Small High Frequency Level Switch Manual

LB Type

■ English

www.ema-electronic.com

Panel control and display

Standard type

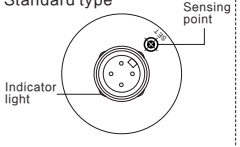
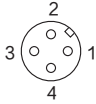


Fig.A



1: BN-Brown
2: WH-White
3: BU-Blue
4: BK-Black

Fig.B

Rear-mounted type

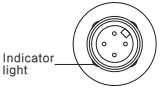
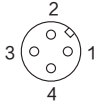


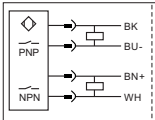
Fig.A



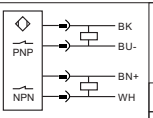
1: BN-Brown
2: WH-White
3: BU-Blue
4: BK-Black

Fig.B

Connection



Red LED goes out

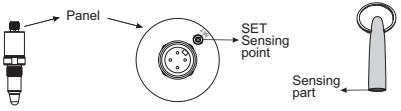


Red LED flashes

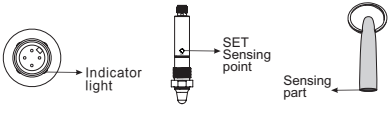
PNP/NPN/ output:	
Power input	18~36VDC
Loading	200mA Max.

Operation

Standard type



Rear-mounted type



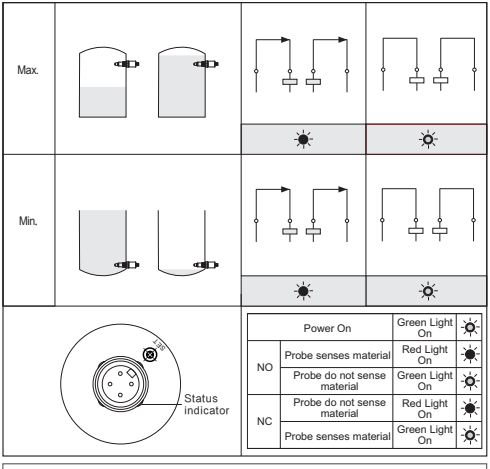
1. **NO/NC setting:** Put sensing part to the SET(sensing point),wait for 3 seconds, keep the sensing part in contact when the indicator light turns green and flashes, and remove the sensing part until the flashing stops, then it enter to the setting of NO/NC.The system is NO status by default.
2. **Learning mode:** Fully insert the PEEK probe into the medium for 5 seconds. Put sensing part to the sensing point for 3 seconds. Remove the sensing part when the indicator light turns green and flashes, then the yellow light flashes to indicate that it is learning. When the yellow light flashes 3 times quickly, it means the learning is successful. If there is no flash quickly, do the learning again.
3.**Reset factory default:** put the sensing part close to SET(sensing point) before power on, and the yellow light will flash after power is connected, remove the sensing point. When the yellow light flashes 3 times quickly, it means that the factory setting is restored successfully.

Notice:

1. PEEK probe should be completely immersed into the medium when set up the learning mode. The stainless steel wetted part is not required.
2. Do not use the unit which is factory default to detect the medium. Run the learning function before measuring the medium.
3. Learning function can sense the measuring of thousands of different medium, even mixed medium. If there is any change for detecting medium, it must be learn the medium again.

Tighten with a wrench

Status Indication



Power On		Green Light On	☼
NO	Probe senses material	Red Light On	☀
	Probe do not sense material	Green Light On	☼
NC	Probe do not sense material	Red Light On	☀
	Probe senses material	Green Light On	☼

Electrical Connection

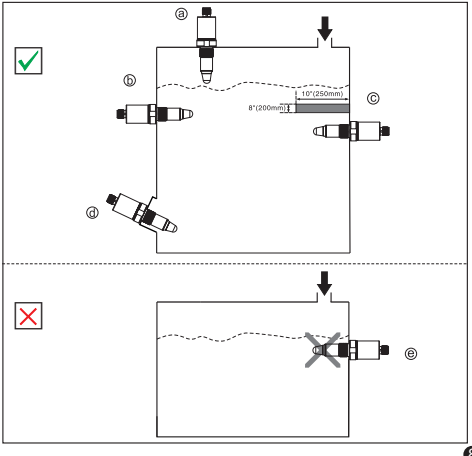
1.The unit must be connected by a technical electrician.
2.The national and international regulations for the installation of electrical equipment must be adhered to Voltage supply to EN50178,SELV,PELV.
3.Disconnect the power before connecting the unit.

