KH.DC01 Atmospheric Electric Field Meter (Lightning Early Warning)

Shenzhen KEHAO Information Technology Co., LTD

Ⅰ. Application Environment

The Atmospheric Electric Field Meter is a high-precision lightning monitoring and early warning device. It can monitor atmospheric electric field changes in real time, accurately capturing the traces of lightning activity, providing strong support for the prevention of lightning hazards.

In the field of meteorological monitoring, the Atmospheric Electric Field Meter can be widely applied at weather stations to continuously monitor lightning activity within a region. It provides critical data for weather forecasting and meteorological disaster early warning. By analyzing atmospheric electric field variations, meteorological departments can predict the probability, intensity, and development trends of lightning weather in advance, and promptly issue lightning warning signals. This information serves as an important reference for the safety of the public and industries such as aviation and maritime operations.

For locations susceptible to lightning strikes, such as petrochemical plants, communication base stations, power facilities, and high-rise buildings, the Atmospheric Electric Field Meter serves as an important monitoring tool for lightning protection. Installing the meter around these sites enables real-time monitoring of atmospheric electric field dynamics. When the measured electric field exceeds a preset threshold, the device can immediately trigger an alarm, prompting staff to take protective measures such as stopping outdoor work or shutting down critical equipment. This effectively reduces potential damage to human life and equipment caused by lightning hazards.

Furthermore, the device has practical applications in agriculture, forestry, and related fields. In agricultural production, advance knowledge of lightning weather allows better planning of farming activities, avoiding crop losses due to lightning, and ensuring the safety of farm workers. In forestry, monitoring lightning activity helps

prevent forest fires caused by lightning strikes, contributing to the protection of forest resources.
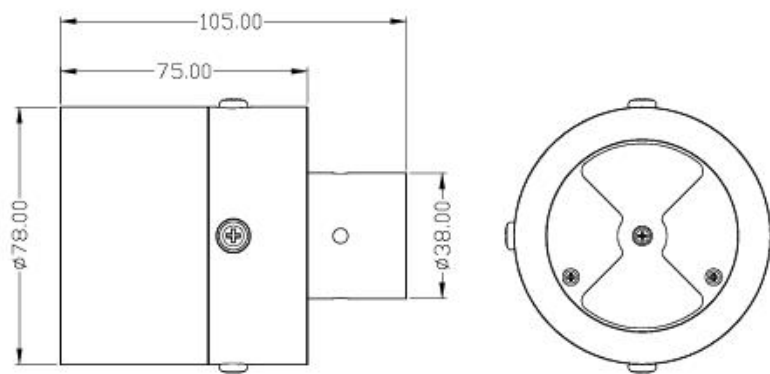
www.kehaoinfo.net

II . Technical Performance and Specifications

i . Technical Parameters

Sensor Performance

- Measurement Range: -100 kV/m — 100 kV/m

- Accuracy: ±0.001% F.S

- Response Time: 3 s

- Housing Material: 6061 Aluminum Alloy

- Power Supply: 12 VDC (0.8 W @ 12 V)

- Communication: Modbus-485

ii . Dimensions

III . Installation and Electrical Connection

i . Installation

- This product is a precision instrument and should be protected from drops and impacts.
- Avoid exposing the device to high temperatures; ensure waterproofing and protection against freezing.
- After unpacking, the instrument should be stored in a dry, ventilated, and non-corrosive environment. Handle with care during transport and avoid violent shaking. Dust, moisture, and extreme temperature fluctuations can affect the service life of the device; therefore, avoid placing it in such conditions.
- Under non-overload and non-stalling conditions, the motor life is up to 4,000 hours.

ii . Electrical Installation

The cable is a 4-core shielded wire, with the following color coding:
- Red: Power line (12~24 VDC)
- Blue: Ground (GND)
- Green: 485B
- Yellow: 485A

IV．Data Communication

ⅰ． Data Format

a) Read Data Command Frame

F5 03 xx xx xx xx xx xx

Address   Function Code   Register Address   Number of Registers   CRC (low byte first)

b) Read Data Response Frame

F5 03 xx xx xx....xx xx

Address   Function Code   Byte Count   Register Values   CRC (low byte first)

c) Write Data Command Frame

F5 06 xx xx xx xx xx xx

Address   Function Code   Register Address   Data to Write   CRC (low byte first)

d) Write Data Response Frame (same as write command)

F5 06 xx xx xx xx xx xx

Address   Function Code   Register Address   Data Written   CRC (low byte first)

www.kehaoinfo.net

ii . Register Map

Register Name	Address	Length (Bytes)	R/W	Description
Product Model	0x0000	2	R	Model: 22
Software Version	0x0001	2	R	-
Restore Factory	0x0002	2	R/W	Write 1 to restore factory settings, write 0 no operation, read response meaningless
Device Address	0x0003	2	R/W	Default address: 245
Baud Rate	0x0004	2	R/W	0-2400, 1-4800, 2-9600, 3-19200, 4-38400, 5-115200
Rotation Speed	0x0005	2	R	Unit: rpm (normal speed ≥50 rpm)
Electric Field Value	0x0006	4	R	Unit: V/m, default reading with one decimal
Alarm Level	0x0008	2	R	0: No alarm, 1: Level 1, 2: Level 2, 3: Level 3
Level 1 Threshold	0x000A	4	R/W	Default 3 kV/m; writing value updates alarm level if electric field > threshold
Level 2 Threshold	0x000C	4	R/W	Default 8 kV/m; writing value updates alarm level if electric field > threshold
Level 3 Threshold	0x000E	4	R/W	Default 10 kV/m; writing value updates alarm level if electric field > threshold

iii . Command Example

Read Data Command Example:

Read rotation speed (unit: rpm, output format with two decimal places).

- Send Frame: F5 03 00 05 00 01 81 7F

- Receive Frame: F5 03 02 00 3B 48 42

Rotation speed = 0x003B = 59 rpm

www.kehaoinfo.net

Ⅴ. Configuration List

FT-LF1 Crack Monitoring Instrument – Sensor Configuration List

Name	Quantity	Unit	Parameter	Remarks
Atmospheric Electric Field Meter	1	pcs	-	-
485 Cable	1	pcs	5 m with aviation plug	-
304 Stainless Steel Cross Head Screws	4	pcs	M4*21	Accessories

Technical Support

Shenzhen KEHAO Information Technologies Co., Ltd.

Address: Software Industry Base, Haitian 2nd Road, Yuehai

Subdistrict, Nanshan District, Shenzhen, China

Email: export@kehaoinfo.com

Website: www.kehaoinfo.net

WhatsApp: +1 213 246 7245