麦芽传感科技
Maiya Sensor Technology

MYHB-KQZS06

Micro Air Quality Measure Station

Manual

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Catalogue

1. Product overview

MYHB-KQZS06 Micro Air Quality Measure Station is a product launched by our company to provide real-time monitoring of outdoor air pollutants.Micro air station is a common real-time data collection in the atmospheric environment(carbon dioxide, sulfur dioxide, nitrogen dioxide, ozone, Vocs,PM2.5, PM10, temperature, humidity, wind speed, wind direction, atmospheric pressure, etc.), supports 24-hour online monitoring, selects the current advanced high-precision four-electrode electrochemistry and optical technology principle, with the characteristics of fast response speed, strong reliability, low maintenance cost and long service life.Data collected on the site is sent to the data summary cloud service platform.

Figure 1-1 MYHB-KQZS06 Micro Air Station

The product is called the MYHB-KQZS06, uses energy-saving power supply, reduce energy consumption, and can also choose market electricity.MYHB-KQZS06 integrates "Four Gas and Two Dust" (SO2, NO2, CO, O3, PM2.5, PM10) sensor with wireless communication technology to realize real-time data monitoring and gathers environmental big data into "cloud platform" to provide data foundation for the grid platform; This device is light, beautiful appearance, convenient installation and can be calibrated according to the site to ensure the best traceability.

Users can choose the solar panel power supply or adopt the municipal electric power supply according to the field conditions.The parameters that can be customized to MYHB-KQZS06 according to their own needs, the options include: standard pollutant ozone (O3), volatile organic matter (VOCS), nitrogen dioxide (NO2), nitrogen oxide (NOx), carbon monoxide (CO), sulfur dioxide (SO2), particulate matter (PM10, PM2.5, PM1, TSP); and meteorological parameters such as temperature, humidity, wind speed, wind direction, atmospheric pressure.

2. Technical indicators

2.1 Gas monitoring unit

The MYHB-KQZS06 microair station uses an intelligent gas (SO2, NO2, CO, O3,) sensor, as shown in Figure 2-1.

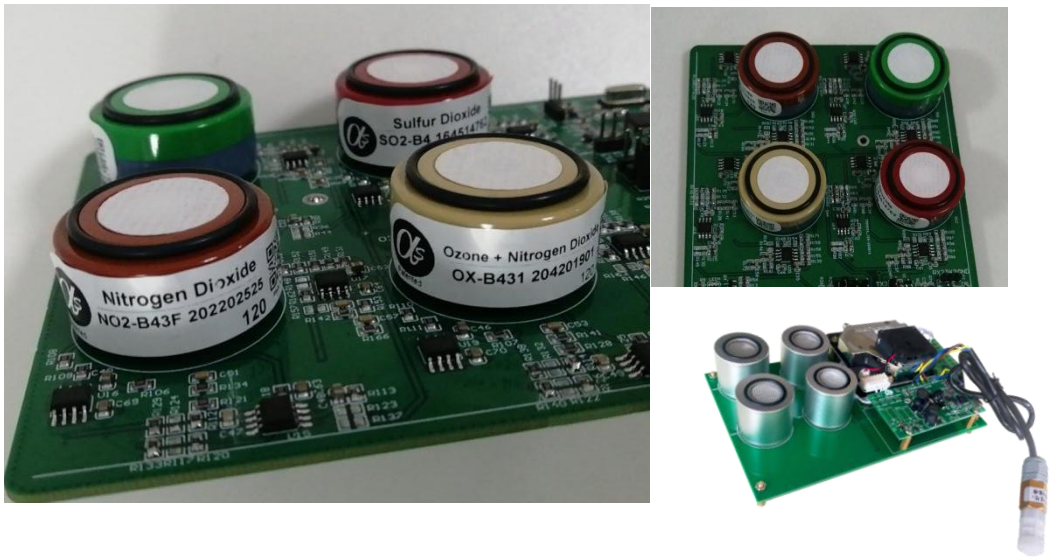


Figure 2-1 The New Intelligent Sensor

This sensor is a new intelligent sensor specially launched by our company for gas detectors. It uses the diffusion gas detection method. The gas in the detected area of the instrument flows freely into the gas sensor with the air.The sensor mainly solves the problems of various gas detection, incompatible sensors, complex production calibration, core device replacement restrictions, convenient operation, accurate measurement, reliable work; light volume, the gas sensor can be replaced according to specific demand, with temperature compensation, no calibration after delivery.

The parameters of each monitored gas are shown in Table 2-1.

