KS A/ISO 9001인증

For HAZARDOUS AREA
NONHAZARDOUS AREA

VERSION 6-1

(주)우창전기산업
WOOCHANG ELECTRIC CO., LTD.

The Introduction of Company

As there have been increasing places that use and treat materials of explosion risk with the development of petrochemical industry, the electric instrument used in the place of explosion risk should be manufactured in an explosion-proof form that can prevent its explosion.

WOOCHANG ELECTRIC CO.,LTD. is the company specializing in manufacturing the explosion-proof electric instrument that manufactures and supplies explosion-proof lighting fixtures, switches and conduit fittings to suit the class of dangerous place and the class of explosion.

It produces the product that passes the performance test according to the Industrial Safety Health Law and the Gas Safety Management Law and produces and supplies customized products.

It will produce and supply quality products based on accumulated know-how more than 30 years and make an effort to do its best prevent industrial accidents and safety accidents.

Thank you.

HISTORY OF COMPANY

SEPTEMBER 15. 1984

Established WooChang Electric Company

Head office

314-6 Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

Factory

570, Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

OCTOBER 5. 1986

Expand the institution ensued move to

Head office

299-216 Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

OCTOBER 30. 1986

Expand the institution ensued move to

Factory

269-20 Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

JULY 1. 1988

Expand the institution ensued move to

Head office

257-72, Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

Factory

275-72, Sungsu-2ka, Sungdong-ku, Seoul, Rep of Korea

MAY 30. 2008

Expand the institution ensued move to

Head office

14-11,140 Mugab-gil(289-1,Mugab-ri), Chowol-eup, Gwangju-si,Gyeonggi-Do, Rep of Korea

Factory

14-11,140 Mugab-gil(289-1,Mugab-ri), Chowol-eup, Gwangju-si,Gyeonggi-Do, Rep of Korea

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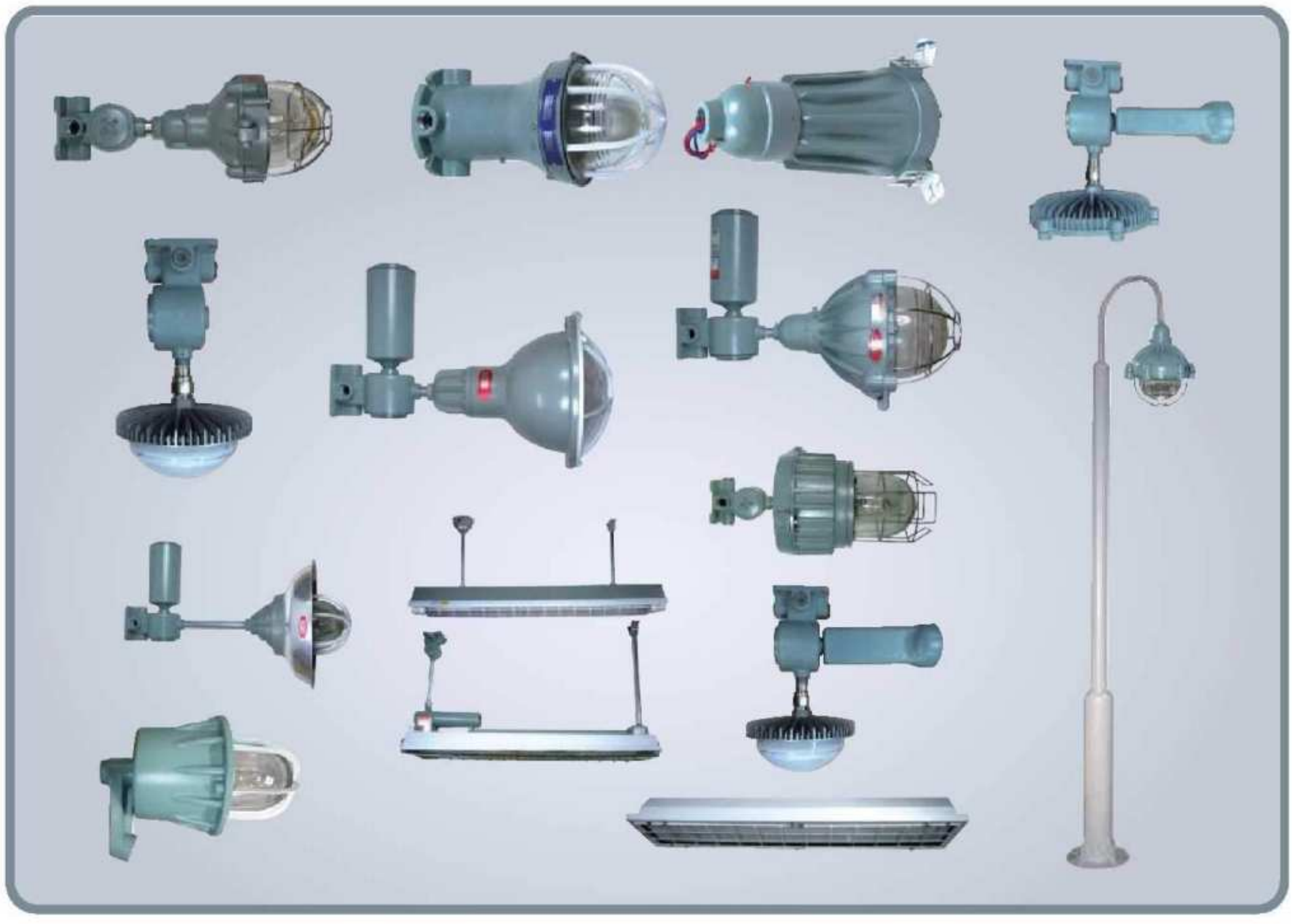
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General Information

PART 1

LIGHTING FIXTURE

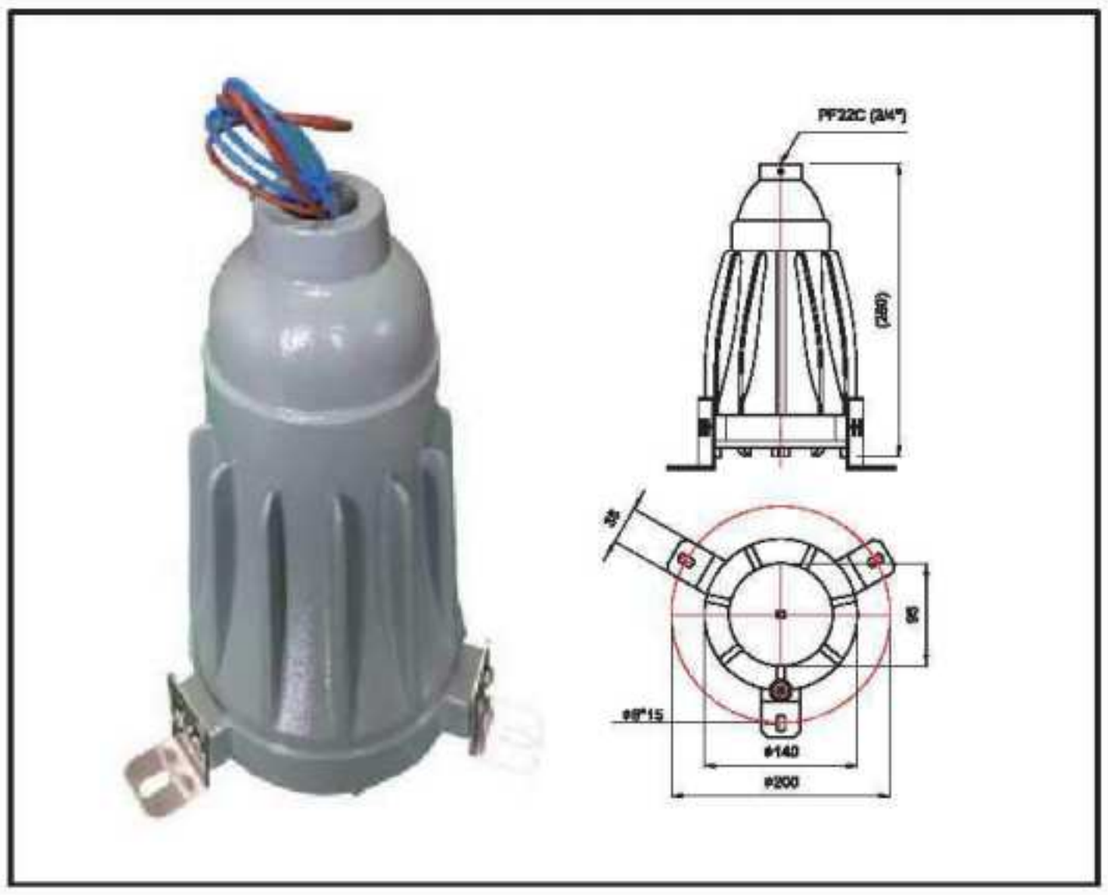


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Flameproof Type LED Tank Lighting Fixtures

Ex d IIC T6 IP65



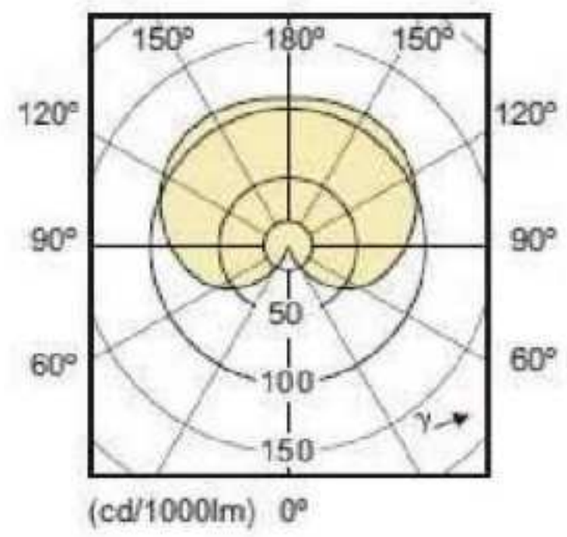
■ Material Data

Descriptions	Materials
Body, Hood, Housing	Cast Aluminum Alloy
Mogul	Porcelain With Mogul Socket
Glass	Heat Resistant Hard Glass

■ Data

Lamp Watt (W)	Model Number	Voltage	Hertz	Weight (kg)
LED MAX 13	FTL-LED-13	AC 220V	50Hz/ 60Hz	3.4

Photometric Data



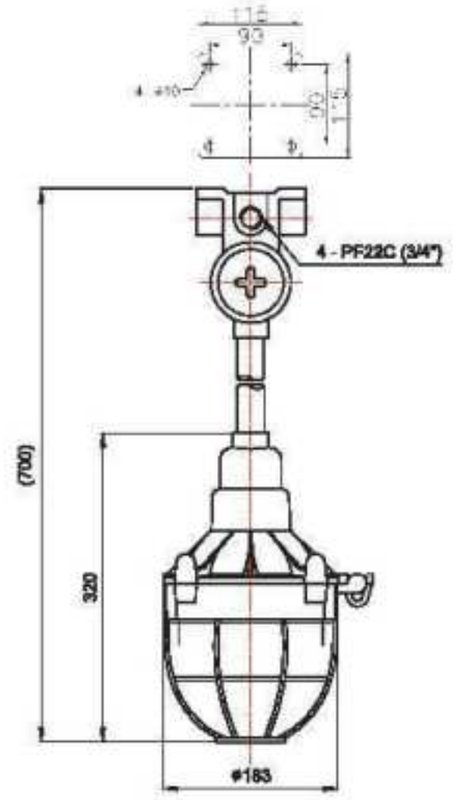
■ Features

- The metal casing is composed of three part; the body, front frame and terminal box.
- The flameproof joint between the body and the front frame is of threaded type for LED 13W fitting and of spigot type with four set screws for fitting.
- The terminal box of both types is fitted to the body with spigot joint and being secured by three set screws.
- fixing of the fittings are to be done by suitable mounting hardwares utilizing the mounting base on the front frame.

Flameproof Type LED Lighting Fixtures

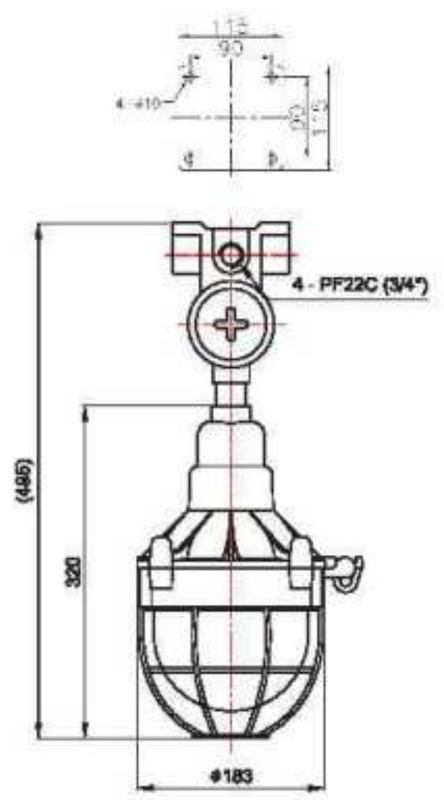
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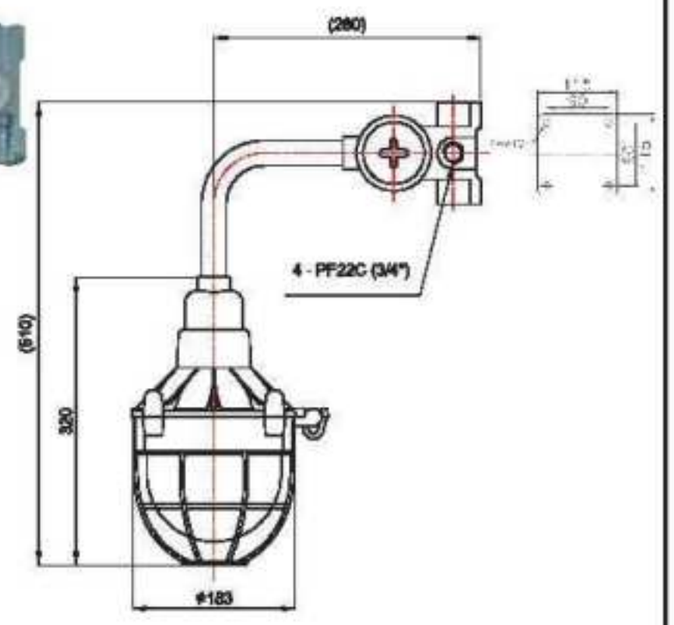
Pendant Type





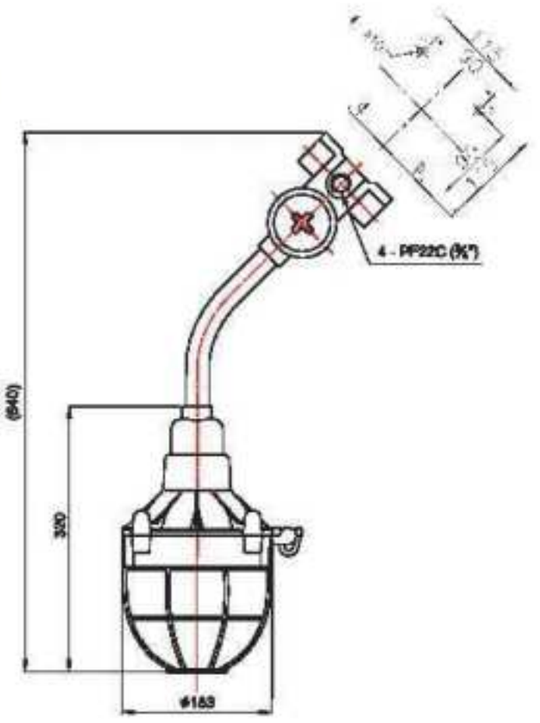
Ceiling Type





90° Bracket Type





40° Bracket Type

Pole Type

■ Material Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Main Body	Die Cast Aluminum Alloy
Mogul	Porcelain With Mogul Socket
Inner Reflector	High Purity Sheet Aluminum
Globe	Heat Resistant Hard Glass
Globe Guard	Stainless Steel
Pole	Steel

 All product specifications in this catalog are subject to change without any prior notice.

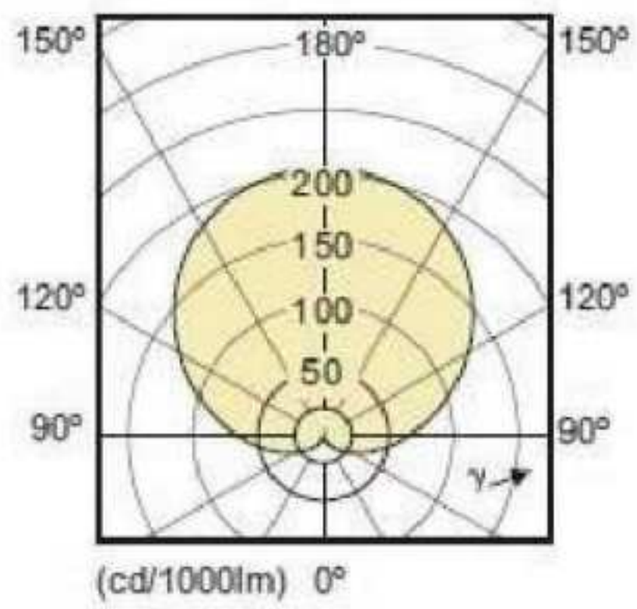
Flameproof Type LED Lighting Fixtures

Ex d IIC T6 IP65

■ Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	FYL-LED-1011	LED MAX 13W	AC 220V	50Hz/ 60Hz	4.8
Ceiling	FYL-LED-1021	LED MAX 13W	AC 220V	50Hz/ 60Hz	4.5
90° Bracket	FYL-LED-1031	LED MAX 13W	AC 220V	50Hz/ 60Hz	4.8
40° Bracket	FYL-LED-1041	LED MAX 13W	AC 220V	50Hz/ 60Hz	4.8
Pole	FYL-LED-1051	LED MAX 13W	AC 220V	50Hz/ 60Hz	4.8

Photometric Data



■ Features

- The body is cast in one piece, and the upper part of which forms a terminal chamber.
- The globe holder is fixed to the base of the body with special flameproof and weatherproof flanged joint.
- The globe, having durable flange, is fixed to the globe holder by threaded ring with asbestos gasket.
- The guard is so constructed that can be hinged down for cleaning the globe.
- The canopy which joints the lighting unit to the mounting box is provided with a terminal block and an access cover. Thus, mounting and wiring connection of the fitting can be - performed easily and securely.

Flameproof Type LED Lighting Fixtures

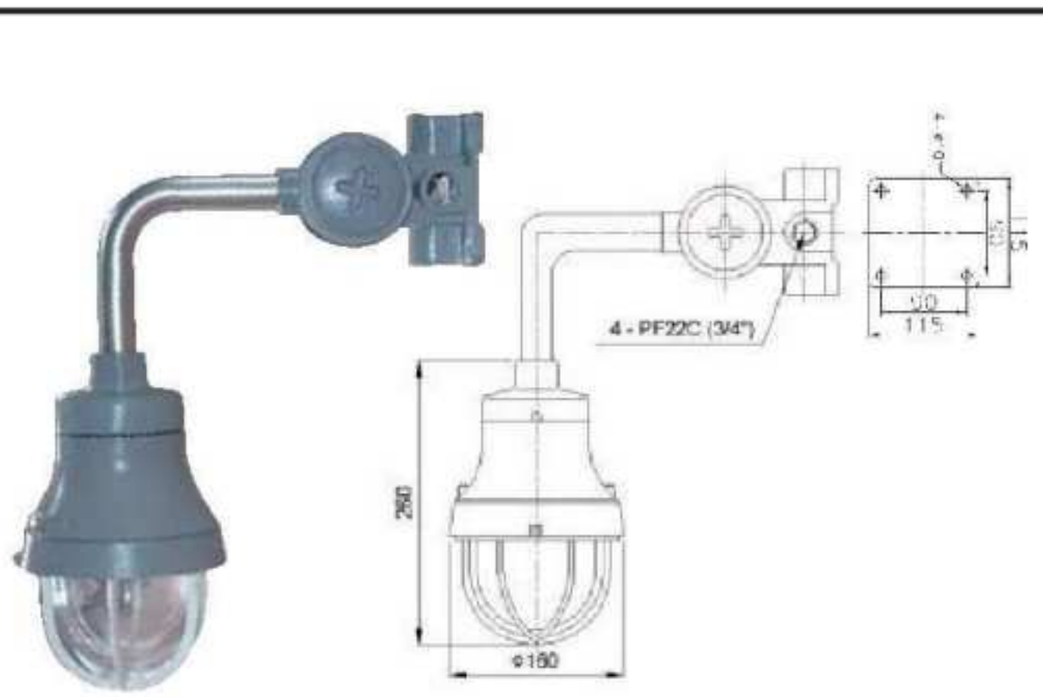
Ex d IIC T6 IP65



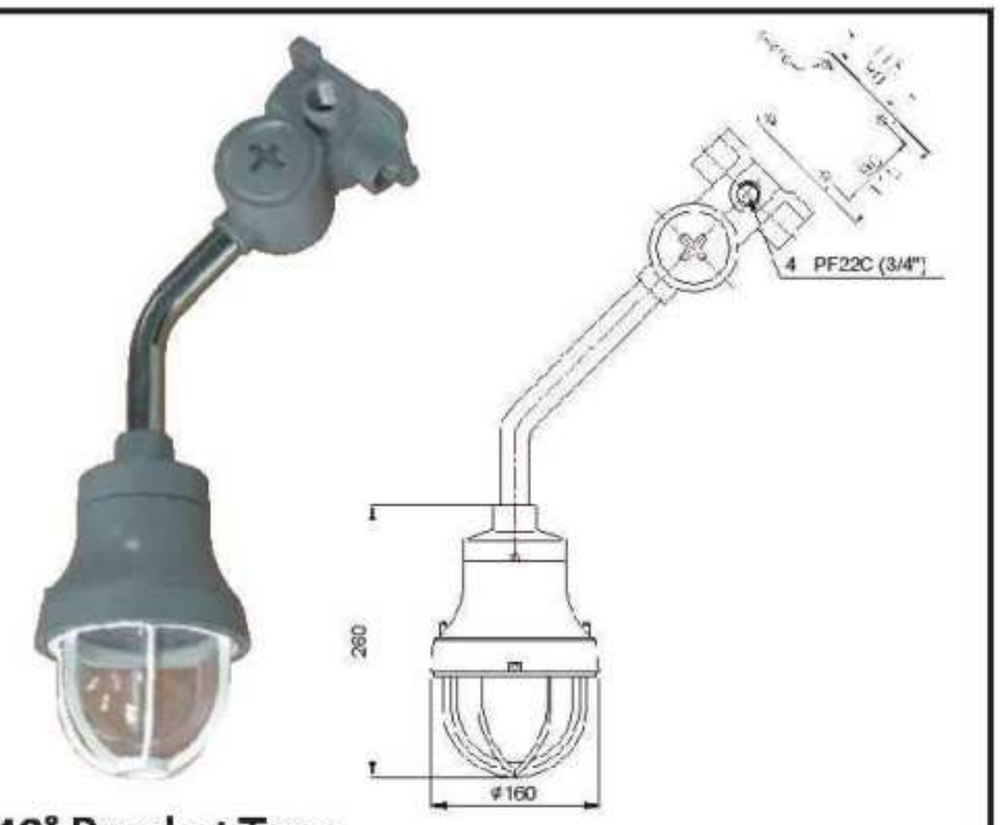
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Material Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Body	Die Cast Aluminum Alloy
Mogul	Porcelain With Mogul Socket
Globe	Heat Resistant Hard Glass
Guard	Die Cast Aluminum Alloy

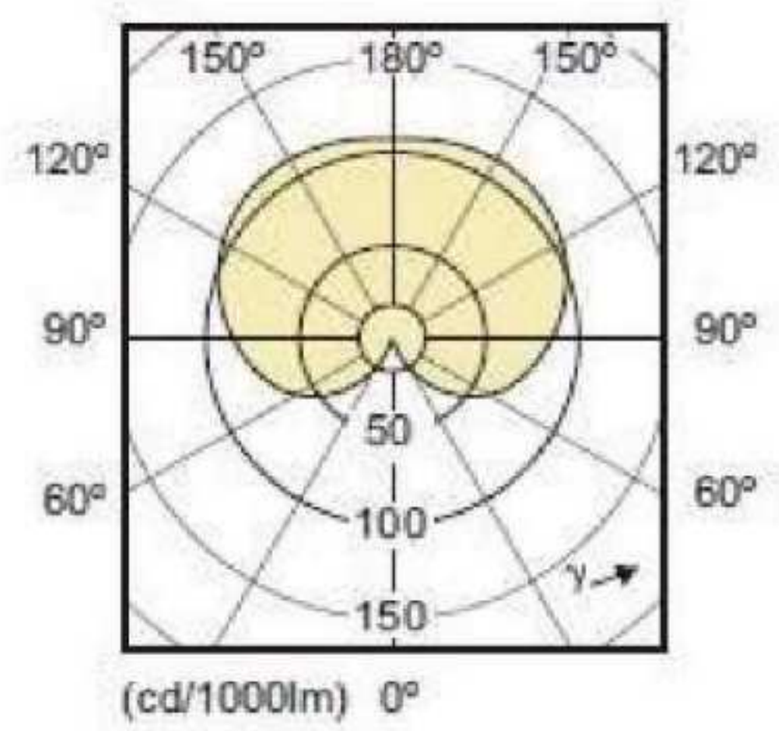
Flameproof Type LED Lighting Fixtures

Ex d IIC T6 IP65

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	FYL-LED-11	LED MAX 8.5W	AC 220V	50Hz/ 60Hz	3.8
Ceiling	FYL-LED-21	LED MAX 8.5W	AC 220V	50Hz/ 60Hz	3
90° Bracket	FYL-LED-31	LED MAX 8.5W	AC 220V	50Hz/ 60Hz	4
40° Bracket	FYL-LED-41	LED MAX 8.5W	AC 220V	50Hz/ 60Hz	4.4

Photometric Data



Features

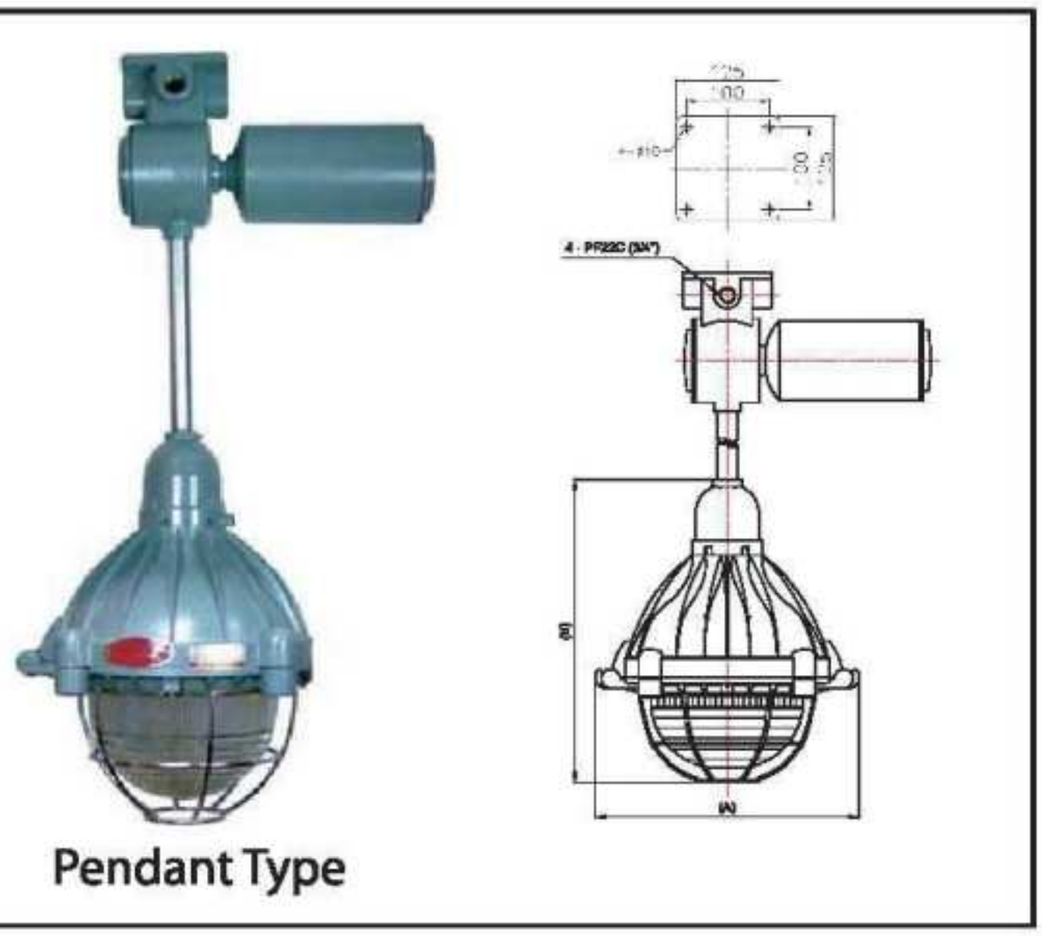
- Flametight threaded joints - no external seal needed.
- Easy to assemble and relamp .
- Shock absorbing receptacle.
- Gasket seals out dirt and liquids.
- Positive locking of globe holder.
- Inner reflector eliminates upward spill light.
- Light weight
- corrosion resistant

Application

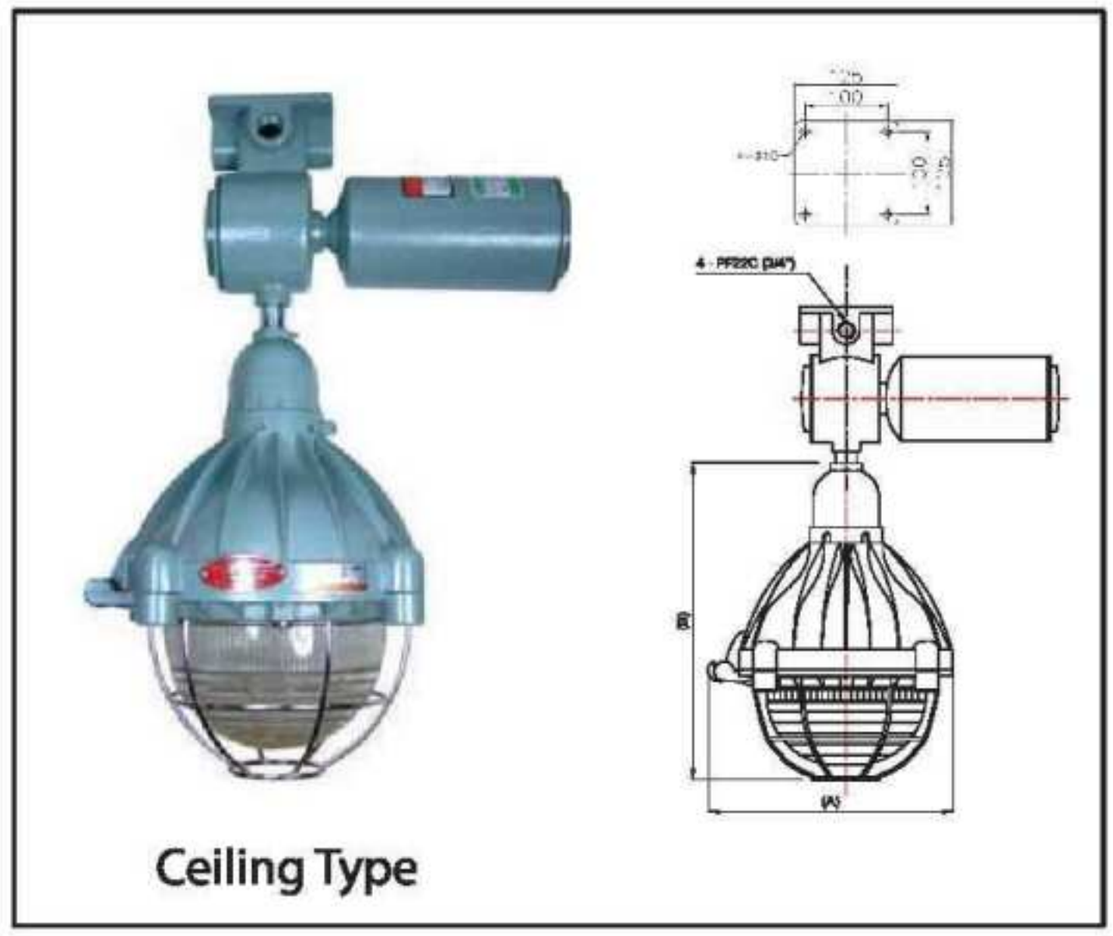
- in location which are hazardous due to the presence of flammable vapors or gases and where dampness or corrosion are present.
- in petroleum refineries, chemical and petrochemical plants, paint spray booths and other process industry facilities where similar hazards exits.
- as pendant, ceiling, wall bracket or bulkhead fixtures indoors for general area or room lighting, or outdoors for "spot" lighting

Flameproof Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures (Ballast outer Type)

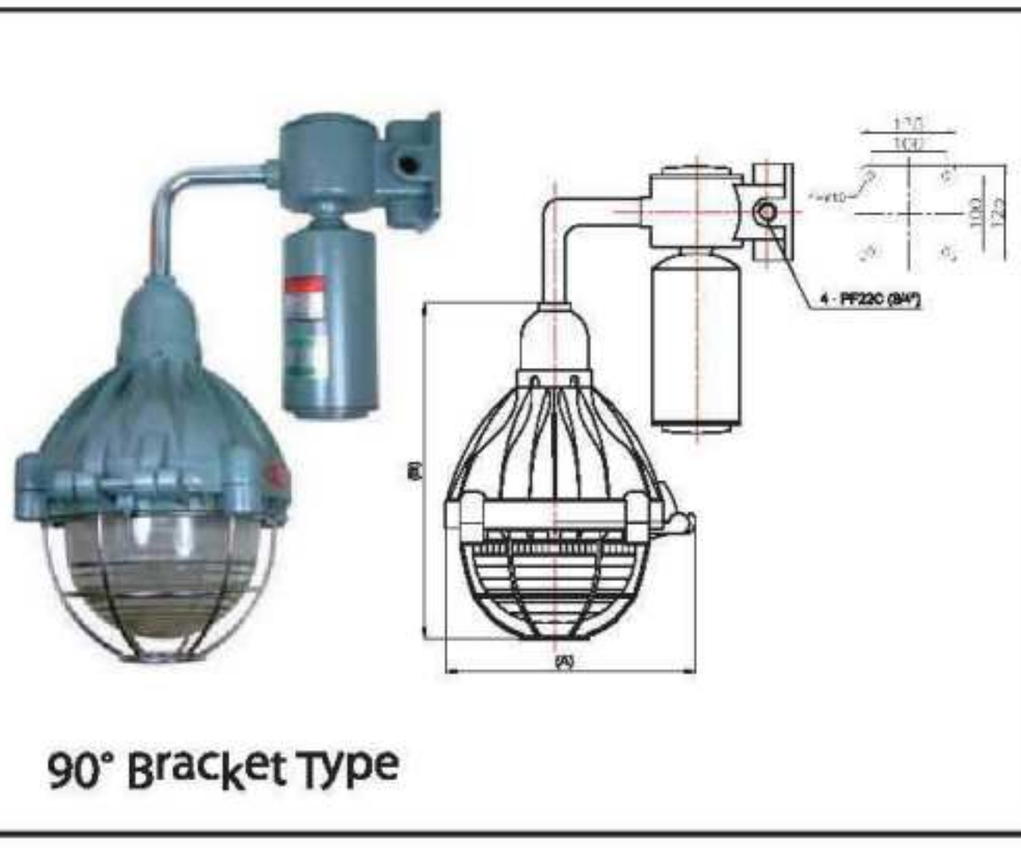
Ex d IIB+H_2 T3 IP65



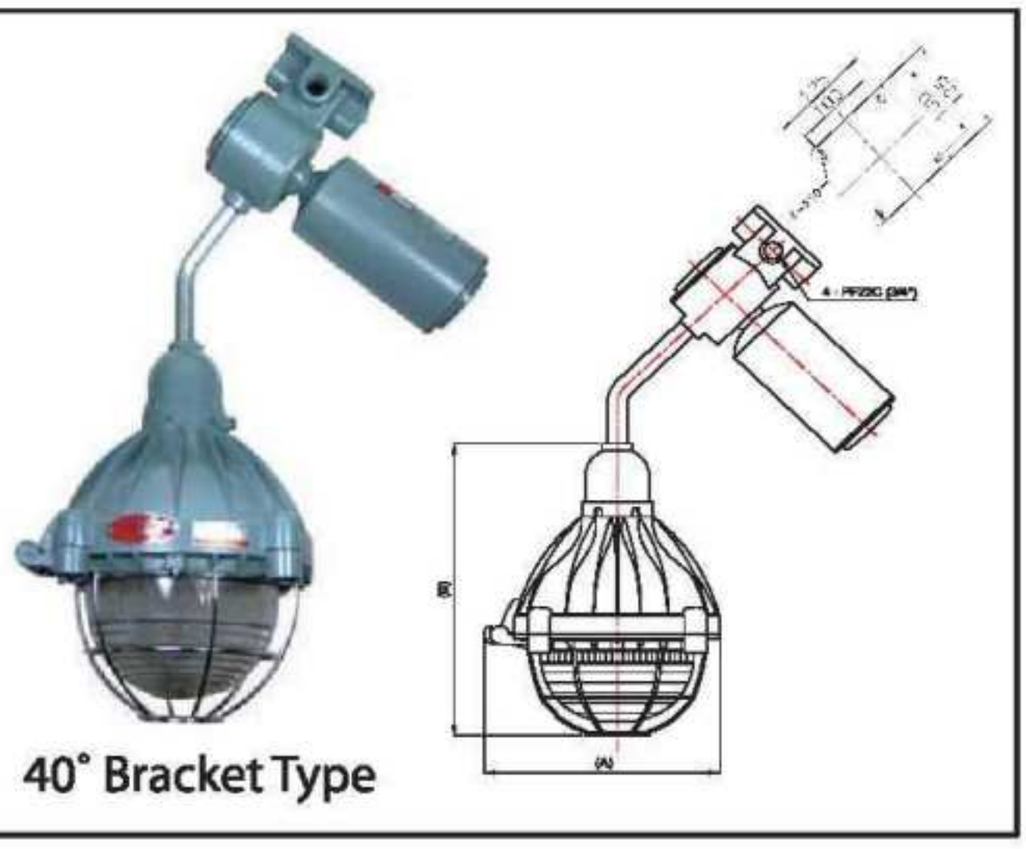
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Dimension

Watt	Length(A)
100W~250W	290(A)

Watt	Length(B)
100W~250W	436(B)

Materials Data

Descriptions	Materials
Mounting Box, Body	Die Cast Aluminum Alloy
Ballast Housing	Steel & Die Cast Aluminum Alloy
Hood	Die Cast Aluminum Alloy
Mogul	Porcelain With Mogul Socket
Inner Reflector	High Purity Sheet Aluminum
Globe	Heat Resistant Hard Glass
Globe Guard	Stainless Steel
Pole	Steel

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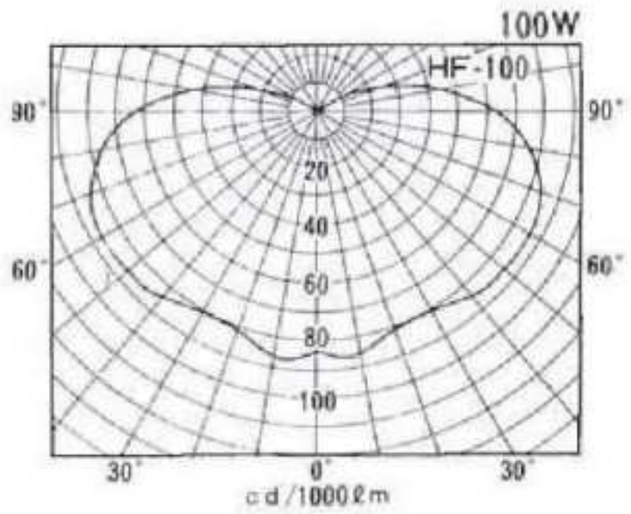
Flameproof Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures (Ballast outer Type)

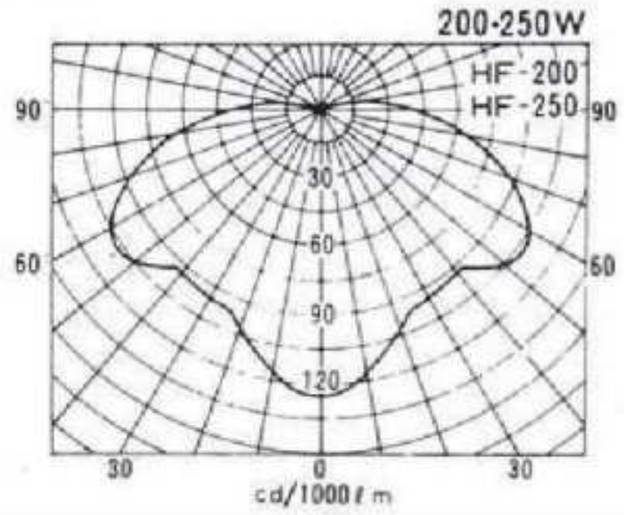
Ex d IIB+H_2 T3 IP65

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	FAHL - 1110	100	AC 220V	50Hz/ 60Hz	10
	FAHL - 1115	150(175)	AC 220V	50Hz/ 60Hz	14.5
	FAHL - 1125	250	AC 220V	50Hz/ 60Hz	14.5
Ceiling	FAHL - 2110	100	AC 220V	50Hz/ 60Hz	9.7
	FAHL - 2115	150(175)	AC 220V	50Hz/ 60Hz	14.2
	FAHL - 2125	250	AC 220V	50Hz/ 60Hz	14.2
90° Bracket	FAHL - 3110	100	AC 220V	50Hz/ 60Hz	10
	FAHL - 3115	150(175)	AC 220V	50Hz/ 60Hz	14.5
	FAHL - 3125	250	AC 220V	50Hz/ 60Hz	14.5
40° Bracket	FAHL - 4110	100	AC 220V	50Hz/ 60Hz	10
	FAHL - 4115	150(175)	AC 220V	50Hz/ 60Hz	14.5
	FAHL - 4125	250	AC 220V	50Hz/ 60Hz	14.5
Pole	FAHL - 5110	100	AC 220V	50Hz/ 60Hz	-
	FAHL - 5115	150(175)	AC 220V	50Hz/ 60Hz	-
	FAHL - 5125	250	AC 220V	50Hz/ 60Hz	-

Photometric Data



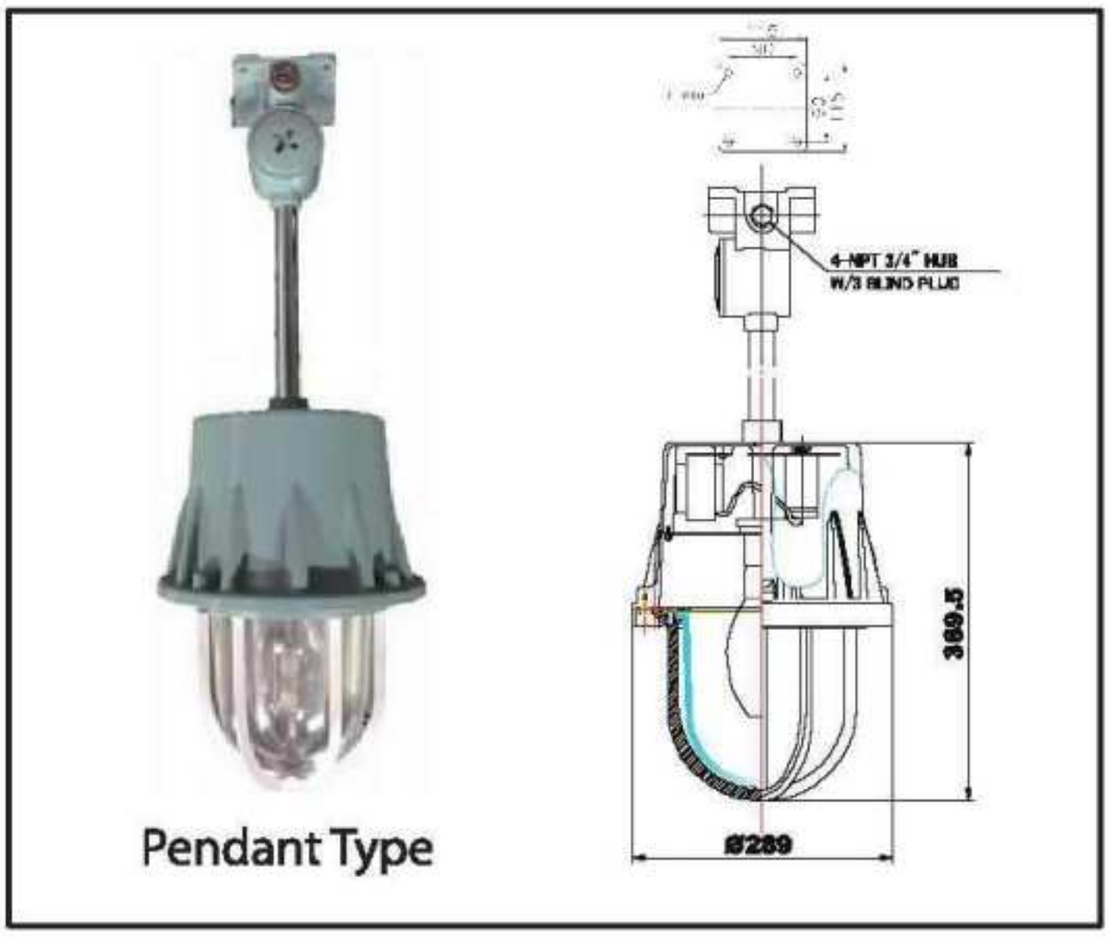


Features

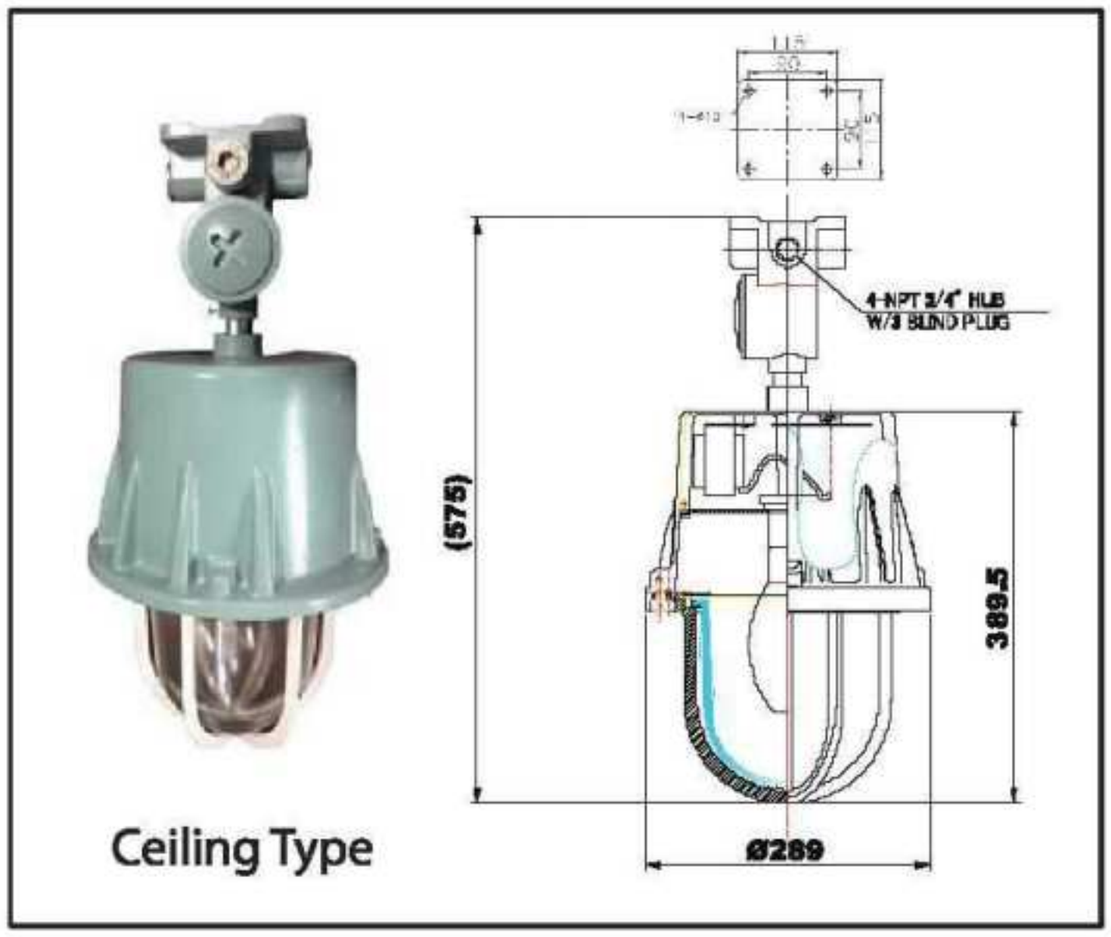
- The lighting unit and the ballast are constructed separately so as to protect the ballast from the heat of the lamp.
- The lighting unit is screwed onto the top of the mounting box and the ballast to the side.
- The base of the body and the top of the globe holder have accurate tapered cylindrical surfaces and are secured by four socket head captive screws.
- The globe assembly is securely hinged to the body.
- The ballast is a high quality one maintaining much safety on strength of enclosure, weatherproofing and temperature-rise.
- The mounting bos has four-way conduit entries and a large acces cover for wiring.
  Thus, pulling and splicing of supply cables can be carried out after completely mounting the fitting.

Dustproof Type Mercury, Hi-Sodium Metal Halide Lighting Fixtures

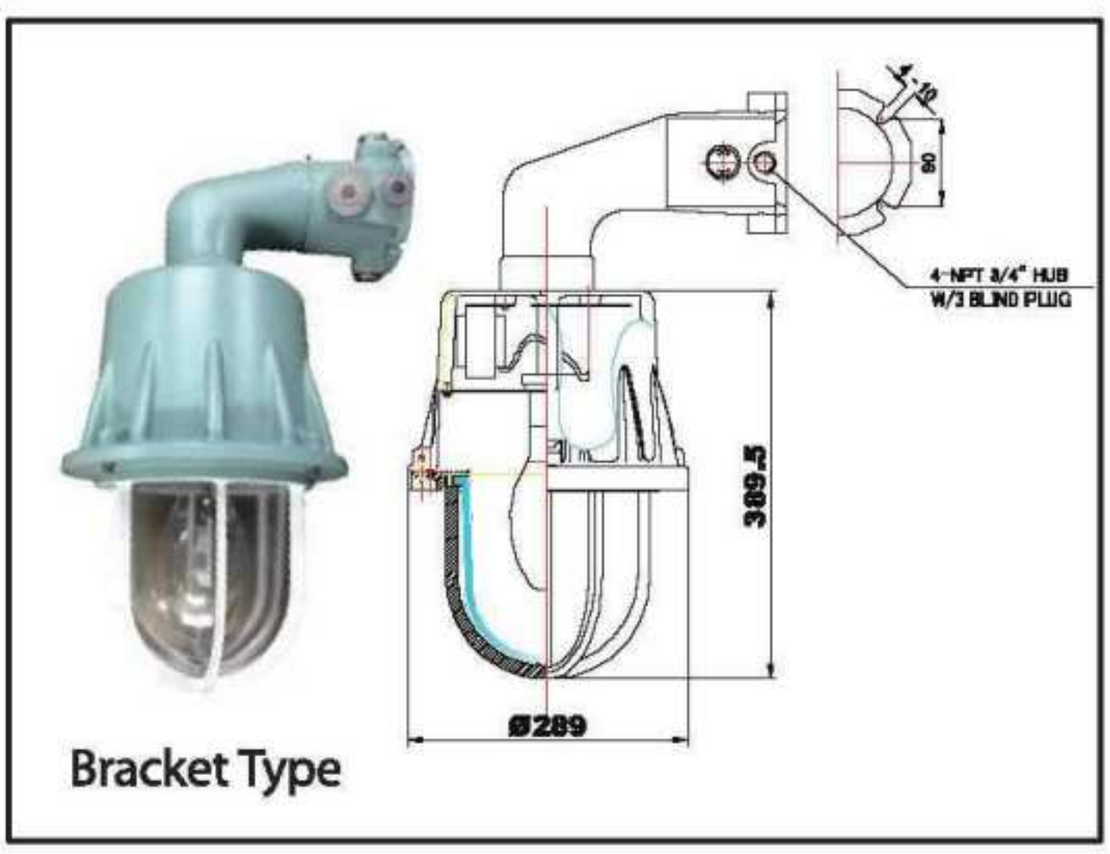
Ex tD A21 T200℃ IP66



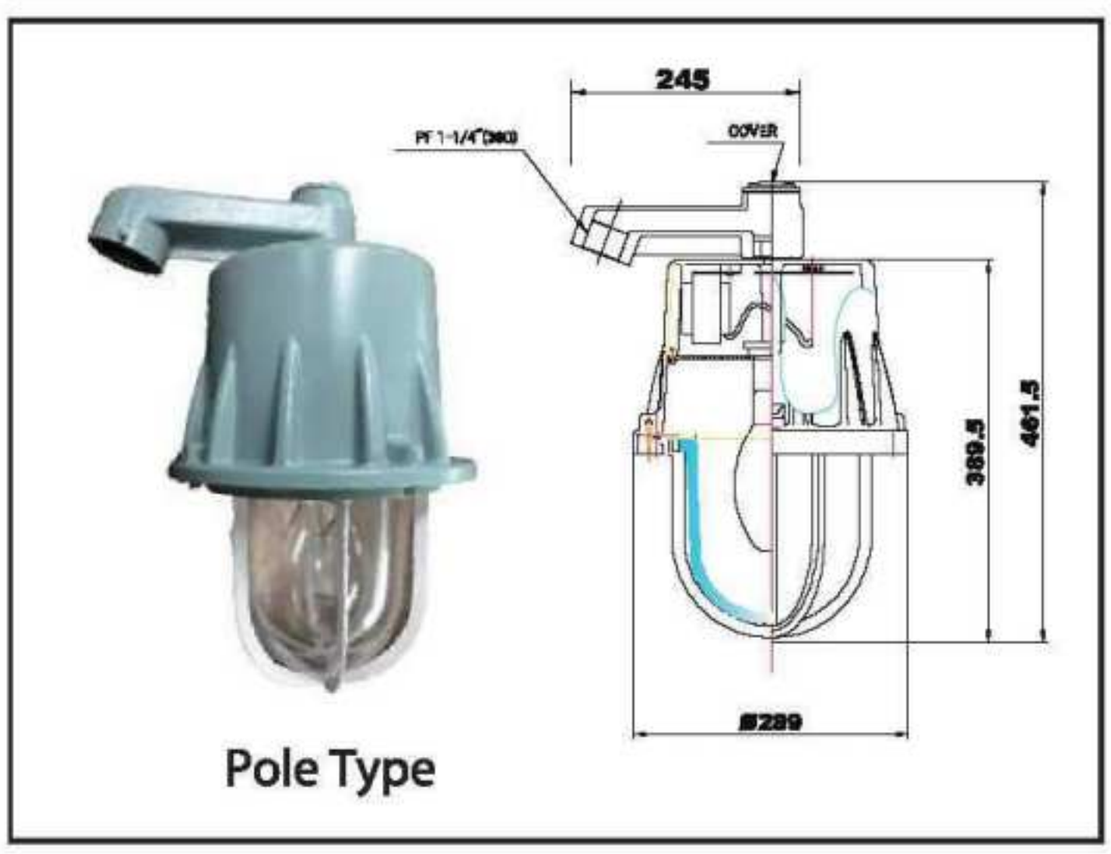
Pendant Type



Ceiling Type



Bracket Type



Pole Type

Materials Data

Descriptions	Materials
Mounting Box, Body	Die Cast Aluminum Alloy
Ballast Housing	Steel & Die Cast Aluminum Alloy
Hood	Die Cast Aluminum Alloy
Mogul	Porcelain With Mogul Socket
Inner Reflector	High Purity Sheet Aluminum
Globe	Heat Resistant Hard Glass
Globe Guard	Die Casting
Pole	Steel

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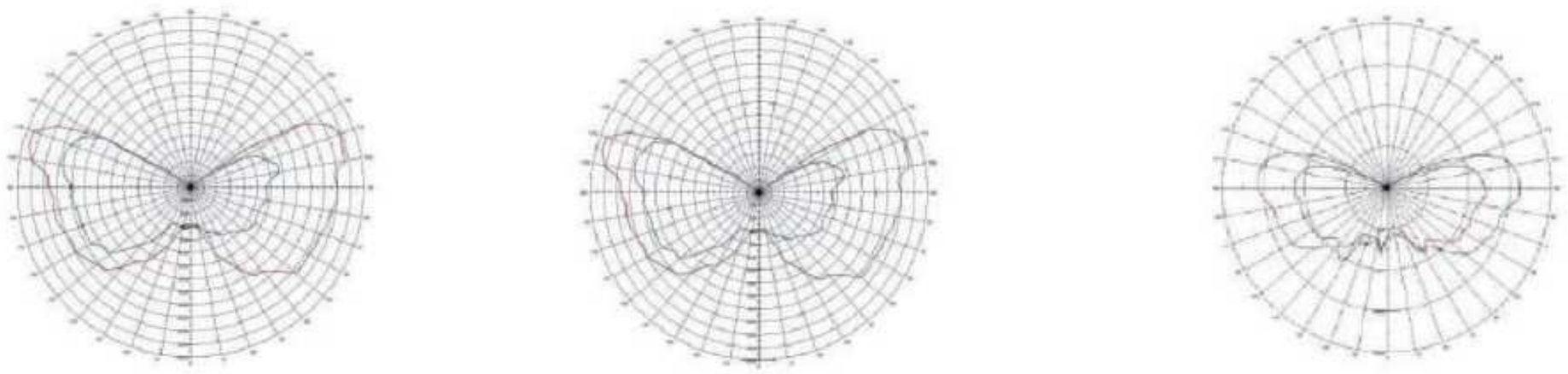
Dustproof Type Mercury, Hi-Sodium Metal Halide Lighting Fixtures

Ex tD A21 T200℃ IP66

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	SPVL-TD-170	70	AC 220V	50Hz/ 60Hz	10.5
	SPVL-TD-1100	100	AC 220V	50Hz/ 60Hz	10.5
	SPVL-TD-1150	150	AC 220V	50Hz/ 60Hz	10.5
	SPVL-TD-1175	175	AC 220V	50Hz/ 60Hz	10.5
	SPVL-TD-1250	250	AC 220V	50Hz/ 60Hz	10.5
Ceiling	SPVL-TD-270	70	AC 220V	50Hz/ 60Hz	10
	SPVL-TD-2100	100	AC 220V	50Hz/ 60Hz	10
	SPVL-TD-2150	150	AC 220V	50Hz/ 60Hz	10
	SPVL-TD-2175	175	AC 220V	50Hz/ 60Hz	10
	SPVL-TD-2250	250	AC 220V	50Hz/ 60Hz	10
Bracket	SPVL-TD-370	70	AC 220V	50Hz/ 60Hz	12
	SPVL-TD-3100	100	AC 220V	50Hz/ 60Hz	12
	SPVL-TD-3150	150	AC 220V	50Hz/ 60Hz	12
	SPVL-TD-3175	175	AC 220V	50Hz/ 60Hz	12
	SPVL-TD-3250	250	AC 220V	50Hz/ 60Hz	12
Pole	SPVL-TD-470	70	AC 220V	50Hz/ 60Hz	-
	SPVL-TD-4100	100	AC 220V	50Hz/ 60Hz	-
	SPVL-TD-4150	150	AC 220V	50Hz/ 60Hz	-
	SPVL-TD-4175	175	AC 220V	50Hz/ 60Hz	-
	SPVL-TD-4250	250	AC 220V	50Hz/ 60Hz	-

Photometric Data

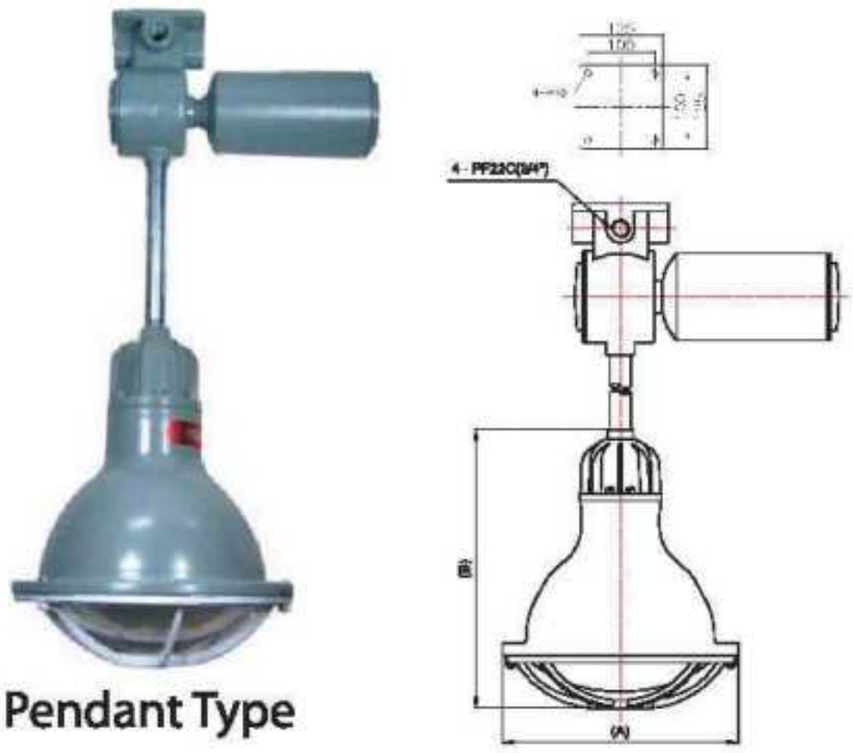


Features

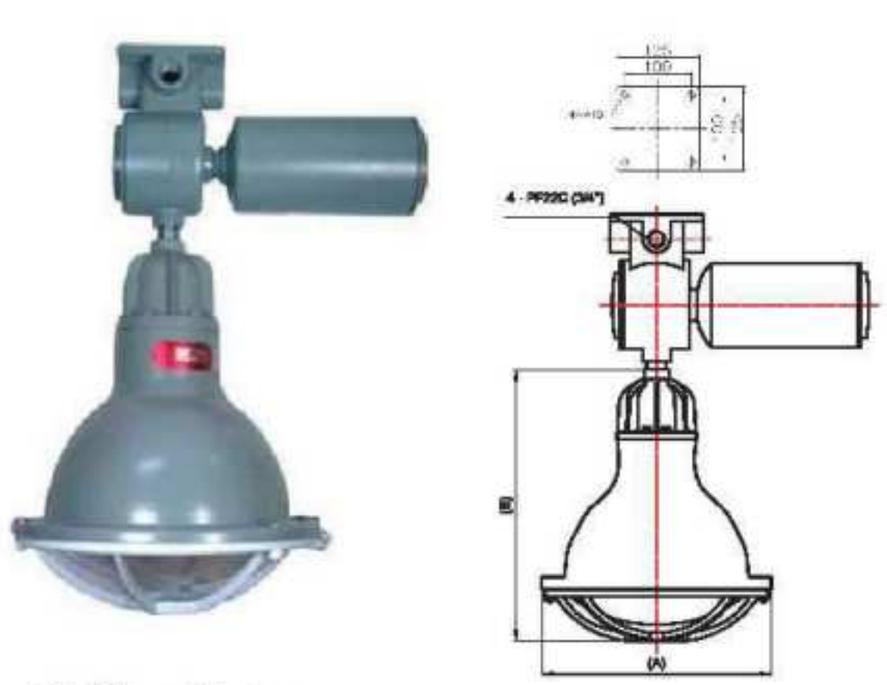
- The lighting unit and the ballast are constructed separately so as to protect the ballast from the heat of the lamp.
- The lighting unit is screwed onto the top of the mounting box and the ballast to the side.
- The base of the body and the top of the globe holder have accurate tapered cylindrical surfaces and are secured by four socket head captive screws.
- The globe assembly is securely hinged to the body.
- The ballast is a high quality one maintaining much safety on strength of enclosure, weatherproofing and temperature-rise.
- The mounting bos has four-way conduit entries and a large acces cover for wiring.
  Thus, pulling and splicing of supply cables can be carried out after completely mounting the fitting.

