



Elektromekanisk Nivåmätare EE300

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Elektromekanisk Nivåmätning

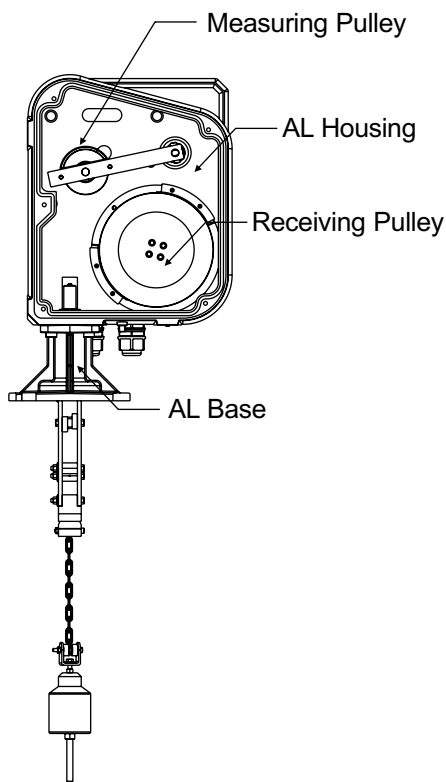
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WORKING PRINCIPLE

Electro-Mechanical Level Measuring System (EE300 series) consists of plumb, cable wire, measuring pulley, position sensor, and control board to measure the material level. It senses the weight status and count the cable wire length from the device to the level of material. The EE series equips with robust position sensor to calculate the rotation of pulley which can be operated in harsh environment. Moreover, it can connect with FineTek's material measurement system (MMS) to build an interactive control system, save the operator patrolling time and maintenance.



Rear View: Wiring Mechanism

APPLICATION

- 1 Widely utilized in mining, cement, chemical, and feed industries.
- 1 Suitable for applications of dusty silo, pellet silo, solids silo, liquid silo, unsealed, or vacuum sealed silo.

FEATURES

- 1 Measurement immune from the interference of environment such as sound waves, dust, capacitance, or temperature change.
- 1 User-friendly in touch buttons with microprocessor-based calculation design.
- 1 High level and low level alarm.
- 1 LCD Dot matrix: 8 x 2.
- 1 Analog output: 4-20mA dc.
- 1 Pulse output:
 - Transistor output NPN/PNP (10mm/pulse)
 - Relay output 3A/250Vac (100mm/pulse)
- 1 Cable Break Alarm: System will detect cable broken during measuring.
- 1 Plumb Buried Alarm: System will detect plumb buried by the medium.
- 1 Four Start Modes: auto start, manual start, intelligent start, and external triggered start.
- 1 Intelligent Start: Measuring interval is inverse proportional to medium level.
- 1 Auto Return Setup: Prevent sensing weight from buried or sliding into the tank pivot and avoid damage facility equipment while tank is empty.
- 1 Material Fill-Up Protection: Reduce the possibility of plumb being buried.
- 1 Measuring range of 30m (Standard), max. up to 40 m.
- 1 RS485 MODBUS communication protocol.
- 1 Various selections of .

Product Testing Standards

- 1 Protection Rating: IP66(IEC60947-2)
- 1 IEC Standards for Voltage: IEC60947-2
- 1 IEC Standards for Isolation: IEC60092-504
- 1 IEC Standards for changes in power supply: IEC60092-504
- 1 IEC Standards for power supply failure: IEC60092-504



