HITACHI
Inspire the Next

HITACHI IJ Printer

Model UX2

Communication User's Manual (Modbus)

- Before using the printer, thoroughly read this communication user's manual for optimum printer use.
- After reading this communication user's manual, properly keep it for future reference.

Hitachi Industrial Equipment Systems Co., Ltd.

To export the product, check the export control-related regulations, such as the Foreign Exchange and Foreign Trade Law and the Export Administration Regulations, and follow the necessary procedures.
If you have any questions, contact your Hitachi sales representative.

January 2025 (rev. N)

Contents

1. Modbus communication

1.1 Overview

Function that supports Modbus protocol. Modbus protocol specifications have been globally disclosed.

Modbus protocol is one of the most common types of communication protocol.

Modbus protocol does not support messages autonomously output by the IJ Printer such as status or printing contents.

1.2 Usage precautions

(1) Modbus communication cannot be combined with the options in the table below.

List of functions which are not operational during the use of this modbus communication

No.	Option
1	Soft option SOP-08 "Barcode Reader Connection"

(2) Functions listed below are not operational during the use of this modbus communication.

List of functions which are not operational during the use of this modbus communication

No.	Screen	Item	Remark
1	Communication environment set up	Data exchange	[Reflect at once] Fixed

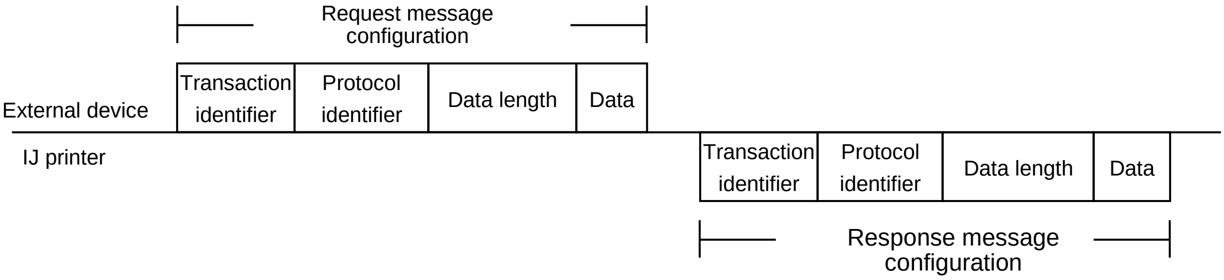
(3) Functions listed below are not supported by this modbus communication.

List of functions which are not supported by this modbus communication

No.	Option
1	More than one of Calendar/Count blocks cannot be set in one item.

(4) Don’t write address not listed to register map (Including reserve area).

1.3 Transmission procedure



No.	Name	Size	Setting range	Description
1	Transaction identifier	2 bytes	0x0000 to 0xFFFF	The IJ Printer returns the transaction identifier received from external unit as it is. You should use the identifier to manage messages for external unit.
2	Protocol identifier	2 bytes	0x0000	Sets protocol identifier. Set protocol identifier to 0x0000. The IJ Printer returns the protocol identifier received from external unit as it is.
3	Data length	2 bytes	0x0000 to 0x00FF	Sets number of bytes for request data and response data.
4	Data	3 to 255 bytes	–	Because data configuration differs according to the function code specified, data size is variable. For data configuration, see 1.4 Message format.

1.4 Message format

(1) Function code

The IJ Printer supports the function code given in the following table.

Function code

No.	Function code	Function
1	0x10	Write Multiple Registers
2	0x06	Write Single Register
3	0x03	Read Holding Registers
4	0x04	Read Input Registers

(2) Message format for Write Multiple Registers (Function code: 0x10)

- Writes contents in the Holding Register to reflect it in the IJ Printer.
- The maximum number of bytes that can be written in the Holding Register per time is 246 bytes; if this number is exceeded, you must divide the data into smaller segments while updating the starting address each time.
- When the writing operation onto Holding Registers is made more than once, 0x0001 (Start) shall be written first on the control flag which is placed in the first address 0x0000 of Holding Registers. Then conduct writing more than once and finally write 0x0002 (Stop) onto the control flag. When 0x0002 (Stop) is written on the control flag, the data being written on Holding Registers will be reflected to IJ printer.

Request message configuration

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address. Set device address to 0x01.
2	Function code	1 byte	0x10	Sets function code (Write Multiple Registers).
3	Start address	2 bytes	0x0000 to 0xFFFF	Sets writing start address. Address is set in word units.
4	No. of words to be written	2 bytes	1 to 123	Sets number of words to be written.
5	No. of bytes to be written	1 byte	1 to 246	Sets number of bytes to be written.
6	Data to be written	2 to 246 bytes	0x0000 to 0xFFFF	Sets data to be written (variable length of 2 to 246 bytes). 0x00 is added to the end when data of uneven byte length is set.

Response message data configuration (normal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x10	Sets function code received as it is.
3	Start address	2 bytes	0x0000 to 0xFFFF	Sets start address received as it is.
4	No. of words to be written	2 bytes	1 to 123	Sets No. of words to be written received as it is.

Response message data configuration (abnormal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x90	Adds 0x80 to function code received.
3	Error code	1 byte	0x01 to 0x03	Sets error code. Error code differs according to cause.

(3) Message format for Write Single Register (Function code: 0x06)

- ●Write a content in the Holding Register to reflect it in the IJ Printer.
- ●The number of bytes that can be written in the Holding Register per time is fixed to 2 bytes.

Request message configuration

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address. Set device address to 0x01.
2	Function code	1 byte	0x06	Sets function code (Write Single Register).
3	Writing address	2 bytes	0x0000 to 0xFFFF	Sets writing address. Address is set in word units.
4	Data to be written	2 bytes	0x0000 to 0xFFFF	Sets data to be written.

Response message data configuration (normal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x06	Sets function code received as it is.
3	Writing address	2 bytes	0x0000 to 0xFFFF	Sets writing address received as it is.
4	Data to be written	2 bytes	0x0000 to 0xFFFF	Sets data to be written received as it is.

Response message data configuration (abnormal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x86	Adds 0x80 to function code received.
3	Error code	1 byte	0x01 to 0x03	Sets error code. Error code differs according to cause.

(4) Message format for Read Holding Registers (Function code: 0x03)

- This function will be used to read the item data of IJ printer, which is readable and writable.
- The maximum number of bytes that can be read in the Holding Register per time is 250 bytes; if this number is exceeded, you must divide the data into smaller segments while updating the starting address each time.

Request message configuration

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address. Set device address to 0x01.
2	Function code	1 byte	0x03	Sets function code (Read Holding Registers).
3	Start address	2 bytes	0x0000 to 0xFFFF	Sets reading start address. Address is set in word units.
4	No. of words to be read	2 bytes	1 to 125	Sets number of words to be read.

Response message data configuration (normal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x03	Sets function code received as it is.
3	No. of bytes to be read	1 byte	2 to 250	Sets number of data bytes to be read.
4	Data to be read	2 to 250 bytes	0x0000 to 0xFFFF	Sets data to be read (variable length of 2 to 250 bytes).

Response message data configuration (abnormal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x83	Adds 0x80 to function code received.
3	Error code	1 byte	0x01 to 0x03	Sets error code. Error code differs according to cause.

(5) Message format for Read Input Registers (Function code: 0x04)

- This function will be used to read the item data of IJ printer, which is read only, or used to read the status of IJ printer.
- The maximum number of bytes that can be read in the Input Register per time is 250 bytes.
  if this number is exceeded, you must divide the data into smaller segments while updating the starting address each time.

Request message configuration

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address. Set device address to 0x01.
2	Function code	1 byte	0x04	Sets function code (Read Input Registers).
3	Start address	2 bytes	0x0000 to 0xFFFF	Sets reading start address. Address is set in word units.
4	No. of words to be read	2 bytes	1 to 125	Sets number of words to be read.

Response message data configuration (normal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x04	Sets function code received as it is.
3	No. of bytes to be read	1 byte	2 to 250	Sets number of data bytes to be read.
4	Data to be read	2 to 250 bytes	0x0000 to 0xFFFF	Sets data to be read (variable length of 2 to 250 bytes).

Response message data configuration (abnormal)

No.	Name	Size	Range	Description
1	Device address	1 byte	0x01	Sets device address received as it is.
2	Function code	1 byte	0x84	Adds 0x80 to function code received.
3	Error code	1 byte	0x01 to 0x03	Sets error code. Error code differs according to cause.