Table 2-1 Parameter Table for each monitored gas

Work voltage	DC5V ±1%/DC24V ±1%	Potter rate	9600
Response time	＜30S	Detection principle	Electrochemistry
NO2 measurement range / resolution	0-20/0.001ppm	SO2 measurement range / resolution	0-20/0.001ppm
CO measurement range / resolution	0-100/0.001ppm	O3 measurement range / resolution	0-5/0.001ppm
PM1 measurement range / resolution	0-20m g/m3 0.01ug/m3	TSP measurement range / resolution	0-20m g/m3 0.01ug/m3
Vocs measurement range / resolution	0-20/0.001ppm	Digital signal format	Support for 232 / 485 transmission format, 4G transmission
Sampling accuracy	±2%FS	Work humidity	10~95%RH(non-condensation)
Repeatability	±1%FS	Long-term drift	≤ 1%FS/ years
Work temperature	-20-70℃	Preheat time	30S
Storage temperature	-40-70℃	Workpressure	86kpa ～106kpa
Work current	≤50mA	Quality warranty period	One year
Service life	Two years	Case material	Aluminum alloy

2.2 Particulate matter monitoring unit

The equipment measures the particle concentration using a laser scattering method.The sensor measurement component is a complete set of air particle distribution concentration measurement system based on Gustav Mie particle light scattering theory and combining microphotodetection technology, as shown in Figures 2-2.

Figure 2-2 Particulate matter Sensor

The system cleverly designs the light sensitive area as the place for particle scattering. After the particle passes through the light scattering area, the focused laser is collected by the micro photodetector on the detection window, and the micro photodetector quickly and accurately transforms the received optical intensity signal into an equal voltage signal. The signal density corresponds to the unit concentration value of the particle, and the dust concentration value makes real-time output through the data interface.Both parameters of PM10 and PM2.5 were measured using the patented technology of the electronic cutter, measuring the range 0-10000ug/m^3。

Table 2-2 Parameter parameters

Execute standards	ISO14644—1（FS209E）AQ/T4268—2015		
Technical principles	Light scattering		
Grain diameter channel	PM1/PM2.5/PM10/ TSP	Power supply	12V—24V
Recreability	≤±2%	Flow speed	1L/min± 5% constant flow
Measurement accuracy	≤±10%	Communication mode	RS485/RS232
Resolution	0.01μg	Communication protocols	Modbus RTU[slave station]
Maximum valid range	20mg/m3	Interface	5 Core Air Plug
Outdoor protection level	IP65	Protection	Have the sensor sheath gas protection
Detection cycle	Default 60s (1-999s adjustable, recommended ≥ 6s)		

Use the environment	Temperature: -10℃~50℃; humidity: < 85%RH; atmospheric pressure: 86~106kpa
Explosion level	No (optional explosive isolation protection box EXDIIBT4)
Battery	Optional 5200mah built-in lithium battery
System extensibility	Temperature, humidity, combustible gas, oxygen, carbon dioxide, etc

2.3 Meteorological sensor

Table 2-3 Parameter Table of MeteorSensor

Name		Specifications and parameters
Weather sensor	Wind sensor	Equipment power supply: 10~30V DC Equipment power consumption: 360°:0.2W Working environment: -20℃~+ 60℃, 0%RH~80%RH Measurement range: 0-360 ° measurement Measuring accuracy: ± 1 ° Communication parameters: Default device address 1, Baud rate 4800 Output signal: RS485
	Wind speed sensor	Equipment power supply: 10~30V DC Power consumption of the equipment: 0.1W Wind speed accuracy: ± (0.2+0.3V) m/s V indicates the wind speed Range of measurement: 0~60m/s Resolution: 0.1m/s Start-up wind speed: ≤ 0.2m/s Response time: ≤ 0.5s Communication parameters: Default device address 1, Baud rate 4800 Output signal: RS485
	Temperature and humidity sensor	Temperature range: -40℃~80℃ Humidity range: 0%~100%RH Temperature accuracy: ± 0.5℃ (25℃) Humidity accuracy: ± 3%RH (5%RH~95RH,25℃) Power supply: 10~30V DC PM2.5/PM10 range: 0 ~ 1,000 ug/m³ Operating temperature: -20~+ 60℃, 0%RH~80RH Output signal: RS485

3. Product characteristics

3.1 Has good quality, low price, suitable for grid, batch promotion;

3.2 Realizes the functions of various parameter acquisition, data processing and data upload;

3.3 Has the equipment status indication function, which can visually identify the equipment working state;

3.4 Has the power supply system of solar + lithium battery + municipal;

3.5 Four-electrode gas sensor, with stable performance and high resolution;

3.6 Modular product design for easy later maintenance;

3.7 Has a large flow vacuum pump, and the reaction time is 1.5 times faster than the ordinary diffusion acquisition method;

