Modbus Communications Agreement

Serial port :8 bit data bit ,1 bit stop bit, no parity
Baud rate :1200,2400,4800,96

RTU mode

When the controller is set to communicate on a Modbus network in RTU(remote terminal unit) mode, each 8 bytes in the message contains two hexadecimal characters of 4 Bit. A major advantage of this approach is that, at the same baud rate, more data is transmitted than ASCII.

Code system

- **8-bit binary, hex 0...9, A...F**
- **Each 8-bit field in a message is a**

Bits per byte

- **1 starting position**
- **8 data bits, minimum valid bits sent first**
- **1 parity bit, none**
- **1 stop bit (with parity), 2 bits**

(without parity)

Error detection domain

- **CRC(cycle length detection)**

RTU frame

Using RTU mode, message sending starts at a pause interval of at least 3.5 characters. a variety of character times at network baud rates, which is most easily implemented (as shown in the T1-T2-T3-T4

below). The first domain of transmission is the device address. Can use the transfer character is hexadecimal 0...9, A...F. Network devices continuously detect network buses, including pause intervals. When the first domain (address domain) is received, each device decodes to determine whether it is sent to itself. After the last transfer character, a pause of at least 3.5 characters calibrates the end of the message. A new message can start after this pause.

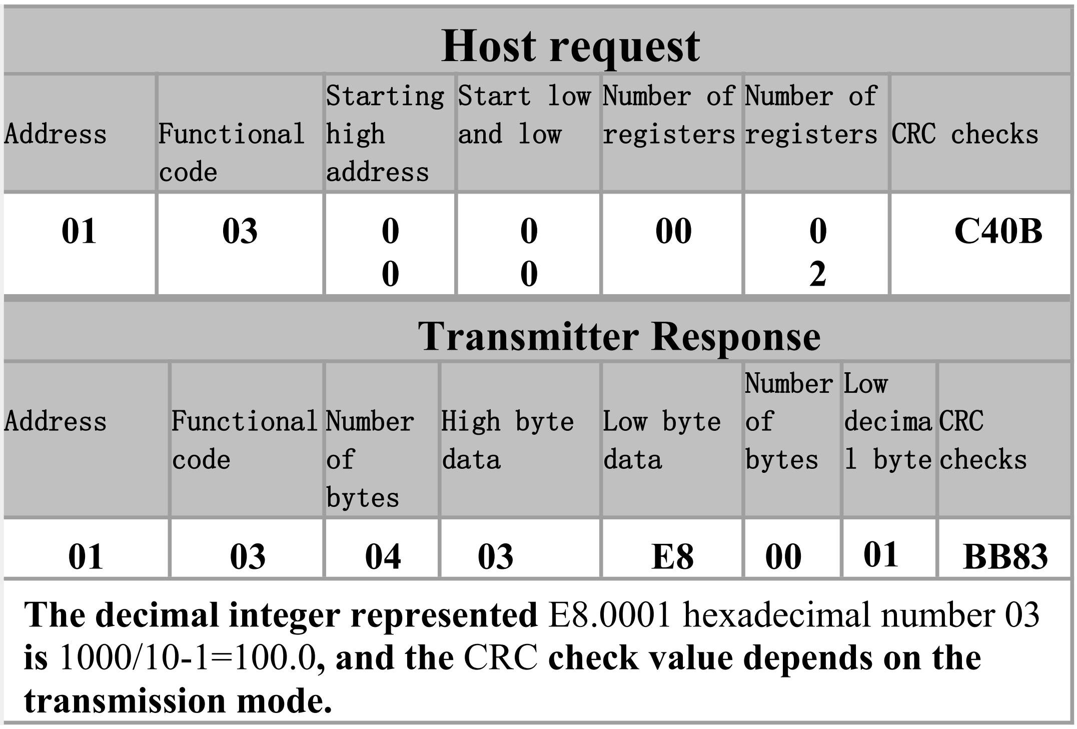
The entire message frame must be transmitted as a continuous flow.If there is a pause time of more than 1.5 characters before the frame is finished, the receiving set will refresh the incomplete message and assume that the next byte is the address domain of a new message. Similarly, if a new message starts with the previous message in less than 3.5 characters, the received device will consider it a continuation of the previous message. this will result in an error because the value in the last CRC domain can not be correct. A typical message frame is as follows:

