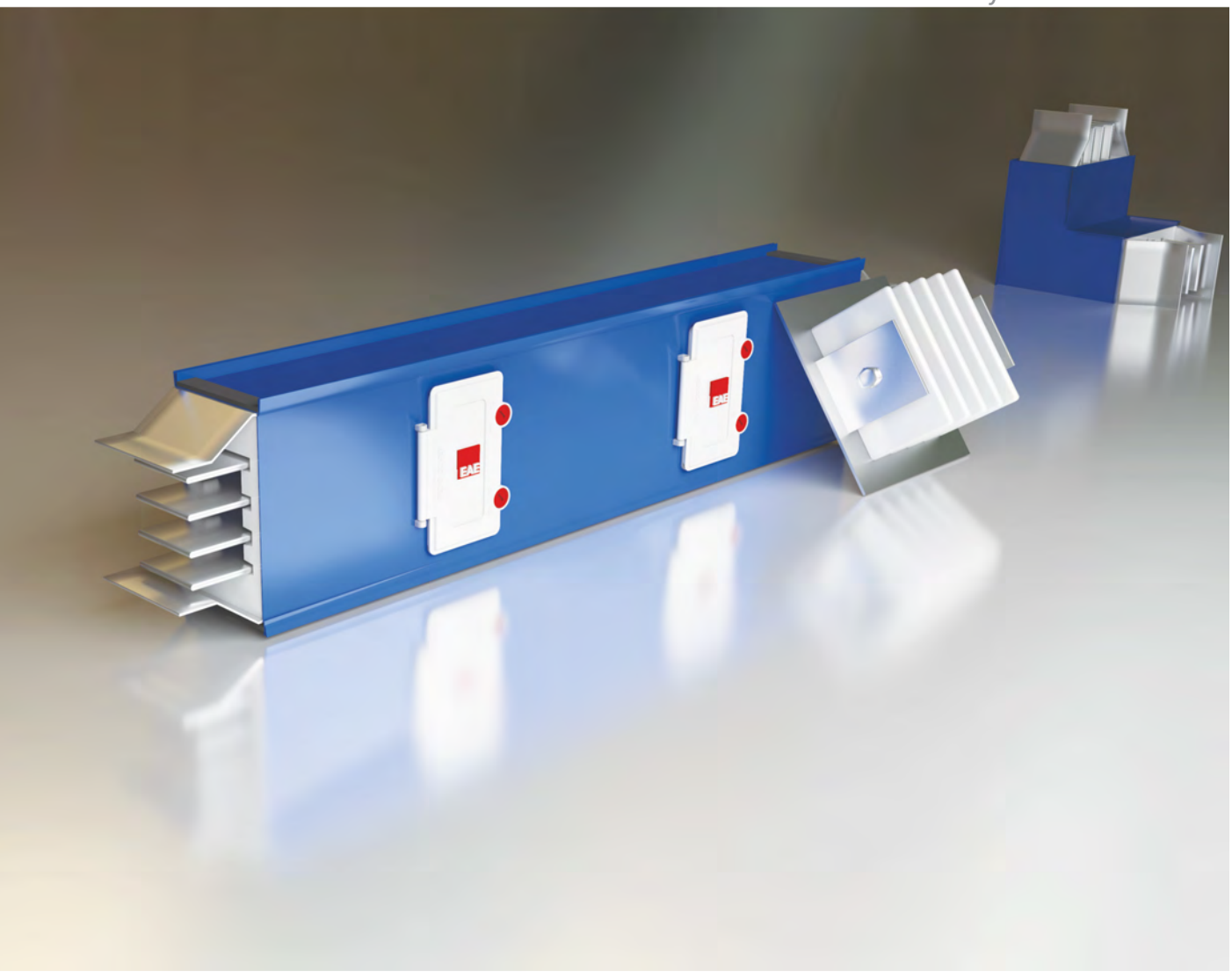
EAE
ELEKTRİK

E-LINEKO-II

Busbar Systems 160...800 A



www.eaeelectric.com

E-LINEKO-II

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E-LINE KO-II

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E-LINEKO-II

▶▶Introduction

E-Line KO-II Busbar System distributes electrical power, both vertically and horizontally at premises where there is a need for electrical power 160 A and 800 A.

It provides a prefabricated and flexible electrical distribution system for all factories engaged in mass production, like automobile plants, textile plants, furniture factories and for buildings where there is a need for a reliable power supply such as business centres, hotels, hospitals, warehouses and all high rise buildings.

• Fast, Flexible Engineering

The large number tap-off points makes it possible to engineer the power supply systems at an early stage, even before the final distribution of loads is known.

• Fast and Easy Mounting

Power is easily supplied to machines by E-Line KO-II The installation of the system does not require any expertise. Supports and accessories are available for mounting the system either from the ceiling or the wall.

• Safe Power Distribution and Transportation

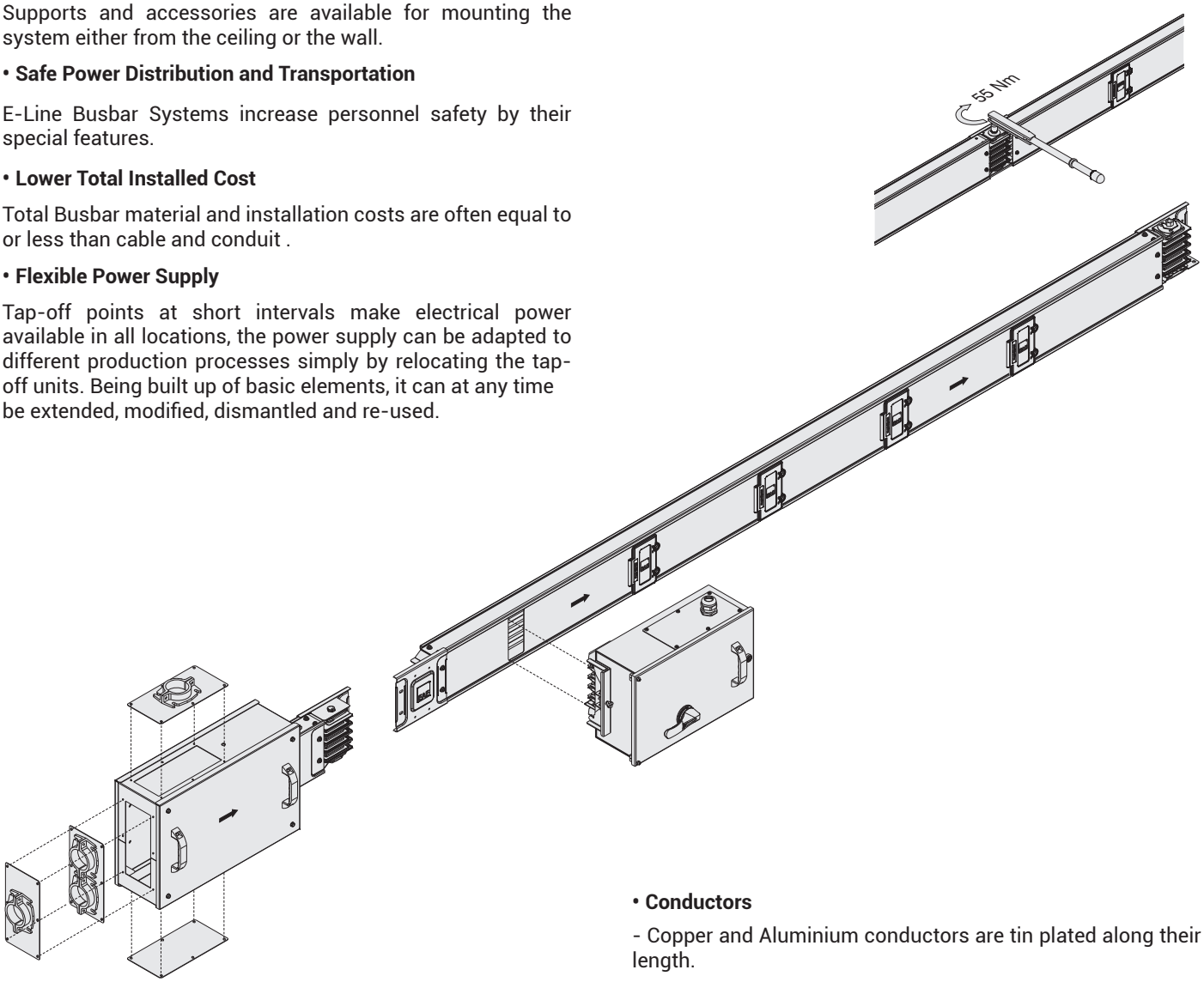
E-Line Busbar Systems increase personnel safety by their special features.

• Lower Total Installed Cost

Total Busbar material and installation costs are often equal to or less than cable and conduit .

• Flexible Power Supply

Tap-off points at short intervals make electrical power available in all locations, the power supply can be adapted to different production processes simply by relocating the tap-off units. Being built up of basic elements, it can at any time be extended, modified, dismantled and re-used.



• Safe Power Take Off

The earth of the tap-off box makes contact with the busbar first and ensures the safety, of the box andthe system that's been fed.

• Modern Appearance

Other than its functional advantages E-Line KO-II busbar system also creates a modern appearance in buildings where it is used.

• Lower Life Cycle Cost

Busbar components can be added, removed or relocated after the initial installation, saving time and money.

• Tap-off Points

Power can only be supplied by E-Line KO-II tap-off boxes. Where necessary the unused tap-off points can be restricted by sealing. Dust covers protect the system from any accidental contact and also prevents the ingress of pollutants from the environment.

• Conductors

- Copper and Aluminium conductors are tin plated along their length.

- Cross-section of neutral conductor is the same as the phase conductors.

- Upon request the KO-II range can also be manufactured with 5 conductors.

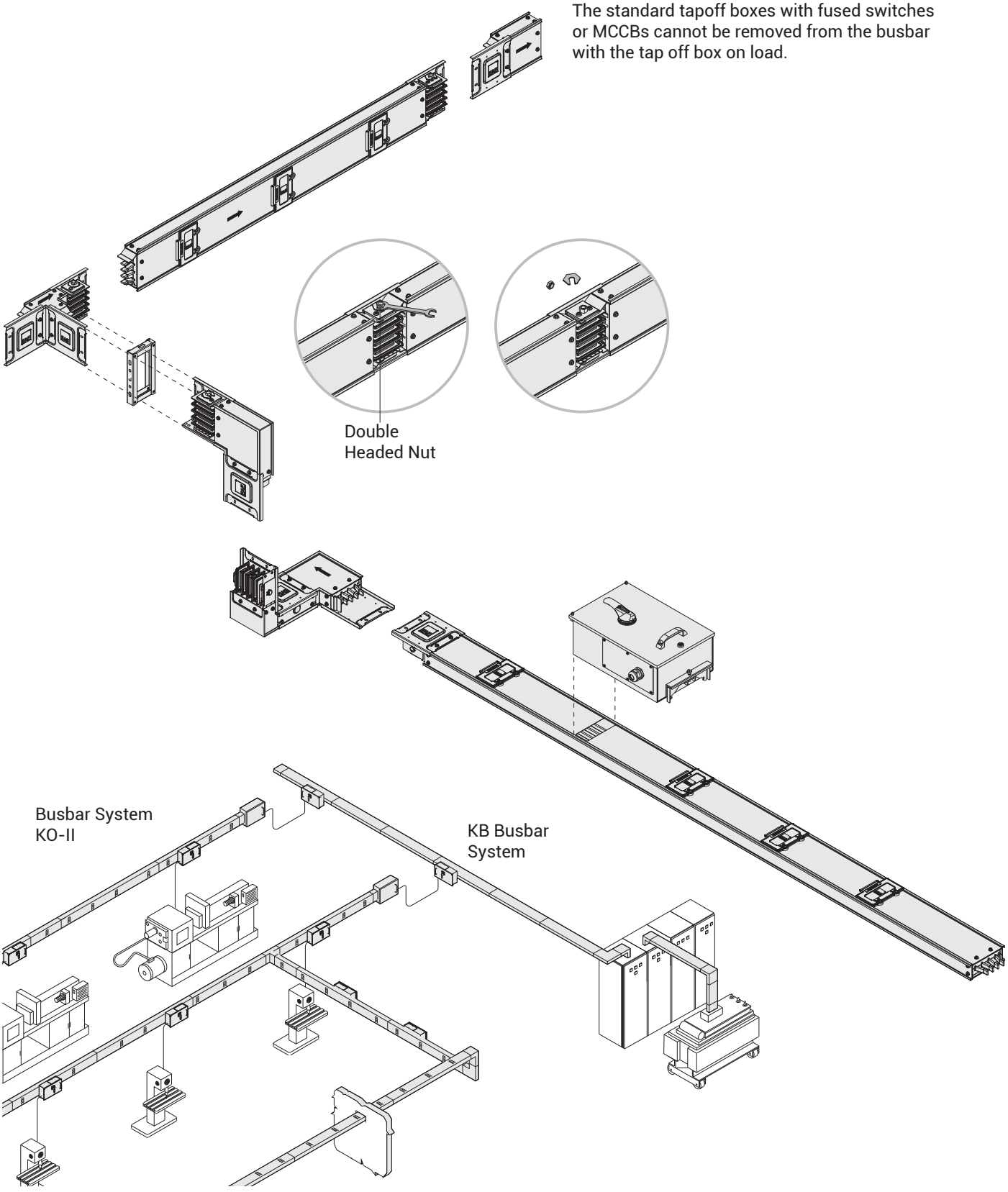
• **"One Bolt Joint"**

E-Line KO-II Busbars are easily installed by tightening the "one bolt joint". Belleville spring washers on both ends of the bolt retains the original contact pressure ensuring a more secure and reliable joint.

• **Tap-off Boxes**

Power upto 400A can be supplied by tap-off boxes. Standard tap-off boxes are equipped with an interlock mechanism which prevents the cover of tap-off boxes from being opened before the power is turned off.
Tap-off boxes are easily mounted on the busbar without any additional mounting equipment. Tap off boxes are fixed to E-Line KO-II Busbar by integral fixing clamps.

The standard tapoff boxes with fused switches or MCCBs cannot be removed from the busbar with the tap off box on load.



E-LINEKO-II

▶▶Design

While designing an electrical distribution system with E-Line KO-II a few approximate details will be necessary.

- Location, number, type and approximate ratings of loads,
- Transformer rates and short-circuit capacities,
- Utilization factor = α
- System co-ordination with other distribution systems (heat, water, etc.)
- Determining the route of E-Line KO-II on layouts,
- Deciding on suitable supports,
- If necessary, co-ordination of E-Line KB and E-Line MK-KAP with E-Line KO-II runs.

