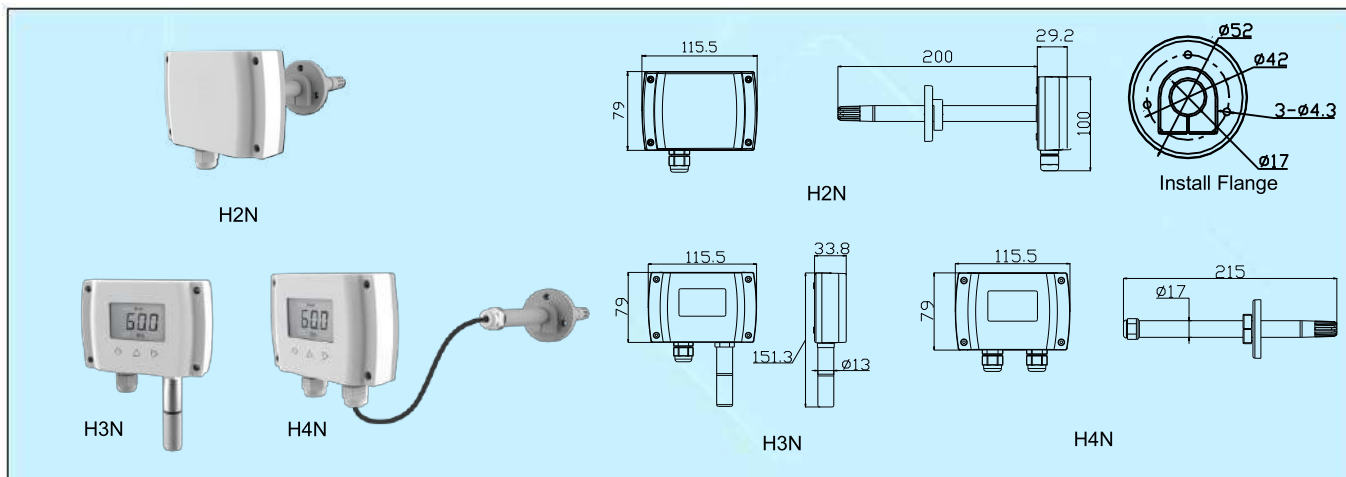


USER MANUAL

TEMPERATURE & HUMIDITY TRANSMITTER



H2,3,4N Temperature & Humidity Transmitter



Applications & Features

- Humidity and temperature transmitters H2N (duct), H3N(outside) and H4N(remote) are designed for environment monitoring and controlling in industrial and commercial buildings.
- High performance digital sensors and circuits, ensure accurate measurement and temperature compensation
- Digital technology applied, multiple outputs optional, over voltage and reverse polarity protection, high reliability and anti-interference capability
- LCD display temperature and humidity alternatively
- LCD & function keys can set parameters and calibrate output, so the product can be a stand alone controller
- Good long term stability and reliability
- 100% field changeable sensor without re-calibration
- Fast response
- High protection rate up to IP65

Specifications

Relative Humidity

Sensor: Digital polymer

Range: 0~100%RH

Output: see models

Accuracy: 2%, 3%, (25°C, 20~80%RH)

Hysteresis: $< \pm 1\% \text{RH}$

Response time: <10s (25°C, in slow air)

Drift: $< \pm 0.5\% \text{RH} / \text{year}$

Temperature

Sensor: Digital temperature sensor or RTD/thermistor

Range: 0~50℃, 0~100℃, -40~60℃ , or others

Output: see models

Accuracy: transmitter: $\leq \pm 0.4^{\circ}\text{C}$ @ $5\sim 60^{\circ}\text{C}$ or 0.3°C @ $5\sim 60^{\circ}\text{C}$

RTD or thermistor: typical $0.2\sim 0.4^{\circ}\text{C}@25^{\circ}\text{C}$, see models

Power: Current: 18.5~35VDC ($R_{load}=500\Omega$)

8.5~35VDC ($R_{load}=0\Omega$)

Voltage: 16~28VAC/ 16~35VDC

Output Load: $\leq 500\Omega$ (current), $\geq 2K\Omega$ (voltage)

Relay output: 2×SPST, 3A/30VDC, 3A/250VAC

Display and keys: 4 digits LCD, with unit

indication, backlight (4-20mA N/A), 3 touch keys, see more details on LCD & Keys operation

Work Temp.: -30~70℃ (LCD:0~50℃)

5~95%RH (Non condensing)

Housing: Fireproof ABS housing, UHMW-PE

filter(H2/H4N), SS probe and sintered filter(H3N)

