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Hongyuv

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CATALOG

1. About us

HongYuv is a technology-driven company with over 10 years of innovation in the field of meteorology and environmental measuring technology sector. Our professional meteorological sensors, widely serve industrial customers in: smart city environment monitoring, weather condition monitoring along road,railway,river,seaside.With a highly experienced team of scientists, designers, engineers and technicians, HongYuv has the capability of bringing innovative products from concept to production.

HongYuv develops and manufactures transducers which make use of cutting edge technologies for a diverse range of applications, including monitoring of wind speed, wind direction, temperature, humidity, barometric pressure, rain(radar technology), solar radiation, illuminance, UV radiation, PM1.0, PM2.5, PM10, tunnel luminance, snow depth, visibility, road condition(dry,moist,wet,snow,ice,mixture of ice and water), road temperature(contactless spectroscopy technology).

Right from the start, HongYuv has remained focused on improving our products to meet market's latest requirement. Meteorological parameters, power supply, communication interface and protocol of our sensors are flexibly selectable and customizable.

2. HY-WDC series MINI Weather Station

HY-WDC2E cost-effective ultrasonic anemometer

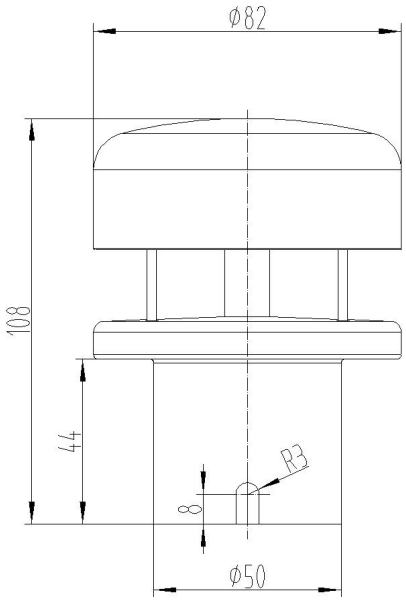
HY-WDC2E Ultrasonic 2D Anemometer is designed to simultaneously measure the 2-dimensional horizontal components of the wind speed and direction based on principle of TOF(time of flight) of ultrasonic sound wave. Low power chip make its power consumption low to 0.2W. By using ABS shell allows a lighter weight is lighter and more stable structure.

Specification

HY-WDC2E	Range	Accuracy	Resolution
Wind Speed	0 - 40m/s	±5%	0.1m/s
Wind Direction	0 - 359°	±3 °	1°
Digital Output	RS485 、 RS232、SDI-12		
Baud Rate	4800 - 19200		
Communication Protocol	ModBus-RTU、NMEA-0183、ASCII		
Protection Grade	IP65		
Operating Temperature	-40℃ - +60℃		
Operating Humidity	0 - 100%		
Operating Voltage	5-30VDC 18mA @5V		
Dimension/Weight	ABS: Φ82×108mm 、0.28kg； Aluminum alloy：Φ82×125mm，0.38kg		
Color of Body	Black or White		
Material	ABS or aluminum alloy		

Features

- Extremely low power consumption(0.2W), suitable for solar-powered
- No moving or wearing parts
- Low power design supports battery-operated data loggers.
- Using engineering plastic or aluminum alloy shell make it lighter
- Adopts the reflecting type of ultrasonic probe, robust structure



HY-WDC2THPE weather station

HY-WDC2THPE is developed based on WDC2E by integrating temperature, humidity, and barometric pressure sensor, its specification refer to HY-WDC6SE.

HY-WDC6E weather station

HY-WDC6E is developed based on WDC2E by integrating temperature, humidity, barometric pressure, and precipitation sensor, its specification refer to HY-WDC6SE.

HY-WDC6SE weather station

HY-WDC6SE is developed based on WDC2E by integrating temperature, humidity, barometric pressure, precipitation, solar radiation, and brightness sensor

Specification

Parameter	Range	Accuracy	Resolution
Wind Speed	0 - 40m/s	±5%	0.1m/s
Wind Direction	0 - 359°	±3 °	1°
Air Temperature	-40℃ - +80℃	±0.5℃	0.1℃
Humidity	0-100%	±5%	1
Air pressure	150 - 1100hPa	±1	0.1hPa
Precipitation	0-100mm/hr	±10%(@ speed≤5m/s)	0.01mm
Altitude	-500 - 9000 m	±5%	1m
Solar Radiation (optional)	0-2000W/m^2	±10%	0.1 W/m^2
Brightness (optional)	0-200000lux	±10%	0.1 lux
UV Radiation (optional)	0-2000W/m^2	±10%	0.1 W/m^2
Digital Output	RS232 、 RS485、SDI-12		
Baud Rate	4800 - 19200 bps		
Communication Protocol	ModBus or NMEA-0183 or ASCII string active output		
Protection Grade	IP65		
Operating Temperature	-40℃ - +60℃		
Operating Humidity	0 - 100%		
Power Supply	7-30VDC		
Power Consumption	120mA @12V		
Dimension/Weight	Φ84×120mm ABS: 0.38kg		
Color of Body	White		
Material	ABS		

HY-WDC2DVSE Ultrasonic Anemometer for Davis VP 2

Compatible With Davis Vantage Pro2 Weather Station

HY-WDC2DVSE Ultrasonic Anemometer is completely powered by solar panel come with it. This model is customized to be completely compatible with Davis Vantage Pro2 series weather station, can be directly connected to Davis ISS via RJ11 port.

