CIE-H10 MODBUS/TCP

Sollae Systems Inc.

Table of context

1. CIE-H10 MODBUS/TCP.

1. CIE-H10 receive or transmit MODBUS data by using TCP/IP protocol
2. All requests and responses are sent or received on TCP port 502
3. MODBUS uses a 'big-endian' representation.
4. CIE-H10 only supports Class 0 functions of MODBUS
   - Class 0 is minimum useful set of funcions

Function	Code
Read multiple registers	Function code 3
Write multiple registers	Function code 16

2. Class 0 commands details.

2.1. MODBUS/TCP header

- The request and response are prefixed by six bytes as follows.

No.	Description
Byte0	Transaction identifier-copied by server – usually 0
Byte1	Transaction identifier-copied by server – usually 0
Byte2	Protocol identifier = 0
Byte3	Protocol identifier = 0
Byte4	Length field (upper byte) = 0 (since all messages are smaller than 256)
Byte5	Length field (lower byte) = number of bytes follwing

2.2. Read multiple registers

- Function code is 0x03(HEX).
- Read multiple registers command request.

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x03(HEX)
Byte2~3	Reference number. = The input or output port address of CIE-H10
Byte4~5	Word count (1 ~ 125)

  - The word count value would be 1 because CIE-H10 has 8 input/output ports.

- Read multiple registers command response

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x03(HEX)
Byte2	Byte count of response (B=2 x Word count)
Byte3~(B+2)	Register values

- The 0th port is the least significant bit of register values.
- If input values is presented to CIE-H10 then the bit of register values is changed to 1.

- Read multiple registers command exceptions

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x83(HEX)
Byte2	Exception code = 01 or 02

2.3. Write multiple registers

- Function code is 0x10(HEX).
- Write multiple registers command request.

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x10(HEX)
Byte2~3	Reference number. = The output port address of CIE-H10
Byte4~5	Word count (1 ~ 100)
Byte6	Byte count (B=2 x word count)
Byet7~(B+6)	Register values.

- The 0th port is the least significant bit of register values.
- If you want turn on output signal on CIE-H10 then change bit value to 1.

- Write multiple registers command response.

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x10(HEX)
Byte2~3	Reference number. = The output port address of CIE-H10
Byte4~5	Word count (1 ~ 100)

- Write multiple registers command exceptions.

No.	Description
Byte0	Unit identifier = The unit id of CIE-H10
Byte1	Function code = 0x90(HEX)
Byte2	Exception code = 01 or 02

3. Sample code.

3.1. CModBusEngine

- MODBUS/TCP main class.

3.1.1 Functions

1. SendReadRequest

- Read input / output port value from CIE-H10.
- Parameters

Transaction_id	Request transaction id
Unit_id	The unit id of CIE-H10
address	The input or output port address of CIE-H10

2. SendWriteRequest

- Write a value to output port of CIE-H10
- Parameters.

Transaction_id	Request transaction id
Unit_id	The unit id of CIE-H10
address	The output port address of CIE-H10
value	Output value.

3. OnReceive

- Process MODBUS/TCP response packet.