Rated Current

The current is calculated using the following equation.

$$I_B = \frac{P.\alpha}{\sqrt{3}.U.\cos\varphi}$$

I_B = *Operating Current (A)*
P = *Installed Load (W)*
α = *Utilization Factor*
U = *Supply Voltage*

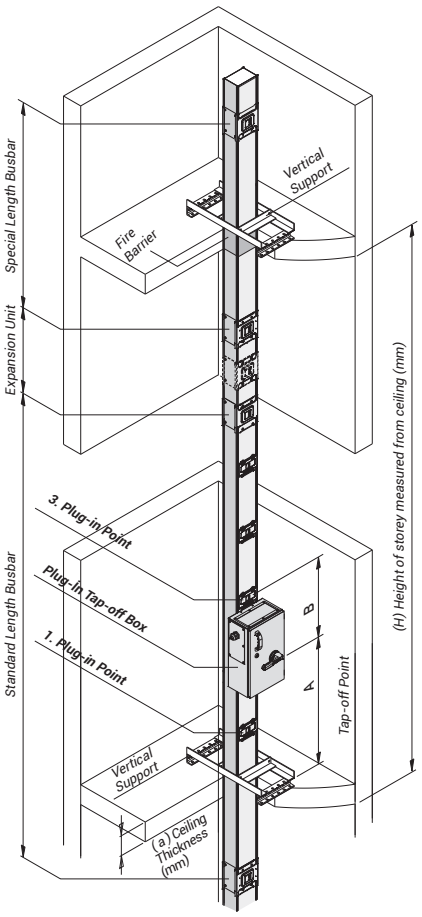
- Busbar Current rating is chosen as equal to or higher then the calculated I_B current.
- After the voltage drop calculation if the chosen current rating is too low, a higher rating should be selected.

Diversity Factor (a)

The diversity factor(a) depends on the type and number of loads.
It is usually around 0.7 or lower. The diversity factor of a line supplying electric motors and lighting systems is usually 0.6 It is as low as 0.5 in welding shops of car factories,
(a) can be 1 in lines where only one big load is supplied.

Applications

As each building's structure is different from another for vertical and horizontal applications special projects have to be designed.



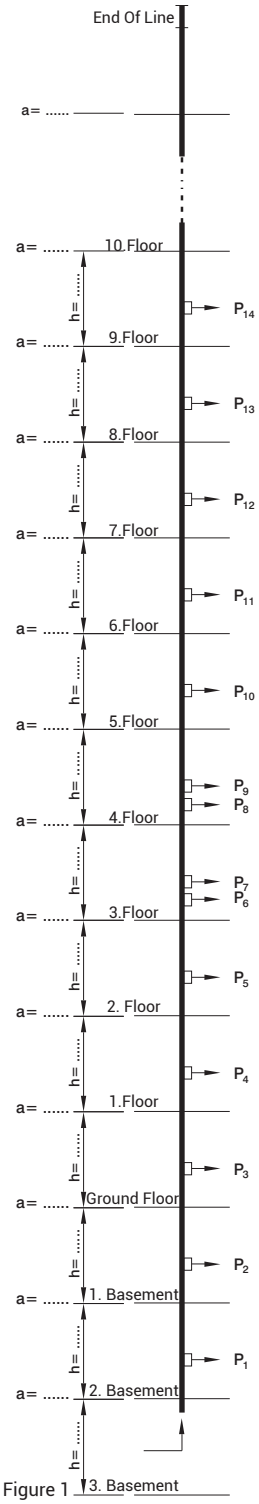
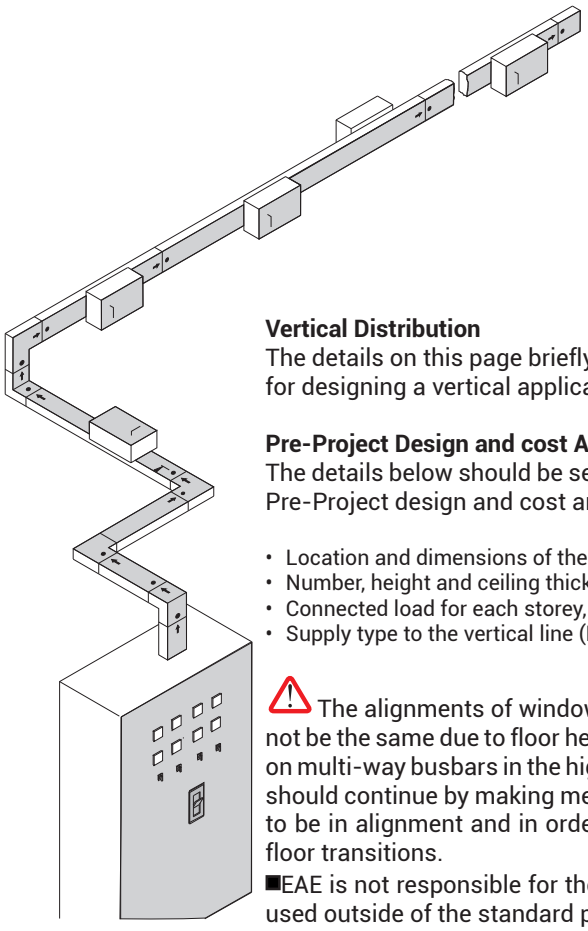


Figure 1



Vertical Distribution

The details on this page briefly explain the necessary information required for designing a vertical application project.

Pre-Project Design and cost Analysis

The details below should be sent to our Project and Design Department for Pre-Project design and cost analysis.

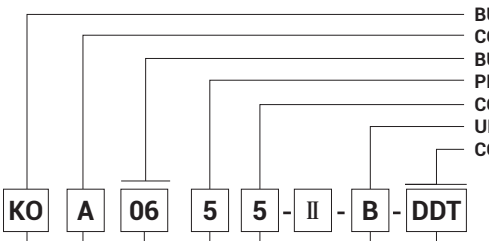
- Location and dimensions of the shaft where busbar will be installed,
- Number, height and ceiling thickness of each storey, (h=)
- Connected load for each storey, (a=)
- Supply type to the vertical line (Busbar or Cable) (p=)

⚠ The alignments of windows or adjunction points on upper floors may not be the same due to floor heights, slab thickness and product tolerances on multi-way busbars in the high-rise vertical shaft applications. Assembly should continue by making measurements on each floor in order for boxes to be in alignment and in order for adjunction points not to coincide with floor transitions.

■EAE is not responsible for the potential risks that may occur in cases where the products in our catalogue are used outside of the standard phase sequences as shown in the catalogue.

E-LINEKO-II

▶▶Order Code System



Busbar Type

Aluminium	A
Copper	C

Conductor Type

Busbar Rated Current		Busbar Code	
Aluminium	160	01	6x20
	250	02	6x25
	315	03	6x30
	400	04	6x50
	500	05	6x62,5
	600	06	6x75
	800	08	6x110
Copper	250	02	6x20
	315	03	6x25
	400	04	6x30
	600	06	6x50
	800	08	6x75

Busbar Code

IP 55	5

Protection Degree

Components

Plug-in Standard Length	STD
Plug-in Special Length	X
Feeder Standard Length	FTD
Feeder Special Length	FX
Right Elbow	R
Left Elbow	L
Downwards Elbow	D
Upwards Elbow	U
Right Upwards Combined	KRU
Left Upwards Combined	KLU
Right Downwards Combined	KRD
Left Downwards Combined	KLD
Upwards Right Combined	KUR
Upwards Left Combined	KUL
Downwards Right Combined	KDR
Downwards Left Combined	KDL
Upwards Vertical Offset	UV
Downwards Vertical Offset	DV
Right Horizontal Offset	RH
Left Horizontal Offset	LH
"T" Component	T
Cross	DD
Reductions	RD
End Closer	S
Horizontal Expansion	YDT
Vertical Expansion	DDT
Flexible	F
Feeder Box 1	B1
Feeder Box 2	B2
Central Feeder Box 1	BO1
Central Feeder Box 2	BO2
Panel Connections	P10
Panel Connections	P11

Conductor Configuration

Number of Conductors	Code	Configuration								
		L1	L2	L3	N	PE	½ PE	CPE	½ CPE	PE (Housing)
4 conductors	4	✓	✓	✓	✓					✓
5 conductors	5	✓	✓	✓	✓	✓				✓
4 ½ conductors	6	✓	✓	✓	✓		✓			✓
5 conductors (CPE)	7	✓	✓	✓	✓			✓		✓
4 ½ conductors (CPE)	9	✓	✓	✓	✓				✓	✓

Paint

UNPAINTED	-
PAINTED	B

E-LINEKO-II

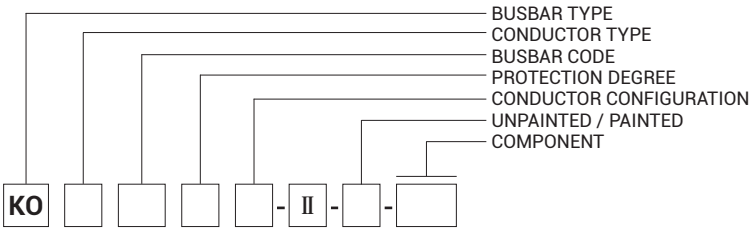
▶▶Technical Characteristics

Rated Current	In	A	Aluminium Conductor (KOA)							Copper Conductor (KOC)				
			160	250	315	400	500	600	800	250	315	400	600	800
Busbar Code			01	02	03	04	05	06	08	02	03	04	06	08
Standards	IEC 61439-6, TS EN 61439-6, IEC 61439-1, TS EN 61439-1													
Rated Insulation Voltage	Ui	V	1000											
Max. Rated Operational Voltage	Ue	V	1000											
Rated Frequency	f	Hz	50											
Pollution Degree	3													
Protection Degree	IP	55												
External Mechanical Impacts (IK Code)	Plug-in Busbar IK09													
Protection for Safety	Basic protection (HD 60364-4-41, clause A1)													
Rated Short-time Withstand Current (1s)	I_{pk}	$kA_{(rms)}$	10	15	15	30	30	35	35	18	18	25	35	35
Rated Peak Withstand Current	I_{cw}	kA	17	30	30	63,5	63,5	73,5	73,5	36	36	52,5	73,5	73,5
Rated Short-time withstand Current (N) (1s)	I_{pk}	kA	6	9	9	18	18	21	21	10,8	10,8	15	21	21
Rated Peak Withstand Current (N)	I_{cw}	kA	10,2	15,3	15,3	36	36	44,1	44,1	21,6	21,6	30	44,1	44,1
Rated Short-time withstand Current (PE) (1s)	I_{pk}	kA	6	9	9	18	18	21	21	10,6	10,6	15	21	21
Rated Peak Withstand Current (PE)	I_{pk}	kA	10,2	15,3	15,3	36	36	44,1	44,1	21,6	21,6	30	44,1	44,1
MEAN PHASE CONDUCTOR CHARACTERISTICS AT RATED CURRENT I_n														
Resistance at a conductor temperature of 20 °C	R_{20}	mΩ/m	0,314	0,238	0,200	0,115	0,094	0,075	0,049	0,170	0,135	0,109	0,066	0,044
Resistance at an ambient air temperature of 35 °C	R	mΩ/m	0,379	0,309	0,271	0,151	0,127	0,104	0,066	0,213	0,172	0,145	0,090	0,061
Reactance (Independent from Temperature)	X	mΩ/m	0,169	0,158	0,147	0,111	0,094	0,083	0,064	0,171	0,159	0,147	0,112	0,085
Positive and negative sequence impedances at an ambient air temperature of 35 °C	Z	mΩ/m	0,415	0,347	0,308	0,188	0,158	0,133	0,092	0,273	0,234	0,206	0,143	0,104
Positive and negative sequence impedances at a conductor temperature of 20 °C	Z_{20}	mΩ/m	0,356	0,286	0,248	0,160	0,133	0,112	0,081	0,241	0,208	0,183	0,130	0,096
Rated Power Loss at 35 °C		mΩ/m	29,0	56,2	78,1	69,0	91,4	110,0	123,8	38,3	49,5	67,9	94,0	112,5
DC Resistance at a conductor temperature of 20 °C for Phases	R/ort_{Ph}	mΩ/m	0,292	0,221	0,189	0,108	0,087	0,072	0,043	0,151	0,119	0,098	0,058	0,039
DC Resistance at a conductor temperature of 20 °C for Neutral	R_N	mΩ/m	0,292	0,219	0,188	0,111	0,089	0,072	0,044	0,152	0,119	0,098	0,059	0,039
DC Resistance at a conductor temperature of 20 °C for PE	R_{PE}	mΩ/m	0,320	0,303	0,295	0,273	0,318	0,296	0,232	0,299	0,305	0,302	0,255	0,240
SECTIONS														
L1,L2,L3,N		mm²	120	150	180	300	375	450	660	120	150	180	300	450
PE (4 ½ Conductors)		mm²	60	75	90	150	187,5	225	330	60	75	90	150	225
PE (5 Conductors)		mm²	120	150	180	300	375	450	660	120	150	180	300	450
Housing Section (Sheet Metal)		mm²	583	593	603	643	668	693	730	583	593	603	643	693
Conductor Dimensions		mmxmm	6x20	6x25	6x30	6x50	6x62,5	6x75	6x110	6x20	6x25	6x30	6x50	6x75
Busbar Weight (4 Conductors)(1)		kg/m	7	7,5	8	10	11	12	15,1	10	11	12,5	16	18
Busbar Weight (5 Conductors)(1)		kg/m	7,3	8	8,7	11	12	13	17	11	12,5	14	19	21
MEAN FAULT-LOOP CHARACTERISTICS														
Zero-sequence Impedance														
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)\ b20phN}$	mΩ/m	1,669	1,374	1,223	0,815	0,670	0,581	0,411	1,177	1,013	0,897	0,625	0,464
Zero-sequence impedance at a conductor temperature of 20 °C	$Z_{(0)\ b20phPE}$	mΩ/m	2,209	1,834	1,696	1,408	1,443	1,256	1,003	1,818	1,608	1,453	1,181	1,052
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)\ bphN}$	mΩ/m	1,925	1,651	1,497	0,956	0,796	0,699	0,473	1,319	1,137	1,014	0,703	0,516
Zero-sequence impedance at an ambient temperature of 35 °C	$Z_{(0)\ bphPE}$	mΩ/m	2,590	2,277	2,167	1,753	1,874	1,669	1,294	2,167	1,952	1,814	1,530	1,386
Resistances and Reactances														
Resistance at a conductor temperature of 20 °C	$R_{b20phph}$	mΩ/m	0,627	0,475	0,408	0,239	0,191	0,159	0,098	0,335	0,265	0,222	0,134	0,091
Resistance at a conductor temperature of 20 °C	R_{b20phN}	mΩ/m	0,648	0,496	0,428	0,258	0,204	0,169	0,105	0,359	0,287	0,242	0,148	0,101
Resistance at a conductor temperature of 20 °C	$R_{b20phPE}$	mΩ/m	0,837	0,777	0,745	0,606	0,570	0,506	0,401	0,709	0,656	0,612	0,495	0,417
Resistance at an ambient air temperature of 35 °C	R_{bphph}	mΩ/m	0,763	0,623	0,552	0,315	0,259	0,221	0,134	0,419	0,340	0,294	0,185	0,127
Resistance at an ambient air temperature of 35 °C	R_{bphN}	mΩ/m	0,788	0,651	0,580	0,340	0,277	0,236	0,143	0,449	0,369	0,321	0,204	0,141
Resistance at an ambient air temperature of 35 °C	R_{bphPE}	mΩ/m	1,018	1,019	1,010	0,799	0,774	0,706	0,544	0,886	0,843	0,812	0,684	0,580
Reactance (Independent from temperature)	X_{bphph}	mΩ/m	0,331	0,308	0,282	0,212	0,178	0,158	0,123	0,328	0,302	0,277	0,210	0,159
Reactance (Independent from temperature)	X_{bphN}	mΩ/m	0,441	0,418	0,389	0,299	0,249	0,224	0,179	0,441	0,412	0,382	0,296	0,228
Reactance (Independent from temperature)	X_{bphPE}	mΩ/m	0,438	0,460	0,442	0,384	0,327	0,304	0,268	0,453	0,445	0,421	0,359	0,295

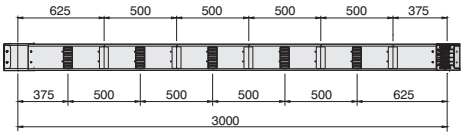
(1) Joint weight is included rated 1/3 of the weight of the joint in the indicated weights per meter.