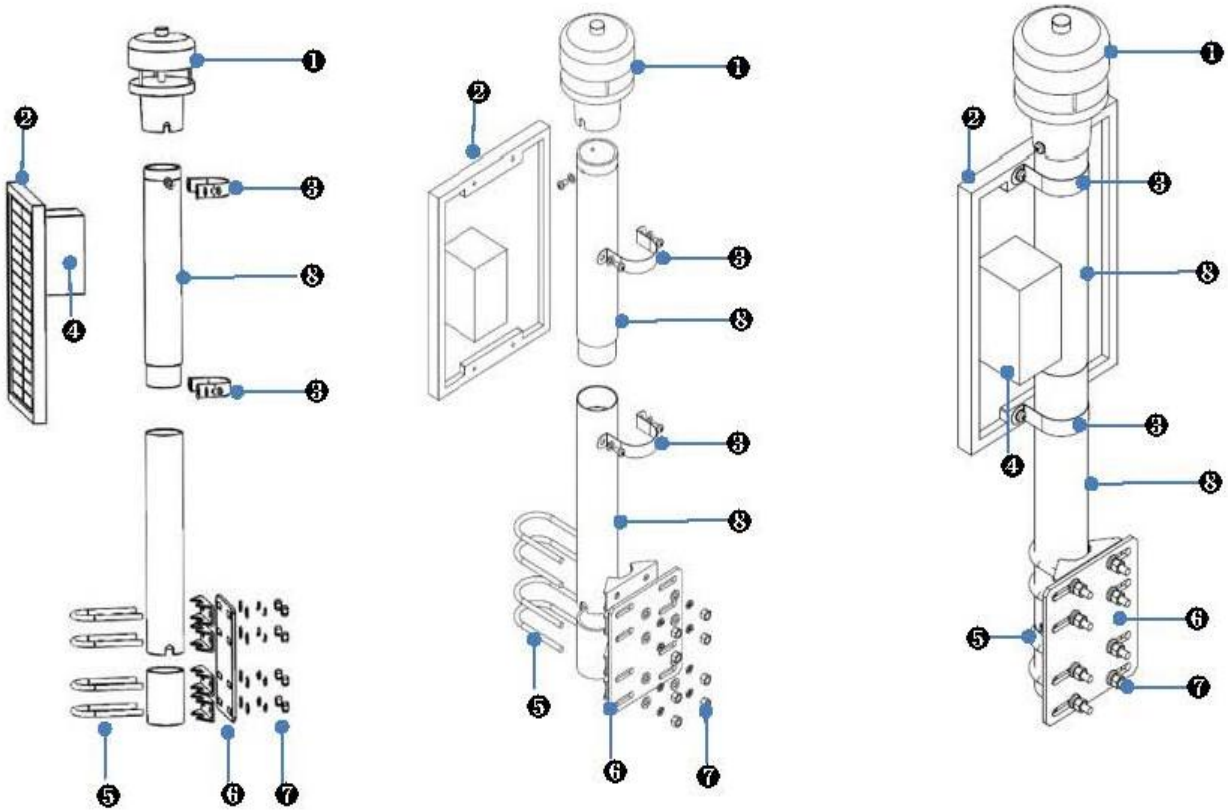
Thanks to ultrasonic technology, cost-effective HY-WDC2DVSE with significant advantages (Robust, No moving part & inertia) can obviously optimize performance of Davis' weather station, make it sensible to 0.1m/s wind, free from maintenance(wind part).

The "Plug & Play" WDC2DVSE connects directly to a pulse or potentiometer input. Maintenance-free plug & play ultrasound WDC2DVSE wind sensor upgrade for Davis weather stations, replaces anenometer models: # 7911, #7913, #7914, #6410.

Technical specification

Signal Output	wind speed	pulse signal
	wind direction	potentiometer signal
Connection	RJ11	
Wind Speed	Range	0 - 40m/s
	Accuracy	±5%
	Resolution	0.1m/s(0.2 knots)
	Threshold	0.1m/s
Wind Direction	Range	0 - 359°
	Accuracy	±3°
	Resolution	1°
Solar Radiation (optional)	Range	0-1800 W/m2
	Accuracy	±10% F.S.
	Resolution	1 W/m2
Power Supply	Self-powered by Solar Panel & 2 pcs rechargeable 18650 lithium battery	
Environmental	Protection Class	IP65
	Operating Temperature	-40℃ to +60℃
	Operating Humidity	0 to 100% RH
	CE	Approved
Mechanical	WDC2DVSE	Material Engineering ABS shell, Size:Φ84×120mm, 0.38kg
Power Supply	Solar Panel	Size: 25mm*18mm Weight:1kg.

Items included in parcel:



❶ WDC2DVSE Ultrasonic Anemometer
❷ Solar Panel
❸ Clamp for solar panel
❹ Power Manage Module
❺ Clamp for conjunction plate
❻ Conjunction plate
❼ Nuts & Cushion & Spring
❽ Mounting Mast

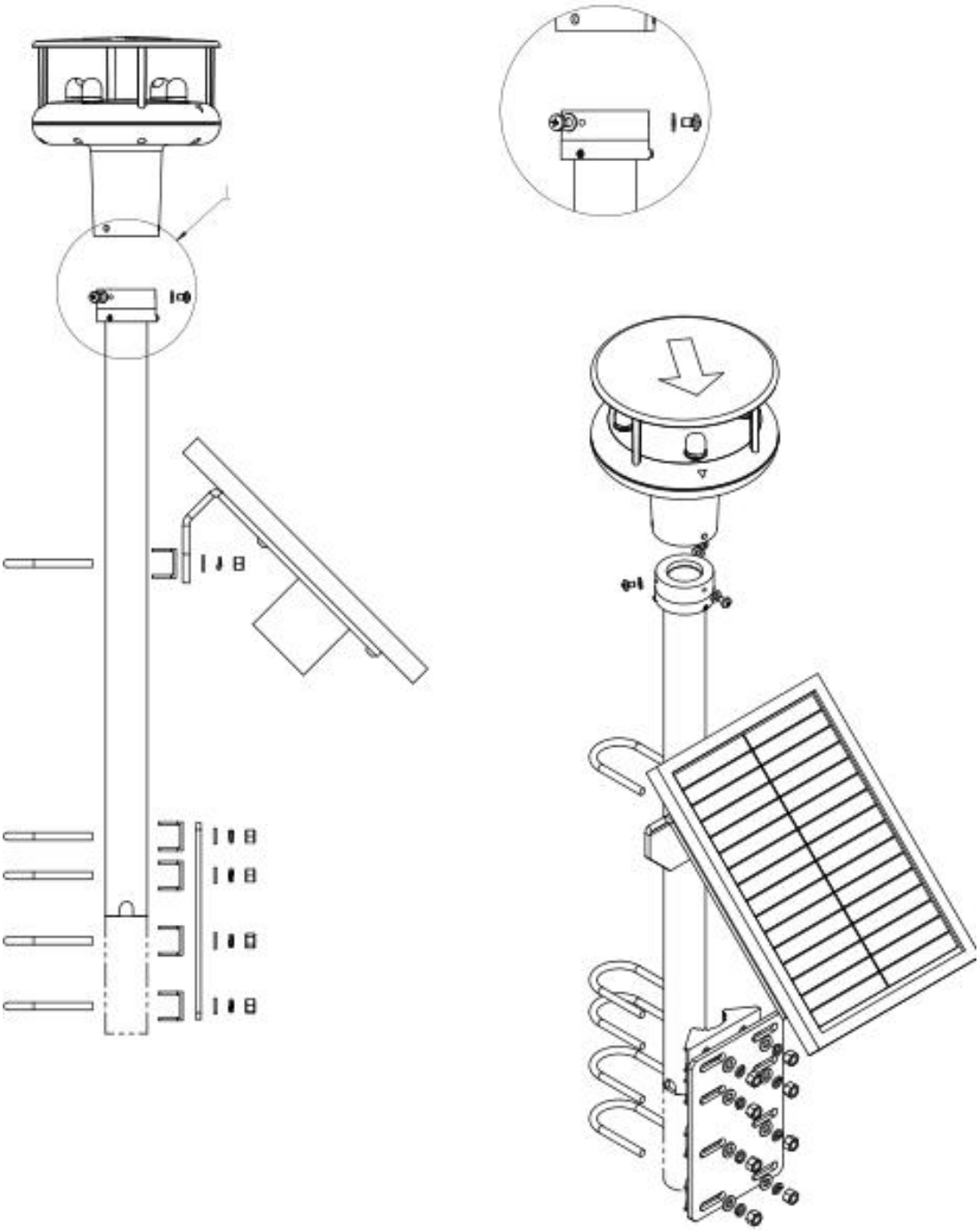
HY-WDS2DVSE Ultrasonic Anemometer

Compatible With Davis Vantage Pro2 Equipment

HY-WDS2DVSE Ultrasonic Anemometer is completely powered by solar panel come with it. This model is customized to be completely compatible with Davis Vantage Pro2 series weather station, can be directly connected to Davis ISS via RJ11 port.

