CDQ-T6A
Miniature Ultrasonic
Automatic Weather Instrument
Manual

Catalogue

CDQ-T6A Miniature Ultrasonic Automatic Weather Instrument

- **Product Brief**

CDQ-T6A miniature ultrasonic weather station is a fully digital detection, high-precision sensor, which is integrated by the principle of ultrasonic wind speed and direction sensor, high-precision digital temperature, humidity, pressure sensor, can accurately and quickly detect wind speed, wind direction, atmospheric temperature, atmospheric humidity and Atmospheric pressure, built-in signal processing unit can output corresponding signals according to user needs, high-strength structure design can work reliably in harsh climate environment, can be widely used in meteorology, ocean, environment, airport, port, laboratory, industry, agriculture and transportation, etc.

- **Application**

· Meteorological Monitoring
· Micro Environmental Monitoring
· Grid Environment Monitoring
· Agricultural Meteorological Monitoring
· Meteorological Traffic Monitoring
· Photovoltaic Environment Monitoring
· Meteorological Environment Monitoring for Smart Cities

- **Features**

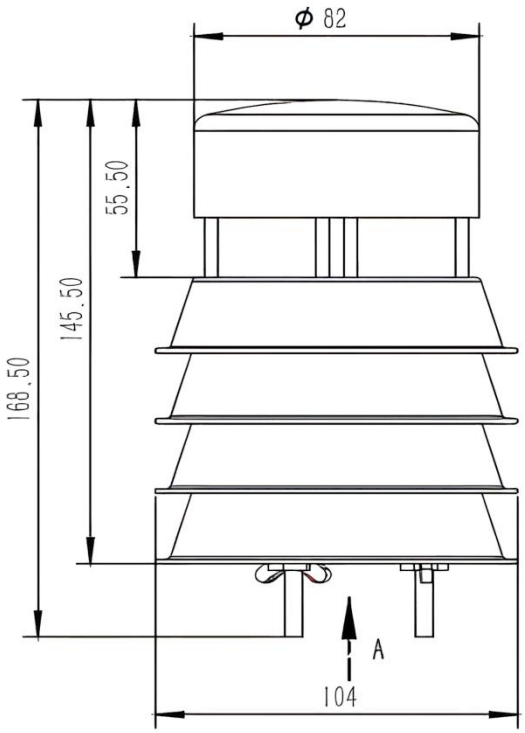
· Small in size · Integrated design
· High integration · Low starting threshold
· Easy to install · One year warranty
· Free testing software MODBUS - poll V1.0 (ask your salesperson for it)

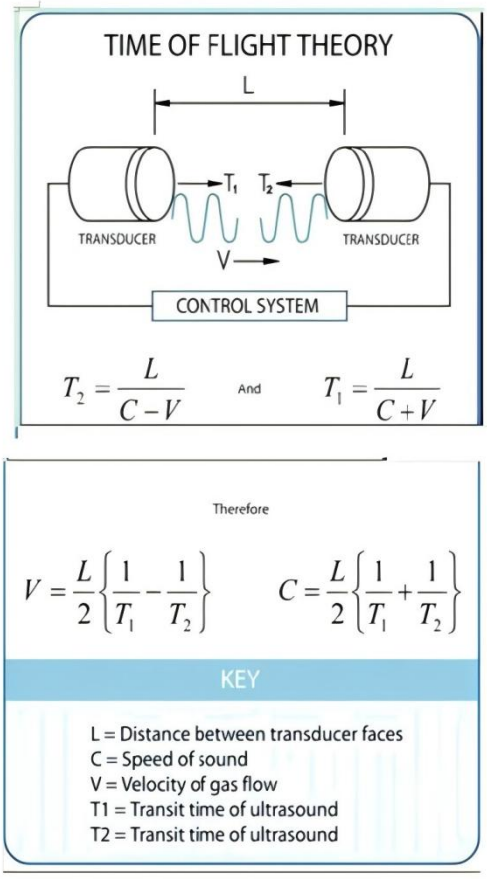
Technical Parameters

Parameters	Measuring Range	Accuracy	Resolution
Wind Speed	0-40m/s	±0.3+2%FS	0.01m/s
Wind Direction	0-359º	±3°	1°
Atmospheric Temperature	-40-+100℃	±0.5℃	0.1℃
Atmospheric Humidity	0-100%RH	±3%	0.1%RH
Atmospheric Pressure	100-1100hpa	±1hpa	0.1hpa
Supply	12-24VDC		
Output	RS485		
Communication Protocol	MODBUS -RTU		
Power consumption	0.6W		
Operating temperature	-40-+80℃		
IP Rating	IP65		
Main material	ABS+ Aluminum alloy		

⭐ Specifications may be updated without prior notice.

- **Product Size**





- **Accessories:**

Mounting Manner：

MODBUS RTU Communication Protocol

（Apply to CDQ-T6A product）

Baud Rate: 9600
Data Bits: 8
Stop Bit: 1
Check Bit: None

1.1 CRC Description:

Among all the following instructions, the two bytes of CRC16 in MODBUS RTU protocol are as follows: the low byte comes before and the high byte comes after.

In the following instructions, the assumed sensor address is 0x01 (the default sensor address is 01).

