

ABOUT US

ECRYSTAL CORPORATION

Ecrystal Corporation, with unique patented technology in the field of nuclear radiation, focuses on R&D and manufacturing of level measurement solution capable for various materials(such as coal, flyash, cinder, slag stone,etc) in coal-fired power plants, and it sticks to constant innovation to improve the product value.



NOGS Technology Of Ecrystal Corporation

The diagram illustrates the NOGS technology. It shows a blue sensor unit labeled 'ECRYSTAL' with a diamond-shaped logo. To its right, there are three curved lines representing signal waves and a cluster of green 'Y' symbols representing gamma rays. Below this, a cross-section of an ash hopper is shown. The hopper contains 'Coal Ash' at the bottom. A 'Sensor' is positioned on the left side of the hopper. Green arrows labeled 'Gamma Ray' point from the coal ash towards the sensor. Another green arrow labeled 'Ray Through The Ash Hopper' points from the top of the hopper towards the sensor. A label 'Ash Hopper Wall' points to the left side of the hopper. An arrow labeled 'Enuironmental Gamma Ray' points towards the sensor from the left. The text 'Coal Ash Gamma Ray' is also present near the hopper.

NOGS (Naturally Occuring Gamma-ray Sensor), a new-type, secure γ -ray detection technology, widely applied in the level measurement of electrostatic precipitators of fly ash in the hopper.

γ -ray detection technology of NOGS is free of dangerous, radioactive sources which are environmentally polluted, so this kind of technology is highly efficient and safe, which could easily help the coal-fired power plants to meet environmental regulation.

PRODUCT INTRODUCTION

Non-radiation coal ash sensor product

▶ CAS series product, based on “NOGS” γ -ray detection technology originally created by Ecrystal Corporation, is of no radioactive substances itself. Widely used in level measurement field, it can make full use of the trace amounts of natural radionuclides widespread in the natural environment. It can effectively extract the level signals from noises, then to measure the magnitude of materials, according to the changing of Gamma rays sensed by the device adopting random signal recognition technology;

▶ CAS series have a dedicated built-in processor, which can effectively distinguish the γ -ray of fly ash from those of noises in the background environment, and then translate the intensity of gamma ray to precise material level figures;
Traditional congenetic products require radioactive sources, the dose of which is far greater than it of nature, which makes it naturally short in environmental protection, installation, procurement, maintainability and service life, etc.



FEATURES

CAS Series Product



COAL ASH SENSOR



- 01 Non-contact measurement;
- 02 No radioactive sources;
- 03 Capable of independent operation of installation and maintenance;
- 04 Non consumable parts like radioactive sources, extremely low maintenance costs with life cycle up to 10 years;
- 05 Provide accurate level signals;

- 06 Excellent performance in the harsh working environment:
 - a.operating temperature range:-40℃ ~ +85℃;
 - b.Solid, complete sealed structure with a security protection grade of IP66, is fully capable of outdoor working;
 - c.Wide working voltage range of alternating current: AC 100V-240V; DC 18V-36V
- 07 Having obtained UL, FCC, CE,etc;
- 08 Easily modify preset working parameters via display panel, remoter and EOMS;
- 09 Analog signals (4-20 ma) output ;
- 10 Comprehensive self-check function (temperature, grounding, analog open load, etc.)



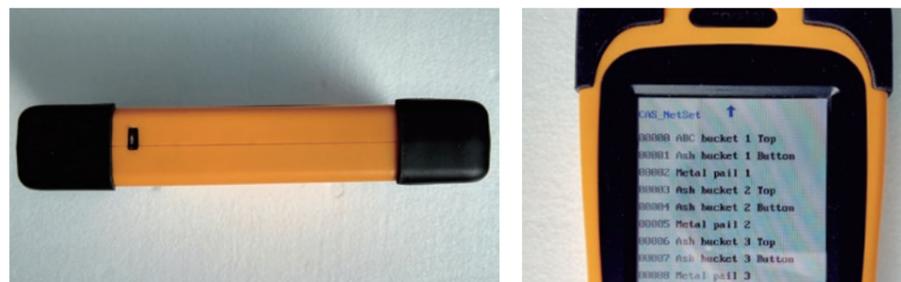
CAS Remote Operation and Maintenance System