Starting position	Device address	Functional code	Data	CRC checks	Terminator
T1-T2-T3-T4	8Bit	8Bit	n 8 Bit	16Bit	T1-T2-T3-T4

RTU message frames

RTU example of reading PV parameter data

Example 1. Read the PV value

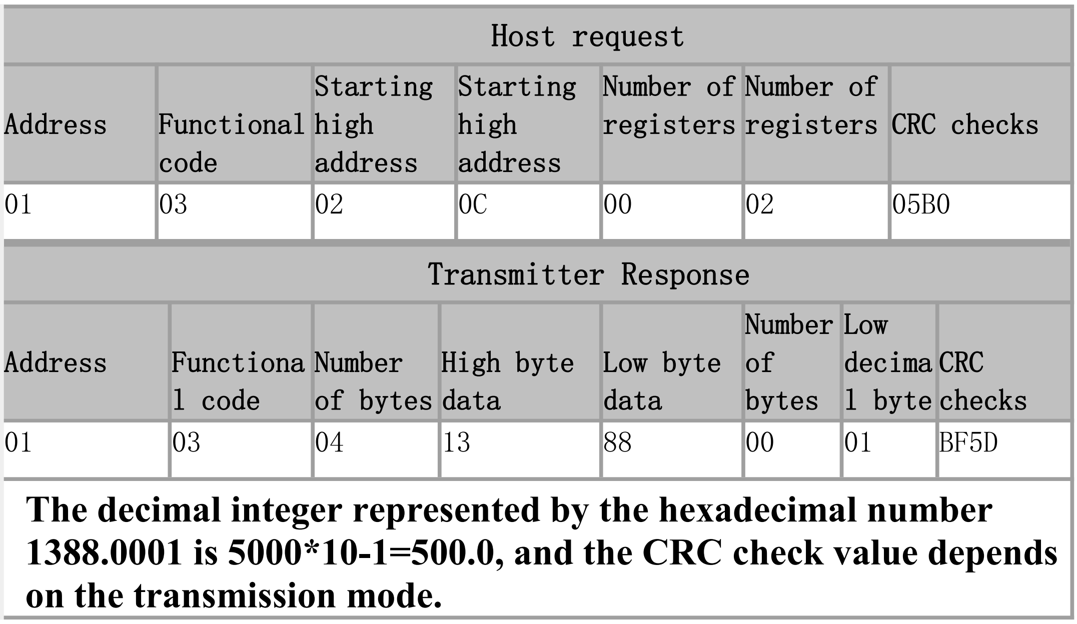


Host request						
Address	Functional code	Starting high address	Start low and low	Number of registers	Number of registers	CRC checks
01	**03**	**00**	**00**	**00**	**02**	**C40B**

Transmitter Response							
Address	Functional code	Number of bytes	High byte data	Low byte data	Number of bytes	Low decimal byte	CRC checks
01	**03**	**04**	**03**	**E8**	**00**	**01**	**BB83**
The decimal integer represented E8.0001 hexadecimal number 03 **is** 1000/10-1=100.0**, and the** CRC **check value depends on the transmission mode.**							

Read PV value data as 100.0

Example 2. Read PUH value



Host request						
Address	Functional code	Starting high address	Starting high address	Number of registers	Number of registers	CRC checks
01	03	02	0C	00	02	05B0

Transmitter Response							
Address	Functional code	Number of bytes	High byte data	Low byte data	Number of bytes	Low decimal byte	CRC checks
01	03	04	13	88	00	01	BF5D
The decimal integer represented by the hexadecimal number 1388.0001 is 5000*10-1=500.0, and the CRC check value depends on the transmission mode.							