3.8 Gas 7 indicators optional, as well as gas image 5 parameters and other parameters can be flexibly customized;

3.9 Accessories are complete, energy Yang power supply, fixed bracket and everything.

4. Schematic diagram of the product structure

Fig. 4-1 Product Appearance Drawing

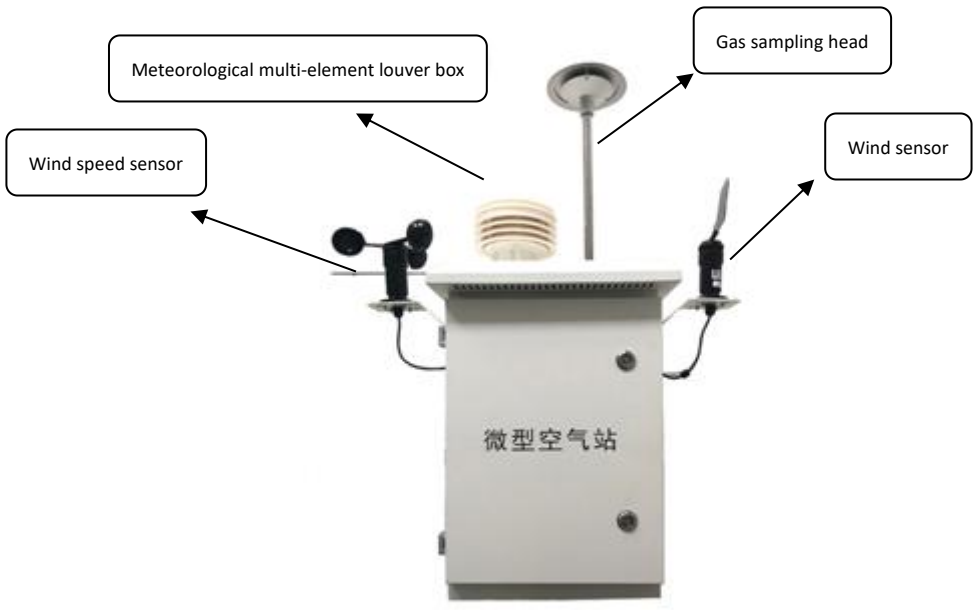


Fig. 4-2 External structure diagram of the product

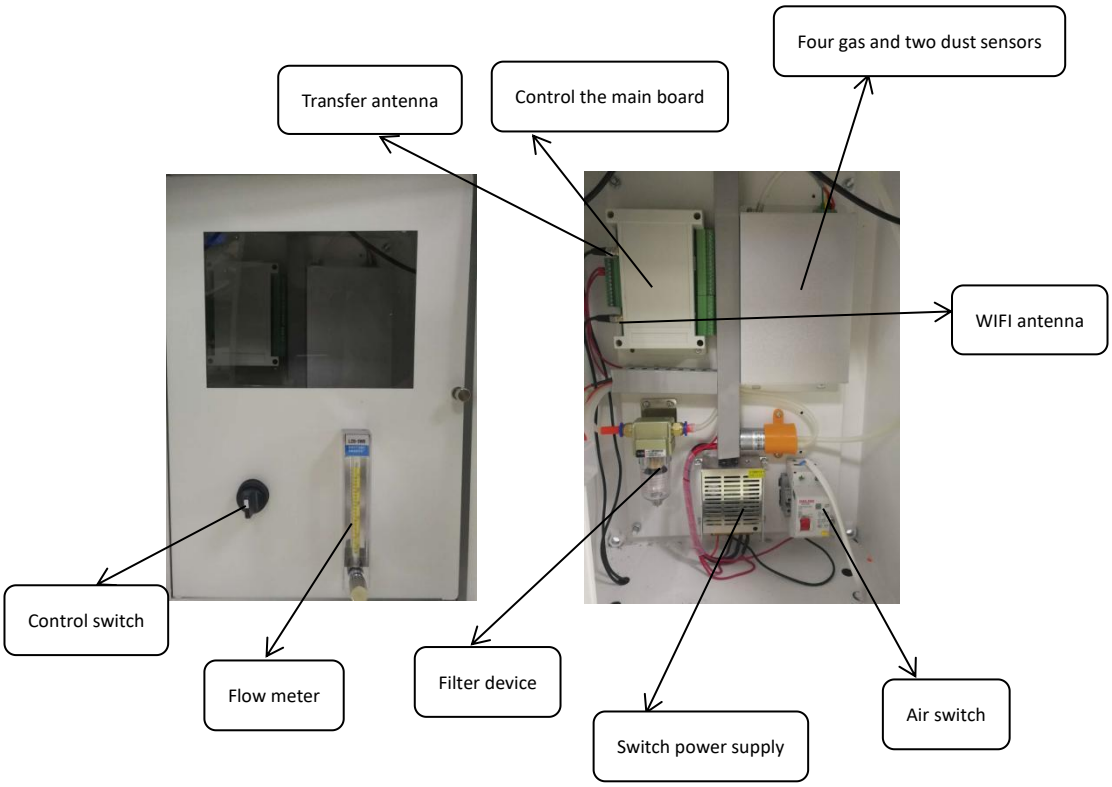


Fig. 4-3 Product internal Structure

5. Micro-air station for applicable environment

The establishment of an air environmental data monitoring and analysis system can improve the processing and management ability of air pollution monitoring data, and provide a decision-making basis for environmental planning and environmental evaluation.