Protection: IP65

Weight: H2N:360g;H3N:270g;H4N:430g

Approval: CE

Models

Model	H2N H3N H4N							Duct mount Temp./RH transmitter Outside air Temp./RH transmitter Remote mount Temp./ RH transmitter
RH Accuracy		2 3						±2%RH (0.3℃) ±3%RH (0.4℃)
RH Output			1 2 8					0-10VDC(3 wires) 4-20mA(2 wires) RS485/Modbus
Temp. Output				0 1 2 3 4 5 6 7 8 9 A				No 0-10VDC(3 wires) 4-20mA(2 wires) PT1000, ±0.2℃@25℃ PT100, ±0.2℃@25℃ NTC20K,±0. 2℃@25℃ Ni 1000, ±0. 5℃@25℃ NTC10K-II, 0.2℃@25℃ RS485/Modbus NTC10K-III,0.3℃@25℃ NTC10K-A, 0.3℃@25℃
Temp. Range					0 1 2 3 7			No 0-50℃ 0-100℃ -40-60℃ others
Relay						0 1		No 2×SPST(4-20mA N/A)
LCD & Keys							0 1 2	No LCD LCD & Keys

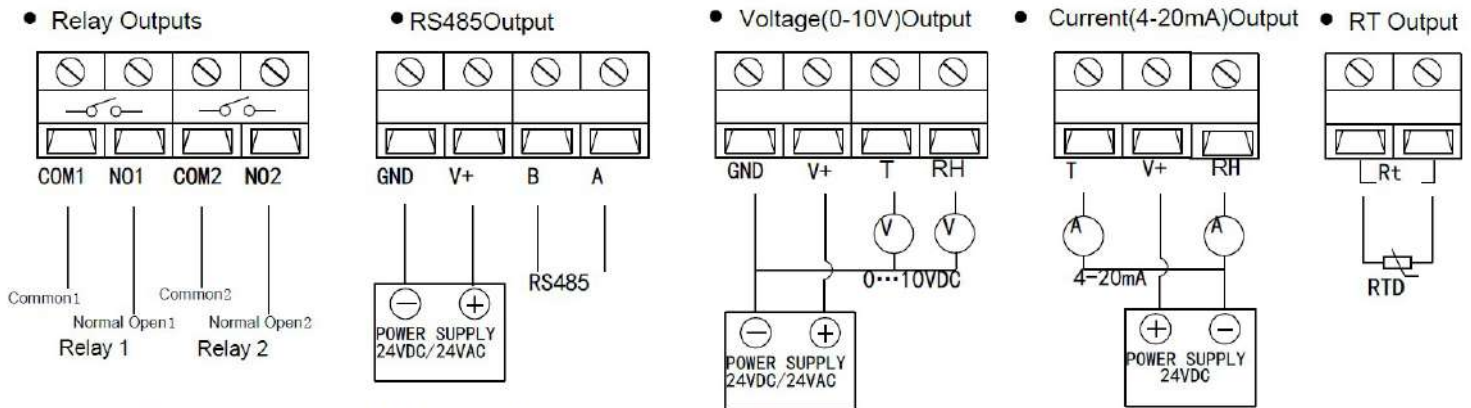
*1. H2,3,4N series current products are powered by RH circuit, so the RH circuit must be powered. Otherwise it could not work.

*2. Only when the temperature output is 1 or 2, the temperature range 1-7 is applicable. Otherwise, always use 0 as temperature range selection.

*3. See resistance table on page 1 of this catalog.

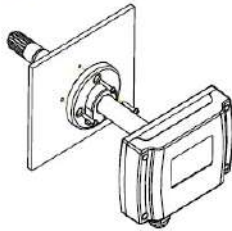
Connection

Different models have different electrical terminals. Please wire specific model according to the wiring diagram inside the front cover.

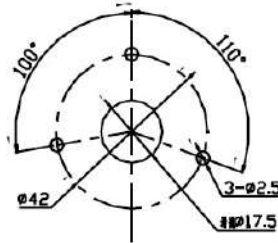


*Current 4-20mA Output: terminal RH loop should be connected, otherwise the transmitter can not work.

