

Crystal Clear Vision for Precise Level Measurement

Ecrystal
CAS-A-AC
Coal Ash Detector User Manual

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| Type | Terminal No. | Description |
|-------------------------|--------------|---------------------------------|
| 1 CLOSE1 3 OPEN1 | 1 | Relay 1 normally closed contact |
| | 2 | Relay 1 common terminal |
| | 3 | Relay 1 normally open contact |
| 4 CLOSE2 6 OPEN2 | 4 | Relay 2 normally closed contact |
| | 5 | Relay 2 common terminal |
| | 6 | Relay 2 normally open contact |
| 8 OPEN3 | 7 | Relay 3 common terminal |
| | 8 | Relay 3 normally open contact |
| | 9 | analog output terminal |
| | 10 | analog output terminal |
| DC | 11 | DC power input |
| | 12 | NC |
| | 13 | DC power input |
| AC | 11 | AC power input |
| | 12 | Ground terminal |
| | 13 | AC power input |



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i. Introduction

CAS (Coal Ash Detector) can effectively extract the level signals from noises, then to measure the location of materials, according to the changing of Gamma rays measured by the sensor, and by adopting random signal recognition technology and a dedicated signal handler.

The properties of CAS are as follows:

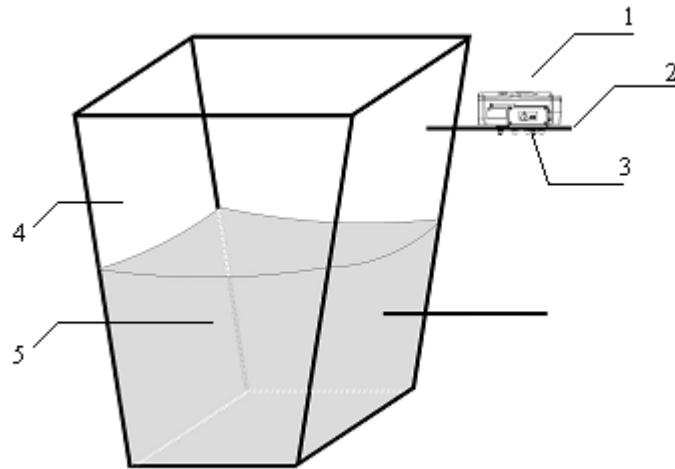
- Non-contact measurement;
- Free from the impact of internal temperature, humidity of hopper;
- High reliability, anti-interference (can overcome the interference of ash and hanging ash of 15 cm thick inner the wall of hopper);
- Lossless components, no mechanical wear, long service life.
- Debugging operations by remote control;
- Remote maintenance of inspection and monitoring.
- Self-test function: Real-time check whether internal high-voltage power supply works normally, environment temperature over-ranges, it is properly grounded, external analogue output is opened
- Wide application, it can detect the following materials: ①radioactive materials (the radiation level of the materials is higher than that of environment) such as: coal ash, coal slag, asphalt, cement; ② materials without radiation (the radiation level of the materials is lower than that of environment) such as water; ③materials with weak radiation (the radiation level of the materials is equivalent to that of environment) such as: some kinds of stone, ore; ④ the interface between ash, slag and water (the interface between radioactive materials and materials without radiation).

Our commitment: stable product quality, warranty period of three year

Thank you for purchasing our products.



ii. Product Applications



| No. | Item | No. | Item |
|-----|------------|-----|---|
| 1 | CAS | 2 | Steel angle |
| 3 | Fixed part | 4 | Heat preservation layer and ash hopper wall |
| 5 | Ash | | |

1. Economizer ash hopper high alarm

The internal temperature of economizer ash hopper reaches about 450 °C. As for conventional Level meter (contact-type, radar, ultrasound), the temperature of electronics part is prone to outrange due to the heat transfer of the probe inside. However, non-contact CAS Level meter is free of this shortcoming.