It is applicable to enterprise chemical park,urban environmental monitoring, municipal environmental monitoring, mobile environment monitoring, traffic pollution environment monitoring residential area / school / hospital air quality environment monitoring, park forest environment monitoring and other scenarios.

6. Micro air station distribution point

According to the distribution and characteristics of air pollution concentration in the region, the distribution of environmental sensitive areas, the leading wind direction and other factors, combined with the construction of the original monitoring stations in the region, the key diffusion path of air pollution events is identified, and the construction of regional micro environment micro stations is coordinated.

In considering the importance of area, the degree of pollution of air pollutants, development level of industrialization, on the basis of the grid, in the grid intersection or center point, using distributed redundant node judgment algorithm, remove sensor redundant nodes, so as to reduce computing complexity, communication cost and equipment cost.At the same time, it can accurately judge the effectiveness and accuracy of the monitoring data, and map the diffusion trend of pollutants in different periods, which is conducive to scientific decision-making on pollutant control.

The area can be divided into industrial parks, administrative office areas, commercial areas, residential areas, medical treatment, schools, stations, public green space, etc.Focus on monitoring the high-pollution industrial zone, to calculate the total output through the industrial park and the surrounding input and output sources, to monitor whether the emissions of pollutants in industrial production meet the standard, and to monitor the air quality of other non-industrial land.

Grid micro-air distribution requirements:

(1)Representative

It is well representative and can objectively reflect the environmental air quality level and changes within a certain spatial scope. The distribution scheme of micro air station meets the needs of regional environmental air monitoring, objectively evaluates the impact of urban, regional environmental air conditions, and the impact of pollution sources on the environmental air quality.

(2)Comparability

The environmental conditions of the same type of monitoring point should be as consistent as possible, so that the data obtained by each monitoring point is comparable.

(3)Scientific

Environmental air quality grid monitoring system, each grid should consider urban natural geography, meteorological comprehensive environmental factors, and industrial layout, as well as urban construction, economic characteristics, economic structure, population distribution, in the layout should reflect the main functional areas and main air pollution status and trend, meet the needs of fine air pollution prevention and control management.

(4)Economy

When different monitoring grids of the same type of monitoring points overlap, the overlapping points should be integrated to avoid the repeated construction of points.When there is a cross of spatial layout between the grids of different pollution sources, the pollution sources with high emission will preferably be arranged by calculating the equal standard pollution load.The monitoring points that have been integrated should be reflected in the analysis and management process of different monitoring grid monitoring data.

(5)Dynamics

Environmental air quality grid monitoring network should be combined with local urban and rural construction planning, energy structure adjustment, regional air quality changes, determine the key evaluation area, timely, reasonable, scientific and effective adjustment of hot grid point layout, make the monitoring points can determine the future urban and rural spatial pattern change trend and the future monitoring needs.

7. Micro-air station data analysis platform

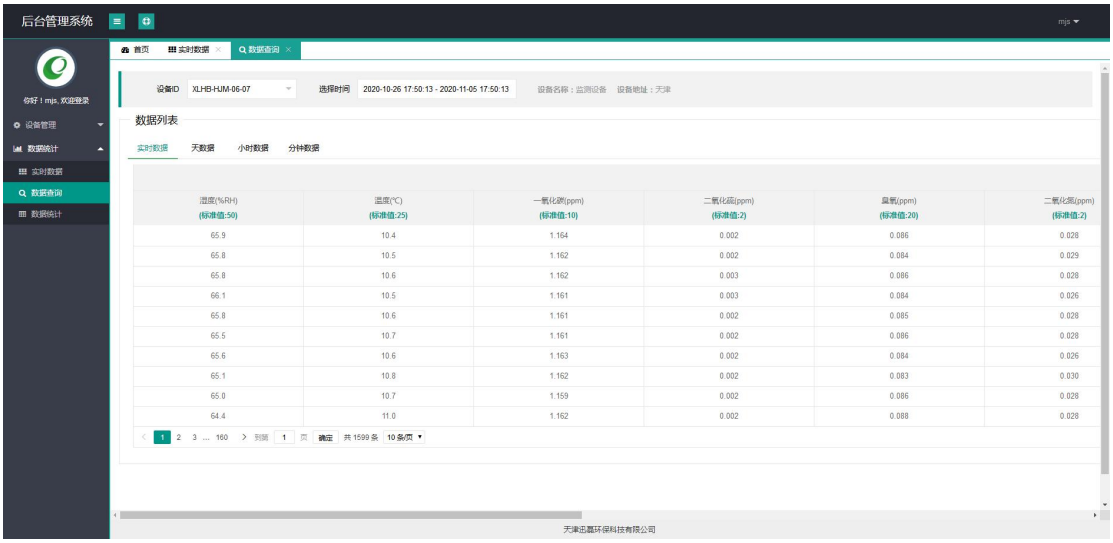
The V2.0, platform equipped with the micro air station is a big data analysis platform. The V2.0, platform can display the parameters of the air station monitoring in real time by binding the micro air station and realize remote monitoring.