E-LINEKO-II

▶▶Standard Components



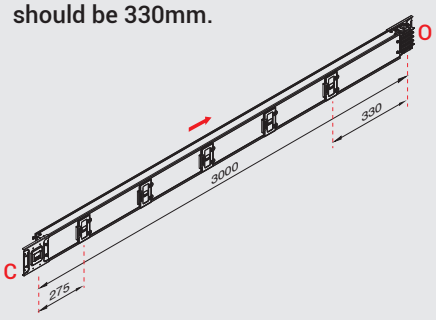
EAE ELEKTRİK

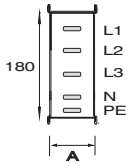


Electrical Power up to 400A can be supplied from the busbar by Tap-off boxes.

E-Line KO-II Busbar is manufactured in 3m lengths as standard, special lengths can be manufactured on request.

- **Your special plug-in window requests, please note that the tap off boxes that you will attach to the plug-in points do not overlap each other.**
- **Your plastic tap off box options;**
  The first plug-in window minimum size should be 275mm,
  The final plug-in window minimum size should be 330mm.





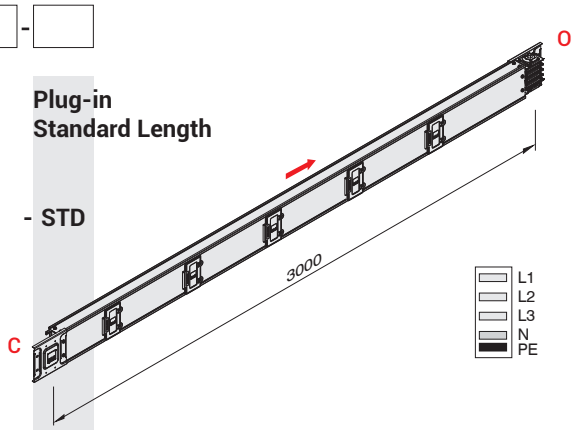
Current	Aluminium	Copper
(A)	(A) mm	(A) mm
160	70	-
250	75	70
315	80	75
400	100	80
500	112	-
600	125	100
800	160	125

Busbar cross-section dimension.
Please call us for non-standard components.

Sample Order:
250 A, Aluminium, Plug-in,
IP 55, 4 Conductors
KOA 0254-II-STD

Plug-in
Standard Length

- STD

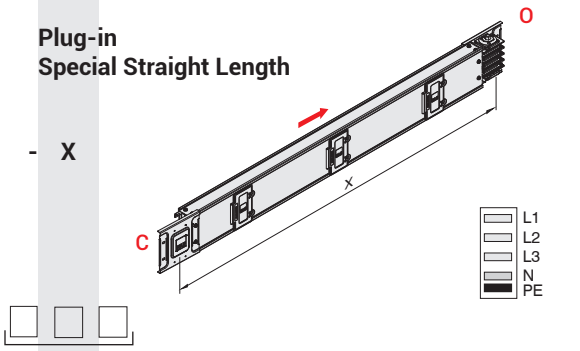


Sample Order:
400 A, Copper, Plug-in,
IP 55, 850 mm. 5 Conductors
KOC 0455-II-85

Minimum special length that can be manufactured is 350 mm.

Plug-in
Special Straight Length

- X

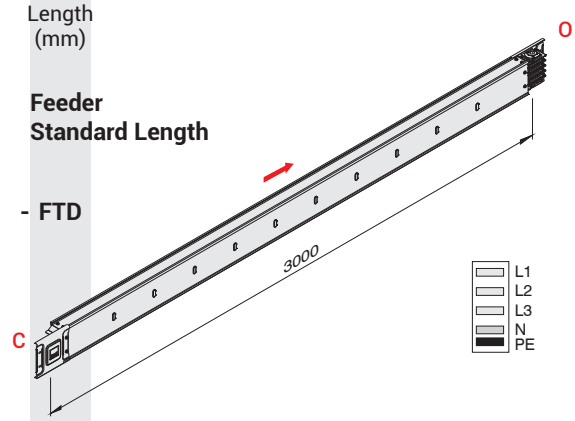


X Special Straight Length (mm)

Sample Order:
315 A, Aluminium, Feeder,
IP 55, 5 Conductors
KOA 0355-II-FTD

Feeder
Standard Length

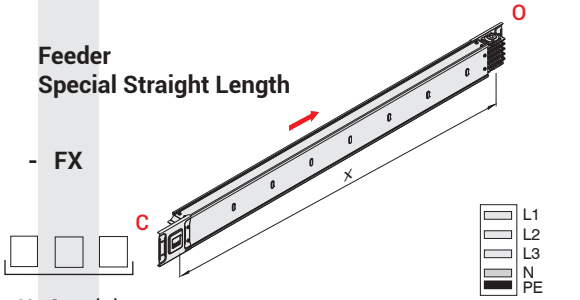
- FTD



Sample Order:
160 A, Aluminium, Feeder,
IP 55, 600 mm, 4 Conductors
KOA 0154-II-60

Feeder
Special Straight Length

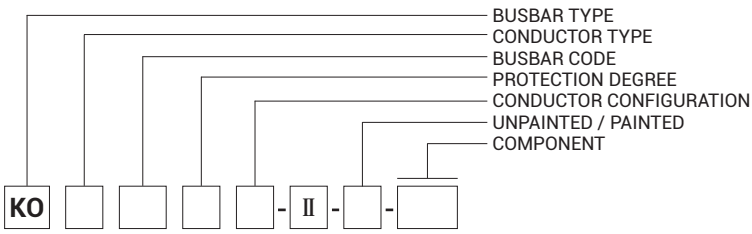
- FX



X Special Straight Length (mm)

E-LINEKO-II

▶▶Elbows

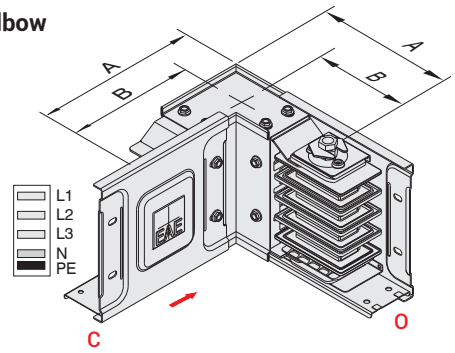


Current		A	B
ALUMINIUM	160	180	145
	250	185	147
	315	190	150
	400	210	160
	500	222	166
	600	235	172
	800	270	190
COPPER	250	180	145
	315	185	147
	400	190	150
	600	210	160
	800	235	172

Sample Order:
250 A, Aluminium, IP 55, 4 Conductors
KOA 0254-II-R

Right Elbow

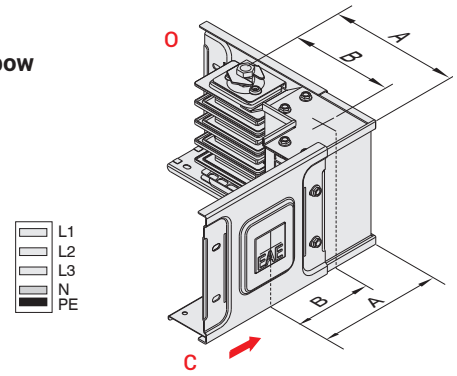
- R



Sample Order:
600 A, Copper, IP 55, 5 Conductors
KOA 0655-II-L

Left Elbow

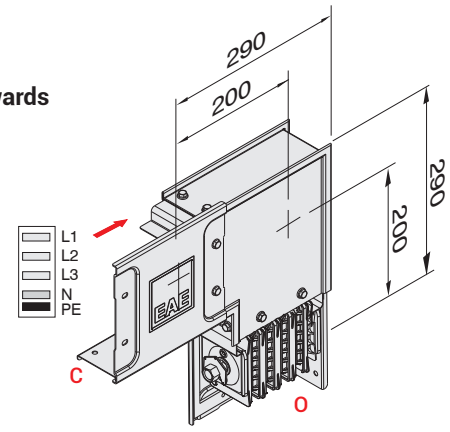
- L



Sample Order:
400 A, Aluminium, IP 55, 4 Conductors
KOA 0454 -II- D

Downwards Elbow

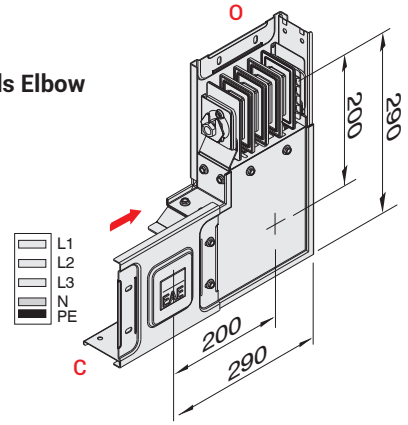
- D



Sample Order:
600 A, Copper, IP 55, 5 Conductors
KOA 0655-II-U

Upwards Elbow

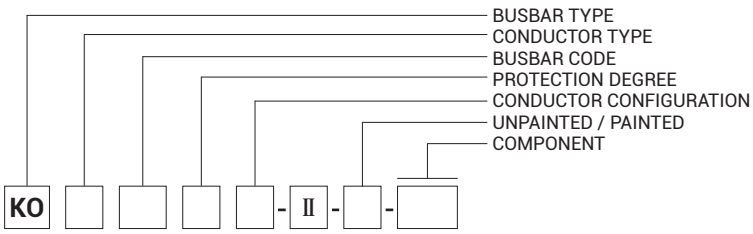
- U



Please call us for non-standard components.

E-LINEKO-II

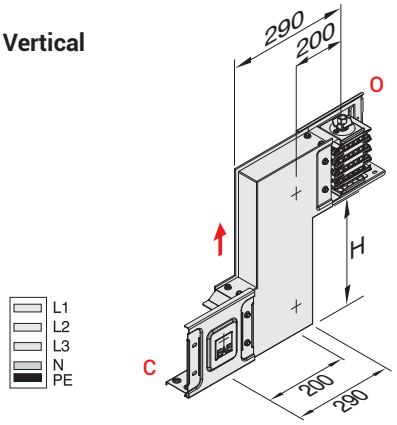
▶▶Elbows



H= min. 200 mm.
Sample Order:
250 A, Aluminium, IP 55,
4 Conductors
KOA 0254 -II- UV

Upwards Vertical Offset

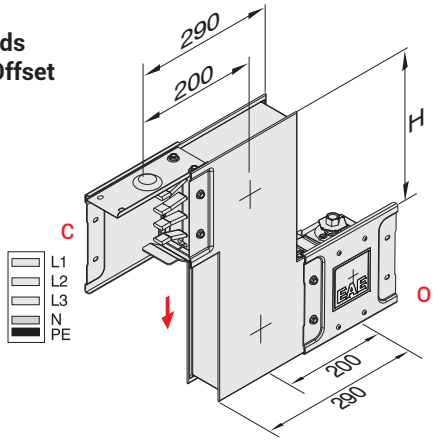
- UV



H= min. 200 mm.
Sample Order:
400 A, Copper, IP 55,
5 Conductors
KOC 0455 -II- DV

Downwards Vertical Offset

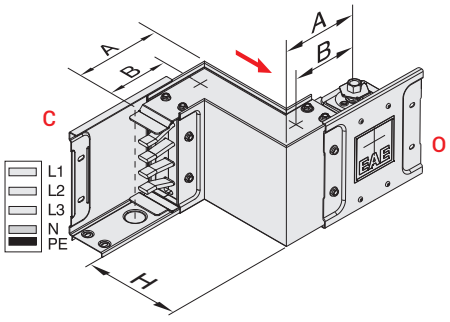
- DV



H= min. 150 mm.
Sample Order:
315 A, Aluminium, IP 55,
5 Conductors
KOA 0355 -II- RH

Right Horizontal Offset

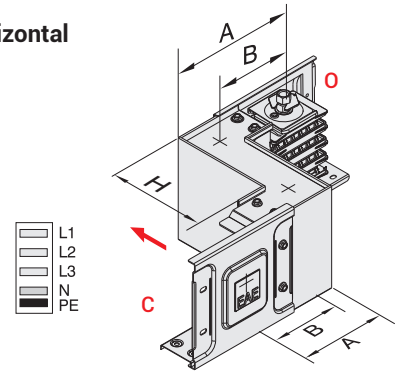
- RH



H= min. 150 mm.
Sample Order:
160 A, Aluminium, IP 55,
4 Conductors
KOA 0154-II-LH

Left Horizontal Offset

- LH

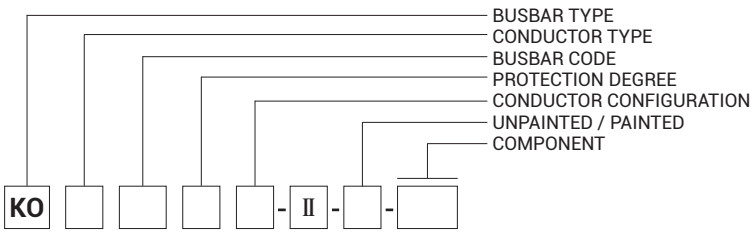


Current		A	B
ALUMINIUM	160	180	145
	250	185	147
	315	190	150
	400	210	160
	500	222	166
	600	235	172
	800	270	190
COPPER	250	180	145
	315	185	147
	400	190	150
	600	210	160
	800	235	172

Please call us for non-standard components.