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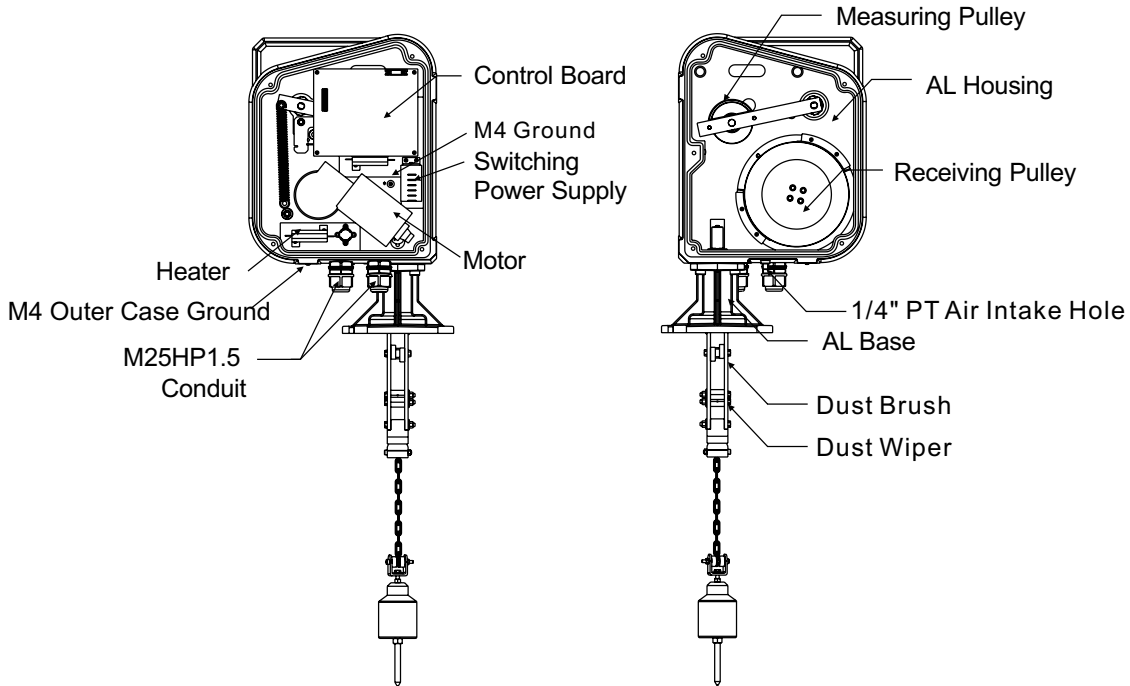
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No.	Category	Specification	
1	Power Supply	100~240Vac \pm 10%, 50/60 Hz	
2	Transistor Measuring Resolution	\pm 3pulse(version with10mm/pulse)	
3	Relay Output Measuring Resolution	\pm 1pulse(version with100mm/pulse)	
4	Measuring Speed	0.23m/s	
5	Analog Output	0/4-20mA \pm 1%	
6	Pulse Output	1. NPN / PNP (10mm/pulse) System sends pulse output every 1cm. Each pulse has interval of 10ms. 2. Relay 3A/250Vac (100mm/pulse) System sends pulse output every 10cm. Each pulse has interval of 15ms.	
7	Display	LCD (Dot matrix , 8 X 2)	
8	Status LED	1.Lock (Fill-Up Protection) 2.RUN 3.Buried 4.Break 5.Auto 6.High Alarm 7.Low Alarm	(Red) On (Yellow) On (Red) Blink for 1 second (Red) Blink for 2 seconds (Blue) On (Red) On (Red) On
9	Ambient Temperature	-35°C- 60°C	
10	Operating Temperature	-35°C- 80°C	
11	Measuring Range	30m Max	
12	Protection Level	IP66	
13	Relay Output	SPDT 3A/250Vac X 3 1. HI Alarm 2. LO Alarm 3. Buried: Blink for 1 second when alarm triggers Break : Blink for 2 seconds when alarm triggers Lock : LED on when alarm triggers	
14	Anti-Dew Heater	Start heating <16BC (prevent frostbite, prevent dew) in 100 W optional	
15	Cable Break Detection	Yes	
16	Sensing Weight Buried Detection	Yes	
17	Manual/Auto Measuring Mode	Yes (0.1-99h)	
18	Motor Protection	Yes	
19	Malfunction Diagnosis Display	Yes	
20	Material Fill-Up Protection	Yes	
21	Communication Protocol (RS485)	Yes	Frame C8N1.C8N2.C801.C8E1.C7N2.C701. C7E1.C702. C7E2.
			Baudrate 1200.2400.4800.9600. 11520. 14400.19200.28800.57600
22	Intelligent Start	Measuring interval is inverse proportional to medium level.	
23	Reset Output	Reset (3A/250Vac)	
24	Cable Wire	1.2 mm	