(6) Error code

Error code

No.	Name	Code	Conditions
1	Illegal function code	0x01	Function code not yet supported is set.
2	Illegal address	0x02	Illegal address is set.
3	Illegal data	0x03	Illegal data is set.

(7) External communication error

External communication error

No.	Name	Conditions
1	External communication error 042	Communication was conducted when the printer is offline.
		Communication was conducted during stop processing.
		Unsupported function code was received.
2	External communication error 043	An illegal address was received.
		An illegal number of words or bytes was received.
3	External communication error 044	Received data is out of specification.

1.5 Data configuration

Data configuration of Holding Registers and Input Registers for IJ Printer is indicated.

(1) Holding Registers

Holding Registers are the area which is written by Write Multiple Registers (0x10) or Write Single Register (0x06) and read by Read Holding Registers (0x03).

The item data which can be set to IJ printer or can be obtained from IJ printer are all placed in Holding Registers.

Holding Registers can be read and be written by one (1) word (2 bytes) at every address.

Holding Register data configuration（1/10）

Word address	Classification	Item name	Setting range	Contents
00 00	Index	Start/Stop control flag	1, 2	Start/Stop flag is used when Holding Register is written more than once. First write “ 1 ” and write Holding Registers more than once and finally write “2”. Then all the written contents will be reflected to IJ Printer. Start/Stop flag is not used when Holding Register is written only once. [1:Start, 2:Stop]
00 01 … 00 07		Reserve_1 … Reserve_7	-	"Reserve" is not initially provided, but may be added in future.
00 08		Number of the printing items	1 to 100	Set the number of the printing items used.
00 09 … 00 0F		Reserve_1 … Reserve_7	-	"Reserve" is not initially provided, but may be added in future.
00 10		Specify Print job registration number	0 to 2000	Set Print job information at Input Register address 0x0E40, which Print job registration number is specified here. When “0” is specified, the print job information of the print job which is being edited will be set.
00 11		Specify Character position for the Inter-character space obtained.	1 to 1000	Set Inter-character space at Input Register address 0x0EF1, which Character position is specified here.
00 12 … 00 1F		Reserve_1 … Reserve_14	-	"Reserve" is not initially provided, but may be added in future.
00 20	Print contents	Character count (Print item 1)	1 to 1000	Sets the character count for each print item.
00 21		Character count (Print item 2)	1 to 1000	
…		…	…	
00 82		Character count (Print item 99)	1 to 1000	
00 83		Character count (Print item 100)	1 to 1000	
00 84		Attribute (1st digit)	0x0000 to 0xFFFF	Set the characters of Print contents. Character codes are the same as those which are used in Standard communication. Please refer to Communication User's Manual(Serial). In case of setting Calendar/Count characters, set to Character attribute, or if they are NOT Calendar/Count characters, set to Character code.
00 85		Character code (1st digit)	0x0020 to 0xFFFF	
…		…	…	
08 52		Attribute (1000th digit)	0x0000 to 0xFFFF	
08 53		Character code (1000th digit)	0x0020 to 0xFFFF	
08 54 … 0F FF		Reserve_1 … Reserve_1964	-	"Reserve" is not initially provided, but may be added in future.

Holding Register data configuration（2/10）

Word address	Classification	Item name	Setting range	Contents
10 00	Printings erasure	Printing erase item number	1 to 100	Sets the printing item number to erase printing contents.
10 01 … 10 05		Reserve_1 … Reserve_5	-	"Reserve" is not initially provided, but may be added in future.
10 06	Print data recall	Print data job number	1 to 2000	Set the registered print job number to be recalled.
10 07 … 10 0B		Reserve_1 … Reserve_5	-	"Reserve" is not initially provided, but may be added in future.
10 0C	Print data registration	Group number	0 to 99	Register the being edited print job by the specified Group number or by the registered print job number or by the job name.
10 0D		Print data job number	1 to 2000	
10 0E		Job name (1st digit)	0x0020 to 0xFFFF	
10 0F		Job name (2nd digit)	0x0020 to 0xFFFF	
…		…	…	
10 18		Job name (11th digit)	0x0020 to 0xFFFF	
10 19		Job name (12th digit)	0x0020 to 0xFFFF	
10 1A … 10 1F		Reserve_1 … Reserve_6	…	"Reserve" is not initially provided, but may be added in future.
10 20	Print format	Line count / print format uniformity	0, 1	Line count of all columns are made uniform based on the first column.
10 21		Insert column	1 to 100	Adds a column directly before the editing objective column.
10 22		Delete column	1 to 100	Deletes all the print items of the editing objective column.
10 23		Add column	1 to 100	Adds a column at the end.
10 24		Individual column setup (Column position)	1 to 100	Changing the number of lines of the editing objective column.
10 25		Individual column setup (Line count)	1 to 6	
10 26 10 27		Reserve_1 Reserve_2	-	"Reserve" is not initially provided, but may be added in future.
10 28		Adjust Inter-character space (Start)	1 to 1000	Inter-character space can be set in character units.
10 29		Adjust Inter-character space (End)	1 to 1000	
10 2A		Adjust Inter-character space (Setting value)	0 to 28	
10 2B … 10 3E		Reserve_1 … Reserve_20	-	"Reserve" is not initially provided, but may be added in future.

Holding Register data configuration（3/10）

Word address	Classification	Item name	Setting range	Contents
10 3F	Print format	Format Setup	1, 3	Sets the Format Setup. 1:Individual setup, 3:Free layout
10 40		Line count	1 to 6	Sets the line count of the print item 1.
10 41		Line spacing	0 to 4	Sets the line spacing of the print item 1.
10 42		Character size	1 to 15, 20	Sets the character size of the print item 1. 1:4x5, 2:5x5, 3:5x7(8), 4:9x7(8), 5:7x10, 6:10x12, 7:12x16, 8:18x24, 9:24x32, 10:11x11, 11:5x3(chimney), 12:5x5(chimney), 13:7x5(chimney), 14:30x40, 15:36x48, 20:QR33
10 43		Inter character space	0 to 28	Sets the inter-character space of the print item 1.
10 44		Bold	1 to 9	Sets the bold of the print item 1.
10 45		Bar code	0 to 35	Sets the bar code of the print item 1. 0:none, 1:code 39, 2:ITF, 3:NW-7, 4:EAN-13, 5:DM8x32, 6:DM16x16, 7:DM16x36, 8:DM16x48, 9:DM18x18, 10:DM20x20, 11:DM22x22, 12:DM24x24, 13:code 128-B,14:code 128-C, 15:UPC-A, 16:UPC-E, 17:EAN-8, 18:QR21x21, 19:QR25x25, 20:QR29x29, 21:QR33x33, 22:EAN-13add-on5, 23:μQR15x15,24:GS1-Lim, 25:GS1-Omn, 26:GS1-Sta, 27:DM14x14, 28:DotCode(vertical 7/8 dot), 29:DotCode(vertical 10 dot), 30:DotCode(vertical 12 dot), 31:DotCode(vertical 14 dotﾄ), 32:DotCode(vertical 16 dot), 33:DM12x12, 34:ITF(2dot), 35:DM12x26
10 46		EAN readable code	0 to 2	Sets the EAN readable code of the print item 1. 0:none, 1:5x5, 2:5x7
10 47		EAN Prefix	0 to 99	Sets the EAN prefix of the print item 1.
10 48		Calendar block No.	0 to 8	When writing, setting is NOT required. When reading, Block information can be obtained item by item.
10 49		Calendar block count	0 to 8	
10 4A		Count block No.	0 to 8	
10 4B		Count block count	0 to 8	
10 4C		Horizontal (X)	0 to 31999	Valid when Free layout is set. Sets the coordinate of the print item 1.
10 4D		Vertical (Y)	0 to 29	
10 4E … 10 57		Reserve_1 Reserve_10	-	"Reserve" is not initially provided, but may be added in future.
10 58 … 19 9F		Print format (Print item 2) … Print format (Print item 100)	-	Item 2 through 100 will be set in the same configuration as those of Item 1 (Address: from 0x1040 to 0x1057).