7.1 The visualization is shown

The following picture shows the device real-time monitoring data browsing interface, the device is equipped with 11 different sensors, which can display the current data of each parameter in real time in 11 dials, visual image.

7.2 The historical data query

The platform can view the real-time, minute, hour and daily monitoring data uploaded by the micro-air station.



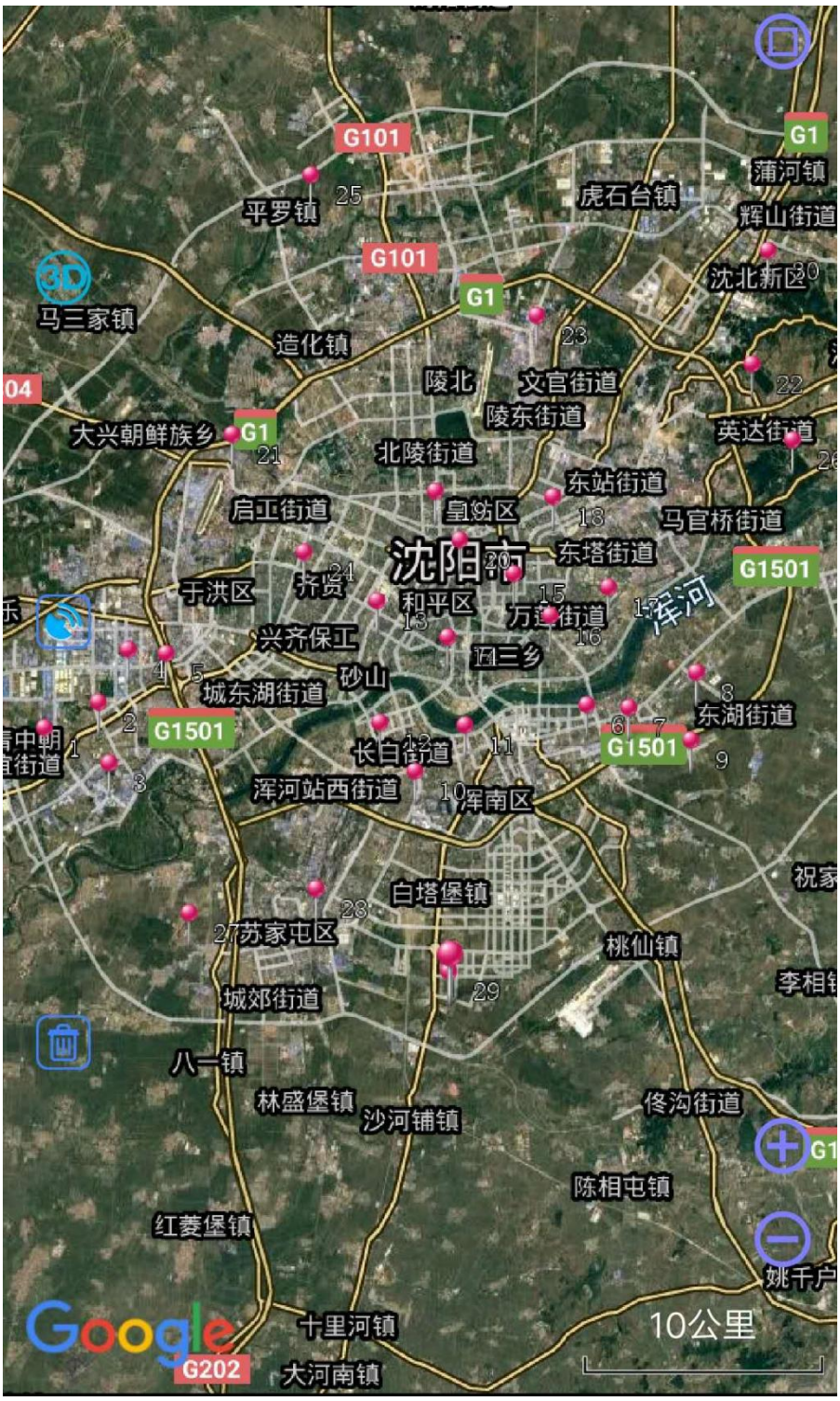
7.3 History data export

The uploaded historical data can be exported on the platform to facilitate the later processing and analysis.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1950	监测设备	XLHB-HJM-06-07	28.0	11.0	1.162	0.002	0.077	0.022	036	054	0.7	西风	101.2	2020-11-07	16:03:42
1951	监测设备	XLHB-HJM-06-07	28.0	10.9	1.163	0.002	0.081	0.027	023	032	2.1	南风	101.2	2020-11-07	16:08:40
1952	监测设备	XLHB-HJM-06-07	28.6	10.8	1.163	0.002	0.081	0.026	039	055	1.0	西风	101.2	2020-11-07	16:13:37
1953	监测设备	XLHB-HJM-06-07	29.4	10.6	1.163	0.003	0.078	0.026	076	105	0.0	西风	101.2	2020-11-07	16:18:35
1954	监测设备	XLHB-HJM-06-07	28.8	10.7	1.164	0.002	0.077	0.026	043	060	0.1	西南风	101.2	2020-11-07	16:23:33
1955	监测设备	XLHB-HJM-06-07	30.3	10.4	1.162	0.002	0.084	0.026	032	046	0.0	西南风	101.2	2020-11-07	16:28:31
1956	监测设备	XLHB-HJM-06-07	29.6	10.4	1.162	0.002	0.078	0.025	056	081	0.7	西北风	101.2	2020-11-07	16:33:28
1957	监测设备	XLHB-HJM-06-07	30.3	10.2	1.162	0.003	0.083	0.026	147	210	0.1	西北风	101.2	2020-11-07	16:38:26
1958	监测设备	XLHB-HJM-06-07	30.2	10.2	1.163	0.002	0.090	0.027	043	061	0.3	西风	101.2	2020-11-07	16:43:24
1959	监测设备	XLHB-HJM-06-07	30.5	10.2	1.162	0.002	0.086	0.028	047	067	0.7	西南风	101.2	2020-11-07	16:48:22