1.2 Return Error Code Rule:

When receive error instruction (including CRC16 validation error), no error codes will be returned. It is considered to be a failure, when there is no return data in 200ms after the instruction is issued. Upper computer may resend instruction.

1.3 Standard MODBUS register description

Special Notice:

The quantity or length of the register in MODBUS is two bytes with 16 bits as a unit (the high byte comes first, and the low bytes follows), instead of one byte with 8 bits as a unit.

User shall ensure that the address and quantity of register in command are confined within the range specified by the system. Otherwise, the output of the sensor will be unpredictable. Users shall ensure that the MODBUS command complies with the requirements of this manual in the software design of the upper computer and the minimum query period supported is 1s/ time.

Input register: read with function code 03

Address	Operation	Contents	Note
0x0000	Read-only	Wind Speed, a hexadecimal number magnified by 100 times. For example, 0x003A indicates 58/100=0.58m/s	
0x0001	Read-only	Wind direction, a hexadecimal number magnified by 1 times. For example, 0x008E indicates 142/1=142°	
0x0002	Read-only	Temperature, a hexadecimal number magnified by 10 times. For example, 0x0121 indicates 289/10=28.9℃	
0x0003	Read-only	Humidity, a hexadecimal number magnified by 10 times. For example, 0x0164 indicates 356/10=35.6%	
0x0004	Read-only	Pressure, a hexadecimal number magnified by 10 times. For example, 0x2728 indicates 10024/10=1002.4hpa	

1.4 Electrical Connections

Connector(cable)	RS485
Pin 1(red)	V+
Pin 2(yellow)	RS485A
Pin 3(black)	V-
Pin 4(blue)	RS485B

1.5 Communication Example

The following is an example of how to use MODBUS RTU commands to access system registers:

1. Read multiple input registers (real time data) command

Send: 01 03 00 00 00 05 85 C9

01	03	00 00	00 05	85 C9
System Address	Function Code	Register Address	Number of Registers	CRC16 check digit automatically generated by software

Answer: 01 03 0A 00 3A 00 8E 01 21 01 64 27 28 CE 43

01	03	0A	00 3A 00 8E 01 21 01 64 27 28	CE 43
System Address	Function Code	The number of bytes in a data segment	Segment Data	CRC16 check bit

Analytical Data:

0x003A= 0x00 * 256 + 0x3A= 58

Wind Speed = 58/100=0.58m/s

0x008E= 0x00 * 256 + 0x8E= 142

Wind Direction = 142/1=142°

0x0121= 0x01 * 256 + 0x21= 289

Temperature = 289/10=28.9℃

0x0164= 0x01 * 256 + 0x64= 356

Humidity= 356/10=35.6%

0x2728= 0x27 * 256 + 0x28= 10024

Pressure = 10024/10=1002.4hpa

2. Read address register command

Send: 00 20 00 68 (read and write address must be 00H)

00	20	00 68
Fixed Address	Function Code	CRC16 check bit

Answer: 00 20 01 A9 C0

00	20	01	A9 C0
Fixed Address	Function Code	Address Of The Sensor	CRC16 check bit

Segment data 0x01 =01 Sensor address 01

3. Modify internal register (system address) command (change the address to 0x02)

Send: 00 10 02 FD C1

00	10	02	FD C1
Fixed Address	Function Code	New Address	CRC16 check bit

Answer: 00 10 00 7C (indicates that the modification is successful)

00	10	00 7C
Fixed Address	Function Code	CRC16 check bit

Warranty and After-sales Service:

Warranty: The product warranty period is 12 months from the delivery date (except for the product problems caused by not operating in accordance with corresponding technical requirements or other artificial behavior).

After-sales telephone: 86-0731-86117089 www.codasensor.com Molly@codasensor.com

Other Weather Sensors

Model number	Type	Output	Special features
CDF-10A	Wind speed	Pulses(PNP) RS485 4-20MA 0-5V	Three cup plastic wind speed
CDF-11A	Wind direction	RS485 4-20MA 0-5V	Plastic wind direction sensor
CDF-12A	Pipe wind speed	RS485 4-20MA 0-5V 0-10V	Duct type wind speed sensor
CDF-13B	Wind speed display controller	LED display	Wireless output relay output
CDF-15A	Digital Anemometer	LCD display	Hand-held anemometer
CDF-20B	Combined Wind Speed & Direction	RS485 4-20MA 0-5V 0-10V	Integrated wind speed and direction
CDF-21A	Ultrasonic Wind Speed & Direction	RS232/RS485(Modbus/NMEA-0183), Voltage(0-5V),Current(4-20mA) optional	Ultrasonic principle
CDF-22A	Mini Ultrasonic Wind Speed & Direction	4-20mA,RS232/RS485(Modbus or NMEA-183), SDI-12	Ultrasonic principle
CDF-26B	Recorder station for wind	LCD display & 4G WIFI Ethernet	Wind speed & direction recorder
CDQ-T6A	Miniature Ultrasonic Automatic Weather	RS485	Wind speed & direction temp & humidity &pressure
CDW-33A	Atmospheric Temperature,Humidity & Pressure	RS485	Shelter installation
CDY-12A	Economical Tipping Bucket Rainfall	Pulses(@10kΩ&0.01uF),RS485	Diameter :φ200mm, height: 271mm
CDG-10B	Solar Radiation	0-5V,4-20mA,RS485	Spectral range:300～1100nm