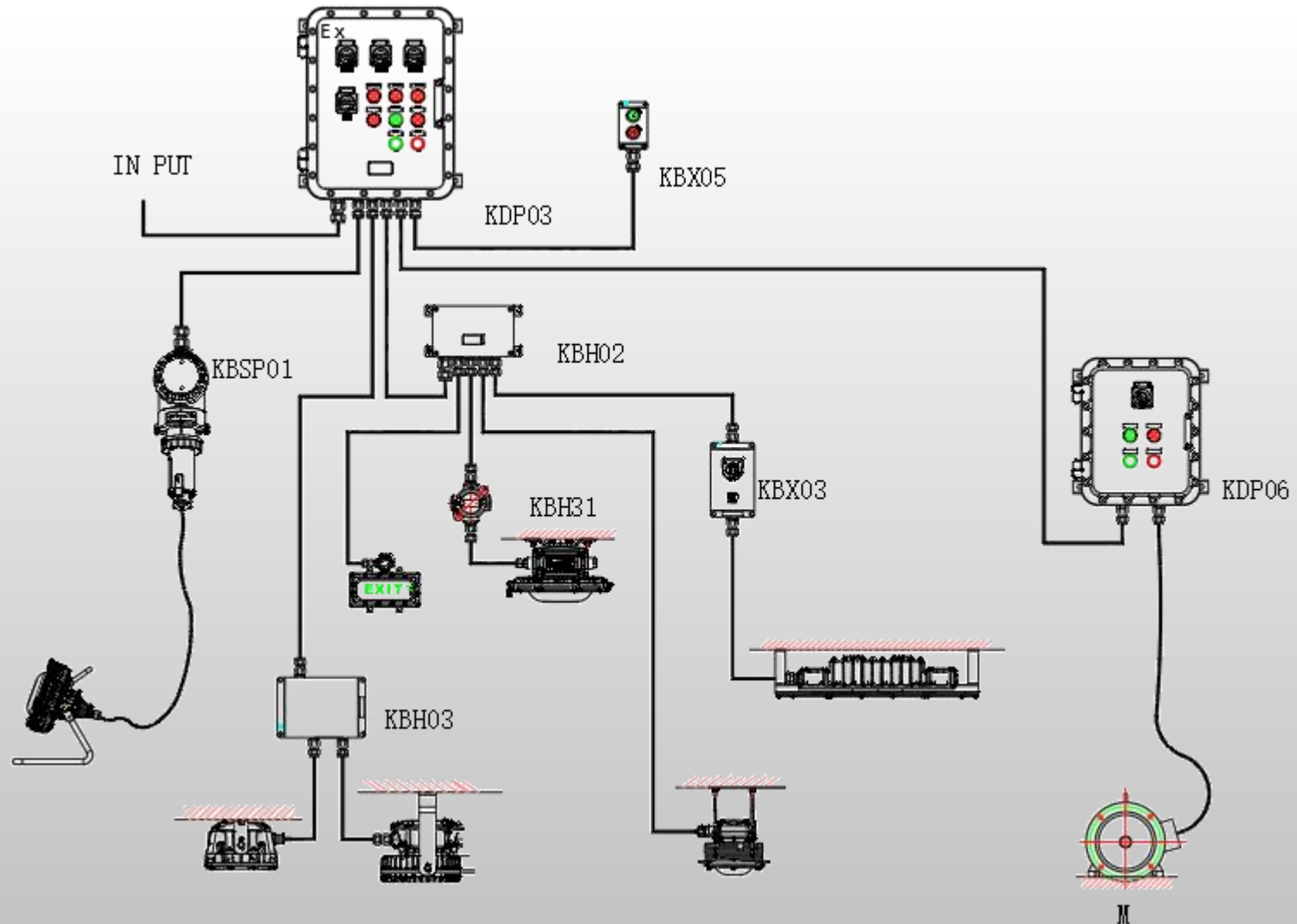


Carry Brightness and Sustainable Future

 **SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO., LTD**



EXPLOSION PROOF ELECTRICAL APPARATUS



Zones System (IECEX/ATEX)

ZONE		Hazardous areas are classified into Zones based upon the frequency of the occurrence and duration of an explosive gas/dust atmosphere, as follows:
Gas	Dust	
0	20	A potentially flammable atmosphere is present continuously or for long periods or frequently.
1	21	A potentially flammable atmosphere is likely to occur in normal operation occasionally.
2	22	A potentially flammable atmosphere is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

Reference: IEC 60079-10

GAS & DUST GROUPS

Gas and Dust Grouping for Electrical Equipment for IEC 60079-0

Group	Representative Gases and Dusts
I	All underground coal mining. Firedamp (methane)
IIA	Industrial methane, propane, petrol and the majority of industrial gasses
IIB	Ethylene, coke oven gas and other industrial gasses
IIC	Hydrogen, acetylene, carbon disulphide
IIIA	Combustible flyings
IIIB	Non-conductive dust
IIIC	Conductive dust

Material Ex Classifications

Gas	Ignition Temp °C	Apparatus Group	Temperature Class
Ammonia	630	IIA	T1
Hydrogen	560	IIC	T1
Methane	537	IIA	T1
Propane	450	IIA	T2
Ethylene	425	IIB	T2
Butane	372	IIA	T2
Acetylene	305	IIC	T2
Cyclohexane	259	IIA	T3
Kerosene	210	IIA	T3
Di-ethyl Ether	160	IIB	T4
Carbon Disulphide	90	IIC	T6