Non-Sparking Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures (Ballast outer Type)

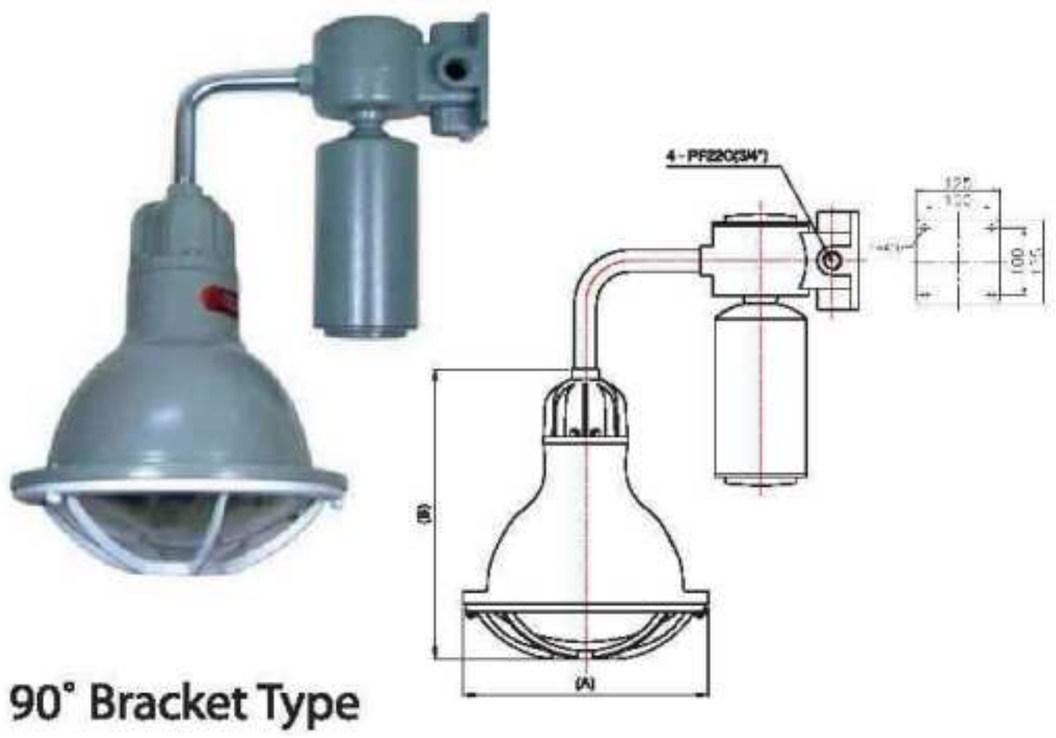
250W: Ex nR II T3 400W: Ex nR II T2



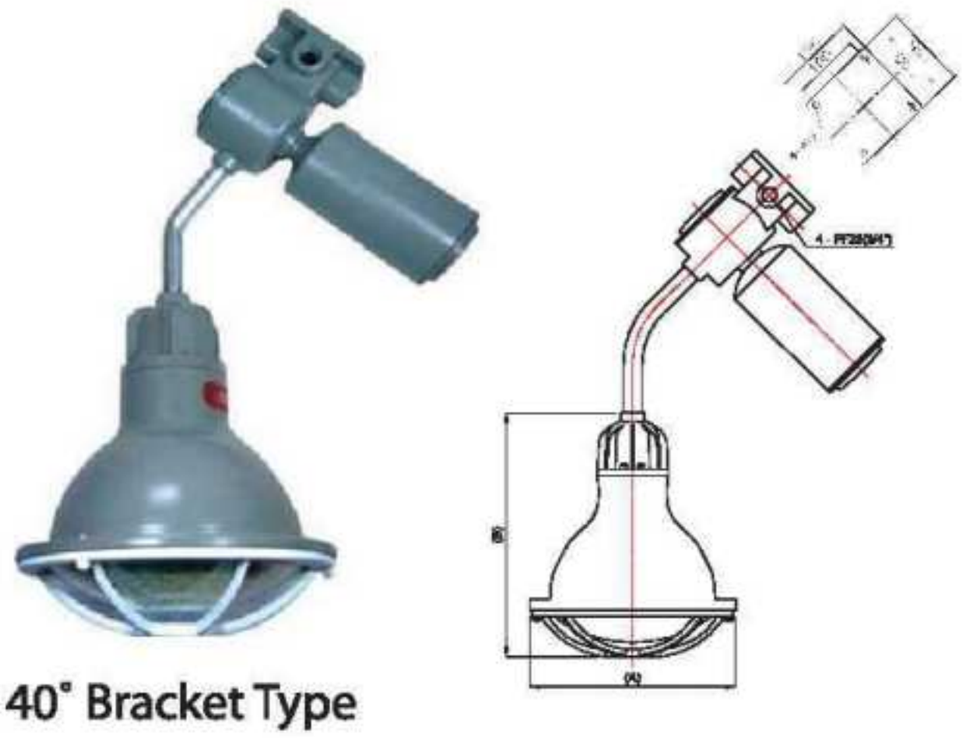
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Dimension

Watt	Length(A)
150W~250W	340
400W	380
Watt	**Length(B)**
150W~250W	410
400W	490

Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Body	Sheet Aluminum Alloy
Ballast Housing	Cast Aluminum Alloy & Steel
Mogul	Porcelain With Mogul Socket
Inner Reflector	High Purity Sheet Aluminum
Globe	Heat Resistant Hard Glass
Guard	Die Cast Aluminum Alloy
Pole	Steel

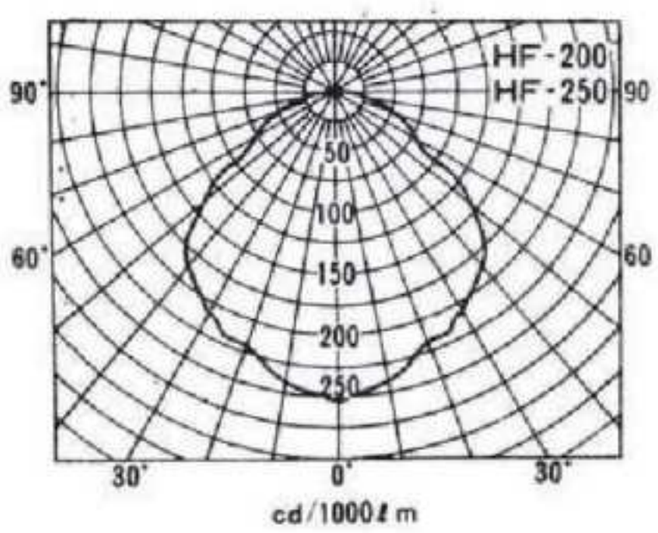
Non - Sparking Type Mercury, Hi - Sodium, Metal Halide Lighting Fixtures (Ballast outer Type)

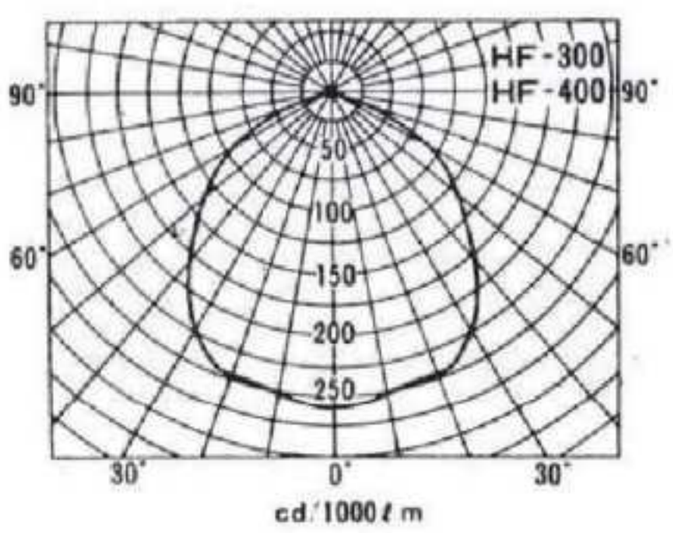
250W: Ex nR II T3 400W: Ex nR II T2

■ Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight (kg)
Pendant	SPHL - 115	150(175)	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 125	250	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 140	400	AC 220V	50Hz/ 60Hz	12
Ceiling	SPHL - 215	150(175)	AC 220V	50Hz/ 60Hz	9.2
	SPHL - 225	250	AC 220V	50Hz/ 60Hz	9.2
	SPHL - 240	400	AC 220V	50Hz/ 60Hz	11.7
90° Bracket	SPHL - 315	150(175)	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 325	250	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 340	400	AC 220V	50Hz/ 60Hz	12
40° Bracket	SPHL - 415	150(175)	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 425	250	AC 220V	50Hz/ 60Hz	9.5
	SPHL - 440	400	AC 220V	50Hz/ 60Hz	12
Pole	SPHL - 515	150(175)	AC 220V	50Hz/ 60Hz	-
	SPHL - 525	250	AC 220V	50Hz/ 60Hz	-
	SPHL - 540	400	AC 220V	50Hz/ 60Hz	-

Photometric Data



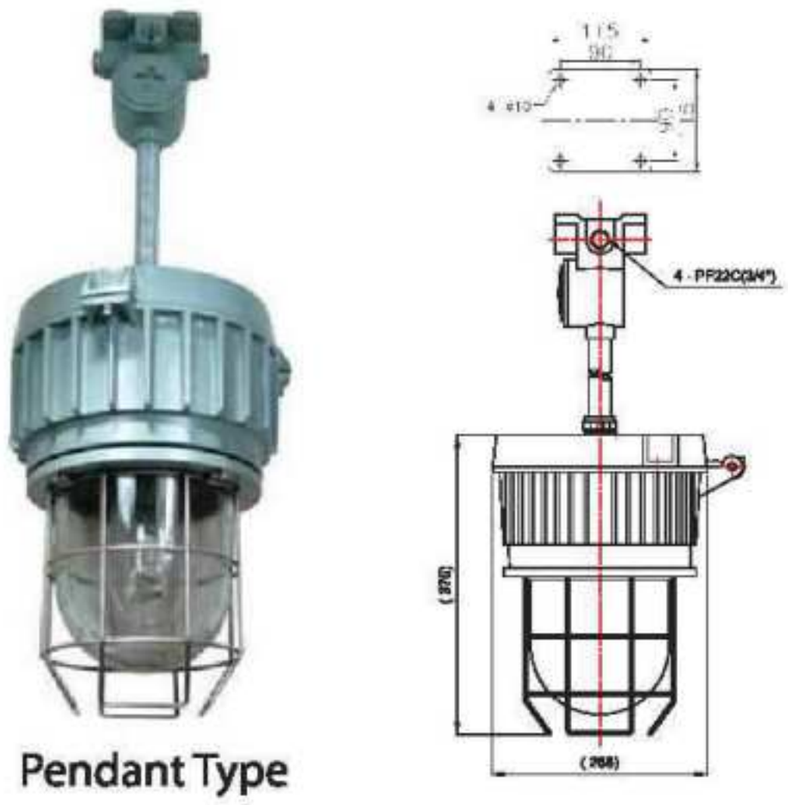


■ Features

- The lighting unit and the ballast are constructed separately so as to protect the ballast from the heat of the lamp. The lighting unit is screwed onto the top of the mounting box and the ballast to the side.
- The body is composed of cast aluminum top member and sheet steel reflector member. The reflector member is elaborately pressed and the inside surface of which is coated with vacuum evaporated high purity aluminum.

Weatherproof & Non - Sparking Type Mercury, Hi - Sodium, Metal Halide Lighting Fixtures

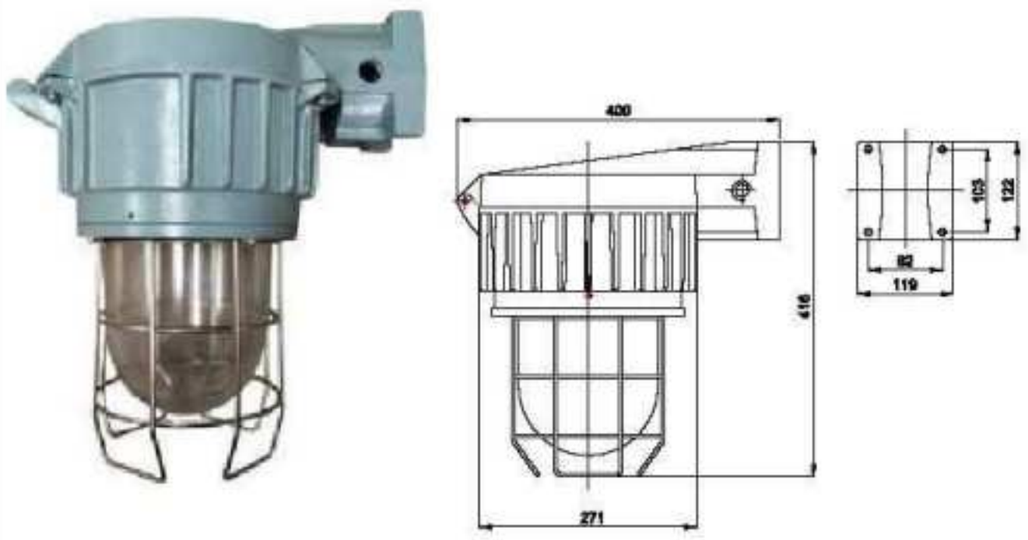
Ex nR II T3



Pendant Type



Ceiling Type



Bracket Type

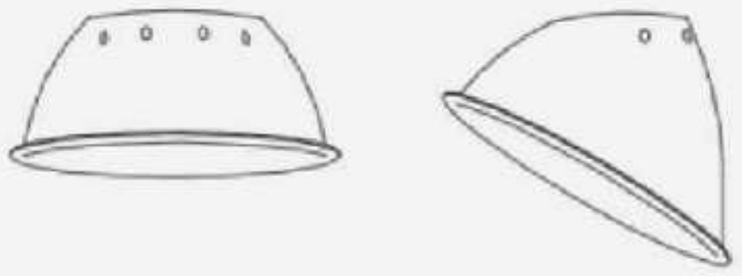


Pole Type

■ Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Body	Cast Aluminum Alloy or Polyester
cover	Cast Aluminum Alloy or Polyester
Mogul	Porcelain With Mogul Socket
Globe	Heat Resistant Hard Glass
Guard	Stainless Steel
Pole	Steel

Optional



Dome Type　　Angle Type

 All product specifications in this catalog are subject to change without any prior notice.

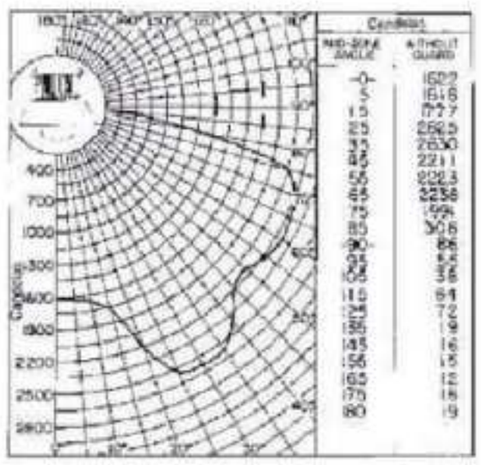
Weatherproof & Non - Sparking Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures

Ex nR II T3

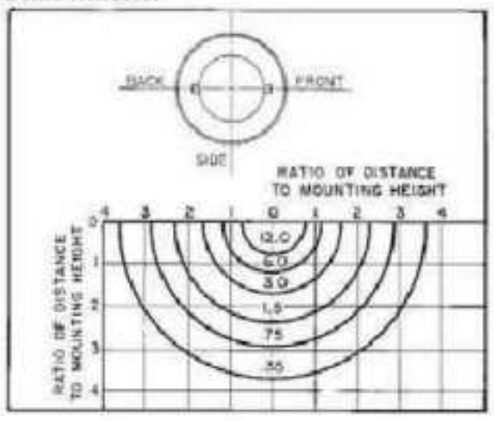
■ Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	SPVL-115	150(175)	AC220V	50Hz/ 60Hz	11
	SPVL-125	250	AC220V	50Hz/ 60Hz	11
Ceiling	SPVL-215	150(175)	AC220V	50Hz/ 60Hz	11
	SPVL-225	250	AC220V	50Hz/ 60Hz	11
Bracket	SPVL-315	150(175)	AC220V	50Hz/ 60Hz	11
	SPVL-325	250	AC220V	50Hz/ 60Hz	11
Pole	SPVL-515	150(175)	AC220V	50Hz/ 60Hz	11
	SPVL-525	250	AC220V	50Hz/ 60Hz	11

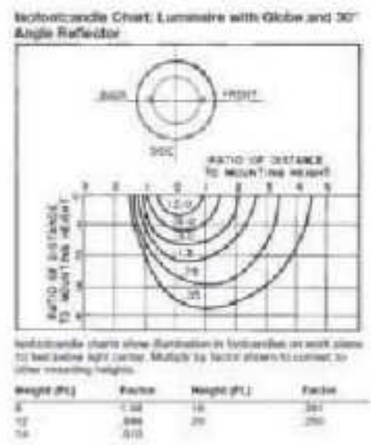
Photometric Data



Isofootcandle Chart: Luminaire with Globe and Dome Reflector



Isofootcandle Chart: Luminaire with Globe and 30° Angle Reflector

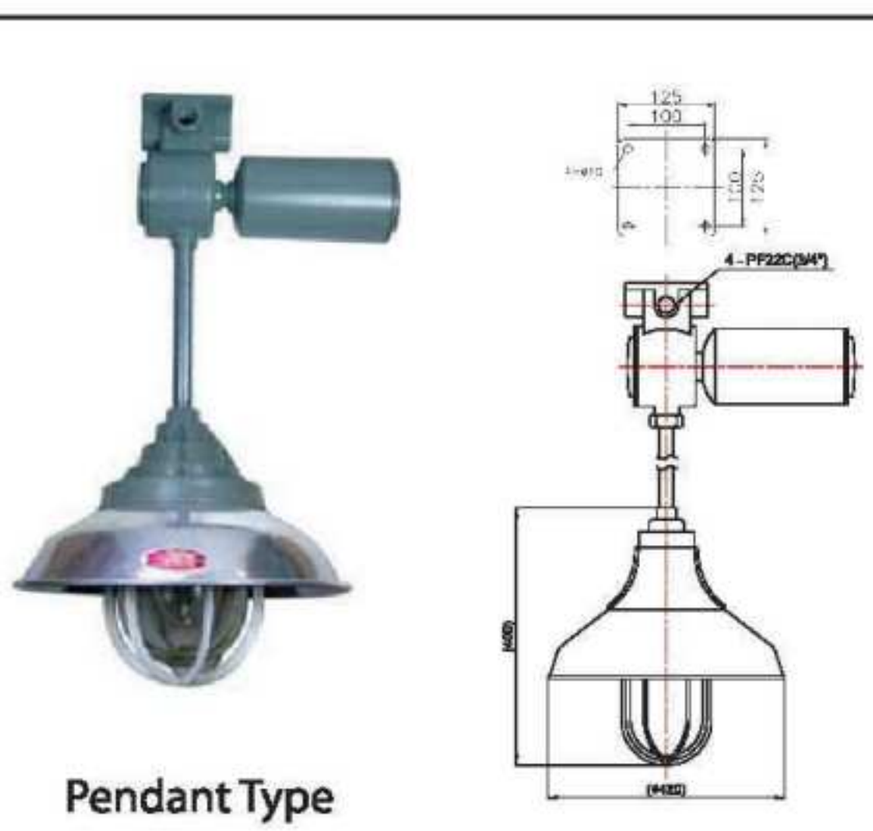


■ Features

- Cast copper-free aluminum construction (less than 0.4 of 1% copper) and epoxy powder finish provide excellent resistance to corrosion.
- Seven mounting arrangements to suit any lighting layout - pendant, flexible pendant, ceiling, wall bracket, angle stanchion, straight stanchion, and quad-mount.
- Hinged ballast housing for ease of installation and maintenance.
- All fixtures designed to perform in a 40 ambient temperature. Selected fixtures are suitable for ambient temperatures up to 65 .
- Superior gasketing seals between the mounting module, housing, and optical assembly for optimum performance in wet and corrosive environments.
- Hubs with an integral conduit stop and bushing to help prevent damage to field wiring during installation.
- Low ambient capability to (-40)
- Dome and 30° angle reflectors made of bright white krydon material provide superior reflectivity, with twist-on feature requiring no tools or additional hardware.
- Will not chip, peel, dent, rust, or corrode.
- Mogul base porcelain lamp socket.
- Stainless steel open bottom guard permits direct access to the globe for easy relamping.

Weatherproof Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures

IP55



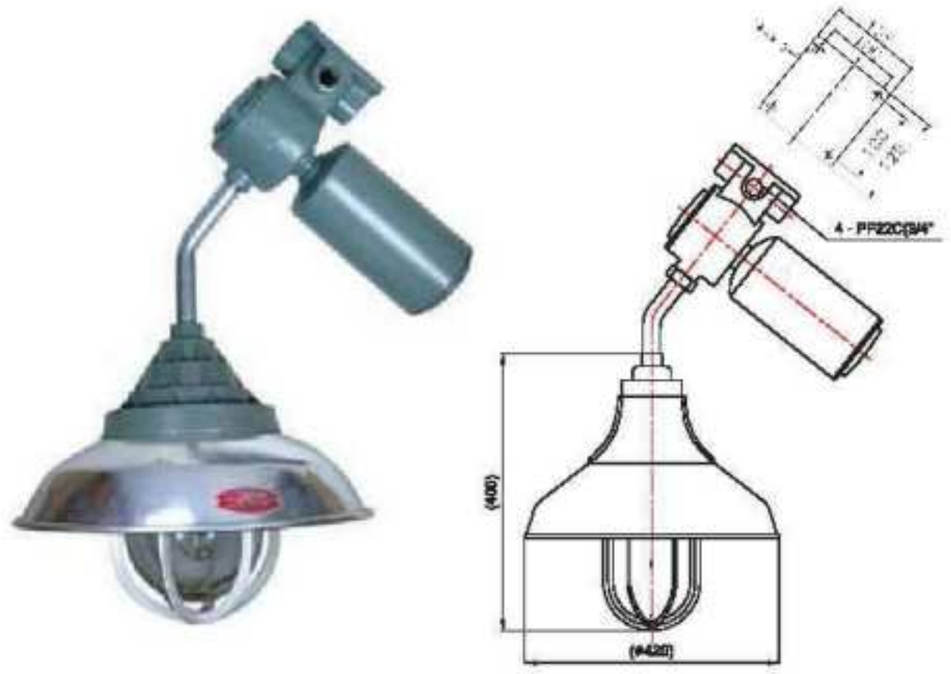
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Body	Die Cast Aluminum Alloy
Ballast Housing	Die Cast Aluminum Alloy & Steel
Mogul	Porcelain With Mogul Socket
Reflector	Sheet Aluminum
Globe	Heat Resistant Hard Glass
Globe Guard	Die Cast Aluminum Alloy
Pole	Steel

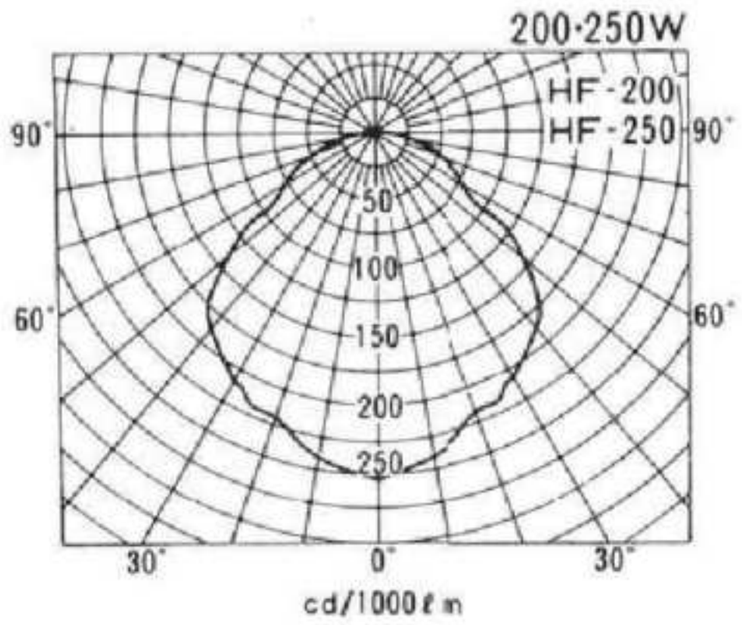
Weatherproof Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures

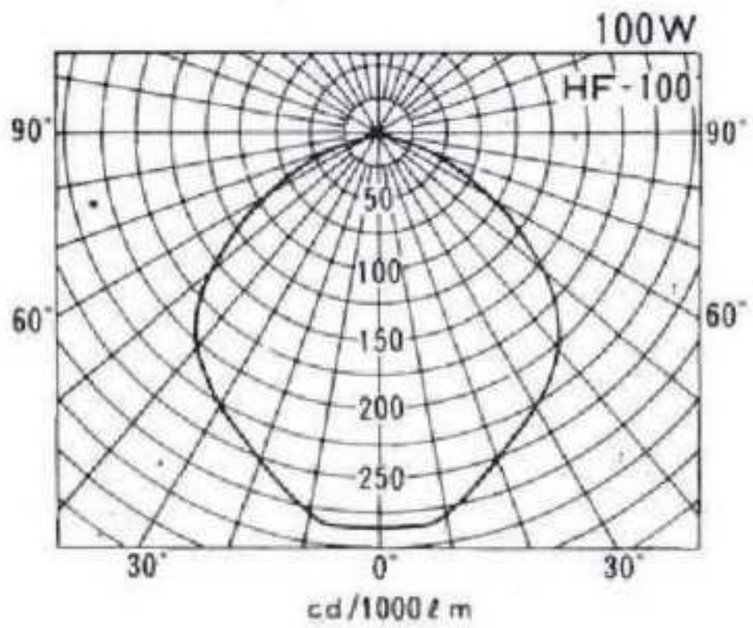
IP55

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight (kg)
Pendant	VRHL - 115	150(175)	AC 220V	50Hz/ 60Hz	10.8
	VRHL - 125	250	AC 220V	50Hz/ 60Hz	10.8
Ceiling	VRHL - 215	150(175)	AC 220V	50Hz/ 60Hz	10.4
	VRHL - 225	250	AC 220V	50Hz/ 60Hz	10.4
90° Bracket	VRHL - 315	150(175)	AC 220V	50Hz/ 60Hz	10.8
	VRHL - 325	250	AC 220V	50Hz/ 60Hz	10.8
40° Bracket	VRHL - 415	150(175)	AC 220V	50Hz/ 60Hz	10.8
	VRHL - 425	250	AC 220V	50Hz/ 60Hz	10.8
Pole	VRHL - 515	150(175)	AC 220V	50Hz/ 60Hz	-
	VRHL - 525	250	AC 220V	50Hz/ 60Hz	-

Photometric Data



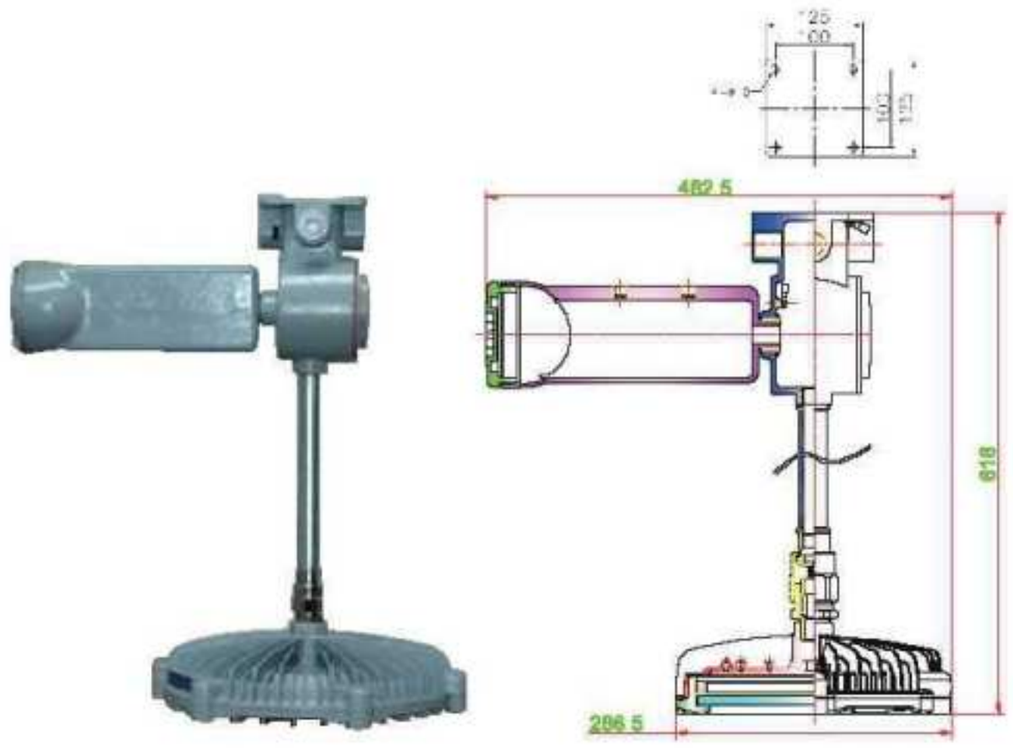


Features

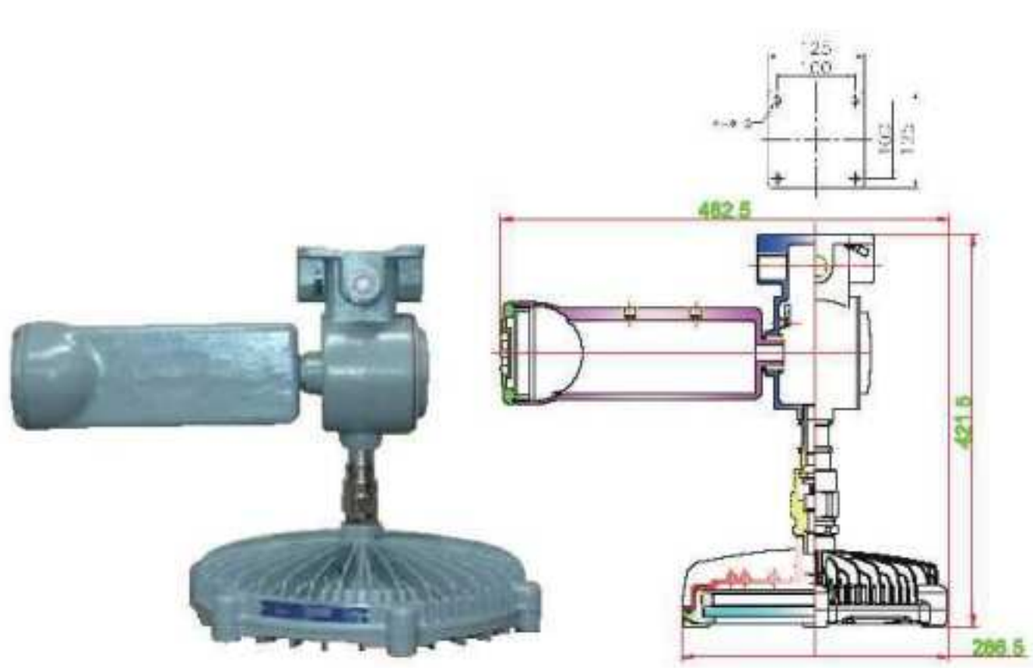
- The lighting unit and the ballast are constructed separately so as to protect the ballast from the heat of the lamp. The lighting unit is screwed onto the top of the mounting box and the ballast to the side.
- The body is composed of cast aluminum top member and sheet steel reflector member. The reflector member is elaborately pressed and the inside surface of which is coated with vacuum evaporated high purity aluminum.

Flameproof Type LED Lighting Fixtures

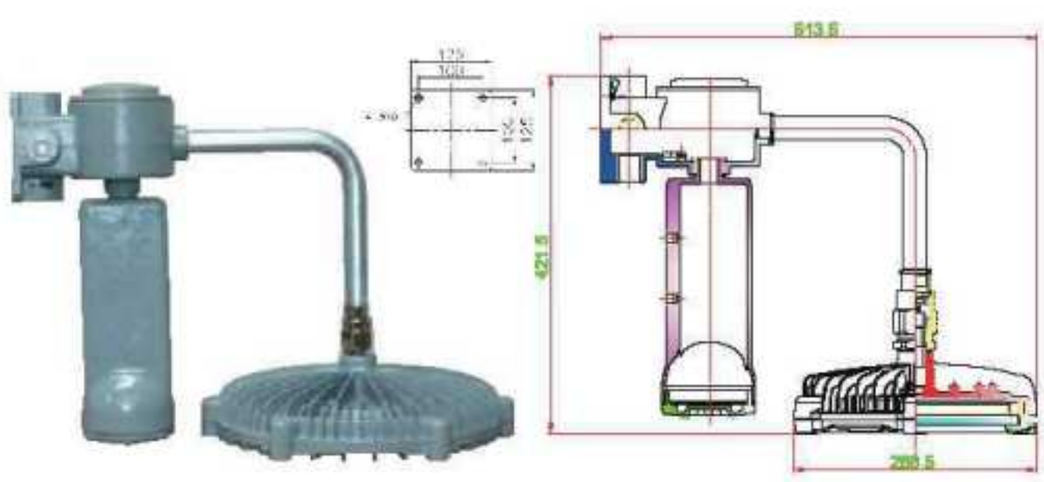
Ex d IIC T5 IP65
Ex tD A21 T100℃ IP65



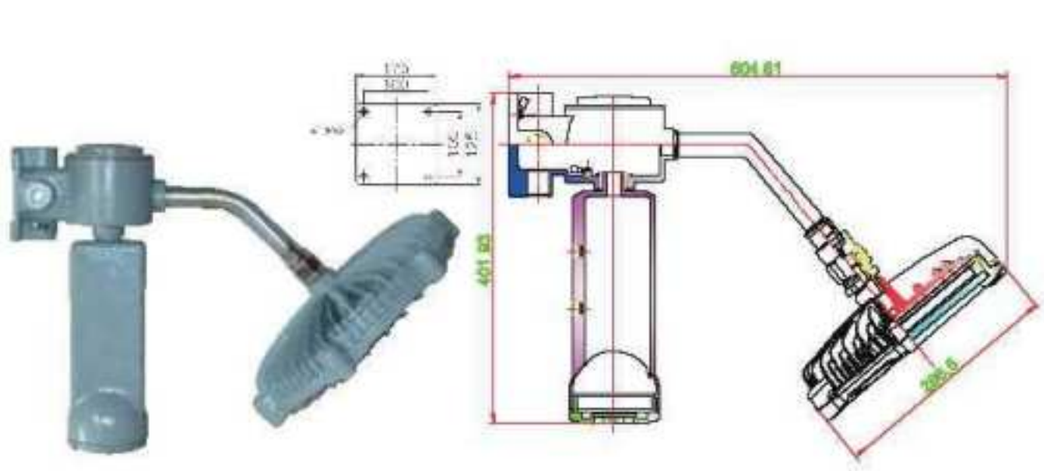
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Main Body	Die Cast Aluminum Alloy
Converter Body	Cast Aluminum Alloy
Glass	Heat Resistant Hard Glass
Glass Guard	Stainless Steel

Flameproof Type LED Lighting Fixtures

Ex d IIC T5 IP65
Ex tD A21 T100℃ IP65

Data

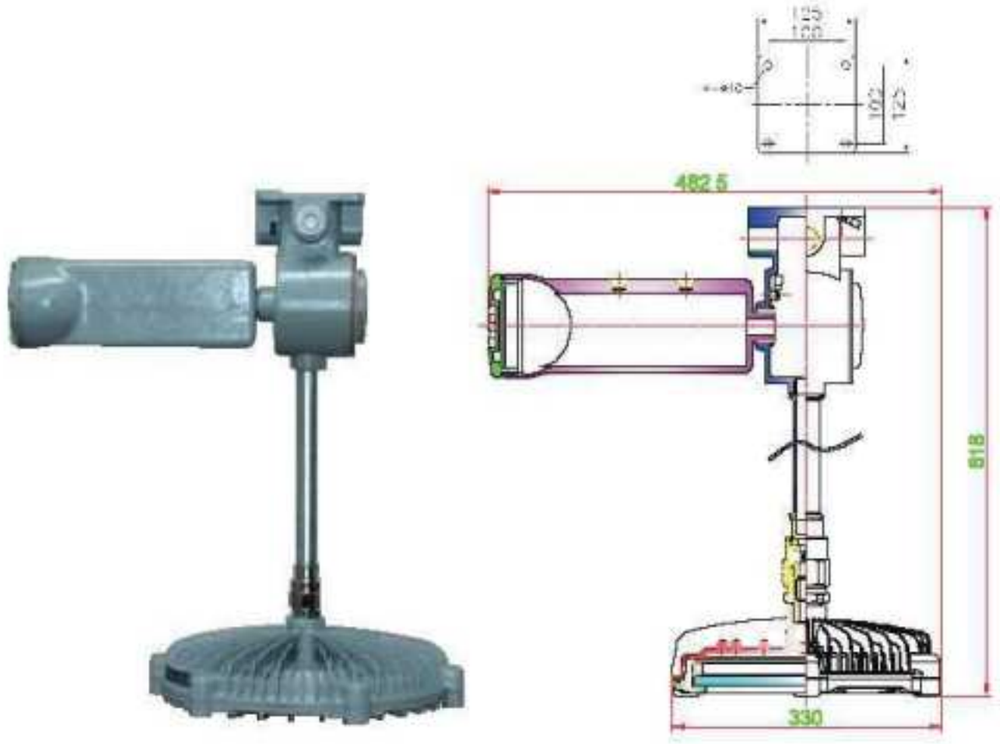
Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	WFLL-D-180D	80	AC 220V	50Hz/ 60Hz	11
	WFLL-D-190D	90	AC 220V	50Hz/ 60Hz	11
	WFLL-D-1100D	100	AC 220V	50Hz/ 60Hz	11
	WFLL-D-1110D	110	AC 220V	50Hz/ 60Hz	11
	WFLL-D-1120D	120	AC 220V	50Hz/ 60Hz	11
Ceiling	WFLL-D-280D	80	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-290D	90	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-2100D	100	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-2110D	110	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-2120D	120	AC 220V	50Hz/ 60Hz	10.5
90° Bracket	WFLL-D-380D	80	AC 220V	50Hz/ 60Hz	11
	WFLL-D-390D	90	AC 220V	50Hz/ 60Hz	11
	WFLL-D-3100D	100	AC 220V	50Hz/ 60Hz	11
	WFLL-D-3110D	110	AC 220V	50Hz/ 60Hz	11
	WFLL-D-3120D	120	AC 220V	50Hz/ 60Hz	11
40° Bracket	WFLL-D-480D	80	AC 220V	50Hz/ 60Hz	11
	WFLL-D-490D	90	AC 220V	50Hz/ 60Hz	11
	WFLL-D-4100D	100	AC 220V	50Hz/ 60Hz	11
	WFLL-D-4110D	110	AC 220V	50Hz/ 60Hz	11
	WFLL-D-4120D	120	AC 220V	50Hz/ 60Hz	11
Pole	WFLL-D-580D	80	AC 220V	50Hz/ 60Hz	-
	WFLL-D-590D	90	AC 220V	50Hz/ 60Hz	-
	WFLL-D-5100D	100	AC 220V	50Hz/ 60Hz	-
	WFLL-D-5110D	110	AC 220V	50Hz/ 60Hz	-
	WFLL-D-5120D	120	AC 220V	50Hz/ 60Hz	-

Characteristics

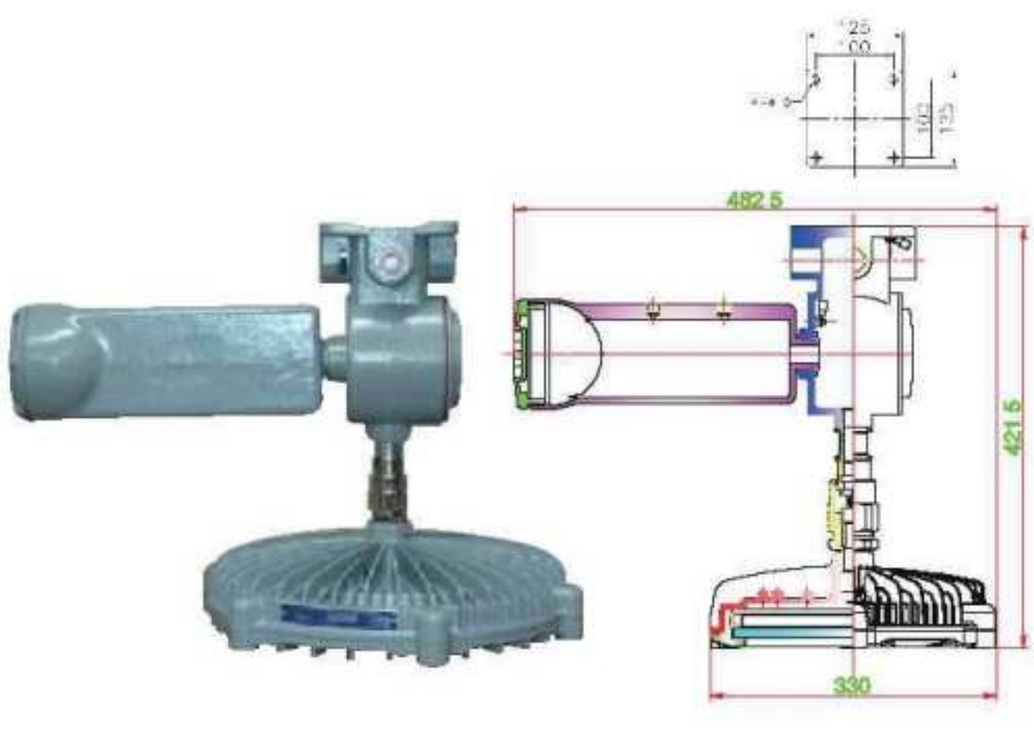
- High Efficiency LED Light
- The Best Illumination
- Low Power Consumption
- Long Lifetime & Low Maintenance Cost
- Environment Friendly (No - Mercury, Lead,Cadmium) & CO_2 Reduction

Flameproof Type LED Lighting Fixtures

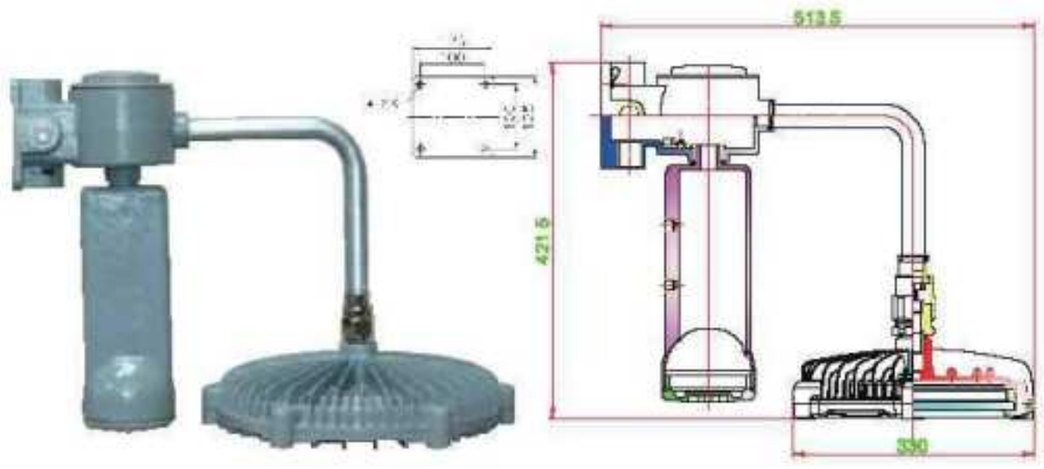
Ex d IIC T5 IP65
Ex tD A21 T100℃ IP65



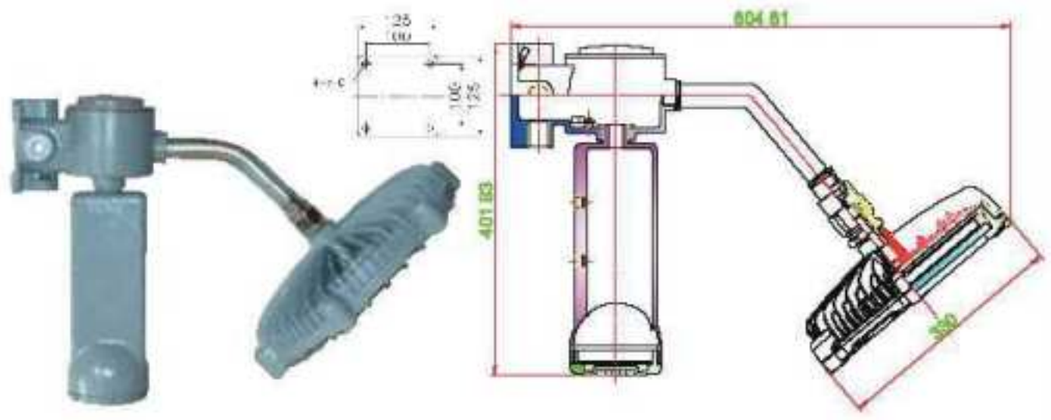
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Main Body	Die Cast Aluminum Alloy
Converter Body	Cast Aluminum Alloy
Glass	Heat Resistant Hard Glass
Glass Guard	Stainless Steel

Flameproof Type LED Lighting Fixtures

Ex d IIC T5 IP65
Ex tD A21 T100℃ IP65

Data

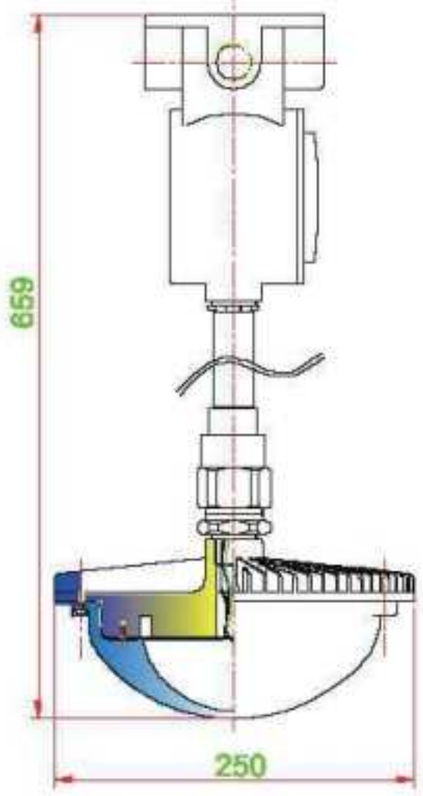
Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	WFLL-D-1130D	130	AC 220V	50Hz/ 60Hz	11
	WFLL-D-1140D	140	AC 220V	50Hz/ 60Hz	11
	WFLL-D-1150D	150	AC 220V	50Hz/ 60Hz	11
Ceiling	WFLL-D-2130D	130	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-2140D	140	AC 220V	50Hz/ 60Hz	10.5
	WFLL-D-2150D	150	AC 220V	50Hz/ 60Hz	10.5
90° Bracket	WFLL-D-3130D	130	AC 220V	50Hz/ 60Hz	11
	WFLL-D-3140D	140	AC 220V	50Hz/ 60Hz	11
	WFLL-D-3150D	150	AC 220V	50Hz/ 60Hz	11
40° Bracket	WFLL-D-4130D	130	AC 220V	50Hz/ 60Hz	11
	WFLL-D-4140D	140	AC 220V	50Hz/ 60Hz	11
	WFLL-D-4150D	150	AC 220V	50Hz/ 60Hz	11
Pole	WFLL-D-5130D	130	AC 220V	50Hz/ 60Hz	-
	WFLL-D-5140D	140	AC 220V	50Hz/ 60Hz	-
	WFLL-D-5150D	150	AC 220V	50Hz/ 60Hz	-

Characteristics

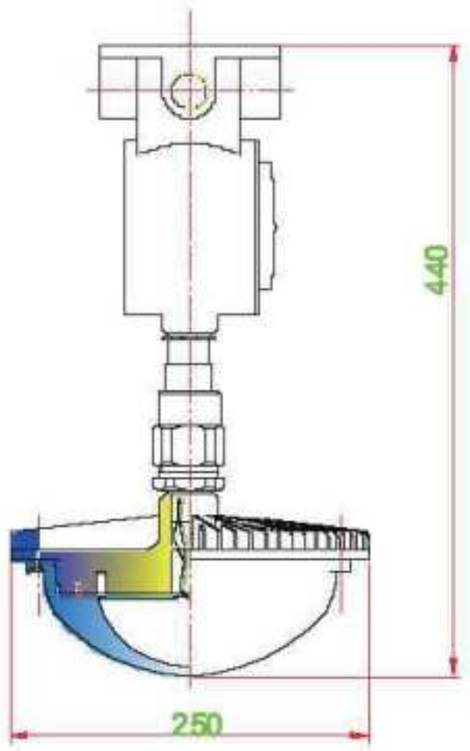
- High Efficiency LED Light
- The Best Illumination
- Low Power Consumption
- Long Lifetime & Low Maintenance Cost
- Environment Friendly (No - Mercury, Lead,Cadmium) & CO_2 Reduction

Flameproof Type LED Lighting Fixtures

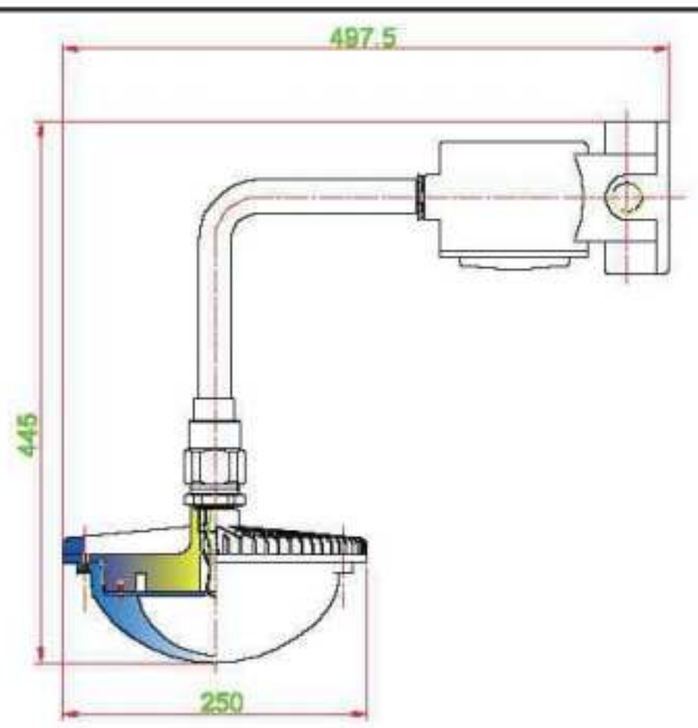
Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65



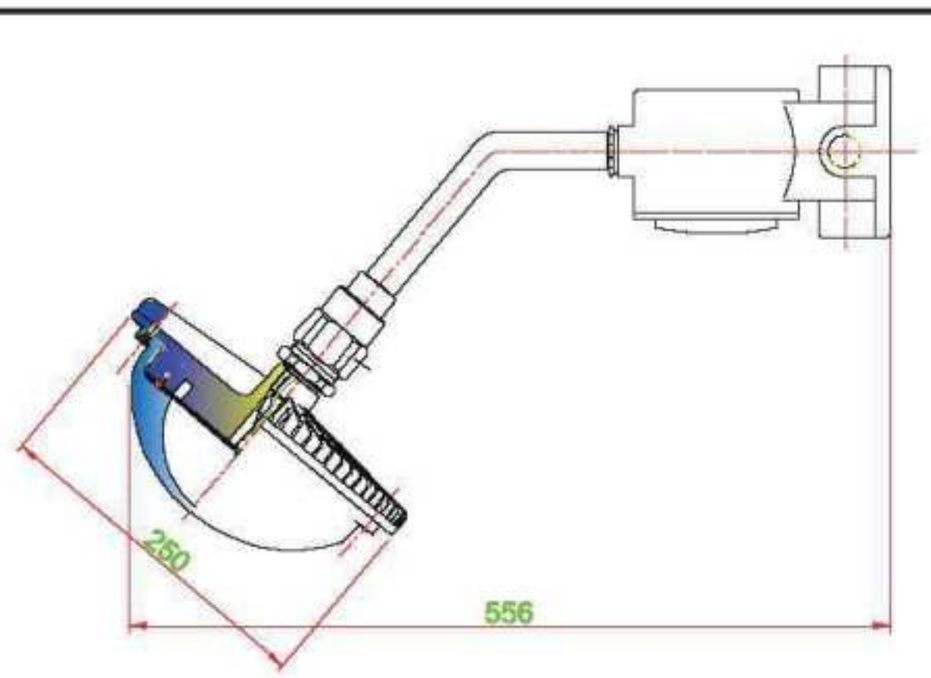
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Main Body	Die Cast Aluminum Alloy
Converter Body	Cast Aluminum Alloy
Glass	Heat Resistant Hard Glass
Glass Guard	Stainless Steel

 All product specifications in this catalog are subject to change without any prior notice.