2. Measurement of ash level of electrostatic precipitator hopper

The reliable alarm function of CAS Level meter can overcome the adverse effect of hanging ash, which may cause false alarm. CAS level can obviously show the change of ash level around monitoring point, and it also



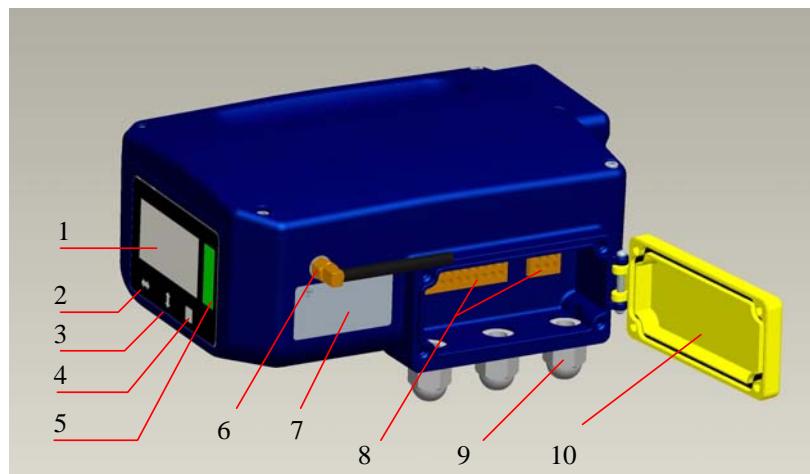
have online test, self-test function, which help operators clearly know the change of ash level around monitoring point.

3. Measurement of ash level of electrostatic precipitator hopper

High alarm is used for protecting electrostatic precipitator and avoid short circuit of counter electrode of electrostatic precipitator caused by over-high ash level. Although rarely alarming in general cases, high alarm must alarm in the case of high ash level, which requires of constant normal operation of Level meter. The temperature of ash in hopper is about 130°C, in the condition of which contact-type Level meter cannot overcome the effect of high temperature, thus fail to accurately measure ash level for a long time. CAS level ash is of non-contact type, therefore, it can solve the problem perfectly and keep constant normal operation.

The monitoring point is used for enabling dry ash removal system. It ensures enough ash in hopper, thus dry ash removal system can constantly, efficiently work over a period time. The concrete location of the monitoring point shall be determined by the times of constant operation of dry ash removal system which maximizes frequency.

If there is no monitoring point or the monitoring point has bad operation and just is enabled according to experience, system efficiency may reduce or increase the risk of poor removal of ash.



| No. | Items | No. | Items |
|-----|-----------------|-----|---------------------|
| 1 | Display screen | 7 | Nameplate |
| 2 | Moving key | 8 | Connection terminal |
| 3 | Change key | 9 | Cable lock |
| 4 | Enter key | 10 | Junction box lid |
| 5 | Indicator light | | |
| 6 | antenna | | |

128×64 monochrome OLED LCD is adopted in display. The Man-Machine Interface mainly includes: conventional display frame and parameters setting screen. (Except in special cases, display screen is shared by CAS-A-AC).

Working temperature: -45°C~+75°C



iii. Trouble Shooting

Fault diagnosis

- If indicator LED flashes per 0.1 second, it means faults detected in instrument self-test; if Relay3 is configured to be fault diagnosis function at the moment, Terminal 7 connects to 8. For details, please refer to “2.2 Parameters setup” and X. Relay.
- Check fault information according to the information displayed on operation status screen. For details, please refer to 2.1 Conventional Display Frame.
- If you want to check faults through remote control, please refer to *Remote Control User Manual*.

Trouble shooting

- Grounding fault:
Connect instrument housing to common grounding point.
- Over-high temperature:
If environment temperature exceeds the working temperature of instrument, please turn off instrument power supply and then turn on it when environment temperature restores into the range of instrument working temperature.
- High voltage abnormalities
Please contact Technical Support immediately.
- Analogue open-circuit fault (CAS-A-AC):
Check whether analogue connection terminal is in good contact. If not, please refer to wiring procedures (**xi. Installing the Sensor**) and reconnect analogue. If yes, and no break contact in return circuit, please contact Technical Support immediately.



FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.