Material Ex Classifications

Dust Typical Ignition Temperatures		
Dust	Cloud (°C)	Layer (°C)
Aluminium	590	>450
Coal dust (ignites)	380	225
Flour	490	340
Grain dust	510	300
Methyl cellulose	420	320
Phenolic resin	530	>450
Polythene	420	(melts)
PVC	700	>450
Soot	810	570
Starch	460	435
Sugar	490	460

Examples of ATEX Directive Marking






	Denotes that a product complies with all the relevant European Directives
0031	Notified Body Number (Sira Certification Service)
	Specific marking for explosion protection
II	Equipment group (Could be I for mining or II for surface industry)
2	Equipment category (Could be 1, 2, 3 depending upon Zone of intended use)
G	Type of flammable atmosphere (G = Gas, D = Dust)
   	
M1	Mining applications (M1 = equipment remains energised, M2 = de-energised)

Example of Standards Marking – Gas

(Marking derived from the EN and/or IEC standards)

Ex db IIC T4 Gb	
Ex	Denotes explosion protection
db	Denotes type of protection (see protection concepts for alternatives)
IIC	Denotes gas group (see gas groups for alternatives)
T4	Denotes temperature classification (see temp classification for alternatives)
Gb	EPL – Equipment Protection Level (see EPL table for alternatives)

Example of Standards Marking – Dust

(Marking derived from the EN and/or IEC standards)

Ex tb IIIC T135°C Db	
Ex	Denotes explosion protection
tb	Denotes type of protection (see protection concepts for alternatives)
IIIC	Denotes dust group (see dust groups for alternatives)
T135°C	Denotes temperature classification (see temp classification for alternatives)
Db	EPL – Equipment Protection Level (see EPL table for alternatives)

CORRELATION BETWEEN ZONES/EQUIPMENT PROTECTION LEVEL (EPL)/ATEX CATEGORIES

Zone	EPL	Category
0	Ga	1G
1	Gb	2G
2	Gc	3G
20	Da	1D
21	Db	2D
22	Dc	3D
Mining Application (Equipment can remain energised in the presence of flammable atmosphere - firedamp)	Ma	M1
Mining Application (Equipment to be de-energised when flammable atmosphere is detected - firedamp)	Mb	M2
G = Gas, D = Dust, M = Mining		

TEMPERATURE CLASSIFICATION

Maximum Surface Temperature (°C)	Divisions	Zones
450	T1	T1
300	T2	T2
280	T2A	—
260	T2B	—
230	T2C	—
215	T2D	—
200	T3	T3
180	T3A	—
165	T3B	—
160	T3C	—
135	T4	T4
120	T4A	—
100	T5	T5
85	T6	T6

STANDARDS ELECTRICAL

ATEX & IECEX

Zones System (Gas, Vapour & Mists)

Type of Protection	Symbol	IECEX EPL	ATEX Category	Permitted Zone	Standard EN-ATEX IEC-IECEX	Definition
General Requirements	N/A	Ga Gb Gc	1 2 3	0 1 2	60079-0	Applies to all protection concepts
Increased Safety	eb ec	Gb Gc	2 3	1 2	60079-7	No arcs, sparks or hot surfaces. Enclosure IP 54 or better
Type n (non-sparking)	nA	Gc	3	2	60079-15	
Flameproof	da* db dc	Ga* Gb Gc	1* 2 3	0* 1 2	60079-1	Contain the explosion and quench the flame.
Type n (enclosed break)	nC	Gc	3	2	60079-15	*applies to catalytic sensors only
Quartz/Sand Filled	q	Gb Gc	2 3	1 2	60079-5	Quench the flame
Intrinsic Safety	ia ib ic	Ga Gb Gc	1 2 3	0 1 2	60079-11	Energy limitation in sparks and hot surfaces.

ATEX & IECEx

Zones System (Gas, Vapour & Mists)

Type of Protection	Symbol	IECEx EPL	ATEX Category	Permitted Zone	Standard EN-ATEX IEC-IECEx	Definition
Pressurised	pxb	Gb	2	1	60079-2	Keep the flammable gas out.
	pyb	Gb	2	1		
	pzc	Gc	3	2		
Encapsulation	ma	Ga	1	0	60079-18	
	mb	Gb	2	1		
	mc	Gc	3	2		
Oil Immersion	ob	Gb	2	1	60079-6	
	oc	Gc	3	2		
Type n (sealing & hermetic sealing)	nC	Gc	3	2	60079-15	
Type n (restricted breathing)	nR	Gc	3	2	60079-15	
Optical Radiation	Op is	Ga	1	0	60079-28	
	Op sh	Ga	1	0		
	Op pr	Gb	2	1		

Equipment suitable for use in a Zone 0 is permitted in a Zone 1 or 2

Equipment suitable for use in a Zone 1 is permitted in a Zone 2, but **not** in a Zone 0

Equipment suitable for use in a Zone 2 is **not** permitted in either a Zone 0 or Zone 1

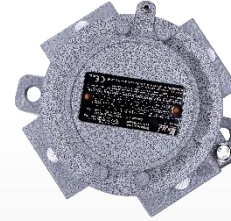
ATEX & IECEx Zones System (Dusts)