500.0 readout PV value data

The address (01) and the function code (03) are invariant when reading the data, only the beginning high bit address and the beginning high bit address are different.

Example of writing parameter data in a RTU manner

Example 1. Write AH value (AH=100.0)

Host request											
Address	Functional code	Start the high address	Starting low	Number of registers high	Number of registers low	byte count	Data high	Data low	Number of bytes	Low decimal byte	CRC Check
01	10	01	00	00	02	04	03	E8	00	01	BF8F

Transmitter Response						
Address	Functional code	Start the high address	Starting low	Number of registers high	Number of registers low	CRC checks
01	10	01	00	00	02	XX

The decimal integer represented E8.0001 hexadecimal number 03 is 1000/10-1=100.0, and the CRC check value depends on the transmission mode.

Write SN value (SN=08)

Host request											
Address	Functional code	Start the high address	Starting low	Number of registers high	Number of registers low	byte count	Data high	Data low	Number of bytes	Low decimal byte	CRC Check
01	10	02	00	00	02	04	00	08	00	00	6B0D

Transmitter Response						
Address	Functional code	Start the high address	Starting low	Number of registers high	Number of registers low	CRC checks
01	10	02	00	00	02	XX

The decimal integer represented by the hexadecimal number 0008.0000 is 8/1=8, and the CRC check value depends on the transmission mode.

Modbus communication protocol is compatible with Modbus communication protocol format, but the data field adds decimal units. Modbus communication protocol is a master-slave protocol. Only one device can be sent on the line at any time. The master station manages the exchange of information, and only it can initiate it. It poll the slave station one after another, otherwise no slave can send a message. There can be no direct communication between slave stations.

Single Point Communication Address

Parameters	Read and write	High address	Low address	Number of decimal units
PV	Reading	00	00	Based on DOT values
AH	Read and write	01	00	DOT
DH	Read and write	01	04	DOT
AL	Read and write	01	08	DOT
DL	Read and write	01	0C	DOT
AHH	Read and write	01	10	DOT
DHH	Read and write	01	14	DOT
ALL	Read and write	01	18	DOT
DLL	Read and write	01	1C	DOT
SN	Read and write	02	00	0
DOT	Read and write	02	04	0
PUL	Read and write	02	08	DOT
PUH	Read and write	02	0C	DOT
PBIA	Read and write	02	10	DOT
FILT	Read and write	02	14	3
K1	Read	02	18	3

	and write			
OU-A	Read and write	02	1C	0
PH	Read and write	02	20	0
PL	Read and write	02	24	0
PHH	Read and write	02	28	0
PLL	Read and write	02	2C	0
INPH	Read and write	02	30	0
INPL	Read and write	02	34	0
BAUD	Read and write	02	38	0
ID	Read and write	02	3C	0

Configuration King and Instrument Online Operation

Modicon modbus (RTU) unpack protocol

Parameters	Read and write	Register (Command + Address)	Data type	Number of decimal units
PV	Reading	41	SHORT	Based on DOT values
			SHORT	
AH	Read and write	4257	SHORT	DOT
DH	Read and write	4261	SHORT	DOT
AL	Read and write	4265	SHORT	DOT
DL	Read and write	4269	SHORT	DOT
AHH	Read and write	4273	SHORT	DOT
DHH	Read and write	4277	SHORT	DOT
ALL	Read and write	4271	SHORT	DOT
DLL	Read and write	4285	SHORT	DOT
SN	Read and write	4513	SHORT	0
DOT	Read and write	4517	SHORT	0
PUL	Read and write	4521	SHORT	DOT
PUH	Read and write	4525	SHORT	DOT
PBIA	Read and write	4529	SHORT	DOT
FILT	Read and	4533	SHORT	3

	write			
K1	Read and write	4537	SHORT	3
OU-A	Read and write	4541	SHORT	0
PH	Read and write	4555	SHORT	0
PL	Read and write	4559	SHORT	0
PHH	Read and write	4563	SHORT	0
PLL	Read and write	4567	SHORT	0
INPH	Read and write	4571	SHORT	0
INPL	Read and write	4575	SHORT	0
BAUD	Read and write	4579	SHORT	0
ID	Read and write	4583	SHORT	0