Flameproof Type LED Lighting Fixtures

Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65

Data

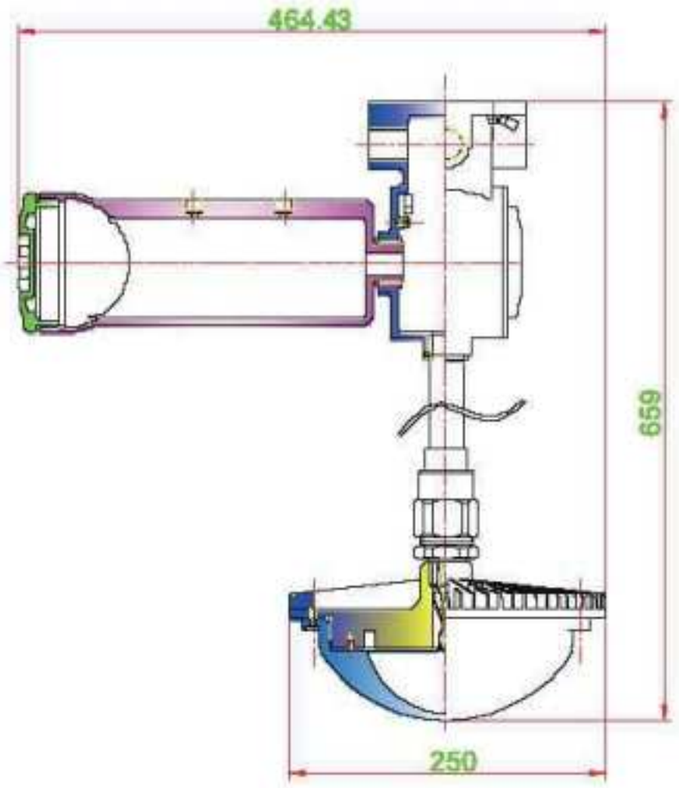
Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	WFLL-G-150A	50	AC 220V	50Hz/ 60Hz	7
	WFLL-G-160A	60	AC 220V	50Hz/ 60Hz	7
	WFLL-G-170A	70	AC 220V	50Hz/ 60Hz	7
	WFLL-G-180A	80	AC 220V	50Hz/ 60Hz	7
Ceiling	WFLL-G-250A	50	AC 220V	50Hz/ 60Hz	7
	WFLL-G-260A	60	AC 220V	50Hz/ 60Hz	7
	WFLL-G-270A	70	AC 220V	50Hz/ 60Hz	7
	WFLL-G-280A	80	AC 220V	50Hz/ 60Hz	7
90° Bracket	WFLL-G-350A	50	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-360A	60	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-370A	70	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-380A	80	AC 220V	50Hz/ 60Hz	7.5
40° Bracket	WFLL-G-450A	50	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-460A	60	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-470A	70	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-480A	80	AC 220V	50Hz/ 60Hz	7.5
Pole	WFLL-G-550A	50	AC 220V	50Hz/ 60Hz	-
	WFLL-G-560A	60	AC 220V	50Hz/ 60Hz	-
	WFLL-G-570A	70	AC 220V	50Hz/ 60Hz	-
	WFLL-G-580A	80	AC 220V	50Hz/ 60Hz	-

Characteristics

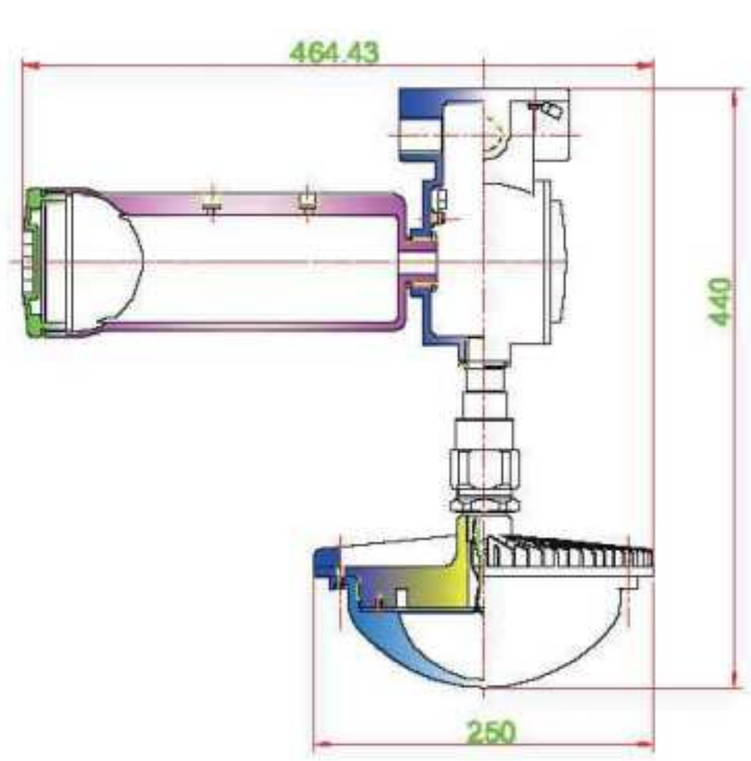
- High Efficiency LED Light
- The Best Illumination
- Low Power Consumption
- Long Lifetime & Low Maintenance Cost
- Environment Friendly (No-Mercury, Lead,Cadmium) & CO_2 Reduction

Flameproof Type LED Lighting Fixtures

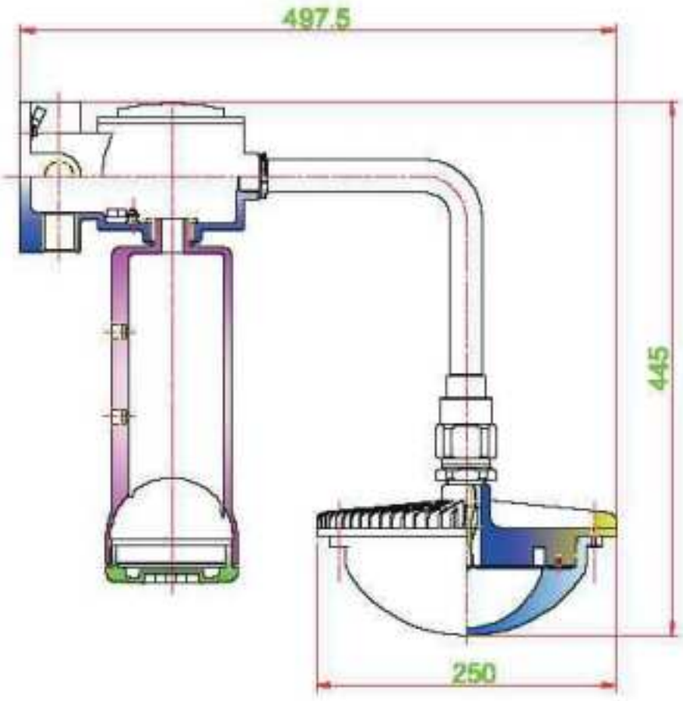
Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65



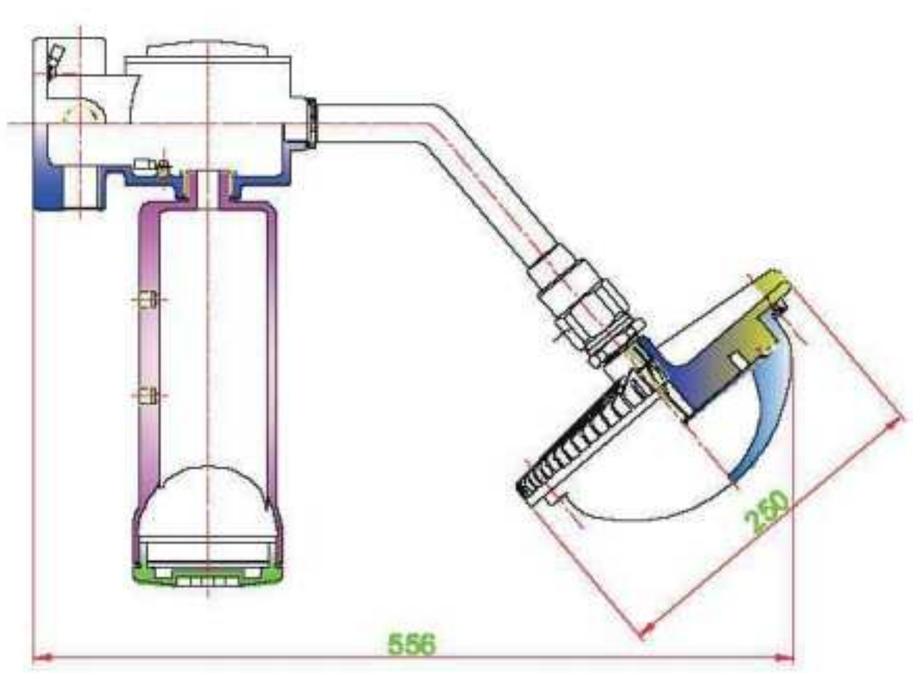
Pendant Type



Ceiling Type



90° Bracket Type



40° Bracket Type

■ Materials Data

Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Main Body	Die Cast Aluminum Alloy
Converter Body	Cast Aluminum Alloy
Glass	Heat Resistant Hard Glass
Glass Guard	Stainless Steel

 All product specifications in this catalog are subject to change without any prior notice.

Flameproof Type LED Lighting Fixtures

Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight(kg)
Pendant	WFLL-G-150D	50	AC 220V	50Hz/ 60Hz	7
	WFLL-G-160D	60	AC 220V	50Hz/ 60Hz	7
	WFLL-G-170D	70	AC 220V	50Hz/ 60Hz	7
	WFLL-G-180D	80	AC 220V	50Hz/ 60Hz	7
Ceiling	WFLL-G-250D	50	AC 220V	50Hz/ 60Hz	7
	WFLL-G-260D	60	AC 220V	50Hz/ 60Hz	7
	WFLL-G-270D	70	AC 220V	50Hz/ 60Hz	7
	WFLL-G-280D	80	AC 220V	50Hz/ 60Hz	7
90° Bracket	WFLL-G-350D	50	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-360D	60	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-370D	70	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-380D	80	AC 220V	50Hz/ 60Hz	7.5
40° Bracket	WFLL-G-450D	50	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-460D	60	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-470D	70	AC 220V	50Hz/ 60Hz	7.5
	WFLL-G-480D	80	AC 220V	50Hz/ 60Hz	7.5
Pole	WFLL-G-550D	50	AC 220V	50Hz/ 60Hz	-
	WFLL-G-560D	60	AC 220V	50Hz/ 60Hz	-
	WFLL-G-570D	70	AC 220V	50Hz/ 60Hz	-
	WFLL-G-580D	80	AC 220V	50Hz/ 60Hz	-

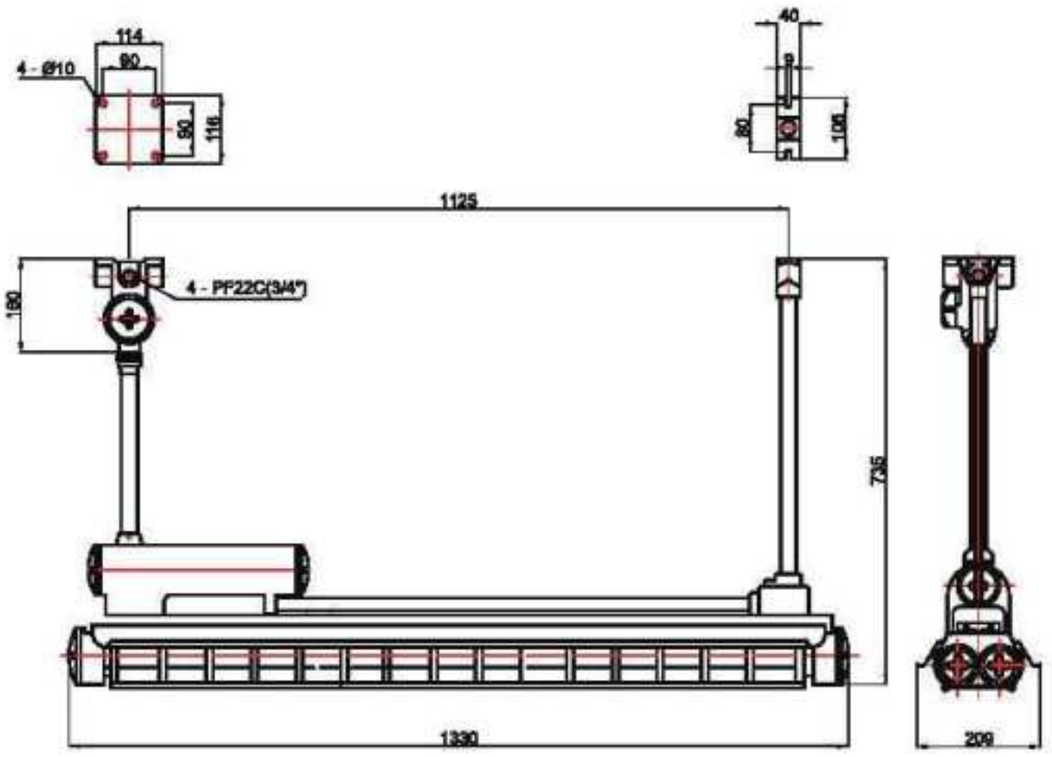
Characteristics

- High Efficiency LED Light
- The Best Illumination
- Low Power Consumption
- Long Lifetime & Low Maintenance Cost
- Environment Friendly (No-Mercury, Lead,Cadmium) & CO_2 Reduction

Flameproof Type Fluorescent, LED Lighting Fixtures

Ex de IIC T5 (Fluorescent)
Ex d IIB+H_2 T6 (LED)





Pendant Type



Ceiling Type

Materials Data

Descriptions	Materials
Mounting Box	DieCast Aluminum Alloy
Body	Cast Aluminum Alloy
Ballast Housing	Cast Aluminum Alloy
Reflector	Cold Rolled Sheet Steel
TubeGlass	Heat Resistant Hard Glass
Guard	StainlessSteel
Pipe	Steel

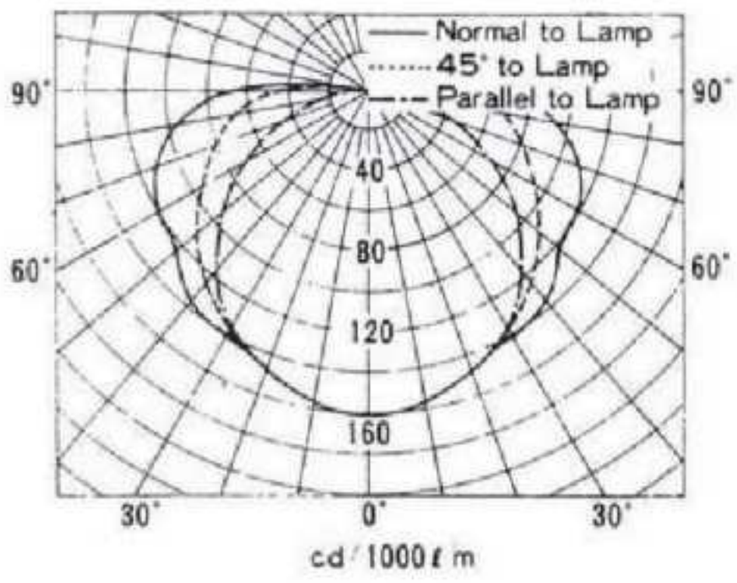
Flameproof Type Fluorescent,LED Lighting Fixtures

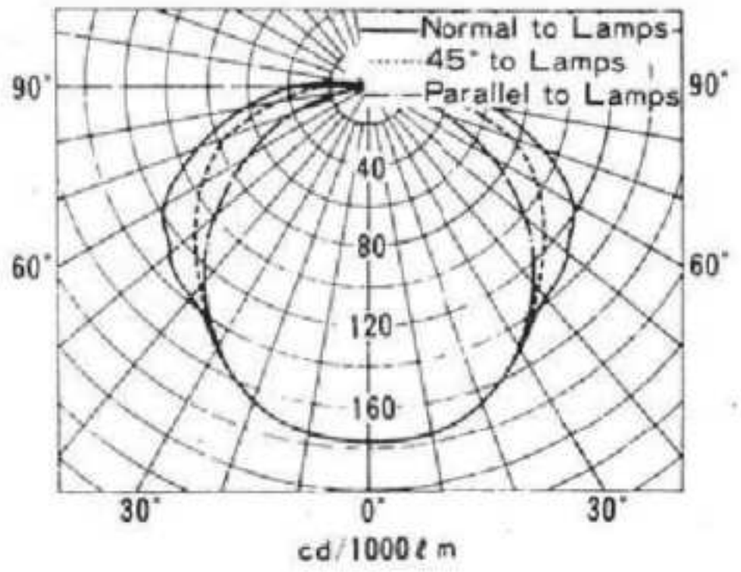
Ex de IIC T5 (Fluorescent)
Ex d IIB+H_2 T6 (LED)

Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight (kg)
Pendant	FFL-3211	32 × 1	AC 220V	50Hz/ 60Hz	-
	FFL-3212	32 × 2	AC 220V	50Hz/ 60Hz	16.6
	FFL-LED-2211	22 x 1	AC 220V	50Hz/ 60Hz	-
	FFL-LED-2212	22 x 2	AC 220V	50Hz/ 60Hz	16.6
Ceiling	FFL-3221	32 × 1	AC 220V	50Hz/ 60Hz	-
	FFL-3222	32 × 2	AC 220V	50Hz/ 60Hz	16
	FFL-LED-2221	22 x 1	AC 220V	50Hz/ 60Hz	-
	FFL-LED-2222	22 x 2	AC 220V	50Hz/ 60Hz	16

Photometric Data





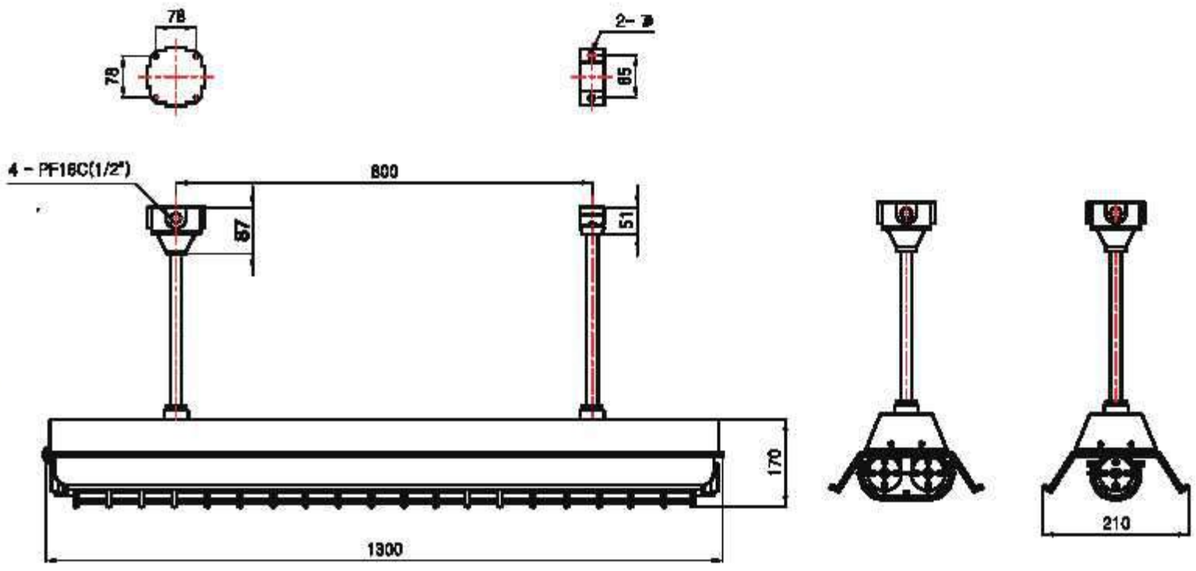
Features

- The flameproof enclosures of lamp and ballast are separated from each other with barrier walls and sealing glands.
- The lamp housing has a tubular lamp cover cemented into the lampholdercasings at the both ends. One casting contains a fixed lampholderand the other a relampinglampholder.
- The ballast housing is a cylindrical enclosure with threaded covers at the both ends, and contains specially designed low temperature-rise ballast.
- The guard is designed to be able to open at either side by releasing two fixing screws. It is convenient to clean the lamp cover.
- The reflector is a pressed sheet steel with galvanized enamel finish, and this also serves as a support of the guard.
- The sloping device is provided at the mounting base of relampingside. The lamp housing can be sloped by releasing two fixing screws for easier replacement of the lamp.

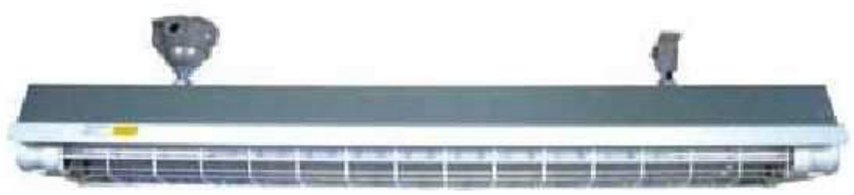
Non - Sparking Type Fluorescent,LED Lighting Fixtures

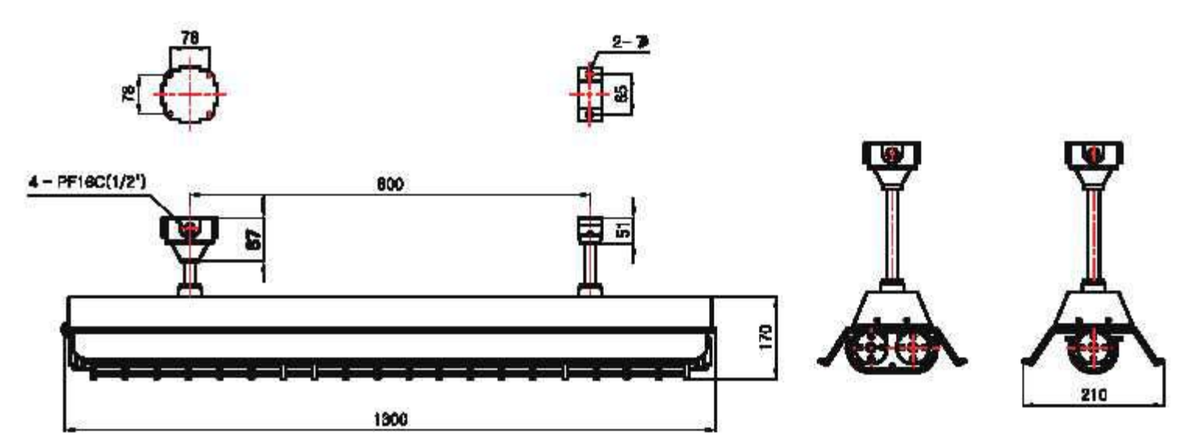
Ex nA II T6





Pendant Type





Ceiling Type

Materials Data

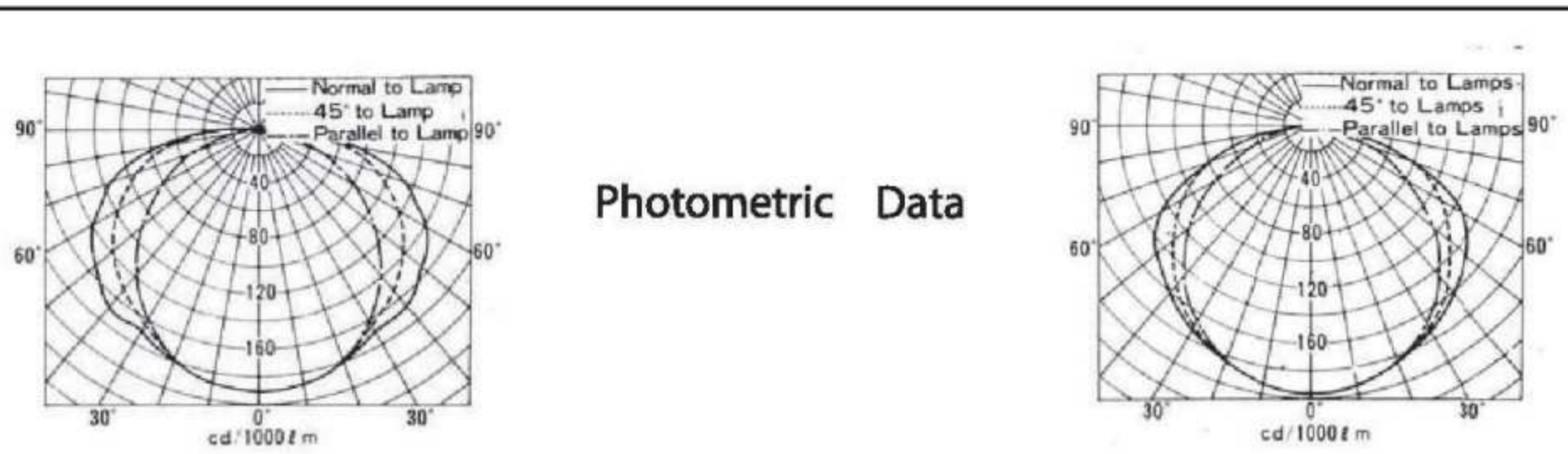
Descriptions	Materials
Mounting Box	Die Cast Aluminum Alloy
Body	Steel Sheet
Reflector	ColdRolled Sheet Steel
Tube Glass	Heat Resistant Hard Glass
Guard	Steel Wire With Painted
Pipe	Steel

Non-Sparking Type Fluorescent,LED Lighting Fixtures

Ex nA II T6

■ Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight (kg)
Pendant	SFL-2011	20× 1	AC220V	50Hz/ 60Hz	-
	SFL-2012	20 × 2	AC220V	50Hz/ 60Hz	9.8
	SFL-3211	32 × 1	AC220V	50Hz/ 60Hz	-
	SFL-3212	32 × 2	AC220V	50Hz/ 60Hz	9.8
	SFL-LED-2211	22 x 1	AC220V	50Hz/ 60Hz	-
	SFL-LED-2212	22 x 2	AC220V	50Hz/ 60Hz	9.8
Ceiling	SFL-2021	20× 1	AC220V	50Hz/ 60Hz	-
	SFL-2022	20 × 2	AC220V	50Hz/ 60Hz	9.8
	SFL-3221	32 × 1	AC220V	50Hz/ 60Hz	-
	SFL-3222	32 × 2	AC220V	50Hz/ 60Hz	9.8
	SFL-LED-2221	22 x 1	AC220V	50Hz/ 60Hz	-
	SFL-LED-2222	22 x 2	AC220V	50Hz/ 60Hz	9.8



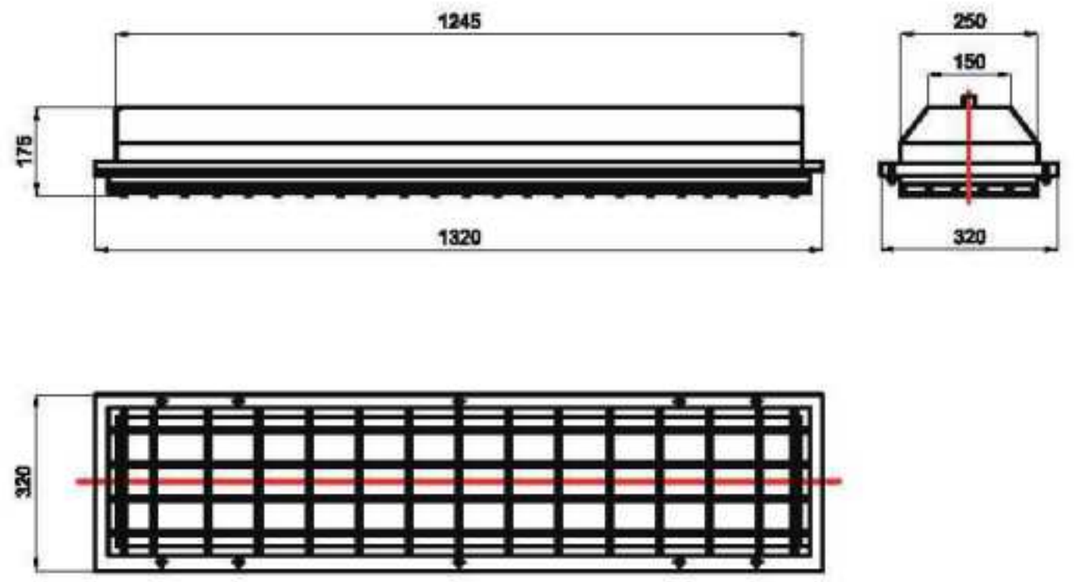
■ Features

- The lighting unit consists of the main body and the reflector, both made of pressed sheet steel, and one or two lamp cover assemblies. The guard is fixed to the reflector.
- The lamp cover is sealed at each and into the lampholder casing by synthetic rubber packing, and an access cover to the relamping lampholder is provided so as to restrict breathing. The cover for replacement of lamp at the end of one lampholder casing.
- The ballast is made in compliance with the increased safety requirements, and is mounted to the reverse side of the main body.
- The guard is designed to be able to open at either side by releasing two fixing screws. This allows easy cleaning of the lamp cover.
- The reflector has a role of suspension of the lamp housings, and cannot be eliminated.

Non-Sparking Type Fluorescent Lighting Fixtures (Built - in Type)

Ex nA II T6





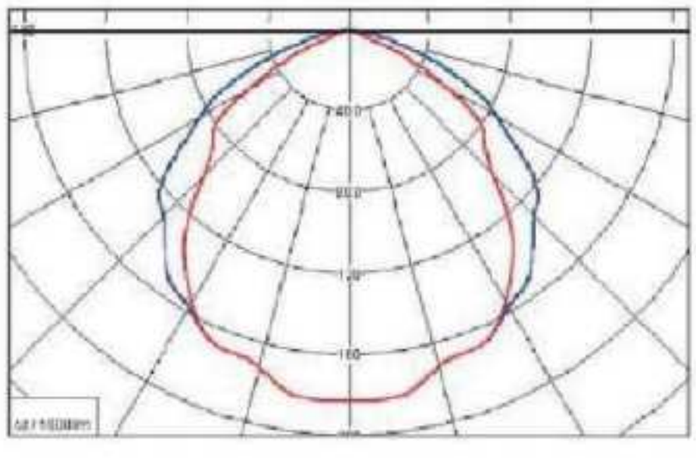
Data

Type	Model Number	Lamp Watt(W)	Voltage	Hertz	Weight (kg)
Built-in	SFL-2032	20 × 2	AC 220V	50Hz/ 60Hz	11.8
	SFL-3232	32 × 2	AC 220V	50Hz/ 60Hz	11.8

Materials Data

Descriptions	Materials
Body	Sheet Steel
Glass Frame	Sheet Steel
Glass	Heat Resistant Hard Glass
Guard	Steel Wire With Chromate Finish

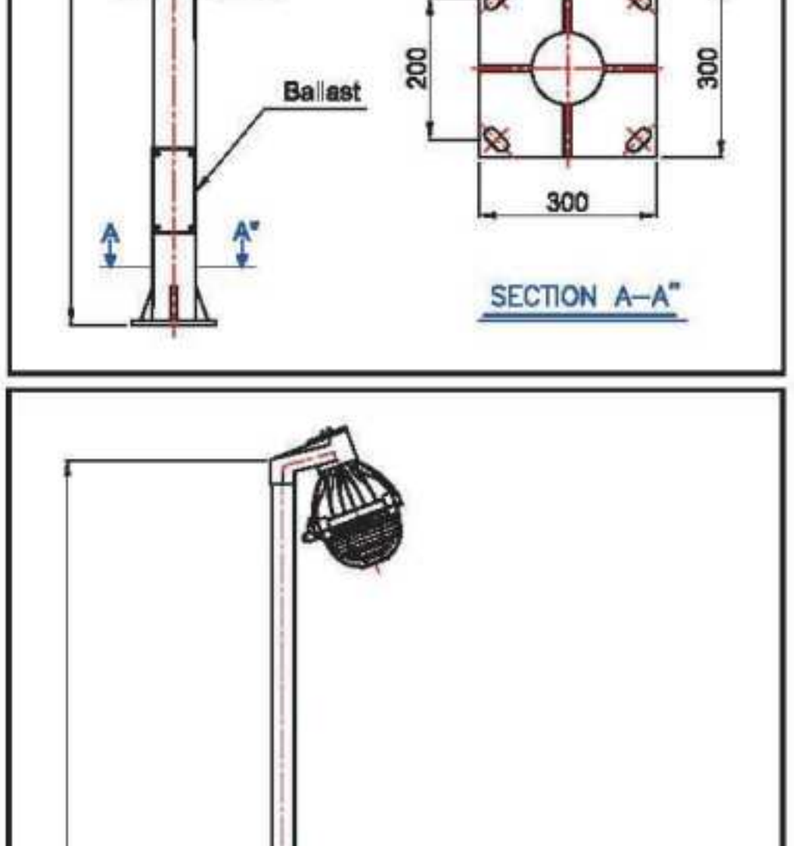
Photometric Data



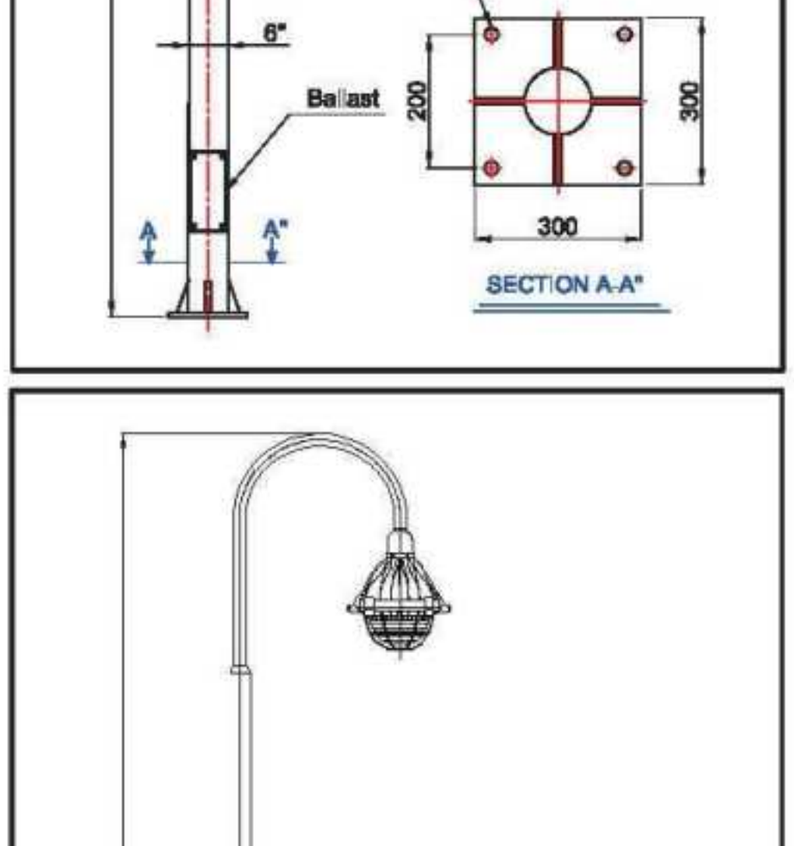
Features

- The lighting unit consists of the main body and the inside reflector, both made of pressed sheet steel.
- The lamp covers is sealed at each end into the lamp-holdercasing by synthetic rubber packing, and an access cover to the relampinglampholderis provided so as to restrict breathing.
- The guard is designed to be able to open at either side by releasing 4 fixing screws to down guard by two hinges.

Flameproof Type Mercury, Hi-Sodium, Metal Halide Lighting Fixtures (Pole)







Materials Data

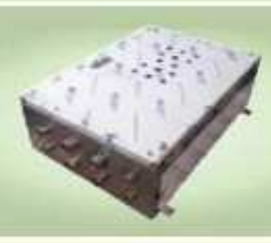
Descriptions	Materials
Pole	Steel & Stainless Steel

PART 2

CONTROL BOX



CONTROL BOXES INDEX

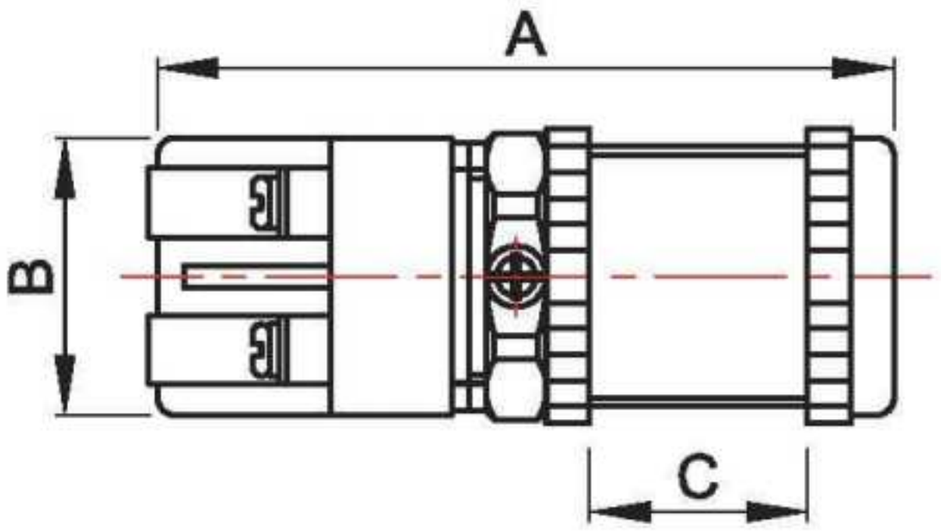
Product Picture	Product Name	Page	Product Picture	Product Name	Page
	Flameproof Type Component	2-1		Flameproof Type Motor Start Boxes	2-11
	Flameproof Type Control Boxes	2-2		Pressurized Type Control Panel	2-12
	Flameproof Type Local Switch Boxes	2-3		Pressurized Type Touch Panel	2-13
	Flameproof Type Indicator Boxes	2-4		Pressurized Type Control Panel	2-14
	Weatherproof Type Local Switch Boxes	2-5		Pressurized Type Control Panel	2-15
	Flameproof Type Load Limiter box(IIC)	2-6		Flameproof Type Camera Housing Box	2-16
	Flameproof Type Load Limiter box(IIB)	2-7		Flameproof Type RHTB Box	2-17
	Flameproof Type Circuit Breakers (IIC)	2-8		Dustproof Type Control Boxes	2-18
	Flameproof Type Circuit Breakers (IIB)	2-9		Flameproof Type Local Control Unit Box	2-19
	Flameproof Type Panel Boards	2-10			

Flameproof Type Component

■ Push Button Switch

Ex d IIC



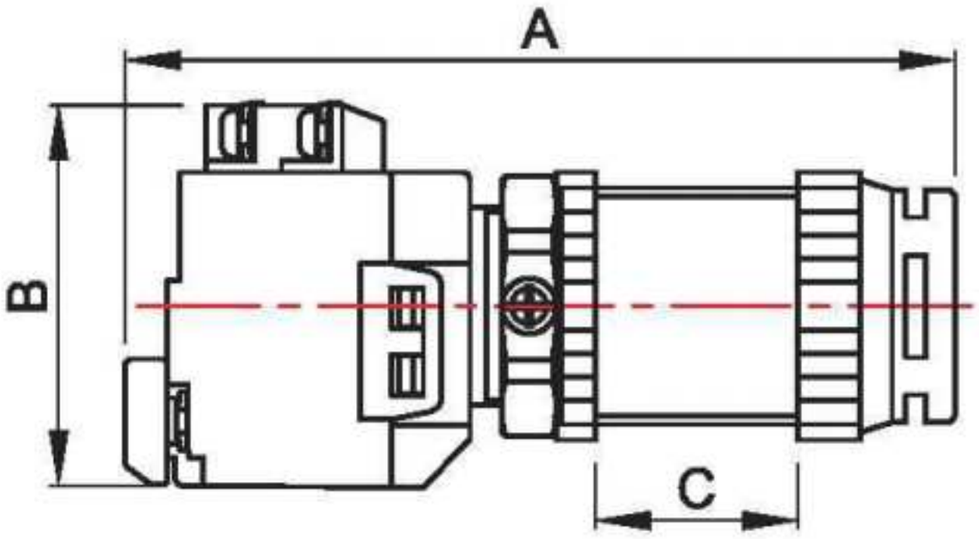


Model	Type	Dimension			Max. Rating	Color
FPB	S	A	B	C	AC 250V 6A 1a 1b / 2a 2b	Red Green Yellow Black White Blue
		86.2	32	25.2		

■ Illuminated Push Button Switch

Ex d IIB+H_2





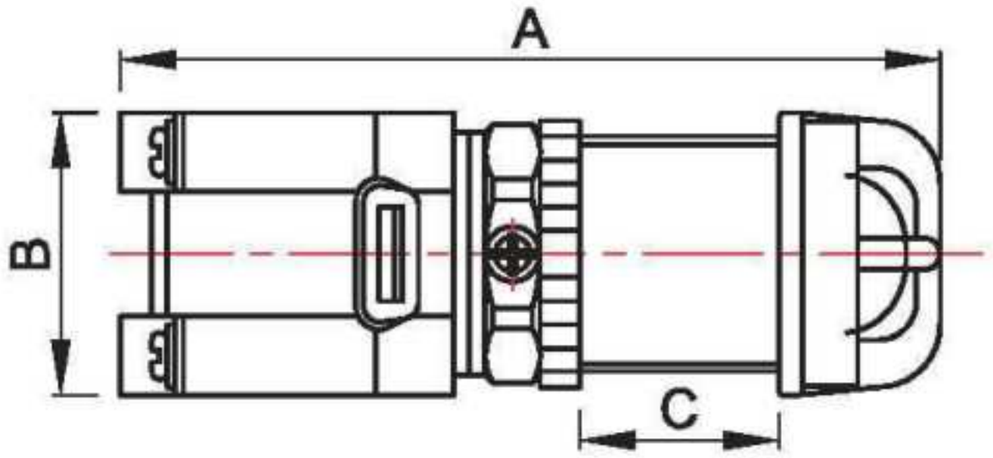
Model	Type	Dimension			Rated Voltage, Current	Color
FPBL	S	A	B	C	DC 24V, 6A AC 110V, 6A AC 220V, 6A	Red Green Yellow
		105.7	48.4	25.8		

Flameproof Type Component

■ Pilot Lamp

Ex d IIC



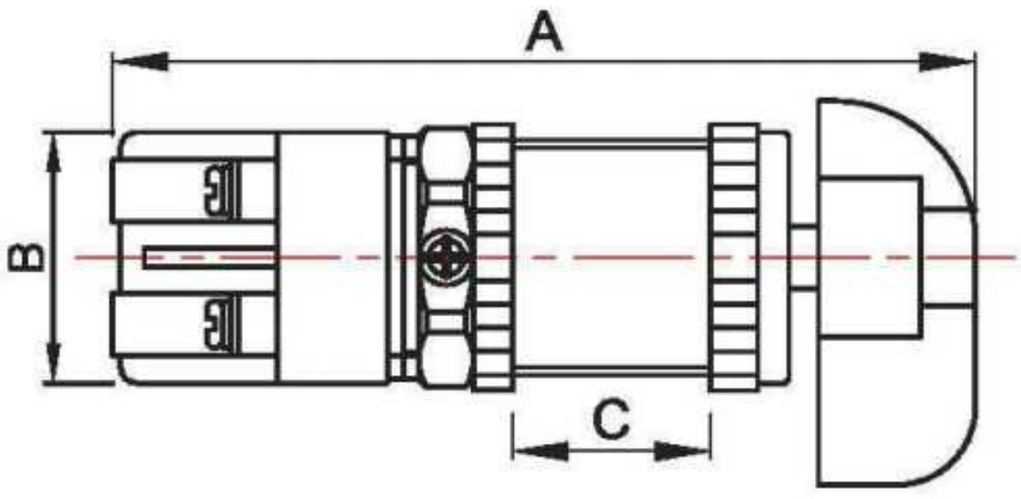


Model	Type	Dimension			Rated Voltage, Current	Color
		A	B	C		
FPL	S	104.5	36	25.6	DC 24V AC 110V AC 220V AC 380V AC 440V	Red Green Yellow White

■ Selector Switch

Ex d IIC





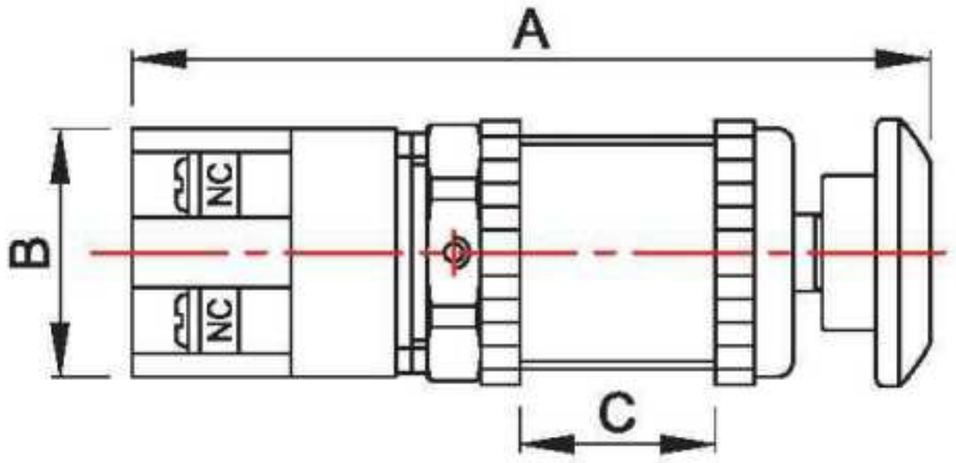
Model	Type	Dimension			Max. Rating
		A	B	C	
FSS	S	110	32	25.2	AC 250V 6A 2 Position / 3 Position

Flameproof Type Component

■ Emergency Switch

Ex d IIC



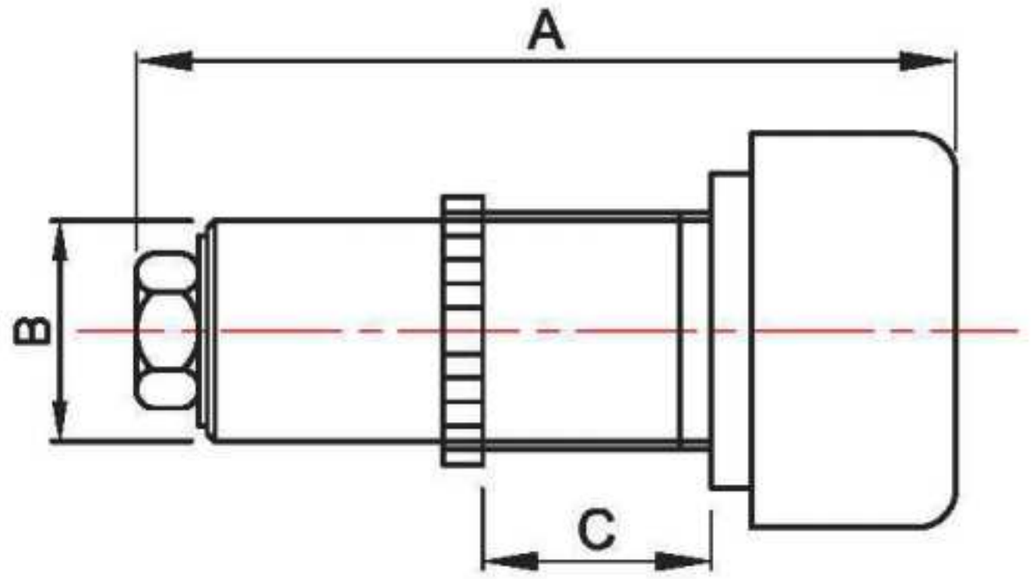


Model	Type	Dimension			Max. Rating
		A	B	C	
FEM	S	100	32	25.2	AC 250V 6A

■ Buzzer

Ex d IIC





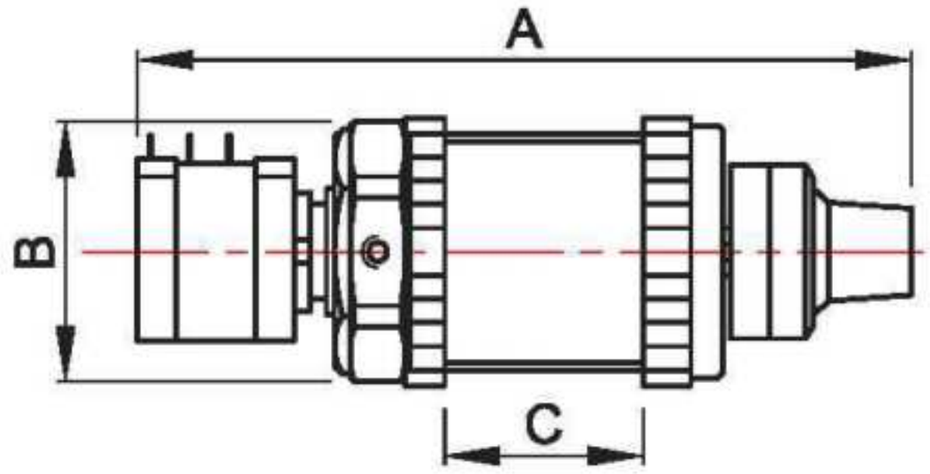
Model	Dimension			Rated Voltage, Current
	A	B	C	
FBZ	104	28	29	DC 24V AC 110V AC 220V

Flameproof Type Component

Volume Switch

Ex d IIC



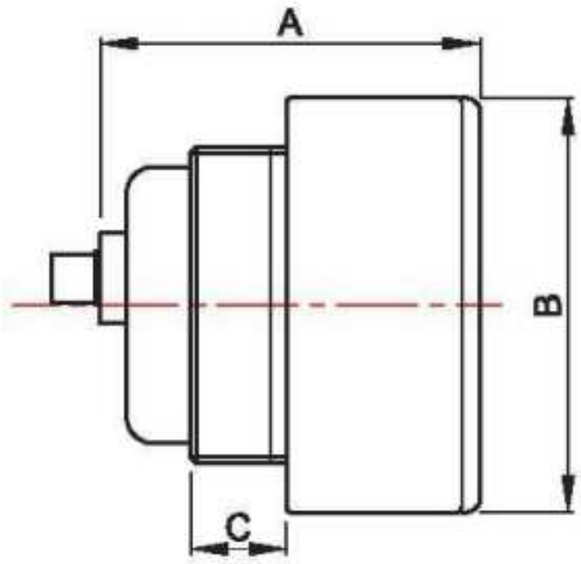


Model	Type	Dimension			Max. Ohm
		A	B	C	
FVL	S	97	33	25.2	1Turn 1~10 kΩ 10Turn 1~10kΩ

Ampere, Volt, RPM Meter

Ex d IIB+H_2







Model	Dimension			Max. Rating
FAM	A	B	C	400A
FVM	71.5	78	18	600V
FRM				20mA / 1,800RPM

Flameproof Type Control Boxes

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65





Component













Wall Mounting Type

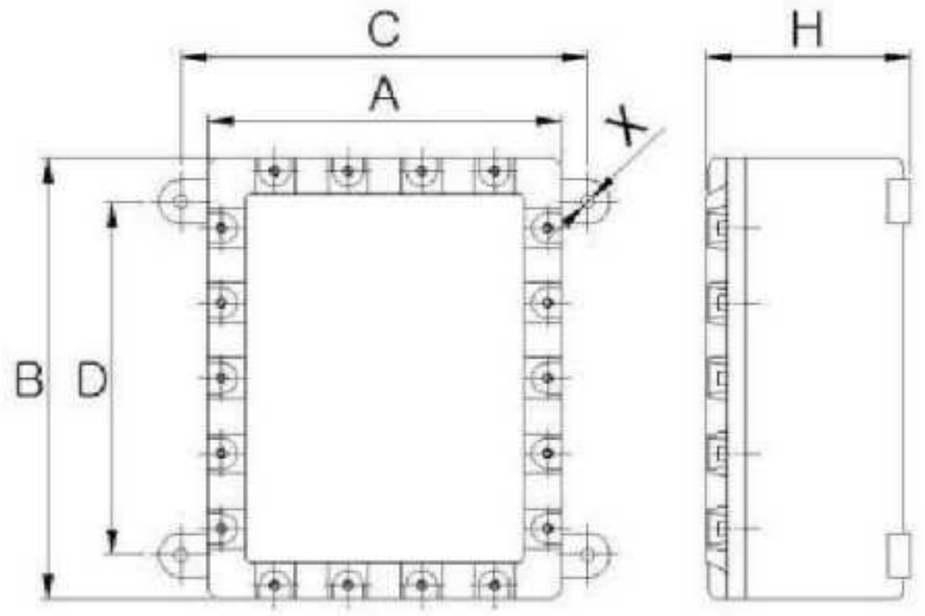
Standing Type

Materials Data

Descriptions	Materials
Body, Cover	Cast Aluminum Alloy
Pole	Steel
Mounting Plate	Cast Aluminum Alloy

Flameproof Type Control Boxes

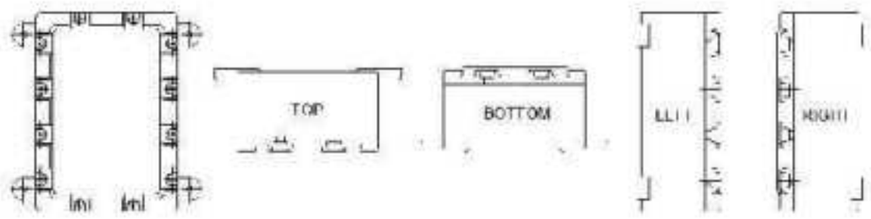
Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65



Data

Model	Box Size	Max.T/B (20A)	Cover M30x1.5P	Dimension(mm)					
				A	B	C	D	ØX	H
FCJB	150x220x132	10P	3	150	220	185	165	10	130
	180x220x135	12P	3	180	220	220	160	10	130
	220x230x136	15P	6	220	230	255	187	10	135
	200x300x150	20P	7	220	300	245	245	10	150
	220x330x130	20P	8	220	330	255	280	12	135
	250x350x150	30P	9	250	350	290	270	10	160
	250x500x180	40P	12	250	500	295	300	10	150
	300x300x195	30P	9	300	300	340	240	12	200
	300x400x210	40P	15	300	400	350	300	12	210
	310x420x150	40P	15	310	420	340	360	12	150
	300x500x230	50P	18	300	500	355	415	12	230
	350x450x230	50P	15	350	450	410	350	12	240
	340x500x210	50P	18	340	500	380	370	12	205
	400x400x260	40P	16	400	400	460	300	12	260
	400x500x225	60P	24	400	500	460	400	15	235
	400x600x235	80P	32	400	600	460	500	15	235
	400x700x260	100P	38	400	700	475	570	15	260
	500x500x230	100P	36	500	500	560	400	15	230
	500x600x260	120P	48	500	600	550	500	15	260
	500x700x290	120P	54	500	700	565	595	15	290
	600x600x255	140P	64	600	600	660	495	15	280
	600x700x300	180P	72	600	700	660	560	15	300
	600x800x300	180P	88	600	800	660	660	18	300
	700x1000x310	200P	126	700	1000	770	850	20	310