Thanks to ultrasonic technology, cost-effective HY-WDS2DVSE with significant advantages (Robust, No moving part & inertia) can obviously optimize performance of

Davis' weather station, make it sensible to 0.1m/s wind, free from maintenance(wind part). The "Plug & Play" WDS2DVSE connects directly to a pulse or potentiometer input. Maintenance-free plug & play ultrasound WDS2DVSE wind sensor upgrade for Davis weather stations, replaces anenometer models: # 7911, #7913, #7914, #6410.



Specification

Signal Output	wind speed	pulse signal	
	wind direction	potentiometer signal	
Connection	RJ11	Heating Function	Yes
Wind Speed	Range	0 - 60m/s	
	Accuracy	±2%	
	Resolution	0.01m/s(0.2 knots)	
	Threshold	0.01m/s	
Wind Direction	Range	0 - 359°	
	Accuracy	±3°	
	Resolution	1°	
Power Supply	Self-powered by Solar Panel & 2 pcs rechargeable 18650 lithium battery		
Environmental	Protection Class	IP65	
	Operating Temperature	-40℃ to +60℃	
	Operating Humidity	0 to 100% RH	
	CE	Approved	
Mechanical	WDS2DVSE	Material Engineering ABS shell, Size:Φ144×163mm, Weight:ABS:0.38kg	
	Solar Panel	Size: 25 cm*18cm Weight:2kg.	

3. HY-SA series Anemometer and Weather Station

HY-SA2E Ultrasonic Anemometer

HY-SA2E wind speed and direction meter is an instrument which uses flight time difference of ultrasonic wave in the air to measure wind speed and direction simultaneously. HY-SA2E adopts low power consumption chip that can be as low as 0.01W. It is especially suitable for solar or battery power supply environment. The shell is made of aluminum alloy with anodized and corrosion-resistant surface that makes it compact, robust and delicate

Typical Applications

Weather station
Meteorology
Oil drilling platform
Marine application
Unmanned drone(UAV)
Wind power plant

Key Features

No moving or wearing parts
Maintenance free
Robust metal body
Rugged and reliable
High precision and accuracy

Technical Parameters

Parameters	Measure Range	Accuracy	Resolution
Wind Speed	0-60m/s	±3%	0.1m/s
Wind Direction	0-359°	±3°	1°
Threshold of wind speed: 0.1m/s			
Baudrate	4800 - 19200 bps		
Power supply	7-30VDC 10mA@12VDC		
Protection Class	IP65		
Operating Environment	-20℃ to +60℃; 0-100%RH		
Storage Temp.	-50℃ to +80℃		
Output options	RS232,RS485,SDI-12		
Optional protocol	MODBUS-RTU,NEMA0183,Active output,SDI-12		
Dimension/Weight	Φ50×58mm 0.28kg		
Material of body	Aluminium alloy black color		
Warranty	24 months; Mean Time Before Failure: 10 years		

HY-SA3E Ultrasonic Anemometer

HY-SA3E wind speed and direction meter is an instrument which uses flight time difference of ultrasonic wave in the air to measure wind speed and direction simultaneously. HY-SA3E adopts low power consumption chip that can be as low as 0.3W. It is especially suitable for solar or battery power supply environment. The shell is made of aluminum alloy with anodized and corrosion-resistant surface that makes it compact, robust and delicate.

Typical Applications

- Weather station
- Meteorology
- Oil drilling platform
- Marine application
- Unmanned drone(UAV)
- Wind power plant

Key Features

- No moving or wearing parts
- Maintenance free
- Robust rugged and reliable
- High precision and accuracy

Technical Parameters

Parameters	Measure Range	Accuracy	Resolution
Wind Speed	0-70m/s	±3%	0.01m/s
Wind Direction	0-359°	±3°	1°
Threshold of wind speed: 0.01m/s			
Baudrate	4800 - 19200 bps		
Power supply	5-30VDC, 0.3W		
Protection Class	IP65		
Operating Environment	-20℃ to +60℃; 0-100%RH		
Output options	RS232,RS485,SDI-12		
Optional protocol	MODBUS-RTU,NEMA0183,Active output,SDI-12		
Dimension/Weight	Φ110×140mm 0.18kg		
Material of body	ASA		
Warranty	24 months; Mean Time Before Failure: 10 years		

4. HY-WDS series Professional Compact Weather Station

HY-WDS2E high resolution & accuracy ultrasonic anemometer

HY-WDS2E Ultrasonic 2D Anemometer is a compact ultrasonic wind speed and wind direction sensor. It is designed to simultaneously measure the 2-dimensional horizontal components of the wind speed and direction. Using ABS shell, Weight is lighter and Structure is more stable. Build-in own intelligent heating module, It can work normally under the cold and freezing weather. Mainly used in highway, meteorology, drilling platform, waterway, port, wind power generation, shipping, and automatic meteorological station, etc.

Features

- No moving wearing parts，free of maintenance
- Using engineering plastic shell make it lighter
- Adopts the reflecting type of ultrasonic probe, the structure is more compact
- using acoustic phase compensation technology, high precipitation

Thecnical Specification

Wind speed	Rang	0 - 60m/s
	Accuracy	±2%
	Resolution	0.01m/s
Wind direction	Rang	0 - 359°
	Accuracy	±3°
	Resolution	1°
Analog output		2 outputs: 4-20mA. Resistance dependent (Max 500Ω)
Digital output		RS232, RS485 and SDI-12
Baud rate		4800-19200
Protocol		ModBus, NMEA-0183, ASCII
Output Frequency		Standard: 1 output per second；Customized:5 outputs per second
Protection Class		IP65
Operating Temp Range		-40℃ -+70℃
Storage Temp Range		-50℃ - +80℃
Operating Humidity		0 - 100%
Power Supply		DC7－30V
Power Consumption		10mA@12V(Without heating) ;1mA@12V(eco-power mode)
Size/Weight		Φ144×163mm 0.38kg
External Construction		ASA

5. HY-WSDCE Wind Speed Direction Display & Controller

HY-WSDCE wind alarm is used for the continuous monitoring of wind speed in construction, mining, agriculture, renewable energy, aviation and marine industries. It alerts workers to wind conditions that can cause safety concerns for people and equipment. For example, a wind speed alarm is an important safety tool for crane operators. When wind velocity reaches an unsafe speed according to the crane manufacturer's recommendations and applicable safety regulations, crane operation must be stopped and the equipment should be secured.Continuous monitoring of wind speed using a wind speed alarm can prevent costly damages to machinery and protect workers from injury. Wind speed monitoring also can aid in optimizing everything from wind turbine placement to agricultural pesticide application.