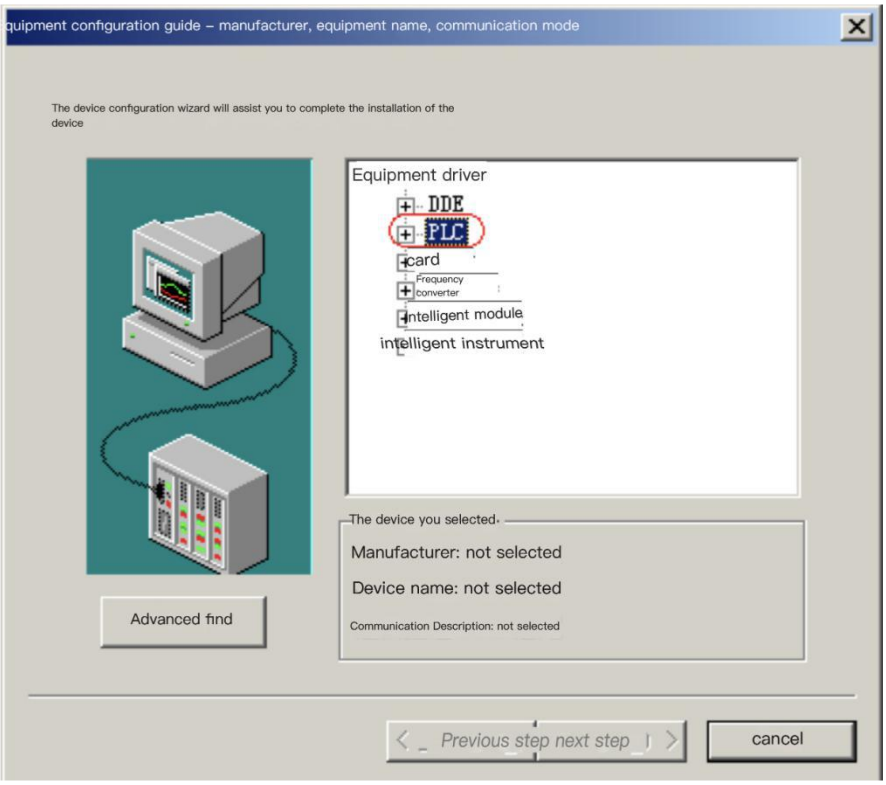
1. modbus driver patch installation

6.52 or lower version Kingview, Kingview modbus protocol patches must be installed to communicate properly.

Run the CD"DriverSetup.exe" installation tool software, install modbus new protocol driver, copy" K V ModbusR TUE x.i ni "file to" kingview\ directory "; copy "KVD_ModbusRTU.dl"file to "kingview\DRIVER\ directory ".

Update documents

KVD_ModbusRTU.dll copy to "kingview\DRIVER\ directory"
KVModbusRtuEx.ini copy to "kingview\ directory"



quipment configuration guide – manufacturer, equipment name, communication mode

The device configuration wizard will assist you to complete the installation of the device