Max. size Hubs that can be used



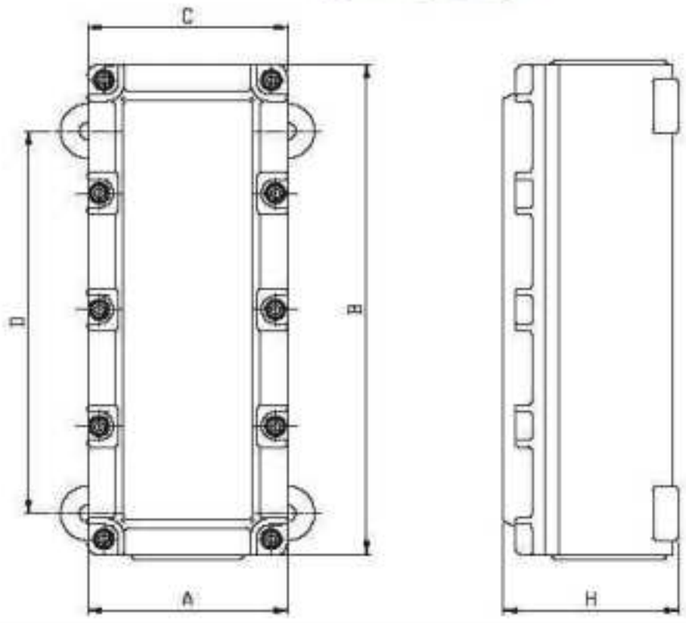
Box Size	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½"(16C) M20	¾"(22C) M25	1"(28C) M32	1¼"(36C) M40	1½"(42C) M50	2"(54C) M63	2½"(70C) M75	3"(82C) M90	4"(104C) M110
150*220*132	Top & Bottom	3	2	2	1	1	1	-	-	-
	Left & Right	5	3	3	2	2	1	1	-	-
180*220*135	Top & Bottom	5	3	2	2	-	-	-	-	-
	Left & Right	5	3	2	2	-	-	-	-	-
220*230*136	Top & Bottom	5	3	3	2	2	2	1	-	-
	Left & Right	5	4	3	2	2	2	1	-	-
200*300*150	Top & Bottom	5	4	3	2	2	2	1	-	-
	Left & Right	7	7	4	3	3	3	2	-	-
220*330*130	Top & Bottom	4	4	3	3	2	1	-	-	-
	Left & Right	6	5	5	4	3	2	-	-	-
250*350*150	Top & Bottom	6	6	5	3	3	2	1	-	-
	Left & Right	10	9	7	4	3	3	2	-	-
250*500*180	Top & Bottom	6	5	4	3	2	2	1	-	-
	Left & Right	12	11	6	5	5	4	3	-	-
300*300*195	Top & Bottom	10	9	7	4	3	3	2	2	-
	Left & Right	10	9	7	4	3	3	2	2	-
300*400*210	Top & Bottom	10	9	7	4	3	3	2	2	-
	Left & Right	14	13	11	5	4	4	3	3	-
310*420*150	Top & Bottom	8	7	4	3	3	2	2	-	-
	Left & Right	11	9	5	4	4	3	3	-	-
300*500*230	Top & Bottom	10	10	7	5	5	3	2	2	-
	Left & Right	18	18	13	9	9	5	3	3	-
350*450*230	Top & Bottom	13	12	10	5	5	4	2	2	-
	Left & Right	17	15	12	7	6	5	3	3	-
340*500*210	Top & Bottom	13	12	10	5	5	4	2	2	-
	Left & Right	18	16	13	8	6	5	3	3	-
400*400*260	Top & Bottom	20	16	7	7	7	7	4	3	-
	Left & Right	20	16	7	7	7	7	4	3	-
400*500*225	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	18	16	13	6	6	5	4	3	-
400*600*235	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	22	20	16	7	7	6	4	4	-
400*700*260	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	26	23	19	8	8	6	5	4	-
500*500*230	Top & Bottom	18	16	13	6	6	5	4	3	-
	Left & Right	18	16	13	6	6	5	4	3	-
500*600*260	Top & Bottom	26	23	13	11	9	7	4	3	-
	Left & Right	32	29	15	13	11	9	5	4	-
500*700*290	Top & Bottom	27	24	20	11	11	9	7	3	-
	Left & Right	35	35	29	17	15	11	9	4	-
600*600*255	Top & Bottom	32	26	15	13	13	6	-	4	3
	Left & Right	32	26	15	13	13	6	5	4	3
600*700*300	Top & Bottom	28	24	18	12	10	8	6	4	2
	Left & Right	32	28	21	15	12	9	7	4	2
600*800*300	Top & Bottom	15	15	7	6	6	5	4	3	-
	Left & Right	21	21	10	8	8	7	6	5	-
700*1000*310	Top & Bottom	18	18	9	8	7	6	4	4	-
	Left & Right	27	27	13	11	10	9	6	5	-

Flameproof Type Local Switch Boxes

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65

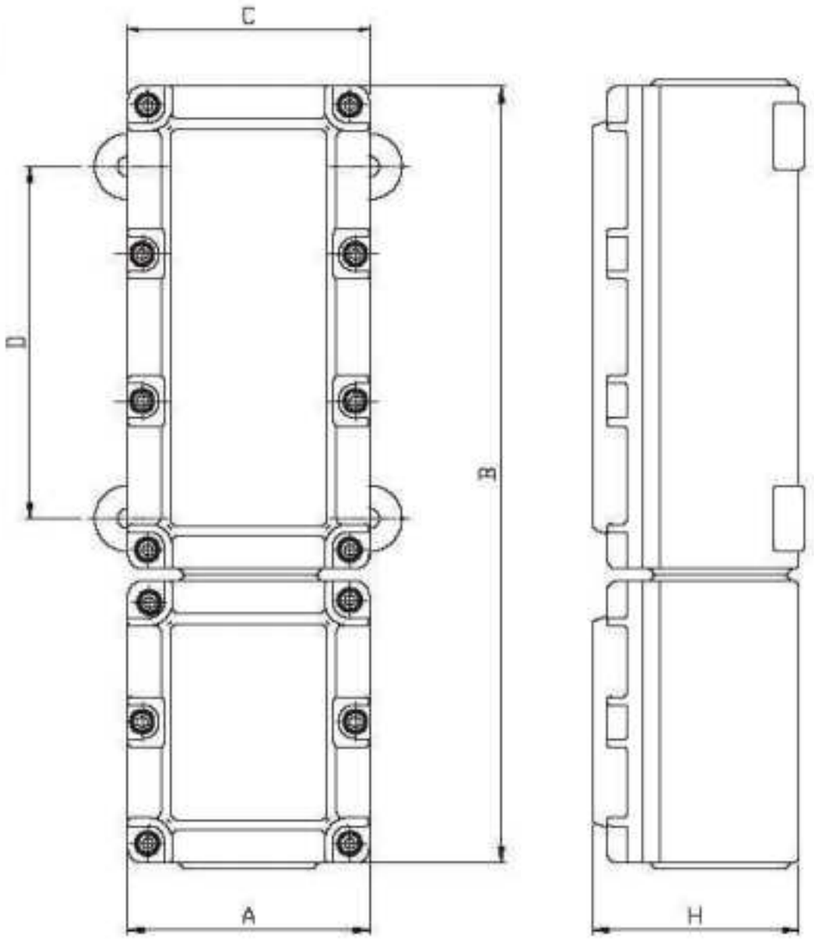
Flameproof Type Local Switch Boxes (A)





Flameproof Type Local Switch Boxes (B)





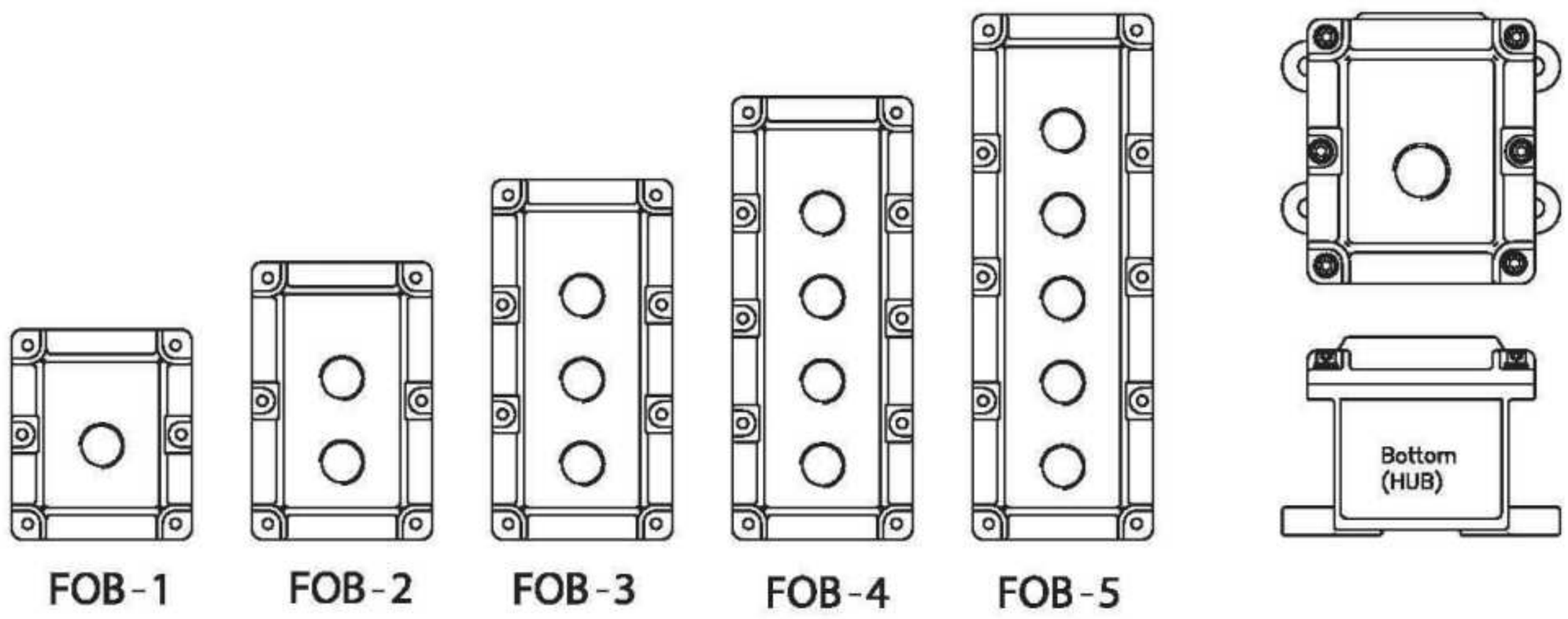
Data (Body)

Type	Model Number	Max. T/B (20A)	Dimensions(mm)					
			A	B	C	D	ØX	H
A	FOB - 1	4P	120	140	120	75	10	105
	FOB - 2	6P	120	185	120	12	10	105
	FOB - 3	12P	120	240	120	175	10	105
	FOB - 4	15P	120	295	120	230	10	105
	FOB - 5	20P	120	350	120	285	10	105
B	FOB - 11	4P	120	280	120	75	10	105
	FOB - 21	6P	120	325	120	120	10	105
	FOB - 31	12P	120	380	120	175	10	105
	FOB - 41	15P	120	435	120	230	10	105
	FOB - 51	20P	120	490	120	285	10	105

Flameproof Type Local Switch Boxes

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65

Data (Cover)



Model Number	SIZE	M30 (Switch)	#54 (Meter Switch Unit)
FOB - 1	120 × 140	1	1
FOB - 2	120 × 185	2	1
FOB - 3	120 × 240	3	2
FOB - 4	120 × 295	4	2
FOB - 5	120 × 350	5	2

Max. size Hubs That Can be Used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)					
		#16 (½") M20	#22 (¾") M25	#28 (1") M32	#36 (1-¼") M40	#42 (1-½") M50	#54 (2") M63
FOB-1	Bottom	3	2	1	1	1	1
FOB-2	Bottom	3	2	1	1	1	1
FOB-3	Bottom	3	2	1	1	1	1
FOB-4	Bottom	3	2	1	1	1	1
FOB-5	Bottom	3	2	1	1	1	1

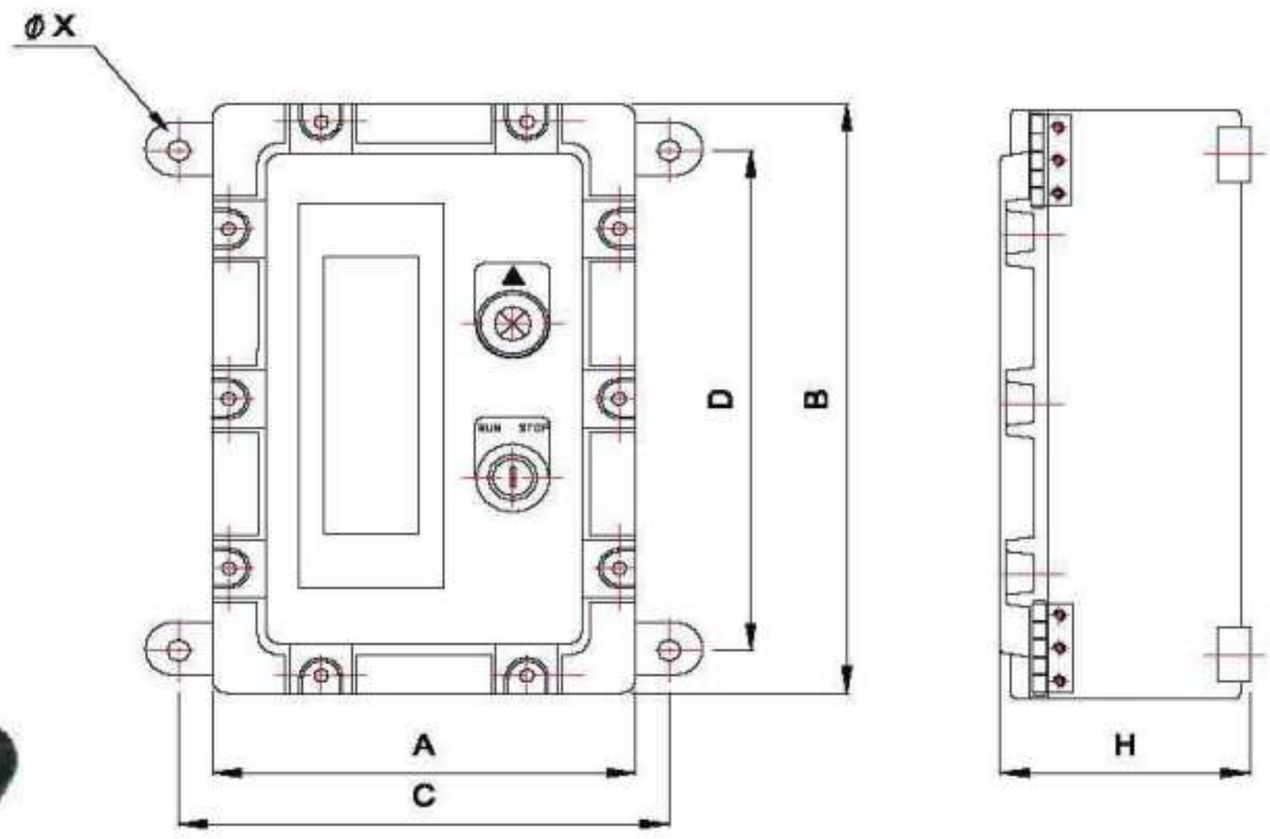
Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

Flameproof Type Indicator Boxes

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65





Data

Model	Size	Max. T/B (20A)	Dimensions(mm)					
			A	B	C	D	ØX	H
IND	220×330×130	20P	220	330	255	280	10	130
	300×300×310	30P	300	300	340	240	12	310
	340×500×210	50P	340	500	380	375	12	210
	400×500×235	60P	400	500	460	400	15	235
	500×500×230	100P	500	500	560	395	15	230
	500×700×290	120p	500	700	600	565	15	290

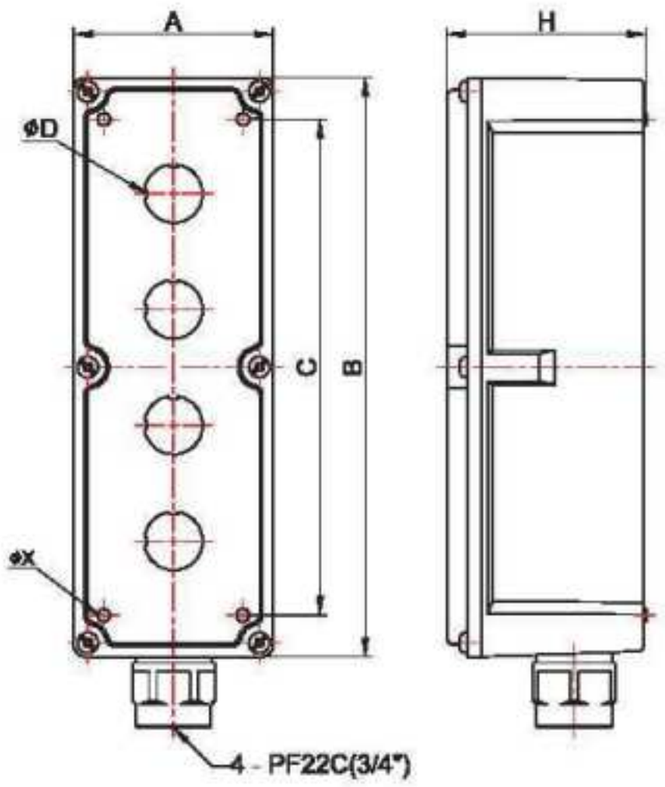
Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy
Glass	Heat Resistant Hard Glass

Weatherproof Type Local Switch Boxes

IP65





MATERIAL

Cast Aluminium Alloy

Data

Model Number	Type (Ø25)	Dimensions(mm)					
		A	B	C	ØD	ØX	H
DCS-1	1G	86	150	114	25.3	5.5	86
DCS-2	2G	86	150	114	25.3	5.5	86
DCS-3	3G	86	250	214	25.3	5.5	86
DCS-4	4G	86	250	214	25.3	5.5	86
DCS-5	5G						

Model Number	Type (Ø30)	Dimensions(mm)					
		A	B	C	ØD	ØX	H
DCS-11	1G	86	150	114	30.3	5.5	86
DCS-21	2G	86	150	114	30.3	5.5	86
DCS-31	3G	86	250	214	30.3	5.5	86
DCS-41	4G	86	250	214	30.3	5.5	86
DCS-51	5G						

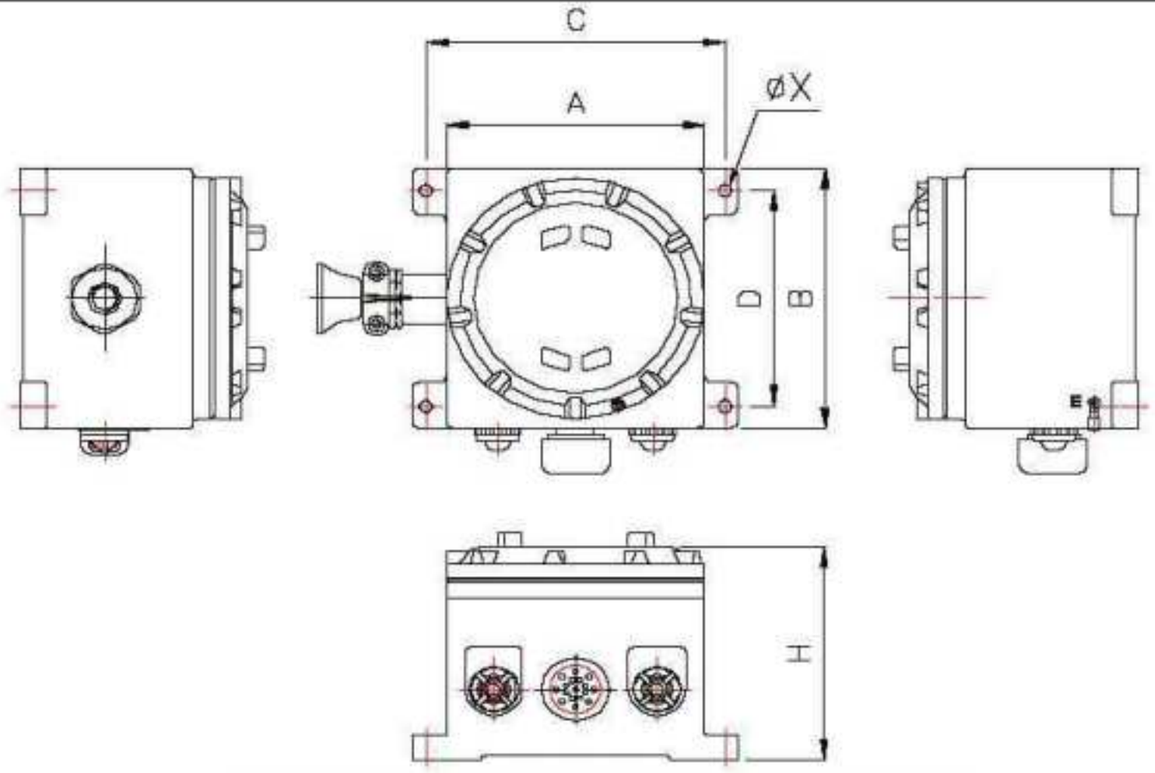
Unit Symbol

Symbol	Description	Symbol	Description
PB	PB ON, OFF Push button switches. AC500V 3A	M	Meter boxes Ampermeter & Volt meters 5A 15A 30/5A 300/5A
K PB	Key Locked type ON, OFF Push button switches. AC250V 6A	Z	Buzzer Signales AC110V 220V, DC12V 24V
SS	Selector switches. AC250V 6A 2&3 notch positions	CS	CS Cam Switches AC250V 6A max. position-6 Max. notch-12
PL	Pilot Lamps AC110V 220V 18V 2W, Red, Green White Color globe		

Flameproof Type Load Limiter Box(IIC)

Ex d IIC T6 IP65

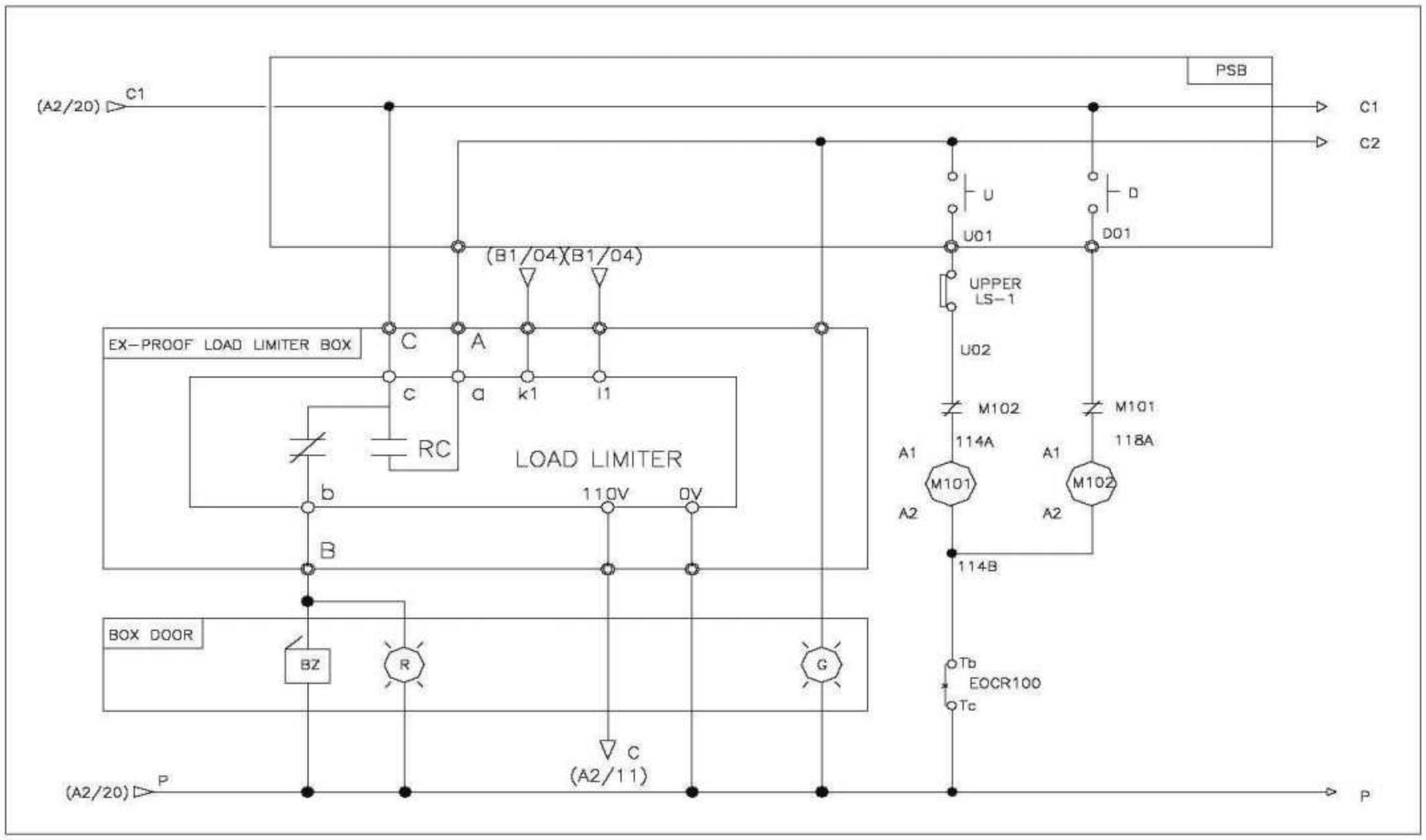




Material: Cast Aluminum Alloy

Data

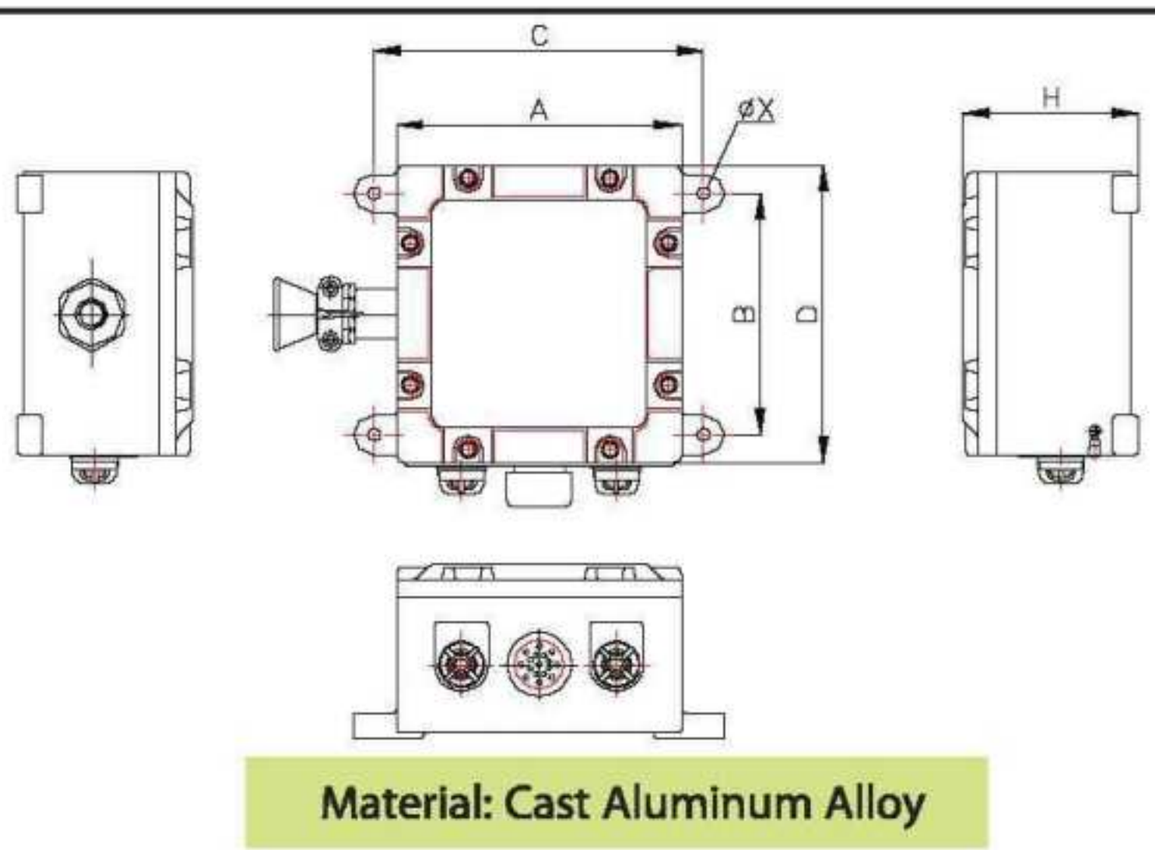
Max. Rating	Model Number	Size	Dimensions(mm)					
			A	B	C	D	ØX	H
AC 120V 10A	FHD-70-IIC	190X205X170	190	205	220	170	10	170



Flameproof Type Load Limiter Box(IIB)

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65

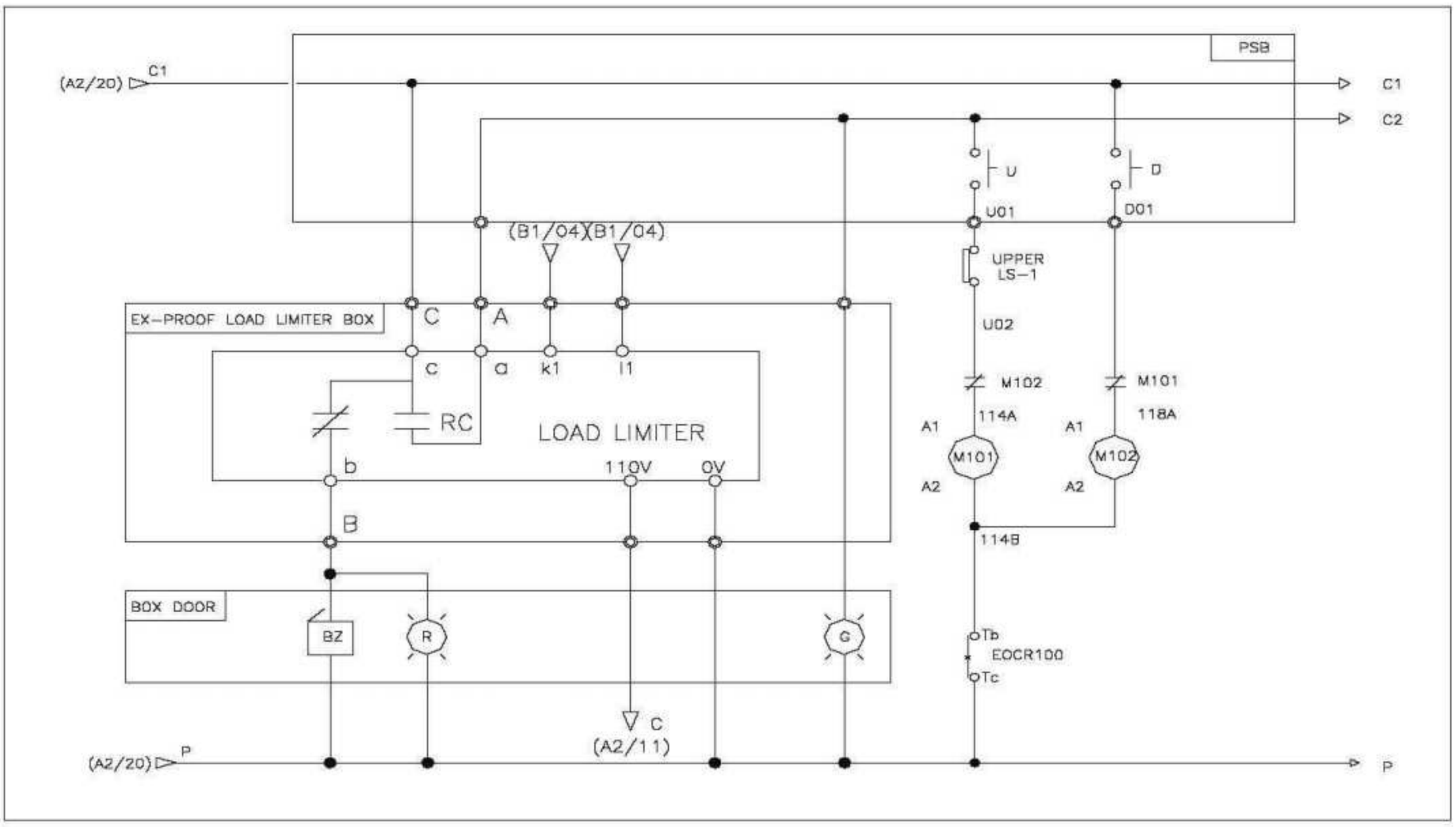




Material: Cast Aluminum Alloy

Data

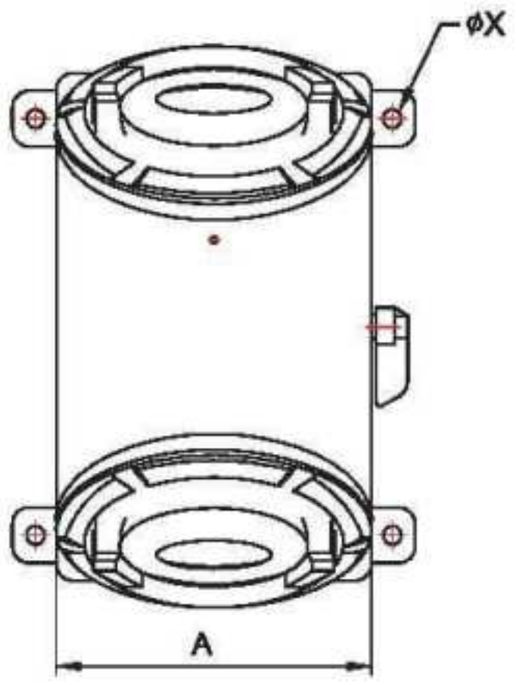
Max. Rating	Model Number	Size	Dimensions(mm)					
			A	B	C	D	ØX	H
AC 120V 10A	FHD-70	220X230X135	220	187	255	230	10	135

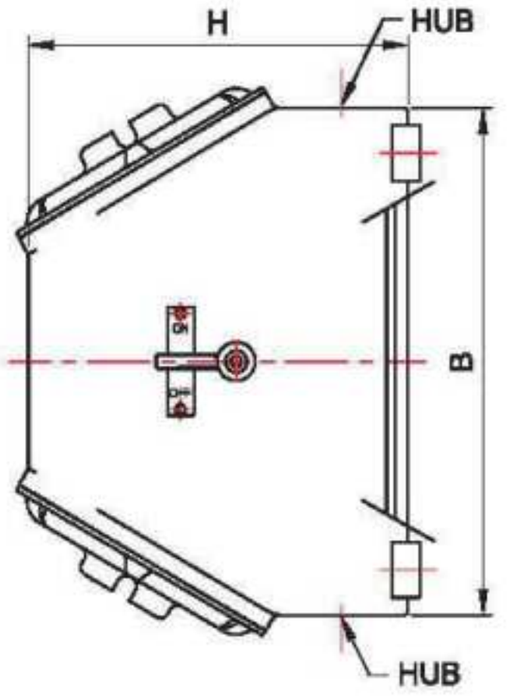


Flameproof Type Circuit Breaker Boxes(IIC)

Ex d IIC T6







Data

Max. Rating	Model Number	Size	Dimensions(mm)			
			A	B	ØX	H
AC 600V 200A	FCN-12	191×301×230	191	301	12	230

Max. size Hubs That Can be Used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½" (16C) M20	¾" (22C) M25	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
FCN-12	Top	2	2	2	2	1	1	-	-	-
	Bottom	2	2	2	2	1	1	-	-	-

Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

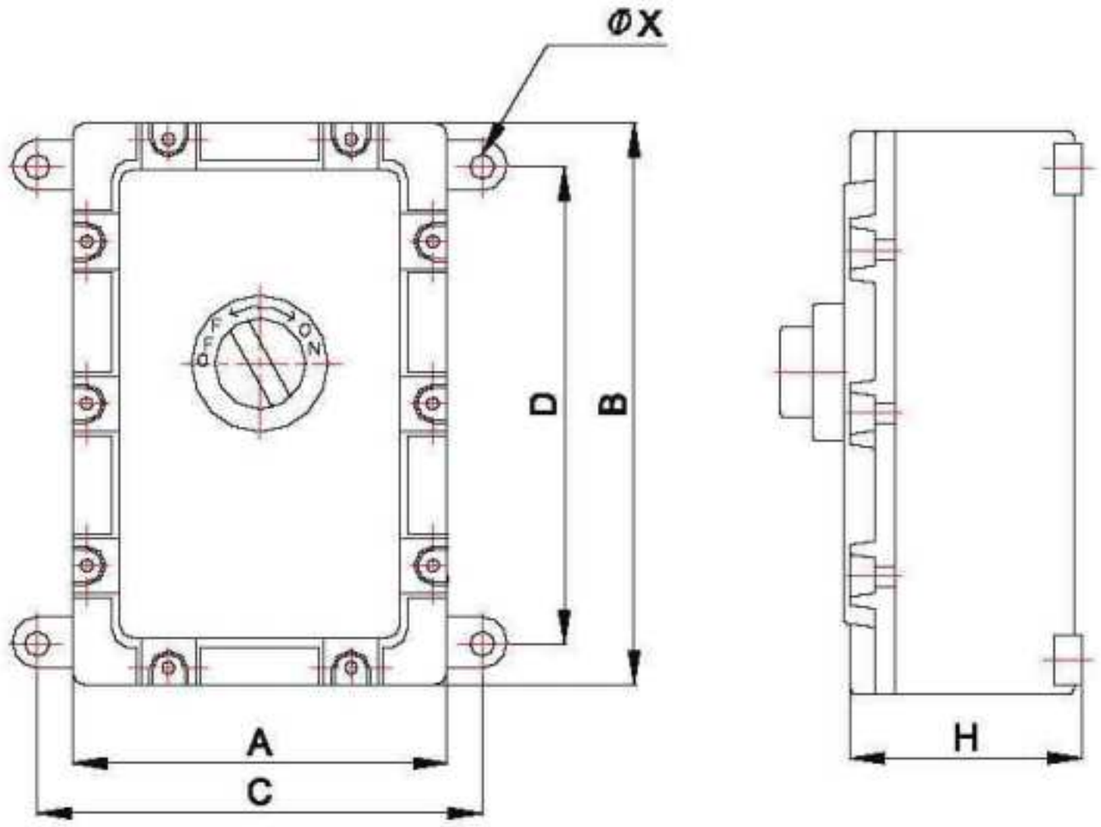
Features

The operating mechanism for the handle of circuit breaker interior is secure and smooth. The operating rod is machined to the required tolerance, and an O-ring is provided for preventing water and dust coming into the joint.

Flameproof Type Circuit Breaker Boxes(IIB)

Ex d IIB+H_2 T5 IP65
Ex tD A21 T85℃ IP65





Data

Max. Rating	Model Number	Size	Dimensions(mm)					
			A	B	C	D	ØX	H
AC 600V 100A	FCN - 21	220x330x130	220	330	255	280	10	130

Max. size Hubs That Can be Used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½" (16C) M20	¾" (22C) M25	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
FCN-21	Top & Bottom	4	4	3	3	2	1	-	-	-
	Left & Right	6	5	5	4	3	2	-	-	-

Materials

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

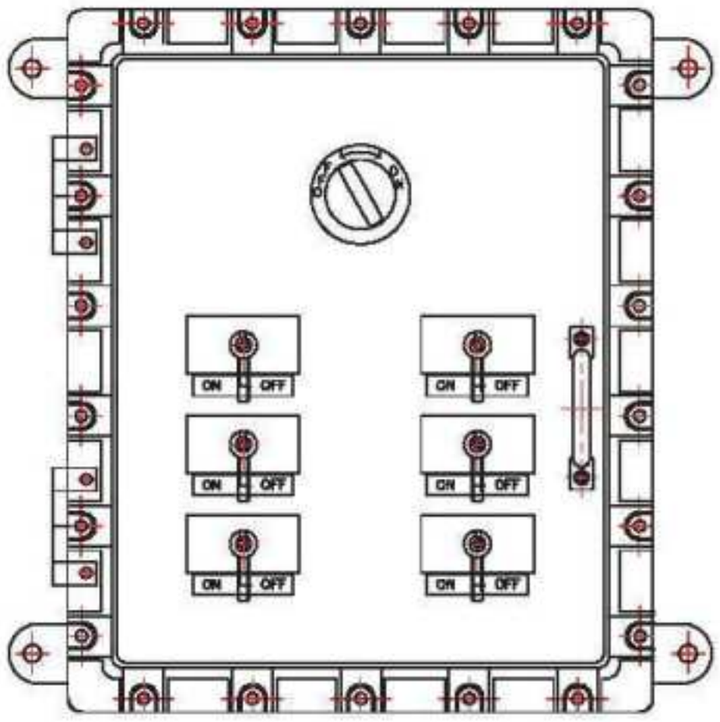
Features

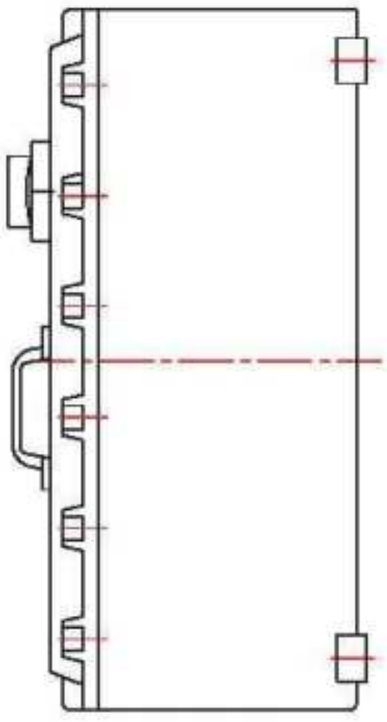
- The bodies of the main enclosure and terminal boxes are accurately machined to rectangular shape, and each of them and their covers are closely fitted with plain flanged joints.
- The operating mechanism for the handle of circuit breaker interior is secure and smooth. The operating rod is machined to the required tolerance, and an O-ring is provided for preventing water and dust coming into the joint.

Flameproof Type Panel Boards

Ex d IIB+H_2 T5







Data

Model	Main Max. Rating	Branch Max. Rating	Circuit
FPD	AC 600V 200AF / 200AT / 4P	AC 600V 50AF / 50AT /2P	6
			8
			12
			18

Materials

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

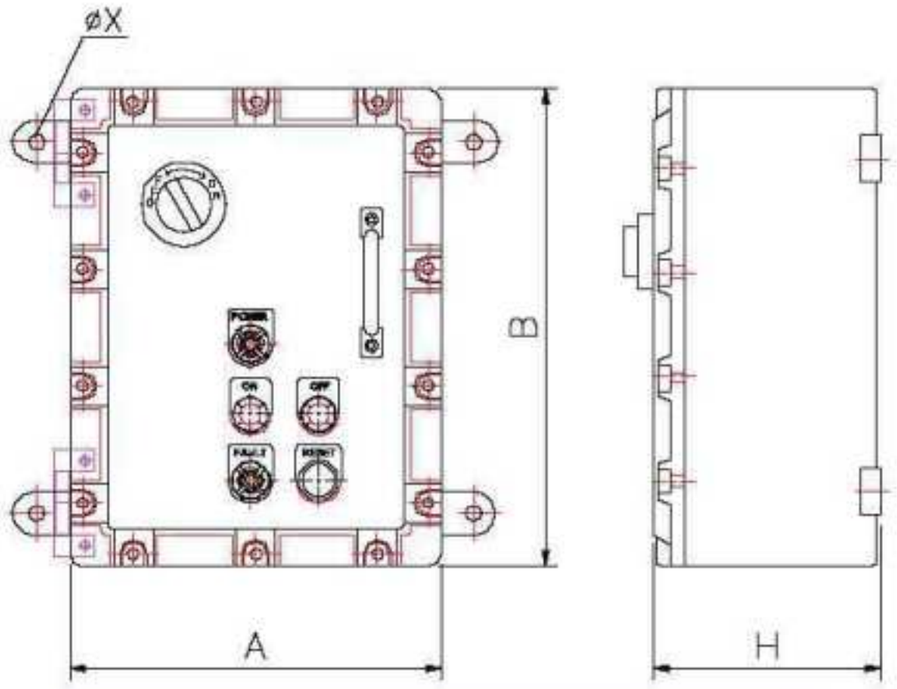
Features

- In each housing the cover is fitted to the body with accurate cylindrical joint and O-ring for highly reliable flameproof and waterproof property. The breaker housings are separated from bus-bar housing by the flameproof packing type seal.
- Both the built-in breaker and the operating handle are installed on the cover. They can be pulled out together with the cover by releasing four fixing bolts for maintenance.
- The bus-bar housing contains the bus-bars and leads, and provides mains terminal at the lower end.
- The branch terminal housing is equipped with terminal blocks for branch wiring, and conduit entries are provided on the top according to the customers specification.

Flameproof Type Motor Start Boxes

Ex d IIB+H_2 T5





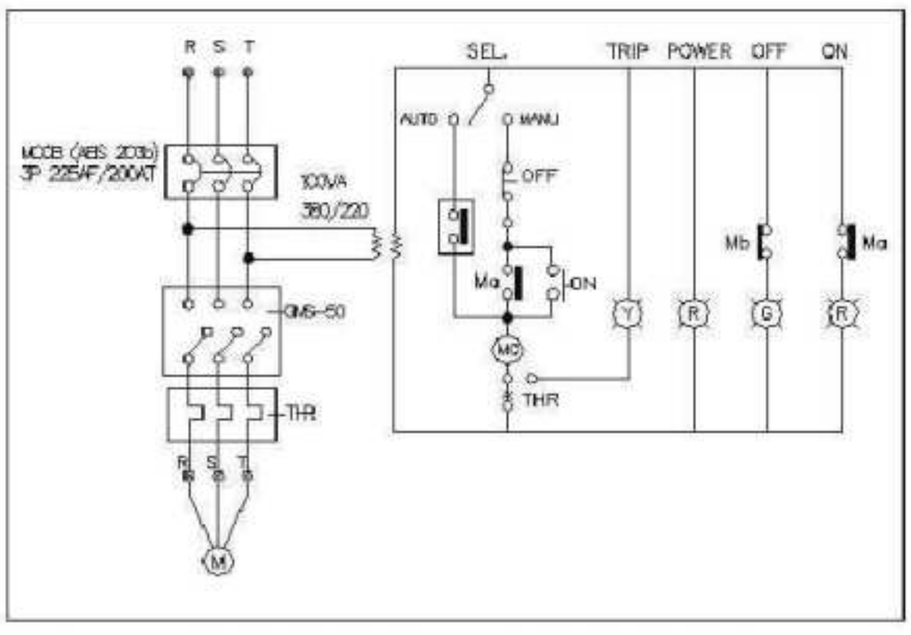
Material: Cast Aluminum Alloy

Data

Max. Rating	Model Number	Size	Max. T/B (20A)	Dimensions(mm)			
				A	B	øX	H
AC 600V 20A	FCM	400×500×230	60P	400	500	15	230

Max. size Hubs That Can be Used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½" (16C) M20	¾" (22C) M25	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
FCM	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	18	16	13	6	6	5	4	3	-



WIRING DIAGRAM

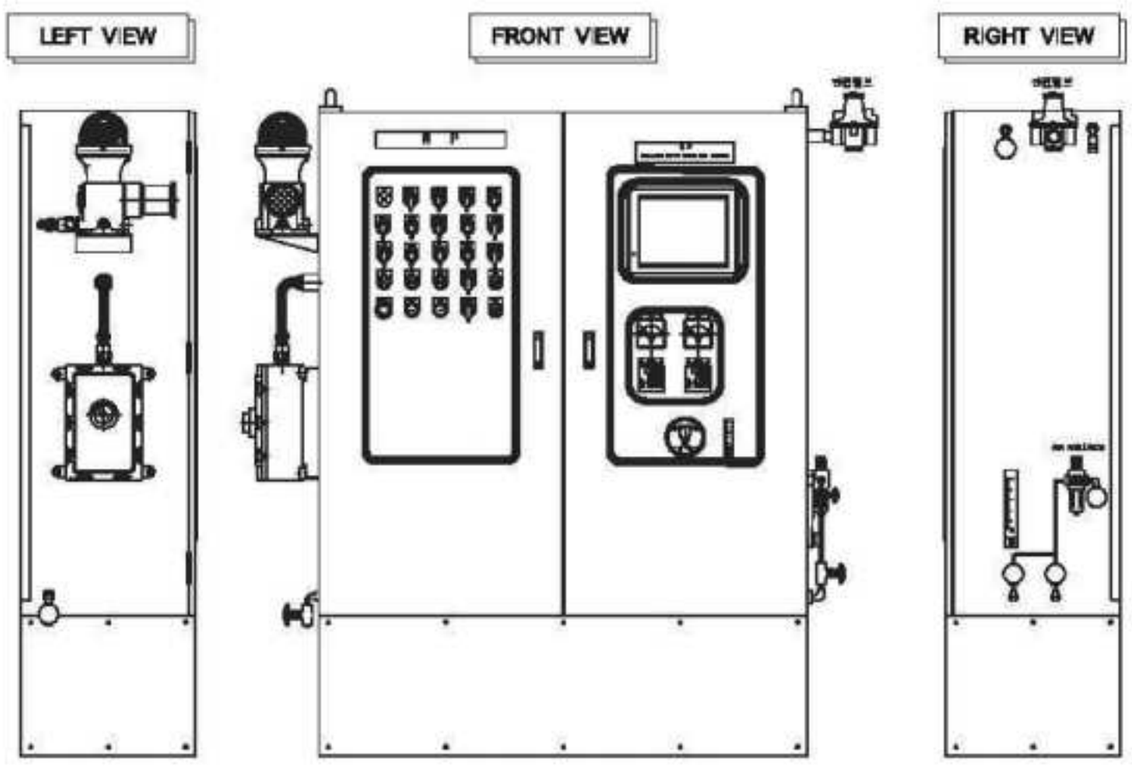
Features

- The bodies of the main enclosure and terminal boxes are accurately machined to rectangular shape, and each of them and their covers are closely fitted with plain flanged joints.
- The operating mechanisms for the resetting button of magnetic motor starter interior, push button and selector switch are secure and smooth.
- The operating rods are machined to the required tolerances, and an O-ring and rubber caps are provided for preventing water and dust coming into the joints. The leading of conductors through the barrier wall is flame-proof stud type for main circuit and flame-proof sealing type for control circuits.