Type of Protection	Symbol	IECEx EPL	ATEX Category	Permitted Zone	Standard EN -ATEX IEC -IECEx	Definition
General Requirements	N/A	Da Db Dc	1 2 3	20 21 22	60079-0	Applies to all protection concepts
Enclosure	ta tb tc	Da Db Dc	1 2 3	20 21 22	60079-31	Prevents dust coming into contact with electrical parts
Pressurised	pxb pyb pzc	Db Db Dc	2 2 3	21 21 22	60079-2	
Encapsulation	ma mb mc	Ga Gb Gc	1 2 3	20 21 22	60079-18	
Intrinsic Safety	ia ib ic	Da Db Dc	1 2 3	20 21 22	60079-11	
Optical Radiation	Op is Op sh Op pr	Da Da Db	1 1 2	20 20 21	60079-28	To prevent ignition by thermal, photochemical or plasma means

Equipment suitable for use in a Zone 20 is permitted in a Zone 21 or 22

Equipment suitable for use in a Zone 21 is permitted in a Zone 22, but **not** in a Zone 20

Equipment suitable for use in a Zone 22 is **not** permitted in either a Zone 20 or Zone 21



II 2 G Ex eb IIC T6/T5 Gb

II 1 G Ex ia IIC T6 Ga

II 2 G Ex ib IIC T6 Gb

II 2 D Ex tb IIIC T80/T95°C Db



KBH02-S Series Explosion proof Electrical Apparatus



Ex mark: II 2 G Ex eb IIC T6/T5/T4 Gb
II 1 G Ex ia IIC T6 Ga
II 2 G Ex ia IIC T6 Gb
II 2 D Ex tb IIIC T80/T95/T130 °C Db

Rated voltage: Max. AC/DC36V (Ex i, Ex tb)
Max. 690V AC, 220V DC (Ex e, Ex tb)

Rated current: 5A (Ex i, Ex tb)
10A, 16A, 25A, 40A, 50A, 100A, 142^a (Ex e, Ex tb)

Material: Stainless steel
IP code: IP66

Temperature: -40 °C ~ +40/55 °C (Ex e, Ex tb)
-40 °C ~ +40/45/55/60 °C (Ex i, Ex tb)

Application area: Zone 0
Zone 1 and Zone 2,
Zone 21 and Zone 22

**IECEX EUT 22.0002, IECEX EUT 22.0003
EPT 22 ATEX 4938 X, EPT 22 ATEX 4939 X**

Application and Features

- Explosion proof certificates

- ATEX : EPT 22 ATEX 4938 X, EPT 22 ATEX 4939 X

- IECEx : IECEx EUT 22.0002, IECEx EUT 22.0003

- Application in hazardous area

- Zone 0,

- Zone 1 and Zone 2,

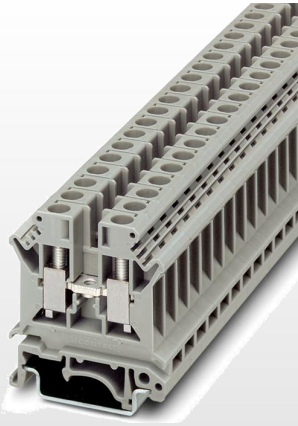
- Zone 21 and Zone 22

- Stainless steel enclosure, three types of explosion protection(Ex eb, Ex ia, Ex tb IIC), which can meet the requirements of various places.

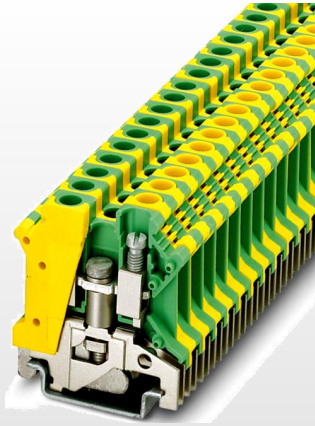
- There are 19 types of enclosure specifications, the current, the number of terminals, the size and direction of the entry can be customized upon request.

- Stainless steel exposed fastener, anti dropping structure, easy installation and maintenance.

