

IO-LINK High frequency read/write header Debugging manual





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1.Hardware wiring diagram



24VDC Power supply

FCPN-8LKM-8A

Siemens 1200

2. Product list

Product name	Model number	Description
Power supply		Power unit
Plc	Siemens CPU 1211	Logic controller
Master station	FCPN-8LKM-8A	Communication master station
Read head	RF30-WR-M30H/LK RF30-WR-MF30H/LK	Read and write data

3. Product description

3.1 Profinet Mater station



3.2 IO-LINK Read Head

Indicator status:

- RF30-WR-M30H&MF30H/LK
- 1. Indicator light stays green: Normal power supply
- 2. Indicator light blinks green: Normal communication status
- Indicator light stays orange: Tag detected



IO-Link Interface



- RF30-WR-C40H/LK
 - 1. RW: read and write commands
 - 2. TAG: TAG Detection Indicator
 - 3. LK: IO-Link communication indicator
 - 4. PW: Power indicator

- RF30-WR-Q95H/LK
 - 1. WR: read and write commands
 - 2. TAG: TAG Detection Indicator
 - 3. LK: IO-Link communication indicator
 - 4. PW: Power indicator



4. Hardware configuration

4.1 Establish a new project

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4.2 Add a PLC

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- 4.3 Add the Profinet subnet
- 1) Right-click the network port on the PLC;
- 2) Configure PLC address;

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4.4 Add the GSD file of the master module

In this example, ELCO FCPN-8LKM-8A main station is used. If other brands are used, please skip to "4.6"Configure the IO-LINK read/write header.

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4.5 Connect to the PLC bus network



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4.6 Configure the IO-LINK RFID read/write header

Double-click the master icon to perform the master configuration. Right-click the channel.it ended to be connected to the RFID read/write head and delete the "Digital I/O" :



Select the module from the hardware directory on the right"->"General Digital IO Module"-> "IOL_I/O_32/32 byte", Doubleclick the mouse configuration to the corresponding channel of the master station.

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4.7 The project is saved and downloaded

After the configuration is completed, compile and download, and download the configuration into PLC. If the PLC download is completed and the communication between the module and the block still fails, check whether the "assign device name" status of the master station module is OK first, and ensure that the name of the master station in the configuration is consistent with the name assigned online.

After the communication between the read/write head and the master station is normal, the PW indicator is steady yellow. LK light yellow slow flashing; The WR indicator blinks rapidly during read or write operations. TAG indicator Steady blue when a tag is available.

5. FB function block introduction



Name	Data type	Description
i_init	BOOL	Module initialization, required after each PLC restart Must be set once
i_start	BOOL	Execute instruction
i_reset	BOOL	Restart block
i_dyn	BOOL	Dynamic mode switch: When the value is "1", the dynamic mode is enabled, and the operation command of the read/write head is triggered. When the label is detected, the result is returned. When no label is detected, the read/write head is in the waiting state, the dynamic mode is closed, and the execution result is returned immediately.
i_ct_type	BOOL	Retain the function. Keep the value 0
i_order	WORD	Command type: 1= read operation, 2= write operation
i_head	BYTE	Retain the function.
i_io_start	INT	The start address of the read/write head hardware configuration
i_io_length	INT	Configuration byte length
i_ct_start	INT	Start address for reading and writing a tag
i_ct_length	WORD	Read/write data length
i_send_db	INT	DB block number(write data)
i_send_adr	INT	DB block start address(write data)
i_recv_db	INT	DB block number(read data)
i_ recv _adr	INT	DB block start address(read data)
i_ ctrl_time	INT	Wathdog time

5.1 Function block input pin introduction

5.2 Function block output pin introduction

Name	Data type	Description
o_ct_present	BOOL	Check whether the tag exists
o_end	BOOL	Job completion mark
o_dig_in	BOOL	Retain the function.
o_fault	BOOL	Fault flag
o_fault_id	BYTE	Fault code,Please refer to the fault code table
o_head	BOOL	Retain the function.

5.3 Fault code table

Fault code	Description	Solution
00	No fault	Check whether the tag exists
01	No tag	Check that the tag really exists
02	Read failure	View and adjust the distance between read and write headers and labels. Whether the label is within the read-write range of the read-write head. By reading and writing head label in place indicator To judge;The read data length exceeded the label capacity procedure
03	Read failed because of the tag was lost	If dynamic mode is enabled, ensure that labels do not move too fast
04	Write failure	View and adjust the distance between read and write headers and labels. Whether the label is within the read-write range of the read-write head. By reading and writing head label in place indicator To judge;The write data length exceeded the label capacity procedure
20	The read/write length exceeded the limit. Procedure	The write and read data length exceeded the label capacity procedure

6. How to use FB function block

Copy the FB function block "RF30_IOL-RW" in the routine to the new program. Each RFID channel of IO-LINK master station needs to call FB separately, and each call of FB will automatically generate the corresponding background data block "RF30_IOL_RW_DB".