Pressurized Type Control Panel

Ex pz II T4





Data

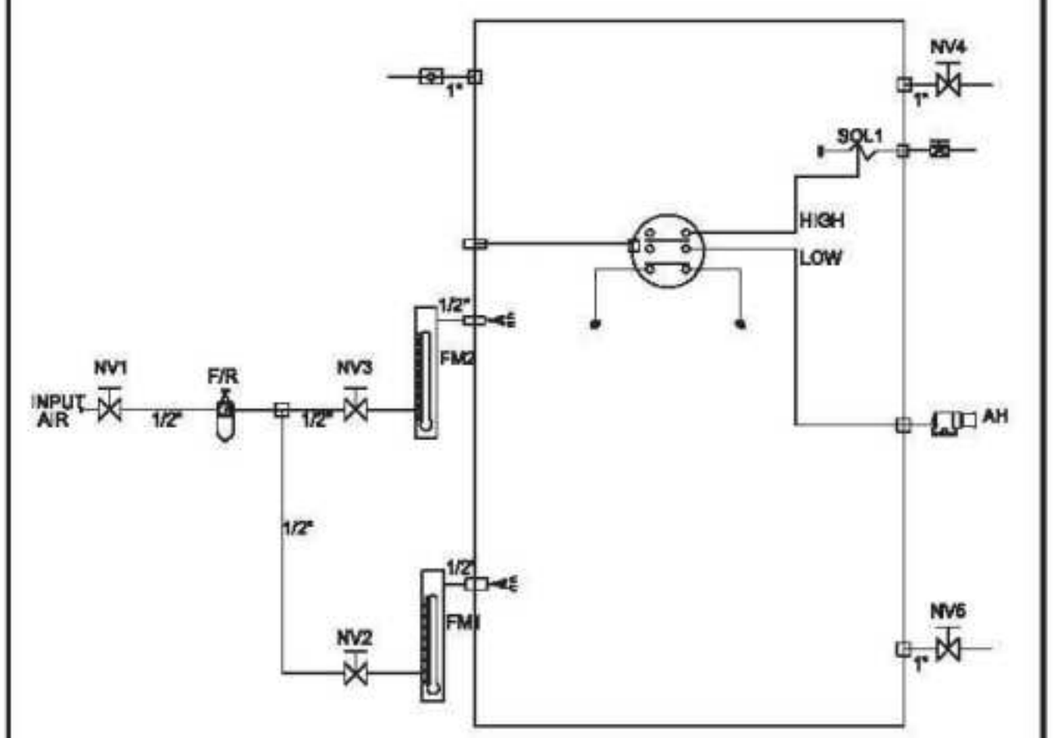
Max. Rating	Size	Temperature	Humidity	Protection Gas	Materials
AC380V / 220	Max.	-20 °C Ta +40 °C	85 % less than	Air & N_2	Steel & Stainless Steel

Circuit Diagram

NO	TAG	DESCRIPTION	SPEC	NO	TAG	DESCRIPTION	SPEC	NO	TAG	DESCRIPTION	SPEC
1	NV1~2	NEEDLE VALVE	½"	5	FM1	FLOW METER	RMB300	9	AH	SIREN	J48K
2	NV3	NEEDLE VALVE	3/8"	6	FM2	FLOW METER	RMB100	10	SOL1	SOLENOID VALVE	3/8"
3	NV4~5	REGULATOR	½"	7	PS	PRESSURE SWITCH	2000~100	11	SC	SPEED CONTROLLER	3/8"
4	F/R	RILTER REGULATO	W300-10	8	RV	RELIEF VALVE	mmH_2O				

Type of Pressurized
Ex pz IIC T4

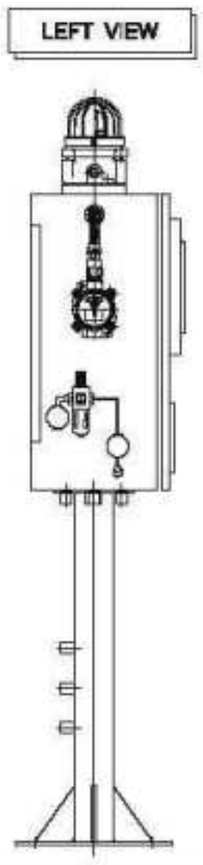


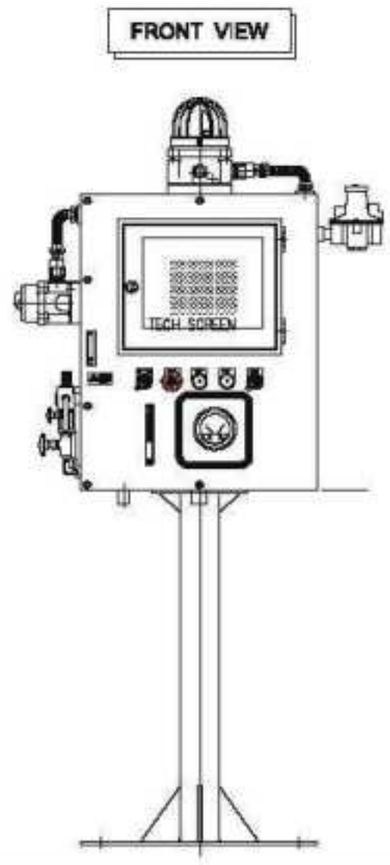


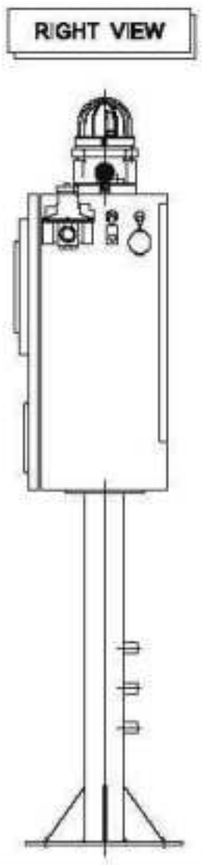
Pressurized Type Touch Panel

Ex pz II T4







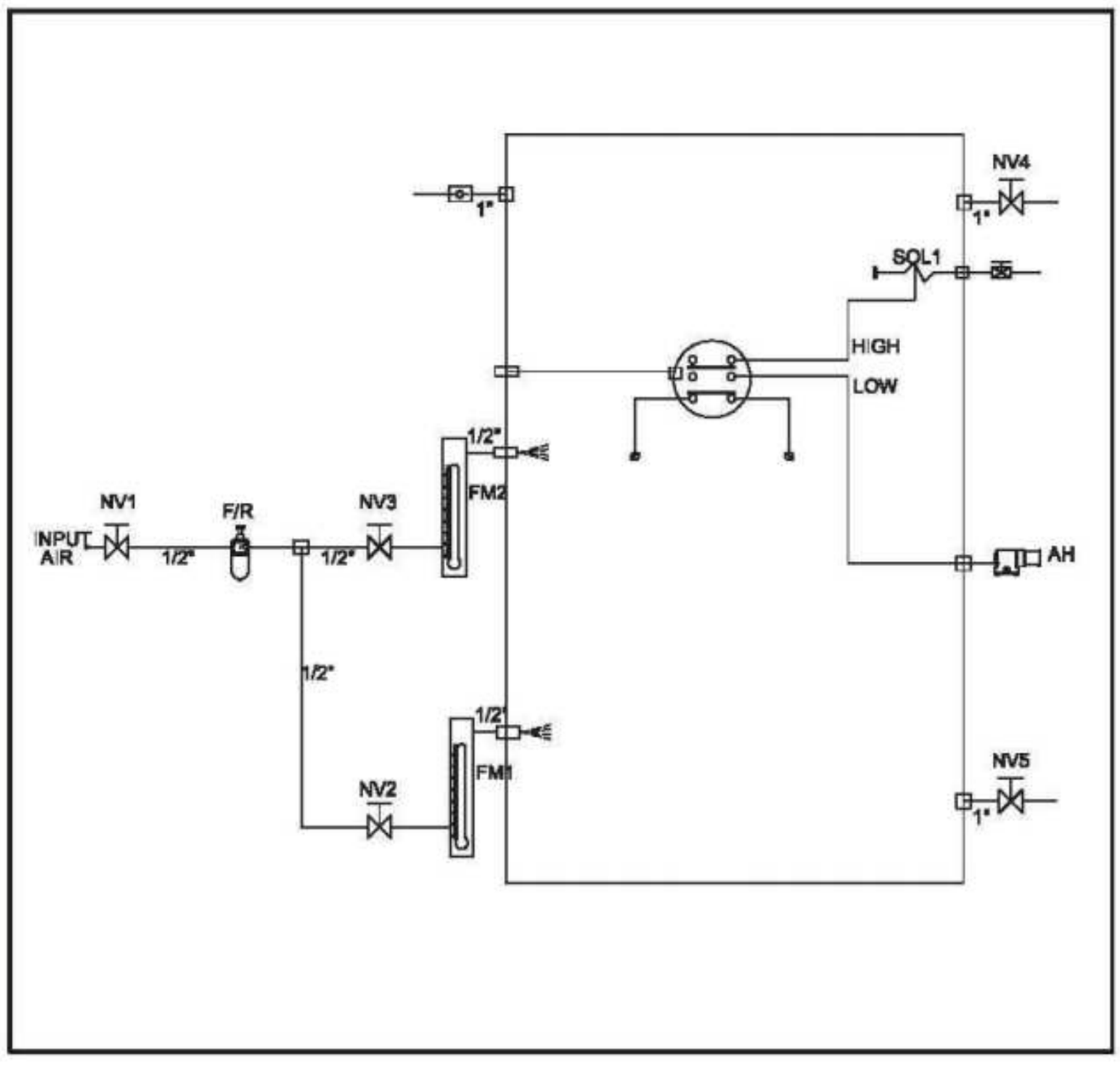


Data

Max. Rating	Size	Temperature	Humidity	Protection Gas	Materials
AC220V	Max.	-20 °C Ta +40 °C	85 % less than	Air & N_2	Steel & Stainless Steel

Circuit Diagram

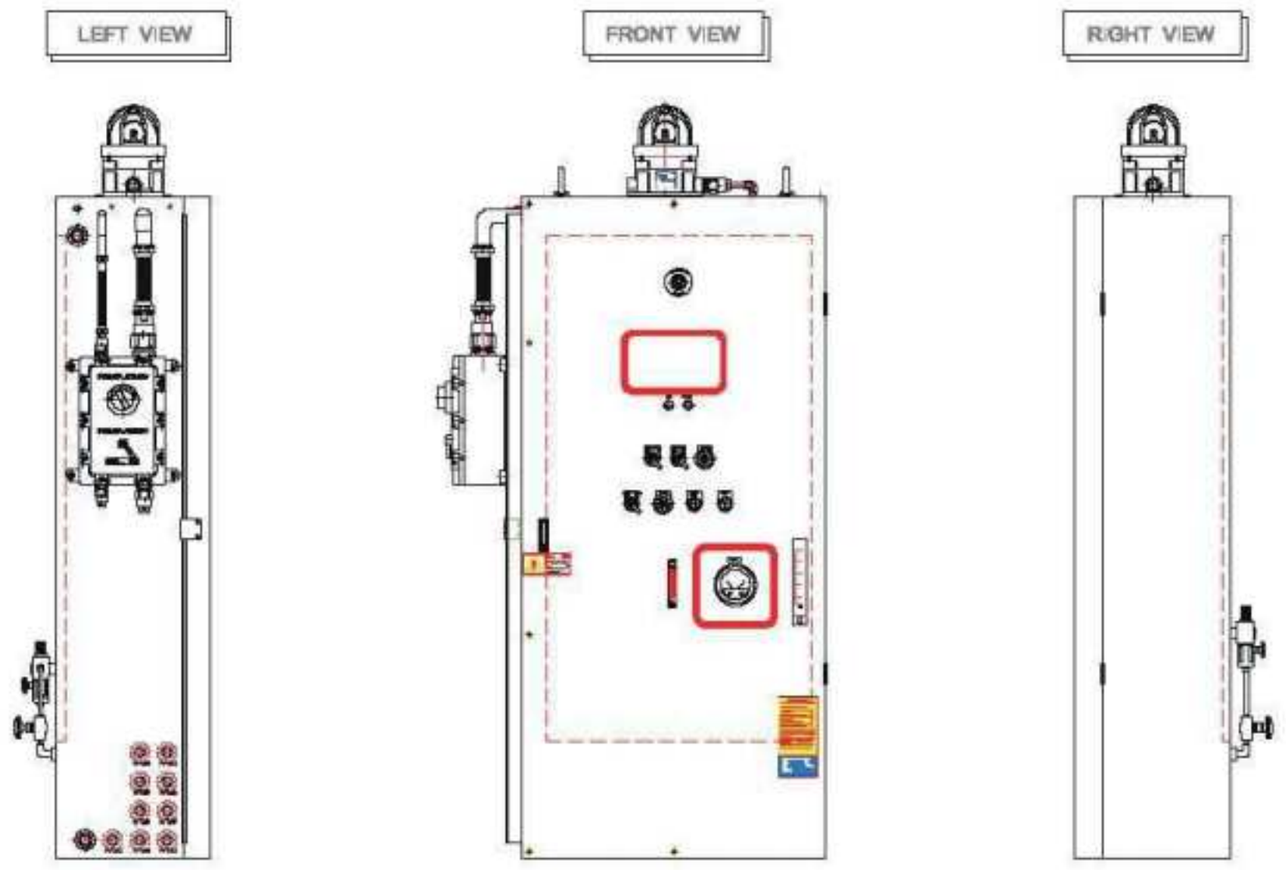
NO.	TAG	DESCRIPTION	SPEC
1	NV1~2	NEEDLE VALVE	½"
2	NV3	NEEDLE VALVE	3/8
3	NV4~5	REGULATOR	½"
4	F/R	RILTER REGULATOR	W300-10
5	FM1	FLOW METER	RMB300
6	FM2	FLOW METER	RMB100
7	PS	PRESSURE SWITCH	2000~100
8	RV	RELIEF VALVE	mmH_2O
9	AH	SIREN	J48K
10	SOL1	SOLENOID VALVE	3/8"
11	SC	SPEED CONTROLLER	3/8"



Pressurized Type Control Panel

Ex pz II T4



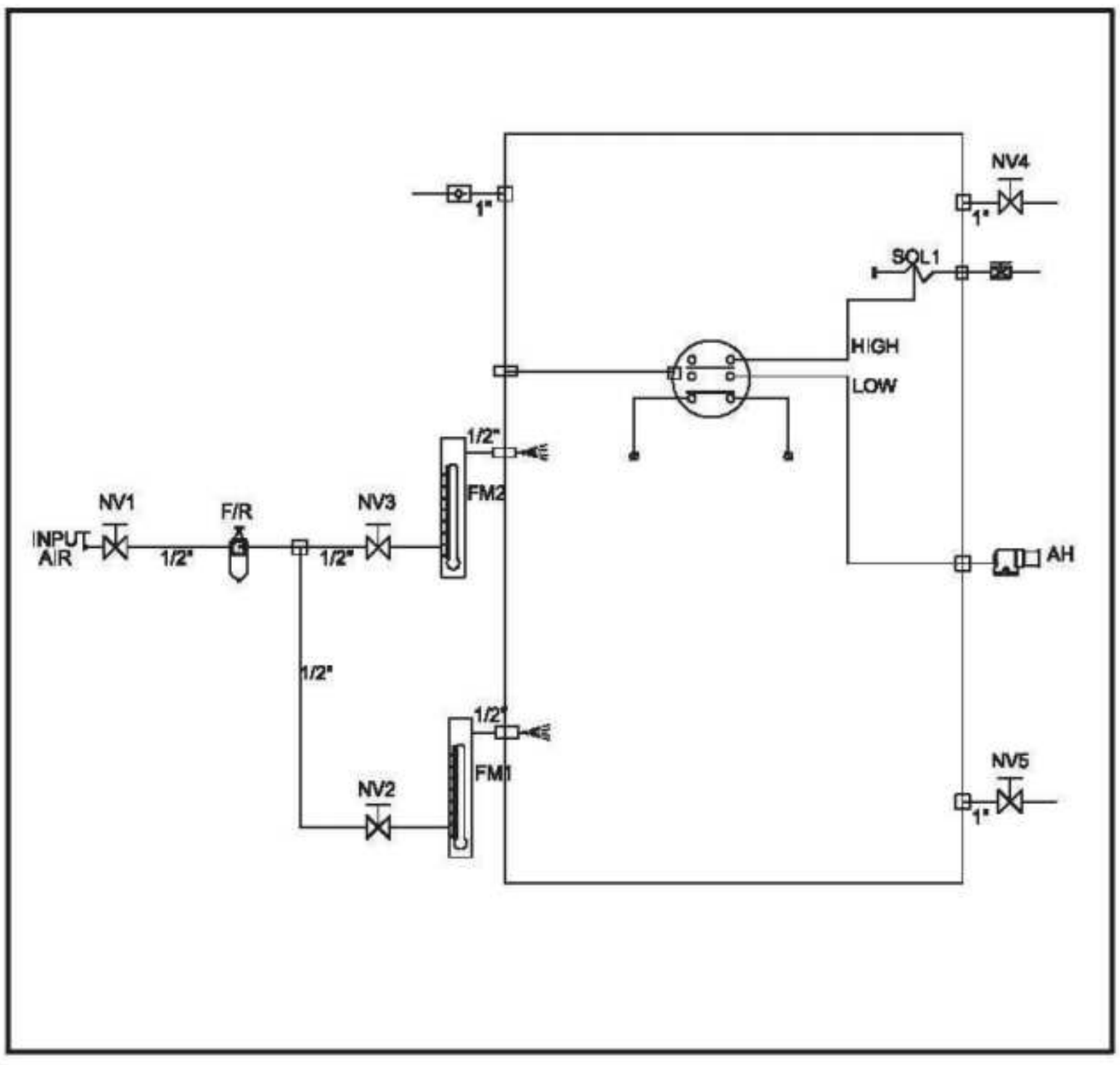


Data

Max. Rating	Size	Temperature	Humidity	Protection Gas	Materials
AC440V / 220V	Max.	-20 °C Ta +40 °C	85 % less than	Air & N_2	Steel & Stainless Steel

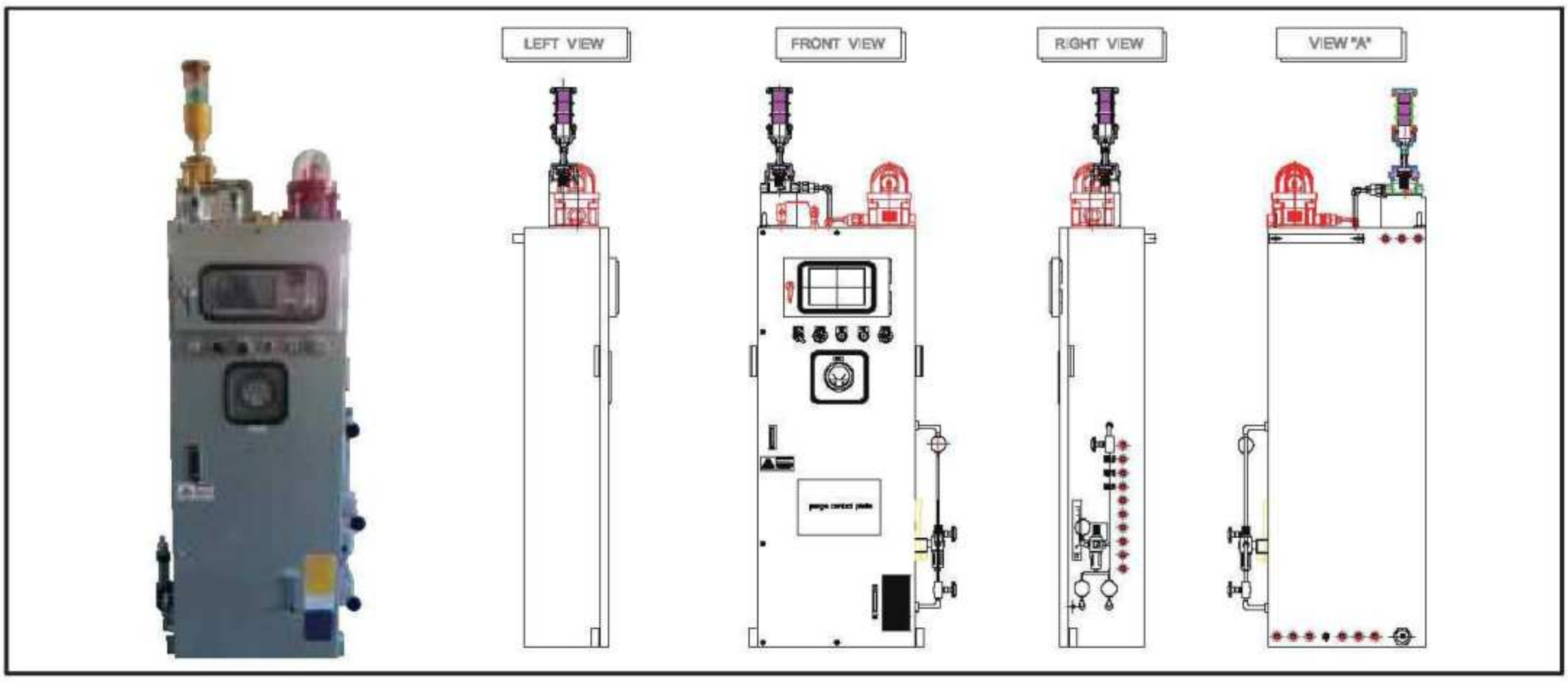
Circuit Diagram

NO.	TAG	DESCRIPTION	SPEC
1	NV1~2	NEEDLE VALVE	½"
2	NV3	NEEDLE VALVE	3/8
3	NV4~5	REGULATOR	½"
4	F/R	RILTER REGULATOR	W300-10
5	FM1	FLOW METER	RMB300
6	FM2	FLOW METER	RMB100
7	PS	PRESSURE SWITCH	2000~100
8	RV	RELIEF VALVE	mmH_2O
9	AH	SIREN	J48K
10	SOL1	SOLENOID VALVE	3/8"
11	SC	SPEED CONTROLLER	3/8"



Pressurized Type Control Panel

Ex pz IIC T4

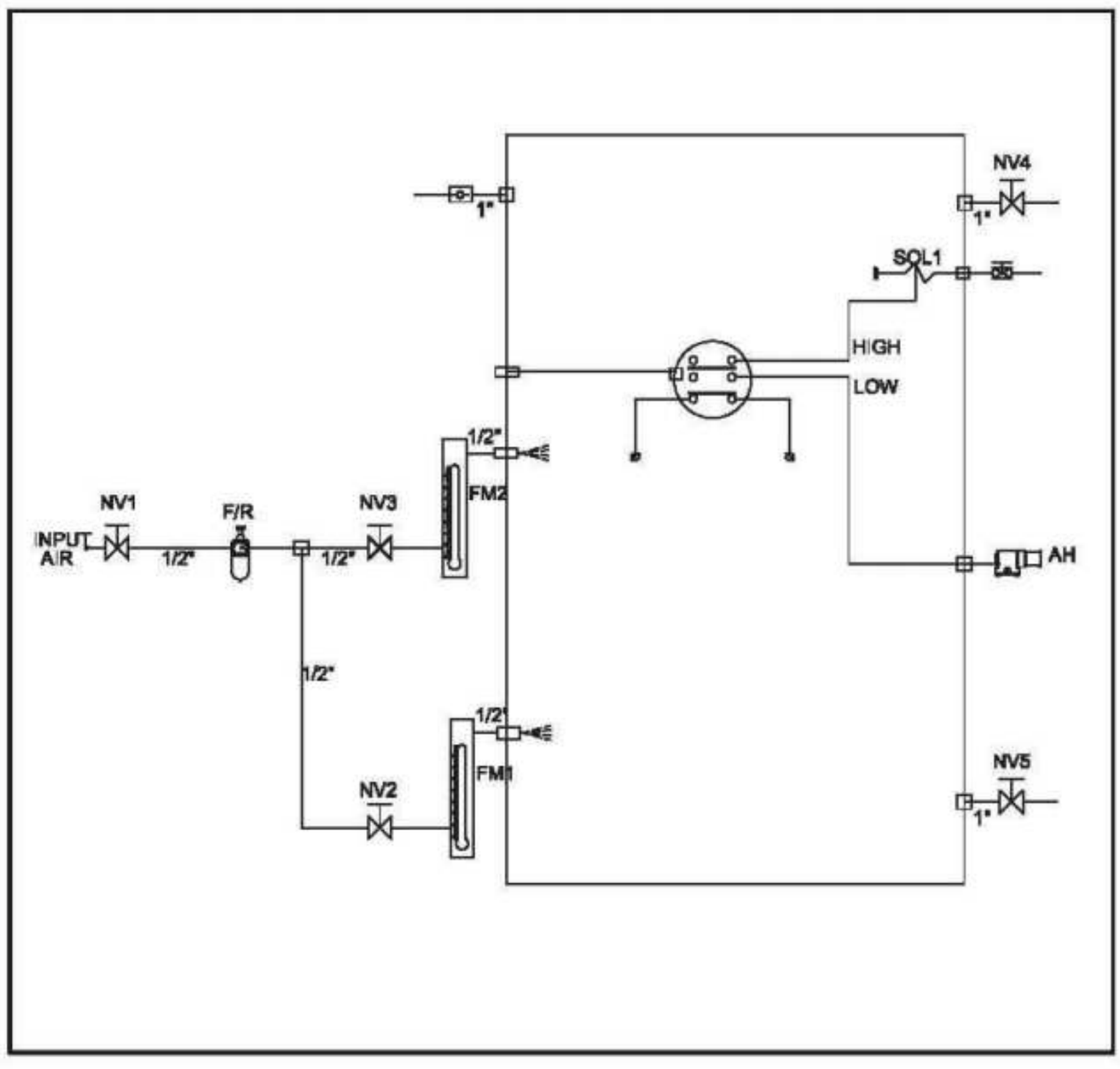


Data

Max. Rating	Size	Temperature	Humidity	Protection Gas	Materials
AC440V / 220V	Max.	-20 °C Ta +40 °C	85 % less than	Air & N_2	Steel & Stainless Steel

Circuit Diagram

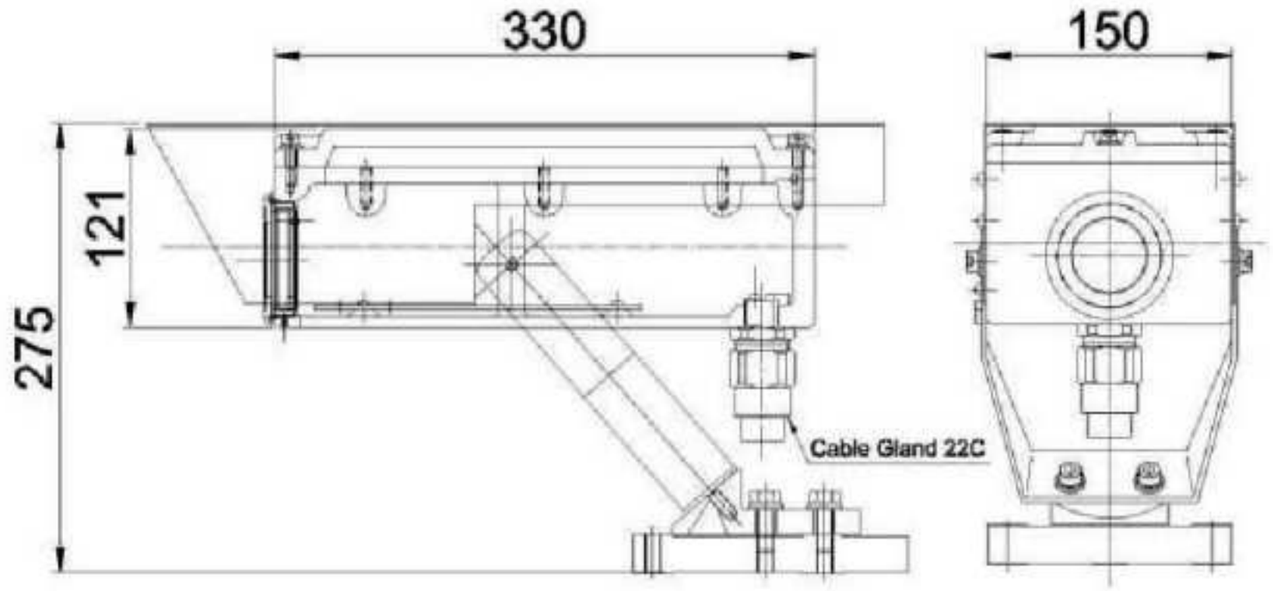
NO.	TAG	DESCRIPTION	SPEC
1	NV1~2	NEEDLE VALVE	½"
2	NV3	NEEDLE VALVE	3/8
3	NV4~5	REGULATOR	½"
4	F/R	RILTER REGULATOR	W300-10
5	FM1	FLOW METER	RMB300
6	FM2	FLOW METER	RMB100
7	PS	PRESSURE SWITCH	2000~100
8	RV	RELIEF VALVE	mmH_2O
9	AH	SIREN	J48K
10	SOL1	SOLENOID VALVE	3/8"
11	SC	SPEED CONTROLLER	3/8"



Flameproof Type Camera Housing Box (CCTV)

Ex d IIB+H_2 T6





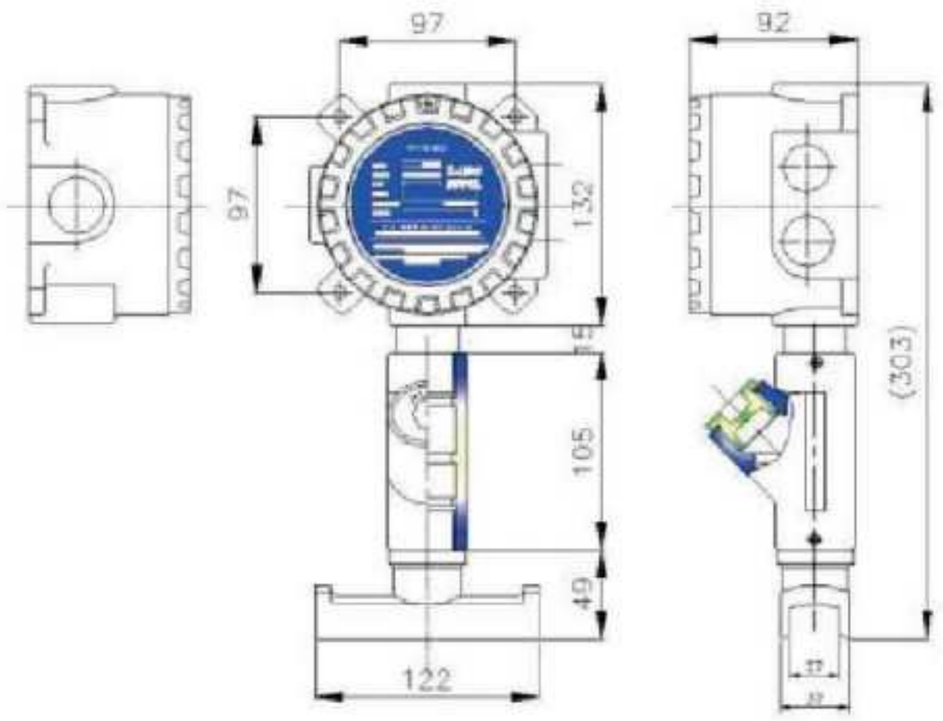
Data

Max. Rated Voltage	Model Number	Ampare	Cable Size	Weight (kg)	Material
MAX AC 270V, DC 24V	CHB	MAX 0.5A	0.75 SQ	4	Die Cast Aluminum Alloy

Flameproof Type RHTB Box

Ex d IIC T6 IP66





Flameproof Type RHTB Box Data

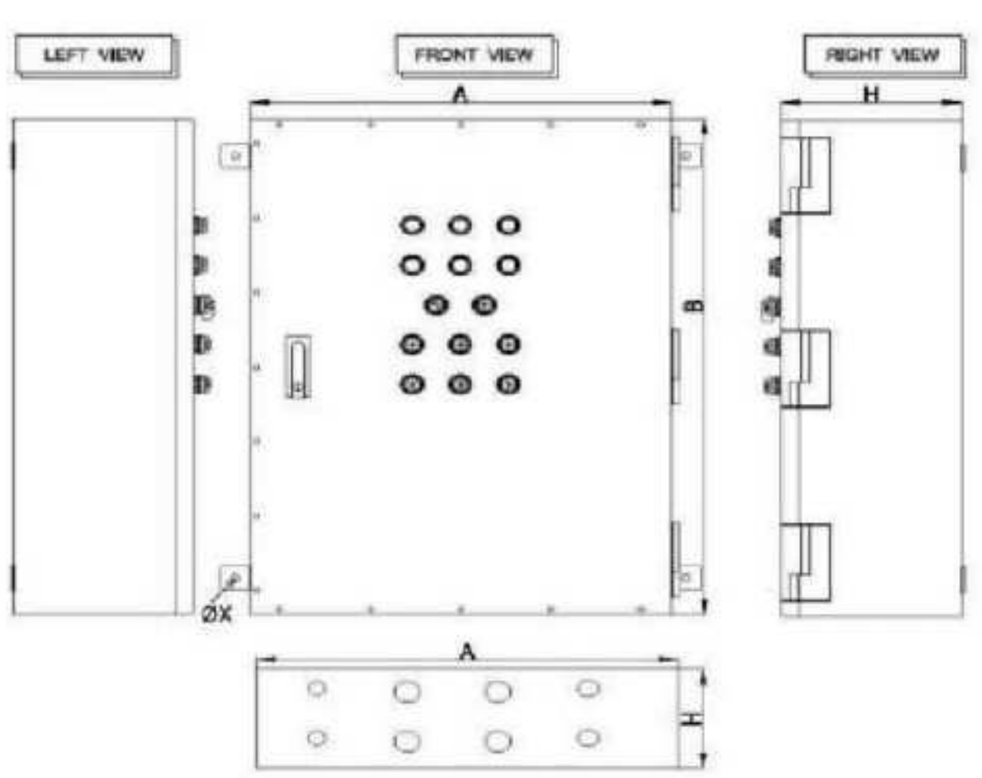
Max. Rated Voltage	Model Number	Current	Weight (kg)	Material
AC 600V	RHTB-01	MAX 20A	1.9	Cast Aluminum Alloy

 All product specifications in this catalog are subject to change without any prior notice.

Dustproof Type Control Boxes

Ex tD A22 T100℃ IP65





Data

Max. Rating	Model Number	Size	Dimensions(mm)			
			A	B	ØX	H
AC 480V 200P	WCJB-TD-200	700x1000x300	700	1000	12	300
AC 480V 300P	WCJB-TD-300	800x1500x375	800	1500	12	375

Max. size Hubs That Can be Used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½" (16C) M20	¾" (22C) M25	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
WCJB-TD-200	Top & Bottom	75	42	24	19	11	11	-	-	-
	Left & Right	84	46	21	21	15	15	-	-	-
WCJB-TD-300	Top & Bottom	75	42	24	19	11	11	-	-	-
	Left & Right	84	46	21	21	15	15	-	-	-

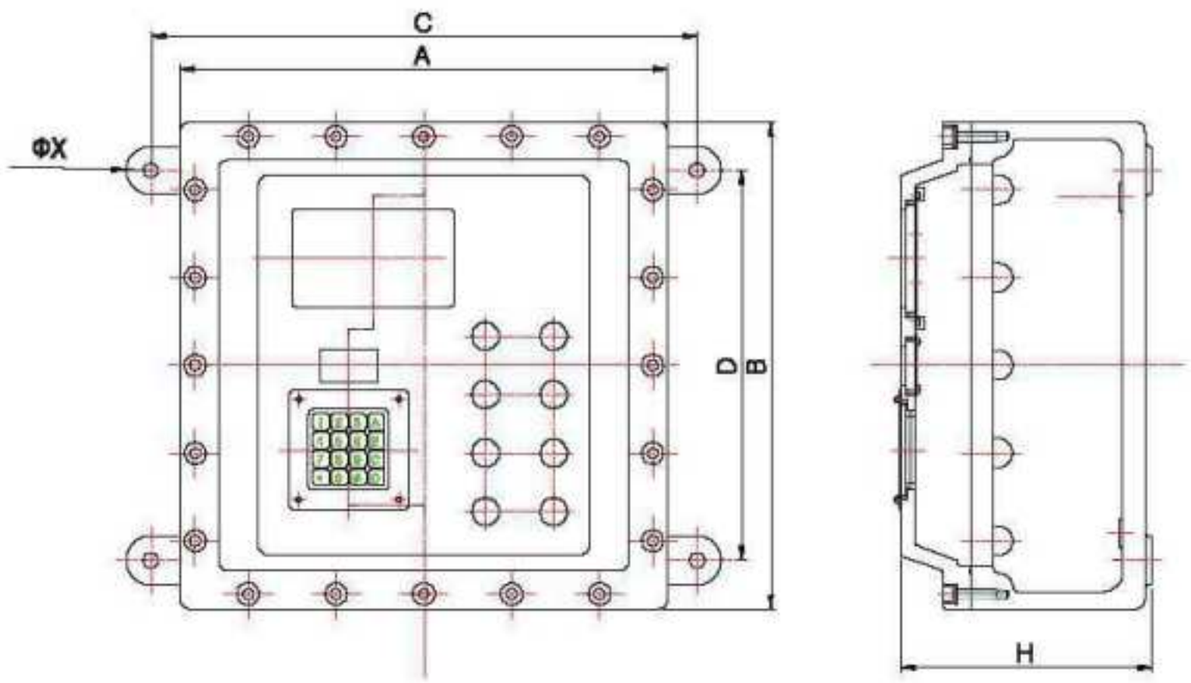
Materials Data

Descriptions	Materials
Body	Stainless Steel
Cover	Stainless Steel

Flameproof Type Local Control Unit Box

Ex d IIB+H_2 T6
Ex tD A21 T85℃ IP65





Data

Max. Rating	Model Number	Size	Dimensions(mm)					
			A	B	C	D	ØX	H
AC 600V 100P	FOB-V100	500x500x250	500	500	560	400	25	250
AC 600V 100P	FOB-TD-V100	500x500x250	500	500	560	400	25	250

Max. size Hubs That Can be Used

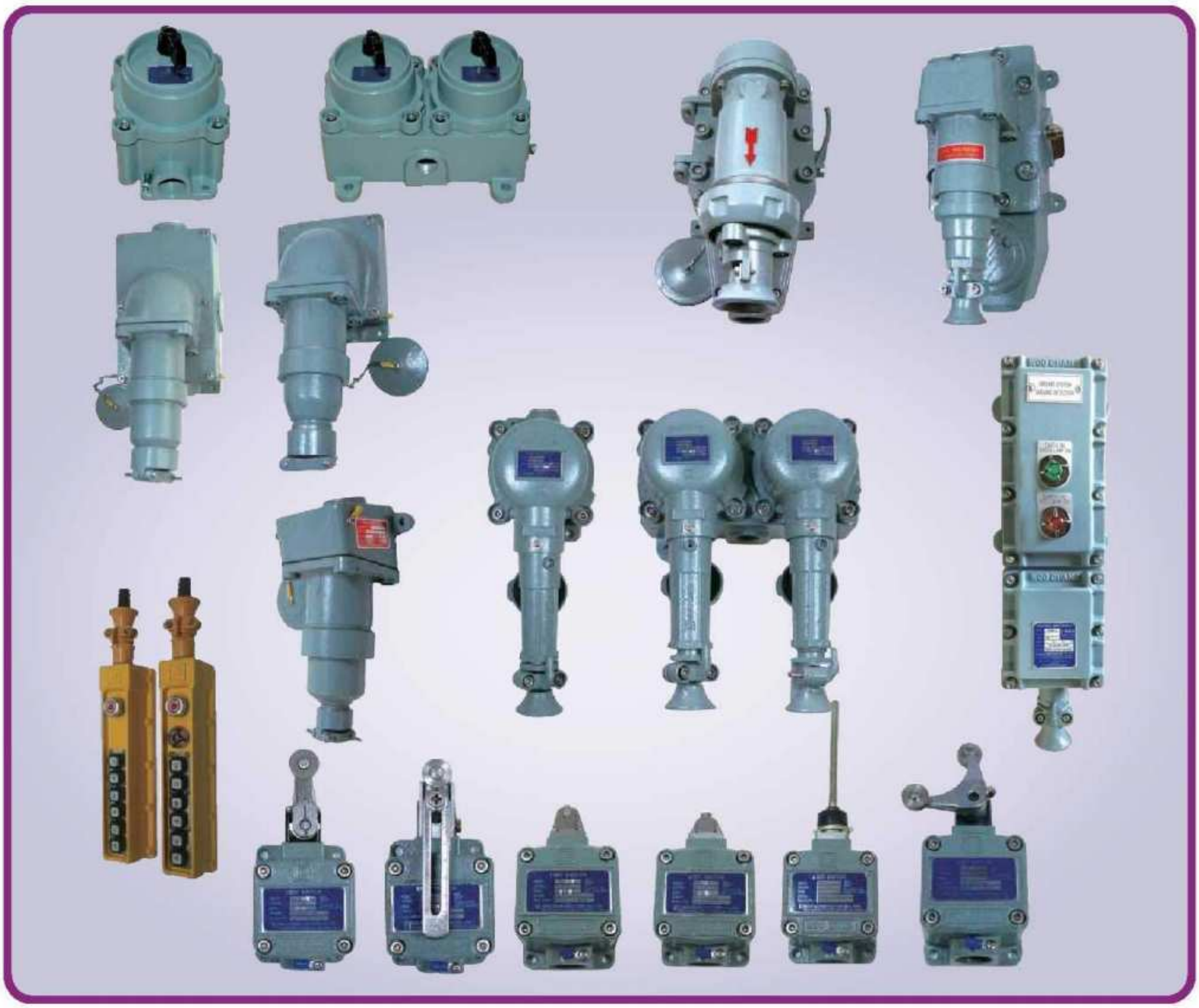
Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½" (16C) M20	¾" (22C) M25	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
FOB-V100 FOB-TD-V100	Left	18	16	13	6	6	5	4	3	-
	Right	18	16	13	6	6	5	4	3	-
	Top	18	16	13	6	6	5	4	3	-
	Bottom	18	16	13	6	6	5	4	3	-

Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

PART 3

SWITCH BOX

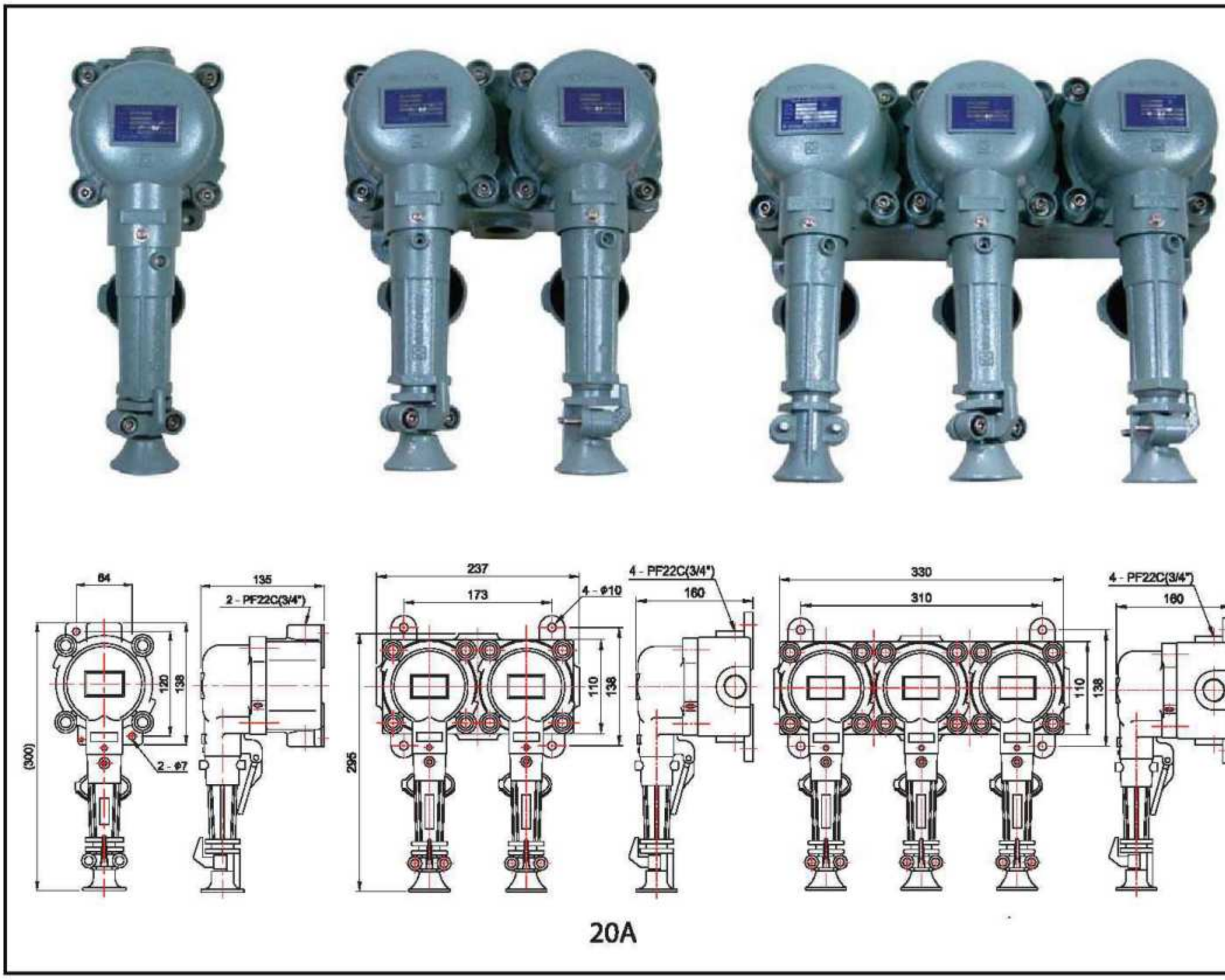


SWITCH BOXES INDEX

Product Picture	Product Name	Page
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	Flameproof Type Plug & Receptacles (30A~100A)	3-2
	Weatherproof & Dustproof Type Plug & Receptacles	3-3
	Flameproof Type Tumbler Switch Boxes	3-4
	Flameproof Type Limit Switches	3-5
	Flameproof Type Ground Detector Boxes	3-6
	Flameproof Type Hoist Pendant Switch Box	3-7

Flameproof Type Plug & Receptacles

Ex d IIB+H_2 T6



20A

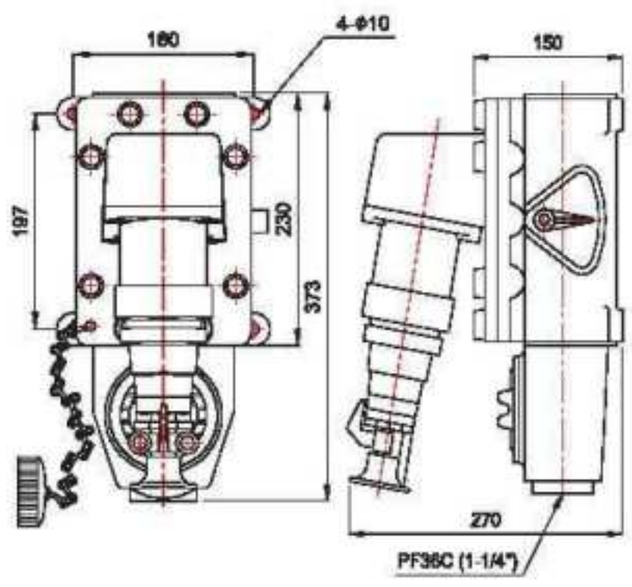
Flameproof Type Plug & Receptacles Data

Max. Rating	Type	Model Number	Number of Pins	Weight (Kg)	Material
AC 220V 20A	1Gang	FPR-2022	3 (2P+1E)	2	Die Cast Aluminum Alloy
		FPR-2023	4 (3P+1E)		
	2Gang	FPR-2024	3 (2P+1E)	4.5	
		FPR-2025	4 (3P+1E)		
	3Gang	FPR-2026	3 (2P+1E)	6.6	
		FPR-2027	4 (3P+1E)		

Flameproof Type Plug & Receptacles

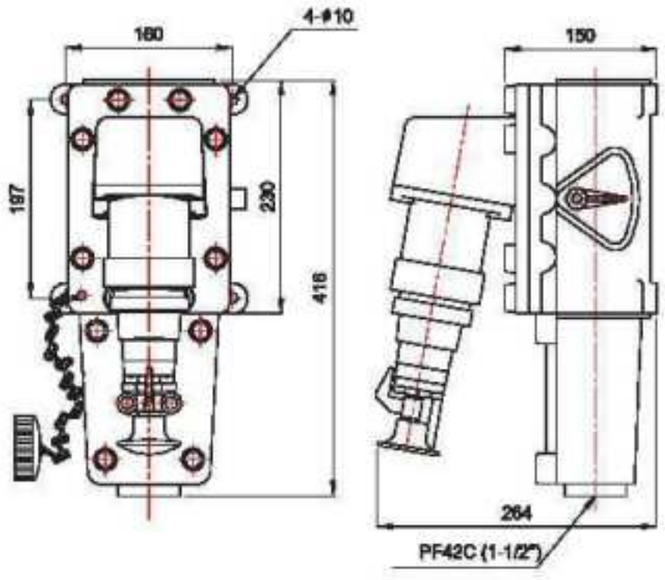
Ex de IIB+H_2 T5





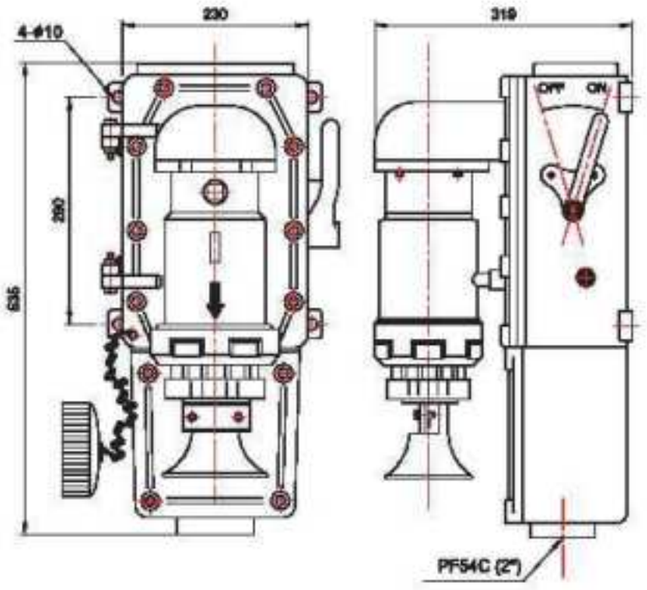
30A





60A





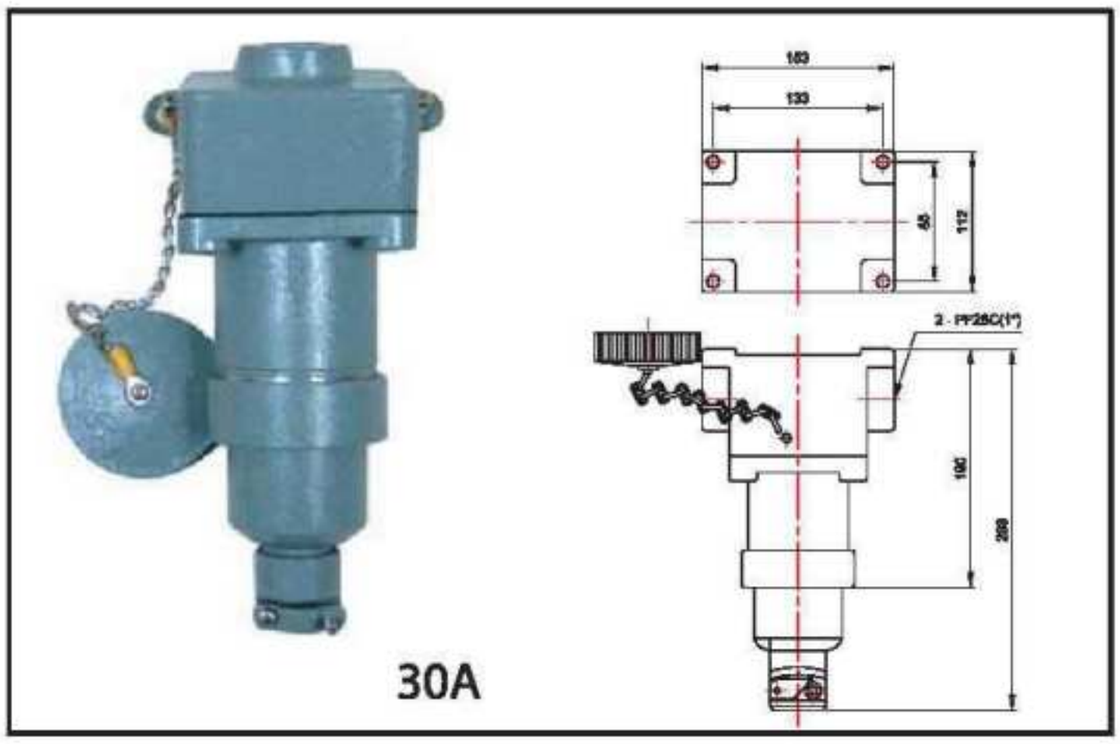
100A

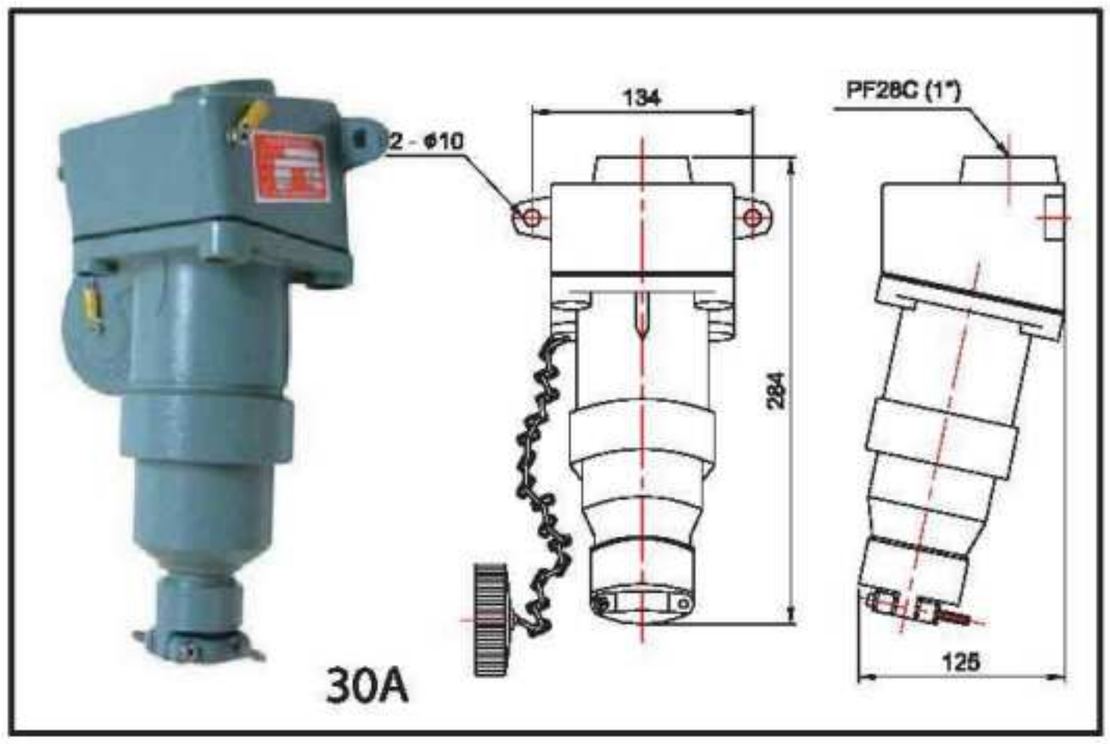
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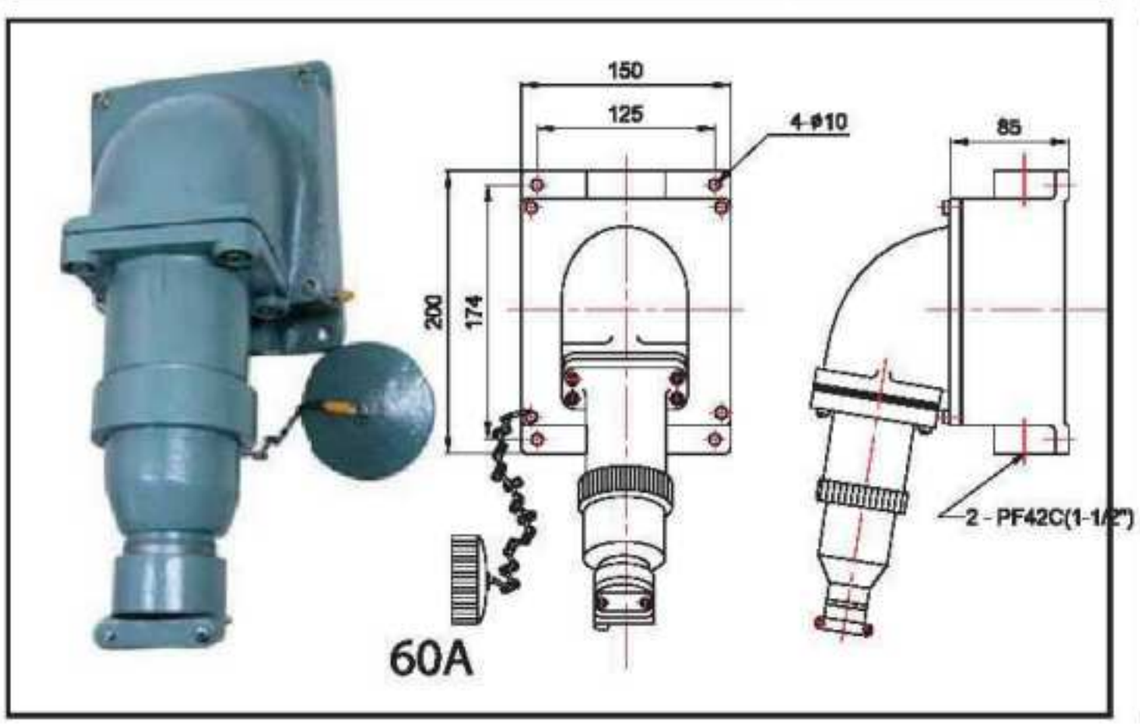
Max. Rating	Model Number	Number of Pins	Hertz	Weight (kg)
460V 30A	FPR- 30	4 (3P+1E)	50/60Hz	10
460V 60A	FPR- 60	4 (3P+1E)	50/60Hz	12
460V 100A	FPR-100	4 (3P+1E)	50/60Hz	26.8

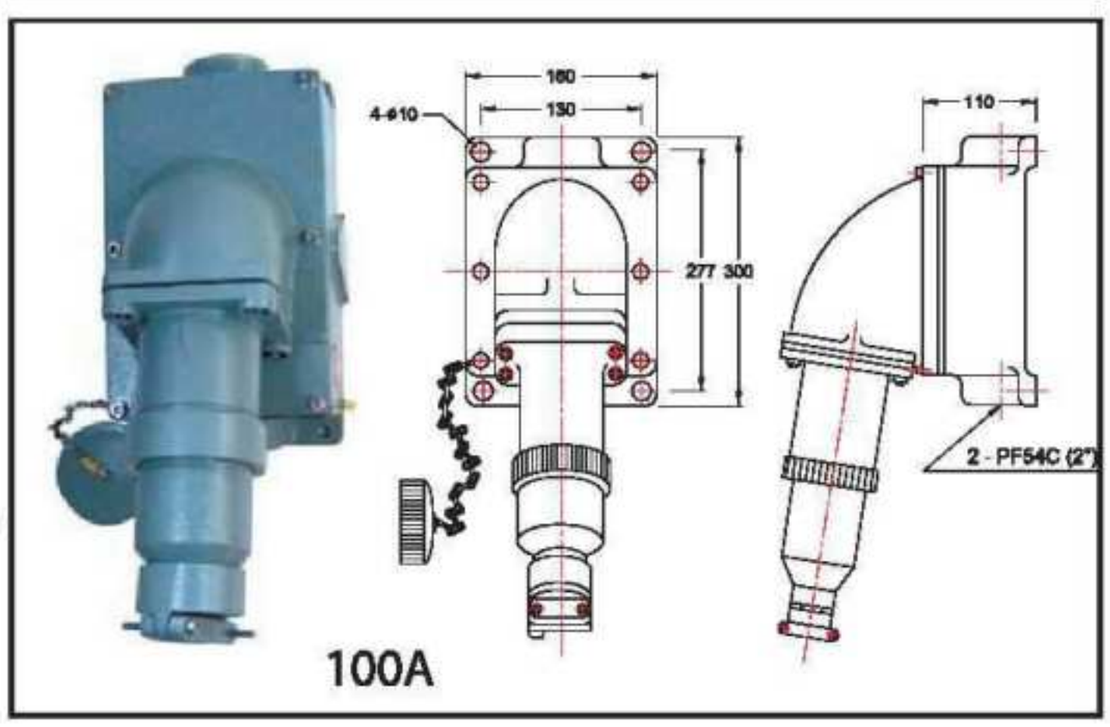
Weatherproof & Dustproof Type Plug & Receptacles

IP65









Data

Max. Rating	Model Number	Number of Pins	Hertz	Weight(kg)	Material
460V 30A	PR-301	4 (3P+1E)	60Hz	3.2	Cast Aluminum Alloy
460V 30A	PR-302	4 (3P+1E)	60Hz	3.2	
460V 60A	PR-6013	4 (3P+1E)	60Hz	4.5	
460V 100A	PR-10053	4 (3P+1E)	60Hz	8.5	

Features

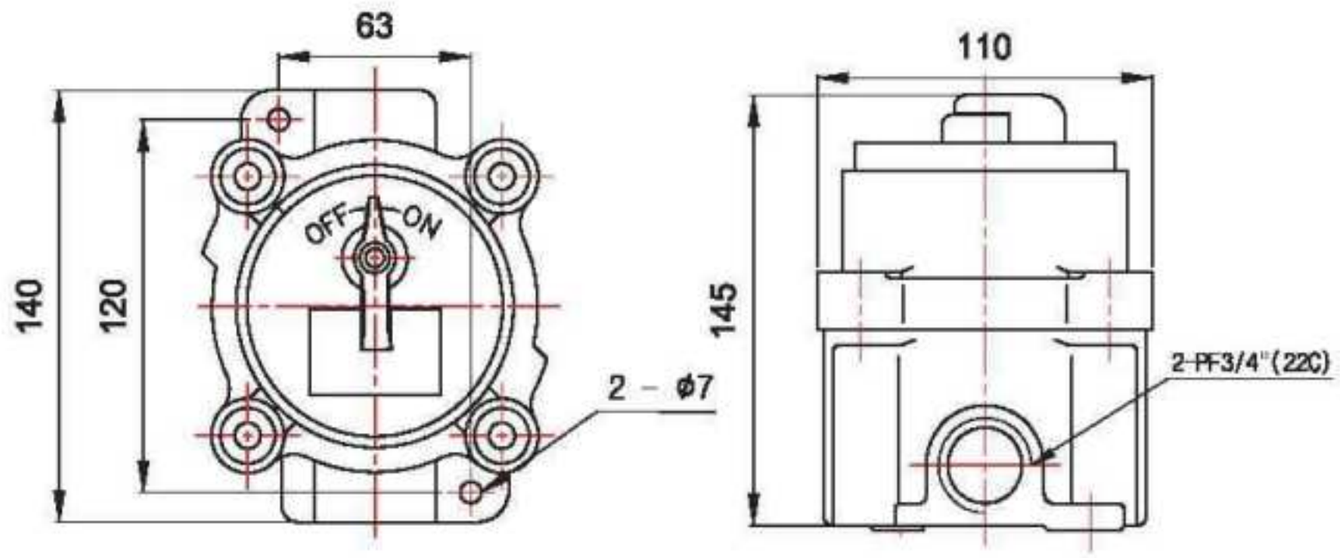
- The main enclosure of the switched receptacle has a socket outlet on the front cover and a operating handle on the side of the body. The terminal box is fitted to the top or bottom, or to the both sides of the main body.
- The interlocking device is of handle operation type. The built-in circuit breaker is operated by the handle, and the plug can only be inserted or withdrawn when the circuit breaker is in the open position.
- The plug is designed for heavy duty and incorporation a flameproof packing type cable gland.
- A screw-on blanking cap is provided for protecting the receptacle outlet.