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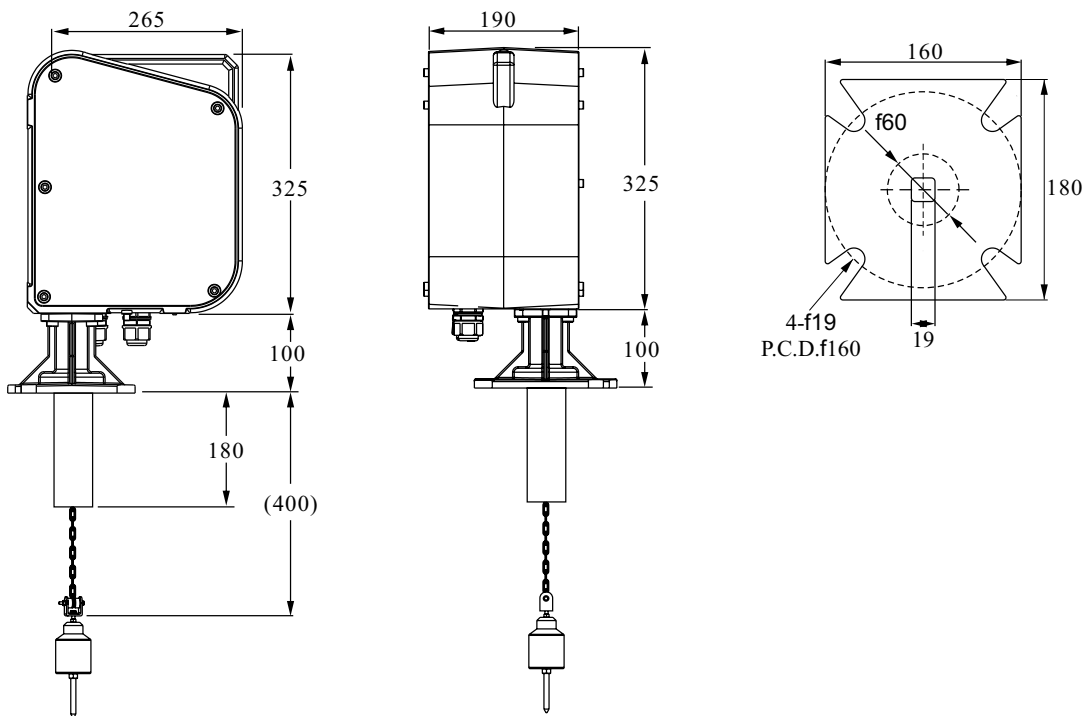
Sketch & Drawing