Holding Register data configuration（4/10）

Word address	Classification	Item name	Setting range	Contents
19 A0	Print specification	Character height	0 to 99	Sets the character height.
19 A1		Ink drop use	1 to 16	Sets the ink drop use.
19 A2		High-speed print	Nozzle diameter (65μm) 0 to 6 (40μm) 0 to 3 (55μm) 0 to 7	Sets the high-speed print. Nozzle diameter(65μm) 0:HM, 1:NM, 2:QM, 3:SM, 4:D1, 5:Reserve, 6:D3 Nozzle diameter(40μm) 0:HM, 1:Reserve, 2:QM, 3:SM Nozzle diameter(55μm) 0:M1, 1:M2, 2:M3, 3:M4, 4:M5, 5:M6, 6:M7, 7:D1
19 A3		Character width	0 to 3999	Sets the character width.
19 A4		Character orientation	0 to 3	Sets the character orientation.
19 A5		Print start delay	0 to 9999	Sets the print start delay.
19 A6		Reverse direction	0 to 9999	Sets the reverse direction.
19 A7		Product speed matching	0 to 3	Sets the product speed matching. 0:None, 1:Encoder, 2:Auto, 3:Encoder(enhance)
19 A8		Pulse rate division factor	1 to 999	Sets the pulse rate division factor.
19 A9		Speed compensation	0, 1	Sets the speed compensation. 0:Disable, 1:Enable
19 AA		Line speed	0 to 9999	Sets the line speed. Set value is multiplied by 1/10 and reflected to IJ Printer. (Example : 1234 = 123.4 m/min.)
19 AB		Distance between print head and work	0 to 99	Sets the distance between print head and work.
19 AC		Length of the object to be printed	0 to 9999	Sets the length of the printed object.
19 AD		Printing length	0 to 9999	Sets the length of the print.
19 AE		Repeat count	0 to 9999	Sets the repeat count.
19 AF 19 B0		Repeat intervals	0 to 99999	Sets the repeat intervals.
19 B1		Target sensor timer	0 to 999	Sets the target sensor timer.
19 B2		Target sensor filter	0, 1	Sets the target sensor filter. 0:Time setup, 1:Until end of print.
19 B3		Target sensor filter value	0 to 9999	Sets the target sensor filter value.
19 B4		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
19 B5		Speed compensation fine control	-50 to 50	Sets the speed compensation fine control.
19 B6		Leading character width control	0, 1	Sets the leading character width control.
19 B7		First row width (Leading character width control)	0 to 32	Sets the first row width (Leading character width control).
19 B8		Second row width (Leading character width control)	0 to 32	Sets the second row width (Leading character width control).
19 B9 … 19 BF		Reserve_1 … Reserve_7	-	"Reserve" is not initially provided, but may be added in future.

Holding Register data configuration（5/10）

<table>
<tr><th>Word address</th><th>Classification</th><th>Item name</th><th>Setting range</th><th>Contents</th></tr>
<tr><td>19 C0</td><td rowspan="25">Calendar condition</td><td>Offset (Year)</td><td>0 to 99</td><td rowspan="5">Sets the offset of the Calendar block 1.</td></tr>
<tr><td>19 C1</td><td>Offset (Month)</td><td>0 to 99</td></tr>
<tr><td>19 C2</td><td>Offset (Day)</td><td>0 to 1999</td></tr>
<tr><td>19 C3</td><td>Offset (Hour)</td><td>-23 to 99</td></tr>
<tr><td>19 C4</td><td>Offset (Minute)</td><td>-59 to 99</td></tr>
<tr><td>19 C5</td><td>Zero-suppression (Year)</td><td>0 to 2</td><td rowspan="5">Sets the zero-suppression of the Calendar block 1.
0:Disable, 1:Enable(Space)
2:Enable(Character fill)</td></tr>
<tr><td>19 C6</td><td>Zero-suppression (Month)</td><td>0 to 2</td></tr>
<tr><td>19 C7</td><td>Zero-suppression (Day)</td><td>0 to 2</td></tr>
<tr><td>19 C8</td><td>Zero-suppression (Hour)</td><td>0 to 2</td></tr>
<tr><td>19 C9</td><td>Zero-suppression (Minute)</td><td>0 to 2</td></tr>
<tr><td>19 CA</td><td>Substitution rules (Year)</td><td>0, 1</td><td rowspan="5">Sets the substitution rules of the Calendar block 1.
0:Disable, 1:Enable</td></tr>
<tr><td>19 CB</td><td>Substitution rules (Month)</td><td>0, 1</td></tr>
<tr><td>19 CC</td><td>Substitution rules (Day)</td><td>0, 1</td></tr>
<tr><td>19 CD</td><td>Substitution rules (Hour)</td><td>0, 1</td></tr>
<tr><td>19 CE</td><td>Substitution rules (Minute)</td><td>0, 1</td></tr>
<tr><td>19 CF</td><td>Substitution rules No.</td><td>1 to 99</td><td>Sets the substitution rules No. of the Calendar block 1.</td></tr>
<tr><td>19 D0</td><td>Substitution rules (Week number)</td><td>0, 1</td><td>Sets the substitution rules of the Calendar block 1.</td></tr>
<tr><td>19 D1</td><td>Zero-suppression (Week number)</td><td>0 to 2</td><td>Sets the zero-suppression of the Calendar block 1.</td></tr>
<tr><td>19 D2</td><td>Substitution rules (Day of week)</td><td>0, 1</td><td>Sets the substitution rules of the Calendar block 1.</td></tr>
<tr><td>19 D3</td><td>Zero-suppression (Day of week)</td><td>0 to 2</td><td>Sets the zero-suppression of the Calendar block 1.</td></tr>
<tr><td>19 D4</td><td>Output during calendar updating Trigger
(Function item for SOP-05)</td><td>0, 1</td><td>[1] Fixed</td></tr>
<tr><td>19 D5
…
19 DF</td><td>Reserve_1
…
Reserve_11</td><td>-</td><td>"Reserve" is not initially provided, but may be added in future.</td></tr>
<tr><td>19 E0
…
19 FF</td><td>Calendar condition
(Calendar block 2)</td><td rowspan="3">-</td><td rowspan="3">Block 2 through 8 will be set in the same configuration as those of Block 1 (Address: from 0x19C0 to 0x19DF).</td></tr>
<tr><td>…</td><td>…</td></tr>
<tr><td>1A A0
…
1A BF</td><td>Calendar condition
(Calendar block 8)</td></tr>
<tr><td>1A C0
…
1C D3</td><td>Reserve</td><td>Reserve_1
…
Reserve_532</td><td>-</td><td>"Reserve" is not initially provided, but may be added in future.</td></tr>
</table>

Holding Register data configuration（6/10）

Word address	Classification	Item name	Setting range	Contents
1C D4	Time count condition	Range (Lower limit) (1st digit)	0x0020 to 0xFFFF	Sets the range (Lower limit).
1C D5		Range (Lower limit) (2nd digit)	0x0020 to 0xFFFF	
1C D6		Range (Lower limit) (3rd digit)	0x0020 to 0xFFFF	
1C D7		Range (Upper limit) (1st digit)	0x0020 to 0xFFFF	Sets the range (Upper limit).
1C D8		Range (Upper limit) (2nd digit)	0x0020 to 0xFFFF	
1C D9		Range (Upper limit) (3rd digit)	0x0020 to 0xFFFF	
1C DA		Reset (1st digit)	0x0020 to 0xFFFF	Sets the reset.
1C DB		Reset (2nd digit)	0x0020 to 0xFFFF	
1C DC		Reset (3rd digit)	0x0020 to 0xFFFF	
1C DD		Reset time	0 to 23	Sets the reset time.
1C DE		Renewal period	0 to 5	Sets the renewal period. 0:5 minutes, 1:6 minutes, 2:10 minutes 3:15 minutes, 4:20 minutes, 5:30 minutes
1C DF		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
1C E0	Shift code setup	Start hour	0 to 23	Sets the start time of the shift code rule 1.
1C E1		Start minute	0 to 59	
1C E2		End hour	0 to 23	Sets the end time of the shift code rule 1.
1C E3		End minute	0 to 59	
1C E4		Shift code character (1st digit)	0x0020 to 0xFFFF	Sets the shift code character of the shift code rule 1.
…		…	…	
1C ED		Shift code character (10th digit)	0x0020 to 0xFFFF	
1C EE		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
1C EF		Reserve_2		
1C F0		Shift code rule (Rule 2)	-	Shift code 2 through 48 will be set in the same configuration as those of Shift code 1 (Address: from 0x1CE0 to 0x1CEF).
1C FF				
…		…		
1F D0		Shift code rule (Rule 48)		
1F DF				