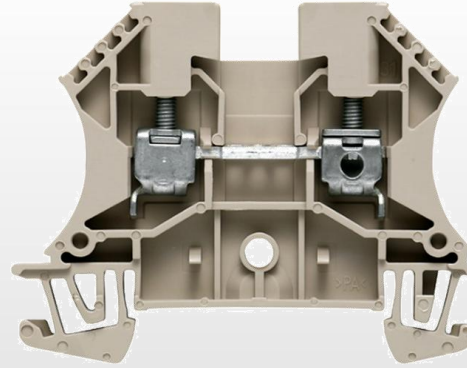
INTERNAL COMPONENTS



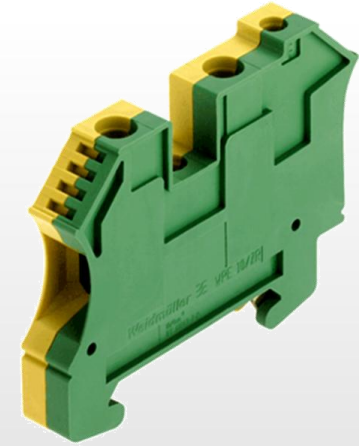
**Terminal
Phoneix**



**PE Terminal
Phoneix**

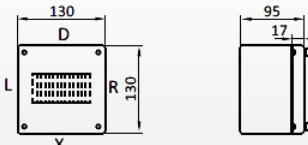

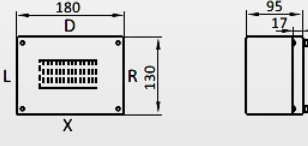



**Terminal
Weidmüller**

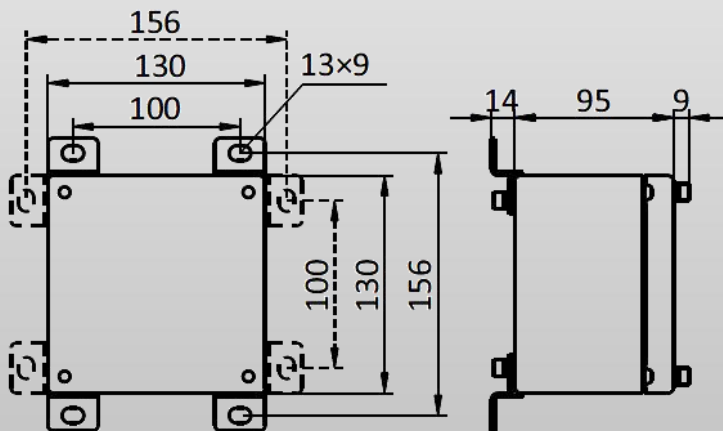


**PE Terminal
Weidmüller**

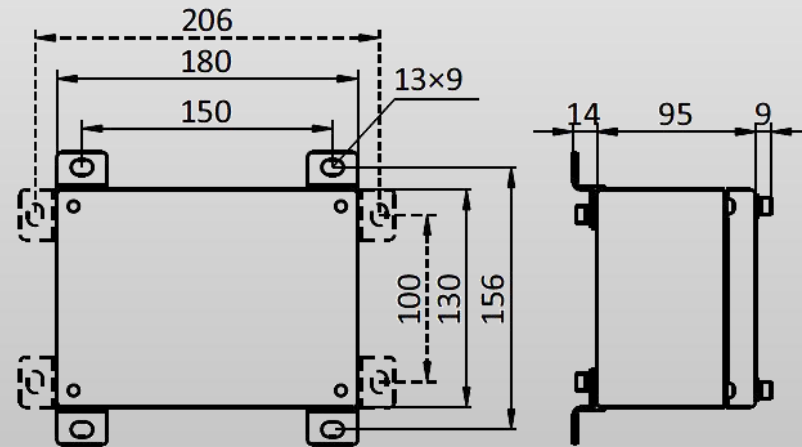
Selection Table

Enclosure specification	Guideway × Terminal (specification and quantity)						Outlet direction	Available maximum cable entries quantity							Weight (kg)
	2.5 ²	4 ²	6 ²	10 ²	16 ²	35 ²		M16	M20	M25	M32	M40	M50	M63	
	UK3N	UK5N	UK6N	UK10N	UK16N	UK35N									
	SAK2.5EN	SAK4EN	SAK6EN	SAK10EN	SAK16EN	SAK35EN									
01		1 × 14	1 × 12	1 × 9	—	—	D/X	8	6	5	3	2	1	—	1.3
							L/R	8	6	5	3	2	1	—	
02		1 × 21	1 × 18	1 × 13	1 × 11	1 × 8	D/X	12	10	8	4	3	2	—	1.9
							L/R	8	6	5	3	2	1	—	