1960	监测设备	XLHB-HJM-06-07	31.1	10.0	1.162	0.002	0.085	0.028	046	064	1.2	西北风	101.3	2020-11-07	16:53:20
1961	监测设备	XLHB-HJM-06-07	30.4	10.1	1.162	0.002	0.081	0.026	026	036	1.5	西风	101.3	2020-11-07	16:58:18
1962	监测设备	XLHB-HJM-06-07	28.4	10.7	1.162	0.003	0.079	0.026	024	036	1.5	西北风	101.3	2020-11-07	17:03:16
1963	监测设备	XLHB-HJM-06-07	27.6	10.7	1.163	0.003	0.088	0.028	014	020	0.3	西南风	101.3	2020-11-07	17:08:13
1964	监测设备	XLHB-HJM-06-07	27.1	10.8	1.162	0.003	0.082	0.026	027	037	1.1	西北风	101.3	2020-11-07	17:13:11
1965	监测设备	XLHB-HJM-06-07	27.8	10.6	1.162	0.002	0.081	0.025	023	033	2.4	西风	101.3	2020-11-07	17:18:09
1966	监测设备	XLHB-HJM-06-07	27.0	10.7	1.163	0.002	0.082	0.026	017	022	2.6	西南风	101.3	2020-11-07	17:23:07
1967	监测设备	XLHB-HJM-06-07	25.4	10.8	1.162	0.002	0.081	0.024	010	015	4.5	西北风	101.3	2020-11-07	17:28:05
1968	监测设备	XLHB-HJM-06-07	24.4	10.9	1.162	0.002	0.077	0.026	017	031	3.5	西北风	101.4	2020-11-07	17:33:03
1969	监测设备	XLHB-HJM-06-07	24.1	10.7	1.161	0.002	0.082	0.023	010	018	2.8	北风	101.4	2020-11-07	17:38:00
1970	监测设备	XLHB-HJM-06-07	24.8	10.4	1.162	0.002	0.077	0.026	009	014	3.3	西北风	101.4	2020-11-07	17:42:58
1971	监测设备	XLHB-HJM-06-07	25.1	9.9	1.162	0.002	0.082	0.025	009	015	4.2	西北风	101.4	2020-11-07	17:47:56
1972	监测设备	XLHB-HJM-06-07	25.8	9.6	1.161	0.002	0.086	0.024	010	016	4.2	西风	101.4	2020-11-07	17:52:54
1973	监测设备	XLHB-HJM-06-07	25.5	9.3	1.161	0.002	0.077	0.026	008	014	3.3	西北风	101.4	2020-11-07	17:57:52
1974	监测设备	XLHB-HJM-06-07	23.4	9.1	1.162	0.002	0.079	0.023	008	025	5.8	西北风	101.5	2020-11-07	18:02:50
1975	监测设备	XLHB-HJM-06-07	22.7	8.8	1.161	0.002	0.077	0.024	007	012	6.9	西北风	101.5	2020-11-07	18:07:47
1976	监测设备	XLHB-HJM-06-07	24.3	8.6	1.161	0.002	0.083	0.024	009	019	4.8	西北风	101.5	2020-11-07	18:12:45