Holding Register data configuration（7/10）

Word address	Classification	Item name	Setting range	Contents
1F E0	Count condition	Value (1st digit)	0x0020 to 0xFFFF	Sets the value of the count block 1.
…		…	…	
1F F3		Value (20th digit)	0x0020 to 0xFFFF	
1F F4		Range (Lower limit) (1st digit)	0x0020 to 0xFFFF	Sets the range (Lower limit) of the count block 1.
…		…	…	
20 07		Range (Lower limit) (20th digit)	0x0020 to 0xFFFF	
20 08		Range (Upper limit) (1st digit)	0x0020 to 0xFFFF	Sets the range (Upper limit) of the count block 1.
…		…	…	
20 1B		Range (Upper limit) (20th digit)	0x0020 to 0xFFFF	
20 1C		Update (In progress)	0 to 999998	Sets the update (In progress) of 20 1D the count block 1.
20 1D				
20 1E		Update (Units)	1 to 999999	Sets the update (Units) of the 20 1F count block 1.
20 1F				
20 20		Increment	1 to 99	Sets the increment of the count block 1.
20 21		Direction	0, 1	Sets the direction of the count block 1. 0:up, 1:down
20 22		Jump (from) (1st digit)	0x0020 to 0xFFFF	Sets the jump (from) of the count block 1.
…		…	…	
20 35		Jump (from) (20th digit)	0x0020 to 0xFFFF	
20 36		Jump (to) (1st digit)	0x0020 to 0xFFFF	Sets the jump (to) of the count block 1.
…		…	…	
20 49		Jump (to) (20th digit)	0x0020 to 0xFFFF	
20 4A		Reset (1st digit)	0x0020 to 0xFFFF	Sets the reset of the count block 1.
…		…	…	
20 5D		Reset (20th digit)	0x0020 to 0xFFFF	
20 5E		Reset signal (Function item for SOP-05)	0 to 2	Sets the reset signal of the count block 1. 0:Disable, 1:Signal 1, 2:Signal 2
20 5F		External signal count (Function item for SOP-05)	0, 1	Sets the external signal count of the count block 1. 0:Disable, 1:Enable

Holding Register data configuration（8/10）

Word address	Classification	Item name	Setting range	Contents
20 60	Count condition	Zero-suppression	0, 1	Sets the zero-suppression of the count block 1. 0:Disable, 1:Enable
20 61		Multiplier (1st digit)	0x0020 to 0x0039	Sets the multiplier of the count block 1. Numeric:0x0031 to 0x0039 Decimal point:0x002E, Space:0x0020
…		…	…	
20 6A		Multiplier (10th digit)	0x0020 to 0x0039	
20 6B		Count skip (1st digit)	0x0020 to 0xFFFF	Sets the count skip of the count block 1.
…		…	…	
20 6F		Count skip (5th digit)	0x0020 to 0xFFFF	
20 70 … 20 73		Reserve_1 … Reserve_4	-	"Reserve" of the count block 1. "Reserve" is not initially provided, but may be added in future.
20 74 … 21 07		Count condition (Count block 2)	-	Block 2 through 8 will be set in the same configuration as those of Block 1 (Address: from 0x1FE0 to 0x2073).
…		…		
23 EC … 24 7F		Count condition (Count block 8)		
24 80	Adjust print parameters	Calendar offset	0, 1	Sets the calendar offset. 0:Offset from yesterday, 1:From today
24 81		DIN print	0, 1	Sets the DIN print 0:Disable, 1:Enable
24 82		EAN Prefix	0, 1	Sets the EAN prefix. 0:Edit job, 1:Print format
24 83		Barcode printing	0, 1	Sets the barcode printing. 0:Normal, 1:Reverse
24 84		QR Error correction level	0, 1	Sets the QR error correction level. 0:M (15%), 1:Q (25%)
24 85 … 24 8F		Reserve_1 … Reserve_11	-	"Reserve" is not initially provided, but may be added in future.
24 90	On-line/Off-line	On-line / Off-line	0, 1	Change the on-line or off-line. 0:Offline, 1:Online
24 91 … 24 93		Reserve_1 … Reserve_3	-	"Reserve" is not initially provided, but may be added in future.
24 94	Remote operation	Remote operation	0 to 4	Specifies remote operation to IJP. 0:Operation start 1:Operation stop 2:Deflection voltage control (ON) 3:Deflection voltage control (OFF) 4:Fault clear
24 95 … 24 97		Reserve_1 … Reserve_3	-	"Reserve" is not initially provided, but may be added in future.

Holding Register data configuration（9/10）

Word address	Classification	Item name	Setting range	Contents
24 98	Date / time setup	Current time (year)	2000 to 2037	Sets the current time.
24 99		Current time (month)	1 to 12	
24 9A		Current time (day)	1 to 31	
24 9B		Current time (hour)	0 to 23	
24 9C		Current time (minute)	0 to 59	
24 9D		Current time (second)	0 to 59	
24 9E		Calendar time control	0,1	Sets the calendar time control. 0:same as current time 1:clock stop
24 9F		Calendar time (year)	2000 to 2037	Sets the calendar time.
24 A0		Calendar time (month)	1 to 12	
24 A1		Calendar time (day)	1 to 31	
24 A2		Calendar time (hour)	0 to 23	
24 A3		Calendar time (minute)	0 to 59	
24 A4		Calendar time (second)	0 to 59	
24 A5		Clock system	0, 1	Sets the clock system. 0:24-hour clock, 1:12-hour clock
24 A6 … 24 AF		Reserve_1 … Reserve_10	-	"Reserve" is not initially provided, but may be added in future.
24 B0 … 25 AF	Reserve	Reserve_1 … Reserve_256	-	"Reserve" is not initially provided, but may be added in future.
25 B0	Operation management	Ink operating time	0 to 9999	Sets the ink operating time.
25 B1		Ink alarm time	0 to 9999	Sets the ink alarm time.
25 B2 25 B3		Print count	0 to 999999999	Sets the print count.
25 B4 … 25 B7		Reserve_1 … Reserve_4	-	"Reserve" is not initially provided, but may be added in future.
25 B8 … 25 BC	Reserve	Reserve_1 … Reserve_5	-	"Reserve" is not initially provided, but may be added in future.
25 BD	Cycle control	Remote Auto Circulation	0,1	Specifies remote operation to IJP. 0:none 1:Remote Auto Circulation
25 BE … 25 DF	Reserve	Reserve_1 … Reserve_34	-	"Reserve" is not initially provided, but may be added in future.
25 E0 … 25 EF	Manage jobs	Reserve_1 … Reserve_16	-	"Reserve" is not initially provided, but may be added in future.

Holding Register data configuration（10/10）

Word address	Classification	Item name	Setting range	Contents
25　F0	Manage jobs	Number to delete the stored job	1 to 2000	Deletes the stored job of the selected number.
25　F1 … 26　0F	Manage jobs	Reserve_1 … Reserve_31	-	"Reserve" is not initially provided, but may be added in future.
26　10 … FF　FF	Reserve	Reserve_1 … Reserve_55792	-	"Reserve" is not initially provided, but may be added in future.

(2) Input Registers

Input Registers are the area read by Read Input Registers (0x04). The item data is placed, which can be obtained from IJ Printer. Input Registers can be read by one (1) word (2 bytes) at every address.