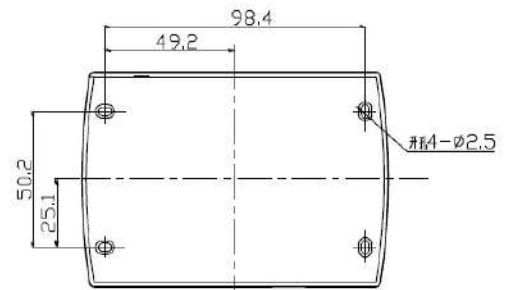
Installation



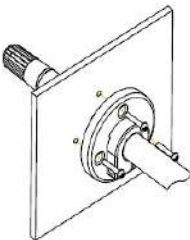
H2N Flange mount



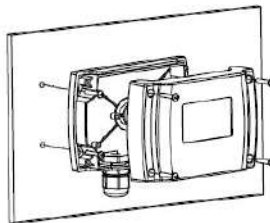
H2N/H4N Flange mount holes



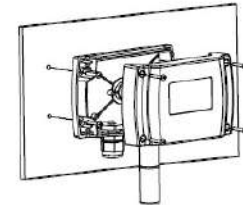
H3N/H4N Surface mount holes



Flange mount for the remote probe of H4N



H4N Surface mount



H3N Surface mount

- The install flange kit is recommended for installing the H2N. The depth being inserted can be adjusted. Install the kit on the duct with 3 screws, and use another screw to tighten the probe and the whole H2N. the duct hole(ϕ 17.5mm) should be air-tight after installation.
- H3/4N's housing should be installed vertically on the wall, with the sensor probe downward. It should be far away from any heat/cool sources. If needed, there should be a shield to prevent the sensor from direct sun light and rain. Drill 4 holes on the wall according to the dimensions. Install the H3/4N base with the 4 screws after remove the front cover. H4N's remote probe can also be installed with flange kit, same as H2N.
- Open the front cover, install the drain on the base and take the wires from DDC/PLC, etc. into the base through the drain, then finish wiring according to the diagram inside the cover and restore the front cover. Make sure to install the drain with the base and the base with the front cover all completely air-tight (there are two seal rings between the drain and the base, and the front cover and the base), to prove the whole housing can meet up to IP65.

Attention

It should be power OFF during installing and wiring. When using 24VAC, it is strongly recommended to power the unit with independent transformer. If sharing a 24VAC transformer with other equipments such as controllers, transmitters or actuators, please make sure the terminals 24V and GND are connected correctly. Otherwise, it will perhaps reduce serious damages.

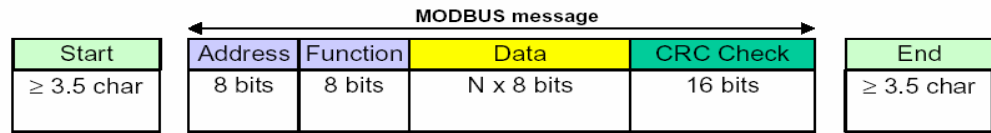
Warranty

- It has limited warranty for eighteen (18) months after the production date.
- It does not extend to any unit that has been subjected to misuse or accident.
- It is, in any event, strictly limited to the replacement or repair of the product itself.

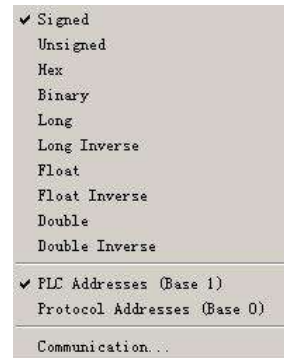
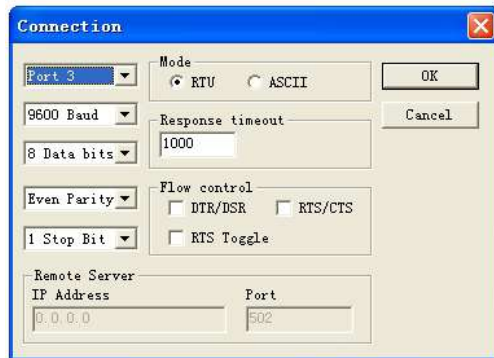
RS485 Communication Modbus RTU

1 Communication setting

- 1.1 Baud rate : 9600
- 1.2 Data : 8Bit
- 1.3 Parity : Even
- 1.4 Stop : 1
- 1.5 Protocol : Modbus RTU



A typical Modbus RTU mode message frame is shown above. Messages starting with a silent interval of at least 3.5 character times implemented as a multiple of character times at the baud rate being used on the network (indicated as above). The first field transmitted is the device address. The allowable characters transmitted for all fields are hexadecimal values 0-9, A-F. Following the last character transmitted, a similar silent interval of 3.5 character times marks the end of the message and a new message can begin after this interval.



2 Modbus Address

The Modbus RTU message frame first field is the device address. Valid addresses are from 1-247. A networked device continuously monitors the network, including the silent intervals, and when the first field is received (the address) after a silent interval of at least 3.5 character times, the device decodes it to determine if it is the addressed device.

Slave address can be setting with compatible Modbus RTU software. Default address = 1, suggested 1-32.

3 Modbus function

The function code field of the message frame contains 8 binary bits (in RTU Mode) which tells the slave what kind of action to take. Valid function codes are from 0-127 (01H~7FH). See the relevant Modbus standard.

products support 03H/06H function codes. Appendix is the register address table. Or refer specific product instructions.

