0 0 0 0 0 0	About ~ 1 • None • COM Restart state: De time(s)) -3- 0 time(s) -3- 0 time(s) -3- 0 0	E log – – X Refresh Close efault – 4. 0 4. Disabled – 5
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 Channel: 1 Signal: -67 SNR: 12 Report: To LoRa Self Restore: 0	Report: Disabled	115200 • 8 • 1 • Output hold • -2- • Output hold • -2- • Output hold • -2- • Output hold • -2- • Output hold	About ✓ 1 ▼ None ▼ COM Restart state: De time(s)) -3- 0 time(s) -3- 0 time(s) -3- 0 0	E log – C × B Refresh Close efault • 4. 0 4. Disabled • 5
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Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 Channel: 1 Signal: -67 SNR: 12 Report: To LoRa Self Restore: 0 Bauderate: 115200 Byte 8 Stop: 1 Parity Nr 7 or of Hermite	Report: Disabled	115200 8 9 9 0 <li0< li=""> 0</li0<>	About ~ 1 • None • COM Restart state: De time(s)) -3- 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 time(s) -3- 0 0 0 0 0 0 0 0 0 0 0 0 0	E log – C × B Refresh Close
Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 Channel: 1 Signal: -67 SNR: 12 Report: To LoRa Self Restore: 0 Bauderate: 115200 Byte 8 Stop: 1 Parity: Nc Serial heartbea	Report: Disabled -1- 0 -1- Disabled 0 Condition Control Condition Addree -1- Follow positive -2- Follow positive 0x55	115200 ▼ 8 ▼ -2. Output hold -3. Output hold -2. Output hold -3. Output hold	About ~ 1 • None • COM Restart state: De time(s) -3- 0 time(s) -3- 0 time(s) -3- 0 time(s) -3- 0 0 0 0 0 0 0 0 0 0 0 0 0	E log – C × 18 Refresh Close efault • 4. 0 4. 0 1 1 1 1 1 1 1 1 1 1 1 1 1
IOTROLITER Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa Adpr ID: 1 Address: 0x36 Spread: 7 * Channel: 1 Signal: -67 Self Restore: 0 Bauderate: 115200 Byte 8 * Stop: 1 * Parity: Nc * Search Restart	Report: Disabled	115200 ▼ 8 ▼ .2. Output hold .3. 0 .3. 0 .1. 0 .2. 0 .2. 0 .3. 0 .3. .3. .3. .3. .3. .3.	About ✓ 1 ▼ None ▼ COM Restart state: De time(s)) -3- 0 time(s) -3- 0 0 time(s) 0 -3- 0 0 time(s) 0 0 time(s) 0 0 1 0 Always On 1 OUT1 ▼ Always On 1 OUT3 ▼ Always On 1 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	E log – C × B Refresh Close sfault • 4. 0 4. Disabled • 0 C Threshold AO value 0 0 0 0 0 0
IOTROLITER Help Learn more Model: ZHC0951 SN: 0951220118030164 Version: 1005 Select firmwa App ID: 1 Address: 0x56 Fw Table Spread: 7 Channel: 1 Signal: -67 SNR: 12 Report: To LoRa Self Restore: 0 Bauderate: 115200 Byte 8 Serial heartbea Serial heartbea Search Restart Read all Write all	Report: Disabled -1: 0 -1: Disabled 0 Condition Control Condition Control Condition Addree -1: Follow positive -2: Follow positive -3: Follow positive 4. Follow positive -4. Follow	115200 ▼ .2. Output hold .2. Output hold .2. Output hold .2. Output hold .3. Output hold .2. Output hold .3. 0 .3. 0 .3. IN1 .1. DO .1. IN2 .1. DO .1. N3 .1. N4	About ~ 1 • None • COM Restart state: De time(s)) -3- 0 time(s) -3- 0 time(s) -3- 0 time(s) -3- 0 0 time(s) -3- 0 0 0 0 0 0 0 0 0 0 0 0 0	E log – C × B Refresh Close efault • 4. 0 4. 0 0 0 0 0 0 0 0 0 0 0 0 0

Figure 8 Setting the device DO to follow DI

As shown above:

1. Enable active reporting in the DI basic parameters of ZHC0941, and the reporting interval is the reporting cycle time S (seconds), which can be set by yourself, and click Save.