Input Register data configuration (1/7)

Word address	Classification	Item name	Setting range	Contents
00 00	Unit status	Communication connection status	0x0030／0x0031	Gets the communication connection status. 0x0030:Offline, 0x0031:Online
00 01		Receive enable/disable status	0x0030／0x0031	Gets the receive enable/disable status. 0x0030:Reception not possible 0x0031:Reception possible
00 02		Operation status	0x0000 to 0xFFFF	Gets the operation status. Status can be obtained by use of the same code as that of the Status output of SOP-04 (Special Communication Function A). Refer to Software Option Specification SOP-04 for details.
00 03		Warning status	0x0000 to 0xFFFF	
00 04		Analysis information 1 (Function code)	0x0000 to 0xFFFF	Cause will be obtained when the external communication error occurred during Modbus communication. Refer to 1.6 (1) Details of Analysis information for details. ･Analysis information 1 Function code is obtained when error is caused. ･Analysis information 2 Classification code is obtained when error is caused. ･Analysis information 3 Error factor is obtained when error is caused. ･Analysis information 4 [0x0000] Fixed
00 05		Analysis information 2 (Classification code)	0x0000 to 0xFFFF	
00 06		Analysis information 3 (Error factor)	0x0000 to 0xFFFF	
00 07		Analysis information 4 (Preparation for future)	0x0000 to 0xFFFF	
00 08		Operation status (details)	0x0000 to 0xFFFF	Mainly obtains the same value as the Input Register address 0x0002 "Operation status". Input Register address 0x0002 "Operation status" obtains 0x0031 in "Standby", "Cover Open", "Drop Adjust", "Starting", "Ink Heating", and "Sleep", however, Input Register address 0x0008 "Operation status (details)" obtains the values as shown below. Starting: 0x00F0, Drop adjust: 0x00F1, Cover open: 0x00F2, Service: 0x00F3, Ink heating: 0x00F4, Sleep: 0x00F5
00 09 … 00 0F		Reserve_1 … Reserve_7	-	"Reserve" is not initially provided, but may be added in future.
00 10	Unit information	Type name(1st digit)	0x0020 to 0x007A	Gets the type name. Model name UX2-D160W is obtained when it is used.
00 11 … 00 1E		Type name(2nd digit) … Type name(15th digit)	0x0020 to 0x007A … 0x0020 to 0x007A	
00 1F		Type name(16th digit)	0x0020 to 0x007A	
00 20 00 21		Serial number	00000000 to 99999999	Gets the serial number.
00 22		Ink name(1st digit)	0x0030 to 0x007A	Gets the ink name. Ink type 1067K is obtained when it is used.
00 23 … 00 2A		Ink name(2nd digit) … Ink name(9th digit)	0x0030 to 0x007A … 0x0030 to 0x007A	
00 2B		Ink name(10th digit)	0x0030 to 0x007A	

Input Register data configuration (2/7)

Word address	Classification	Item name	Setting range	Contents
00 2C	Unit information	Input mode	1 to 3, 5	Gets the input mode. 1:Default, 2:Kana, 3:Special Kanji, 5:Traditional SP Kanji
00 2D		Maximum job length (Characters)	240 to 1000	Gets the maximum job length (Characters).
00 2E		Maximum registers	300 to 2000	Gets the maximum registers.
00 2F		2D code print	0, 1	Gets the 2D code print. 0:NOT supported, 1:supported
00 30		Character size	0x0000 to 0x0007	Gets the Settable sizes. Bit information is obtained for availability of Character size of 4x5 or 18x24 or 24x32. 0x0001:4x5, 0x0002:18x24 0x0004:24x32
00 31		Maximum calendar/count block count	3, 8	Gets the maximum calendar/count block count.
00 32		Replacement items	48, 99	Gets the replacement items.
00 33		Shift code/Time count	0, 1	Gets the shift code/time count. 0:NOT supported, 1:supported
00 34		Chimney/DIN print	0, 1	Gets the chimney/DIN print. 0:NOT supported, 1:supported
00 35		Maximum column	2 to 6	Gets the maximum column.
00 36 … 00 4F		Reserve_1 … Reserve_26	-	"Reserve" is not initially provided, but may be added in future.
00 50	Operation management	Ink operating time	0 to 9999	Gets the ink operating time.
00 51		Ink alarm time	0 to 9999	Gets the ink alarm time.
00 52 00 53		Print count	0 to 999999999	Gets the print count.
00 54 00 55		Cumulative operation time	0 to 999999	Gets the cumulative operation time.
00 56		Ink/makeup ink type	1 to 999	Gets the ink/makeup ink type.
00 57		Ink viscosity	0 to 999	Gets the ink viscosity.
00 58		Ink pressure	0 to 999	Gets the ink pressure. Ink pressure multiplied by 1000 is obtained. (Example : 255 = 0.255 MPa)
00 59		Ambient temperature	-99 to 100	Gets the ambient temperature.
00 5A		Deflection voltage	0 to 99	Gets the deflection voltage. Deflection Voltage multiplied by 10 is obtained. (Example : 57 = 5.7 kV)
00 5B		Excitation V-ref.	0 to 27	Gets the excitation V-ref.
00 5C		Excitation frequency	0 to 1000	Gets the excitation frequency. Excitation frequency multiplied by 10 is obtained. (Example : 689 = 68.9 kHz)
00 5D … 00 6F		Reserve_1 … Reserve_19	-	"Reserve" is not initially provided, but may be added in future.

Input Register data configuration (3/7)

Word address	Classification	Item name	Setting range	Contents
00 70	View alarm history	Fault/warning message count	0 to 90	Obtain the fault/warning message count, and updates the history data (Address: from 0x0074 to 0x0343) of up to latest 90 information. Unless this address is obtained, the history data does not update and the latest information cannot be obtained.
00 71 … 00 73		Reserve_1 … Reserve_3	-	"Reserve" is not initially provided, but may be added in future.
00 74		Generation time(year)	2000 to 2037	Gets the generation time of the message 1.
00 75		Generation time(month)	1 to 12	
00 76		Generation time(day)	1 to 31	
00 77		Generation time(hour)	0 to 23	
00 78		Generation time(minute)	0 to 59	
00 79		Generation time(second)	0 to 59	
00 7A		Fault/warning No.	1 to 999	Gets the fault/warning No. of the message 1.
00 7B		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
00 7C		Fault/warning message 2	-	Fault/warning history 02 through 90 are obtained in a same way as that of Fault warning history 01 (Address: from 0x0074 to 0x007B)
00 83				
…		…		
03 3C		Fault/warning message 90		
03 43				
03 44 … 0B BF	Reserve	Reserve_1 … Reserve_2172	-	"Reserve" is not initially provided, but may be added in future.

Input Register data configuration (4/7)

Word address	Classification	Item name	Setting range	Contents
0B C0	Circulation control	Ink concentration control	0, 1	Gets the ink concentration control. 0:Disable, 1:Enable
0B C1 … 0B CF		Reserve_1 … Reserve_15	-	"Reserve" is not initially provided, but may be added in future.
0B D0		Ink filter use time	0 to 65099	Gets the ink filter use time.
0B D1		Makeup filter use time	0 to 65099	Gets the makeup filter use time.
0B D2		Recovery filter use time	0 to 65099	Gets the recovery filter use time.
0B D3		Air filter use time	0 to 65099	Gets the air filter use time.
0B D4		Circulation filter use time	0 to 65099	Gets the circulation filter use time.
0B D5		MGV filter use time	0 to 65099	Gets the MGV filter use time.
0B D6		Supply pump use time	0 to 65099	Gets the supply pump use time.
0B D7		Heating unit use time	0 to 65099	Gets the heating unit use time.
0B D8		MV1 use time	0 to 65099	Gets the MV1 use time.
0B D9		MV2 use time	0 to 65099	Gets the MV2 use time.
0B DA		MV3 use time	0 to 65099	Gets the MV3 use time.
0B DB		MV4 use time	0 to 65099	Gets the MV4 use time.
0B DC		MV5 use time	0 to 65099	Gets the MV5 use time.
0B DD		MV6 use time	0 to 65099	Gets the MV6 use time.
0B DE		MV7 use time	0 to 65099	Gets the MV7 use time.
0B DF		MV8 use time	0 to 65099	Gets the MV8 use time.
0B E0		MV9 use time	0 to 65099	Gets the MV9 use time.
0B E1		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
0B E2		MV12 use time	0 to 65099	Gets the MV12 use time.
0B E3 0B E4		Ink consumption	0 to 999999	Gets the ink consumption.
0B E5 0B E6		Makeup consumption	0 to 999999	Gets the makeup consumption.
0B E7 0B E8		Print count	0 to 999999999	Gets the print count.
0B E9		R air filter use time	0 to 65099	Gets the R air filter use time.
0B EA		Reserve_1	-	"Reserve" is not initially provided, but may be added in future.
0B EB		Ink remaining level	0x0E (Empty) 0x01 to 0x06 0x0F (Full)	Gets the ink remaining level.
0B EC		Makeup remaining level	0x0E (Empty) 0x01 to 0x06 0x0F (Full)	Gets the makeup remaining level.
0B ED … 0C 1F		Reserve_1 … Reserve_51	-	"Reserve" is not initially provided, but may be added in future.