03H Read Holding Registers

Sample: Read humidity

Set as shown right.

Slave address : 5

Function: 03

Started register: 40003

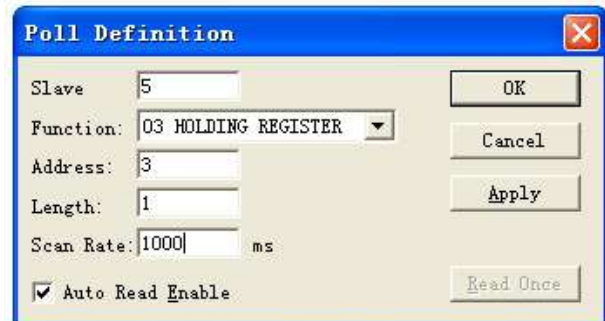
Register reading length: 1

Scan rate: 1000 ms

Communication codes :

Master / PC to SLAVE : 05 03 00 02 00 01 24 4E

SLAVE to Master / PC : 05 03 02 02 9F 08 8C



06H Preset Single Register

Sample: Set device ID from 5 to 6.

Set as shown right.

Slave address : 5

Function: 06

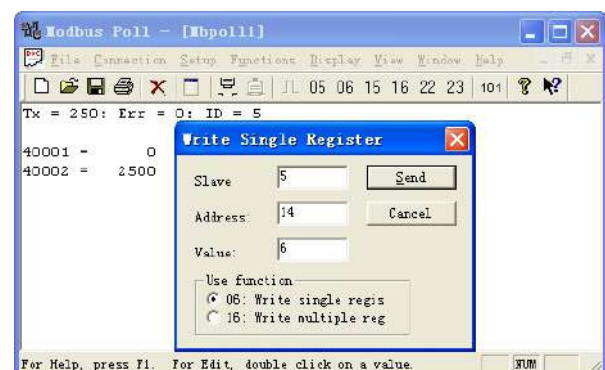
Register: 40014

Set value : 6

Communication codes :

Master / PC to SLAVE : 05 06 00 0D 00 06 99 8F

SLAVE to Master / PC : none



4 Broadcast mode

Broadcast mode used for set new slave address when forget now slave address. In this mode slave device will not reply.

Sample : Set new address 3

Settings as shown right

Slave address : 0

Function : 06

Register address : 14

Set value : 3

Communication codes :

Master / PC to SLAVE : 00 06 00 0D 00 03 59 D9

SLAVE to Master / PC : none

5 Register table

Address	R/W	TYPE	Register Define	Mark
40001, 00000	Read	Signed	Product code	4116
40002, 00001	Read	Signed	Temperature C	Data resolution to 0.1unit,real value=data/10,
40003, 00002	Read	Signed	Humidity %	
40004, 00003	Read	Signed		
40005, 00004	Read	Signed		
40006, 00005	Read	Signed		
40014, 00013	R/W	Signed	Modbus slave address	Can set 1 to 255,Default 1
40015, 00014	R/W	Signed	System data	3210
40016, 00015	R/W	Signed	Restore default settings	Write 3210 to restore default settings.

Address	R/W	TYPE	Register Define	Mark
40017, 00016	Read	Signed	Relay 1 Control Mode	0: Off 1: Relay activated below the boot parameter 2: Relay activated more than the boot parameters. 3: Relay activated in the set region 4: Relay activated in the set region
40018, 00017	R/W	Signed	Relay 1 control source	0: controlled by Humidity; 1: controlled by Temp.
40019, 00018	R/W	Signed	The lower limit of regional	Relay 1 control paramemter settings
40020, 00019	R/W	Signed	The upper limit of regional	
40021, 00020	R/W	Signed	Start time delay relay	
40022, 00021	R/W	Signed	End time delay relay	
40023, 00022	Read	Signed	Relay 2 Control Mode	0: Off 1: Relay activated below the boot parameter 2: Relay activated more than the boot parameters. 3: Relay activated in the set region 4: Relay activated in the set region
40024, 00023	R/W	Signed	Relay 2 control source	0:controlled by Humidity; 1: controlled by Temp.
40025, 00024	R/W	Signed	The lower limit of regional	Relay 2 control parameter settings
40026, 00025	R/W	Signed	The upper limit of regional	
40027, 00026	R/W	Signed	Start time delay relay	
40028, 00027	R/W	Signed	End time delay relay	
40029, 00028	R/W	Signed	Baud rate	4800 or 9600
40030, 00029	R/W	Signed	Parity	0: NONE,1:ODD,2=EVEN

Note 40001... is PLC mode ADDRESS (BASE 1), 00000...is PROTOCOL ADDRESS (BASE 0).