Technical Parameters

Type	Small
Application	Powder, liquid, suitable for sticky liquid
Supply Voltage[V]	18...36 DC
Switch response time[s]	< 1
Ambient temperature[℃/℉]	−40...+85℃/−40...+185℉
Storage temperature[℃/℉]	−40...+85℃/−40...+185℉
Medium temperature[℃/℉]	−40...+115℃/−40...+239℉
Operating pressure [bar]	Max. 40
Process connection	G1/2"A
Connection	M12*1.0 Socket
Housing material	Stainless steel 316L
Probe material	PEEK
Output	Load 200mA
Max. power consumption[W]	< 1W
Protection/Enclosure Rating	IP68/IP69K

Installation Notice

1.The ideal installation for reducing the shock to materials and the hanging of materials is to make the switch horizontal at an angle of 15−20 degree.
2.Keep the switches away from the feed opening of the barrel to reduce the shock to materials, if unavoidable, a protection plate is necessary.
3.The operators cannot use the product to climb or hook any object when working in the tank.



Correct mounting:

ⓐ Top mounted: Probe is vertical downward and mounted on the top of any position (away from the inlet port).

ⓑ Laterally mounted: Laterally mounted to reduce material impact and hanging of flowing materials.

ⓒ Laterally mounted with shield: Length approx. 10"(250mm), width approx. 8"(200mm), to prevent (d) material from accumulating improperly around the unit and reduce the impact of material on the unit.

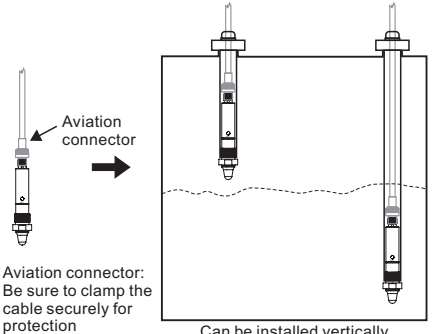
ⓓ Inclined mounted–Mount in the hopper: Max. distance between the end of screw on the unit and the tank wall < 2.4"(60mm).It can avoid false alarm due to improper accumulation of materials.

Incorrect mounting:

ⓔ Laterally mounted in filling wall or under the inlet opening.

Example of Rear-Mounted Type

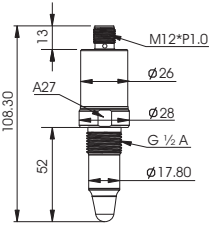
Installation of extension



Dimensions

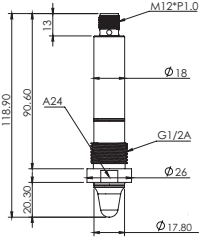
Small High Frequency length of probe is about 52mm, there is also extended length of probe 150mm and 250mm for your choice.

Small:



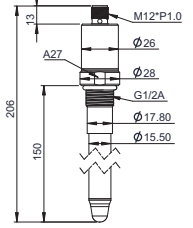
Unit: mm

Rear-mounted type LB0010:



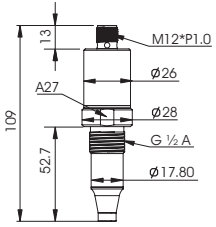
Unit: mm

Small
Extra length probe 150mm:



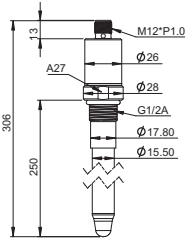
Unit: mm

M type:



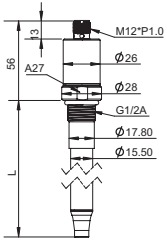
Unit: mm

Small
Extra length probe 250mm:



Unit: mm

M type
Extra length probe 150/250mm:



Unit: mm

Adapter

By using sanitary adapter, the protection rating can reach to IP69K. The options are as below:

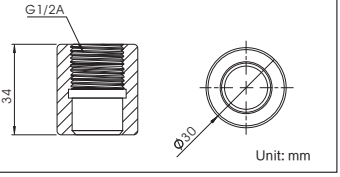
①	Use welding adapter US0069. Installation manual is supplied with the adapter.
②	Use Clamp adapter US0070 Installation manual is supplied with the adapter.
③	The sealing O- ring on the sensors can be used as pipe's sealing part. The upper sealing area of the pipe connection must be parallel with the thread hole. The surface roughness must not be lower than Rz 6.3 ► Grease the sensor thread with proper lubricating paste. ► Insert the sensor into the pipe. ► Tighten it with a spanner. (Maximum tightening torque: 35 Nm.)