Example Create two DB blocks of type array of Byte and size 0... 1024 ",

The names DB_Receive and DB_Send are used to receive the read data and send the cached data written to the tag. Enter the ID of the two cached DB blocks in i_recv_db and i_send_db pins of the FB block.



For details, see the following legend:

7. Read and write operation

7.1 The FB function block is initialized

Set i_init to true and then FALSE to initialize the FB function block.

7.2 Write data operation:

1) Write 10 bytes of data to the monitor in DB3 of the variable table.

2) Put the label into the read/write area and M30.0 (o_ct_present) is shown as TRUE.

- 3) Change the variable "order" to 2.
- 4) Set "start" to TRUE to start the write operation.
- 5) Variable "finish" is "TRUE", variable "fault" is "false", the write

operation is complete, no error, write success.

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	DB_VAR[1]	Byte	1.0	16#02		¥	1	4		
	DB_VAR[2]	Byte	2.0	16#03		¥	1	4		
	DB_VAR[3]	Byte	3.0	16#04		¥	1	4		
-	DB_VAR[4]	Byte	4.0	16#05		V	V	¥		
-00	DB_VAR[5]	Byte	5.0	16#06		¥	1	4		
	DB_VAR[6]	Byte	6.0	16#07		1	1	4		
	DB_VAR[7]	Byte	7.0	16#08		V	V	4		
	DB_VAR[8]	Byte	8.0	16#09		¥	1	4		
	DB_VAR[9]	Byte	9.0	16#10		V	1	4		
-00	DB_VAR[10]	Byte	10.0	16#11		V	V	¥		
	DB_VAR[11]	Byte	11.0	16#12		1	1	4		
-	DB_VAR[12]	Byte	12.0	16#13		V	V	¥		
-00	DB_VAR[13]	Byte	13.0	16#14		V	V	¥		
	DB_VAR[14]	Byte	14.0	16#15		¥	1	4		
	DB_VAR[15]	Byte	15.0	16#16		V	V	¥		
-	DB_VAR[16]	Byte	16.0	16#16			V	4		
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-	DB_VAR[19]	Byte	19.0	16#16			V	4		
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	DB_VAR[21]	Byte	21.0	16#16		1	1	4		
-	DB_VAR[22]	Byte	22.0	16#16		V	V			
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7.3 Read data operation:

1) Put the label into the read/write area and M30.0 (o_ct_present) is shown as TRUE.

2) Change the variable "order" to 1.`

3) Set "start" to TRUE to start the read operation.

4) Variable "finish" is "TRUE", variable "fault" is "false", the read operation is complete, no error, read success.

5) After reading, check whether the monitor value in the variable table DB4 is the same as the value written in DB3

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	-00		DB_VAR[1]	Byte	1.0	16#0		V	1	4		
			DB_VAR[2]	Byte	2.0	16#0		V	V	¥		
	-		DB_VAR[3]	Byte	3.0	16#0		¥	V	1		
	-00		DB_VAR[4]	Byte	4.0	16#0		¥	1	¥		
	-00		DB_VAR[5]	Byte	5.0	16#0		V	V	V		
			DB_VAR[6]	Byte	6.0	16#0		V	V	¥		
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1	-00		DB_VAR[8]	Byte	8.0	16#0		¥	1	4		
2	-00		DB_VAR[9]	Byte	9.0	16#0		V	1	¥		
3	-		DB_VAR[10]	Byte	10.0	16#0		V	V	¥		
4	-		DB_VAR[11]	Byte	11.0	16#0		¥	V	¥		
5	-00		DB_VAR[12]	Byte	12.0	16#0		¥	1	4		
6	-00		DB_VAR[13]	Byte	13.0	16#0		V	1	¥		
7			DB_VAR[14]	Byte	14.0	16#0		¥	V	¥		
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1			DB_VAR[18]	Byte	18.0	16#0		¥	V	¥		
22	-		DB_VAR[19]	Byte	19.0	16#0		1	4	¥		
3	-00		DB_VAR[20]	Byte	20.0	16#0		¥	1	4		
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NOTE:

1. The prerequisite for triggering the execution of "Start" is that the TAG signal is 1, the work completion signal is 1, and the error flag bit is 0. Otherwise, FB cannot run normally.

2. For read and write operations, the signal given to "start" must be a rising edge signal.

3. The maximum byte number processed by the FB block of read/write head is 1024 bytes. However, pay attention to the maximum capacity of the tag. If the operation exceeds the maximum capacity of the tag, an error is reported.

4. The reading success rate of the read/write head is closely related to the label sensitivity, the environment around the read/write head, the installation mode of the read/write head, and whether metal objects reflect electromagnetic waves.