Typical dimensions

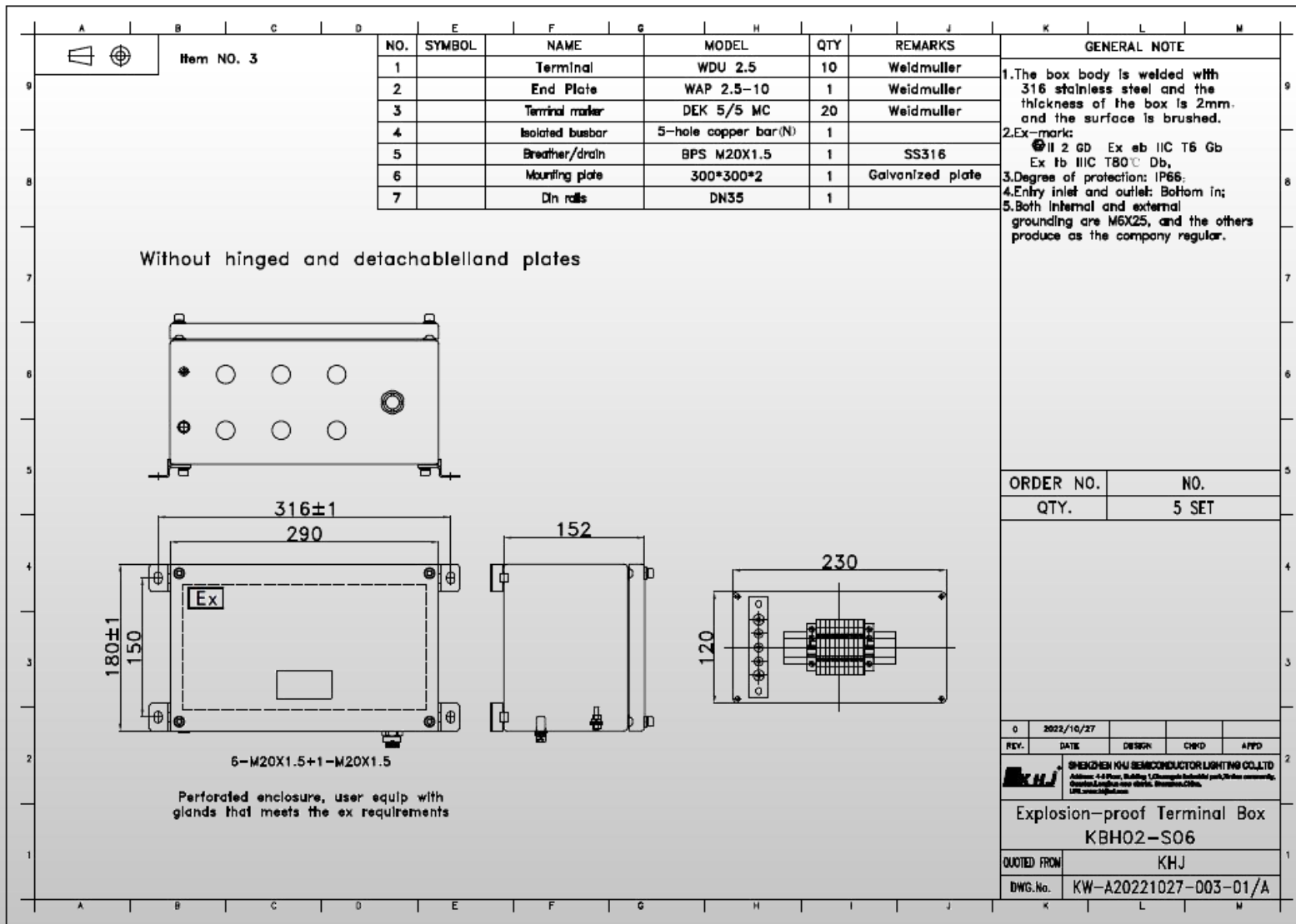


Enclosure 01



Enclosure 02

Case:



KBH03 Series Explosion proof Terminal Box



Ex mark: II 2 G Ex eb IIC T6/T5 Gb
II 1 G Ex ia IIC T6 Ga
II 2 G Ex ib IIC T6 Gb
II 2 D Ex tb IIIC T80/T95°C Db

Rated voltage: Max. AC/DC36V(Ex i, Ex tb)
Max. 690V AC, 220V DC(Ex e,Ex tb)

Rated current: 5A(Ex i, Ex tb)
10A,16A,25A,40A,50A,100A,142A(Ex e,Ex tb)

Material: GRP (Polyester resin, glass fibre reinforced), anti-static

IP code: IP66

Temperature: : -40 °C ~+40/55°C (Ex e, Ex tb)
-40 °C ~+50/60/65 °C (Ex i,Ex tb)

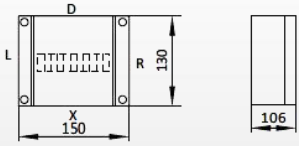
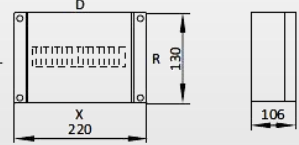
Application area: Zone 0
Zone 1 and Zone 2,
Zone 21 and Zone 22

IECEX SEV 22.0012X, SEV 22 ATEX 0630 X

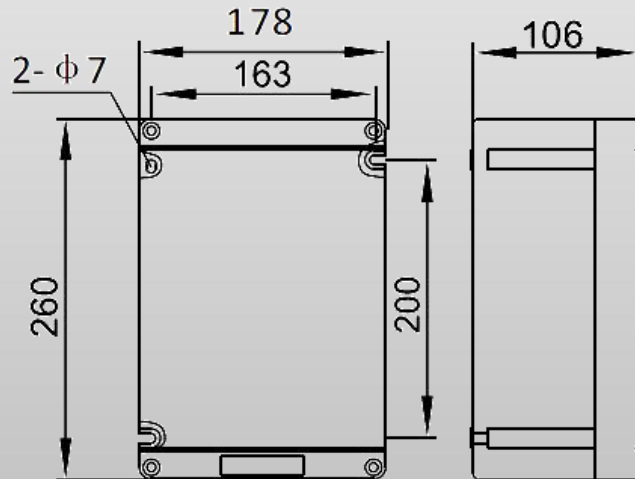
Application and Features

- Explosion proof certificates
 - ATEX : SEV 22 ATEX 0630 X
 - IECEx : IECEx SEV 22.0012X
- Application in hazardous area
Zone 0, Zone 1 and Zone 2, Zone 21 and Zone 22
- This series of products have 4 types explosion protection (Ex eb, Ex ia, Ex ib and Ex tb IIC), which can meet various requirements.
- GRP enclosure.
- There are 7 types of enclosure, easy to customize the current, terminals, size and direction of entry according to customer requirements.
- Stainless steel exposed fastener, anti dropping structure, easy installation and maintenance.