It's mounted on the crane or nearby structure.Wind speed is detected by the latest technology ultrasonic sensor HY-WDS2E. The sensor provides an output current proportional to the wind speed to a cab mounted alarm console.It can simultaneously display real-time wind speed and wind direction.

A built-in time delay, variable from 000-999 seconds can be set to prevent very short duration gusts from causing false alarms. Only when wind speed reach preset value limit and last time exceed time delay, will the corresponding relay be triggered.If additional connections are made, the alarm can cause a remote warning light to flash, sound a remote horn or siren, and automatically actuate the crane brakes to prevent the crane from rolling.

Features

- Low Limit Warning Light
- Middle Limit Warning Light
- High Limit Warning Light
- 2 ways 4-20mA current loop output(B for wind direction, A for wind speed)
- RS485 or RS232 output(MODBUS-RTU prototol)

Technical parameters

Display	4 digit 7 Seg LED
Communication interface	RS485
Power supply	AC220V
Analog output	2 ways 4-20mA output
Digital output	MODBUS-RTU via RS485
Relay output	3 ways relay outputs Capacity:125 V AC; max. 60 VA; 150 V DC; max 30 VA
Dimension/Weight	60mm*154mm*110mm (H*L*W)　About 540g
Operating Environment	-30－ 65 ℃　0－95%RH

HY-WDS2THPE Weather Station

HY-WDS2THPE is developed based on WDS2E by integrating temperature, humidity, and barometric pressure sensor, its specification refer to HY-WDS9E.

HY-WDS6E Weather Station

HY-WDS6E is developed based on WDS2E by integrating temperature, h and barometric pressure sensor and precipitation sensor, its specification HY-WDS9E.

HY-WDS6SE Weather Station

HY-WDS6E is developed based on WDS2E by integrating temperature, hur barometric pressure, precipitation and solar radiation sensor, its specificati HY-WDS9E.

HY-WDS9E Weather Station

HY-WDS6 Compact weather station is a self-developed professional meteorological sensor for simultaneous measurement of multi-parameters: atmospheric temperature, atmospheric humidity, wind speed, wind direction, air pressure and precipitation. Air temperature, humidity, and pressure measurements are measured by standard industrial MEMS sensor positioned in radiation protection shield. It is characterized by high accuracy and fast response time.

Measurement of wind speed and direction is working based on principle of ultrasonic travel time difference. Precipitation is detected by 24G radar, which can rapidly detect precipitation and its intensity. GPS global positioning module and electronic compass are optional to be installed in reserved room, with these two module, you can obtain longitude and velocity accurately, thereby, true and apparent wind speed & direction can be calculated out.

Features

- Robust design, easy to install, 24 hours continuous monitoring
- Without moving parts, whole system is free of maintenance
- MODBUS communication protocol, standard RS485/RS232 output
- Electronic compass, GPS or BeiDou global positioning module can be added
- With internal heating device ensures normal operation in cold weather
- Radar precipitation can accurately measure amount of precipitation and reflect
- beginning and ending of raining.

Specification

Model	HY-WDS6			
Signal Output	RS232、RS485、SDI-12			
Power Supply	DC：7-24V			
Data Output	1 per second(adjustable)			
Power Consumption	185mA@12V(without heater)			
Material of Body	ABS+ Aluminum alloy			
Communication Protocol	Modbus、NMEA-0183、ASCII			
Dimension	Ø140 * 245 mm			
	Principle	Range	Accuracy	Resolution
Air Temperature	MEMS sensor	-40℃ - +80℃	±0.5℃	0.1℃
Air Humidity	MEMS sensor	0－100%	±2%	0.1
Air Pressure	MEMS sensor	150 － 1100hPa	±1 hPa	0.1hPa
Wind Speed	Ultrasonic	0 － 60m/s	±2%	0.01
Wind Direction	Ultrasonic	0 －359°	<3°	1°
Precipitation(Rain/Hail/Snow)	Radar	0-100mm/hr(Rain)	±10%	0.01mm
Luminance *	Silicon	0-20 KLux	±5%	1 Lux
Solar Radiation *	Silicon	0-1750 W/m2	±5%	1 W/m2
Sea level *	MEMS sensor	-500 － 9000m	±5%	1m

HY-WDS65E Weather Station

HY-WDS65E is developed based on WDS2E by integrating temperature, humidity, and barometric pressure sensor, compass and GPS module.

HY-WDS65 vehicle carried automatic weather station is professional meteorological station manufactured by Hongyuv, which can simultaneously measure air temperature, air humidity, wind speed, wind direction, air pressure and precipitation, and the real-time display of six data elements, Bottom of HY-WDS65 is two strong magnet wrapped by rubber, convenient for installation on vehicle by attractive force of magnet.

It has built-in rechargeable lithium battery and Bluetooth wireless data transmission module to send real-time data collected by weather station to APP on phone or laptop, and displayed in software. Total weight is only 1.8kg, easy for carrying and operation.

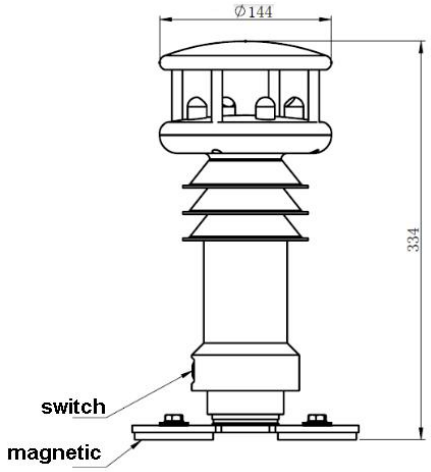
Features

- Built-in rechargeable lithium battery last for over 10 hours
- Built-in three axis electric compass, can calculate intersection angle with geophysical north direction
- Sensor comes with heating device to ensure normal work in cold weather
- No moving parts, free of maintenance

Specification

Parameters	Measure range	Accuracy	Resolution
Apparent./True Wind Speed	0 – 60 m/s	±2%	0.1 m/s
Apparent./True Wind Direction	0-359 °	±3°	1°
Air Temperature	-40℃ – +80℃	±1℃	0.1℃
Air Humidity	0 – 100%	±2%	0.1%
Air pressure	150 – 1100hPa	± 1hPa	0.1hPa
Precipitation(24G Radar)	0-100mm/hr	± 10%	0.01mm
Longitude,Latitude	GPS		
Traveling speed	Unit: knot or m/hour		
Signal Output	Bluetooth		
Power Supply	Rechargeable lithium battery last for 8 hours		
Data output	1 per second via Bluetooth		
Dimension	150*110*320mm		

Dimension



6. HY-WDS63 Portable Automatic Weather Station

Brief introduction

HY-WDS63 portable automatic weather station is professional meteorological station manufactured by Hongyuv, which can simultaneously measure air temperature, air humidity, wind speed, wind direction, air pressure and precipitation, and the real-time display of six data elements, which is characterized by high integration detection, high precision, fast response time.