E-LINEKO-II

▶▶Elbows

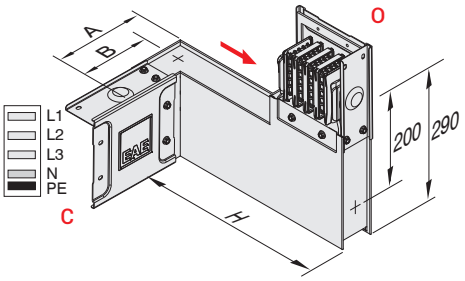


Current		A	B
ALUMINIUM	160	180	145
	250	185	147
	315	190	150
	400	210	160
	500	222	166
	600	235	172
	800	270	190
COPPER	250	180	145
	315	185	147
	400	190	150
	600	210	160
	800	235	172

H= min. 200 mm.
Sample Order:
250 A, Aluminium, IP 55,
4 Conductors
KOA 0254-II-KRU

Right Upwards Combined Offset

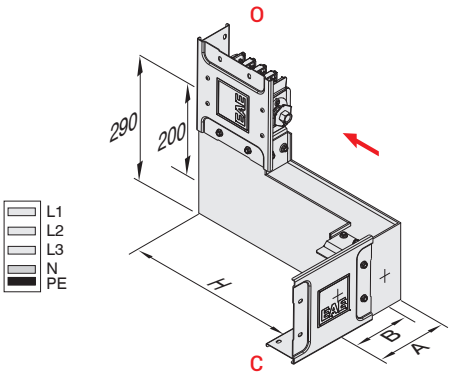
- KRU



H= min. 200 mm.
Sample Order:
400 A, Copper, IP 55,
5 Conductors
KOC 0455 -II- KLU

Left Upwards Combined Offset

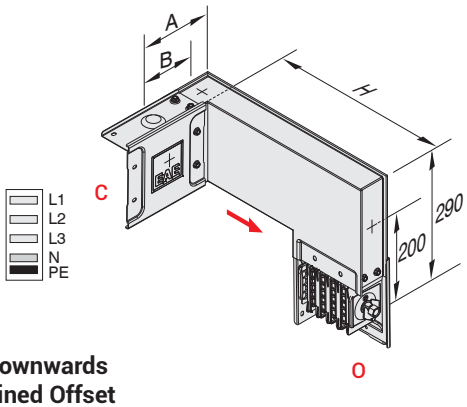
- KLU



H= min. 200 mm.
Sample Order:
315 A, Aluminium, IP 55,
5 Conductors
KOA 0355 -II- KRD

Right Downwards Combined Offset

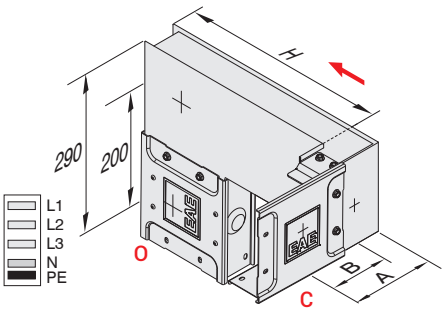
- KRD



H= min. 200 mm.
Sample Order:
160 A, Aluminium, IP 55,
4 Conductors
KOA 0154-II-KLD

Left Downwards Combined Offset

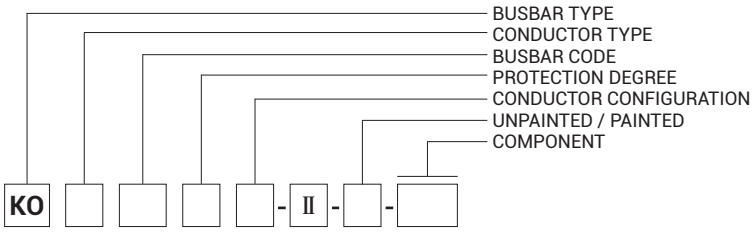
- KLD



Please call us for non-standard components.

E-LINEKO-II

▶▶Elbows

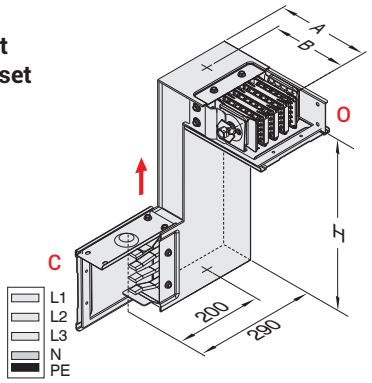


Current		A	B
ALUMINIUM	160	180	145
	250	185	147
	315	190	150
	400	210	160
	500	222	166
	600	235	172
	800	270	190
COPPER	250	180	145
	315	185	147
	400	190	150
	600	210	160
	800	235	172

H= min. 200 mm.
Sample Order:
250 A, Aluminium, IP 55,
4 Conductors
KOA 0254 -II- KUR

Upwards Right Combined Offset

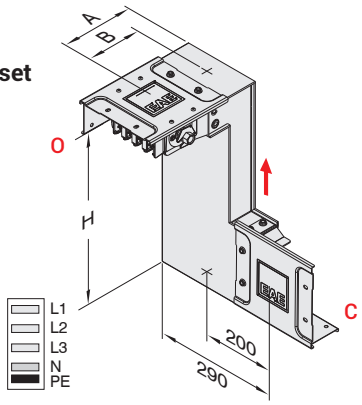
- KUR



H= min. 200 mm.
Sample Order:
400 A, Copper, IP 55,
5 Conductors
KOC 0455 -II- KUL

Upwards Left Combined Offset

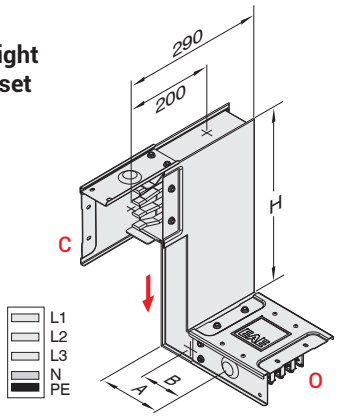
- KUL



H= min. 200 mm.
Sample Order:
315 A, Aluminium, IP 55,
5 Conductors
KOA 0355 -II- KDR

Downwards Right Combined Offset

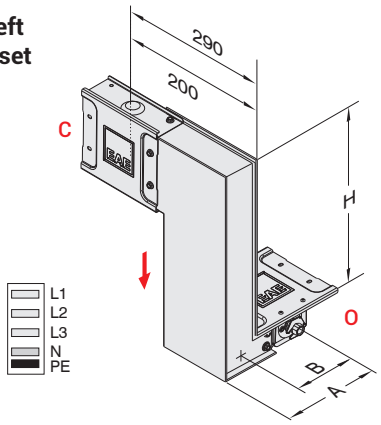
- KDR



H= min. 200 mm.
Sample Order:
160 A, Aluminium, IP 55,
4 Conductors
KOA 0154-II-KDL

Downwards Left Combined Offset

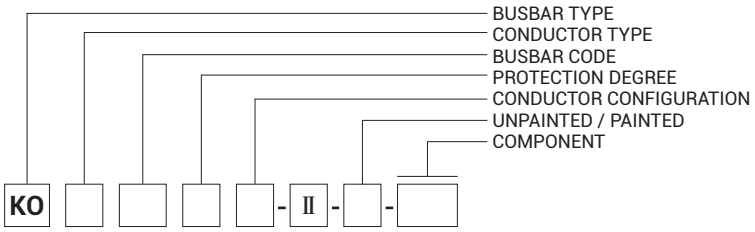
- KDL



Please call us for non-standard components.

E-LINEKO-II

▶▶Standard Components



Reduction
Is used to change the busbar cross section.

NOTE:
The selection of the reduction unit and the lower side protection is the responsibility of the customer.

Reducers Table

KOA - Al Conductor

Rated Current	Reduced Busbar Current					
	160	250	315	400	500	600
250	✓	-	-	-	-	-
315	✓	✓	-	-	-	-
400	-	✓	✓	-	-	-
500	-	-	✓	✓	-	-
600	-	-	-	✓	✓	-
800	-	-	-	-	✓	✓

1 ↓ 2 →

KOC - Cu Conductor

Rated Current	Reduced Busbar Current			
	250	315	400	600
315	✓	-	-	-
400	✓	✓	-	-
600	-	✓	✓	-
800	-	-	✓	✓

1 ↓ 2 →

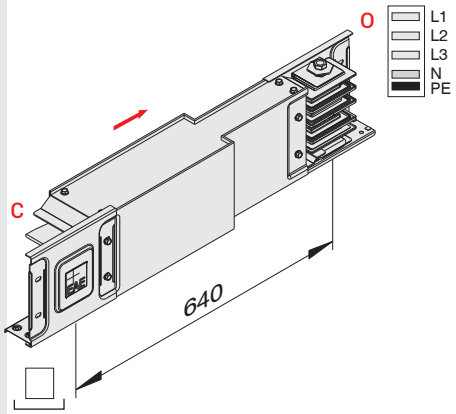
Current		A	B
ALUMINIUM	160	290	145
	250	295	147
	315	300	150
	400	320	160
	500	332	166
	600	345	172
	800	380	190
COPPER	250	290	145
	315	295	147
	400	300	150
	600	320	160
	800	345	172

Please call us for non-standard components.

Sample Order:
400-250 A, Aluminium,
IP 55,5 Conductors
KOA 0455-II-RD2

Reduction

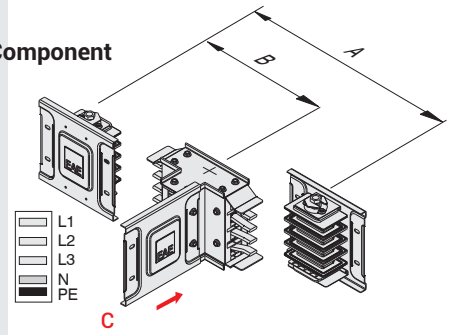
- RD



Sample Order:
250 A, Aluminium, IP 55,
4 Conductors
KOC 0254 -II- T

"T" Component

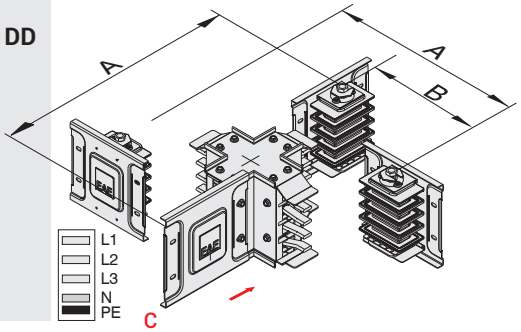
- T



Sample Order:
600 A, Aluminium, IP 55,
4 Conductors
KOA 0654-II-DD

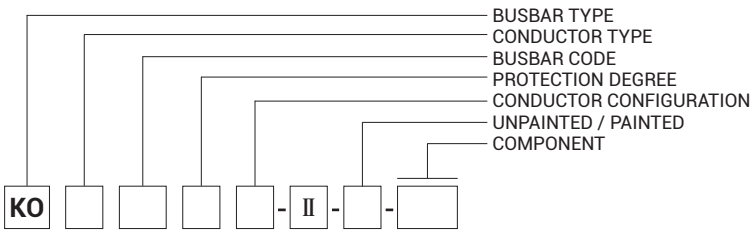
Cross

- DD



E-LINEKO-II

▶▶Standard Components

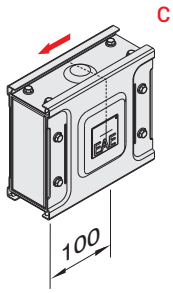


End Closer
Is used to close the end of busbar run.

Sample Order:
250 A, Copper, IP 55, 5 Conductors
KOC 0255 -II- S

End Closer

- S

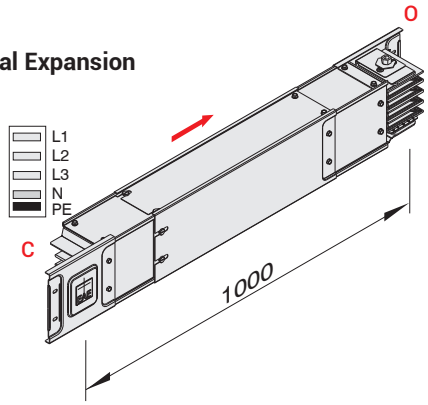


Horizontal Expansion
For long horizontal runs and for crossing the building expansions.
(See page no.27 for application)

Sample Order:
250 A, Aluminium, IP 55, 4 Conductors
KOA 0254 -II- YDT

Horizontal Expansion

- YDT

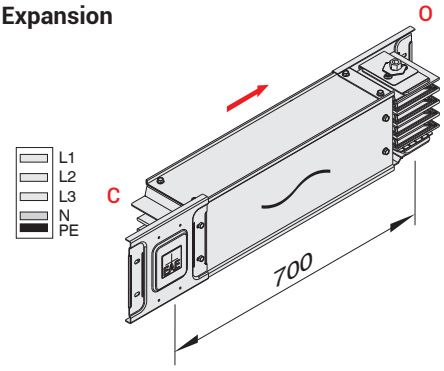


Vertical Expansion
For vertical applications in multi- storey buildings.
(See page no.27 for application)

Vertical Expansion

Sample Order:
250 A, Copper, IP 55, 5 Conductors
KOC 0255 -II- DDT

- DDT

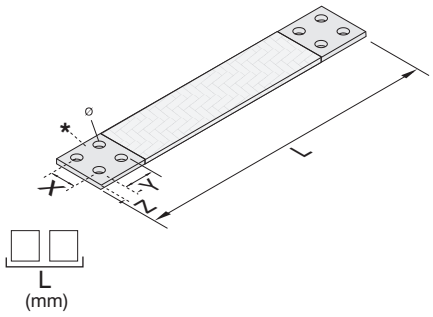


Flexibles
Are used for panel-busbar connections.

Flexibles

Sample Order:
600 A, Aluminium, 4 Conductors 550 mm.
KOA 0454 -II- F55

- F

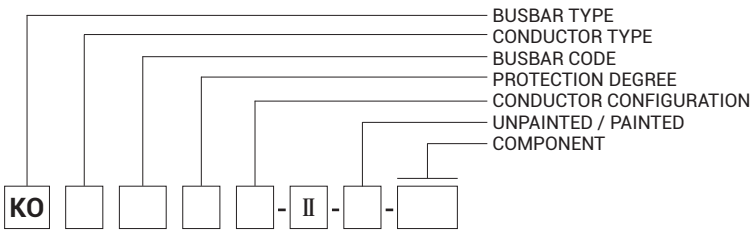


Please call us for non-standard components.