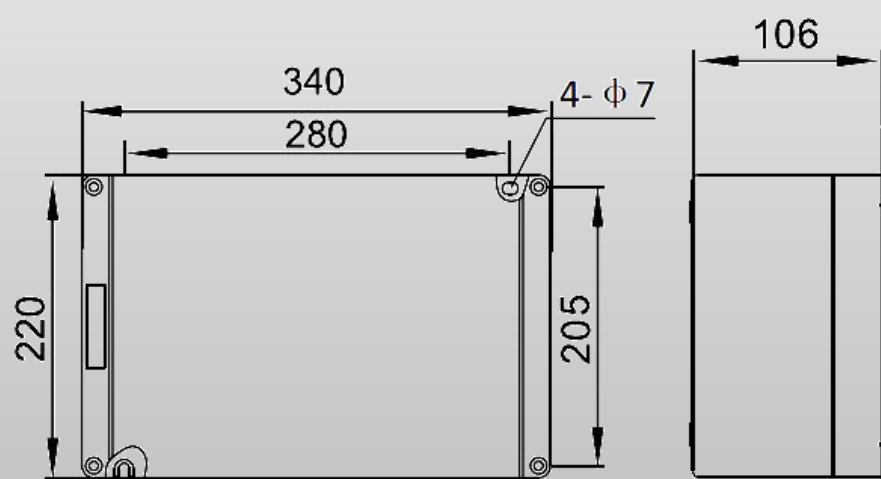
Selection Table

Enclosure specification	Guideway x Terminal (specification and quantity)								Outlet direction	Cable gland quantity								Weight (kg)
	1.5 ²	2.5 ²	4 ²	6 ²	10 ²	16 ²	35 ²	50 ²		M16	M20	M25	M32	M40	M50	M63	—	
	UK2N	UK3N	UK5N	UK6N	UK10N	UK16N	UK35N	UK50N		—	G15	G20	G25	G32	G40	G50	G70	
	SAK1.5EN	SAK2.5EN	SAK4EN	SAK6EN	SAK10EN	SAK16EN	SAK35EN	SAK50EN		—	—	—	—	—	—	—	—	
01# 	1×12	1×12	1×10	1×8	—	—	—	—	D/X	3	3	2	1	1	—	—	1.2	
	—	—	—	—	—	—	—	—		—	—	2	2	2	1	1		—
L/R	—	—	—	—	—	—	—	—	—	2	2	2	1	1	—	—		
	—	—	—	—	—	—	—	—	—	—	2	2	1	1	—	—		
02# 	1×25	1×25	1×20	1×15	—	—	—	—	D/X	7	5	3	3	2	1	—	1.5	
	—	—	—	—	—	—	—	—		—	—	4	3	3	2	1		—
L/R	—	—	—	—	—	—	—	—	—	2	2	2	1	1	—	—		
	—	—	—	—	—	—	—	—	—	—	2	2	1	1	—	—		

Typical dimensions




03#




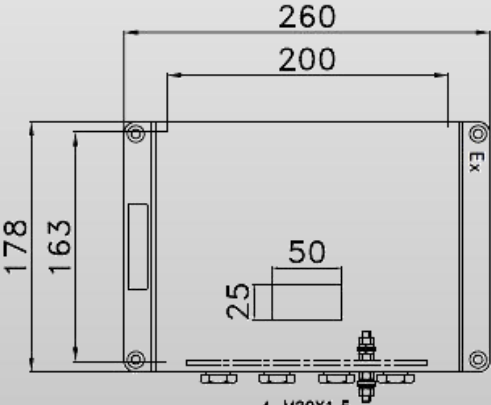
04#

Case:

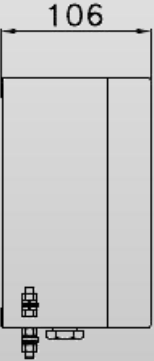
NO.	SYMBOL	NAME	MODEL	QTY	REMARKS	GENERAL NOTE
1		Terminal	WDU 6	6	Weidmuller	Technical Description: 1.The box is made of engineering plastics: black. 2.Ex-mark: ● IIC GD Ex eb IIC T6 Gb Ex Ib IIC T80°C Db. 3.Entry inlet and outlet: Bottom in; 4.Protection grade:IP66. 5.Perforated enclosure, user equip with glands that meets the ex requirements. 6.Voltage:Maximum 500VAC, 220V DC; 7.Nameplate:Silver label. 8.Both internal and external grounding are M6X25, and the others produce as the company regular.
2		Terminal	WPE 6	2	Weidmuller	
3		End Plate	WAP 2.5-10	3	Weidmuller	
4		Terminal marker	DEK 5/8/WS 12/6.5	16	Weidmuller	
5		Cross connector	WQV 6/2	3	Weidmuller	
6		Bolt	M6X50	1	SS316	
7		Stopping Plug	HLBM42-CF M20X1.5/H	4	Nickel plated brass	
8		Mounting plate	190*110*2	1	SS316	
9		Nameplate	50*20	1	Silver label	
10		Brass plate	170*65*3	1	Brass	







4-M20X1.5
Perforated enclosure, user equip with glands that meets the ex requirements



ORDER NO.	NO.
QTY.	123 SET

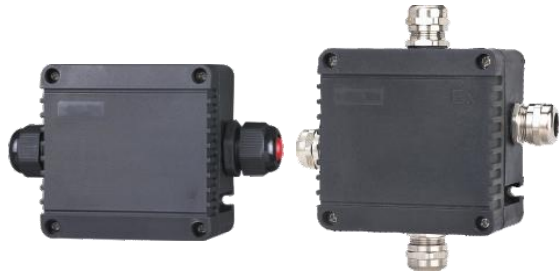
REV.	DATE	DESIGN	CHECK	APPD
0	2022/11/14			

SHENZHEN KHJ SEMICONDUCTOR LIGHTING CO.,LTD.
 Address: 4-8 floor, Building 12, Guangping Industrial park, Xixiu community, Qianhai, Shenzhen, Guangdong, China.
 URL: www.khj.com.cn

Explosion Protected Terminal Box
KBH03-03

QUOTED FROM	KHJ
DWG.No.	KW-A20221114-001-01/A

KBH05 Series Explosion proof Terminal Box



Ex mark: II 2 G Ex eb IIC T6/T5 Gb
II 1 G Ex ia IIC T6 Ga
II 2 G Ex ib IIC T6 Gb
II 2 D Ex tb IIIC T80°C Db

Rated voltage: Max. AC/DC36V(Ex i, Ex tb)
Max. 500V AC, 220V DC (Ex e,Ex tb)

Rated current: 5A(Ex i, Ex tb)
10A,12A,20A (Ex e,Ex tb)

Material: Nylon (PA66)