HY-WDS63 is compose of detection part and display part. Display part uses high brightness LED digital tube, even in bright light can also clearly see the display data. Optional aluminum alloy material tripod, up to 2.3 meters, weight is only 2.2kg, very light for carrying. In particular the two part is very convenient and quick to install and disassemble. The detection and display part can also be powered by rechargeable lithium battery, HY-WDS63 can start measuring once it's assembled and turned on. It's very simple and convenient to use. And built-in SD card slot, real-time storage of data. At the same time, the bottom part of the display also has a communication interface, and also facilitates the transmission of information through the cable to the computer for display and storage.

Features

- Compact, light weigh, total weight only 2.9 kg
- Built-in rechargeable lithium battery last for over 8 hours
- Built-in TF card slot, convenient for storage and transfer data
- Built-in compass and GPS
- Sensor comes with heating device to ensure normal work in cold weather
- Simultaneously measure multiple meteorological parameters
- Display part come with standard serial port
- No moving parts, free of maintenance

Technical Specification

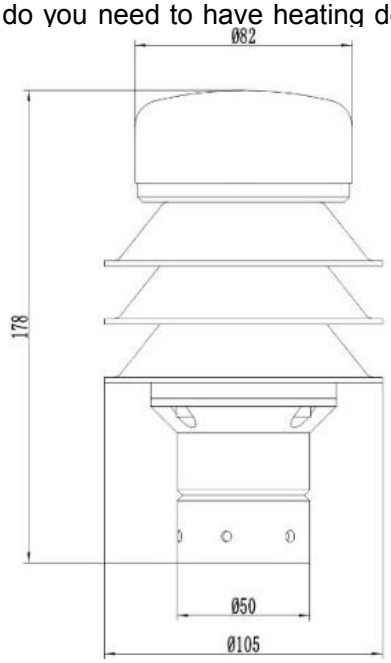
Parameters	Measure range	Accuracy	Resolution
Wind Speed	0 – 60 m/s	±2%	0.1 m/s
Wind Direction	0-359 °	±3°	1°
Compass Heading	0-359 °	±5°	1°
Air Temperature	-40℃ – +80℃	±1℃	0.1℃
Air Humidity	0 – 100%	±2%	0.1%
Air pressure	150 – 1100hPa	±1hPa	0.1hPa
Precipitation(24G Radar)	0-100mm/hr	±10%	0.01mm
Power Supply	Adapter: 12VDC; Rechargeable lithium battery can last for 8 hours		
Data Storage	Built-in TF card slot	Signal Output	RS485
Operating Environment	-20~60℃; 0~100% RH		
Dimension	Sensor:150*110*420mm Tripod:2300mm		

Dimension

7. HY-RS2E Radar Rain Gauge Precipitation Sensor

HY-RS2E adopts advanced small 24GHz Doppler radar, the speed rate of drops is registered with a 24 GHz radar system. By comparison between the speed rate and the size of drops, the quantity of rain or its intensity will be registered. The rain/precipitation type (rain/snow/snow-covered rain/freezing rain/hail) is determined thanks to the speed rate of the rain. Resolution up to 0.1mm, without maintenance.

HY-RS2E radar precipitation detector has higher sensitivity and faster response than the traditional mechanical type when detecting start and end time of rain, besides, neither do you need to worry about obstruction such as leaves covered in the surface of the detector to interfere with rainfall detection, nor do you need to have heating device to prevent freezing.



Application

- Weather station rain/precipitation detection
- Smart city weather system
- River flood control forecasting

Specifications

Model	HY-RS2E
Type of precipitation	Rain, Snow, Hail, sleet, freezing
Measurement surface	8cm^2
Measurement Range	0-200mm/hour (rain)
Accuracy	±10%
Measuring drop size range	0.5-5.0mm
Resolution	0.1mm
Sample rate	1 time per second
Communication interface	RS485、RS232、 SDI-12
Protocol	ModBus、NMEA-0183、ASCII
Voltage	DC7-30V； 110mA@12V
Operating Temperature	-40℃ – +70℃
Operating Humidity	0-100%
Size	Ø105 * 178mm
Material	Aluminum alloy +ABS
Weight	0.45kg

8. HY-SLV2E Visibility Sensor

Introduction

HY-SLV2E visibility sensor is working based on forward scattering principle developed by Hongyuv, It has robust, lightweight and compact structure, and can be mounted to vehicle for mobile monitoring. Aluminum alloy shell with spray-powder make it will never rust, applicable to drilling platforms, ships, highways and other transport sector.

The visibility meter adopts light forward scattering principle, built-in microprocessor-controlled atmospheric visibility monitoring equipment. It emits pulses of infrared light and measures the intensity of the forward-scattered light of the suspended particles in the atmosphere, using suitable algorithms to convert the measurements to meteorological visibility values.

Working Principle

When HY-SLV2E is working, emitting module emits a bunch of infrared light with a center wavelength of 0.87μm through the infrared light emitting diode to the atmosphere, and the receiver converges a certain volume of atmospheric forward-scattered light onto the receiving surface of the silicon photoelectric sensor and converts strength of light to electrical signal, then signal is processed and collected by DAM(Data Acquisition Module), and then processed as visibility values by CPU and sent to PC via RS485

Application

- Easy installation and start-up
- Analogue and digital Interfaces
- Correct measurement long term stability
- Representative measurement
- Technical Parameters

Measured value :	Intensity of scattered light
Measuring range :	10 m to 3000 m
Accuracy	±20%
Operating temperature	-40 °C to +55 °C
Power supply	DC12-24V
Power consumption	2.8w (with heating:15w)
Interfaces	RS 485/RS232
Protocol	ModBus
Dimensions (W x H x D)	300×140×115 mm
Weight	1.2 kg

9. HY-VTF306BE Visibility Sensor

Overview

HY-VTF306B Visibility detector measures atmospheric visibility by amount of light scattered by different particles (smoke, dust, haze, fog, the air that pass through the optical sample volume.

Field of application

The forward scatter measurement principle and unique design ensure the output is both accurate and reliable in all weather conditions and will not be influenced by local lights sources, even those that flash.

With a measurement range of 10m to 10km the sensor is suitable for use in road and aviation constructed from robust aluminium and finished with a high quality powder coat, the sensor will provide years of reliable service. Heating of the optical windows and sensor hoods is provided as standard allowing use in the harshest of conditions. Both optical windows are monitored for contamination and the visibility output is automatically compensated to reduce maintenance requirement.