Flameproof Type Tumbler Switch Boxes

Ex d IIB+H_2 T5

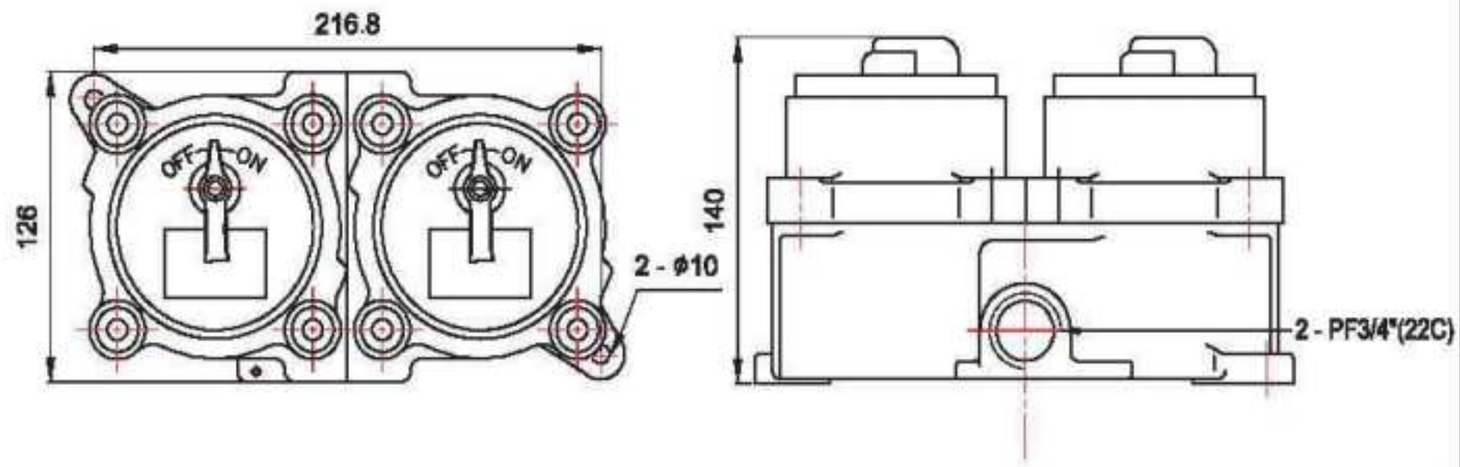


1G



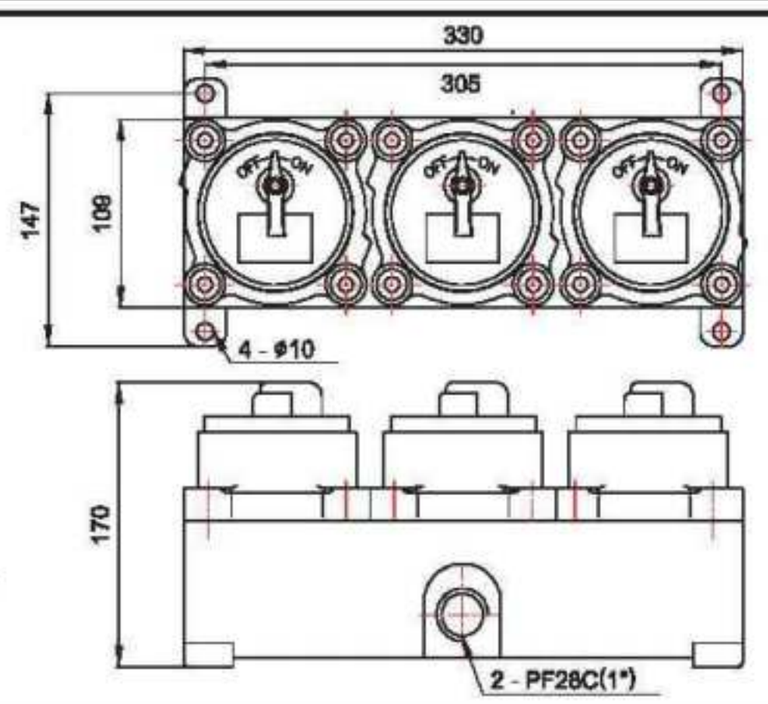


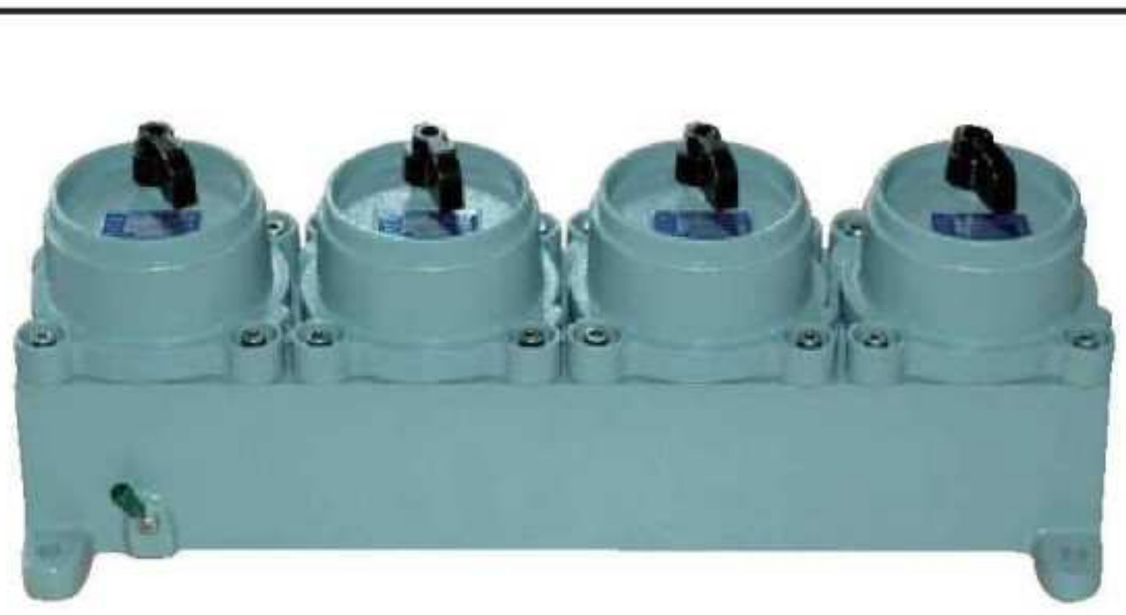
2G



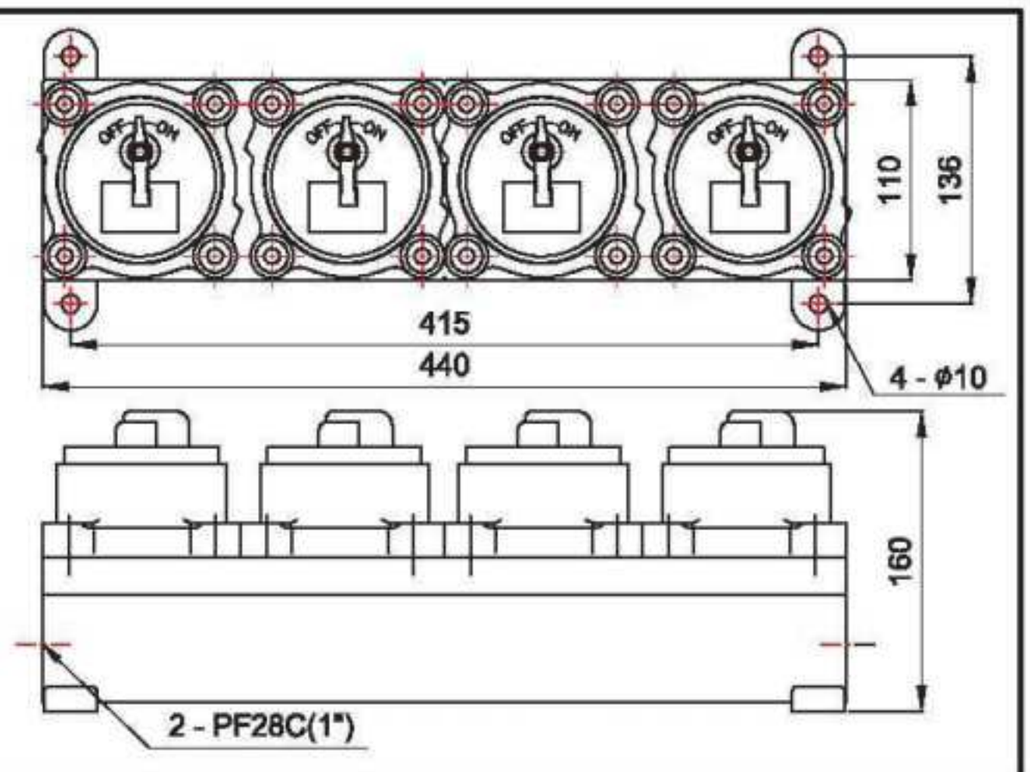


3G





4G



Flameproof Type Tumbler Switch Boxes

Ex d IIB+H_2 T5

■ Data

Max. Rating	Type	Model Number	polarity				Weight (kg)
AC 250V 20A	1Gang	KEX-150	2 - Pole				1.4
		KEX-151	3 - Way				
	2Gang	KEX-152	2 - Pole		2 - Pole		3.4
		KEX-153	2 - Pole		3 - Way		
		KEX-154	3 - Way		3 - Way		
	3Gang	KEX-155	2 - Pole	2 - Pole	2 - Pole		5.1
		KEX-156	2 - Pole	2 - Pole	3 - Way		
		KEX-157	2 - Pole	3 - Way	3 - Way		
		KEX-158	3 - Way	3 - Way	3 - Way		
	4Gang	KEX-159	2 - Pole	2 - Pole	2 - Pole	3 - Way	6.8
		KEX-160	2 - Pole	2 - Pole	2 - Pole	3 - Way	
		KEX-161	2 - Pole	2 - Pole	3 - Way	3 - Way	
		KEX-162	2 - Pole	3 - Way	3 - Way	3 - Way	
		KEX-163	3 - Way	3 - Way	3 - Way	3 - Way	

■ Materials Data

Descriptions	Materials
Body	Die Cast Aluminum Alloy
Cover	Die Cast Aluminum Alloy

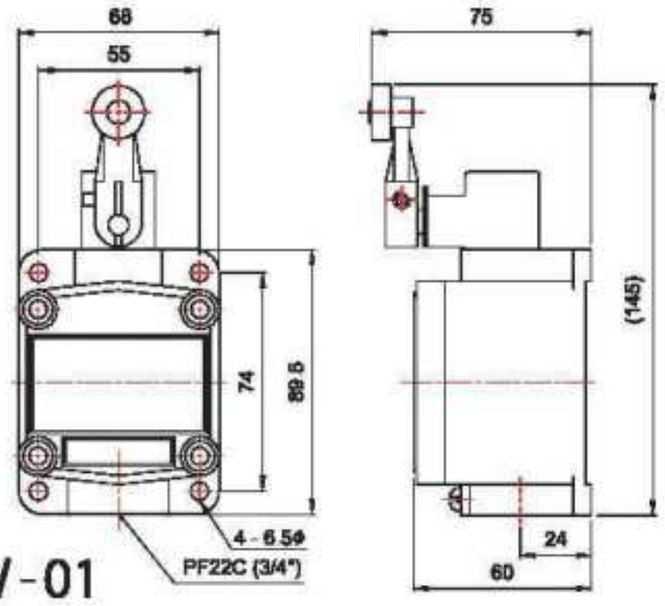
■ Features

- The tumbler switch is designed to take larger insulation clearance and clurability.
- The tumbler switch has metalic lever with roller to ensure long life under rough operation.

Flameproof Type Limit Switches

Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65

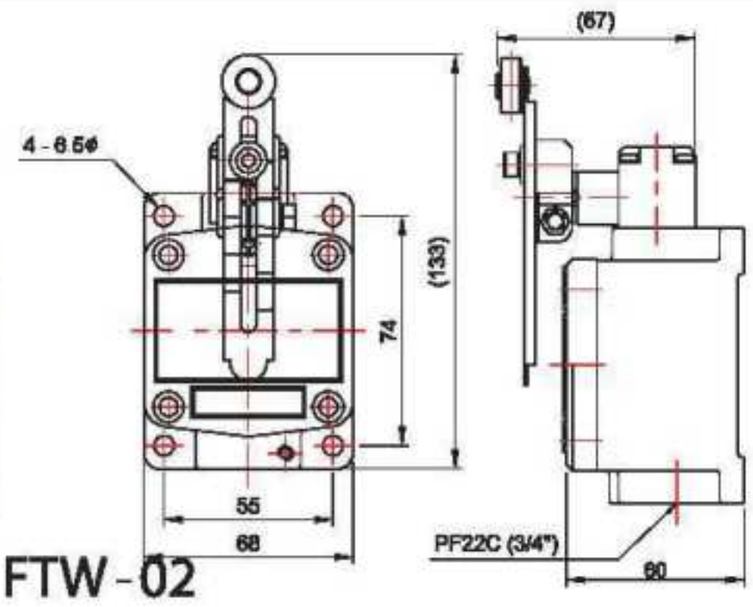




FTW-01

Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW-01	0.8	Die Cast Aluminum Alloy

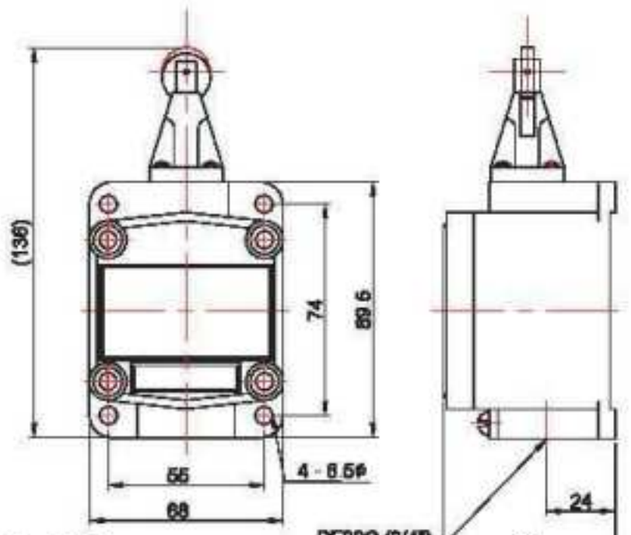




FTW-02

Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW-02	0.8	Die Cast Aluminum Alloy

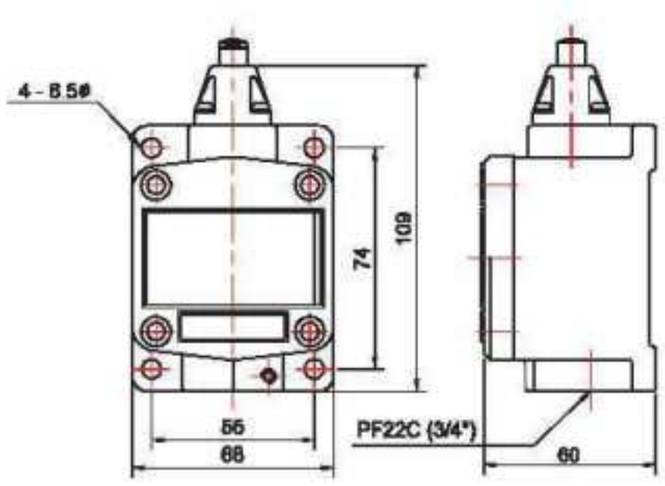




FTW-03

Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW-03	0.8	Die Cast Aluminum Alloy





FTW-04

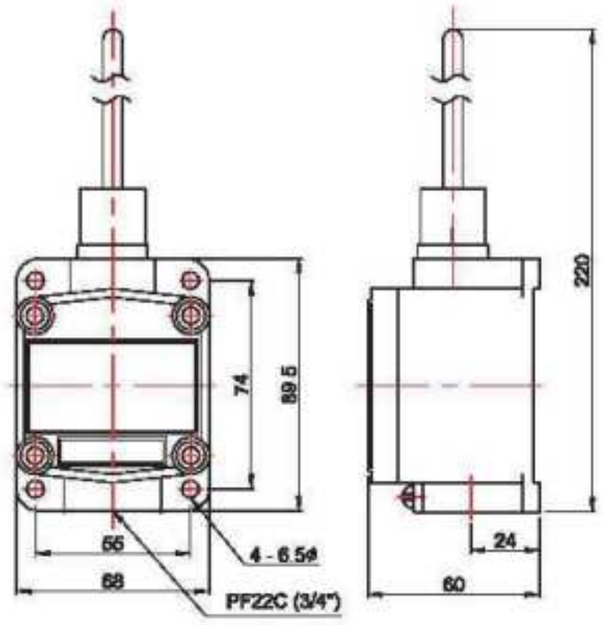
Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW-04	0.8	Die Cast Aluminum Alloy

Flameproof Type Limit Switches

Ex d IIC T6 IP65
Ex tD A21 T85℃ IP65



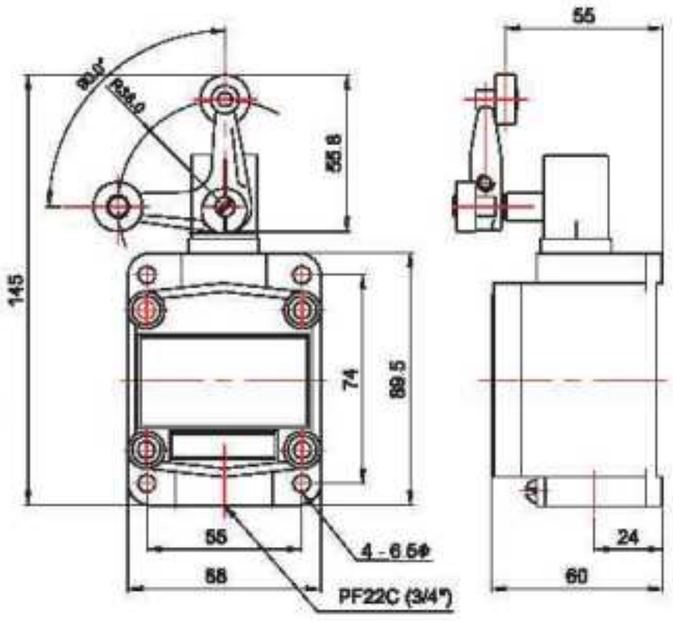
FTW-05



Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW - 05	0.8	Die Cast Aluminum Alloy

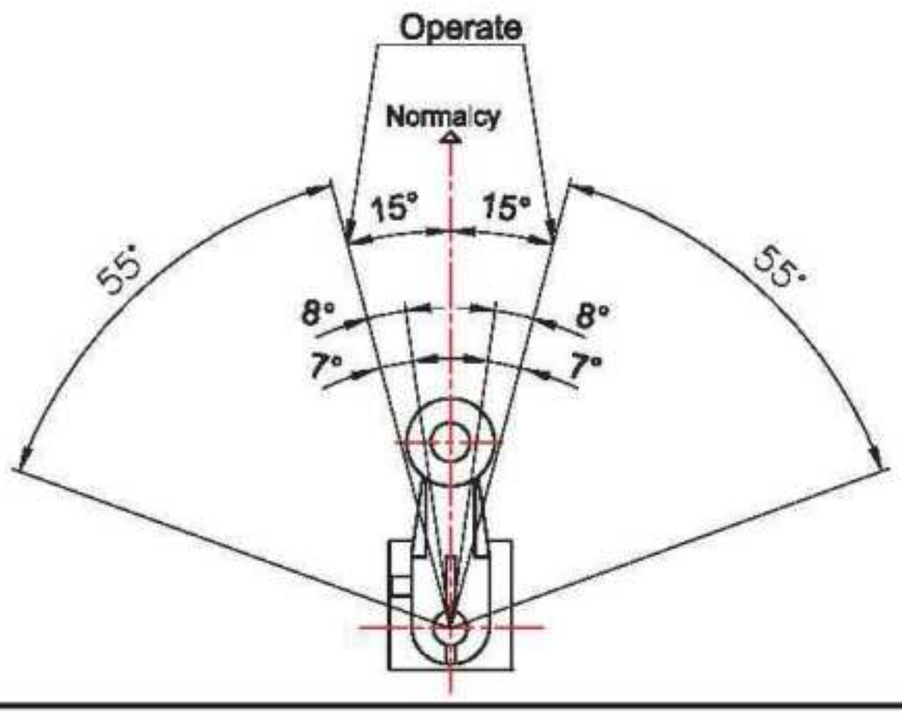


FTW-06



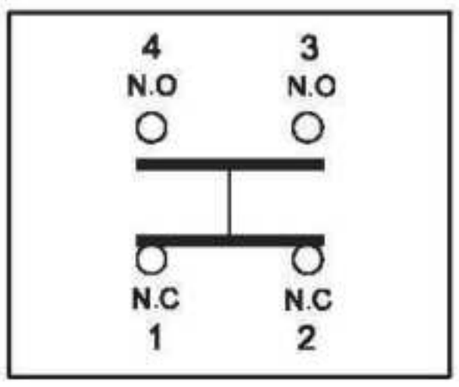
Max. Rating	Model Number	Weight (kg)	Material
AC 250V 6A	FTW - 06	0.8	Die Cast Aluminum Alloy

Limits of Adjustments



FTW-01
FTW-02

Wiring Diagrams



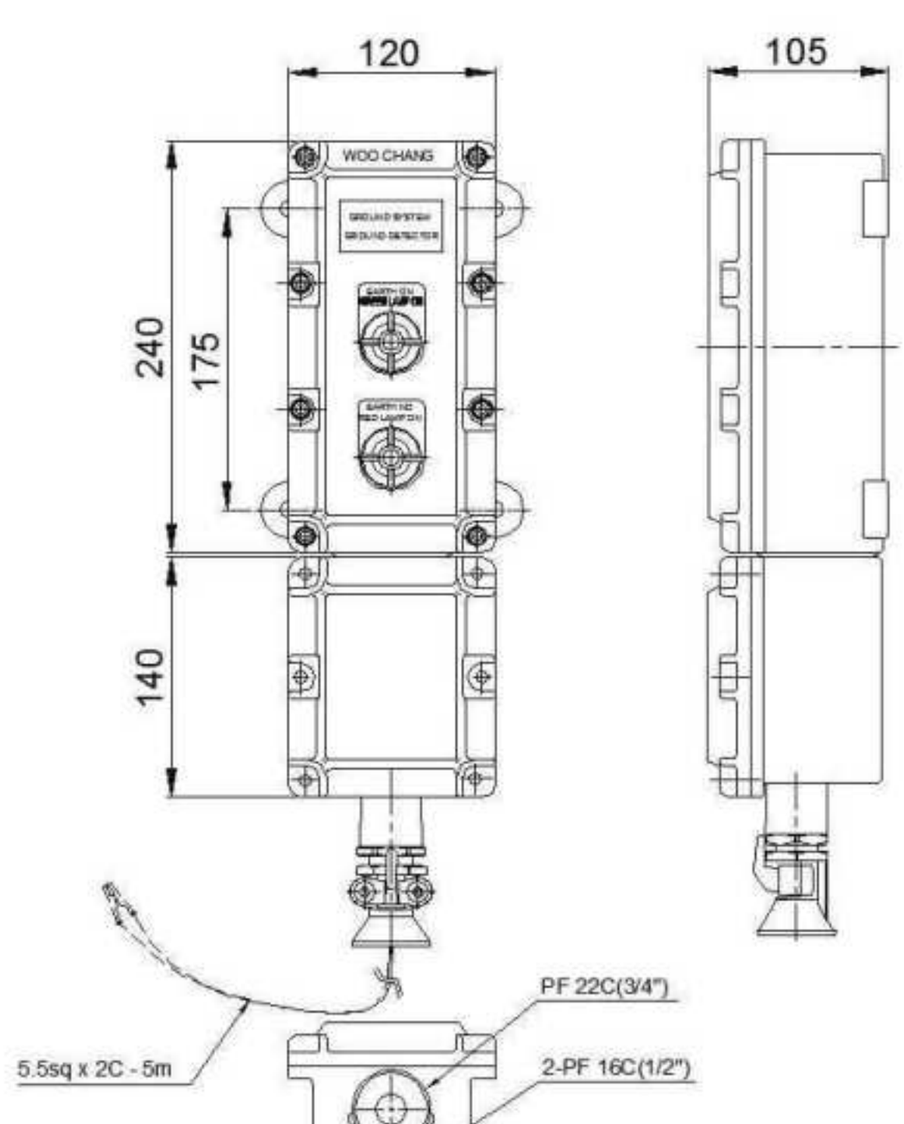
■ Application

Limits switches are used in areas which are hazardous due to the presence of flammable vapors or gases and Combustible dusts such as petrochemical plant, thermal Power station, oil refineries, chemical plant and manufacturing plant.

Flameproof Type Ground Detector Boxes

Ex d IIB+H_2T6





■ Data

Max. Rating	Model Number	Weight (kg)
AC 110V / AC220V	FOB-3	4.3

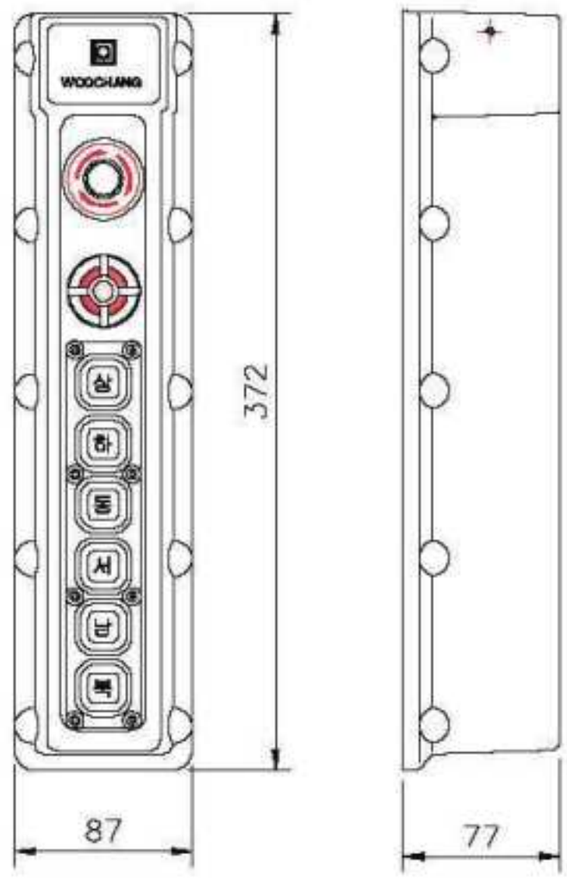
■ Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

Flameproof Type Hoist Pendant Switch Box

Ex d IIB+H_2 T6
Ex tD A21 T85℃ IP65





Data

Component	Model Number	Rating	Color	Lay Out
Emergency S/W	FEM-S	AC 110V / 6A		
Pilot Lamp	FPL-S	AC 110V / 6A	Red, Green, Yellow, White	
Selector S/W	FSS-S	AC 110V / 6A		
Push Button (1a-1a,1stage)	WC-HA100	AC 110V / 6A		
Push Button (2a-2a,2stage)	WC-HC100	AC 110V / 6A		
Push Button (2a-2a,1stage)	WC-HT100	AC 110V / 6A		

Push Button With Internation Symbpls

■ 한 글 (Korean)



■ 영 문 (English)

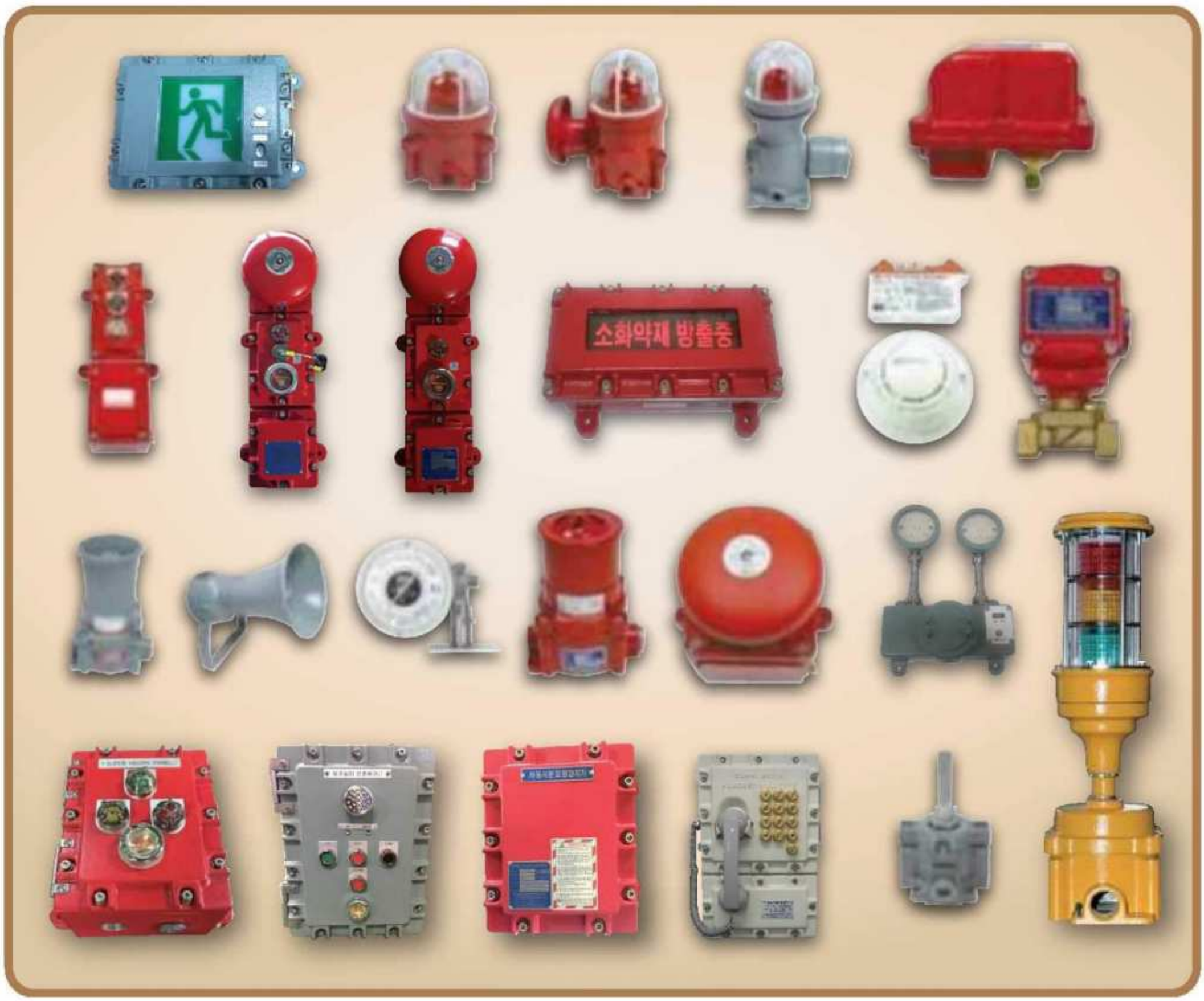


■ 기 호 (Symbol Marks)



PART 4

FIRE PROTECTION



FIRE PROTECTIONS INDEX

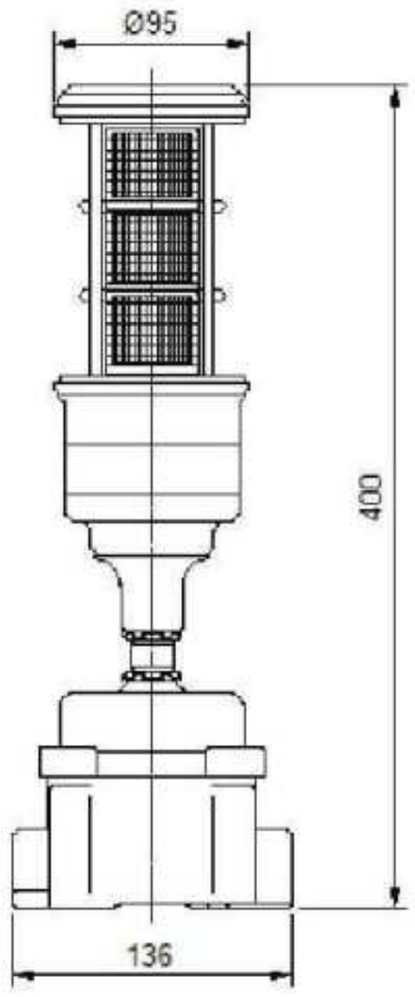
Product Picture	Product Name	Page	Product Picture	Product Name	Page
	Non-Sparking Type Signal Tower Lamp	4-1		Flameproof Type Horn Signal	4-12
	Flameproof Type Exit Lights	4-2		Flameproof Type Temperature Detectors	4-13
	Flameproof Type larm Signals	4-3		Flameproof Type Emergency Lighting Fixture	4-14
	Flameproof Type Alarm Signals & Bell Signals	4-4		Flameproof Type Solenoid Valve Box	4-15
	Flameproof Type Alarm Signals & Horn Signals	4-5		Flameproof Type Pressure Switch Box	4-16
	Flameproof Type Alarm & Bell Manual Stations	4-6		Flameproof Type Line Type Pneumatic Rate of Rise Heat Detector	4-17
	Flameproof Type Alarm Manual Station	4-7		Flameproof Type Interlock Controller	4-18
	Flameproof Type Super Visory Panel	4-8		Flameproof Type Rate of Rise Spot Type Heat Detector	4-19
	Flameproof Type Discharge Indicator	4-9		Flameproof Type Telephone	4-20
	Flameproof Type Bell Signals	4-10		Flameproof Type Projected Beam Smoke Detector	4-21
	Flameproof Type Horn Speakers	4-11		Flameproof Type Flame Detectors	4-22

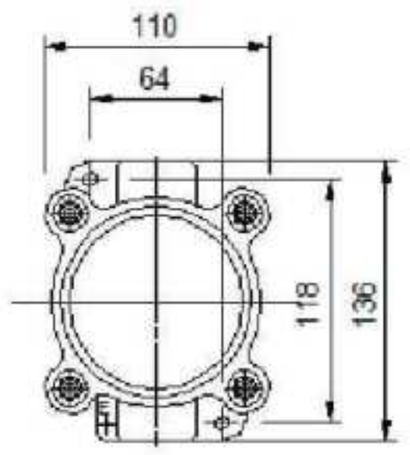
Non-Sparking Type Signal Tower Lamp

Ex d nR IIC T6 IP65



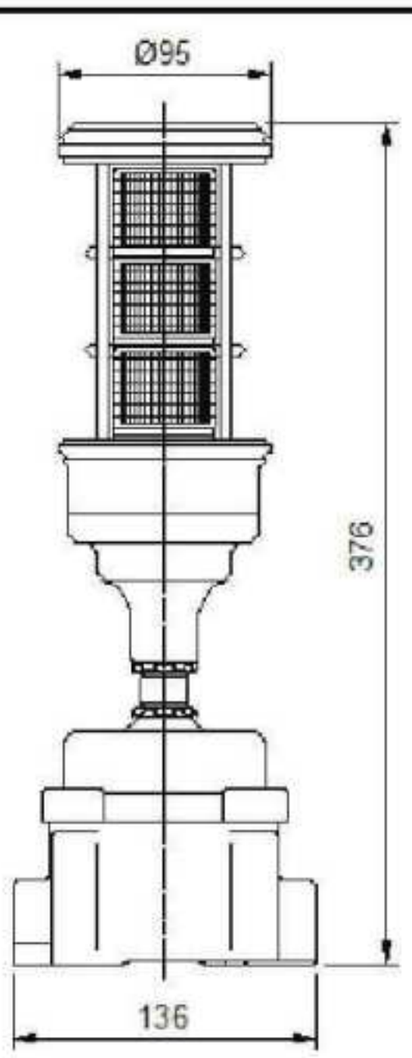
AC 110V,220V

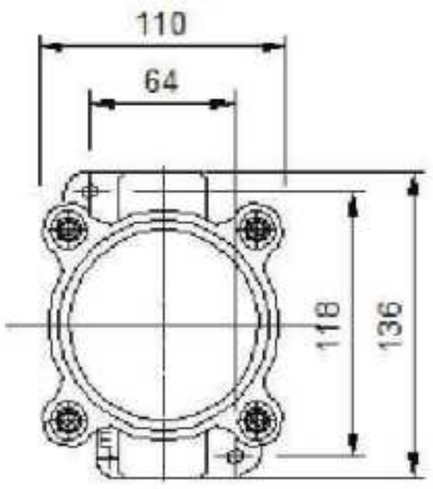






DC 24V





Data

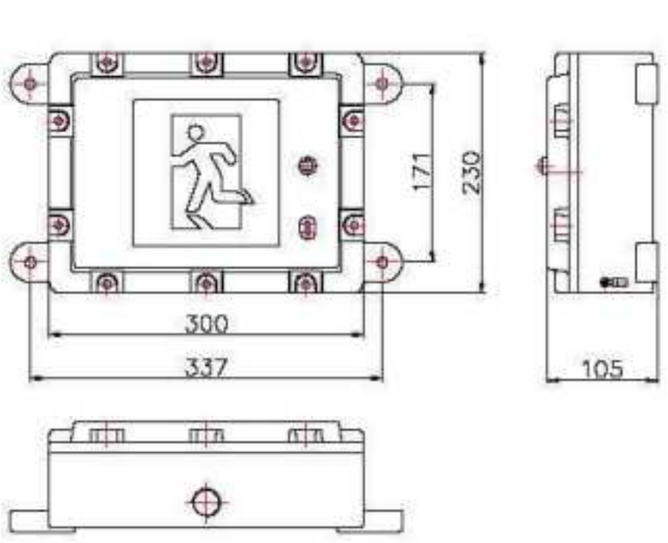
Max. Rating	Model Number	Weight (kg)	Materials
AC 220V	NST-22	2.85	Body : Cast Aluminum Alloy Cover : Cast Aluminum Alloy Glass : Acrylic
AC 110V	NST-11	2.85	
DC 24V	NST-24	2.55	

Flameproof Type Exit Lights

Ex d IIB+H_2 T6

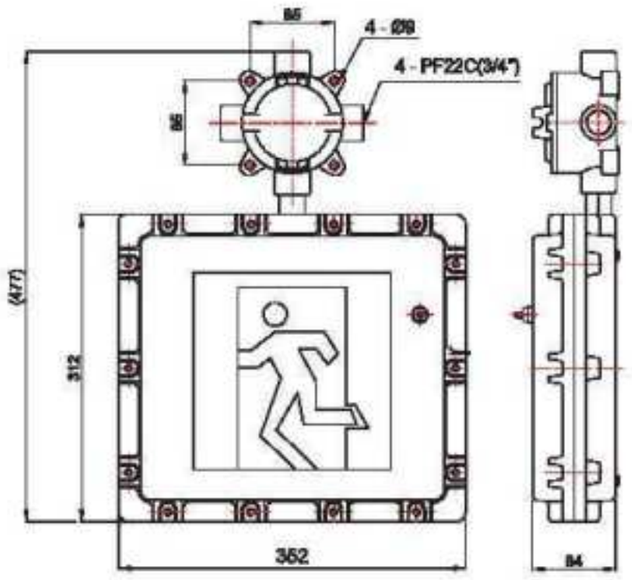


FUFL-LED-S



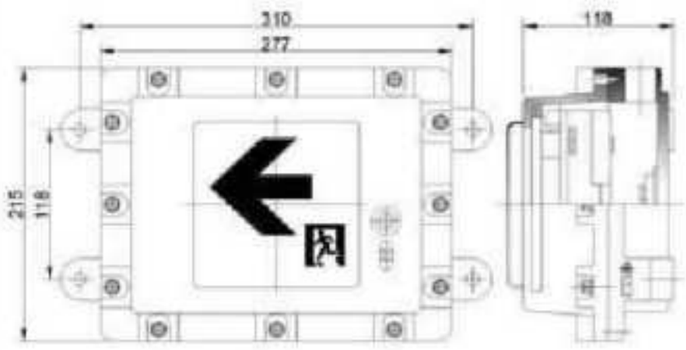


FUFL-LED-M





FUFL-LED-E



Data

Max. Rating	Model Number	Size	Material	Symbols			
				A	B	C	D
•AC220V 60Hz •DC3.6V 60Min 3.1W	FUFL-LED-S	300×230×105	Cast Aluminum Alloy	Test Button	Hub PF3/4"	LED(Green)	LED(Red)
	FUFL-LED-M	352×312×84					
	FUFL-LED-E	277×215×118					

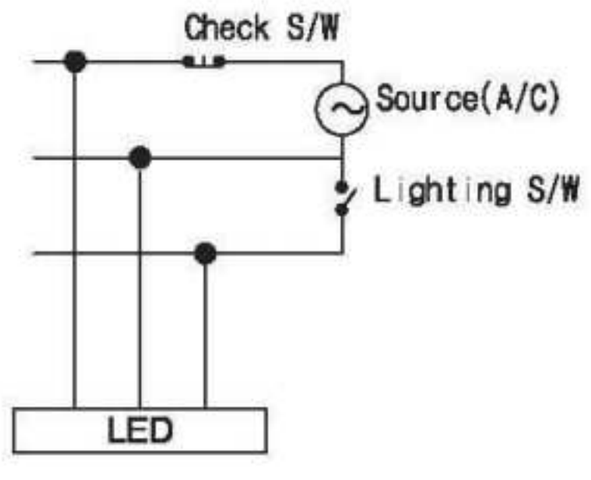
Operating Form

1. Integral Battery Type

2.Emergency Time : 60 min.



Wiring Diagram

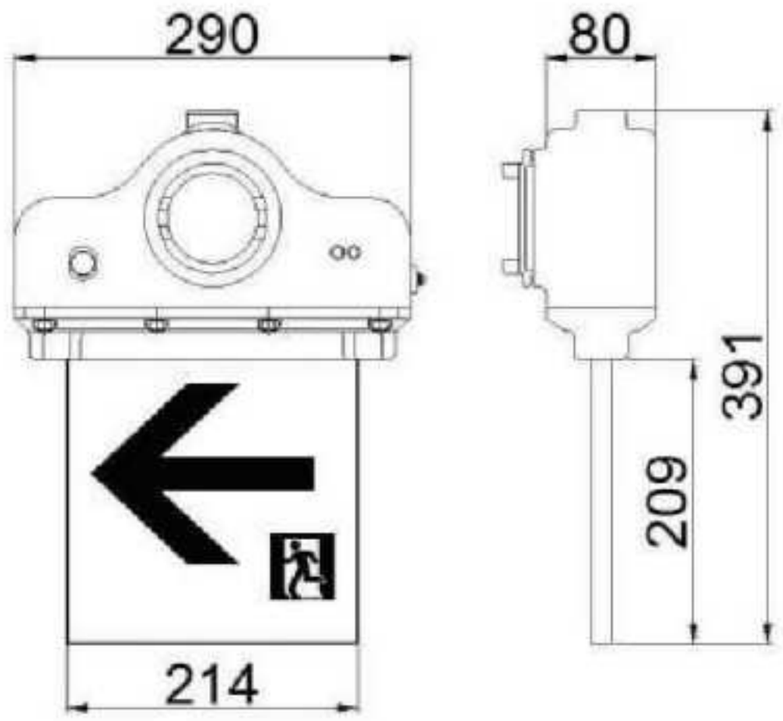


Flameproof Type Exit Lights

Ex d IIB+H2 T6 IP 65



FUFL-LED-TM



Data

Max. Rating	Model Number	Size	Material	Symbols			
				A	B	C	D
AC 220V 200mA	FUFL-LED-TM	290×391×80	Cast Aluminum Alloy	Test Button	Hub PF3/4"	LED(Green)	LED(Red)

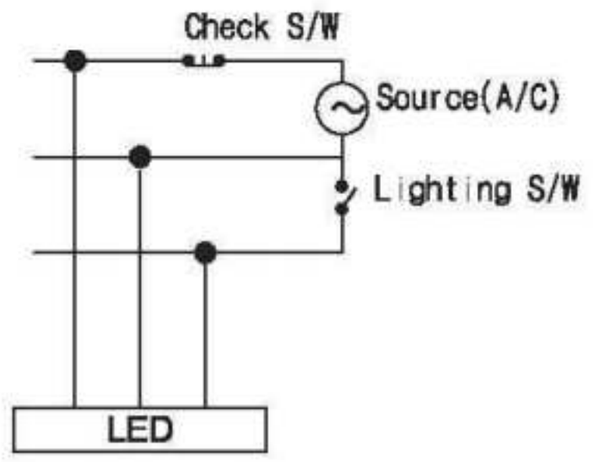
Operating Form

1. Integral Battery Type

2.Emergency Time : 60 min.



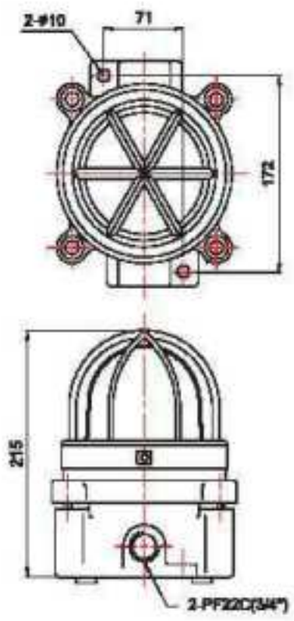
Wiring Diagram



Flameproof Type Alarm Signals

Ex d IIC T6 IP65





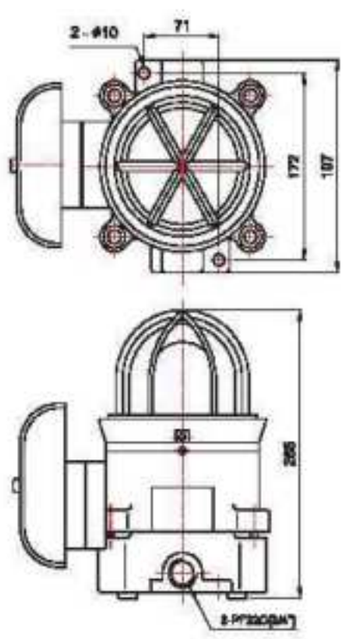
■ Data

Max. Rating	Model Number	Weight (kg)	Materials
AC 220V	FAS-22	5	**Body** : Cast Aluminum Alloy **Globe** : Heat Resistant Hard Glass **Globe Guard** : Die Cast Aluminum Alloy
AC110V	FAS-11	5	
DC24V	FAS-24	5	

Flameproof Type Alarm Signals & Bell Signals

Ex d IIC T6 IP65





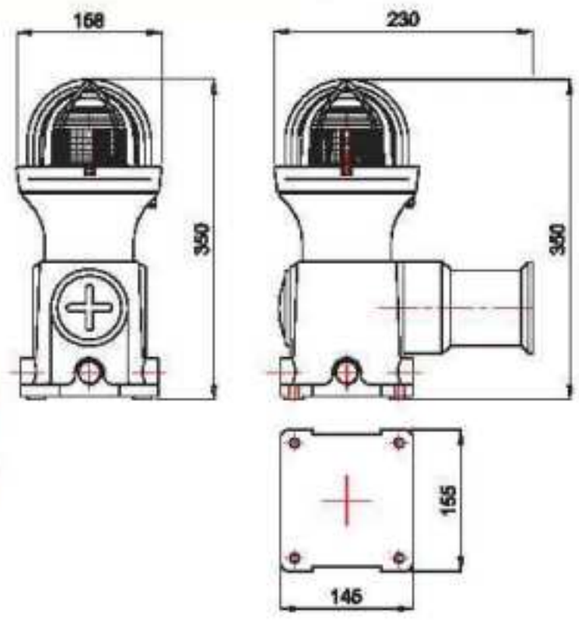
■ Data

Max. Rating	Model Number	Weight (kg)	Materials
AC 220V	FAS-B-22	5.5	**Body** : Cast Aluminum Alloy **Globe** : Heat Resistant Hard Glass **Globe Guard** : Die Cast Aluminum Alloy **Gong** : Brass
AC110V	FAS-B-11	5.5	
DC24V	FAS-B-24	5.5	

Flameproof Type Alarm Signals & Horn Signals

Ex d IIC T6 IP65





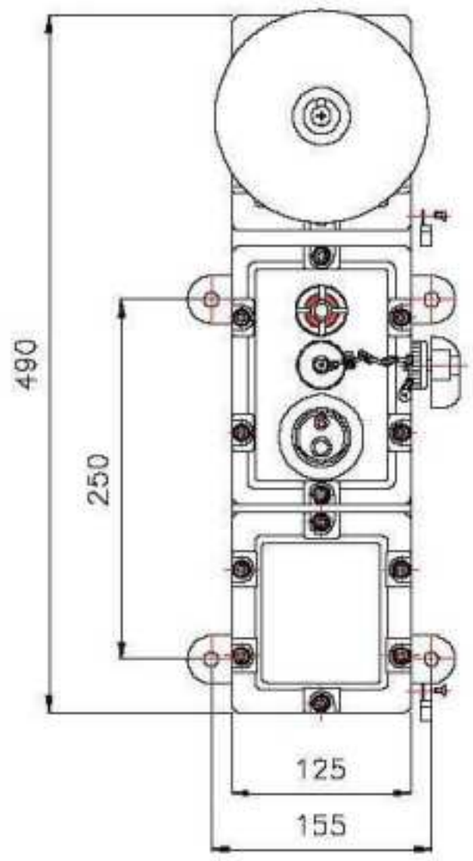
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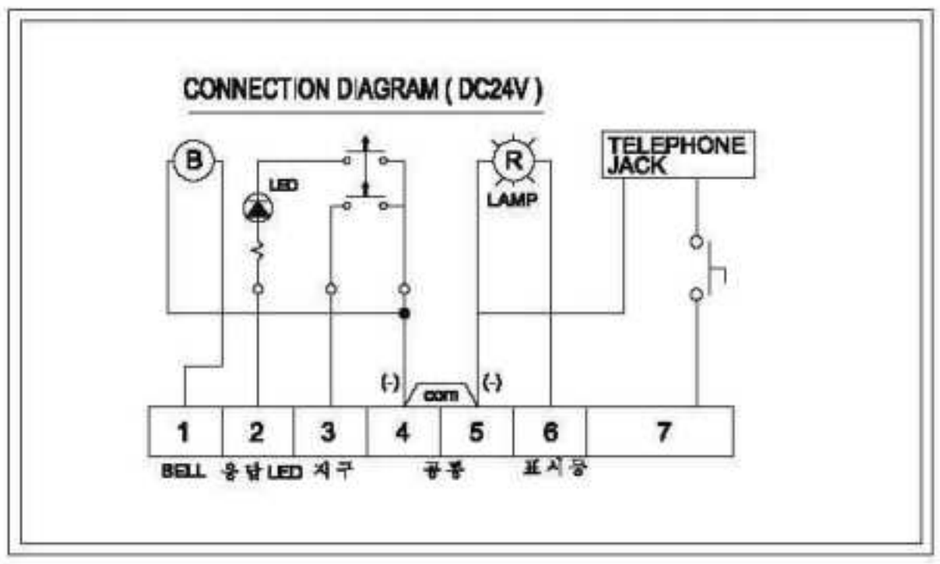
Max. Rating	Model Number	Weight (kg)	Materials
AC 220V	FAS-K-22	5	**Body** : Cast Aluminum Alloy **Globe** : Heat Resistant Hard Glass **Globe Guard** : Die Cast Aluminum Alloy
AC110V	FAS-K-11	5	
DC24V	FAS-K-24	5	

Flameproof Type Alarm & Bell Manual Stations

Ex d IIB+H_2 T6

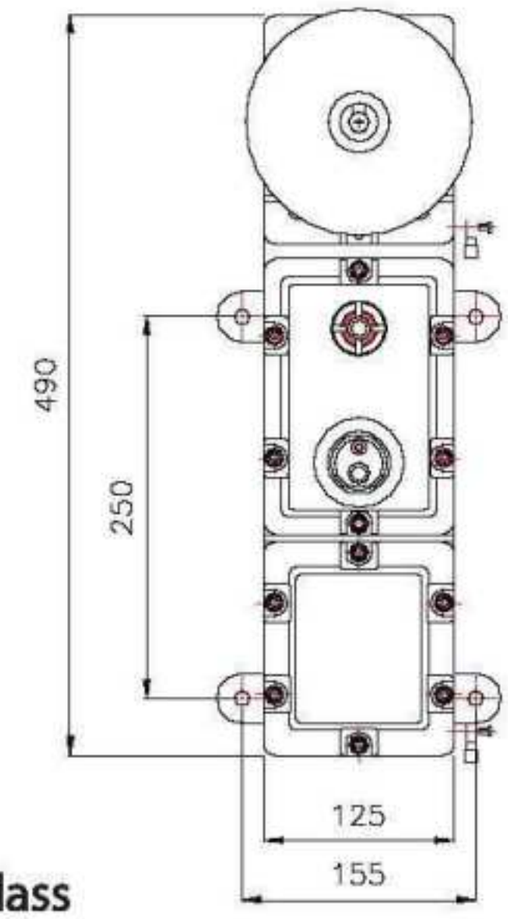


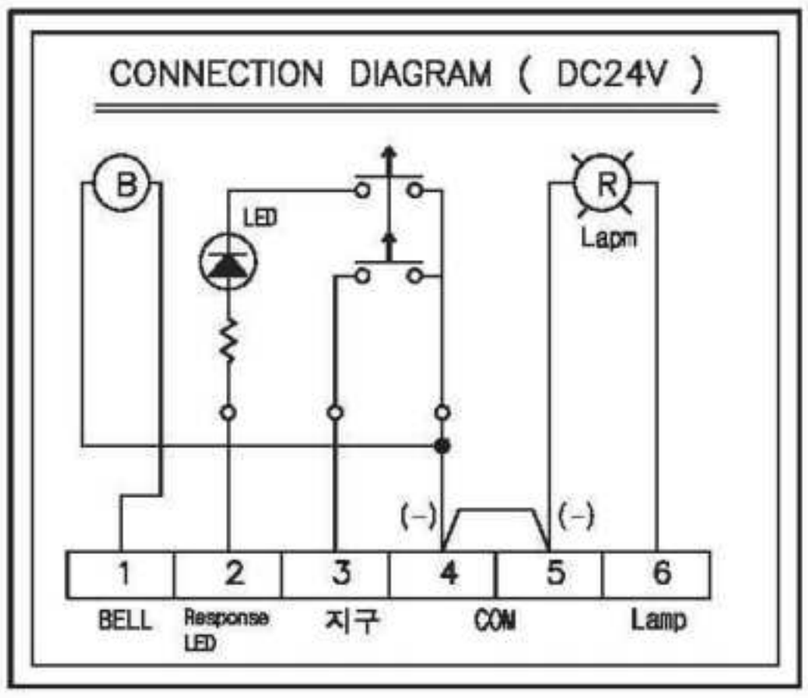




P Type 1Class







P Type 2Class

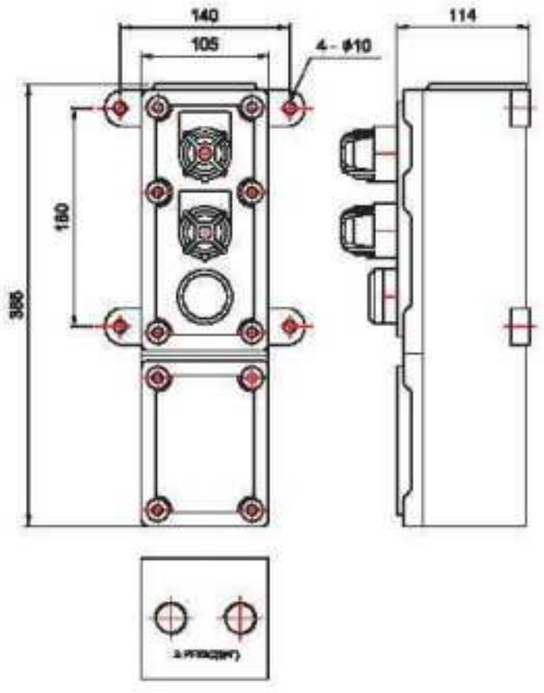
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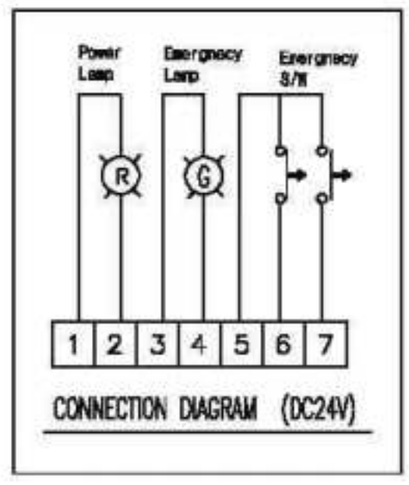
Rated Voltage	Type	Rated Current			Materials		Weight (kg)
		Sender	Alarm Bell	Indicator Lamp	Body	Gong	
DC24V	P Type 1Class	Applying an Electric Current : (DC24V) Max. 1A	Max. 50mA	LED 30mA	Cast Aluminum Alloy	Brass	8
	P Type 2Class						