Front View: Electric Board & Motor

Rear View: Wiring Mechanism

Dimension



Front View

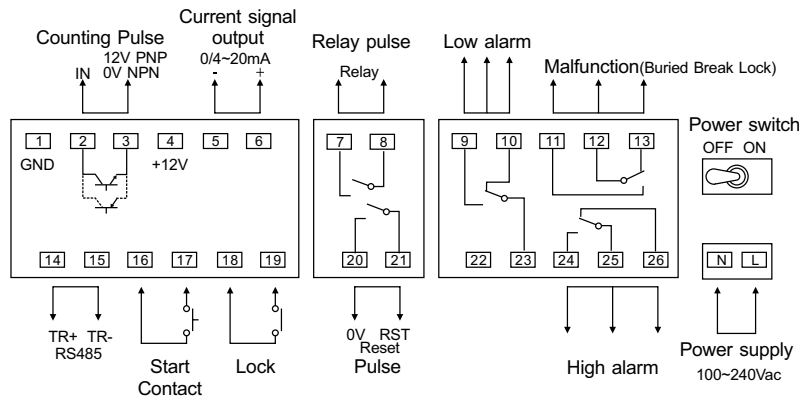
Side View

Top View

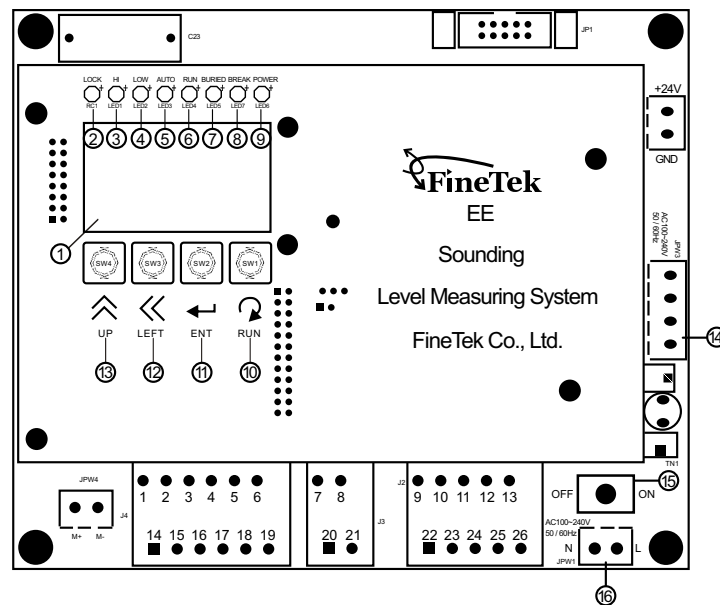
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Wiring Diagram



Description of Panel



- ① Characteristic LCD (Dot matrix , 8 ; 2), provides the status, level command and error message.
- ② Material Fill-Up Protection Indicator (LOCK), the EE will be turned off and hold LOCK indication while the reservoir is filling up procedure.
- ③ High Level Alarm Indicator (HI), light on if the material level exceeds the preset high threshold.
- ④ Low Level Alarm Indicator (LOW), light on if the material level is below the preset low threshold.
- ⑤ Auto Start Indicator (AUTO), light on to indicate EE is in automatic operation mode.
- ⑥ Start Indicator (RUN), light on if the EE is in measuring period, and it turns light off status while the measurement completed.
- ⑦ Weight Head Buried (BURIED), blink light on /off in 1 sec period to warn operator, the LCD will show BURIED message.
- ⑧ Cable Break Indicator (BREAK), blink light on /off in 2 sec period to warn operator, the LCD will showBREAK message.
- ⑨ Power Indicator (POWER), "Light On" for power on and "Light Off" to indicate power off.
- ⑩ "Start", start the operation.
- ⑪ "Enter", acts as "confirm button" at setting mode and as "page select button" at menu mode.
- ⑫ "Shift", acts as "decimal shift" while enter digits and as "enter button" at menu mode.
- ⑬ "UP", acts as "Increment button" while enter digits and as "Escape button" at menu mode.
- ⑭ Terminal (H1.H2) for heater.
- ⑮ Power switch: to turn on, turn off power
- ⑯ Power connector (L.N), accepts the power of 100~240VAC, 50/60Hz

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Definition

K Tank Height:

distance between connecting flange to tank outlet

S Blind Distance:

distance from connecting flange to the tip of the weight

Z Safety Distance:

To avoid obstacle and prevent weight sliding into the outlet.

H Measuring Height:

Full measuring range from drop and return with full pulse signal record.