Key Features

- Especially built for Traffic Applications
- 10m to 10km measurement range
- Ideal for road long distance visibility data collection
- Accurate and traceable measurement
- High mechanical strength
- Low maintenance requirement
- Simple Installation and Maintenance
- Compact forward design
- Not affected by local lights
- Easily installed by one person
- Hood heating for use in extreme environments

Specification

Visibility measurement	
Measures Range	10m to 10km
Accuracy	±10%
Measurement principle	Forward scatter meter with 39° to 51° angle
Output	
Baud Rate	9600
Serial outputs	RS232 or RS485
Protocol	ModBus and ASCII
Environmental	
Operating temperature	-40°C to +60°C
Operating humidity	0 – 100% RH
Protection rating	IP65
Power Requirements	
Sensor power	12-24 VDC
Power consumption	3.8W
Physical	
Material	Powder coated Hard-Anodized aluminium
Weight	3.2 Kg
Dimensions	706x250x170mm
Lifetime	>10 Years

10. HY-IRS2E Non-contact Road Surface Temperature Sensor

Introduction

HY-IRS2E is a compact infrared temperature sensor. The optical analysis system is sited in a compact aluminium shell. An 90° adjustable mounting bracket allows an easy installation. It's designed for industrial, outdoor 7/24 monitoring.

HY-IRS2E is compose of thermopile and a thermistor and working based a basic principle that All objects with a temperature above absolute zero emit electromagnetic radiation. The wavelengths and intensity of radiation emitted are related to the temperature of the object.

By measuring the infrared radiation energy of their own, their surface temperature can be obtained by HY-IRS2E,which is also greatest advantage of HY-IRS2E.

Application Scopes

- Pavement roadway surface temperature monitoring
- Bridge surface temperature monitoring
- Plant canopy temperature monitoring
- Surface temperature monitoring of soil, snow cover, grass

Technical Specification

Measure Range	-40—70℃
Accuracy	±1% or ±1℃
Distance to Target:Target Diameter	D:T=8:1
Resolution	0.1℃
Respond Time	1 s
Spectral Range	8—14um
Output Interface	RS485
Protocol	ModBus
Operating Environment	-55 — 80℃； 0—100% RH
Power Supply	DC7-15V
Power Consumption	0.5mA @ 12VDC

11. HY-RSS11E Non-contact Road Surface State Sensor

Brief introduction

HY-RSS11E is a non-contact road surface state detector, thanks to remote sensing technology it's taken, it can not only avoid damage to the road, But also traffic interference during its installation. Multispectral measurement technology enables accurate detection of thickness of ice, snow, water on surface of the road.

HY-RSS11E detector is ideal choice for road conditions where installation of embedded pavement sensor is inconvenient or inapplicable. Remote installation, means that there is no need to slot-cut surface or shut down the road, its installation is safe and convenient. It's almost free of maintenance and ideal choice for road meteorological systems. It can be installed on existing weather stations or on other buildings which has unobstructed view to pavement.

The HY-RSS11E detector is installed in a robust durable housing to ensure it's stable working and providing accurate data during bad weather.

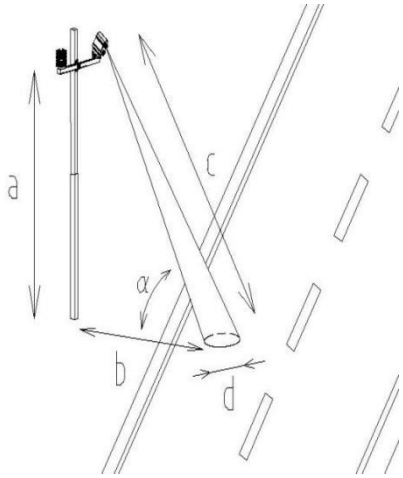
By providing accurate road state information, HY-RSS11E can alarm road management department to take appropriate remedial action. Before weather elements has created a hazardous driving surface

Function

- Detect thickness of ice, snow, water on surface of the road
- Remotely monitor road state
- No embedded installation
- Low maintenance cost
- Can be integrated into existing road monitoring system

Application

- Bridge road
- Accident-prone areas
- Intense traffic area
- Rain and snow-prone areas



Specification

Model	HY-RSS11E		
Measuring distance	2-13 meters		
Measuring area diameter	23 cm		
Angle	35-90°		
Power supply	220VAC、12-24VDC		
Max. Power consumption	4W(including heating of lens)		
Operating temperature	-40 ℃— +70 ℃		
Operating humidity	0—100%		
Road surface state parameters output	Water ： 0.00—10mm	Resolution: 0.01mm	Accuracy: 0.1mm
	Ice： 0.00—10mm		
	Snow： 0.00—10mm		
Road status report	Dry, moist, wet, snow ,ice, mixture of ice and water(frost)		
Lens contamination detection	Measure contamination level and automatic internal compensation		
Material of road surface	Concrete, asphalt		
Communication	RS485、RS232		
MTTF	1.5*1000 000 hours		
Dimension	400(L)×136（W）×220（H）		
Safety	No safety problem – remote infrared detection		

12. HY-RSS12E/13E Road Surface State Detector

Introduction

HY-RSS12E/13E series non-contact road state detector adopts remote sensing technology to avoid road damage and traffic interference caused by the installation of road meteorological station. Multispectral measurement technology can accurately detect the presence and thickness of ice, snow and water on the road surface, as well as real-time monitoring of heavy fog, rain, snow and other weather phenomena that affect traffic safety.

Function

- Remotely detect water,snow, ice on road
- Road and bridge surface state remote sensing
- Non-imbed installation
- Ideal for traffic and accident prone areas
- Ideal for frequently rainy and snowy areas
- Almost maintenance-free

Technical Parameters

Model	HY-RSS12E	HY-RSS13E
Detect distance: Diameter of detection area	2-8 meters； 23cm	
Installation angle to horitonal direction	30-80°	
Power supply	DC12-24V:1W	
Working Environment	Temperature： -40 ºC to +60 ºC; Humidity:0 to 95%	
Thickness of water film	-	0-2 mm
Thickness of ice layer	-	0-2 mm
Thickness of snow	-	0-2 mm
Level of grip	-	0.01-0.82
Identificable Road State	Dry,moist,wet,snow,ice,mixture of ice and water	
Applicable Road	Concrete, Asphalt	
Communication Interface	RS485,RS232	

13. HY-CDP22E Tunnels Entrance Luminance Monitor

- CIE Approved measurement technology
- Accurate measurement of tunnel entrance luminance
- Designed specifically for tunnels
- Rugged construction
- Simple installation/operation
- Isolated 4-20mA analogue outputs
- Alarm relay contacts
- ModBus serial comms

The HY-CDP22E Luminance Monitor measures the level of luminance, or brightness, created by natural light at the tunnel entrance / exit to ensure that the visual perception of drivers will be maintained, both day and night, by avoiding sudden variations in lighting levels and potential “black hole effect” when entering and exiting a tunnel.