The rear-mounted type of high frequency level switch can be paired with the extension tube kit for vertical installation:

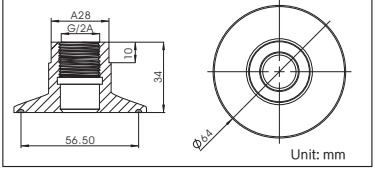
Extension	Length(mm)
T60400	400
T60600	600
T60800	800
T61000	1000

Adapter Dimensions

Hygienic welding adapter US0069:



Hygienic Tri Clamp adapter US0070:



M-LC/LE-EN-V1.2

High Frequency Level Switch Manual

LC/LE Type

■ English

www.ema-electronic.com

Panel control and display

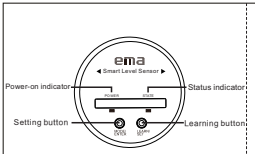


Fig.A

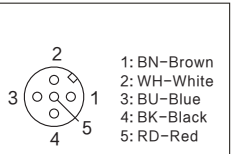
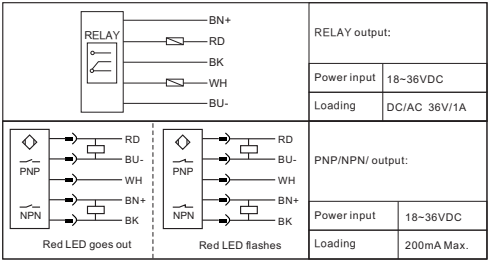


Fig.B

The color of setting buttons are grey for LE type.

Connection



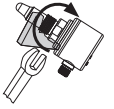
WH is ground wire for PNP/NPN output.⏚

Operation

1. Factory default is under Lock status. First step is to unlock the unit and then operate the learning function.
2. **Unlock:** Keeping pressing "MODE/ENTER" and "LEARN/SET" at the same time about 5 seconds until green light is flashing, meaning the unit is unlock and enters the menu selection mode.
3. **Lock:** if there is no button pressed in 1 minute under unlock condition, the unit will be locked automatically.
4. **NO/NC setting:** keeping pressing "MODE/ENTER" about 5 seconds under unlock status, then it enter to the setting of NO/NC.
5. **Learning mode:** Fully insert the PEEK probe into the medium for 5 seconds. Under the unlock status, keeping pressing the "LEARN/SET" and hold it when red light and green light are flashing at the same time, then release the button. It indicates that the unit is learning. When the red light and green light flash at same time and change to alternating flash, it means that the learning is done. if there is not red light and green light to flash at the same, it means unsuccessful learning, then need to learn it again.
6. **Empty-level learning:** (for **High Temperature** type only) after the learning mode is completed, take out the product and make the probe leave the medium. When there is no residual medium dripping on the probe, pressing the "MODE/ENTER" and "LEARN/SET" about 3 seconds. When the green light flashes for 3 times, it means that the learning is done, which can be used normally. If the red light flashes 3 times, please do this empty-level learning again.

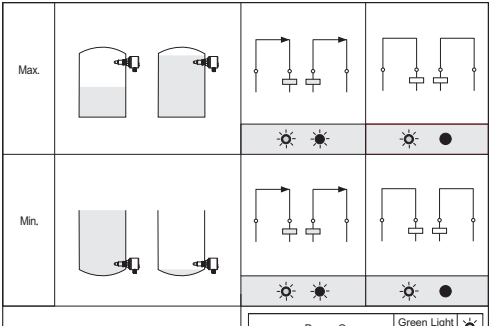
Reset factory default:
Keeping press the "MODE/ENTER" and "LEARN/SET" at the same time before the power on, and then connect the power thus the red light and green light flash at the same time. At this time, release the button and wait for the red light and green light to change from flashing at the same time to alternate flashing, then it is successful to reset factory default.