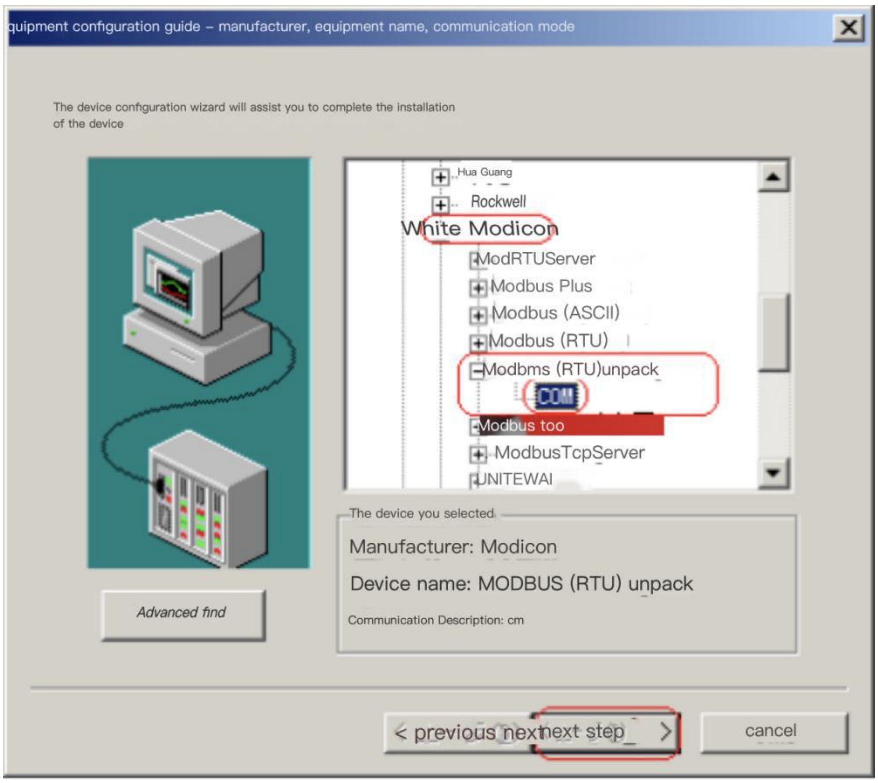
The device you selected

Manufacturer: not selected

Device name: not selected

Communication Description: not selected

2. Flow Chart of Instrument and Kingview



quipment configuration guide – manufacturer, equipment name, communication mode

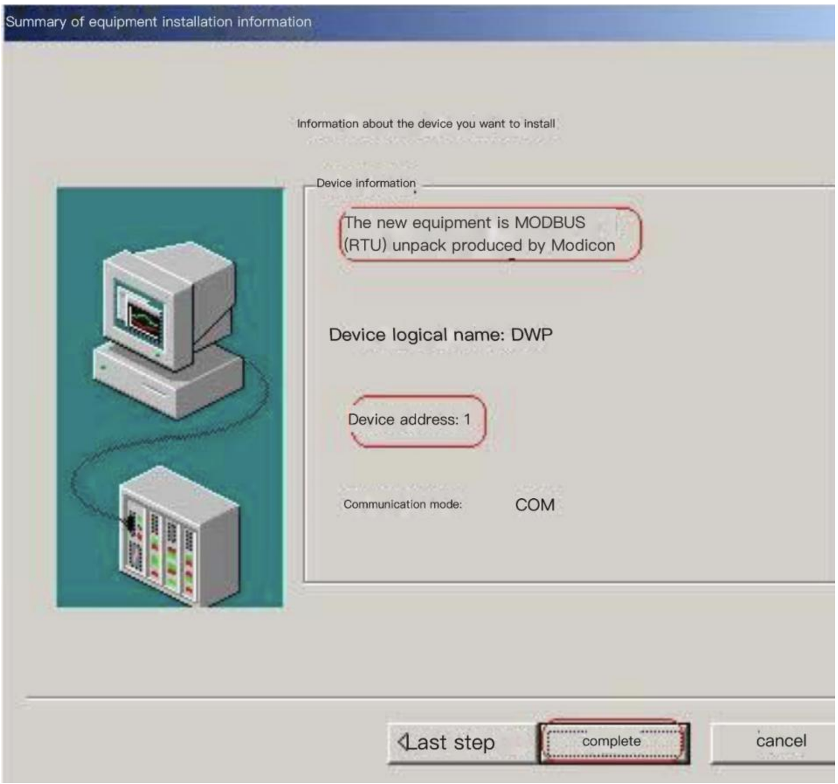
The device configuration wizard will assist you to complete the installation of the device