The HY-CDP22E Luminance Monitor uses a specially designed, highly light-sensitive photocell, filtered to provide a spectral response close to that of the average human eye, to react to changes in light levels within the tunnel environment. This reaction is virtually instantaneous. The light receptor measures the average luminance within an acceptance angle subtending 20 0.

The HY-CDP22E is a self contained intelligent analyser and the measurements are converted into an output signal of 4-20 mA (directly proportional to the luminance measurement).

The HY-CDP22E also comes with alarm relay contacts and ModBus serial communications protocol.

It has been designed to enable it to withstand extremes of weather conditions. The complete electronic system is contained within a water-proof, heated housing of powder coated steel with an IP66 protection rating.

The HY-CDP22E Luminance Monitor has an operating temperature range from -30℃ - +70℃ which ensures stable readings across all prevailing ambient temperature conditions.

Specification

Detector	Silicon photo diode
Measuring Angle	20°
Measurement Range	0-7000cd/m2
Accuracy	±3%
Voltage	100-240VAC
Power Consumption	15 Watt
Output	RS485(MODBUS)
	4-20mA(Isolated)
	two way relay 2A@24VDC
IP Grade	IP66
Operating Temperature	-30~70℃
Operating Humidity	0-100%
Materials	Powder coated steel
Dimensions	370x189x167mm L x W x H
Weight (each)	3.5 Kg
Mounting	Adjustable brackets(optional)
Warranty	24 Months

14. HY-LXP21E Tunnels Illuminance Monitor

- CIE Approved measurement technology
- Accurate measurement of illuminance within tunnel
- Designed specifically for tunnels
- Rugged construction
- Simple installation/operation
- Isolated 4-20mA analogue outputs
- Alarm relay contacts
- ModBus serial comms

The HY-LXP21E measures the level of illuminance within the tunnel bore to ensure interior illumination levels are being continuously maintained in order to affect safe lighting conditions for drivers. Illuminance, or incident lighting, determines the amount of light that covers a specific surface or area within the tunnel.

Designed specifically for the tunnel environment, the HY-LXP21E continuously measures cosine corrected planar illuminance within the tunnel thus allowing elimination of directional error. The HY-LXP21E measures the illuminance over a standard range of 0 - 20,000 lux.

Like the HY-CDP22E, the HY-LXP21E uses a specially designed, highly light-sensitive photocell, filtered to provide a spectral response close to that of the average human eye, to react to changes in light levels within the tunnel environment.

The HY-LXP21E is a self contained intelligent analyser and the measurements are converted into an output signal of 4-20 mA (directly proportional to the illuminance measurement) for hard wire connection and signal transmission to a host controller. The HY-LXP21E also comes with alarm relay contacts and ModBus serial communications protocol.

Having been designed for tunnel environments, the HY-LXP21E is of rugged construction using powder coated stainless steel and flame retardant polycarbonate to achieve an IP67 / NEMA 4X protection rating. The HY- LXP21E is able it to withstand the corrosive atmosphere and regular tunnel washing that the tunnel environment endures. The HY-LXP21E has an operating temperature range from -30℃ - +70℃ which ensures stable readings across all prevailing ambient temperature conditions.

Specification

Detector	Silicon photo diode
Measurement Range	0-2000 lx
Resolution	1 lx
Accuracy	±1%
Voltage	100-240VAC
Power Consumption	36 Watt
Output	RS485(MODBUS)
	4-20mA(Isolated)
	two way relay 2A@24VDC
IP Grade	IP66
Operating Temperature	-30~70℃
Operating Humidity	0-100%
Materials	Powder coated steel
Dimensions	376x136x164 mm L x W x H
Weight (each)	3 Kg
Warranty	24 Months

15. HY-WDS21E Tunnel Ultrasonic Wind Sensor

HY-WDS21E wall-mounted ultrasonic wind speed and direction sensor is specially designed for the tunnel application, it's installed on the tunnel wall and providing real-time tunnel wind data to total control room, as a basic basis for ventilation and operation. At the same time, the analog and digital signals output from sensor can be connected to the PLC in the nearby sub-control room and then to the general control room through optical fiber.

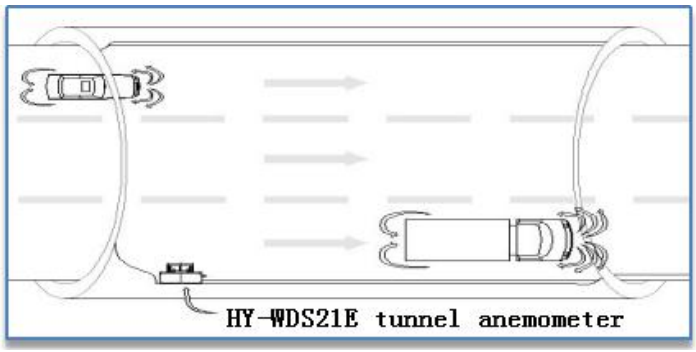
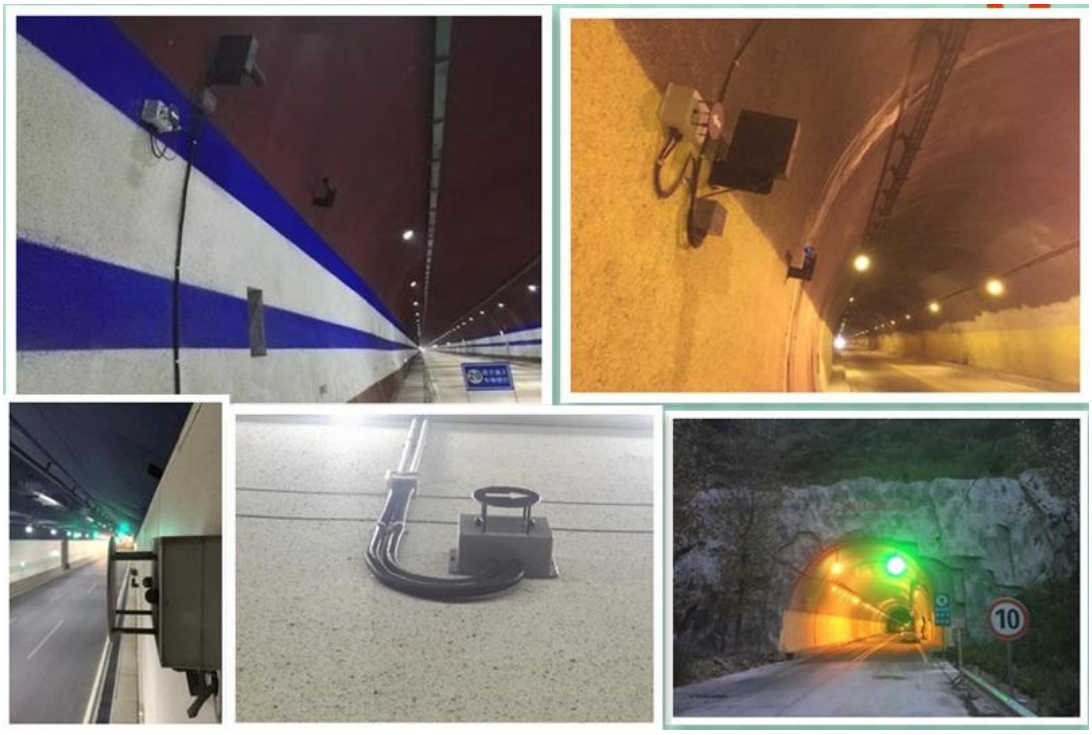


Figure 1 HY-WDS21E tunnel wind sensor

Main Features

1. Cast aluminum body, anodized surface for harsh environments in the tunnel
2. Ultrasonic measurement free from influence of ambient temperature
3. Non-contact detection, no moving parts, reduce the failure rate.