Flameproof Type Alarm Manual Station

Ex d IIB+H_2 T6







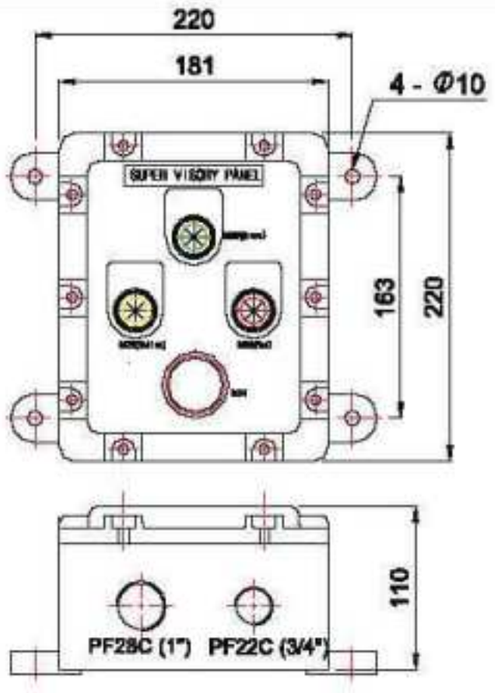
Data

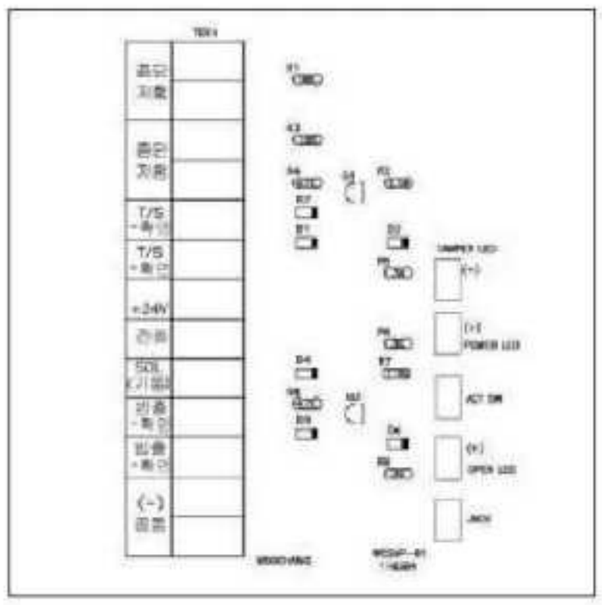
Rated Voltage	Model Number	Rated Current		Weight (kg)	Material
		Switch	Indicator Lamp		
FMS	DC24V	1A (DC 24V)	LED 30mA	5	Cast Aluminum Alloy

Flameproof Type Super Visory Panel

Ex d IIB+H_2 T6 IP65







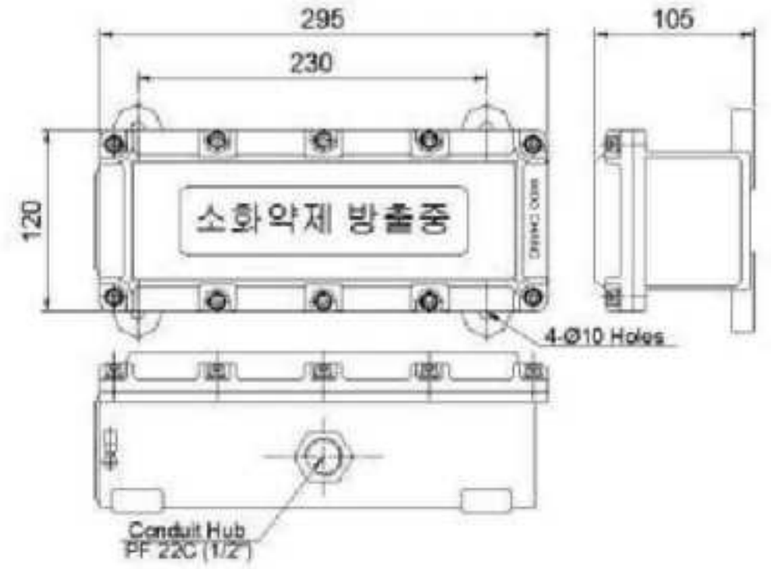
Data

Rated Voltage	Model Number	Rated Current		Weight (kg)	Material
		Switch	Indicator Lamp		
SVP	DC24V	1A (DC 24V)	LED 30mA	9	Cast Aluminum Alloy

Flameproof Type Discharge Indicators

Ex d IIB+H_2 T6





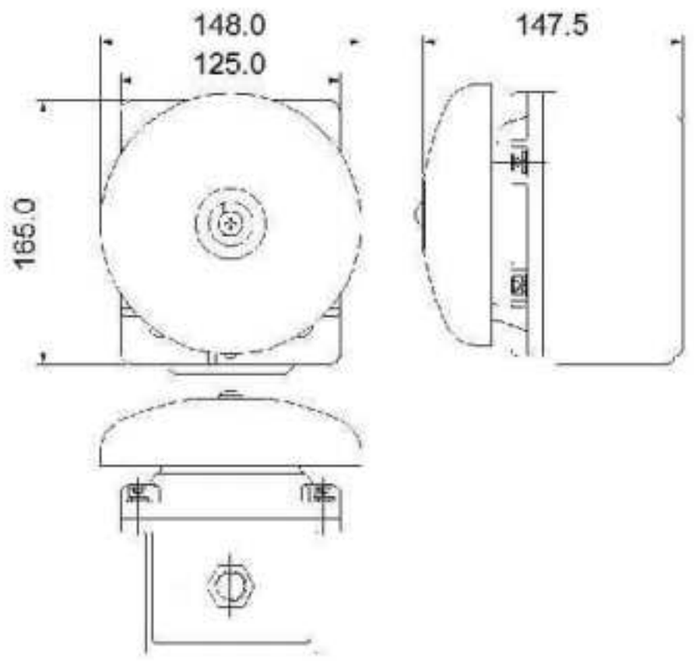
Data

Max. Rating	Model Number	Kind of Lamps	Weight (kg)	Materials	
				Body	Glass
DC24V / 100mA	FUFL	High Frequency Luminance LED	3.5	Cast Aluminum Alloy	Heat Resistant Hard Glass

Flameproof Type Bell Signals

Ex d IIB+H_2 T6





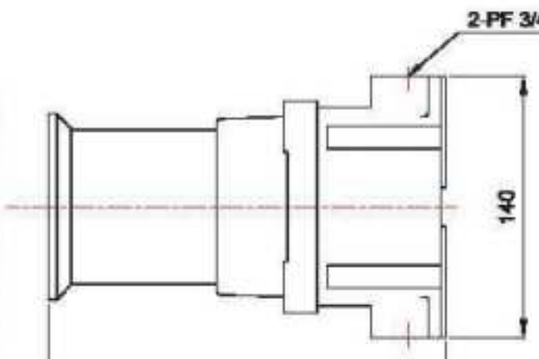
Data

Max. Rating	Model Number	Sound Level (dB)	Materials	
			Body	Gong
AC 220V	KEXSB-22	90 or More	Cast Aluminum Alloy	Brass
AC110V	KEXSB-11			
DC24V	KEXSB-24			

Flameproof Type Horn Speakers

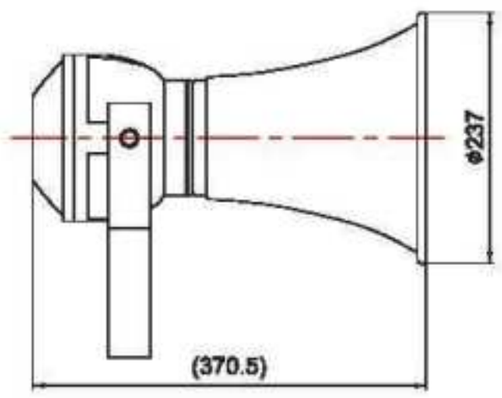
Ex d IIC T6





FP-FHS-10





FP-FHS-25

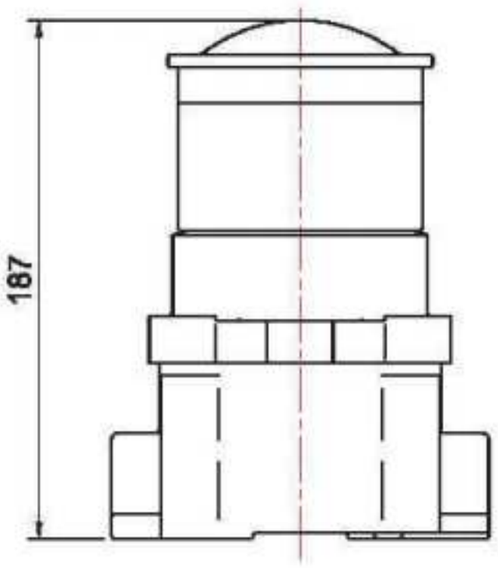
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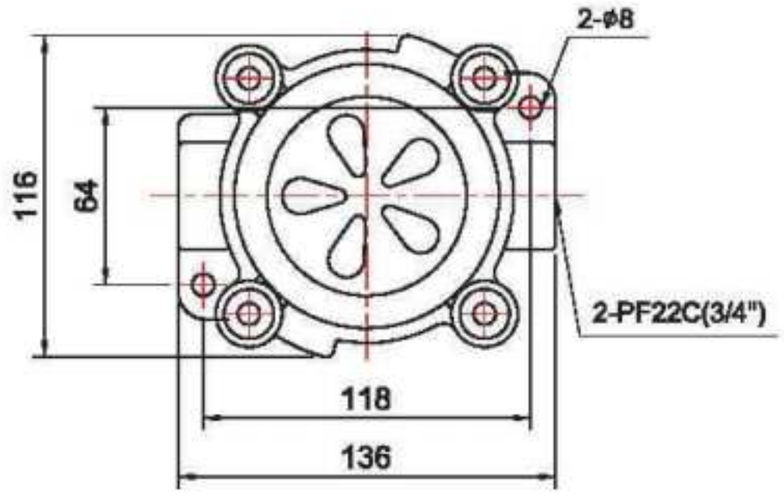
Max. Rating	Model Number	Weight (kg)	Material
5~10W / 8 Ω	FP-FHS-10	2.4	Cast Aluminum Alloy
15~25W / 8 Ω	FP- FHS-25	4.4	

Flameproof Type Horn Signal

Ex d IIB+H_2 T6







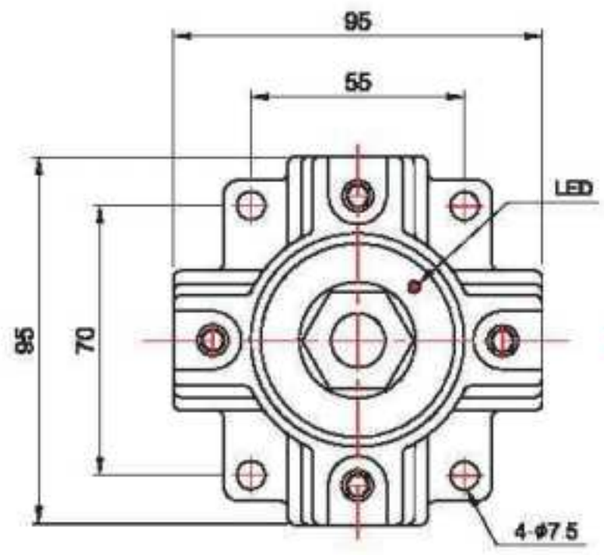
Data

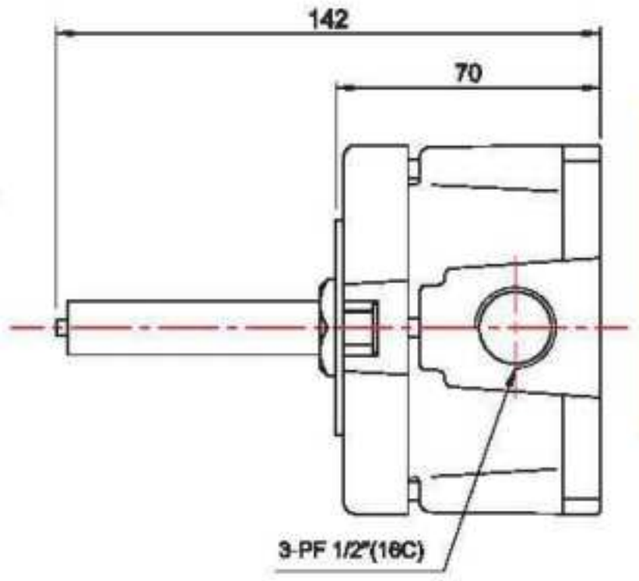
Max. Rating	Model Number	Sound Volume	Quality	Weight (kg)	Material
DC24V 3A	FP - FKEX	90dB /1m	Hi - Low	2	Cast Aluminum Alloy

Flameproof Type Temperature Detectors

Ex d IIB+H_2 T6







Materials
Body:
Cast Aluminum Alloy

Detector:
Brass, Ni-Plated

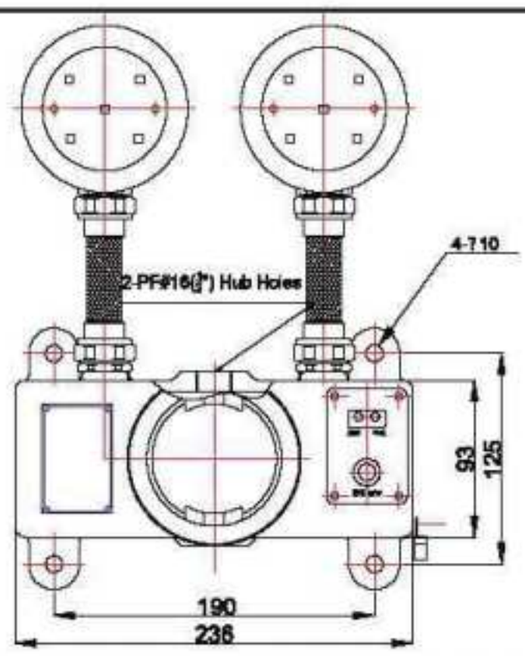
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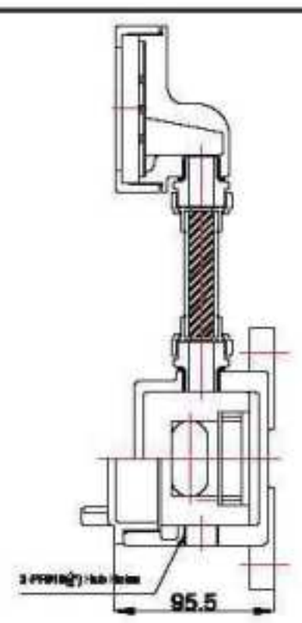
Max. Rating	Model Number	Temp.	Operating Principles	Sensing Area		Weight (kg)
				Installation Height 4m	Installation Height 4~8m	
DC24V	FD-90	90°C	Barrel Expansions Type, Electronic Type	70m²	35m²	0.8

Flameproof Type Emergency LED Lighting Fixture

Ex d IIC T6 IP65







■ Data

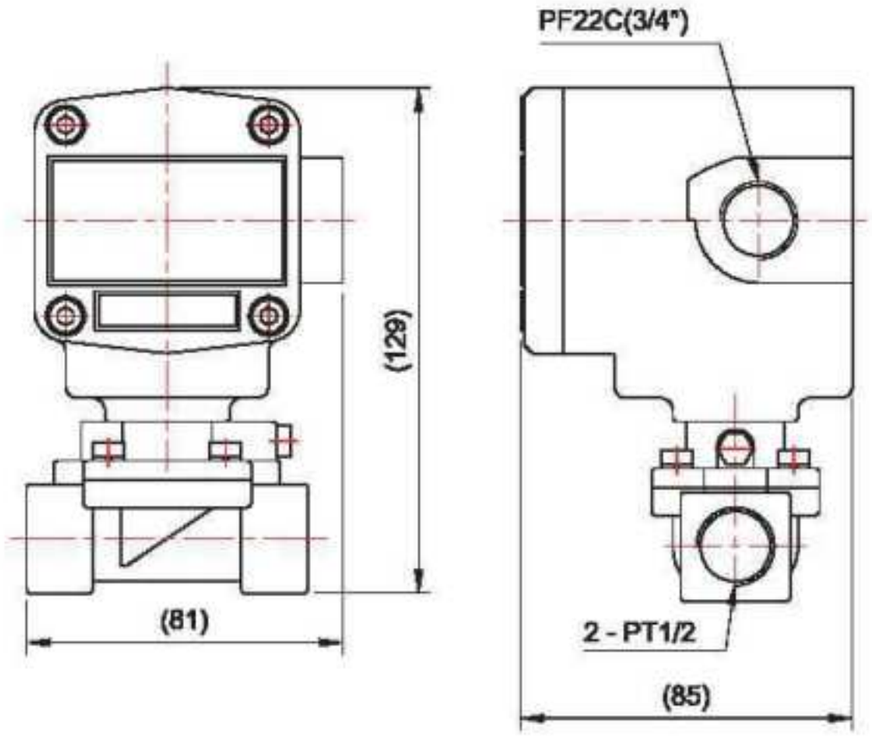
Max. Rating	Model Number	Kind of Lamps
AC220V / 5.7mA	WCF-FEL-LED	LED Lamp 4.8V / 3W × 2

Descriptions	Materials
Body	Cast Aluminum Alloy
Light Cover	Cast Aluminum Alloy
Globe	Heat Resistant Hard Glass

Flameproof Type Solenoid Valve Box

Ex d IIB+H_2 T6





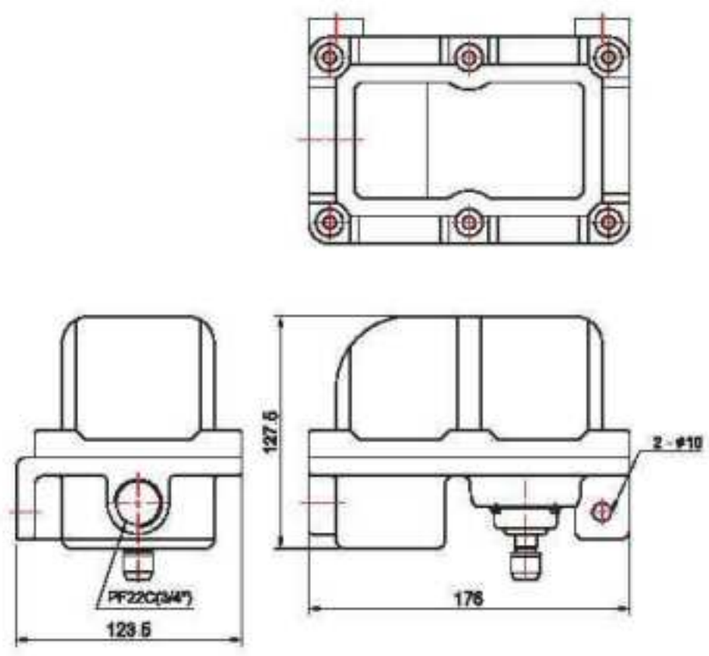
Data

Max. Rating	Model	Pressure (kg/cm²)	Weight (kg)	Material
AC220V, DC24V	FP-FSS	0.3~20	1.2	Die Cast Aluminum Alloy

Flameproof Type Pressure Switch Box

Ex d IIB+H_2 T6





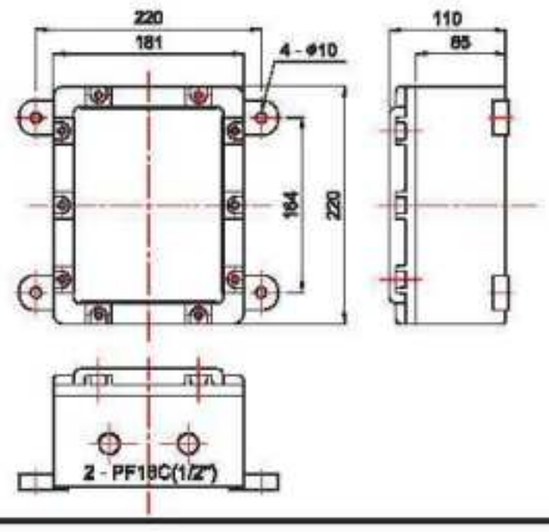
Data

Max. Rating	Model	Pressure (kg/cm²)	Weight (kg)	Material
AC 220V DC24V	FP-FPS	1~10	3	Die Cast Aluminum Alloy

Flameproof Type Line Type Pneumatic Rate of Rise Heat Detector

Ex d IIB + H_2 T6 IP65





Material
Cast Aluminum Alloy

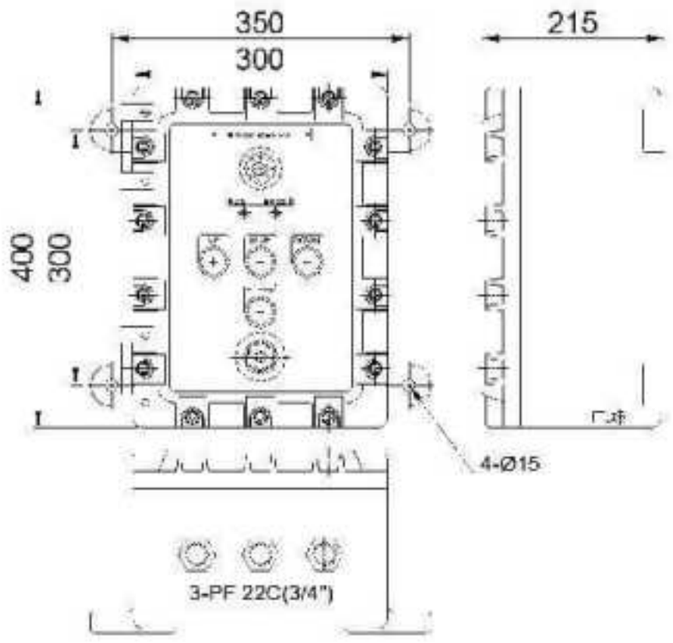
Data

Rated Voltage	Model Number	Capacity of Contact	Weight (kg)	Environmental Contact		Pneumatic Tube Caliber	
				Temperature	Humidity	External Dimension	Inside Dimension
DC24V	FDD	100mA (DC 24V / 65mA)	9	- 10~50C°	~85 %RH	Ø: 2.0	Ø: 1.4
						Length: 20m~100m	

Flameproof Type Interlock Controller

Ex d IIB+H_2 T6





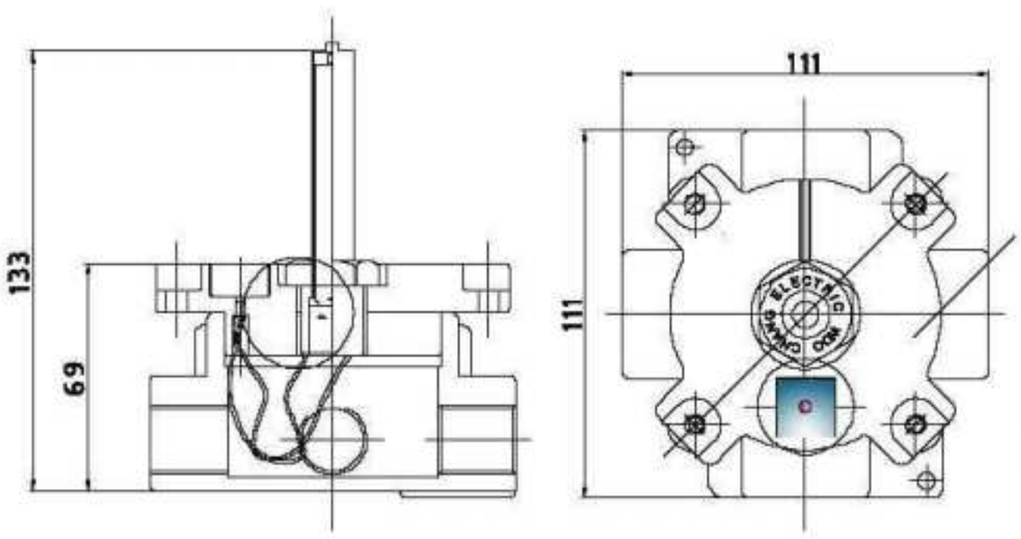
Data

First Voltage	AC 220V/380V
Second Voltage	DC 24V
Primary Power	Airtight Type Ni-cd Condenser
Temperature	-20 °C~ 40° C
Quantity	DC 24V Parallel max. 10EA
Material	Die Cast Aluminum Alloy

Flameproof Type Rate of Rise Spot Type Heat Detector

Ex d IIC T6





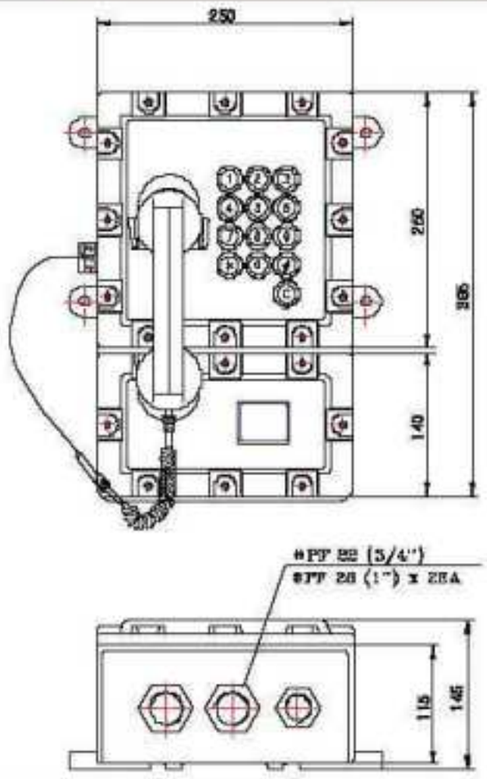
Data

Rated Voltage	DC 24V,30μA
Model Number	WC-RORD
Material	Die Cast Aluminum Alloy

Flameproof Type Telephone

Ex dib IIB T6





Data

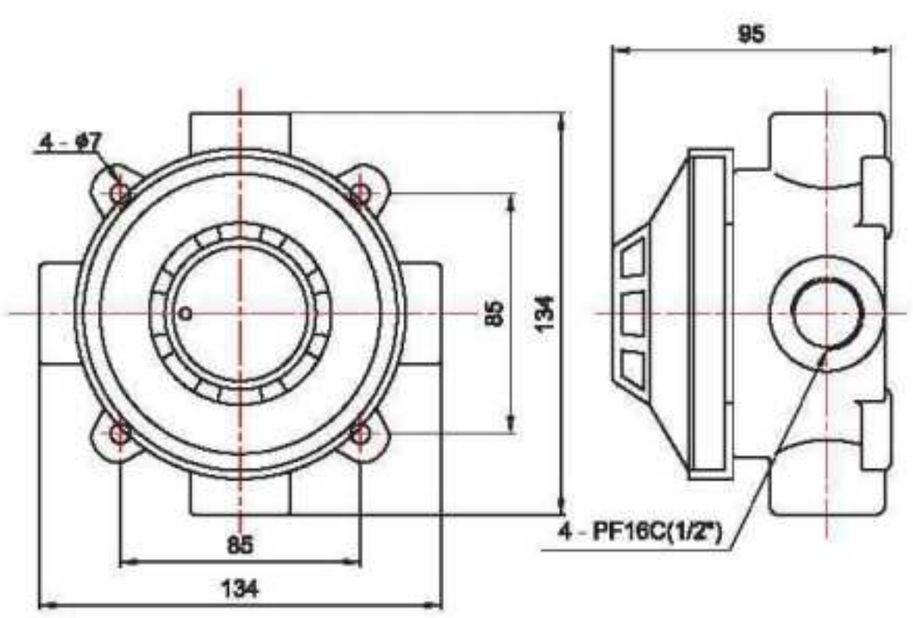
Rated Voltage	DC24V
Input(dB)	-60dB
Output(dB)	0dB
Signal Frequency	1khz±10dB
Size	250(W) X 395(H) X 145(D)
Material	Cast Aluminum Alloy

Flameproof Type Projected Beam Smoke Detector

Ex d IIC T6







Data

Max. Rating	DC24V / 60mA
Weight (kg)	-
Material	Die Cast Aluminum Alloy

Flameproof Type Flame Detectors

Ex d IIC T6

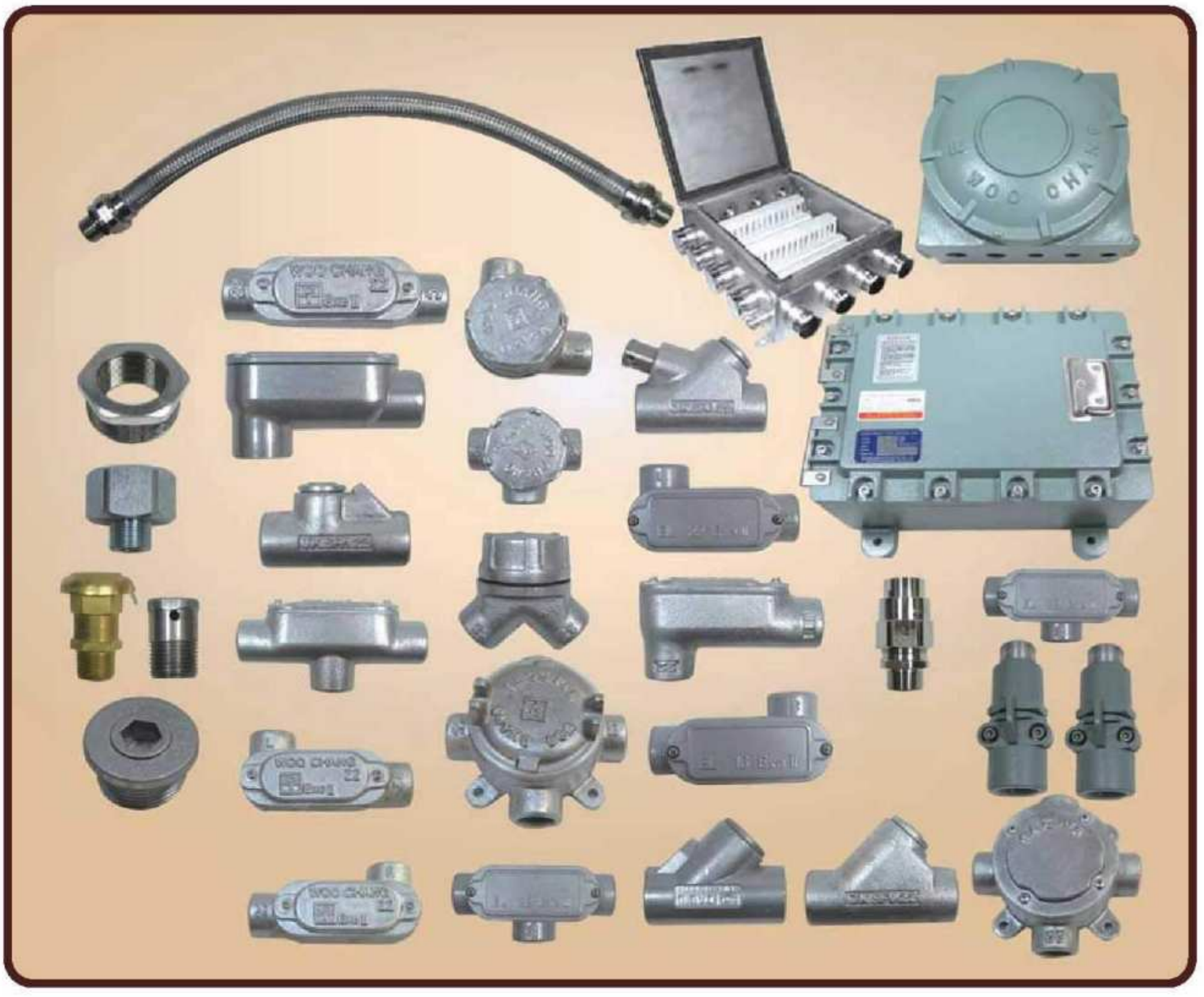


Data

Max. Rating	DC24V / 85mA	
Detection Distance	30M, 50M	
Environmental Contact	Temperature	Humidity
	-40~80C°	85%RH
Size	Ø75 * 58mm(L)	
Weight (g)	500	
Material	Die Cast Aluminum Alloy	

PART 5

JUNCTION BOX & FITTING



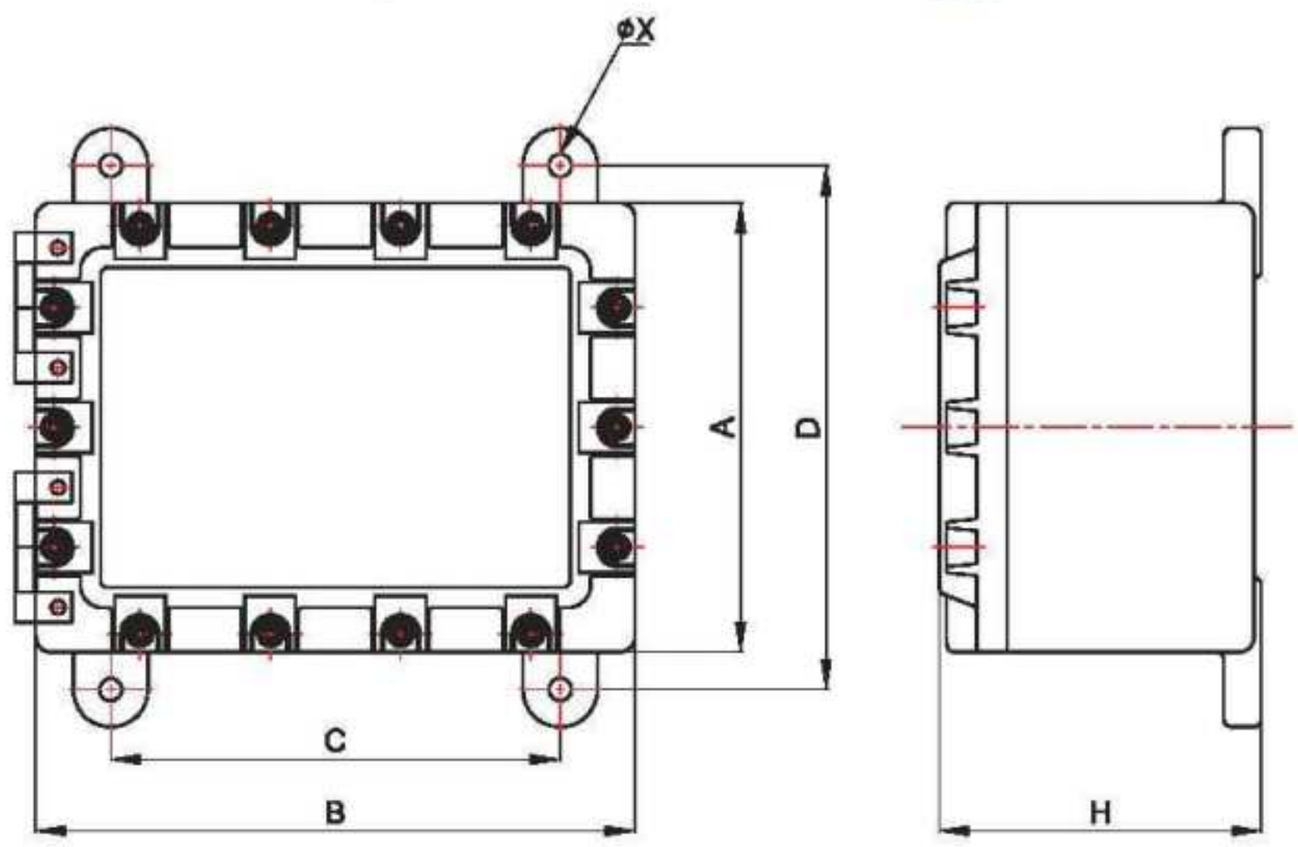
JUNCTION BOX & FITTING

Product Picture	Product Name	Page	Product Picture	Product Name	Page
	Flameproof Type Junction Boxes (IIB)	5-1		Increased Safety Type Elbows and Tees (Aluminum)	5-10
	Flameproof Type Junction Boxes (IIC)	5-2		Flameproof Type Round Junction Boxes	5-11
	Increased Safety Junction Boxes (stainless steel)	5-3		Increased Safety Type Round Junction Boxes	5-12
	Flameproof Type Packing Cable Glands (SS)	5-4		Flameproof Type Union Couplings	5-13
	Flameproof Type Packing Cable Glands (CG)	5-5		Flameproof Type Adapters and sockets	5-14
	Flameproof Type Packing Cable Glands (GC)	5-6		Flameproof Type Sealing Fittings	5-15
	Flameproof Type Flexible Fittings	5-7		Flameproof Type Sealing Fittings (Aluminum)	5-16
	Flameproof Elbows and Tees (XB, XL, XT)	5-8		Sealing Compound	5-17
	Increased Safety Type Elbows and Tees	5-9		Flameproof Type Accessorys	5-18

Flameproof Type Junction Boxes(IIB)

Ex d IIB+H_2 T6 IP65
Ex tD A21 T85℃ IP65





Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

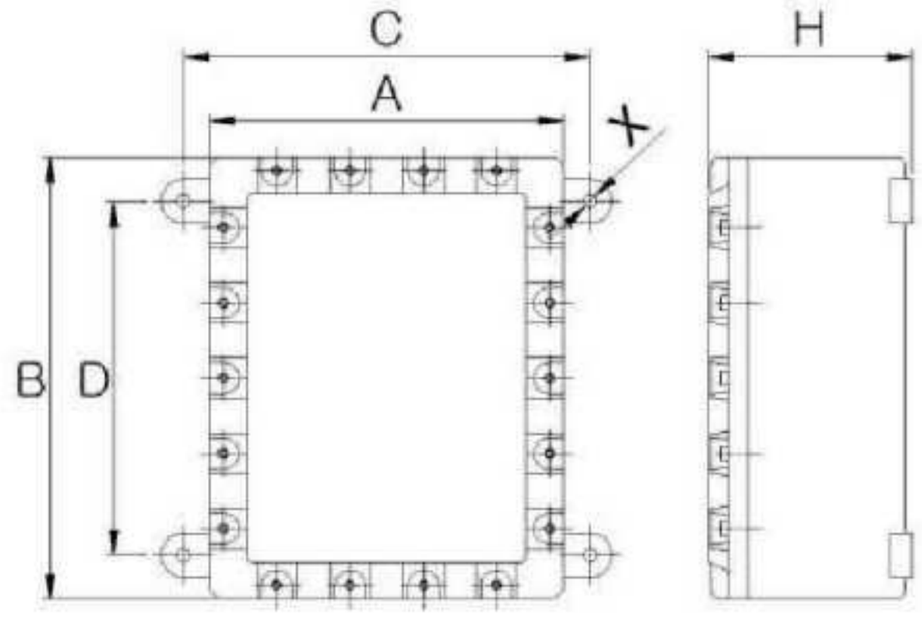
Features

- Ground joint cover opening provides maximum opening for pulling wires or mounting equipment.
- Walls of selected bodies may be drilled and tapped for conduit entries
- Flat cover provides additional space for mounting a greater number of control devices

Flameproof Type Junction Boxes(IIB)

Ex d IIB+H_2 T6 IP65

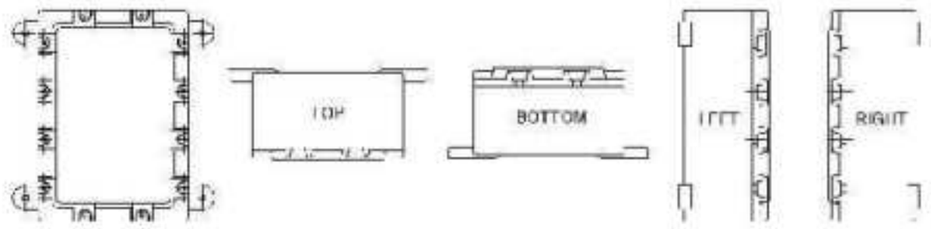
Ex tD A21 T85℃ IP65



Data

Model	Box Size	Max.T/B (20A)	Cover M30x1.5P	Dimension(mm)					
				A	B	C	D	ØX	H
FCJB	150x220x132	10P	3	150	220	185	165	10	130
	180x220x135	12P	3	180	220	220	160	10	130
	220x230x136	15P	6	220	230	255	187	10	135
	200x300x150	20P	7	220	300	245	245	10	150
	220x330x130	20P	8	220	330	255	280	12	135
	250x350x150	30P	9	250	350	290	270	10	160
	250x500x180	40P	12	250	500	295	300	10	150
	300x300x195	30P	9	300	300	340	240	12	200
	300x400x210	40P	15	300	400	350	300	12	210
	310x420x150	40P	15	310	420	340	360	12	150
	300x500x230	50P	18	300	500	355	415	12	230
	350x450x230	50P	15	350	450	410	350	12	240
	340x500x210	50P	18	340	500	380	370	12	205
	400x400x260	40P	16	400	400	460	300	12	260
	400x500x225	60P	24	400	500	460	400	15	235
	400x600x235	80P	32	400	600	460	500	15	235
	400x700x260	100P	38	400	700	475	570	15	260
	500x500x230	100P	36	500	500	560	400	15	230
	500x600x260	120P	48	500	600	550	500	15	260
	500x700x290	120P	54	500	700	565	595	15	290
	600x600x255	140P	64	600	600	660	495	15	280
	600x700x300	180P	72	600	700	660	560	15	300
	600x800x300	180P	88	600	800	660	660	18	300
	700x1000x310	200P	126	700	1000	770	850	20	310

Max. size Hubs that can be used

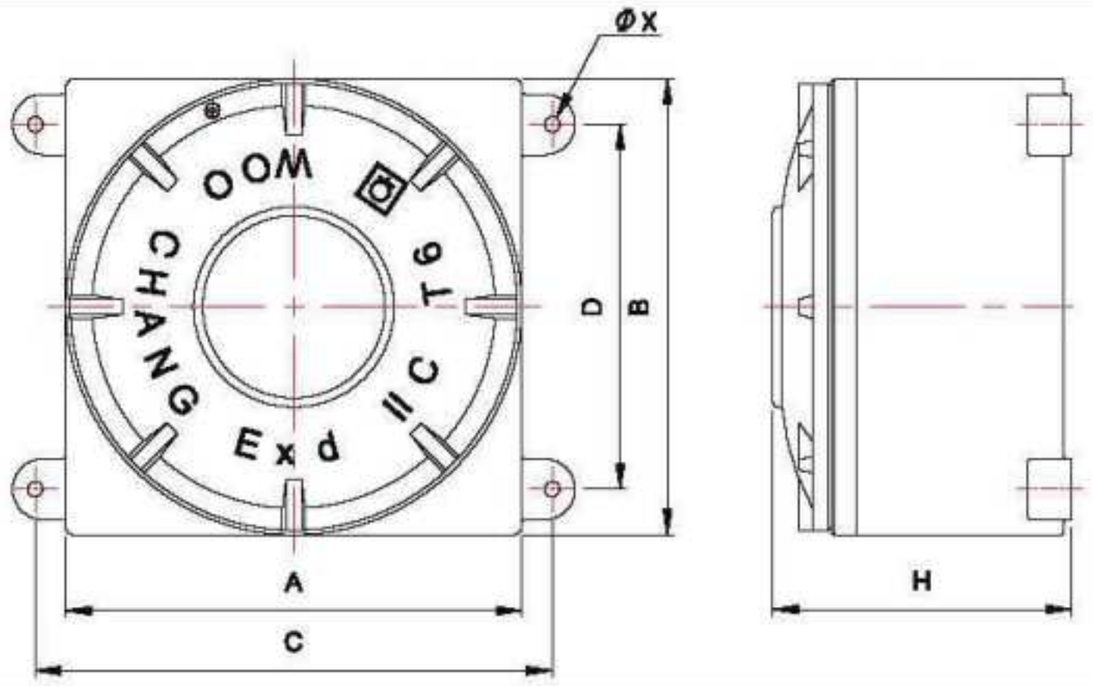


Box Size	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½"(16C) M20	¾"(22C) M25	1"(28C) M32	1¼"(36C) M40	1½"(42C) M50	2"(54C) M63	2½"(70C) M75	3"(82C) M90	4"(104C) M110
150*220*132	Top & Bottom	3	2	2	1	1	1	-	-	-
	Left & Right	5	3	3	2	2	1	1	-	-
180*220*135	Top & Bottom	5	3	2	2	-	-	-	-	-
	Left & Right	5	3	2	2	-	-	-	-	-
220*230*136	Top & Bottom	5	3	3	2	2	2	1	-	-
	Left & Right	5	4	3	2	2	2	1	-	-
200*300*150	Top & Bottom	5	4	3	2	2	2	1	-	-
	Left & Right	7	7	4	3	3	3	2	-	-
220*330*130	Top & Bottom	4	4	3	3	2	1	-	-	-
	Left & Right	6	5	5	4	3	2	-	-	-
250*350*150	Top & Bottom	6	6	5	3	3	2	1	-	-
	Left & Right	10	9	7	4	3	3	2	-	-
250*500*180	Top & Bottom	6	5	4	3	2	2	1	-	-
	Left & Right	12	11	6	5	5	4	3	-	-
300*300*195	Top & Bottom	10	9	7	4	3	3	2	2	-
	Left & Right	10	9	7	4	3	3	2	2	-
300*400*210	Top & Bottom	10	9	7	4	3	3	2	2	-
	Left & Right	14	13	11	5	4	4	3	3	-
310*420*150	Top & Bottom	8	7	4	3	3	2	2	-	-
	Left & Right	11	9	5	4	4	3	3	-	-
300*500*230	Top & Bottom	10	10	7	5	5	3	2	2	-
	Left & Right	18	18	13	9	9	5	3	3	-
350*450*230	Top & Bottom	13	12	10	5	5	4	2	2	-
	Left & Right	17	15	12	7	6	5	3	3	-
340*500*210	Top & Bottom	13	12	10	5	5	4	2	2	-
	Left & Right	18	16	13	8	6	5	3	3	-
400*400*260	Top & Bottom	20	16	7	7	7	7	4	3	-
	Left & Right	20	16	7	7	7	7	4	3	-
400*500*225	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	18	16	13	6	6	5	4	3	-
400*600*235	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	22	20	16	7	7	6	4	4	-
400*700*260	Top & Bottom	14	13	11	5	4	4	3	2	-
	Left & Right	26	23	19	8	8	6	5	4	-
500*500*230	Top & Bottom	18	16	13	6	6	5	4	3	-
	Left & Right	18	16	13	6	6	5	4	3	-
500*600*260	Top & Bottom	26	23	13	11	9	7	4	3	-
	Left & Right	32	29	15	13	11	9	5	4	-
500*700*290	Top & Bottom	27	24	20	11	11	9	7	3	-
	Left & Right	35	35	29	17	15	11	9	4	-
600*600*255	Top & Bottom	32	26	15	13	13	6	-	4	3
	Left & Right	32	26	15	13	13	6	5	4	3
600*700*300	Top & Bottom	28	24	18	12	10	8	6	4	2
	Left & Right	32	28	21	15	12	9	7	4	2
600*800*300	Top & Bottom	15	15	7	6	6	5	4	3	-
	Left & Right	21	21	10	8	8	7	6	5	-
700*1000*310	Top & Bottom	18	18	9	8	7	6	4	4	-
	Left & Right	27	27	13	11	10	9	6	5	-

Flameproof Type Junction Boxes (IIC)

Ex d IIC T6 IP65





Data

Model	Box Size	Max. T/B (20A)	Dimensions(mm)					
			A	B	C	D	ØX	H
FJG-10	165x178x150	10P	165	178	200	145	10	150
FJG-20	190x205x180	20P	190	205	220	170	10	180
FJG-40	300x300x200	40P	300	300	335	235	10	200
FJG-60	400x500x240	60P	400	500	460	400	15	240
FJG-100	500x550x260	80P	500	550	550	440	15	260

Max. size Hubs That Can be Used

Box Size	Hub Type	Max HUB Q'TY(PF, NPT, M)									
		½" (16C) M20	¾" (22C) M25	M30	1" (28C) M32	1¼" (36C) M40	1½" (42C) M50	2" (54C) M63	2½" (70C) M75	3" (82C) M90	4" (104C) M110
165x178x150	Left & Right	5	4	3	3	2	2	1	1	-	-
	Top & Bottom	4	3	2	2	1	1	1	-	-	-
190x205x180	Left & Right	8	5	4	4	3	2	1	1	1	-
	Top & Bottom	5	5	4	4	3	2	1	1	1	-
300x300x195	Left & Right	10	9	7	7	4	3	3	2	2	-
	Top & Bottom	10	9	7	7	4	3	3	2	2	-
400x500x230	Left & Right	13	11	13	7	5	3	3	-	-	-
	Top & Bottom	13	11	11	7	5	3	3	-	-	-
500x550x290	Left & Right	20	14	17	11	8	5	5	-	-	-
	Top & Bottom	20	14	15	11	8	5	5	-	-	-

Materials Data

Descriptions	Materials
Body	Cast Aluminum Alloy
Cover	Cast Aluminum Alloy

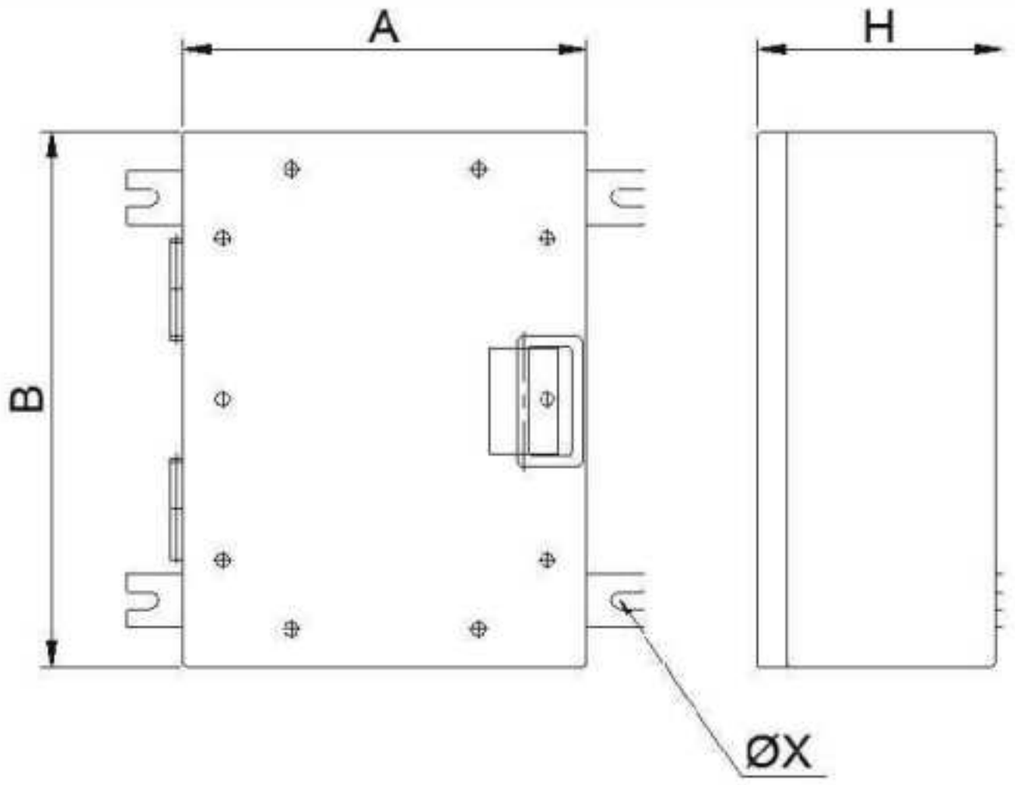
Features

- Threaded contruction throughout permits use in hazardous areas.
- Wide variety of conduit hub arrangements.
- Hubs provide integral bushings.
- Covers are sealed with optional "O" ring gasket when water-tight enclosures are required.

Increased Safety Junction Boxes (Stainless Steel)

Ex e II T5 IP65





Data

Max. Rating	Model Number	Size	Max. T/B (15A)	Dimensions(mm)			
				A	B	ØX	H
AC600V	WJB-40	300×400×200	40P	300	400	12	200
	WJB-60	400×500×200	60P	400	500	15	200
	WJB-100	400×600×200	80P	400	600	15	200

Max. size Hubs that can be used

Model Number	Connection Hub Type	Max HUB Q'TY (PF, NPT, M)								
		½"(16C) M20	¾"(22C) M25	1"(28C) M32	1¼"(36C) M40	1½"(42C) M50	2"(54C) M63	2½"(70C) M75	3"(82C) M90	4"(104C) M110
WJB-40	Left & Right	14	13	**11**	5	4	4	-	-	-
	Top & Bottom	10	9	**7**	4	3	3	-	-	-
WJB-60	Left & Right	18	16	**11**	6	6	5	-	-	-
	Top & Bottom	14	13	**11**	5	4	4	-	-	-
WJB-100	Left & Right	22	20	**16**	7	7	6	-	-	-
	Top & Bottom	14	13	**11**	5	4	4	-	-	-

Materials Data

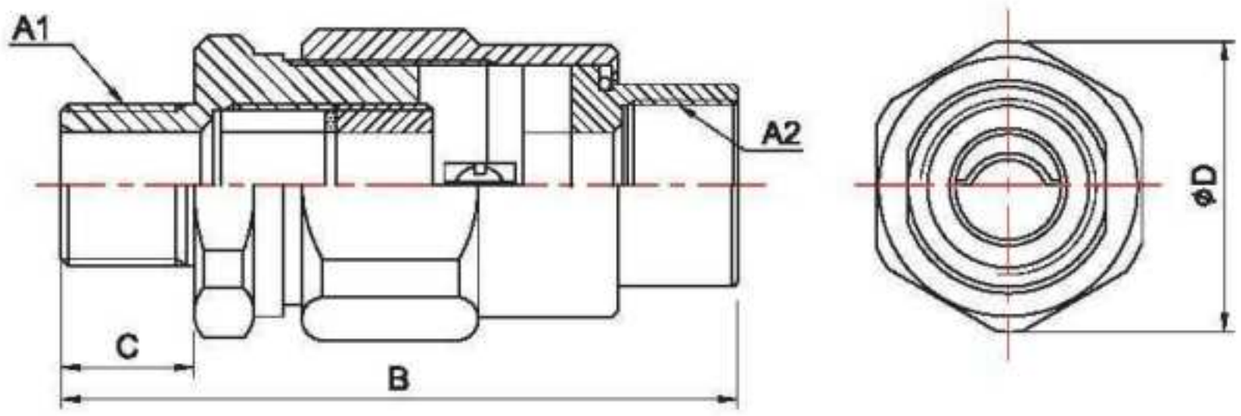
Descriptions	Materials
Body	Stainless Steel
Cover	Stainless Steel

Flameproof Type Packing Cable Glands (SS)

Ex d IIC IP66



SS



Data

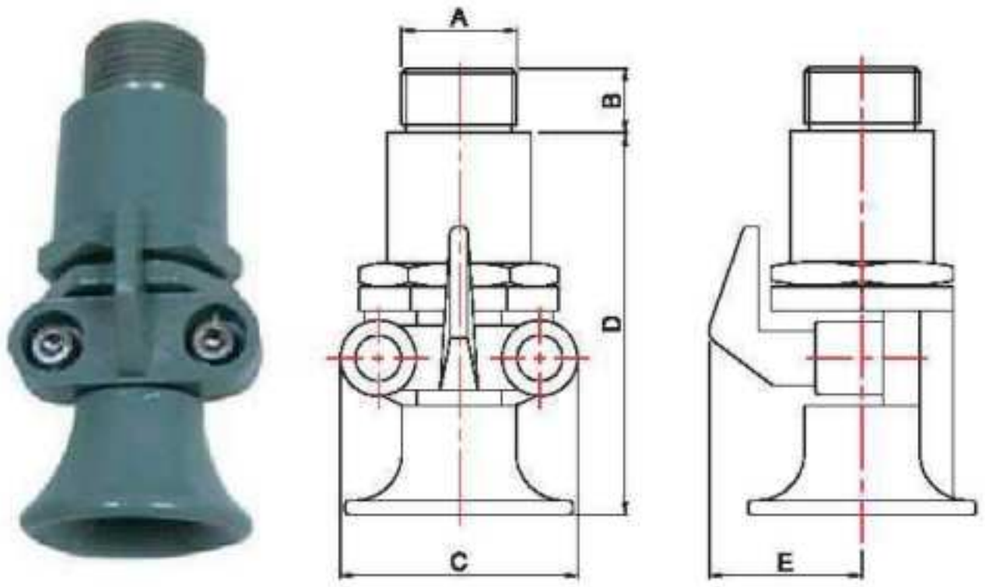
Model Number	Cable Size	Weight (kg)	Hub Size (PF)		Dimensions(mm)		
			A1	A2	B	C	D
SS-16	7~11	0.27	16 (1/2")	16 (1/2")	76	16	37
SS-22	10~15	0.36	22 (3/4")	22 (3/4")	80	16	41
SS-28	14~20	0.57	28 (1")	28 (1")	92	20	50
SS-36	18~22	0.78	36 (1-1/4")	36 (1-1/4")	98.5	21	58.5
SS-42	23~28	1.25	42 (1-1/2")	42 (1-1/2")	110	22	67
SS-54	27~32	2.25	54 (2")	54 (2")	113	26	80
SS-70	41~46	3.91	70 (2-1/2")	70 (2-1/2")	130	31	98

Materials Data

Descriptions	Materials
Body	Brass & Stainless Steel

Flameproof Type Packing Cable Glands (CG & GC)

Ex d IIC IP66

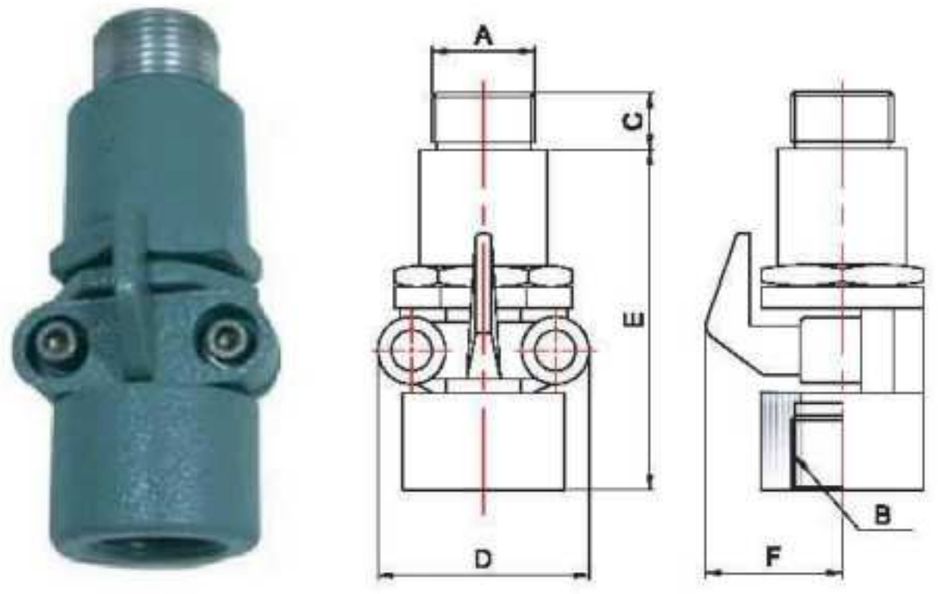


CG

Data

Model Number	Cable Size	Weight (kg)
CG-16	6~8	0.15
CG-22	11~13	0.2
CG-28	18~20	0.28
CG-36	21~23	0.59
CG-42	32~34	0.74
CG-54	43~45	1.3

Hub Size (PF)	Dimensions(mm)			
A	B	C	D(Max)	E
16(1/2")	18	46	58	24
22(3/4")	18.5	48.5	66	26.5
28(1")	23	59	74	28
36(1-1/4")	25	66	87.5	40
42(1-1/2")	26	85	123	50
54(2")	27	93	130	54.5



GC

Data

Model Number	Cable Size	Weight (kg)
GC-16	6~8	0.2
GC-22	11~13	0.25
GC-28	18~20	0.31
GC-36	21~23	0.6
GC-42	32~34	0.75
GC-54	43~45	1.4

Hub Size (PF)		Dimensions(mm)			
A	B	C	D	E(Max)	F
16(1/2")	16 (1/2")	18	46	58	24
22(3/4")	22 (3/4")	18.5	48.5	66	26.5
28(1")	28 (1")	23	59	74	28
36(1-1/4")	36 (1-1/4")	25	66	87.5	40
42(1-1/2")	42 (1-1/2")	26	85	123	50
54(2")	54 (2")	27	93	130	54.5

Materials Data

Descriptions	Material
Body	Cast Aluminum Alloy

Flameproof Type Flexible Fittings

Ex d IIC



Data

Model Number	Hub Size (PF)		Dimensions(mm)				
	Male	Female	A	B	ØD	Ød1	Ød2
FCX-16	16(1/2")	16(1/2")	16	17	38	13.4	20
FCX-22	22(3/4")	22(3/4")	16	17	46	19.1	27.1
FCX-28	28(1")	28(1")	19	21	54	25.4	34.8
FCX-36	36(1-1/4")	36(1-1/4")	20	21	65	32.9	42.1
FCX-42	42(1-1/2")	42(1-1/2")	20	26	78	39.3	49.1
FCX-54	54(2")	54(2")	23	27	98	51.8	63
FCX-70	70(2-1/2")	70(2-1/2")	26	31	100	65.2	78
FCX-82	82(3")	82(3")	30	31	118	76.5	92
FCX-104	104(4")	104(4")	30	31	154	101	121

Materials Data

Descriptions	Materials
Flexible Tube	Stainless Steel
End Fittings	Brass , Stainless Steel
Finish	Ni-Plated Chromate Finish

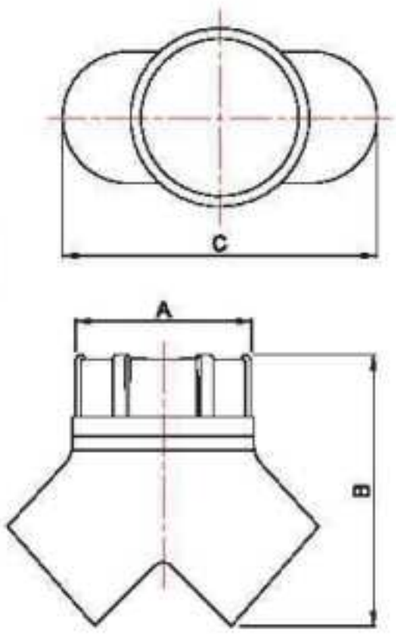
 All product specifications in this catalog are subject to change without any prior notice.