CAS REMOTE CONTROL

Remoter is an accessory of CAS series, it allows users to make a better use of solution to facilitate the read of data as well as setting and adjustment of parameters. The properties of remote control are as follows:

- ▲ Easy to operate with touch panel
- ▲ Long communication distance (1000m), high stability
- ▲ One single remoter can control up to 120 sensors
- ▲ The remote control can make wireless update of the system program for CAS without computer
- ▲ Support of standard USB protocol, downloading parameters and programs quickly
- ▲ Backlight display, convenient for use in dark and weak light environment



01 CAS Site Host

CASH - 01 site host, as part of the CAS system, the main functions are as follows:

- ▲ Intelligent networking of 99 coal ash sensors can be realized by the server through a single CAS site host;
- ▲ Each sensor, as a wireless node, can intelligently relay radio signals, to ensure the CAS wireless networking of no blind zone;
- ▲ Hosts can make real-time data collection and recording from networking sensors;
- ▲ The host can upload the real-time and historical data collected to the server for analysis;
- ▲ Storage capability of data up to 7 days;
- ▲ Maximum of 4 wireless groups simultaneously;
- ▲ Adopting LED screen which is easy to access the host data;
- ▲ With the function of buzzer alarm and relay fault output;
- ▲ IP66 protection class, making the host adapt to harsh environment.



02 CAS EOMS

CAS remote operational platform software, deployed in high-end servers, control their subordinates coal ash sensors through the CASH - 01 site host management; Functions as followed can be achieved by combining the CAS remote operational platform software and the CASH - 01 site host:

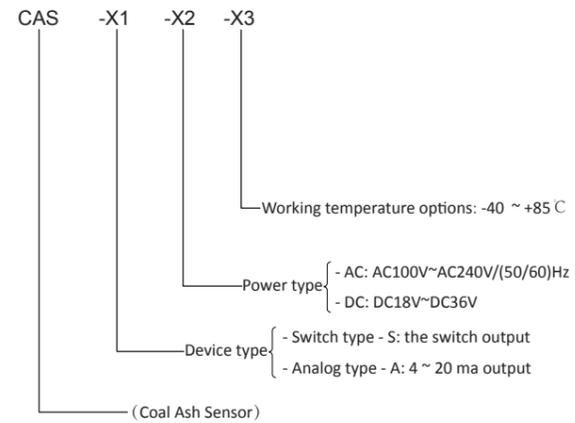
- Controlling the intelligent networking of multiple CAS;
 - Real-time collection and recording of CAS data;
 - Monitoring parameter status and warning information of CAS;
 - Flexible real-time and historical data report to the server.
- The main functions and the performance index are as follows:



- ▲ System capacity: 10,000 sets of coal ash sensor;
- ▲ Strict access control (settings, modification) in parameters management, only allowed to modify by authorized users, and traceable operating log for future reference;
- ▲ Large data storage capacity, which guarantees 10-year historical data of 10000 sets, provides operating and monitoring of the equipment with complete objective data;
- ▲ Intuitive graphical interface ensures the users with good experience and make it more convenient in management;
- ▲ Curve analysis function, by analyzing complex situation, provides valid basis for operation;
- ▲ Capable of upgrading the host and CAS program via online platform which provides a handy solution for better clients' experience.