The device you selected

Manufacturer: Modicon

Device name: MODBUS (RTU) unpack

Communication Description: cm



Summary of equipment installation information

Information about the device you want to install

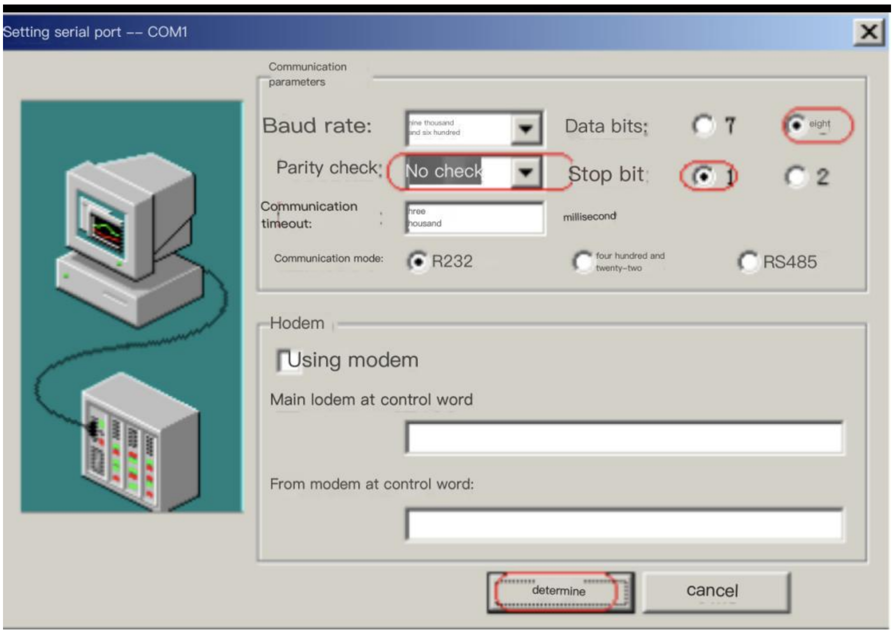
Device information

The new equipment is MODBUS (RTU) unpack produced by Modicon

Device logical name: DWP

Device address: 1

Communication mode: COM



Setting serial port -- COM1

Communication parameters

Baud rate: ine thousand and six hundred

Data bits: ○ 7 ● eight

Parity check: No check

Stop bit: ● 1 ○ 2

Communication timeout: hree housand millisecond

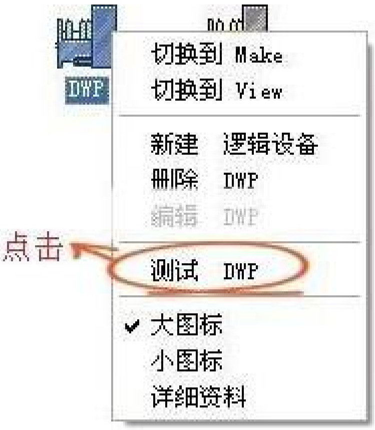
Communication mode: ● R232 ○ four hundred and twenty-two ○ RS485