2. Set the condition judgment of ZHC0951 device, select forward or reverse follow, and fill in the address 55 of the 0941 device to be followed, (input register selects IN11,

8

output type selects DO, and output register selects OUT1, which means DO1 follows DI1) to complete Click Save.

Note: If you set up local follow, just change the address to 0, it can be achieved.

3.2 Data Presentation

IOTROUTER			About 🗸	E log – 🗖 🗙		- = ×
Help Learn more		115200 👻 🛚 👻	1 TNone TCOM8	Refresh Close	[L: 6 2022/5/13 12:13:54] 55 02 01 0F F1	BC
Model: ZHC0951				0	[]: 6 2022/5/13 12:13:551 56 01 01 0F 01	F8
SN: 0951220118030164		DO				
Version: 1005 Select firmware	Always O	Always O	Always O	Always O		
App ID: 1		Open all	Open close			
Address: 0x56 Fw Table						
Spread: 🛛 🔻 Channel: 🔟	-1-	-2-	-3-	-4-		
Signal: -67 SNR: 12						
Report: To LoRa 🔻		Write	Read			
Self Restore: 0	DO Config			9		
Bauderate: 115200 🔻	Dirabler		0			
Byte 8 ▼ Stop: 1 ▼	Keport: Disabled		Restart state: Den		56 01 00 00 00 04	
Parity: Nc 🔻 Serial heartbeat		-2- Output hole	d time(s) -3-			
Search Restart					Timer	1000
Read all Write all		Default o	utput			Send
Update Reset	-1-	-2-		4.		R: 12

Figure 9 Device ZHC0951 Data Presentation

As shown above:

1. If the values corresponding to the DO of ZHC0951 and the DI input of device ZHC0941 are the same, the configuration will follow successfully, and the data refresh speed is determined by the active reporting time;

2. You can also test whether the DO output follows the DI in other ways, for example, you can use a multimeter to print the DO on/off state.

4. Drop output settings

IOTROUTER	About 🗸 🗐 log 🗕 🗖 🗙
Help Learn more	115200 🔻 8 🐨 1 🐨 None 🐨 COMB 🔽 Refresh 🛛 Close
Model: ZHC0951 SN: 0951220118030164	Disabled Disabled
App ID: 1	AO Config 🖸 🖸
Address: 0x56 Fw Table	Report: Disabled Restart state: Default
Spread: 7 ▼ Channel: 1 Signal: -50 SNR: 12 Report: To LoRa ▼	Output hold time(s)) -1- -2- -3- -3- -4- 0 0
Self Restore: 0 Bauderate: 115200 Byte 8 Stop: 1 Parity: Nc Serial heartbeat	Output hold time(s) -1- -2- Enable Disabled Disabled 10000 0 0
Soarch Postart	Condition Control
Read all Write all Update Reset	Condition Address Input register Out type Out register DO action Threshold AO value -1- AO follow AI ▼ 0x55 IN1 ▼ AO ▼ OUT1 ▼ Always On ▼ 0 0

Figure 10 Dropped output settings

As shown above:

1. This picture is the AO parameter configuration page of the ZHC0951 device. The output hold time and the default output need to be used at the same time.

2. The above setting means that when the ZHC0951 device does not receive the AI status report of the 0941 device within 60 seconds, the AO1 will output the default output value of 10000uA.

Note:

The same is true for the output setting of DO following DI disconnection. It can be set according to the requirements. It can be disabled if it is not needed. The output hold time is 0, which is disabled.