A Air Zone(deadband):

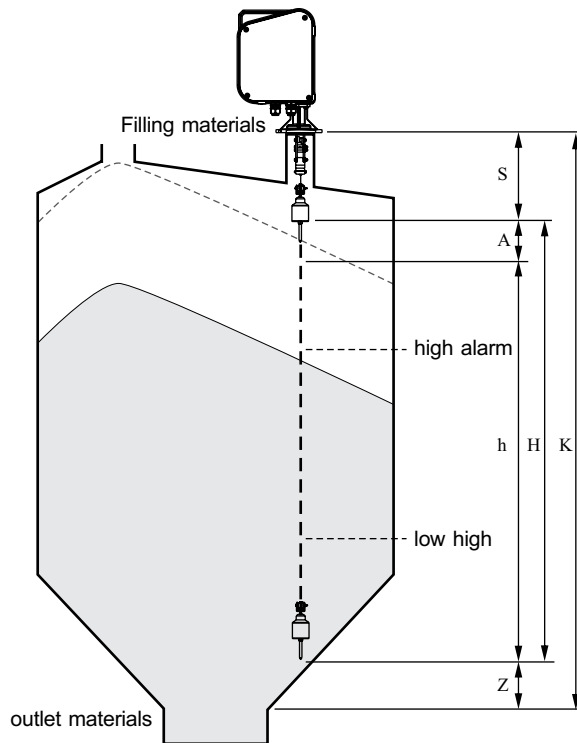
Variation of tank capacity and real medium level. Default setting is 0.

H Effective measuring distance:

distance will change according to A value and corresponds to 0/4~20mA output signal.

Hi Alarm: High level alarm setup.

Lo Alarm: Low level alarm setup.



Example (Smart Mode)

Smart mode operates the measurement according to the capacity and level of reservoir. In smart mode, the next measuring time period is depend on the current level distance measured. It is roughly a step by step (0.1 hr for each step), in quasi-linear relation, as indicated below. (Note: Timer value should be larger than Smart value).

Example:

Timer=1.1h?**Smart**=0.1h?**H**=10m

Measuring time at next, $t = (\text{Smart} + (A/H) \times (\text{Timer} - \text{Smart}))$

Where the **Timer** is the maximum standby time to detect, **Smart** is the minimum standby time to detect, A is the measuring level distance, H is the High Alarm value. T is the next measuring time since this measurement.

Ex: A is 10m, the next start detect time is $0.1 + 1 \times 1 = 1.1\text{h}$

A is 1m, the next start detect time is $0.1 + 0.1 \times 1 = 0.2\text{h}$

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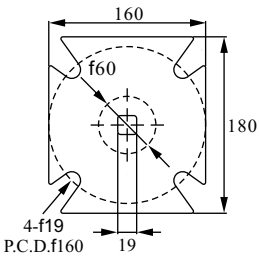
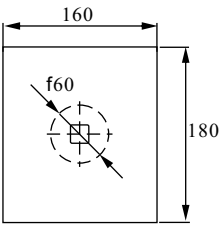
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TEMPERATURE CONTROL

0:None

1:Yes

CONNECTION

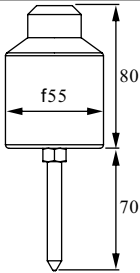
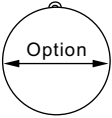
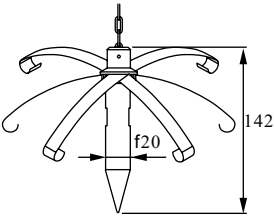
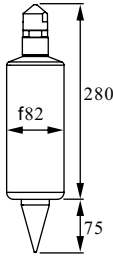
	00	SS
Name	Standard	Customization
Type		

Flanges For Standard Model :

4"x5kg/cm²;4"x10kg/cm²;4"x16kg/cm²;4"x20kg/cm²;4"x150Lbs

DN100 PN6 ;DN100 PN10;DN100 PN16;DN100 PN25;DN100 PN40

SENSING WEIGHT TYPE

	A	B	C	D
Name	Aluminum Alloy	Stainless probe steel float type	Umbrella	Plastic Auto-Fall-Off
Type				

※ Custom made is available for sensing weight

MEASURING RANGE (m)

02:2m(min.)

30:30m(max.)