*** Please indicate X, Y, Z and ø measurement on order.**

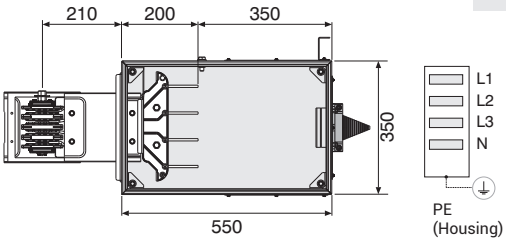
E-LINEKO-II

▶▶Feeder Boxes



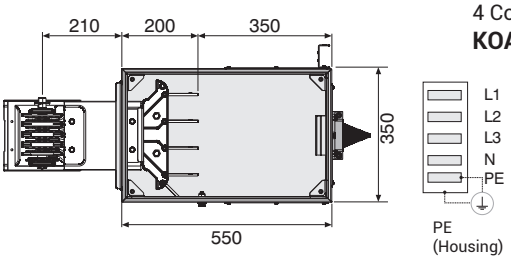
Sample Order:
250 A, Copper IP 55,
5 Conductors
KOC 0255-II-B1

4 conductors

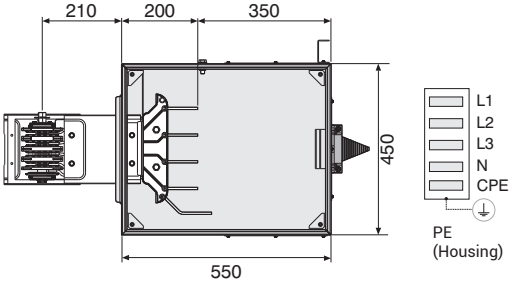


Sample Order:
250 A, Aluminium IP 55,
4 Conductors
KOA 0255 -II- B2

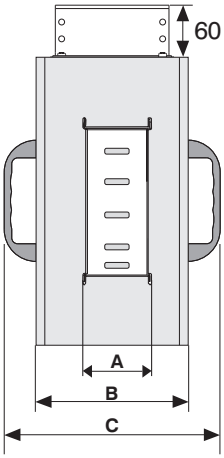
4,5 / 5 PE conductors



4,5 / 5 CPE (Clean Earth) conductors

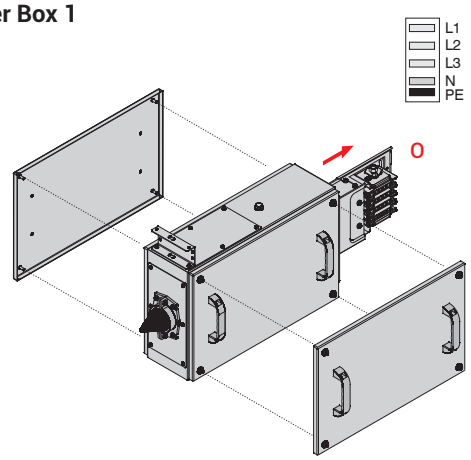


Current		A	B	C
ALUMINIUM	160	70	180	260
	250	75	180	260
	315	80	180	260
	400	100	180	260
	500	112	240	315
	600	125	240	315
	800	160	300	375
COPPER	250	70	180	260
	315	75	180	260
	400	80	180	260
	600	100	180	260
	800	125	240	315



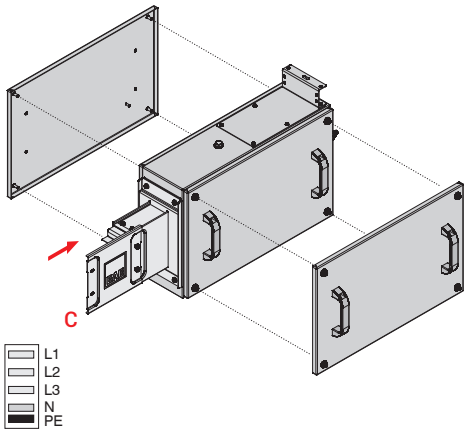
Feeder Box 1

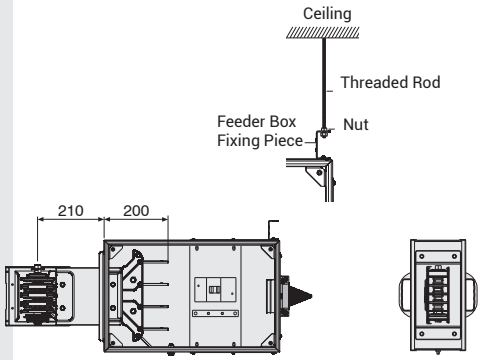
- B1



Feeder Box 2

- B2



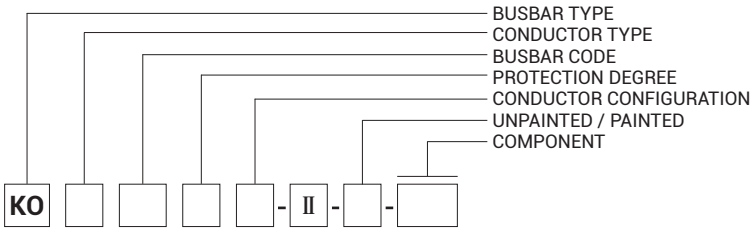


Feeder Box sample equipped with MCCB

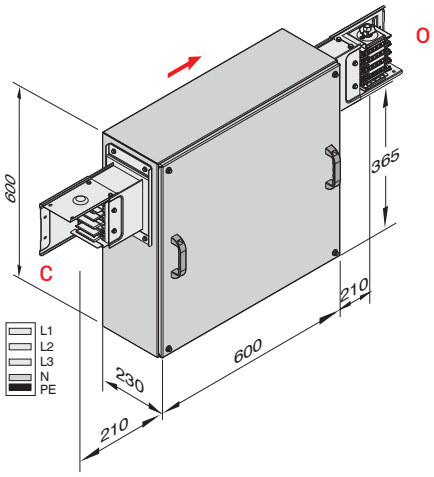
Please call us for special applications or for applications with MCB's

E-LINEKO-II

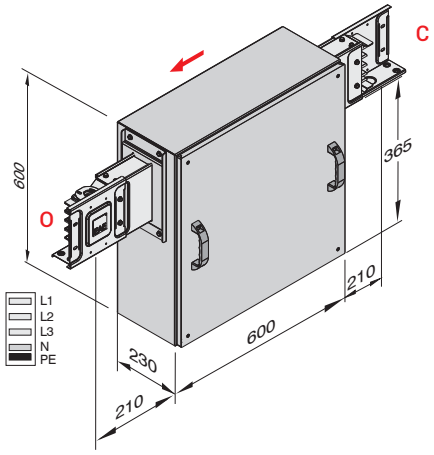
▶▶Feeder Boxes
(Central Feeder Box BO)

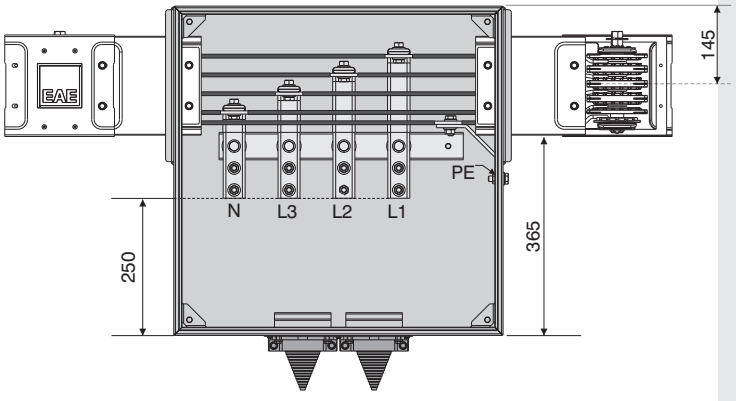


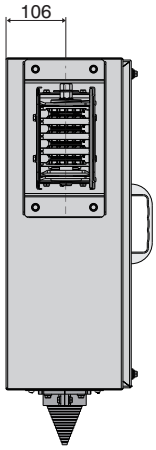
Central
Feeder Box BO 1
Sample Order:
600 A, Aluminium,IP 55, 4 Conductors **- BO1**
KOA 0654 -II- BO1



Central
Feeder Box BO 2
Sample Order:
600 A, Aluminium,IP 55, 4 Conductors **- BO2**
KOA 0654 -II- BO2



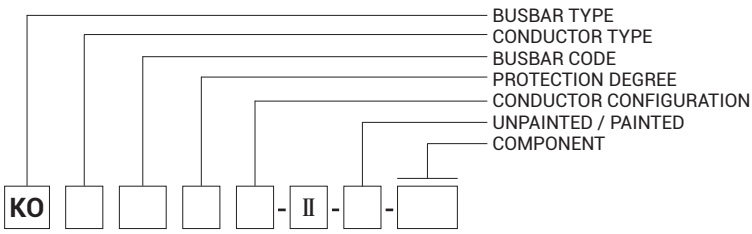




Please call us for special applications or for applications with MCCB's

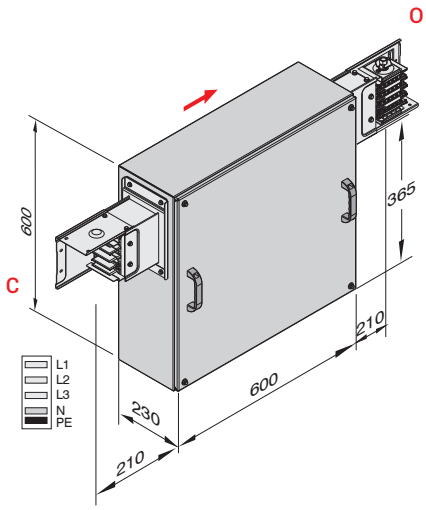
E-LINEKO-II

▶▶Feeder Boxes
(Central Feeder Box
KOA 800 - KOC 800 A)



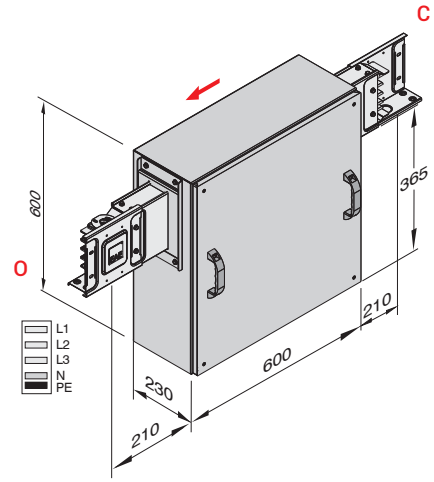
Central
Feeder Box BO 1
Sample Order:
800 A, Copper IP 55, 4 Conductors
KOC 0854 -II- BO1

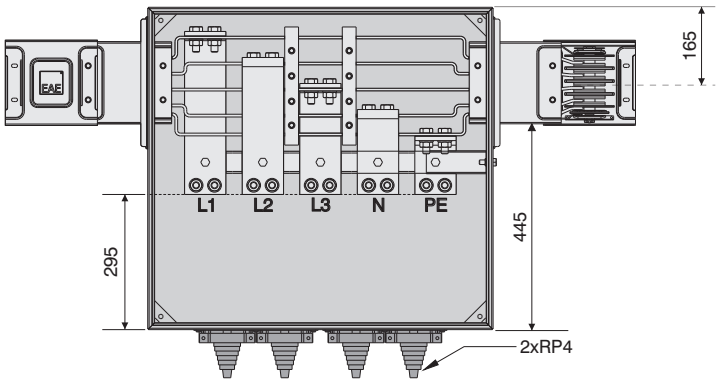
- BO1

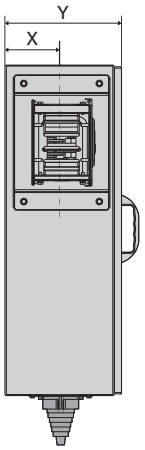


Central
Feeder Box BO 2
Sample Order:
800 A, Copper IP 55, 4 Conductors
KOC 0854 -II- BO2

- BO2





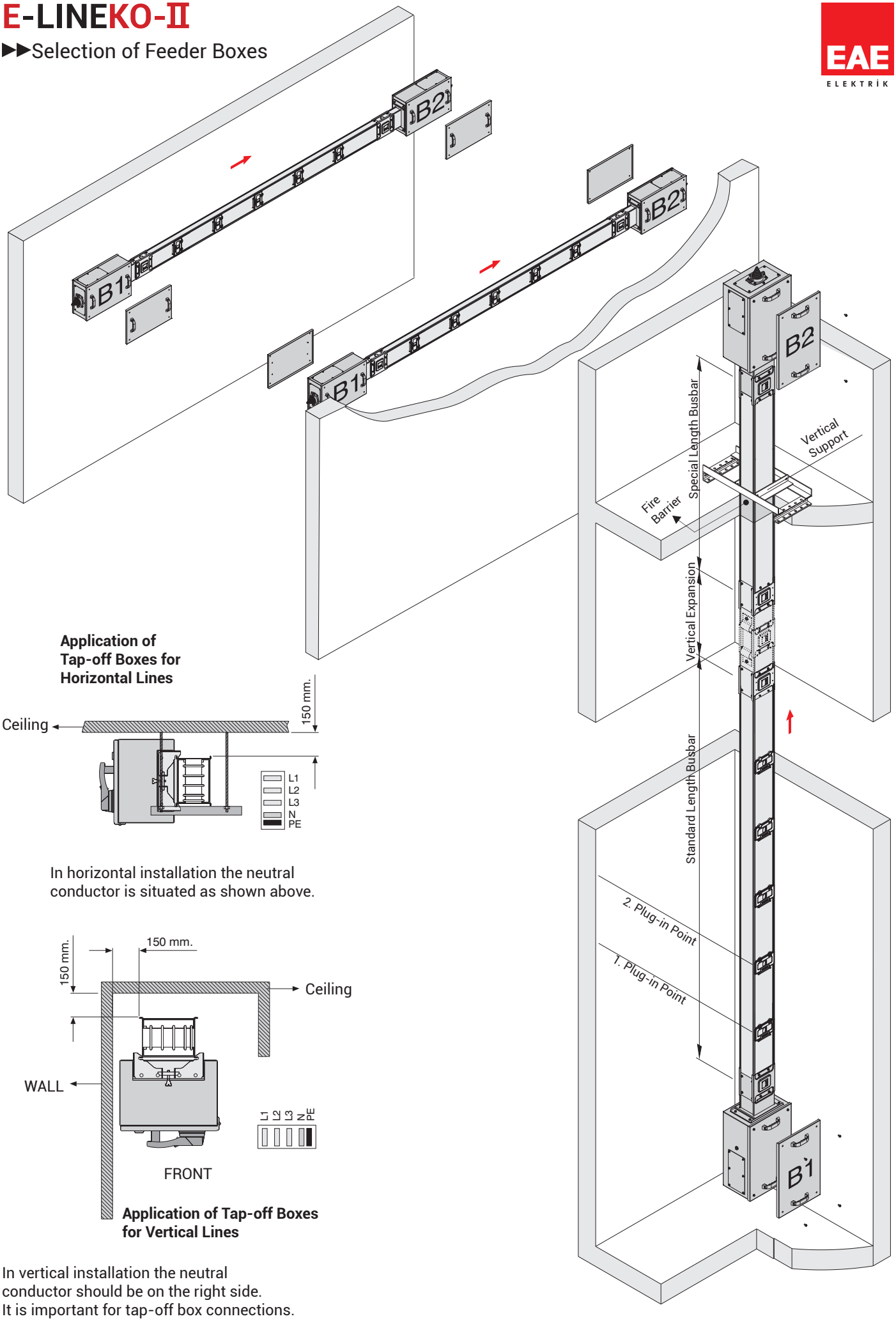


Current	X	Y
KOA 800	145	292
KOC 800	120	247

Please call us for special applications or for applications with MCCB's

E-LINEKO-II

▶▶Selection of Feeder Boxes



Application of Tap-off Boxes for Horizontal Lines

In horizontal installation the neutral conductor is situated as shown above.