Input Register data configuration (5/7)

Word address	Classification	Item name	Setting range	Contents
0C 20	View software version	Basic software(1st digit)	0x0020 to 0xFFFF	Gets the basic software version. When the version is V01.00, "V01.00 Basic software" is obtained.
0C 21		Basic software(2nd digit)	0x0020 to 0xFFFF	
…		…	…	
0C 3E		Basic software(31st digit)	0x0020 to 0xFFFF	
0C 3F		Basic software(32nd digit)	0x0020 to 0xFFFF	
0C 40		Controller software(1st digit)	0x0020 to 0xFFFF	Gets the controller software version. When the version is V01.00, "V01.00 Controller software" is obtained.
0C 41		Controller software(2nd digit)	0x0020 to 0xFFFF	
…		…	…	
0C 5E		Controller software(31st digit)	0x0020 to 0xFFFF	
0C 5F		Controller software(32nd digit)	0x0020 to 0xFFFF	
0C 60		Print controller software E (1st digit)	0x0020 to 0xFFFF	Gets the print controller software E version. When the version is V01.00, "V01.00 Engine software E" is obtained.
0C 61		Print controller software E (2nd digit)	0x0020 to 0xFFFF	
…		…	…	
0C 7E		Print controller software E (31st digit)	0x0020 to 0xFFFF	
0C 7F		Print controller software E (32nd digit)	0x0020 to 0xFFFF	
0C 80 … 0C DF		Reserve_1 … Reserve_96	-	"Reserve" is not initially provided, but may be added in future.
0C E0		Software option01(1st digit)	0x0020 to 0xFFFF	Gets the software option version and symbol. When SOP-04 is installed and its version is V01.00, "V01.00 SOP-04" is obtained.
0C E1		Software option01(2nd digit)	0x0020 to 0xFFFF	
…		…	…	
0C FE		Software option01(31st digit)	0x0020 to 0xFFFF	
0C FF		Software option01(32nd digit)	0x0020 to 0xFFFF	
…		…	…	
0E 00		Software option10(1st digit)	0x0020 to 0xFFFF	
0E 01		Software option10(2nd digit)	0x0020 to 0xFFFF	
…		…	…	
0E 1E		Software option10(31st digit)	0x0020 to 0xFFFF	
0E 1F		Software option10(32nd digit)	0x0020 to 0xFFFF	
0E 20 … 0E 3F		Reserve_1 … Reserve_32	-	"Reserve" is not initially provided, but may be added in future.

Input Register data configuration (6/7)

Word address	Classification	Item name	Setting range	Contents
0E 40	Manage jobs	Print data job number	1 to 2000	When Print job registration number is specified at Holding Register address 0x0010, its Group number and Job name are obtained.
0E 41		Group number	0 to 99	
0E 42		Job name(1st digit)	0x0020 to 0xFFFF	
…		…	…	
0E 4D		job name(12th digit)	0x0020 to 0xFFFF	
0E 4E … 0E 52		Reserve_1 … Reserve_5	-	"Reserve" is not initially provided, but may be added in future.
0E 53		Print job registration (001)	0x0000 to 0xFFFF	Status of Print job registration (Registered or NOT) is obtained by bit information ON or OFF. Print job registration (001) shows 16 statuses of Print job registrations 1 through 16 starting from the upper bit. Subsequently, the same data structure as those of Print job registration (001) will follow.
…		…	…	
0E CF		Print job registration (125)	0x0000 to 0xFFFF	
0E D0 … 0E EF	Reserve	Reserve_1 … Reserve_32	-	"Reserve" is not initially provided, but may be added in future.

Input Register data configuration (7/7)

Word address	Classification	Item name	Setting range	Contents
0E F0	Various data	Current job data length	0 to 2000	Gets the job data length (Character count x 2) of the current job.
0E F1		Inter-character space (character units)	0 to 28	When Character position is specified at Holding Register address 0x0011, its Inter-character space will be obtained.
0E F2		Calendar block count	0 to 8	Gets the calendar block count of the current job.
0E F3		Calendar characters count (Calendar block 1)	0 to 20	Gets the calendar characters count for 8 blocks of the current job.
0E F4		Calendar characters count (Calendar block 2)	0 to 20	
…		…	…	
0E F9		Calendar characters count (Calendar block 7)	0 to 20	
0E FA		Calendar characters count (Calendar block 8)	0 to 20	
0E FB		Time count block No.	0 to 8	Gets the time count block No. of the current job.
0E FC		Shift code block No.	0 to 8	Gets the shift code block No. of the current job.
0E FD		Shift code rule count	0 to 48	Gets the shift code rule count of the current job.
0E FE		Count block count	0 to 8	Gets the count block count of the current job.
0E FF		Count characters count (Count block 1)	0 to 20	Gets the count characters count for 8 blocks of the current job.
0F 00		Count characters count (Count block 2)	0 to 20	
…			…	
0F 05		Count characters count (Count block 7)	0 to 20	
0F 06		Count characters count (Count block 8)	0 to 20	
0F 07 … 0F 0F		Reserve_1 … Reserve_9	-	"Reserve" is not initially provided, but may be added in future.
0F 10		Inter-character space (1st digit)	0 to 28	Gets the inter-character space for 1000 characters of the current job.
0F 11		Inter-character space (2nd digit)	0 to 28	
…		…	…	
12 F6		Inter-character space (999th digit)	0 to 28	
12 F7		Inter-character space (1000th digit)	0 to 28	
12 F8 … 13 0F	Reserve	Reserve_1 … Reserve_24	-	"Reserve" is not initially provided, but may be added in future.

1.6 Detail of Data configuration

(1) Details of Analysis information

When an error occurs in the external communication being conducted, the error cause can be obtained from the analysis information of IJ printer status available at Input Registers.

- Analysis information 1 (Function Code): Functional code of the communication message which resulted in error.
- Analysis information 2 (Classification code): Functional classification of the communication message which resulted in error.
- Analysis information 3 (Error factor): Cause which resulted in error.
- Analysis information 4 (Preparation for future): Reserved area for future use. 0x0000 fixed.

Code table of Analysis information

No.	Item	Code	Content
1	Analysis information 1 (Function code)	0x0010	Write on Holding Register
		0x0006	Write one word on Holding Register
		0x0003	Read Holding Register
		0x0004	Read Input Register
		Other than the above	Function code which is NOT available
2	Analysis information 2 (Classification code)	0x0000	No classification assigned
		0x0001	Index
		0x0002	Print description
		0x0003	Delete of Print contents
		0x0004	Print data Recall
		0x0005	Print data Register
		0x0006	Print format
		0x0007	Print specification
		0x0008	Calendar conditions
		0x0009	Substitution rules.
		0x000A	Time count
		0x000B	Shift code
		0x000C	Count conditions
		0x000D	Various print setup
		0x000E	Online/Offline
		0x000F	Remote operation
		0x0010	Time control
		0x0011	User environment setup (Preparation for future)
		0x0012	Touch screen setup
		0x0014	Operation management
		0x0015	Circulation control
		0x0016	Print data management
		0x0017	Group control
		0x0018	Editing Substitution rules
		0x001A	Print job control (Preparation for future)
		0x001B	User pattern (Fixed size)
		0x001C	User pattern (Free size)
3	Analysis information 3 (Error factor)	0x0001	Invalid Function code
		0x0002	Invalid Address
		0x0003	Invalid Data size
		0x0005	Invalid Offline
		0x0006	Invalid Job repeat print
		0x0007	Communication is NOT allowed when Ink ejection is stopped.
		0x0010	Invalid data
4	Analysis information 4 (Preparation for future)	0x0000	0x0000 fixed.

1.7 Modbus communication rule for IJ Printer

The Modbus communication rule for IJ printer is described. Please read them carefully and fully understand and use the IJ printer.

(1) When IJ Printer is Offline, Offline/Online switching and Read Input Registers are only available. In case of Read Holding Registers or Write Multiple/Single Register(s), please place IJ Printer Online.

(2) When Holding Registers which overlap the plural functional classifications are read/written by one communication message, it will NOT work correctly. If reading/writing operation of the Registers overlaps their functional classification, please separate the message into plural messages so that one message will NOT overlap plural functional classifications

(3) When IJ Printer receives Modbus communication, IJ Printer will reflect the contents of the message each time of communication. If plural writing operations are conducted, please use Start/Stop control flag which are placed at the leading address of Holding Registers.