Flameproof Type Elbows and Tees (XB, XL, XT)

Ex d IIC



XB

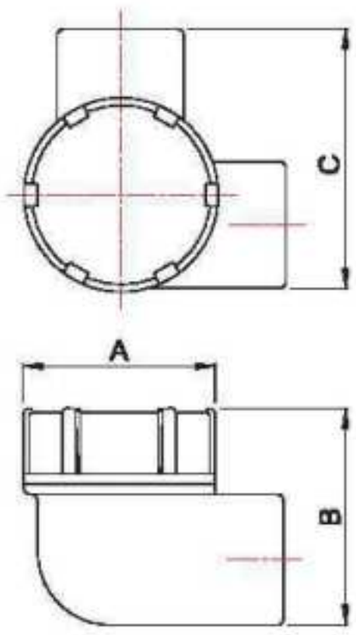


■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
XB-16	16(1/2")	65	63	90	0.8
XB-22	22(3/4")	65	73	100	0.85
XB-28	28(1")	65	86	114	1.05
XB-36	36(1 -1/4")	85	102	133	1.4
XB-42	42(1 -1/2")	85	114	148	1.7
XB-54	54(2")	102	130	165	2.4
XB-70	70(2 -1/2")	138	155	218	4.2
XB-82	82(3")	138	175	237	5.3



XL

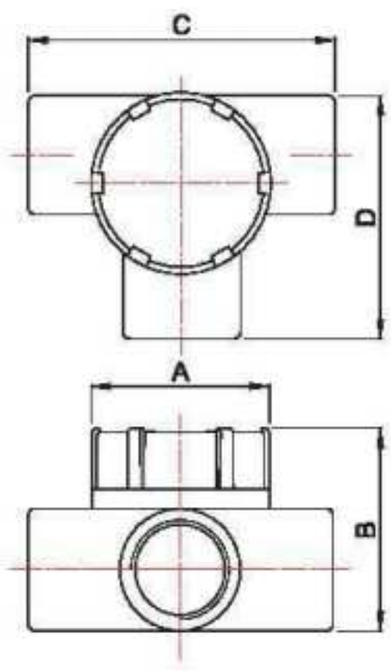


■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
XL-16	16(1/2")	65	56	80	0.85
XL-22	22(3/4")	65	62	82	0.95
XL-28	28(1")	65	70	84	0.1
XL-36	36(1 -1/4")	85	88	105	1.5
XL-42	42(1 -1/2")	85	95	113	1.7
XL-54	54(2")	102	114	130	2.7
XL-70	70(2 -1/2")	138	134	166	4.6
XL-82	82(3")	138	147	180	5.6



XT



■ Data

Model Number	Hub Size (PF)	Dimensions(mm)				Weight (kg)
		A	B	C	D	
XT-16	16(1/2")	65	56	95	80	0.95
XT-22	22(3/4")	65	62	97	82	10.5
XT-28	28(1")	65	70	103	84	1.15
XT-36	36(1 -1/4")	85	88	125	105	1.7
XT-42	42(1 -1/2")	85	95	142	113	2.0
XT-54	54(2")	102	114	158	130	2.9
XT-70	70(2 -1/2")	138	134	216	166	4.8
XT-82	82(3")	138	147	240	180	6.1

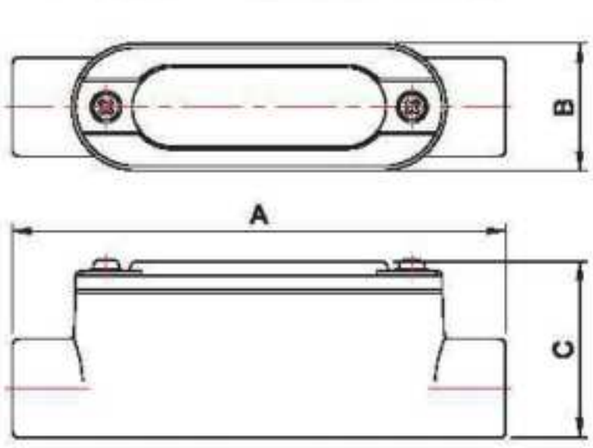
■ Materials Data

Descriptions	Material
Body	Cast Iron (Hot Dip. Galvanized)

Increased Safety Type Elbows and Tees

Ex e II

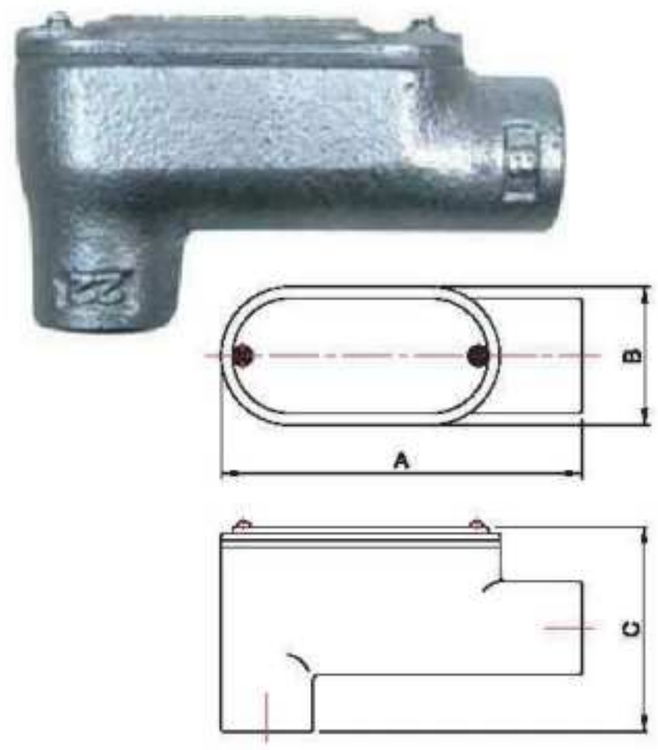




SC

■ Data

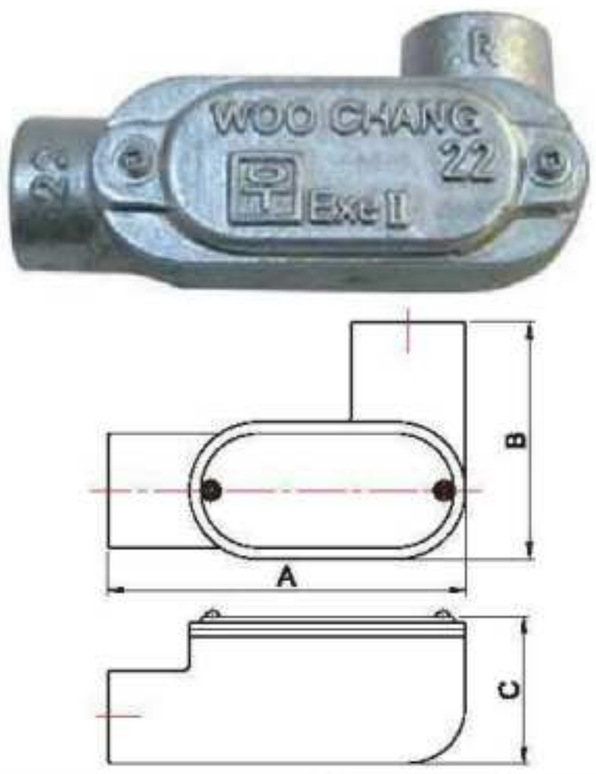
Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
SC-16	16(1/2")	142	38	45	0.6
SC-22	22(3/4")	154	43	49	0.8
SC-28	28(1")	183	56	60	1.2
SC-36	36(1-1/4")	195	65	74	1.5
SC-42	42(1-1/2")	218	71	82	2.2
SC-54	54(2")	245	80	98	3.2
SC-70	70(2-1/2")	275	97	114	5.0
SC-82	82(3")	305	110	128	6.0
SC-104	104(4")	333	135	153	9.0



SB

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
SB-16	16(1/2")	123	38	64	0.6
SB-22	22(3/4")	133	38	74	0.8
SB-28	28(1")	160	45	86	1.2
SB-36	36(1-1/4")	170	56	98	1.5
SB-42	42(1-1/2")	193	76	112	2.2
SB-54	54(2")	215	77	124	3.2
SB-70	70(2-1/2")	249	97	146	5.0
SB-82	82(3")	278	110	159	6.0
SB-104	104(4")	305	133	177	9.0



SR

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
SR-16	16(1/2")	123	60	45	0.6
SR-22	22(3/4")	133	64	51	0.8
SR-28	28(1")	175	81	63	1.2
SR-36	36(1-1/4")	172	91	75	1.5
SR-42	42(1-1/2")	193	101	84	2.2
SR-54	54(2")	217	111	95	3.2
SR-70	70(2-1/2")	247	131	114	5.0
SR-82	82(3")	278	143	128	6.0
SR-104	104(4")	305	165	154	9.0

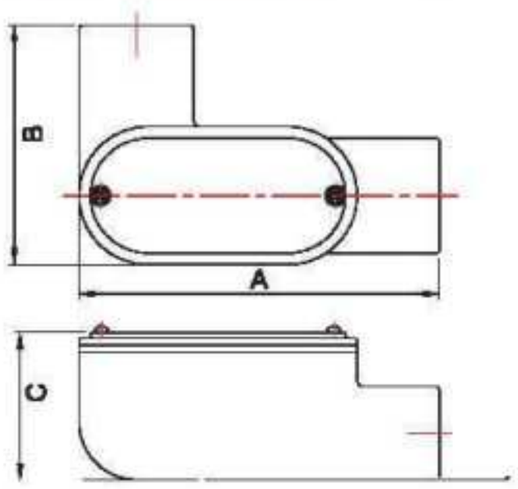
■ Material Data

Descriptions	Material
Body	Cast Iron (Hot Dip. Galvanized)

Increased Safety Type Elbows and Tees

Ex e II



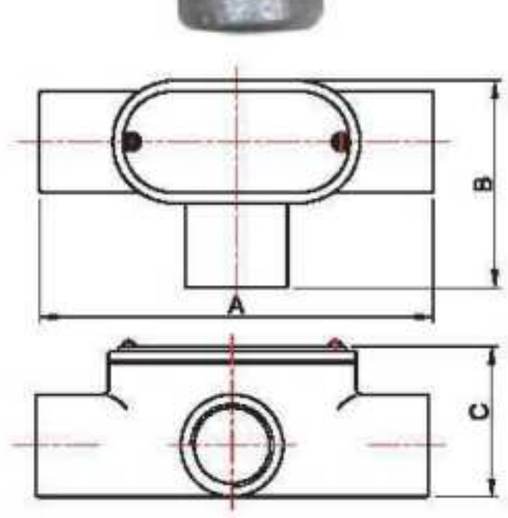


SL

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
SL-16	16(1/2")	123	60	45	0.6
SL-22	22(3/4")	133	64	52	0.8
SL-28	28(1")	160	80	68	1.2
SL-36	36(1-1/4")	172	91	76	1.5
SL-42	42(1-1/2")	193	99	84	2.2
SL-54	54(2")	217	111	95	3.2
SL-70	70(2-1/2")	247	130	114	5.0
SL-82	82(3")	278	142	128	6.0
SL-104	104(4")	305	165	154	9.0



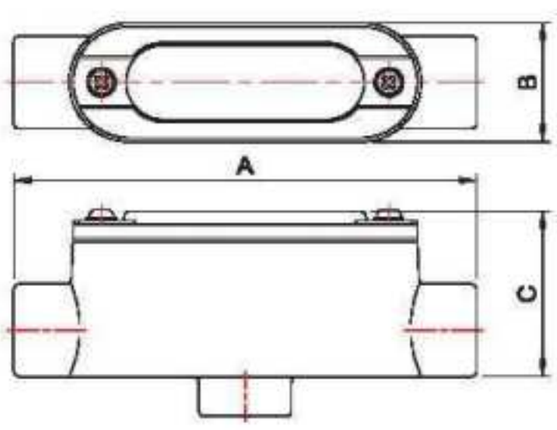


ST

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
ST-16	16(1/2")	142	60	45	0.65
ST-22	22(3/4")	154	64	49	0.9
ST-28	28(1")	183	80	60	1.4
ST-36	36(1-1/4")	195	92	72	1.7
ST-42	42(1-1/2")	218	102	82	2.4
ST-54	54(2")	245	112	98	3.5
ST-70	70(2-1/2")	275	125	114	5.7
ST-82	82(3")	305	138	128	6.8
ST-104	104(4")	333	168	153	10





STB

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	C	
STB-16	16(1/2")	140	38	64	0.65
STB-22	22(3/4")	154	43	72	0.9
STB-28	28(1")	183	56	84	1.4
STB-36	36(1-1/4")	195	65	95	1.7
STB-42	42(1-1/2")	218	71	105	2.4
STB-54	54(2")	245	80	124	3.5
STB-70	70(2-1/2")	275	97	146	-
STB-82	82(3")	305	110	155	-
STB-104	104(4")	333	135	177	-

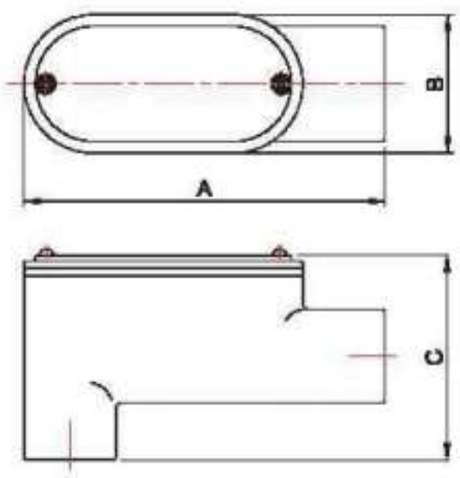
■ Material Data

Descriptions	Material
Body	Cast Iron (Hot Dip. Galvanized)

Increased Safety Type Elbows and Tees (Aluminum)

Ex e II



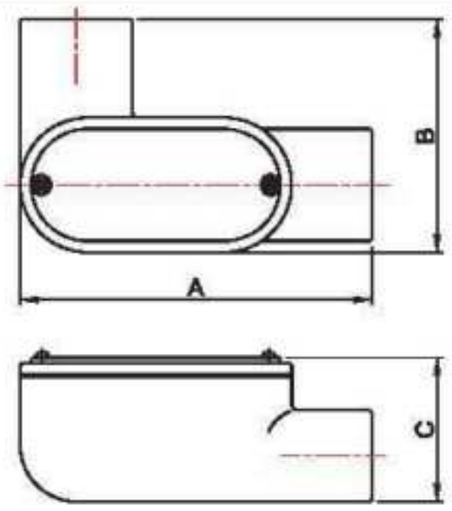


SB

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (g)
		A	B	C	
SB-16	16(1/2")	109	40	58	207
SB-22	22(3/4")	122	46	65.5	262
SB-28	28(1")	142.5	57	77	450
SB-36	36(1-1/4")	170	66	101	779
SB-42	42(1-1/2")	190	73	109	1015
SB-54	54(2")	220	84	123	1548



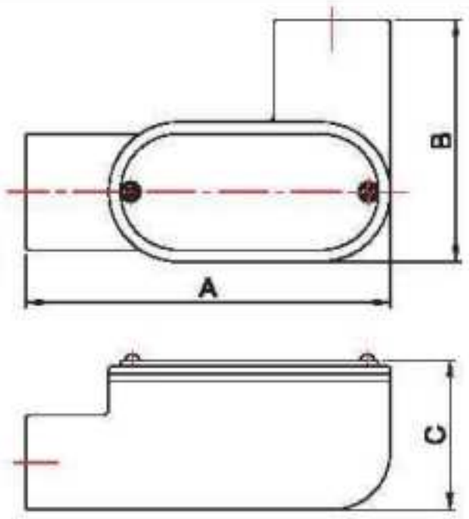


SL

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (g)
		A	B	C	
SL-16	16(1/2")	109	40	56	203
SL-22	22(3/4")	122	46	64	264
SL-28	28(1")	142.5	57	76.5	445
SL-36	36(1-1/4")	169.5	66	92	781
SL-42	42(1-1/2")	192	73	99	1003
SL-54	54(2")	220	84	110	1523



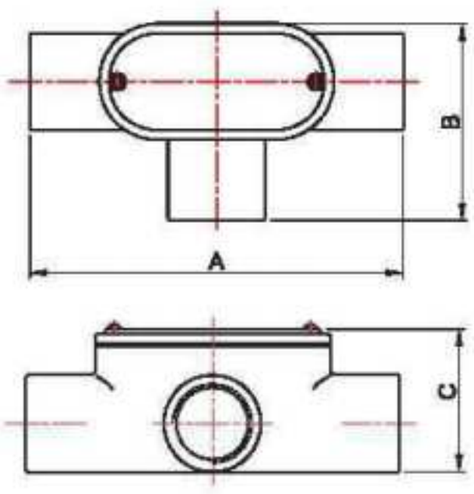


SR

■ Data

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (g)
		A	B	C	
SR-16	16(1/2")	109	56	40	201
SR-22	22(3/4")	122	64	46	261
SR-28	28(1")	142.5	76.5	57	446
SR-36	36(1-1/4")	169	92	66	774
SR-42	42(1-1/2")	190.5	99	73	1002
SR-54	54(2")	221	110	84	1511





ST

■ Data

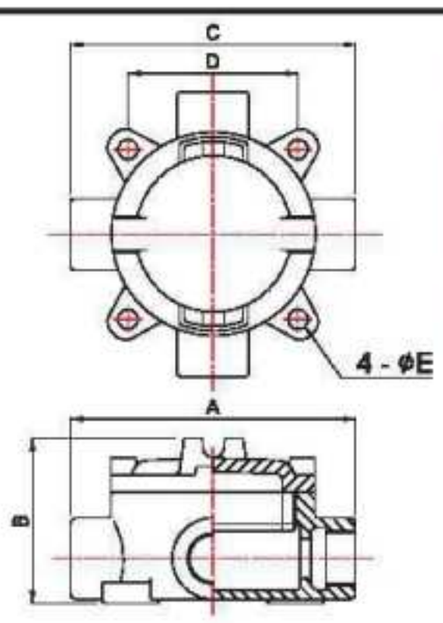
Model Number	Hub Size (PF)	Dimensions(mm)			Weight (g)
		A	B	C	
ST-16	16(1/2")	122	56	43	219
ST-22	22(3/4")	136	64	47.5	286
ST-28	28(1")	158	77	57.5	473
ST-36	36(1-1/4")	194.5	92.5	74	819
ST-42	42(1-1/2")	216	99.5	83	1063
ST-54	54(2")	250	110	96	1625

Flameproof Type Round Junction Boxes

Ex d IIC T6



Four - Way (GA)



■ Material Data

Descriptions	Materials
Body	Cast Iron
Finish	Hot Dip. Galvanized with Stove Enamelled Silver White

■ Data

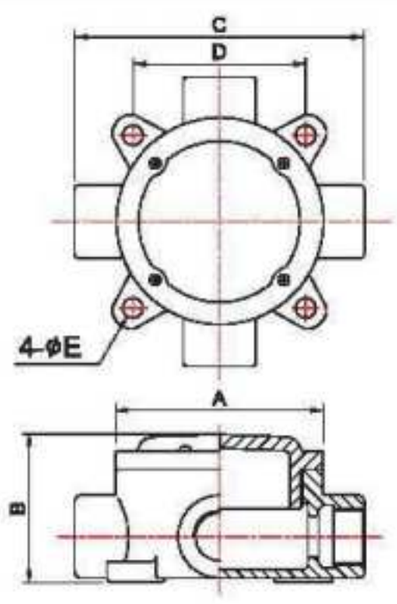
Model Number	Hub Size (PF)	Dimensions(mm)					Weight (kg)
		A	B	C	D	ØE	
GA-16	16(1/2")	95	69	134	85	7	1.8
GA-22	22(3/4")	95	75	134	85	7	1.9
GA-28	28(1")	95	83	138	85	7	1.9
GA-36	36(1-1/4")	125	100	170	106	9	3.1
GA-42	42(1-1/2")	125	107	170	106	9	3.1
GA-54	54(2")	160	135	228	142	10	6.4
GA-70	70(2-1/2")						

Increased Safety Type Round Junction Boxes

Ex e II



Four - Way (SB)



■ Material Data

Descriptions	Materials
Body	Cast Iron
Finish	Hot Dip. Galvanized with Stove Enamelled Silver White

■ Data

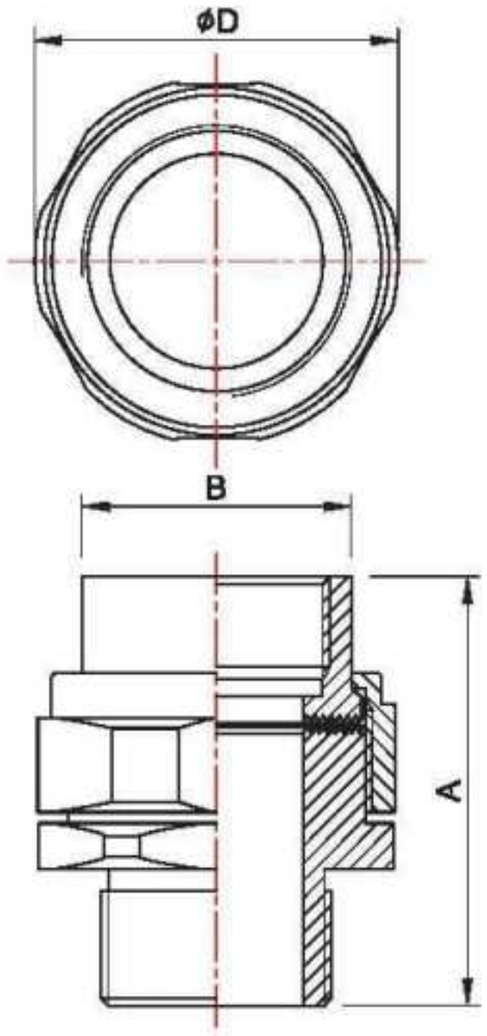
Model Number	Hub Size (PF)	Dimensions(mm)					Weight (kg)
		A	B	C	D	ØE	
SB F16	16(1/2")	95	59	134	83	7	1.8
SB F22	22(3/4")	95	63	134	83	7	1.8
SB F28	28(1")	95	76	138	83	7	2.0
SB F36	36(1-1/4")	125	85	170	83	9	3.4
SB F42	42(1-1/2")	125	95	170	83	9	3.8
SB F54	54(2")	160	118	228	83	10	5.4
SB F70	70(2-1/2")						

Flameproof Type Union Couplings

Ex d IIC

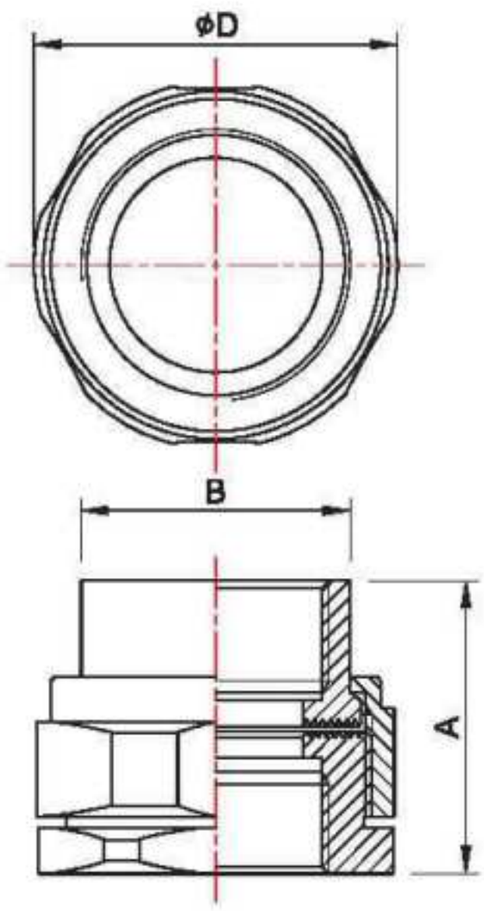


Unions Male Type





Unions Female Type



Data (Male)

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	ØD	
UX-10	16(1/2″)	51	26	39	0.33
UX-11	22(3/4″)	54	31	44	0.37
UX-12	28(1″)	67	38	53	0.48
UX-13	36(1-1/4″)	74	48	64	0.8
UX-14	42(1-1/2″)	85	54	71	0.85
UX-15	54(2″)	90	66	83	1.2
UX-16	70(2-1/2″)	106	82	103	1.5
UX-17	82(3″)	116	95	116	2.0
UX-18	104(4″)	142	122	144	3.2

Data (Female)

Model Number	Hub Size (PF)	Dimensions(mm)			Weight (kg)
		A	B	ØD	
UX-20	16(1/2″)	38	26	39	0.3
UX-21	22(3/4″)	41	31	44	0.32
UX-22	28(1″)	48	38	53	0.42
UX-23	36(1-1/4″)	53	48	64	0.7
UX-24	42(1-1/2″)	61	54	71	0.75
UX-25	54(2″)	65	66	83	0.95
UX-26	70(2-1/2″)	74	82	103	1.3
UX-27	82(3″)	82	95	106	1.7
UX-28	104(4″)	105	122	144	2.6

Materials Data

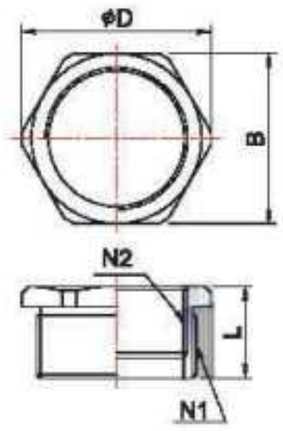
Descriptions	Materials
Body	Carbon Steel, Brass, Stainless Steel

Flameproof Type Adapters and Sockets

Ex d IIC

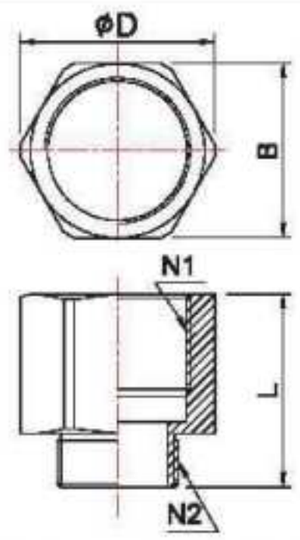


Adapter (XR)





Socket (XS)



Data

Thread Size(PF)		Adapter Types					Socket Types				
		Dimensions(mm)			Model NO	Weight (Kg)	Dimensions(mm)			Model NO.	Weight (Kg)
N1	N2	B	ØD	L			B	ØD	L		
22(3/4″)	16(1/2″)	32	35	22	XR - 110	0.09	32	35	35	XS - 110	0.1
28(1″)	16(1/2″)	38	41	26	XR - 210	0.11	38	41	40	XS - 210	0.2
	22(3/4″)	36	39	26	XR - 211	0.11	38	41	40	XS - 211	0.2
36(1- 1/4)	16(1/2″)	45	48	28	XR - 310	0.15	46	50	44	XS - 310	0.34
	22(3/4″)	45	48	28	XR - 311	0.15	46	50	44	XS - 311	0.34
	28 (1″)	45	48	28	XR - 312	0.15	46	50	44	XS - 312	0.34
42(1-1/2″)	16(1/2″)	51	54	30	XR - 410	0.22	54	58	44	XS - 410	0.38
	22(3/4″)	51	54	30	XR - 411	0.22	54	58	44	XS - 411	0.38
	28(1″)	51	54	30	XR - 412	0.22	54	58	44	XS - 412	0.38
	36(1- 1/4)	51	54	30	XR - 413	0.22	54	58	44	XS - 413	0.38
54(2″)	16(1/2″)	63	67	32	XR - 510	0.45	67	73	46	XS - 510	0.42
	22(3/4″)	63	67	32	XR - 511	0.45	67	73	46	XS - 511	0.42
	28(1″)	63	67	32	XR - 512	0.45	67	73	46	XS - 512	0.42
	36(1- 1/4)	63	67	32	XR - 513	0.45	67	73	46	XS - 513	0.42
	42(1-1/2″)	63	67	32	XR - 514	0.45	67	73	46	XS - 514	0.42
70(2-1/2″)	28(1″)	79	83	40	XR - 612	0.63	82	85	48	XS - 612	0.45
	36(1- 1/4)	79	83	40	XR - 613	0.63	82	85	48	XS - 613	0.45
	42(1-1/2″)	79	83	40	XR - 614	0.63	82	85	48	XS - 614	0.45
	54(2″)	79	83	40	XR - 615	0.63	82	85	48	XS - 615	0.45
82(3″)	28(1″)	93	97	42	XR - 712	0.7	95	100	56	XS - 712	0.89
	36(1- 1/4)	93	97	42	XR - 713	0.7	95	100	56	XS - 713	0.89
	42(1-1/2″)	93	97	42	XR - 714	0.7	95	100	56	XS - 714	0.89
	54(2″)	93	97	42	XR - 715	0.7	95	100	56	XS - 715	0.89
	70(2-1/2″)	93	97	42	XR - 716	0.7	95	100	56	XS - 716	0.89
104(4″)	54(2″)	128	134	46	XR - 915	0.89	128	134	60	XS - 915	2
	70(2-1/2″)	128	134	46	XR - 916	0.89	128	134	60	XS - 916	2
	82(3″)	128	134	46	XR - 917	0.89	128	134	60	XS - 917	2

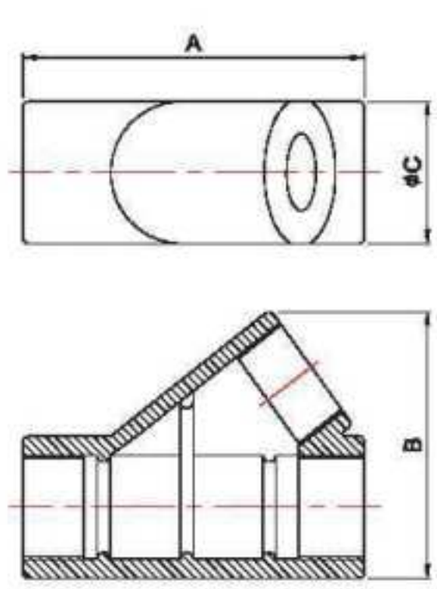
Materials Data

Description	Material
Body	Carbon Steel or Brass

Flameproof Type Sealing Fittings

Ex d IIC





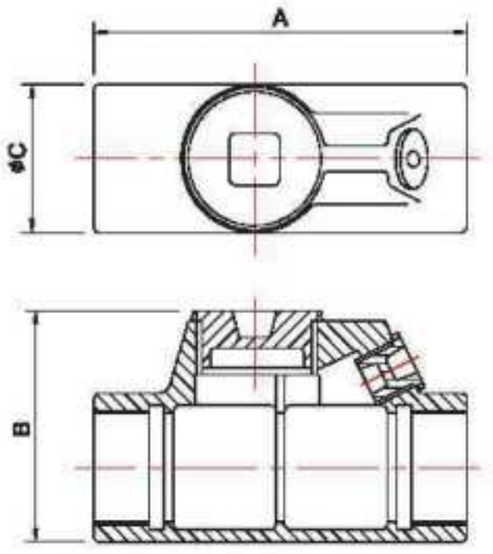
Vertical Type (FV)

Data

Model Number	Weight (kg)	Compound Weight (g)	Material
FV-16	0.5	50	Body: Cast Iron (Hot Dip. Galvanized)
FV-22	0.6	70	
FV-28	0.8	120	
FV-36	1.3	210	
FV-42	1.8	250	
FV-54	2.8	400	
FV-70	3.7	700	
FV-82	5.2	1,000	
FV-104	6.7	1,800	

Hub Size	Dimensions(mm)		
	A	B	ØC
16(1/2")	81	60	33
22(3/4")	96	72	38
28(1")	105	80	46
36(1-1/4")	127	100	57
42(1-1/2")	143	109	63
54(2")	163	136	80
70(2-1/2")	185	153	93
82(3")	205	185	108
104(4")	231	207	135





Horizontal Type (SFH)

Data

Model Number	Weight (kg)	Compound Weight (g)	Material
SFH-16	0.55	50	Body: Cast Iron (Hot Dip. Galvanized)
SFH-22	0.65	70	
SFH-28	0.93	120	
SFH-36	1.3	210	
SFH-42	1.95	250	
SFH-54	2.6	400	
SFH-70	3.8	700	
SFH-82	5.3	1,000	
SFH-104	7.2	1,800	

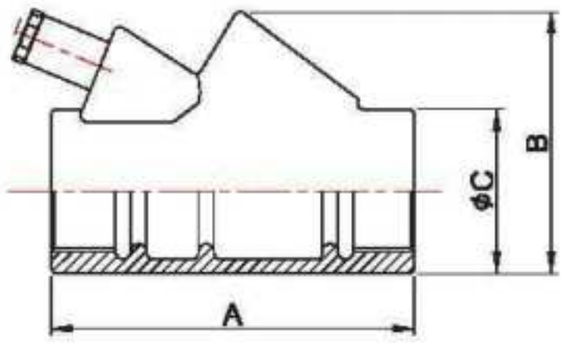
Hub Size	Dimensions(mm)		
	A	B	ØC
16(1/2")	94	46	32
22(3/4")	94	50	38
28(1")	110	60	44
36(1-1/4")	128	72	55
42(1-1/2")	140	86	62
54(2")	158	100	76
70(2-1/2")	190	114	89
82(3")	216	138	108
104(4")	248	154	133

Flameproof Type Sealing Fittings

Ex d IIC



Drain Type



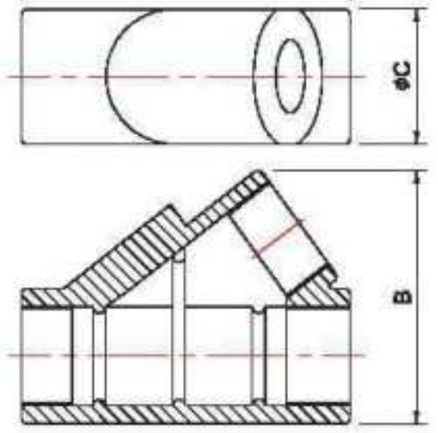
Data

Model Number	Weight (kg)	Compound Weight (g)	Material
FD-16	0.6	120	Body: Cast Iron (Hot Dip. Galvanized)
FD-22	0.7	140	
FD-28	0.95	210	
FD-36	1.6	260	
FD-42	2.1	300	
FD-54	2.8	430	
FD-70	4.3	500	
FD-82	5.5	600	
FD-104	8.2	1,000	

Hub Size	Dimensions(mm)		
	A	B	ØC
16(1/2")	85	64	32
22(3/4")	84	72	38
28(1")	110	83	45
36(1-1/4")	130	100	57
42(1-1/2")	143	112	63
54(2")	160	136	77
70(2-1/2")	190	152	88
82(3")	216	180	108
104(4")	247	230	133



Vertical Type (Aluminum)



Data

Model Number	Weight (g)	Compound Weight (g)	Material
FVA-16	141	50	Body: Die Cast Aluminum Alloy
FVA-22	198	70	
FVA-28	290	120	
FVA-36	446	210	
FVA-42	543	250	
FVA-54	1012	400	

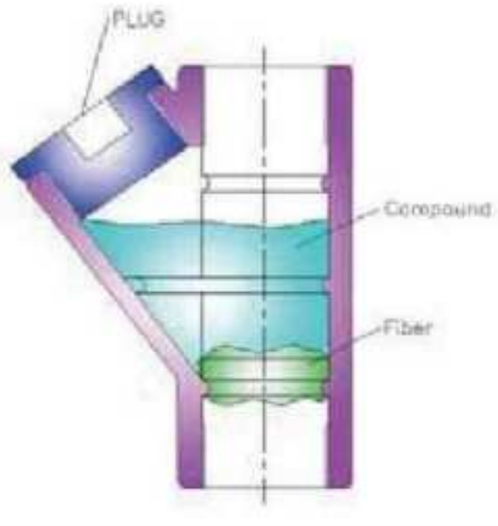
Hub Size	Dimensions(mm)		
	A	B	ØC
16(1/2")	82	55.3	31
22(3/4")	90	65	36
28(1")	98	76	43
36(1-1/4")	106	94	55
42(1-1/2")	114	105	61
54(2")	136	130	75

Sealing Compound



Sealing Compound

How to use Sealing Compound



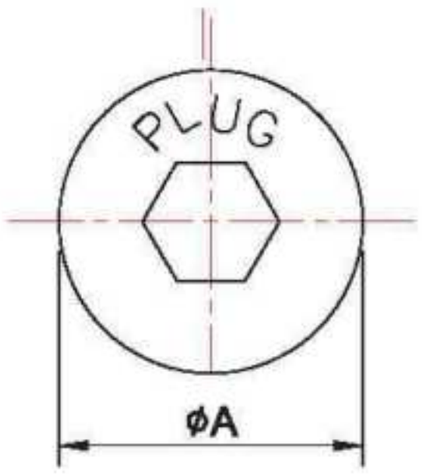
Flameproof Type Accessorys

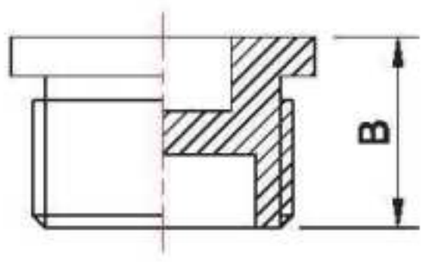
Ex d IIC



Plug

Material:
Die-casting Aluminum





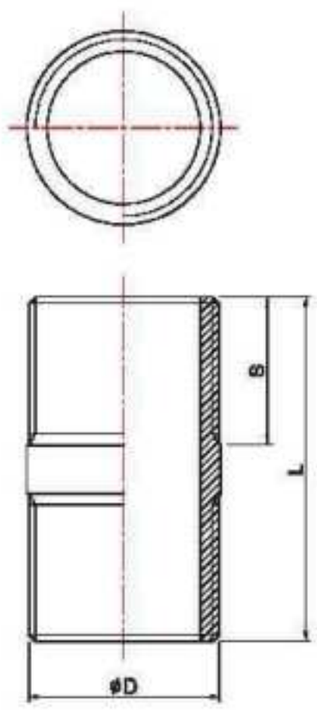
■ Data

Model Number	Hub Size	Dimensions(mm)		Weight (g)
		ØA	B	
PP-16	16(1/2")	26	23	62
PP-22	22(3/4")	33	23	99
PP-28	28(1")	38	27	172
PP-36	36(1-1/4")	49	28	302
PP-42	42(1-1/2")	53	33	442
PP-54	54(2")	64.5	35	668
PP-70	70(2-1/2")	82	38	1,458
PP-82	82(3")	94	41	1,889
PP-104	104(4")	119.5	41	3,192



Nipples

Material: Carbon steel



■ Data

Model Number	Hub Size	Dimensions(mm)			Weight (kg)
		ØD	S	L	
NN-16	16(1/2")	16	16	44	0.06
NN-22	22(3/4")	22	16	44	0.07
NN-28	28(1")	27	20	55	0.1
NN-36	36(1-1/4")	36	20	55	0.15
NN-42	42(1-1/2")	42	20	55	0.17
NN-54	54(2")	53	25	65	0.24
NN-70	70(2-1/2")	68	25	65	0.35
NN-82	82(3")	81	25	80	0.5
NN-104	104(4")	105	35	90	1.35

Drain & Breather

Drain

Breathers

Material: SUS304,Brass

■ Drain Data

Model Number	Hub Size
XD-310	16(1/2")

■ Breathers Data

Model Number	Hub Size
XD-10	16(1/2")

General Information for the Explosion - proof

1. Explosion - proof Enclosure Overview

Explosion-proof Enclosure Symbols

	Types	Symbols
Explosion-proof Enclosure Types	Flame Proof	d
	Pressurized Proof	px, py, pz
	Increased Safety	e
	Intrinsic Safety	ia, ib
	Non - Sparking Structure	nA, nC, nR
	Dust Ignition Protection	tD

Max. Surface Temperature and its Class

Types	Symbols
Excess of 300 less than 450	T1
Excess of 200 less than 300	T2
Excess of 135 less than 200	T3
Excess of 100 less than 135	T4
Excess of 85 less than 100	T5
Less than 85	T6

Explosion - proof structure, notation

Explosion - proof structure, notation

Ex	d	IIB	T6	IP65
Explosion - Proof Symbol	Structure	Gas Group	Surface Temperature	Protection Class

Structure	Symbol
Flame Proof	d
Pressurized Proof	px, py, pz
Increased Safety	e
Intrinsic Safety	ia, ib
Non - Sparking Structure	nA, nC, nR
Dust Ignition Protection	tD

Structure		Symbol
Industrial (II)	Gas, Vapor	A
	Gas, Vapor	B
	Gas, Vapor	C
		20
Dust		21
		22

Temp Grade( )	Symbol
Over 300 Less Then 450	T1
Over 200 Less Then 300	T2
Over 135 Less Then 200	T3
Over 100 Less Then 135	T4
Over 85 Less Then 100	T5
Less Then 85	T6

Protection Class
IP OO

Classification of Hazardous Areas in Various Countries

	Constant Hazardous Atmosphere	Ordinarily Intermittent Hazardous Atmosphere	Extraordinarily Hazardous Atmosphere
ICE / CENELEC / EUROPE	Zone 0	Zone 1	Zone 2
NORTHAM ERICA	Division 1	Division 1	Division 2
KOREA / JAPAN	Class 0 Area	Class 1 Area	Class 2 Area

Explosionproof Structure Marking in Various Countries

Countries	Flame proof	Pressurized Proof	Increased Safety	Intrinsic Safety	Non-Sparking Structure	Dust Ignition Protection
korea	Ex d	ExPx,Py,Pz	Ex e	Ex ia, ib	EXnA,nC,nR	tD
British	FLP			FLP		
Germeny	Ex d	Ex t	Ex e	Ex i		
Austria	Ex d	Ex e	Ex i	Ex s		
Italy	Ex d	Ex p	Ex e	Ex i		
Swiss	Ex d	Ex f	Ex e			
Sweden	Xt	Xv	Xh	Xi		

Gas Classification in Various Countries

Korea, Japan	IEC	Germany	U.S.A.
< Explosionproof Class 1 > Methane, Ammonia, Carbon-Monoxide, Benzene, Gasoline, Propane Gas	**< Group of Enclosure I >** Methane	**< Explosion Class 1 >** Methane, Ammonia, Carbon Monoxide, Benzene, Gasoline, Propane Gas	**< Group A >** Acetylene
< Explosionproof Class 2 > Coal Gas, Ethylene, Ethylene Oxide, 1.3 Butadiene	**< Group of Enclosure II A >** Ammonia, Carbon - Monoxide, Acetone, Ethanol, Methanol	**< Explosion Class 2 >** Ethylene, Ethylene Chloride, Ethylene Oxide, City Gas	**< Group B >** Butadiene, Ethylene Oxide, Hydrogen, Propylene Oxide
< Explosionproof Class 3 > Hydrogen Gas, Hydro-Acetylene Gas, Sulfurated Carbon	**< Group of Enclosure II B >** 1.3 Butadiene, Ethylene, Ethylene Oxide, City Gas	**< Explosion Class 3 >** 3a : Hydrogen 3b : Sulfurated Carbon 3c : Acetylene	**< Group C >** Acetaldelhyde, Ethylene, Isoprene, Ethyl, Propane
	<Group of Enclosure II C> Hydrogen Gas		**< Group D >** Methane, Ammonia, Benzene, Propane

General Information for the Explosion - proof

2. Explosionproof Regulations

<table>
<tr><th></th><th>European Community</th><th>North America</th></tr>
<tr><td>Hazardous Category</td><td>Explosive Mixture
Group I : Explosive Gas in Mines
Group II : Other Areas outside Mines</td><td>Explosionproof Mixture blended with Oxygen
Class I : Gas and Vapor
Class II : Dust
Class III : Fibroid Material</td></tr>
<tr><td>Explosive Hazard caused by Sparks (Classified by Gas)</td><td>Classification of Explosionproof Forms
Intrinsic Explosionproof/Flameproof On & Off Device
Classification by degree of explosion depending on min. ignition and igniting Power
Group I : Methane
Group II : A Propane
Group II : B Ethylene
Group II : C Hydrogen, Acetylene</td><td>Classification by Igniting Power
Class I Group : A Acetylene
B Hydrogen
C Ethylene
D Methane
Class II Group : E Acetylene
F Coal Dust
G Crane Dust
Class III Group : no grouping</td></tr>
<tr><td>Igniting hazard caused by hot surface (Classification by temperature)</td><td colspan="2">Classification by IEC 78-8 Regulation depending on max. surface temperature at surrounding temperature of less than 40 . :
T1 450 T2 300 T3 200 T4 135 T5 100 T6 85</td></tr>
<tr><td rowspan="3">Classification of Hazardous Areas</td><td colspan="2">Classification by possibility of Explosion is as follows :</td></tr>
<tr><td colspan="2">Germany(U.K) :
Gas, Vapor, Fog : Gas and Dust
Zone 0 Constant, Long-Term
1 Intermittent } Division 1
2 Occasional, Short-Period : Division 2
Dust :
Zone 10(Z) Long-Term or Frequently
11(Y) Short-Period</td></tr>
<tr><td colspan="2">Notes : (Refer to IEC79-10) : If Constant, Long-Term >1000h/year.
If Intermittent 10 · · 1000h/year, Occasional, Short-Period>10h/year</td></tr>
<tr><td rowspan="2">Safety Features</td><td colspan="2">The peculiar figures to classify inflammable gases and vapor by igniting power, temperature and point are as follow</td></tr>
<tr><td>DIN VDE 0165/2.91 Append. A
BS 5345 Part 1</td><td>NFPA 497M
CSA Nr. C22-1</td></tr>
<tr><td>Certification</td><td>PTB Physikalish-Technische Bunderesanstalt
BVS Bergbauversuchsstrecke
BASEEFA
British Approvales Service For Electrical Equipment In Flammable Atmospherss</td><td>UL underwriters Laboratories Association(USA)
FM Factoru Mutual Resesrch(USA)
CSA Canadian Standards Association</td></tr>
<tr><td>Installing Requirements</td><td>DIN VDE 0165/2.91
BS 5345 Part 4
And other nationally validrequlation</td><td>DIN VDE 0165/2.91
BS 5345 Part 4
And other nationally validrequlation</td></tr>
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General Information for the Explosion - proof

3. IEC : Ex d IIB T4 IP55

Currently used in Korea, Japan and European areas.

Explosionproof Marking

Ex	d	II	B	T6	IP65
Explosionproof Equipment	Type of Protection	Purpose Classification	Gas Class	Temperature Class	Protection Class

Types of Enclosures

Type	T6	Symbol
Explosionproof Enclosure	A type of enclosure withstanding an internal explosion of a flammable mixture which has penetrated into the interior without suffering from damages and causing ignition.	Ex d
Pressurized Enclosure	A type of enclosure which intercepts inflow of explosive gases or vapor in it by filling protective gases.	px, py, pz
Increase Safety Enclosure	A type of enclosure safety of which has been increased in mechanical, electric construction and temperature rising in order to prevent igniting causes from being produced.	Ex e
Intrinsic Safety Enclosure	A type of enclosure which prevents igniting causes from being produced such as sparks, arcs or high temperatures in a normal situation or accidents (disconnection, short circuit, etc.)	Ex ia, ib
Non-Sparking Enclosure	A type of enclosure neither to ignite surrounding explosive gases or vapor in a normal operation nor to cause inflammable malfunctions.	nA, nC, nR
Dustproof Specialized Type Enclosure	A type of enclosure dust and explosion - proof capability of which is confirmed with other methods.	tD

Purpose Classification

II : For mines
II : For factory and industry

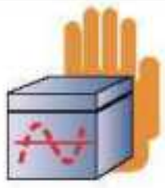
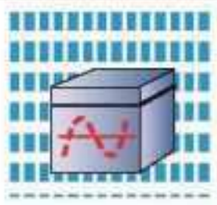
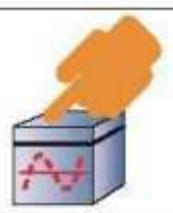
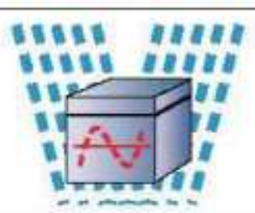
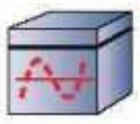
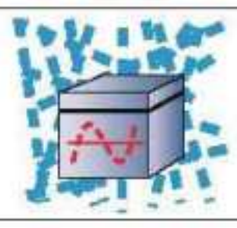
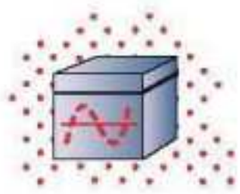
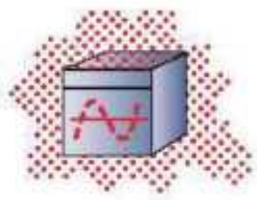
Classification of Explosive Gases

Classification of Explosive Gases	A	B	C
Scope of Max. Safety Gap	0.9mm and over	Over 0.5mm less than 0.9mm	0.5 mm and less
Min. Igniting Voltage (Intrinsic Safety)	Over 0.8	Over 0.45 less than 0.8	Less than 0.45
Applied Enclosure (Explosionproof, Intrinsic, Non-sparking)	II A	II B	II C
Representative Gases	Ammonia, Car-bon Monoxide, Benzene, Ac-etone, Methanol, Propane	Butadiene, Ethyl-ene, Diethyl Ether, Ethylene Oxide, City Gas	Acetylene, Hydrogen, Sul-furated Carbon

General Information for the Explosion - proof

■ Ingression Protection Class

(Ingress Protection class of enclosures according to IEC-529 standard)

Protection Degree for Solid Body			Protection Degree for Liquid		
IP		Test	IP		Test
0		Not protected	0		Not protected
1		Protection against solid bodies bigger than 50 mm	1		vertical raindrops
2		Protection against solid bodies bigger than 12 mm	2		of 15 degrees
3		Protection against solid bodies bigger than 2.5 mm	3		60 degrees
4		Protection against solid bodies bigger than 1 mm	4		spray at multi-angles
5		Protection against dust	5		pressure
6		Protection against from dust	6		pressure
			7		15 cm~1m
			8		long period of time

General Information for the Explosion-proof

4. NEC : Class 1, Division 2, Groups B, C, D.

(Currently used in the American continent)

Class 1	Division 2	Groups B, C, D
Classification of Hazardous Materials	Hazardous Areas	Class of Hazardous Materials

Classification of Hazardous Materials

Class	Class of Materials	Representative areas
I	Gas, Vapor	Factories, Petrochemical factories, Dry areas, Painting plants, spraying areas Petroleum dispensing areas, Gas handling facilities, Aviation shed
II	Inflammable dust	Grain warehouses, starch handling, fireworks handling, Flour and feed manufacturing factories, Pulverizing machines, Coal manufacturing areas
III	Inflammable fibers, Fur scraps	wood-working area, Textile manufacturing factories, cotton cotton-seed mill, Flax manufacturing areas-gin

Classification of Hazardous Areas

Division 2	Division 0	Division 1
Areas	Hazardous areas in a normal situation	Hazardous areas in an abnormal situation

Class of Hazardous Materials

Class	Group	Applicable Substances
I	A	acetylene
	B	Hydrogen
	C	Ethylene
	D	hexane, propane, benzene - A colorless liquid collected from coal tar), gasoline
II	E	Metal Dust (A mixture of Aluminum, Magnesium etc.)
	F	carbon black, coal, dust, coke dust
	G	flour, starch, grain dust

Classification of NEC and IEC

- Group A : Acetylene
  Group B : C related gases except Acetylene
  Group C : IIB related gases
  Group D : IIA related gases
- Since classifying methods are different from IEC, some gases belong to different groups.

Classification of Hazardous Areas

- Zone 0 : An area of generating or having a potentiality of hazardous atmosphere constantly in a normal situation.
  For example) The upper space in a receptacle containing inflammable liquid, the inside of a receptacle containing inflammable gases, pit trenches in which inflammable liquid stays
- Zone 1 : An area in which there is a potentiality of generating a hazardous atmosphere in a normal situation
  For example) Around Zone 0 area, oil feeders, and connecting parts to open at operations
- Zone 2 : An area where an hazardous atmosphere continues for a short period of time in an abnormal situation
  For example) Around Zone 1 area, connecting parts of facilities and sealings of pumps

General Information for the Explosion - proof

Applications of Explosionproof Enclosures for Hazardous Areas

Area	Intrinsic safety		Explosionproof	Pressurized	Increased Safety
	ia	la			
Zone 0	O		-	-	-
Zone 1	O	O	O	O	△
Zone 2	O	O	O	O	O
Explosionproof Dust Hazardous Area	Special Dustproof Enclosure				
Combustible Dust Hazardous Area	Special Dustproof Enclosure, Regular Dustproof Enclosure				

Increased Safety Enclosure : Applying to Zone 2 only domestically (Applying to Zone 1 in IEC)

NEMA Protection Class

NEMA Code No.	Details of the Related Provisions
1	Indoor use providing a protection against a contact with built-in equipments and a limited amount of fallout.
2	Indoor use providing a protection against a limited amount of fallout and raindrops.
3	Outdoor use providing a protection against dust, rain and sleet by wind without any damages caused by refrigeration.
3R	Outdoor use providing a protection against pouring rain and sleet.
3S	Outdoor use providing a protection against wind dust, rain, and sleet with outer parts of equipments working in an ice - covered condition.
4	Indoor or outdoor use providing a protection against splashing water, wind dust, rain and water sprayed through hose without any damages caused by refrigeration.
4X	Indoor or outdoor use providing corrosion - resistance and a protection against splashing water, wind dust, rain and water sprayed through hose without any damages caused by refrigeration.
6	Indoor or outdoor use providing a protection against an ingression of water under a submersion in a limited depth of water without any damages caused by refrigeration.
6P	Indoor or outdoor use providing a protection against an ingression of water under a submersion in a limited depth of water.
11	Indoor use providing a protection by oil immersion against corrosion of enclosures caused by corrosive liquid and gases.
12, 12K	Indoor use providing a protection against dust, fallout and droppings of noncorrosive liquids.
13	Indoor use providing a protection against dust, water spray and noncorrosive coolants.