SUCH

Product Agreement

CYW71 anti-corrosion input type liquid level transmitter

Protocol description <small>Protocol description (limited to RS485 signal output, default address is 01, and data is in hexadecimal)</small>

Basic technical parameters of the transmitter

This protocol follows the Modbus communication protocol and adopts the sub centralized RTU mode in the Modbus protocol. RS485 half duplex working mode

a) Output signal: RS485 (up to 1000 meters. A total of 32 channels can be connected)

b) Standard Modbus-RTU protocol (03 function reads data, 06 function writes setting data)

c) Data format: 9600, N, 8,1 (9600bps, no checksum, 8-bit data bits, 1-bit stop)

d) Measurement range: 0-X (kPa...)

e) Resolution: 0.05%

f) Output data: 0... 2000 (customized for other ranges)

g) Response frequency: ≤ 5Hz

h) Response speed: ≥ 10ms

Modbus RTU read data 03 command description

	Device address	Function code	Data address	Number of read data	16crc code (low front high rear)
Host command	Address	03	00 00	CN	CRC0 CRC1
	Device address	Function code	Data byte	Sensor data	16crc code (low front high rear)
Return from machine	Address	03	02*CN	S_HN , S_LN	CRC0 CRC1

Communication examples

Example: Set the communication device address of a sensor at 0-50kPa to 01, that is,

[Address]=01 (Address range 01-254);

At this point, CRC0=84 and CRC1=0a. So the sending and returning data are as follows:

Sent to: 01 03 00 00 00 01 84 0A

Return: 01 03 02 02 AC B9 59

02AC is hexadecimal, converted to decimal to 684;

Data output: 0-2000 corresponds to 0-50kPa, so the current liquid level is P=50 * 684/2000=16.2kPa

Query example

Reading the current device address can only be completed independently by a single offline sensor

Send FF 03 00 0f 00 01 A1 D7

Return to FF 03 02 00 01 50 50

Then: the device address is 01 (hexadecimal)

Detailed description of Modbus RTU write 06 command

	Device address	Function code	Data address	New address	16crc code (low front high rear)
Host command	Address	06	00 0F	H L	CRC0 CRC1
	Device address	Function code	Data address	New address	16crc code (low front high rear)
Return from machine	Address	06	00 0F	H L	CRC0 CRC1

Modification example

If the 01 address is changed to 09 address:

Send 01 06 00 0f 00 09 79 CF

Return to 01 06 00 0f 00 09 79 CF

Then the original address 01 is successfully changed to 09. The modified address can be modified offline or online. After completion, it can work directly without power on again.

Precautions for use

☞a) A single RS485 bus must adopt a "hand in hand" bus structure, and do not use star connection and bifurcation connection. The address code is set from near to far, that is, the management computer is connected to No. 1 controller, No. 2 is connected to No. 1, No. 3 is connected to No. 2, and so on.

⚠ Warning!
b) The AC and chassis supplied by the equipment must be truly grounded and well grounded. Many places have triangular sockets on the surface, but they are not grounded at all. Be careful. When the grounding is good, it can ensure that the equipment is impacted by lightning surge. When static electricity is accumulated, it can cooperate with the lightning protection design of the equipment to better release energy and protect RS485 bus equipment and related chips from damage. If the grounding is not well connected or not connected, do not use RS485 bus to avoid equipment burning and casualties.

☞c) The wire must use multi strand shielded twisted pair wire with a wire diameter of more than 0.3 mm2 (multi strand is for standby). PVC pipe shall be applied separately to avoid walking together with strong current to avoid interference of strong current.

☞d) 485 (a) and 485 (b) must be twisted pair, because 485 communication adopts the principle of differential mode communication, and the twisted pair has good anti-interference. It is wrong not to use twisted pair, and other types of cables must be avoided.

☞e) Connect the reference GND (power supply negative) of the RS485 converter and all access controllers in series, and use the remaining one or all of the multi strand twisted pair network cables for the series GND; The reference ground is not well connected, which also affects the communication. The common mode effect is mainly caused by the high-frequency radiation from the distributed capacitance and inductance.

☞f) The shielding layer of the network communication line is connected to the earth. Pay attention to grounding, otherwise there is a potential unknown danger of the bus.

☞ g) If multiple slaves or connecting wires are too long and communication is not smooth, 120 ohm matching resistance shall be added between 485 (a) and 485 (b) of one slave at the head and end of 485 bus to improve communication quality（ (must be twisted pair)

☞ h) Reasonable arrangement of transmission rate, number of load nodes and transmission distance, so as to achieve the principle of remote low-speed few nodes and short-range high-speed multi nodes.

i) Data communication must be verified to protect transmission correctness. Generally, Modbus RTU is verified with CRC-16 verification mode, and the error rate is less than 1 / 1 billion.

j) If necessary, select the isolation 485 of our company, and the general price is more expensive.