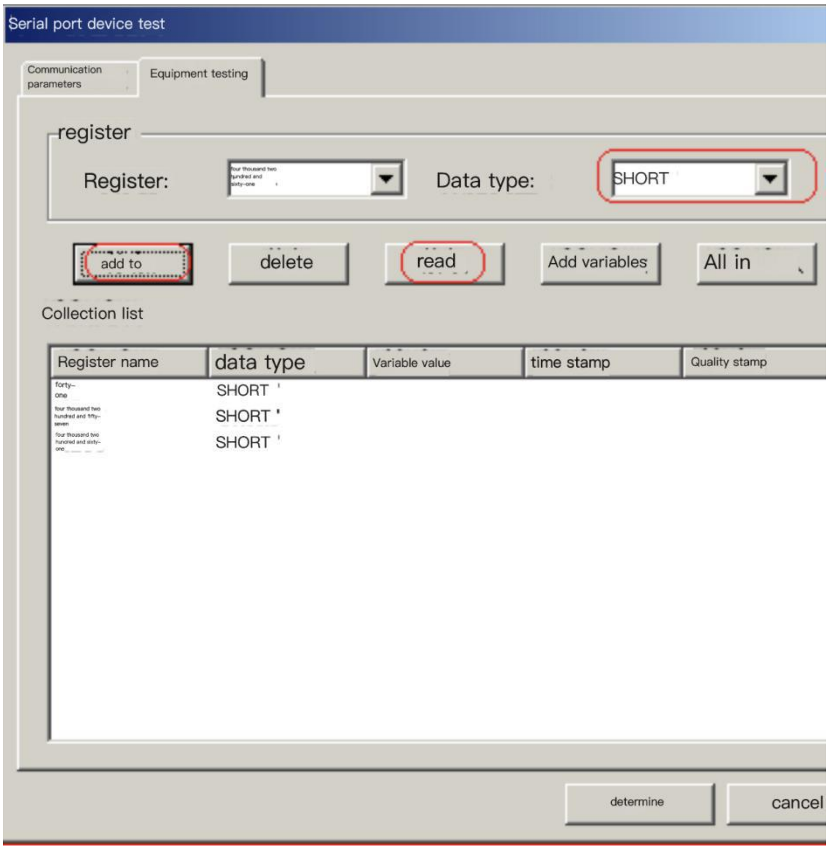
Hodem

□ Using modem

Main lodem at control word

From modem at control word:





Register: four thousand two hundred and sixty-one

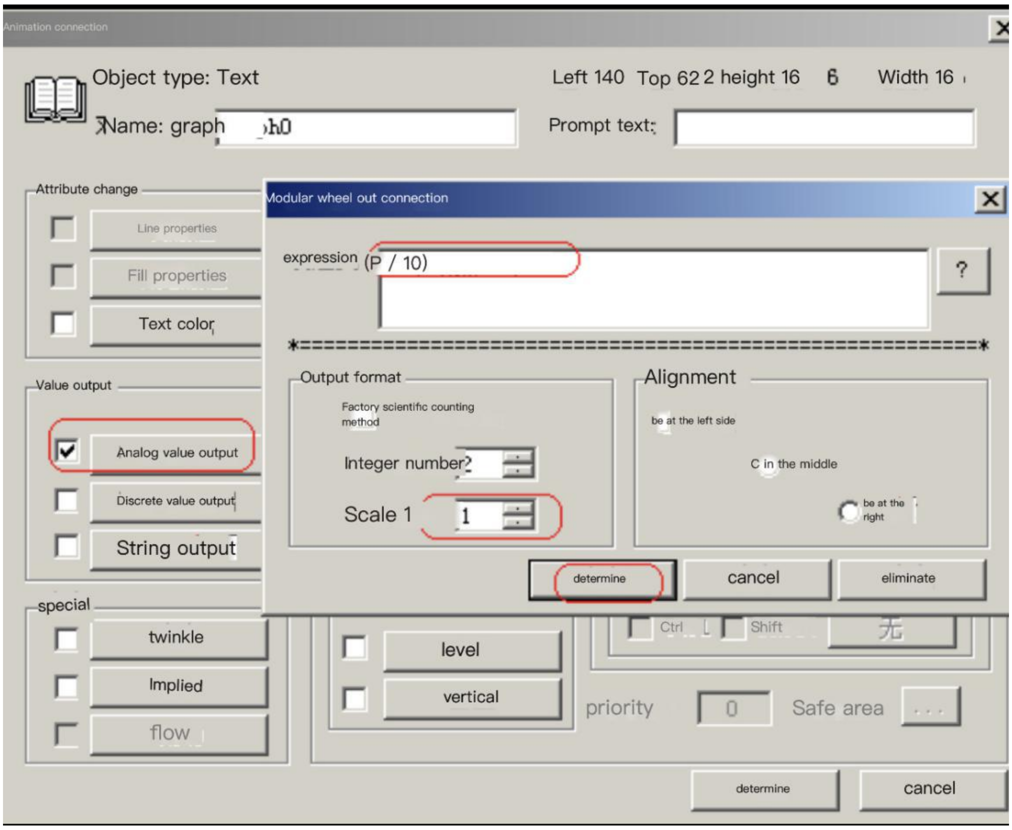
Data type: SHORT

Collection list

Register name	data type	Variable value	time stamp	Quality stamp
forty-one	SHORT			
four thousand two hundred and fifty-seven	SHORT			
four thousand two hundred and sixty-one	SHORT			