Application of Tap-off Boxes for Vertical Lines

In vertical installation the neutral conductor should be on the right side.
It is important for tap-off box connections.

E-LINEKO-II

▶▶Panel Connections

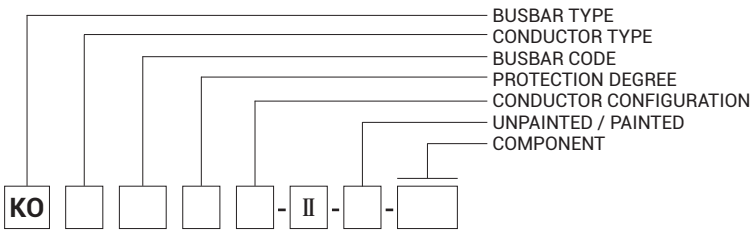


Figure 1 **Figure 2** **Figure 3**

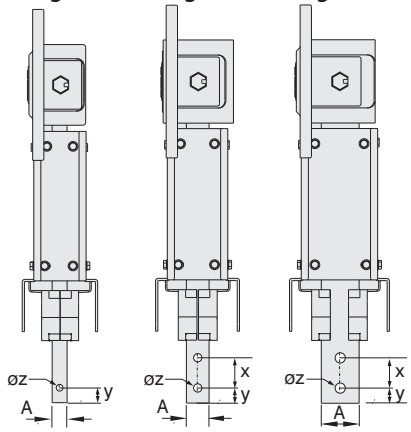
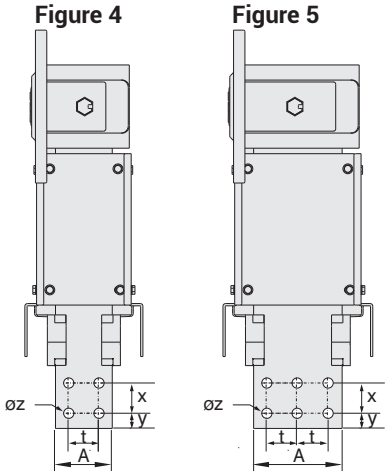


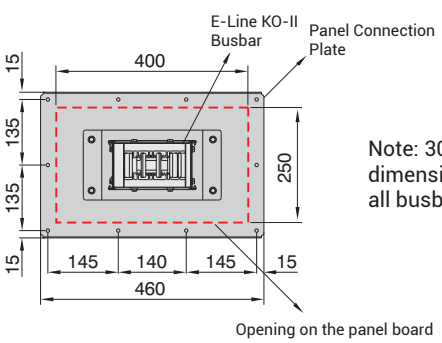
Figure 4 **Figure 5**



Sample Order:
600 A, Aluminium, IP 55, 5 Conductors
KOA 0655-II-P10

Sample Order:
600 A, Aluminium, IP 55, 5 Conductors
KOA 0655-II-P11

Current		A	x	y	z	t	Figure
ALUMINIUM	160	20	40	20	9	-	1
	250	25	40	20	11	-	2
	315	30	40	20	11	-	2
	400	50	40	20	13	-	3
	500	62,5	40	20	13	-	3
	600	75	40	20	13	40	4
	800	110	40	20	13	40	5
COPPER	250	20	40	20	9	-	1
	315	25	40	20	11	-	2
	400	30	40	20	11	-	2
	600	50	40	20	13	-	3
	800	75	40	20	13	40	4

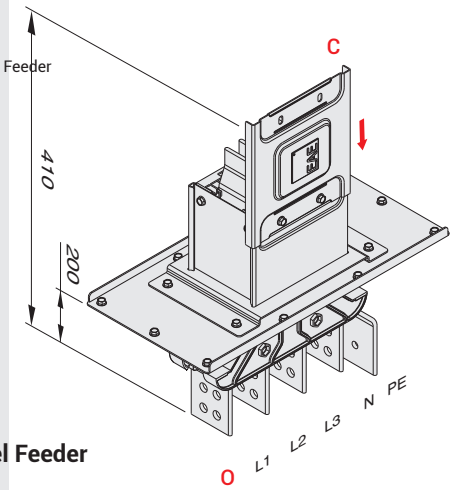


Note: 300x460mm flange plate dimensions are standard for all busbar types.

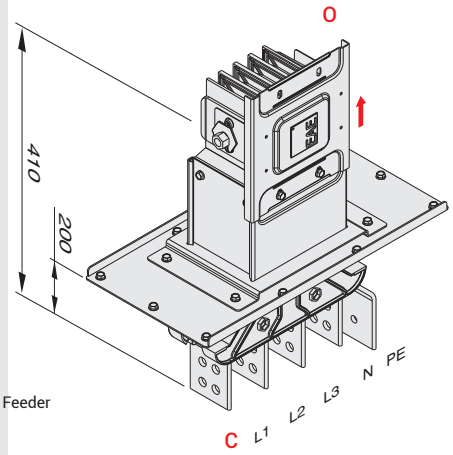
Busbar Feeder

- P10

Busbar Feeder

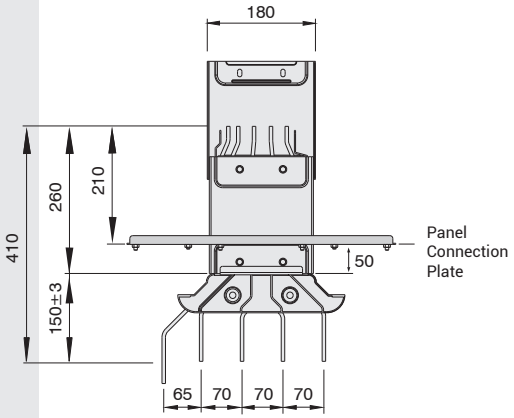


Panel Feeder



- P11

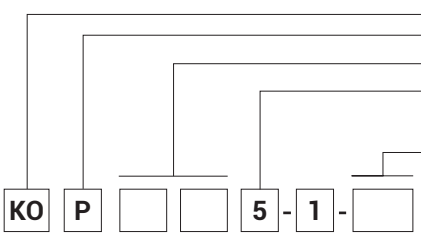
Busbar Feeder



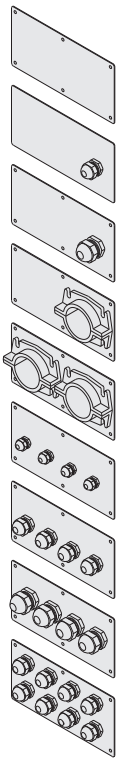
Please call us for non-standard components.

E-LINEKO-II

▶▶Tap-Off Boxes
with Fused Switches (SYK)

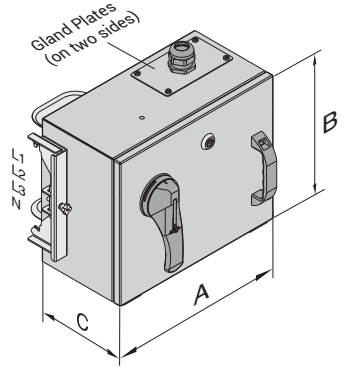


Cable Gland Plates

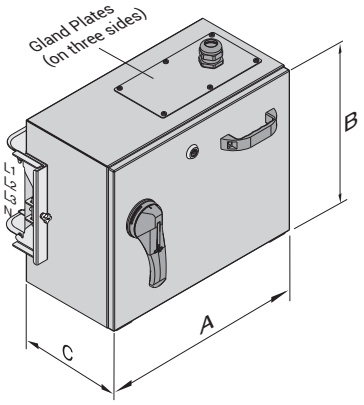


Mat.	Cable Gland Type	Order Code	Inner Diameter (mm)
Mat.	Cable Gland Type	RP0	---
Sheet Metal	---	RP1	25
Sheet Metal	M32	RP2	32
Sheet Metal	M40	RP3	63
Sheet Metal	Special	RP4	63
AL	2xSpecial	RP5	18
AL	4xM25		
AL	4xM32	RP6	25
AL	4xM40	RP7	32
AL	8xM32	RP8	25

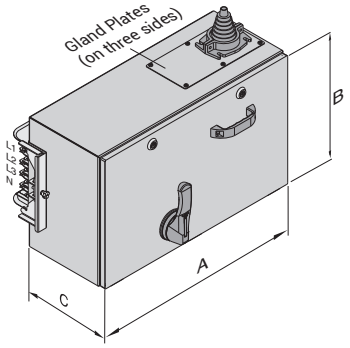
KOP 1651-S



KOP 2551-S



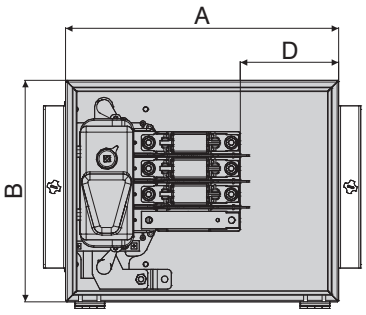
KOP 4051-S

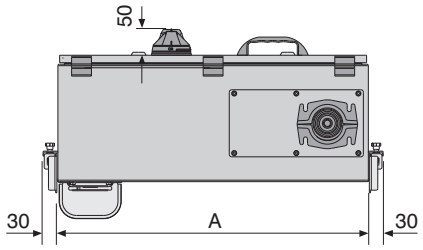


Fused Switches (SYK)

Tap-off boxes are equipped with EAE syk fused switches that;

- Can operate under load,
- Are equipped with NH fuse holders,
- Have Interlock mechanism
- Padlock applicable





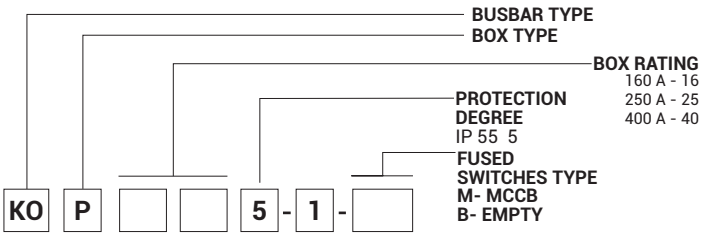
CURRENT (A)	A	B	C	D	Cable Gland	Fuse Size	Fused Switches	5W Order No
KOP 160	370	300	195	135	RPK1	NH 00	KYA	3030205
KOP 250	480	380	245	150	RP2	NH 1	KYA	3030207
KOP 400	625	380	255	215	RP3	NH 3	SYK	3030314

Tap-off boxes can be equipped with other brand of fused switches on request. Tap-off boxes are painted in red as standard. Continuous current of tap-off boxes with fused switch should not exceed 80% of tap-off box current rating.

Please call us for non-standard components.

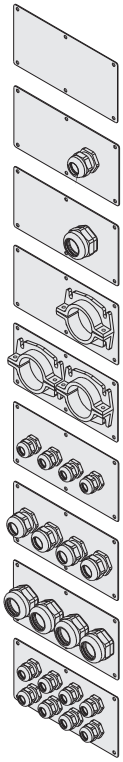
E-LINEKO-II

▶▶Tap-Off Boxes
for MCCB's



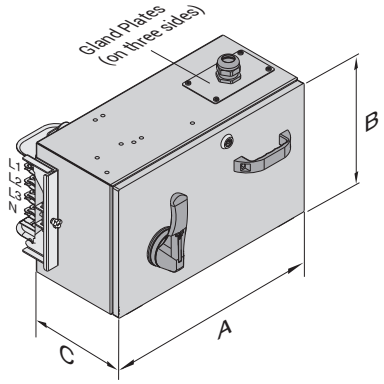
EAE ELEKTRİK

Cable Gland Plates

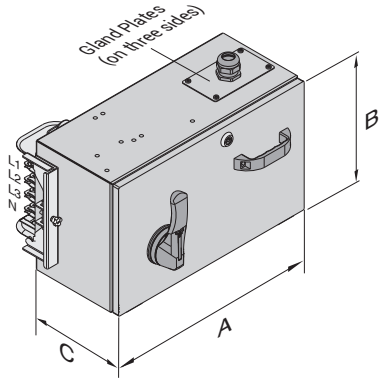


Mat.	Cable Gland Type	Order Code	Inner Diameter (mm)
Sheet Metal	---	RP0	---
Sheet Metal	M32	RP1	25
		RP2	32
Sheet Metal	M40	RP3	63
Sheet Metal	Special	RP4	63
AL	2xSpecial	RP5	18
AL	4xM25	RP6	25
AL	4xM32		
AL	4xM40	RP7	32
AL	8xM32	RP8	25

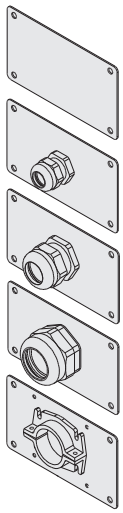
KOP 1651-M
KOP 1651-B



KOP 2551-M
KOP 2551-B

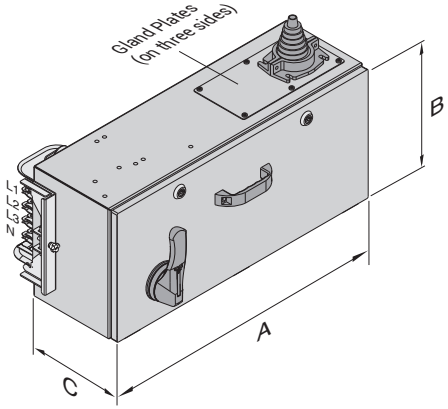


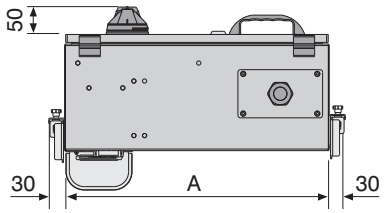
Special Cable Gland Plates



Mat.	Cable Gland Type	Order Code	Inner Diameter (mm)
Sheet Metal	---	RPK0	---
Sheet Metal	M25	RPK1	25
Sheet Metal	M32	RPK2	32
Sheet Metal	M40	RPK3	63
Sheet Metal	1xSpecial	RPK4	63

KOP 4051-M
KOP 4051-B





CURRENT (A)	A	B	C	Cable Gland	5W Order No
KOP 160	420	300	220	RPK2	3030192
KOP 250	500	300	220	RPK3	3030193
KOP 400	675	300	220	RP3	3030194

*** EAE tap-off boxes can be designed for all brands of MCCB's.**

Please call us for non-standard components.

