DCWS TEMPERATURE & HUMIDITY SENSOR MANUAL

BASIC COMMUNICATION PARAMETERS

Coding	8-bit binary
Data bits	8 bits
Parity bit	None
Stop bit	1 bit
Error check	CRC (Redundant cyclic code)
Baud Rate	2400bit/s, 4800bit/s, 9600bit/s can be set Factory standard is 4800bit/s

DATA FRAME FORMAT DEFINITION

Modbus-RTU communication protocol is adopted,
and the format is as follows:
Time of initial structure ≥ 4 bytes
Address code=1 byte
Function code=1 byte
Data area=N bytes
Error check=16-bit CRC code
Time to end structure ≥ 4 bytes
Address code: the address of the transmitter,
which is unique in the communication network (factory standard 0x01)
Function code: the instruction function indication sent by the host.
This transmitter only uses function code 0x03 (read register data)
Data area: The data area is specific communication data.
Note that the high byte of 16bits data comes first
CRC code: two-byte check code.
Host query frame structure:

Address code	Function code	Register start address	Register length	Check code low	Check code high
1 byte	1 byte	2 byte	2 byte	1 byte	1 byte

Slave response frame structure:

Address code	Function code	Number of valid bytes	Data area 1	Data area 2	Data area N	Data area check code
1 byte	1 byte	1 byte	2 byte	2 byte	2 byte	2 byte

Register address:

Register address	PLC or configuration address	Content	Operation
0000H	40001	Humidity	R
0001H	40002	Temperature	R
0050H	40081	Temperature calibration	R/W
0051H	40082	Humidity calibration	R/W
07D0H	42001	Address register	R/W: 1-254
07D1H	42001	Baud rate register	R/W: 0: 2400/ 1: 4800/ 2:9600

COMMUNICATION PROTOCOL EXAMPLES & EXPLANATIONS

Example: Read the temperature and humidity value of the device address 0x01
Query frame (hexadecimal):

Address code	Function code	Start Address	Data Length	Check Code Low	Check Code High
0x01	0x03	0x00 0x00	0x00 0x02	0xC4	0x0B

Response frame (hexadecimal): (For example, when reading a temperature of - 10.1 ℃ and a humidity of 65.8% RH)

Address code	Function code	Returns the number of valid bytes	Humidity Value	Temperature Value	Check Code Low	Check Code High
0x01	0x03	0x04	0x02 0x92	0xFF 0x9B	0x5A	0x3D

Temperature calculation:
When the temperature is lower than 0 ℃, the temperature data is uploaded in the form of a complement code.
Temperature: FF9B H (hexadecimal)=- 101=>Temperature=- 10.1 ℃
Humidity calculation:
Humidity: 292 H (hexadecimal)=658=>Humidity=65.8% RH

DEVICE ADDRESS SETTING METHOD

The device address supports two methods: software configuration and dial switch settings,
Only one method can be selected to set the address.
When all four dial switches are turned to the "OFF" position, it is supported to use the
configuration software to set the address,
You can set the address through the "Configuration Software".
When one of the four dial switches is in the "ON" position, the device address can
only be the address represented by the dial switch,
At this time, the address set by the software is invalid, and the address range set by t
he dial switch is 1 to 15.
The address mode for setting the dial switch is as follows: 1 represents ON,
0 represents OFF.

Modbus Address	1	2	3	
Address set using software	0	0	0	0
1	0	0	0	1
2	0	0	0	0
......	......	......	......	......
15	1	1	1	1