3. **Configuration screen display decimal point and instrument decimal point corresponding to the need for special processing**

The decimal point is actually displayed by the instrument (PV divided by 10 is due to the decimal point of the instrument =1)



Object type: Text

Left 140 Top 62 2 height 16 6 Width 16

Name: graph ›h0

Prompt text:

☑ Analog value output

□ Discrete value output

□ String output

priority 0

expression (P / 10)

Factory scientific counting method

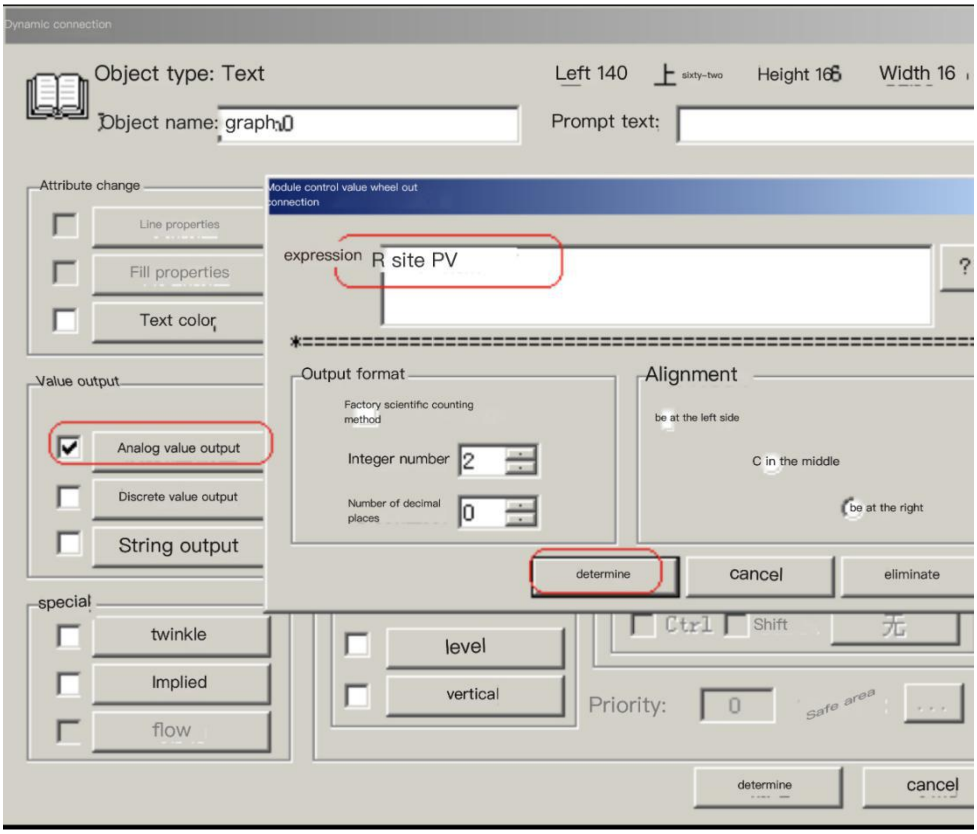
Integer number 2

Scale 1 1

be at the left side

○ in the middle

○ be at the right



Object type: Text

Left 140 sixty-two Height 16 6 Width 16

Object name: graph ›0

Prompt text:

☑ Analog value output

□ Discrete value output

□ String output

Priority: 0

expression R site PV

Factory scientific counting method

Integer number 2

Number of decimal places 0

be at the left side

○ in the middle

○ be at the right

Display by type