Technical Parameters

Principle	Ultrasonic time-difference technology
Installation	Wall of tunnel
Range	Wind speed -30m/s~30m/s(other range can be customized)
Resolution	0.1m/s
Accuracy	±2%
Digital interface	RS232，RS485
Signal output	Wind Speed: 4-20 mA output(load < 500Ω)
	Wind Direction: Relay output(three terminals NO or NC)
Protocol	ModBus
Power supply	100~220VAC±10%，50Hz/60Hz
Protection Grade	IP66
Operating temperature	-45℃ - +75℃
Operating humidity	0 - 100%
Power consumption	1W

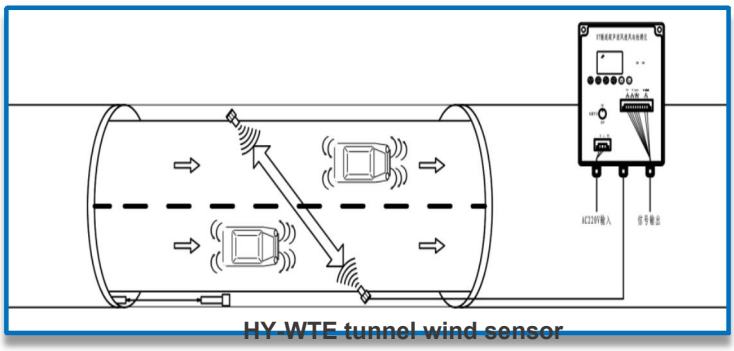
Specifications may be subject to change without prior notice.

16. HY-WTE Crossed Tunnel Ultrasonic Wind Sensor

Introduction

HY-WTE crossed type tunnel ultrasonic wind speed and wind direction detector is specifically designed for for the tunnel application, it's working based on ultrasonic time-difference method, the two ultrasonic probes were installed on both sides of the tunnel wall and face to each other, when tunnel airflow passes between the two ultrasonic probes, the time difference between the round-trip times of the ultrasonic waves transmitted by each other is changed by airflow. By measuring the time difference, the airflow velocity is obtained.

A built-in time delay, variable from 00-99 seconds can be set to prevent very short duration gusts from causing false alarms. Only when wind speed reach preset value limit and last time exceed time delay, will the corresponding relay be triggered.If additional connections are made, the alarm can cause a remote warning light to flash, sound a remote horn or siren, and automatically actuate the crane brakes to prevent the crane from rolling.



HY-WTE tunnel wind sensor

Main Features

1.Non-contact measuring system without any moving parts for lowest operating costs and long maintenance intervals

2.Integral measurement over the full tunnel width for representative measuring results,imperative according to tunnel experts, especially when the system is designed for
fire hazards

3.Precise measurement also for very low flow velocities,therefore perfectly suitable for the assessment of portal emissions.

4.Measured and actual air velocity (averaged over the complete tunnel cross-section) are very much in agreement. Large differences can occur with single-point measurements–even indication of the wrong flow direction.

Application

Measuring the air velocity and flow direction
– ventilation control in road and railway tunnels or similar structures
– detection of smoke propagation during tunnel fires for efficient fire fighting

Technical Parameters

Principle	Ultrasonic time-difference technology
Installation	Wall of tunnel on opposite-side
Range	Wind speed -30m/s~30m/s
Sampling path	5m~25m
Accuracy	Wind speed ±0.1m/s
Relay output	2 ways dry-contact relay output
Output	RS485(MODBUS-RTU)　and 4-20 mA output(load < 500Ω)
Power supply	220VAC±10%，50Hz/60Hz
Protection Grade	IP66
Operating Environment	Temperature:-30－65℃; Humidity:0－95%RH

17. HY-CNVIE Tunnel Visibility Gas Detector

Introduction

Tunnel is a special kind of tubular structures, due to the small space, if exhaust gas emitted by vehicles is not ventilated out timely, those particles will directly affected visibility in tunnel and endanger passengers and maintenance staff personal safety. The HY-CNVIE is designed to collect real-time monitoring data of VI online, and provide them with traffic supervision departments, so as to provide decision-making basis for tunnel ventilation and road safety.

Features

1. High resolution visibility measurement；
2. The measurement is completely free from the influence of other stray light sources；
3. Specially designed for harsh environment of tunnel;
4. Measurement is totally free from vibration caused by environment and moving vehicles;

Unique compensation function allows a longer maintenance cycle；

Non-contact, continuous visibility measurement；

Working Principle

HY-CNVIE is a visibility detector of transmission principle based, both emitter/receiver and the reflector are installed and fixed alignment using bracket, highly focused optical beam is emitted by emitter then go through 3 meter optical path and reflected by reflector. The actual travel distance of optical beam is double optical path as 6 meters, the attenuation caused by dust is processed as the measured value. According to the requirements of Chinese tunnel construction, the visibility detector should be installed on the top or side wall of the tunnel. HY-CNVIE visibility detector has its own compensation function. It can automatically self-compensated when the optical lens is contaminated, therefore, it has longer maintenance period.

Technical Parameters

Items	Visibility	CO	NO	NO2
Working Principle	LED Transmitivity	Electrochemical Cell		
Unit	m-1	ppm	ppm	ppm
Measure range	0--35×10-3 m-1	0–300ppm	0–30ppm	0–10ppm
Optical path	6 meters optical length (installation length is 3 meters)	—	—	—
Accuracy	±0.002 m-1	±2 ppm or 2% span	±2 ppm or 2% span	100ppb
Digital output	RS485			
Compensation	VI has self-calibration and automatic zero-calibration			
Analog output	two ways 0/4mA- 20mA(internal resistance<500Ω)			
Ambient temperature	-55－65℃			
Ambient humidity	0－100%RH(non-condensing)			
Power supply	220V±15%VAC 50HZ			
Power consumption	Rated 5W, Maximum 10W			
IP Grade	IP67			
Weight	18 kg			

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