(4) Start/Stop control flag will be used when the data more than 247 bytes are written on Holding Registers or when the writing operation is made on the Registers of which addresses are NOT consecutive. When the Start (0x0001) is written on Start/Stop control flag, the written data is held and there will be NO writing operation onto Holding Registers. When the Stop (0x0002) is written on Start/Stop control flag, all the data held on Holding Registers will be reflected to IJ Printer.

(5) Character codes are the same as those which are used in Standard communication.
Please refer to Communication User's Manual (Serial), for details.
In Modbus communication, Shift code characters and Time count characters can be also used and communicated. They are shown in the table below.

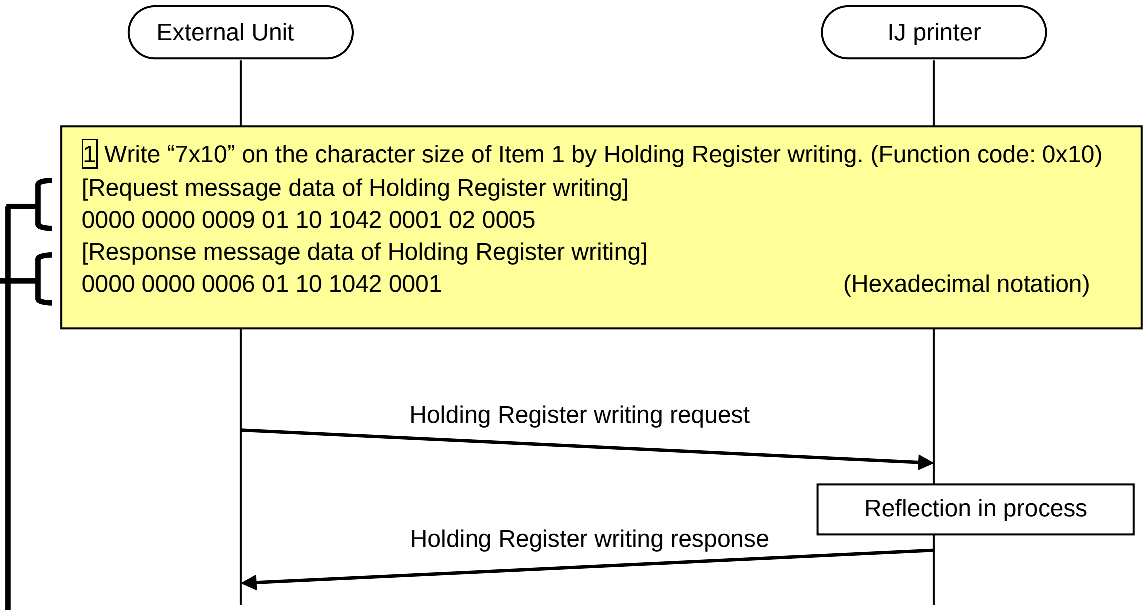
Shift code character	0xF25B	Time count character	0xF25C
Shift code start character	0xF26B	Time count start character	0xF26C
Shift code end character	0xF27B	Time count end character	0xF27C

(6) If the external signal was input for Print Data Recall, etc. when Read Holding Registers was conducted more than once, there is a possibility that the data before external signal input and the data after external signal input are mixed and the read result would be an unexpected data. Therefore, when Modbus communication and the external signals are used together, it is recommended to control the input timing of the external signal so that they will NOT overlap.

1.8 Examples of Transmission procedure

(1) In case of changing the character size of Item 1 to “7x10”:

Step 1. Write 7x10 on the character size of Item 1 by Holding Register writing.



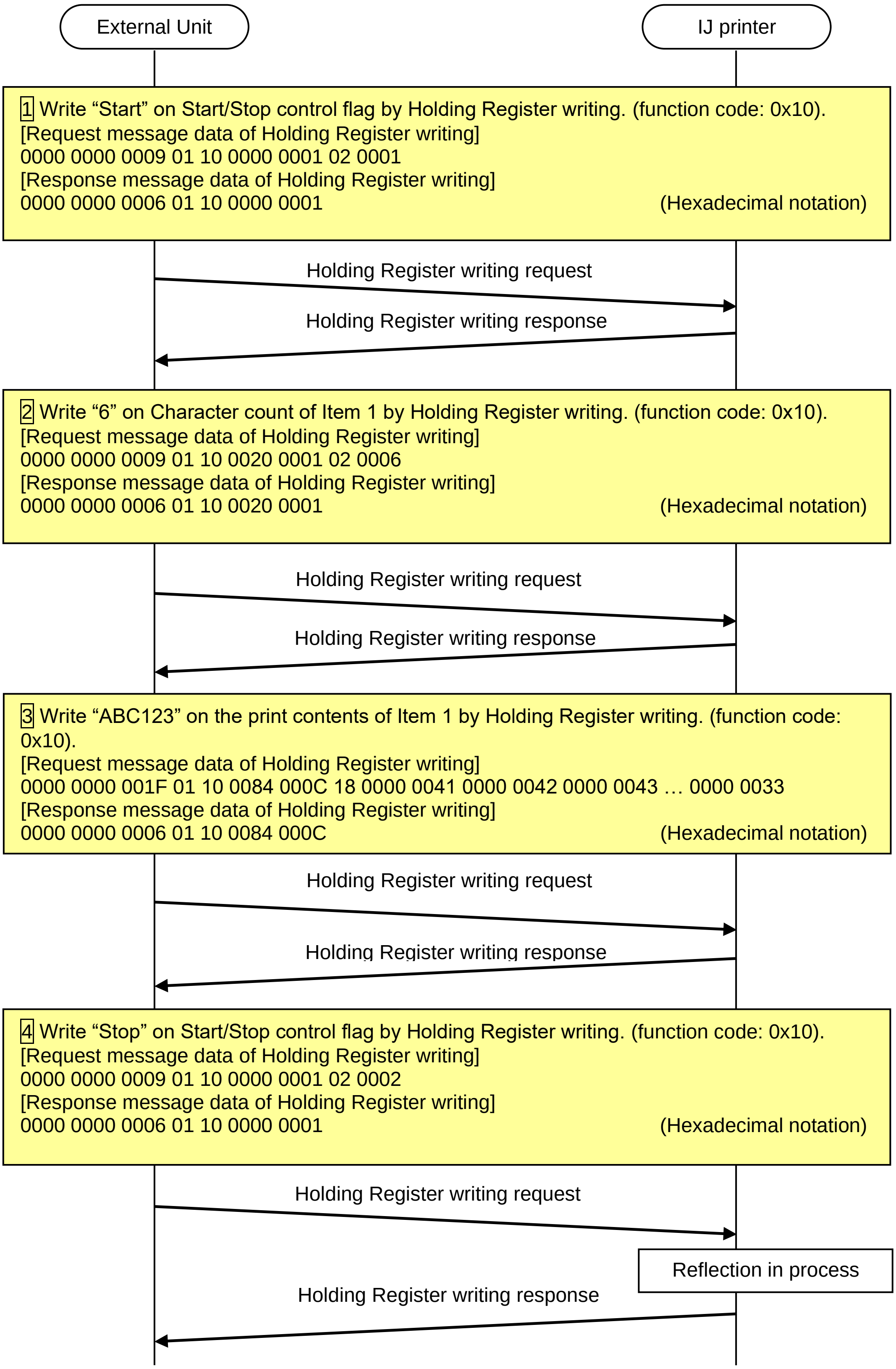
Contents of Request message

No.	Name		Request data
1	Transaction identifier		0x0000
2	Protocol identifier		0x0000
3	Data length		0x0009
4	Data	Device address	0x01
5		Function code	0x10
6		Start address	0x1042
7		No. of words to be written	0x0001
8		No. of bytes to be written	0x02
9		Data to be written	0x0005