1977	监测设备	XLHB-HJM-06-07	25.6	8.4	1.163	0.002	0.076	0.025	005	007	2.5	西北风	101.5	2020-11-07	18:17:43
1978	监测设备	XLHB-HJM-06-07	26.6	8.1	1.163	0.002	0.078	0.025	005	008	2.6	西北风	101.5	2020-11-07	18:22:41
1979	监测设备	XLHB-HJM-06-07	27.8	7.9	1.163	0.002	0.077	0.025	008	012	2.3	西北风	101.6	2020-11-07	18:27:39
1980	监测设备	XLHB-HJM-06-07	28.8	7.7	1.162	0.002	0.077	0.025	007	013	2.7	西北风	101.6	2020-11-07	18:32:37
1981	监测设备	XLHB-HJM-06-07	29.8	7.6	1.162	0.002	0.077	0.024	006	010	2.3	西北风	101.6	2020-11-07	18:37:35
1982	监测设备	XLHB-HJM-06-07	29.9	7.5	1.162	0.002	0.077	0.026	005	008	4.1	西北风	101.6	2020-11-07	18:42:33
1983	监测设备	XLHB-HJM-06-07	30.3	7.3	1.162	0.002	0.077	0.027	007	010	3.0	西风	101.6	2020-11-07	18:47:30
1984	监测设备	XLHB-HJM-06-07	30.7	7.1	1.162	0.002	0.076	0.024	006	008	3.9	西北风	101.7	2020-11-07	18:52:28
1985	监测设备	XLHB-HJM-06-07	30.9	7.0	1.162	0.002	0.079	0.024	005	008	5.1	北风	101.7	2020-11-07	18:57:26
1986	监测设备	XLHB-HJM-06-07	31.4	6.8	1.162	0.002	0.077	0.023	006	009	2.0	西北风	101.7	2020-11-07	19:02:24
1987	监测设备	XLHB-HJM-06-07	31.0	6.6	1.162	0.002	0.078	0.024	016	022	2.2	西风	101.7	2020-11-07	19:07:22
1988	监测设备	XLHB-HJM-06-07	31.0	6.4	1.161	0.002	0.077	0.025	009	016	3.1	西风	101.7	2020-11-07	19:12:20
1989	监测设备	XLHB-HJM-06-07	31.4	6.2	1.162	0.002	0.077	0.025	004	006	1.4	西北风	101.7	2020-11-07	19:17:17
1990	监测设备	XLHB-HJM-06-07	31.5	6.1	1.162	0.002	0.079	0.024	004	006	3.6	北风	101.7	2020-11-07	19:22:15
1991	监测设备	XLHB-HJM-06-07	31.8	6.0	1.162	0.002	0.077	0.028	004	007	2.3	西北风	101.7	2020-11-07	19:27:13
1992	监测设备	XLHB-HJM-06-07	32.1	5.9	1.159	0.002	0.077	0.025	007	015	2.2	西北风	101.7	2020-11-07	19:32:11
1993	监测设备	XLHB-HJM-06-07	32.3	5.7	1.162	0.002	0.077	0.026	003	003	3.0	西北风	101.8	2020-11-07	19:37:09