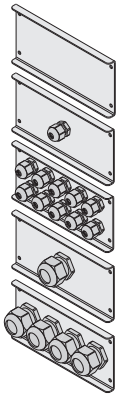
E-LINEKO-II

▶▶KOP-Data Tap-Off Boxes (125A)

KOP | **12** | **5** | **1** - **DATA** - **B** - **P3** - **2** - **D0**

- Tap-off Box Type: KOP
- 125 A **12** — CURRENT RATINGS
- IP 55 **5** — PROTECTION DEGREE
- 5 Conductor **1** — CONDUCTOR CONFIGURATION
- GLAND TYPE: DPK0 **D0**, DPK1 **D1**, DPK2 **D2**, DPK3 **D3**, DPK4 **D4**
- NUMBER OF SOCKETS: 1 pcs **1**, 2 pcs **2**, 3 pcs **3**, 4 pcs **4**
- SOCKET TYPE: Schuko(1x16A) **P1**, CEE Single Phase(3x16A) **P2**, CEE Single Phase(3x32A) **P3**, CEE Three Phase(5x16A) **P4**, CEE Three Phase(5x32A) **P5**, CEE Three Phase(5x63A) **P6**
- MCB TYPE: Empty **B**, 1x16A with MCB **M1**, 3x16A with MCB **M2**, 1x32A with MCB **M3**, 3x32A with MCB **M4**, 3x63A with MCB **M5**

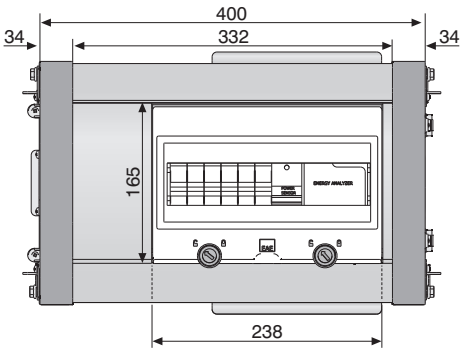
Cable Gland Plates

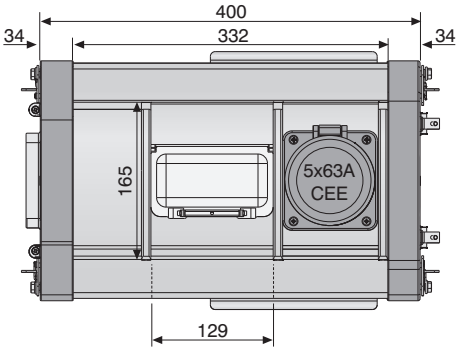


Mat.	Cable Gland Type	Order Code	Inner Diameter (mm)
Al	---	DPK0	---
Al	M16	DPK1	10
Al	10xM16	DPK2	10
Al	M25	DPK3	18
Al	4xM25	DPK4	18

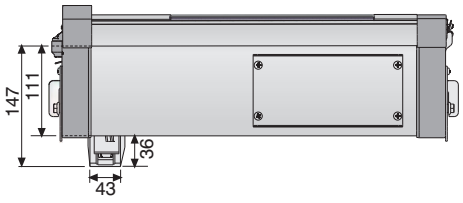
Features;

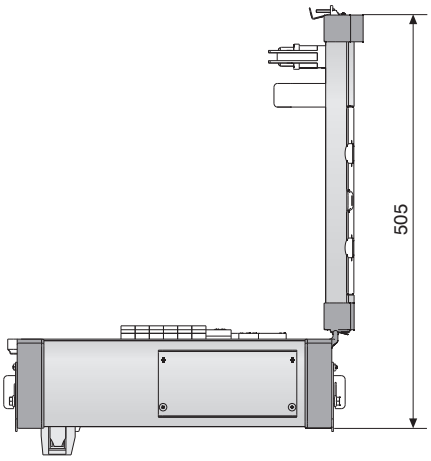
- Up to 125A MCB
- RAL 7038 Painted Aluminium Housing
- Standard tap-off is empty, gland plates are DPK0.
- with DIN rail inside(available for 4pcs 3P MCB)
- May be equipped with CEE or Schuko Sockets with different configurations.(Optional)
- All tap off boxes with equipment fitted are manufactured with C Type ABB MCB.











Please call us for non-standard components.

E-LINEKO-II

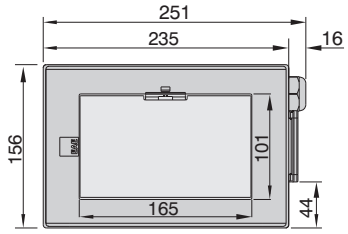
▶▶Tap-Off Boxes

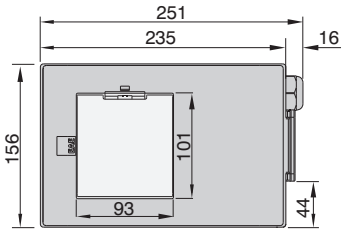
BUSBAR TYPE
BOX TYPE
BOX RATING
PROTECTION DEGREE IP 55 5
32 A - 03
40 A - 04
80 A - 08
SWITCH TYPE
B1 -Transparent hinged lid / Empty tap off box
B2 -Transparent fixed lid / Empty tap off box

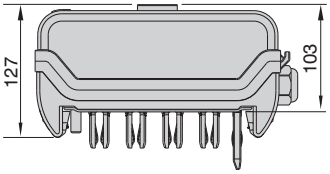
KO	P			5	-	1	-	

M - MCB

3x6 A	3x32 A
3x10 A	3x40 A
3x16 A	3x50 A
3x20 A	3x63 A
3x25 A	3x80 A







KOP 0351-P1
KOP 0351-P2

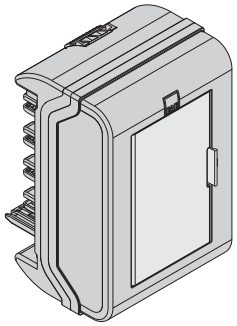
Sample Order:
32 A, IP 55, 5 wire,
hinged lid, suitable for 8pcs
MCB, empty tap off box

KOP 0351 - P1

Sample Order:
32 A, IP 55, 5 wire,
hinged lid, suitable for 4pcs
MCB, empty tap off box

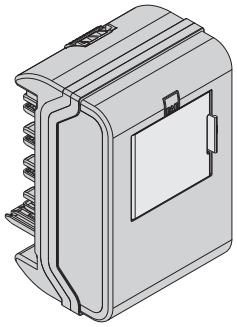
KOP 0351 - P2

P1

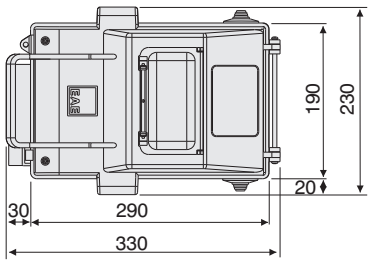


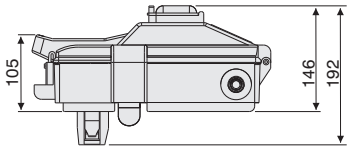
suitable for 8pcs MCB

P2



suitable for 4pcs MCB

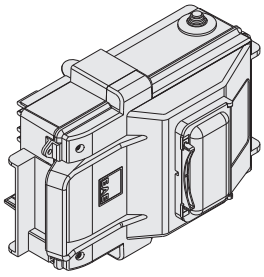


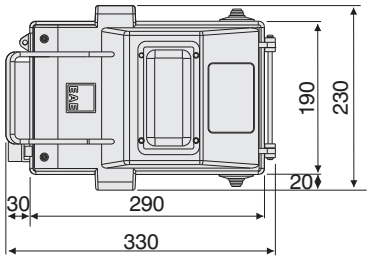


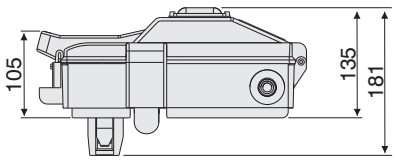
KOP 0451-B1
KOP 0851-B1

Sample Order:
40 A, IP 55, 5 wire, transparent
hinged lid, suitable for MCB,
empty tap off box

KOP 0451 - B1



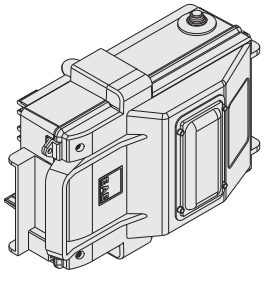




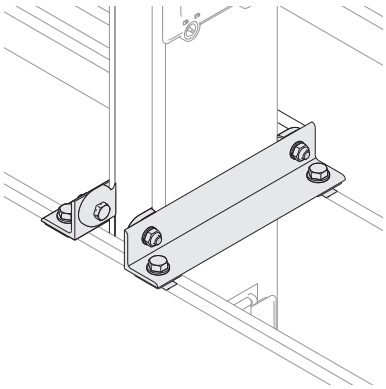
KOP 0451-B2
KOP 0851-B2

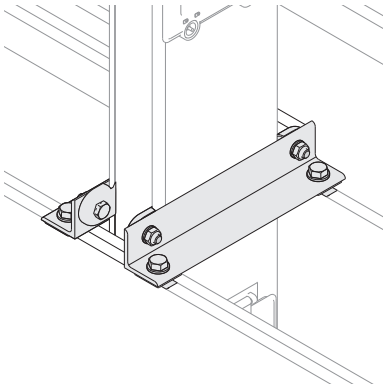
Sample Order:
40 A, IP 55, 5 wire, transparent
fixed lid, suitable for MCB,
empty tap off box

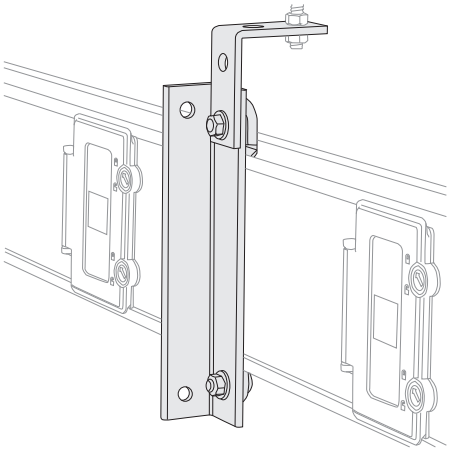
KOP 0451 - B2



Please call us for non-standard components.

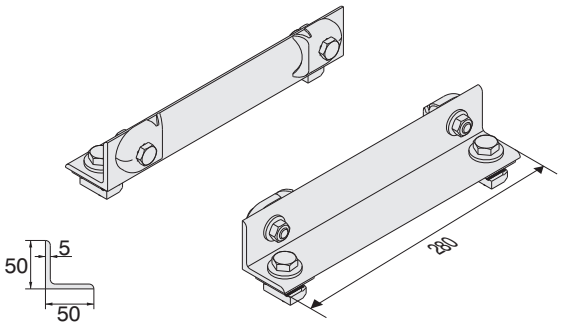




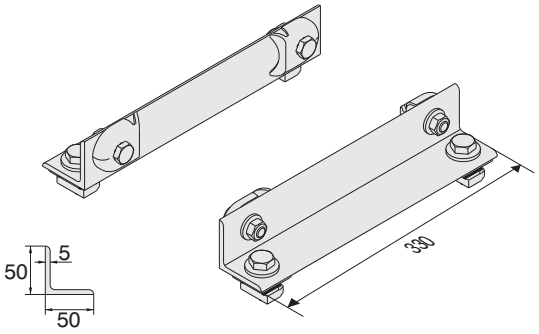


Supports

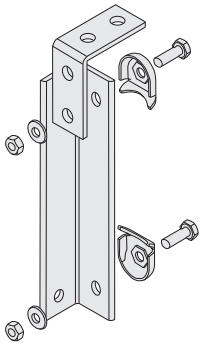
Description	Code
KO-II Vertical Riser Fixing Unit	**3048476**



Description	Code
KO-II Vertical Riser Fixing Unit (Fire Barrier)	**3048995**

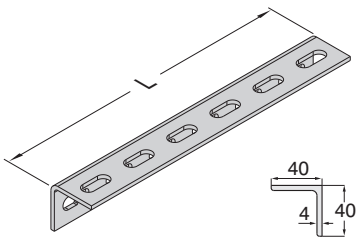


Description	Code
KO-II Horizontal Busbar Support Set	**3116749**

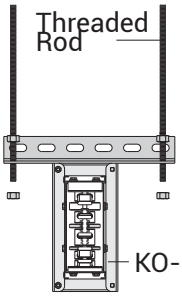


Tray Supports

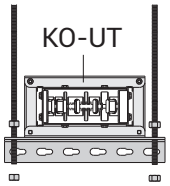
Description	L (mm)	Code
UAS-K4 SUPPORT (1)	200	**3005333**
UAS-K4 SUPPORT (2)	250	**3005332**
UAS-K4 SUPPORT (3)	300	**3005331**
UAS-K4 SUPPORT (4)	350	**3005330**
UAS-K4 SUPPORT (5)	400	**3005329**
UAS-K4 SUPPORT (6)	500	**3005328**
UAS-K4 SUPPORT (7)	600	**3005327**
UAS-K4 SUPPORT (8)	700	**3005326**
UAS-K4 SUPPORT (9)	1100	**3005325**



UAS-K4
L Support



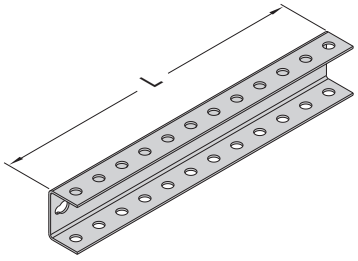
Flatwise
application sample



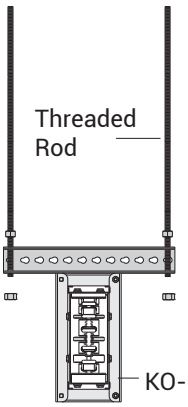
Edgewise
application
sample

Tray Supports

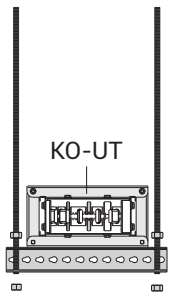
Description	L (mm)	Code
ASU2A-1	135	**3008589**
ASU2A-2	250	**3008587**
ASU2A-3	500	**3008585**
ASU2A-4	1000	**3008583**
ASU2A-5	2000	**3008168**



ASU2A



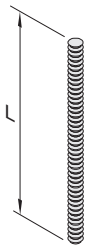
Flatwise application sample



Edgewise application sample

Connection Parts

Description	L (mm)	Code
BRA 11-05 Threaded Rod (M8)	500	**5000039**
BRA 11-10 Threaded Rod (M8)	1000	**5000038**
BRA 12-05 Threaded Rod (M10)	500	**5000037**
BRA 12-10 Threaded Rod (M10)	1000	**5000032**
BRA 10 Extension Part (M8)	2000	**1004313**
BRA 13 Extension Part (M10)	-	**1004312**
BRA 9 EAE Pull-off Dowel (M8)	-	**5000033**
BRA 9 EAE Pull-off Dowel (M10)	-	**5000023**
M8 Steel Nut	-	**1000521**
M10 Steel Nut	-	**1000522**
M8 Washer	-	**1000502**
M10 Washer	-	**1000504**