Contents of Response message

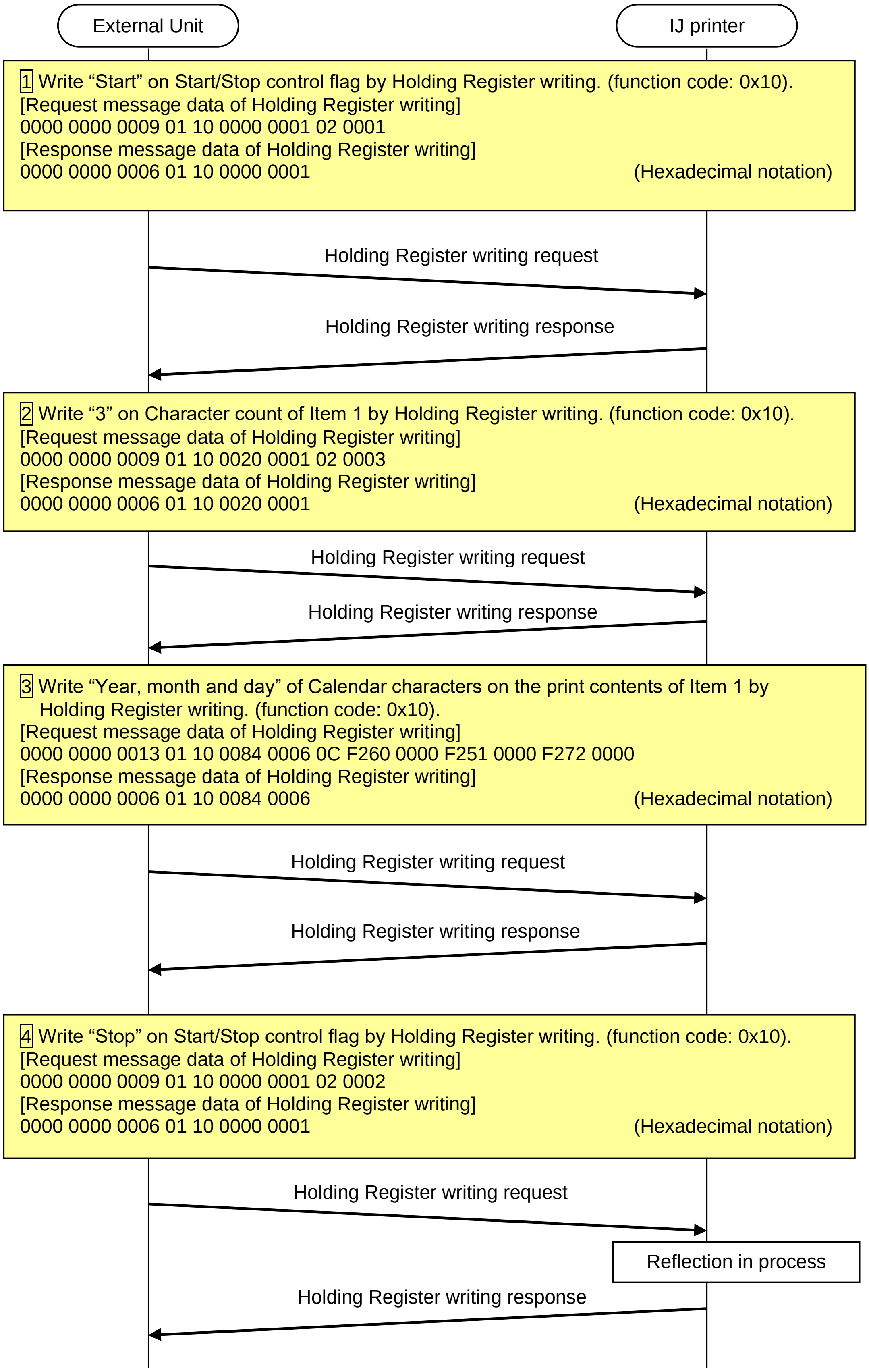
No.	Name		Response data
1	Transaction identifier		0x0000
2	Protocol identifier		0x0000
3	Data length		0x0006
4	Data	Device address	0x01
5		Function code	0x10
6		Start address	0x1042
7		No. of words to be written	0x0001

(2) In case of setting the print contents of Item 1 to "ABC123":
Step 1. Write “Start” on Start/Stop control flag by Holding Register writing.
Step 2. Write “6” on Character count of Item 1 by Holding Register writing.
Step 3. Write “ABC123” on the print contents of Item 1 by Holding Register writing.
Step 4. Write “Stop” on Start/Stop control flag by Holding Register writing.

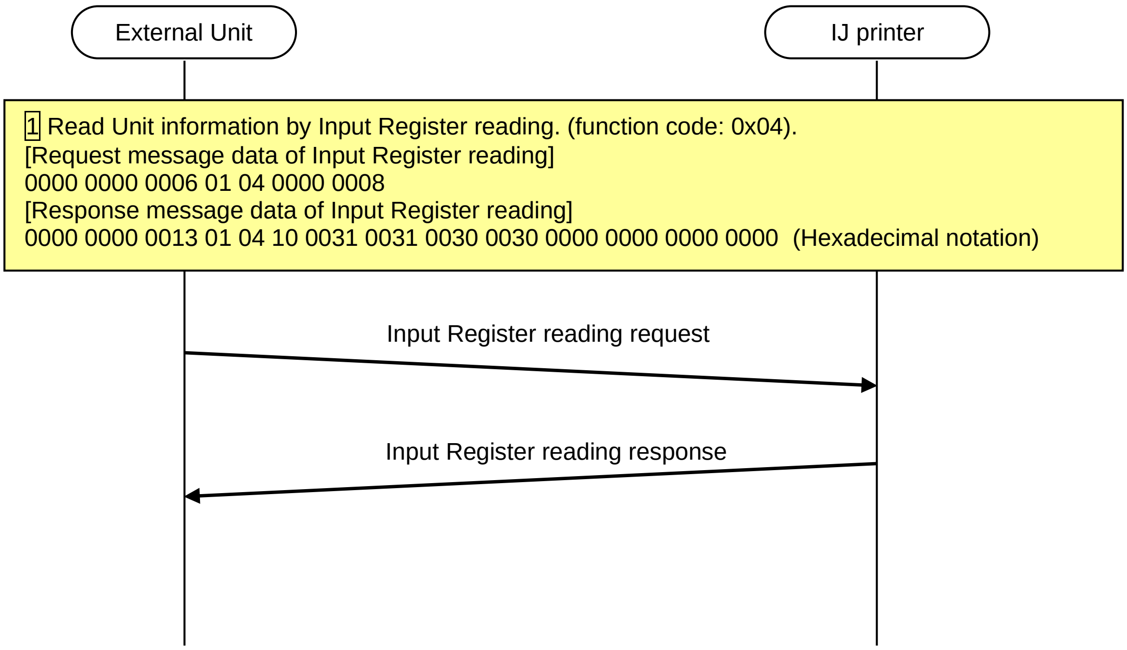


(3) In case of setting “Year, month and day” of Calendar characters on the print contents of Item1:

Step 1. Write “Start” on Start/Stop control flag by Holding Register writing.
Step 2. Write “3” on Character count of Item 1 by Holding Register writing.
Step 3. Write “Year, month and day” of Calendar characters on the print contents of Item 1 by Holding Register writing.
Step 4. Write “Stop” on Start/Stop control flag by Holding Register writing.



(4) In case of getting Unit information of IJ Printer:
Step 1. Read Unit information by Input Register reading.



1.9 Troubleshooting guide

In case IJ does not work correctly, please troubleshoot referring to the table below:

Phenomenon	Check	Solution
External device can NOT communicate to IJ Printer.	Is LAN cable properly connected to IJ Printer?	Confirm IJ Printer connection, referring to “Communication User's Manual(Common)”.
	Is IJ Printer’s main power switch turned ON?	Power ON IJ Printer’s main power switch.
	Is IJ Printer’s plug surely inserted into Power outlet? Is Power outlet activated?	First turn OFF the main switch. Confirm if the power outlet is activated or not. And then, insert the plug into the outlet.
	Is IJ Printer connected to LAN of the same network segment?	Set IJ Printer to an IP address of the same network segment.
	Is IP address which was set to IJ Printer the duplicate of other device on the network?	If there is a possibility of the duplicate IP address, please disconnect LAN cable and change IP address.
	Is communication blocked by the security software?	Please temporarily disable Firewall protection of Windows or the security software and retry.
	Is IP address or Port number properly set for external device?	Confirm setting of external device.
When IJ Printer is powered ON again, the data which was supposed to be changed is NOT changed.	Did you power OFF IJ Printer after ink ejection was stopped?	IJ Printer saves the data when ink ejection is stopped. Please power OFF IJ Printer after ink ejection stop process is complete. Data will NOT be held when data change is made via communication during stand-by.