8. Application example of micro-air station

(1) Position control map of Shenyang City grid micro-air site

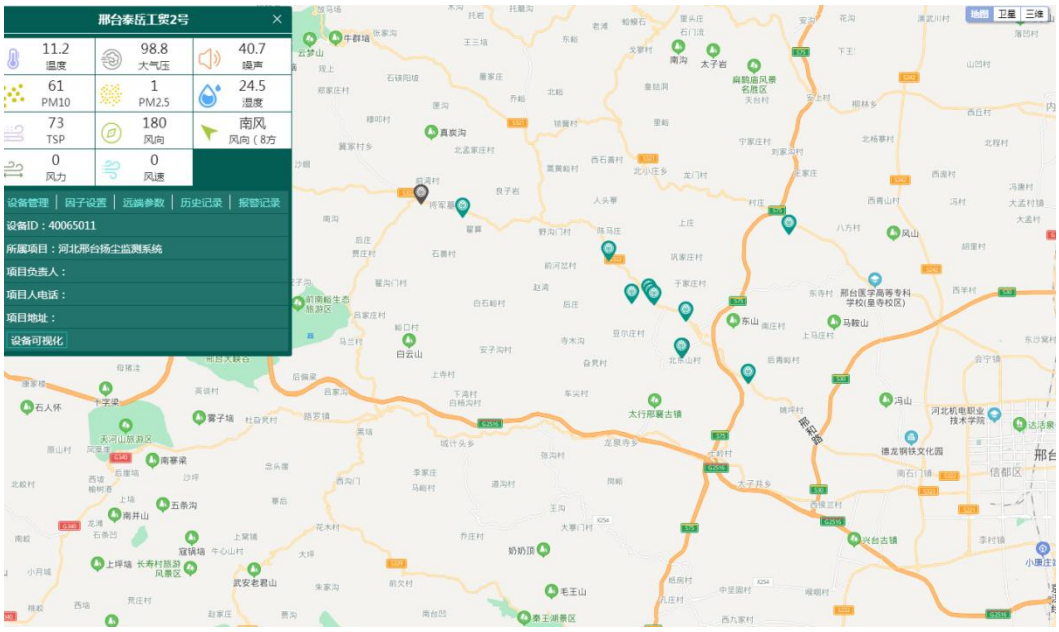


And the installation site photos are following:

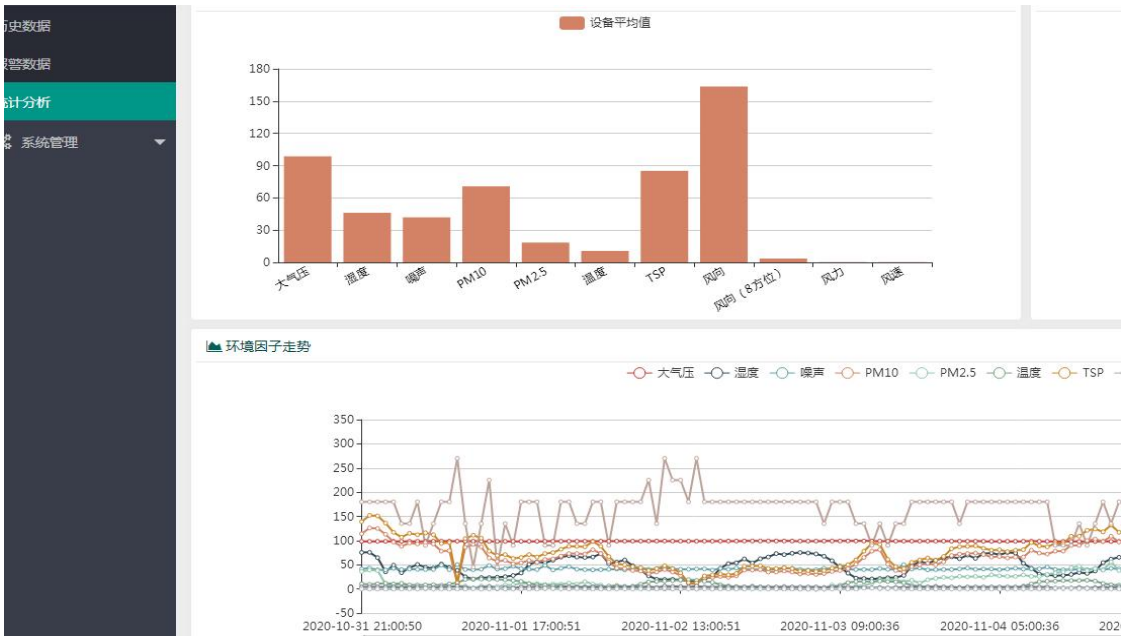
(2) Grid atmosphere monitoring system of a certain area of Tianjin City



(3) Xingtai City, Hebei Province Atmospheric Monitoring System




荣生润滑剂
PM2.5：19ug/m³
大气压：99.8kpa
湿度：46.5%RH
光照：0.0klux
噪声：66.7db
臭氧：--ug/m³
PM10：70ug/m³
一氧化碳：0mg/m³
二氧化硫：0ug/m³
温度：6.8℃
TSP：84ug/m³
风向：225°
风向（8方位）：西南风风力：0级
风速：0m/s
设备ID：40065687
所属项目：河北邢台扬尘监测系统
项目负责人：
项目人电话：
项目地址：
设备总数
14
在线设备
报警设备
离线设备
设备列表
河北邢台扬尘监测系统
查询


设备平均值
大气压
湿度
噪声
PM10
PM2.5
温度
TSP
风向
风向（8方位）
风力
风速
环境因子走势
2020-10-31 21:00:50
2020-11-01 17:00:51
2020-11-02 13:00:51
2020-11-03 09:00:36
2020-11-04 05:00:36

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maiya sensor

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