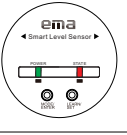
Notice:
1. PEEK probe should be completely immersed into the medium when set up the learning mode. The stainless steel wetted part is not required.
2. Do not use the unit which is factory default to detect the medium. Run the learning function before measuring the medium.
3. Learning function can sense the measuring of thousands of different medium, even mixed medium. If there is any change for detecting medium, it must be learn the medium again.



Tighten with a wrench

Status Indication





Power On		Green Light On	☼
NO	Probe senses material	Red Light On	☼
	Probe do not sense material	Red Light Off	●
NC	Probe do not sense material	Red Light On	☼
	Probe senses material	Red Light Off	●

Electrical Connection

1.The unit must be connected by a technical electrician.
2.The national and international regulations for the installation of electrical equipment must be adhered to Voltage supply to EN50178,SELV,PELV.
3.Disconnect the power before connecting the unit.
4.Please purchase ema qualified Ex-proof wire for this Ex-proof product.

Technical Parameters

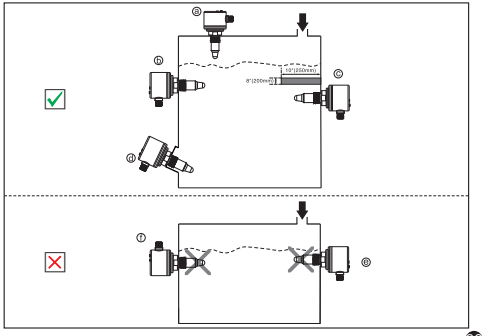
Type	Standard LC00	High temperature LC01
Application	Powder, liquid, suitable for sticky liquid	
Supply Voltage[V]	18...36 DC	
Switch response time[s]	< 1	
Ambient temperature[℃/℉]	−40...+85℃/−40...+185℉	
Storage temperature[℃/℉]	−40...+85℃/−40...+185℉	
Medium temperature[℃/℉]	−40...+125℃/ −40...+257℉	−40...+200℃/ −40...+392℉
Operating pressure [bar]	Max. 40	
Process connection	G1/2"A	
Connection	M12*1.0 Socket	
Housing material	Stainless steel 316L	
Probe material	PEEK	
Output	PNP & NPN: Load 200mA	
	RELAY output: Load DC/AC 36V/1A	
Max. power consumption[W]	PNP & NPN output: <1W	
	RELAY output : <2W	
Protection/Enclosure Rating	IP68/IP69K	

Type	M type	S type
Application	For low conductivity media	Solid: for granular, powder
Supply Voltage[V]	18...36 DC	
Switch response time[s]	< 1	
Ambient temperature[℃/℉]	−40...+85℃/−40...+185℉	
Storage temperature[℃/℉]	−40...+85℃/−40...+185℉	
Medium temperature[℃/℉]	Standard: −40...+125℃/−40...+257℉ High−temp.: −40...+200℃/−40...+392℉	
Operating pressure [bar]	Max. 40	
Process connection	G1/2"A	
Connection	M12*1.0 Socket	
Housing material	Stainless steel 316L	
Probe material	PEEK	
Output	PNP & NPN: Load 200mA	
	RELAY output: Load DC/AC 36V/1A	
Max. power consumption[W]	PNP & NPN output: <1W	
	RELAY output : <2W	
Protection/Enclosure Rating	IP68/IP69K	

Type	EX Standard LE00	EX High temperature LE01
Application	Powder, liquid, suitable for sticky liquid	
Supply Voltage[V]	18...36 DC	
Switch response time[s]	< 1	
Ambient temperature[℃/℉]	−40...+85℃/−40...+185℉	
Storage temperature[℃/℉]	−40...+85℃/−40...+185℉	
Medium temperature[℃/℉]	−40...+125℃/ −40...+257℉	−40...+200℃/ −40...+392℉
Operating pressure [bar]	Max. 40	
Process connection	G1/2"A	
Connection	M12*1.0 Socket	
Housing material	Stainless steel 316L	
Probe material	PEEK	
Output	PNP & NPN: Load 200mA	
	RELAY output: Load DC/AC 36V/1A	
Max. power consumption[W]	PNP & NPN output: <1W	
	RELAY output : <2W	
Protection/Enclosure Rating	IP68/IP69K	
EX marking	Ex ec IIC T5 Gc / Ex tb IIIC T100℃ Db	