IP code: IP66

Temperature: : -40 °C ~+45/55/60 °C (Ex e,Ex tb)
-40 °C ~+45/65°C (Ex i, Ex tb)

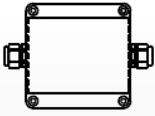
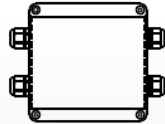
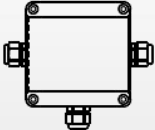
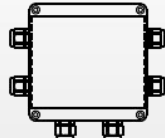
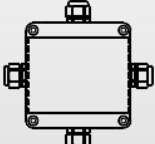
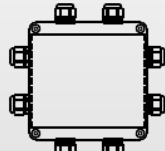
Application area: Zone 0
Zone 1 and Zone 2,
Zone 21 and Zone 22

Cable entries: M20X1.5, M25X1.5, M32X1.5
IECEX SEV 22.0012X, SEV 22 ATEX 0630 X

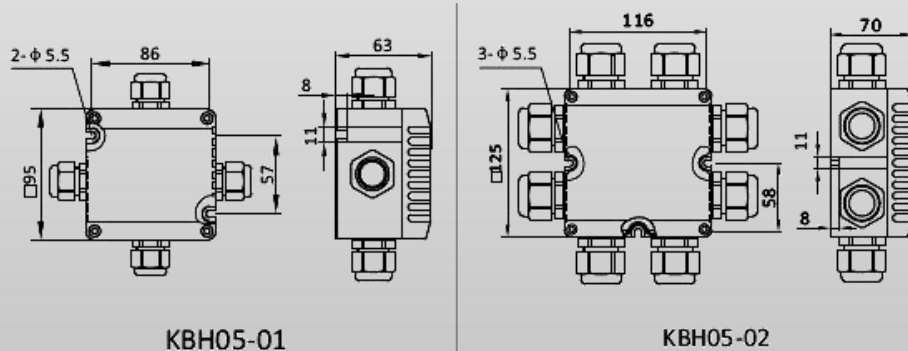
Application and Features

- Explosion proof certificate
 - ATEX : SEV 22 ATEX 0630 X
 - IECEx : IECEx SEV 22.0012X
- Application in hazardous area
Zone 0, Zone 1 and Zone 2, Zone 21 and Zone 22
- This series of products have 4 types explosion protection (Ex eb, Ex ia, Ex ib and Ex tb IIIC), which can meet the requirements of various places.
- PA66 enclosure.
- There are two types of enclosure which the current, terminal, size and direction of entry can be customized based on customer requirements.
- Type A: open crimping type terminal in enclosure.
- Type B (Standard): an International brand of terminal will be installed in the enclosure.
- Stainless steel exposed fastener, anti dropping structure, easy installation and maintenance.

Selection Table

KBH05-01	Cable entries	Cable outer dia.	KBH05-02	Cable entries	Cable outer dia.
	2XM20	$\phi 6 \sim \phi 12\text{mm}$		4XM25	$\phi 10 \sim \phi 14\text{mm}$
	2XM25	$\phi 10 \sim \phi 14\text{mm}$		4XM32	$\phi 13 \sim \phi 19\text{mm}$
	3XM20	$\phi 6 \sim \phi 12\text{mm}$		6XM25	$\phi 10 \sim \phi 14\text{mm}$
	3XM25	$\phi 10 \sim \phi 14\text{mm}$		6XM32	$\phi 13 \sim \phi 19\text{mm}$
	4XM20	$\phi 6 \sim \phi 12\text{mm}$		8XM25	$\phi 10 \sim \phi 14\text{mm}$
	4XM25	$\phi 10 \sim \phi 14\text{mm}$		8XM32	$\phi 13 \sim \phi 19\text{mm}$

Typical dimensions

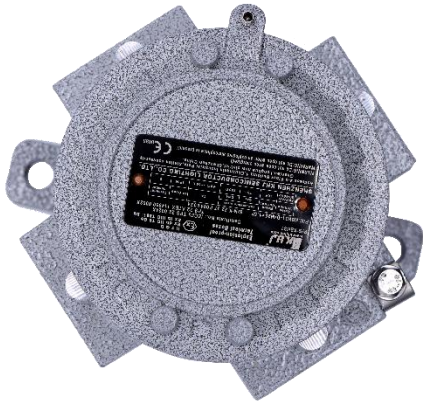


Type A
Weight: 0.6kg



Type B
Weight: 0.5kg

KBH31/32 Series Explosion proof Junction Box



Ex mark: II 2 G Ex db IIC T6 Gb

II 1 G Ex ia IIC T6 Ga

II 2 G Ex ib IIC T6 Gb

II 2 D Ex tb IIIC T80 °C Db

Rated voltage: 36VAC/DC, 220V DC, 400V AC, 500V AC

Rated current: 5A, 16A, 20A

Material: Aluminum alloy enclosure

Temperature: : -60°C~+55 °C

Application area: Zone 0

Zone 1 and Zone 2

Zone 21 and Zone 22

Cable entries: Standard M20×1.5~M32×1.5

Optional NPT1/2~NPT1

IECEX TPS 22.0024X, TPS 22 ATEX 114950 0002 X

Application and Features

- Explosion proof certificate:

- ATEX : TPS 22 ATEX 114950 0002 X

- IECEx : IECEx TPS 22.0024X

- Application in hazardous area





- Zone 0,

- Zone 1 and Zone 2,

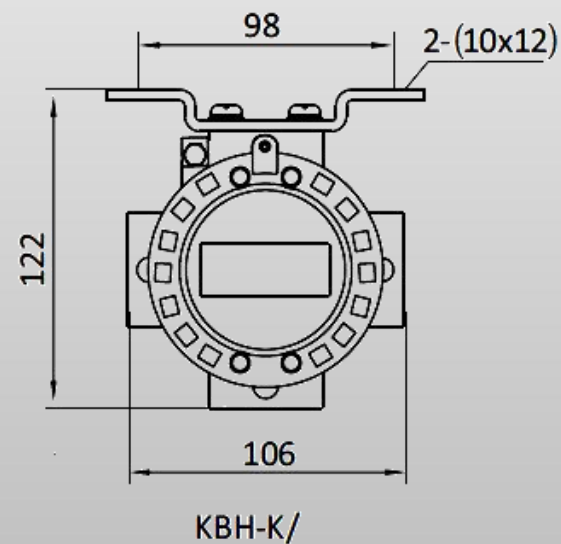
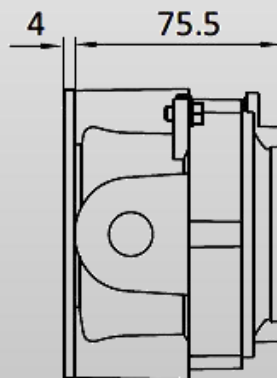
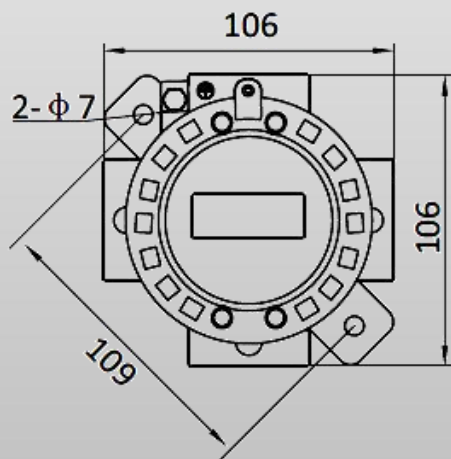
- Zone 21 and Zone 22

- This series product has 6 types for selection: A, B, C, D, E and K.

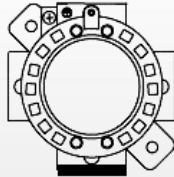
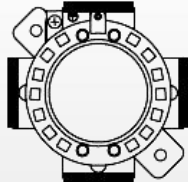
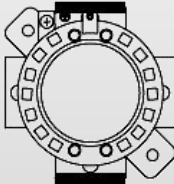
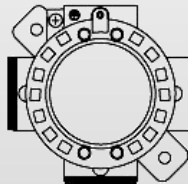
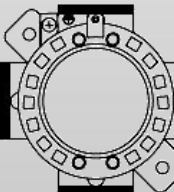
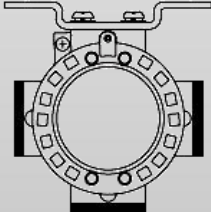
Selection Table

	Ex marking	Type	Terminal	Voltage	Current	Picture	Qty	Weight
Terminal block	Ex d, Ex tb	KBH31	MBK3/E-Z	400V AC 220V DC	16A		6	0.05kg
			MBK5/E-Z	500V AC 220V DC	20A		4	0.04kg
		KBH32	Pillar terminal 4-M5		20A			
	Ex i, Ex tb	KBH31	MBK3/E-Z	Max. 36VAC/DC	5A		6	0.05kg
			MBK5/E-Z				4	0.04kg
		KBH32	Pillar terminal 4-M5					

Typical dimensions



Typical model

Type	Code	Outline	Weight (kg)	Type	Code	Outline	Weight (kg)
KBH-ANPT1/2	A		0.66	KBH-DNPT1/2	D		0.66
KBH-ANPT3/4			0.65	KBH-DNPT3/4			0.71
KBH-ANPT 1			0.62	KBH-DNPT 1			0.60
KBH-AM20×1.5			0.65	KBH-DM20×1.5			0.70
KBH-AM25×1.5			0.67	KBH-DM25×1.5			0.67
KBH-AM32×1.5			0.62	KBH-DM32×1.5			0.60
KBH-BNPT1/2	B		0.68	KBH-ENPT1/2	E		0.68
KBH-BNPT3/4			0.66	KBH-ENPT3/4			0.66
KBH-BNPT 1			0.61	KBH-ENPT 1			0.61
KBH-BM20×1.5			0.67	KBH-EM20×1.5			0.67
KBH-BM25×1.5			0.65	KBH-EM25×1.5			0.65
KBH-BM32×1.5			0.61	KBH-EM32×1.5			0.61
KBH-CNPT1/2	C		0.69	KBH-K/	K		0.80
KBH-CNPT3/4			0.66				
KBH-CNPT 1			0.61				
KBH-CM20×1.5			0.69				
KBH-CM25×1.5			0.66				
KBH-CM32×1.5			0.61				

Note:

- Please advise the classification of the equipment used for and the certificate type :ATEX,IECEX.
- Please advise the enclosure material:GRP, SS304 or SS316 .
- Please advise the brand of internal terminal: Weidmüller or Phoenix.
- Please advise the specification and direction of the cable gland.
- Please advise the installation location:indoor or outdoor .Whether it needs to be equipped with rain cover, outer cabinet, etc.
- Please advise the installation method: hanging or vertical, whether it needs to be equipped with a bracket or installation accessories.
- Please advise if any other special requirements .
- The Ex mark of terminal box is Ex eb.
- Please provide the necessary information during the design process.



Thank you!