Type	CAS	-X1	-X2	-X3
Meaning	(Coal Ash Sensor)	Device type	Power options	Working temperature options



SELECTION GUIDE



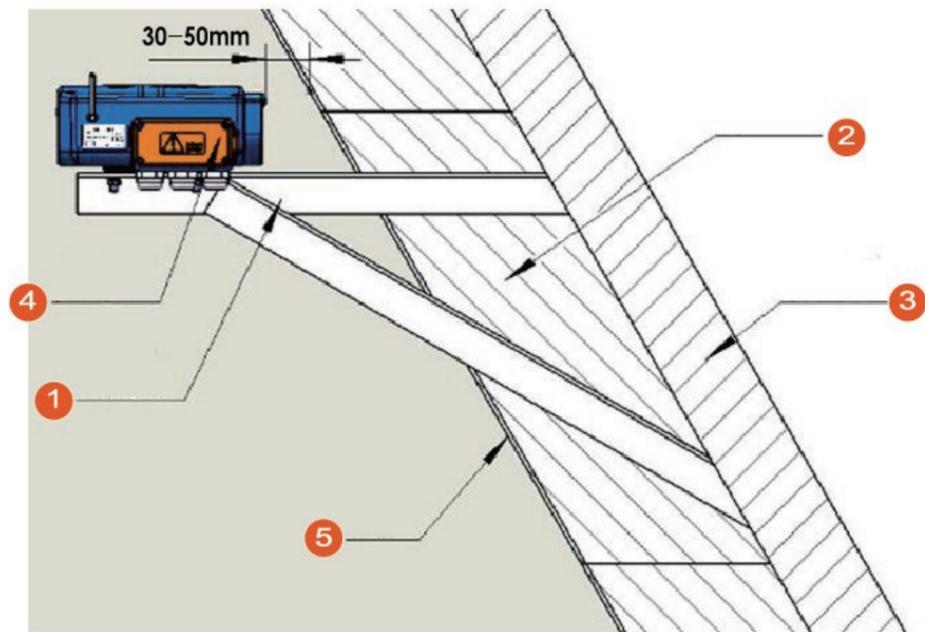
Output port instructions

Terminal	No.	Description	Functional specification
	1	Relay1 normally-closed contact	> Relay 1 and relay 2 are used as level alarm output; > While the level alarming and the relay acting, common port COM and normally-closed contact CLOSE disconnect, common port COM and normally-open contact OPEN connect;
	2	Relay1 common port	
	3	Relay1 normally-open contact	
	4	Relay2 normally-closed contact	> When the level alarm removed, relay back to off-position, common port COM and normally-closed contact CLOSE connect, common port COM and normally-open contact OPEN disconnect;
	5	Relay 2common port	
	6	Relay2 normally-open contact	
	7	Relay 3common port	> Can be set as fault alarm output or level alarm output; > When set as fault alarm output, relay 3 acts after one or a few "fault" is confirmed: common port COM and normally-open contact OPEN connected; Relay 3 gets back to power-off status after all the "faults" removed: common port COM and normally-open contact OPEN disconnected; > When set as meter alarm output, use relay 3 as the method of Relay1 Relay2.
	8	Relay3 normally-open contact	
	9	Analog output	> The port is invalid in switch mode; > 4-20ma output current according to the material level information; > Built-in DC24V feeder, without external power supply;
	10	Analog output	
	11	DC+	> DC type power input
	12	Grounding	
	13	DC-	
	11	AC firing line	> AC power input;
	12	Grounding	
	13	AC zero line	

CAS Sensor Spec

Product Type	Switch CAS - S type	Analog CAS - A type
Net weight	About 4.5 kg	
Size	253mm*189mm*106mm(length*width*height)	
Housing material	ADC 12	
Power input	AC:100V~240V 50/60 Hz < 10W	CAS-S-AC CAS-A-AC
	DC:18V~36V < 10W	CAS-S-DC CAS-A-DC
Cable connector	M20 waterproof cable locks	
Relative humidity	Less than 85%	
Operating temperature range	-40 ~ +85 C	
The switch quantity of analog sensors	The switch quantity	Analog quantity
Data output	Relay	Analog (4—20mA)
Relay output	Contact capacity: 1A30VDC /1A250VAC	
Wireless transmission distance	Range of visibility: 1000m	
The response time	1~999 seconds	
Resolution ratio	1CPS	
Safety standards & wireless authentication	UL CE & FCC	

INSTALLATION INTRODUCTION



Installation diagram of CAS

- ① Steel angle
- ② Thermal insulation layer
- ③ Container wall
- ④ Coal ash sensor
- ⑤ Iron sheet