Installation Notice

1.The ideal installation for reducing the shock to materials and the hanging of materials is to make the switch horizontal at an angle of 15-20 degree.
2.Keep the switches away from the feed opening of the barrel to reduce the shock to materials, if unavoidable, a protection plate is necessary.
3.The direction of M12 connector should be downward.
4.The operators cannot use the product to climb or hook any object when working in the tank.
5.When installing Ex-Proof wire, it is necessary to tighten it with wrench. Torque:1.5Nm.
6.Please purchase ema qualified Ex-proof wire for this Ex-proof product as the requirement.
7.The housing of product in the pipe should be correctly connected with the equipotential grounding system.
8.Do not open when an explosive dust asmosphere is present.



Correct mounting:

ⓐ Top mounted: Probe is vertical downward and mounted on the top of any position (away from the inlet port).
ⓑ Laterally mounted: Laterally mounted to reduce material impact and hanging of flowing materials.
ⓒ Laterally mounted with shield: Length approx. 10"(250mm), width approx. 8"(200mm), to prevent (d) material from accumulating improperly around the unit and reduce the impact of material on the unit.
ⓓ Inclined mounted–Mount in the hopper: Max. distance between the end of screw on the unit and the tank wall < 2.4"(60mm).It can avoid false alarm due to improper accumulation of materials.

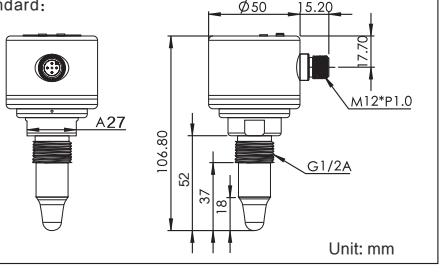
Incorrect mounting:

ⓔ Laterally mounted in filling wall or under the inlet opening.
ⓕ M12 connector is upward.

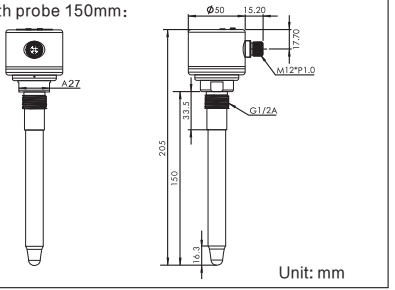
Dimensions

Standard and high temperature length of probe is about 52mm,there is also extended length of probe 150mm and 250mm for your choice.

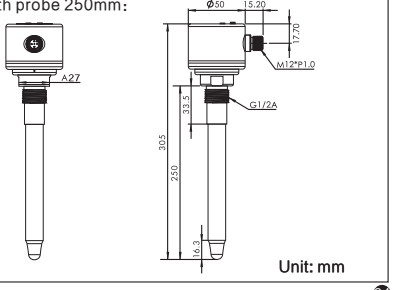
Standard:



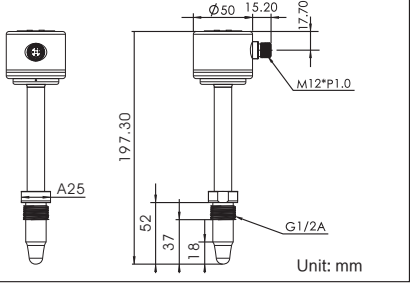
Standard
Extra length probe 150mm:



Standard
Extra length probe 250mm:

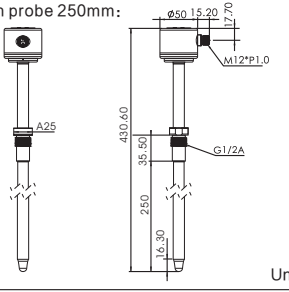


High temperature:



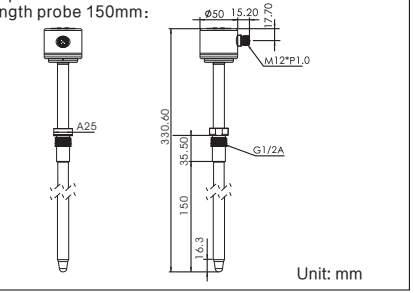
Unit: mm

High temperature
Extra length probe 250mm:



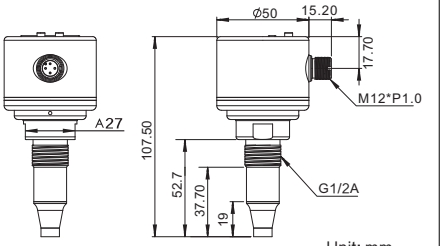
Unit: mm

High temperature
Extra length probe 150mm:



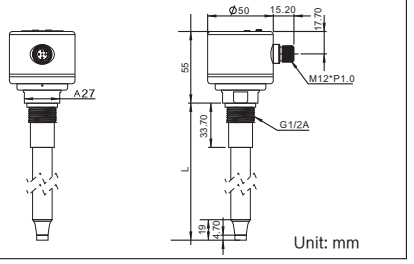
Unit: mm

M type:

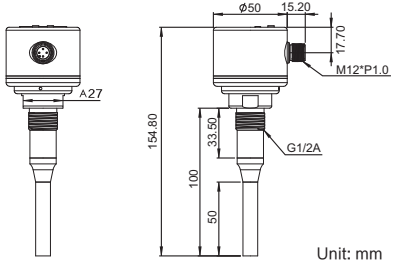


Unit: mm

M type
Extra length probe 150/250mm：



S type：



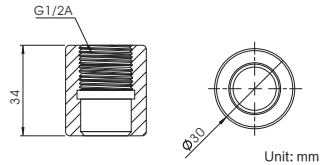
Adapter

By using sanitary adapter, the protection rating can reach to IP69K. The options are as below:

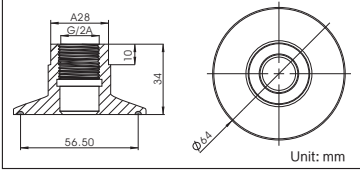
①	Use welding adapter US0069. Installation manual is supplied with the adapter.
②	Use Clamp adapter US0070 Installation manual is supplied with the adapter.
③	The sealing O- ring on the sensors can be used as pipe's sealing part. The upper sealing area of the pipe connection must be parallel with the thread hole. The surface roughness must not be lower than Rz 6.3 ► Grease the sensor thread with proper lubricating paste. ► Insert the sensor into the pipe. ► Tighten it with a spanner. (Maximum tightening torque: 35 Nm.)

Adapter Dimensions

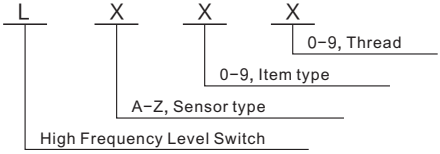
Hygienic welding adapter US0069:



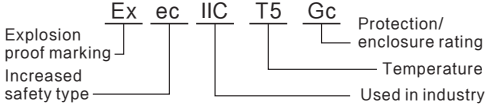
Hygienic Tri Clamp adapter US0070:

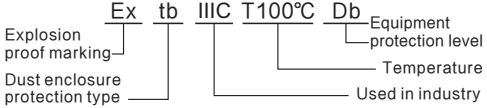


Order No. for the sensor and the principle



The conception of explosion proof marking





Notice

1. Medium temperature range: -25°C~+80°C.
2. Electrical parameters: Rated voltage DC18V~36V,
   maxumum power: 1W.
3. Appropriate explosion protection measures shall be taken for
   the free ends of the permanently connected cable of the product.
4. Do not open when the explosive atmosphere is present.
5. Do not open the cover while power on.
6. After installation, the product housing shall maintain
   equipotential bonding.
7. The outer surface of the product shall be kept clean to prevent
   dust accumulation, but blowing with compressed air is strictly
   prohibited.
8. The entrance cable used for the product shall have a maximum
   heat resistance temperature of at least 85°C.
9. The user shall not replace any part of the product.
   Any malfunction occurring during operation shall be resolved
   together with the product manufacturer to prevent the damage.
10. The installation, usage and maintenance of the product shall
    comply with the product manual as well as the
    requirements of the following relevant standards:
    GB/T 3836.13-2021 Explosive atmospheres
    Part 13: Equipment repair, overhaul, reclamation and modification
    GB 3836.15-2024 Explosive atmospheres
    Part 15: Electrical installations design,
    selection and safety requirements
    GB 3836.16-2024 Explosive atmospheres
    Part 16: Electrical installations inspection and maintenance
    GB 15577-2018 Safety regulations for dust explosion prevention
    GB 50257-2014 Code for construction and acceptance of
    electrical equipment installation in explosive and fire hazardous
    atmospheres