Threaded Rod



Extension Part



EAE Pull-off Dowel



Steel Nut



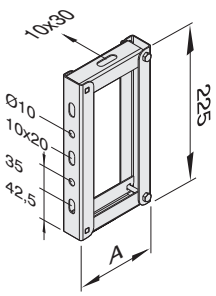
Washer

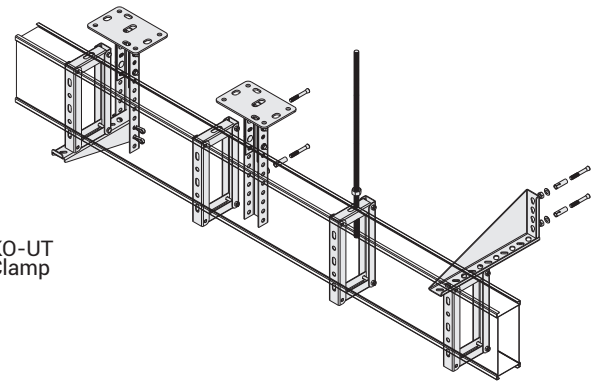
Current	Aluminium	Copper
(A)	(A) mm	(A) mm
160	70	-
250	75	70
315	80	75
400	100	80
500	112	-
600	125	100
800	160	125

Busbar cross-section dimensions

Diameter of the hole to be drilled
M8.....Ø12
M10.....Ø14

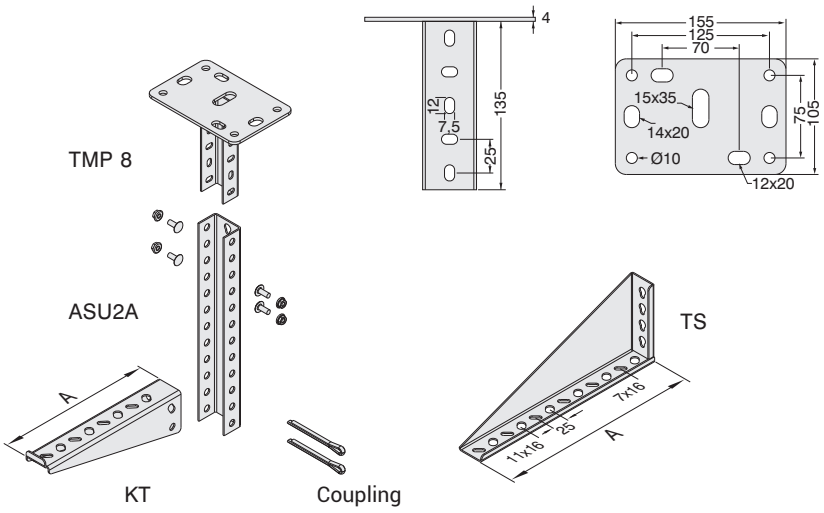
Description	Current	A (mm)	Code
KOA - 1 UT Clamp	160	115	**1004275**
KOA - 2 UT Clamp	250	120	**1004278**
KOA - 3 UT Clamp	315	125	**1004274**
KOA - 4 UT Clamp	400	145	**1004277**
KOA - 5 UT Clamp	500	157	**1004265**
KOA - 6 UT Clamp	600	170	**1004276**
KOA - 8 UT Clamp	800	205	**1007573**
KOC - 2 UT Clamp	250	115	**1004275**
KOC - 4 UT Clamp	400	125	**1004274**
KOC - 6 UT Clamp	600	145	**1004277**
KOC - 8 UT Clamp	800	170	**1004276**



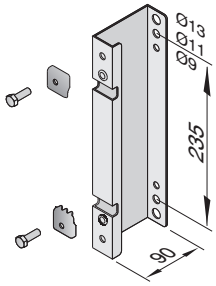


KO-UT Clamp

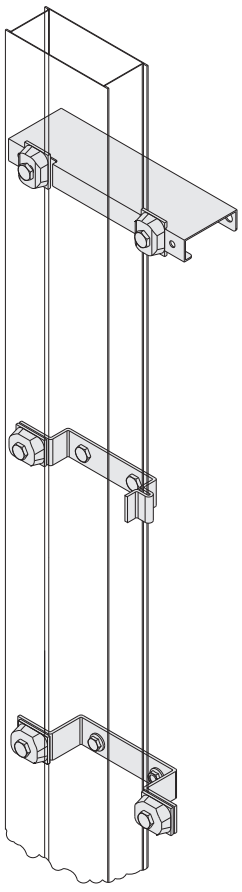
Description	A (mm)	Code
KT 200 Tray Support	235	3008567
KT 250 Tray Support	285	3008565
KT 300 Tray Support	335	3008563
KT 400 Tray Support	435	3008561
KT 500 Tray Support	535	3008559
KT 600 Tray Support	635	3008264
TS 200 Tray Support	205	3008551
TS 250 Tray Support	255	3008549
TS 300 Tray Support	305	3008547
TS 400 Tray Support	405	3008545
TS 500 Tray Support	505	3008543
TS 600 Tray Support	605	3005828
TMP 8 Ceiling Support Unit	-	3008382
Coupling	-	1004310



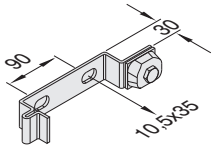
Description	Code
Vertical Support Set Wall Type	3025371



Vertical Support Set Wall Type

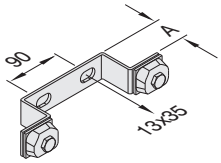


Description	Code
Vertical Support Set (Z) Type	3025376



Vertical Support Set (Z) Type

Description	Code
Vertical Support Set (VS)-40	3025379
Vertical Support Set (VS)-60	3025378



Vertical Support Set (VS) Type

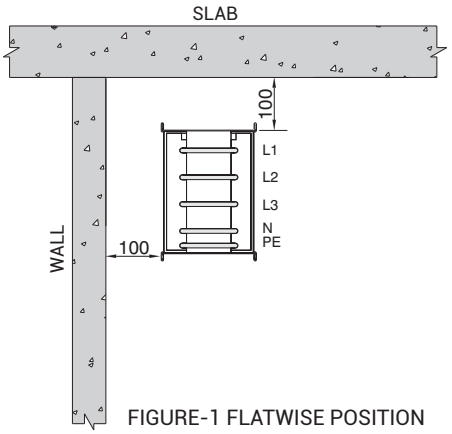


FIGURE-1 FLATWISE POSITION

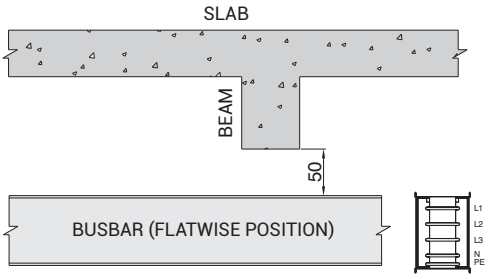


FIGURE-4 SAMPLE WALL CROSSING WITH FIRE BARRIER

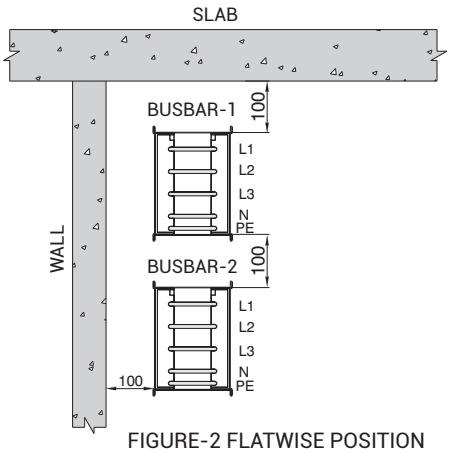


FIGURE-2 FLATWISE POSITION

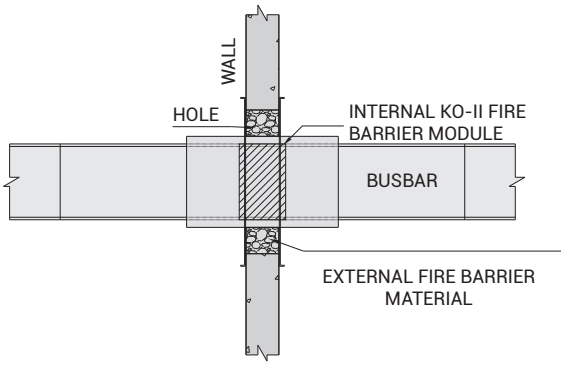


FIGURE-5 CROSSING UNDER A BEAM HORIZONTAL POSITION

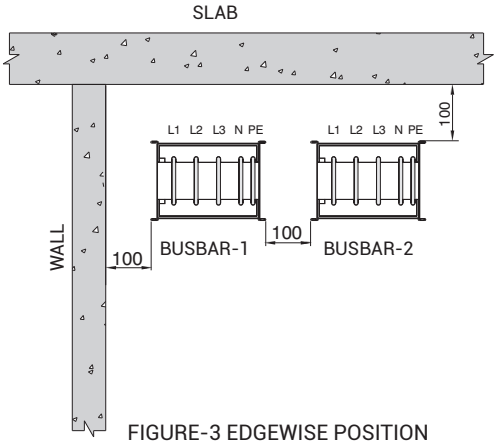


FIGURE-3 EDGEWISE POSITION

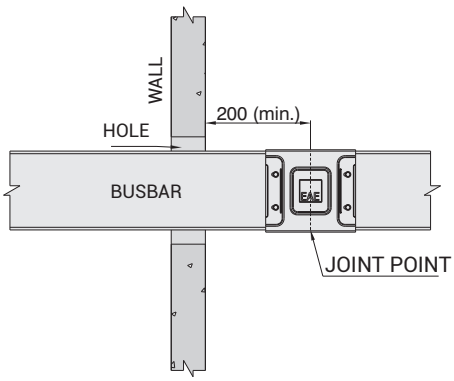


FIGURE-6 STANDARD WALL CROSSING

The dimensions given above are minumum values.

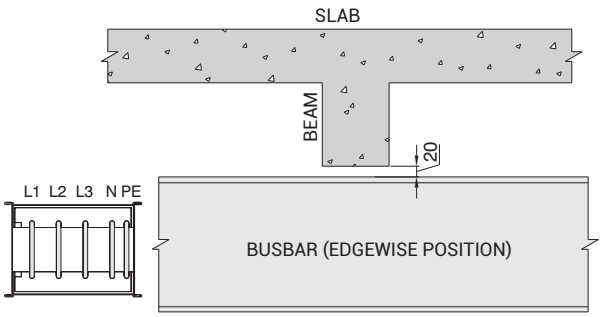


FIGURE-7 CROSSING UNDER A BEAM EDGEWISE POSITION

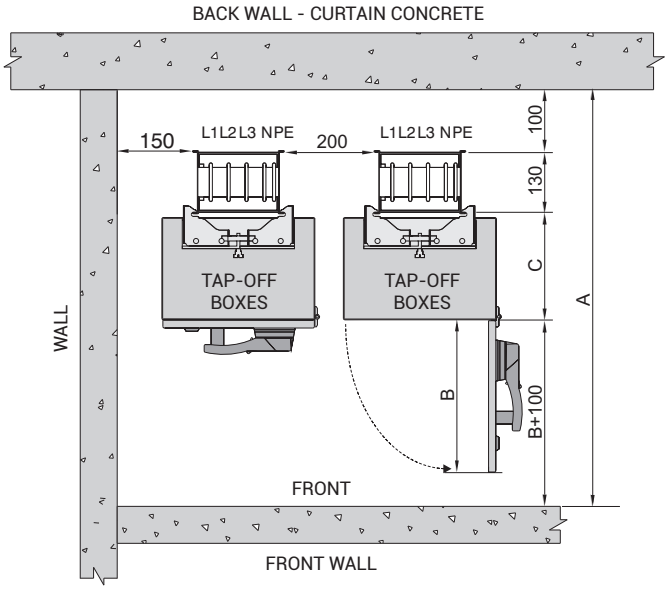


FIGURE-8 MINIMUM DIMENSIONS BETWEEN 2 TAP-OFF BOXES

NOTE : To determine the busbar layout in correct shaft measurement
A= B+C+330

A = Min distance from front wall
B = Distance to open the cover of Tap off box
C = Depth of Tap off box

Application of Tap off box on vertical lines

Neutral conductor position in housing should be on rightside from front view at vertical lines.

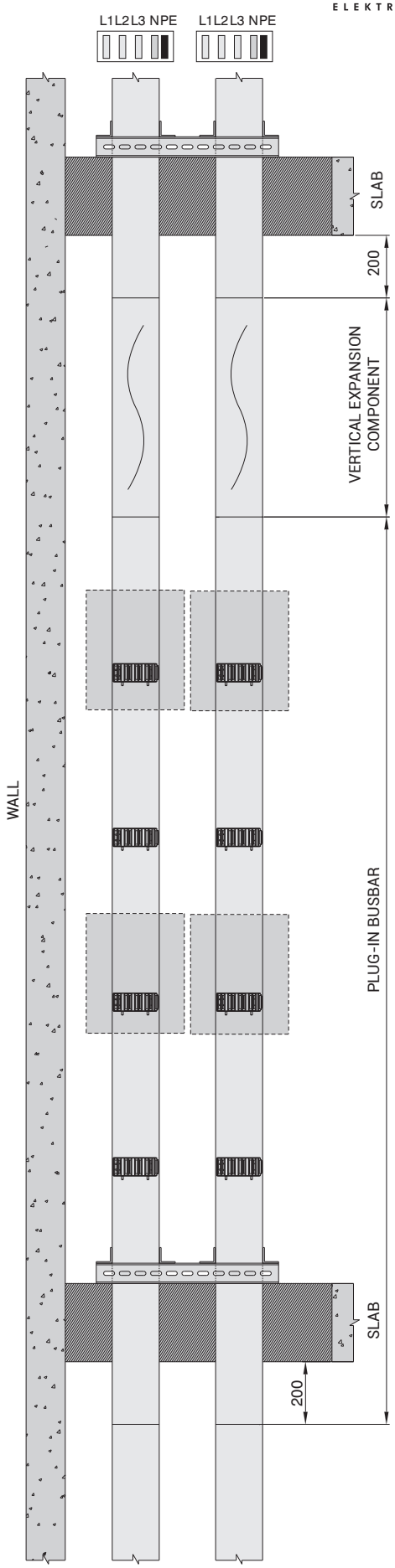


FIGURE-9
MINIMUM DIMENSIONS ON SHAFT APPLICATIONS

The dimensions given above are minumum values. All dimensions are given in mm.

▶▶Horizontal And Vertical Expansion Modules Application

Horizontal expansion module (YDT) application

It is used for longer horizontal runs as per the pictures shown below (Picture-1)

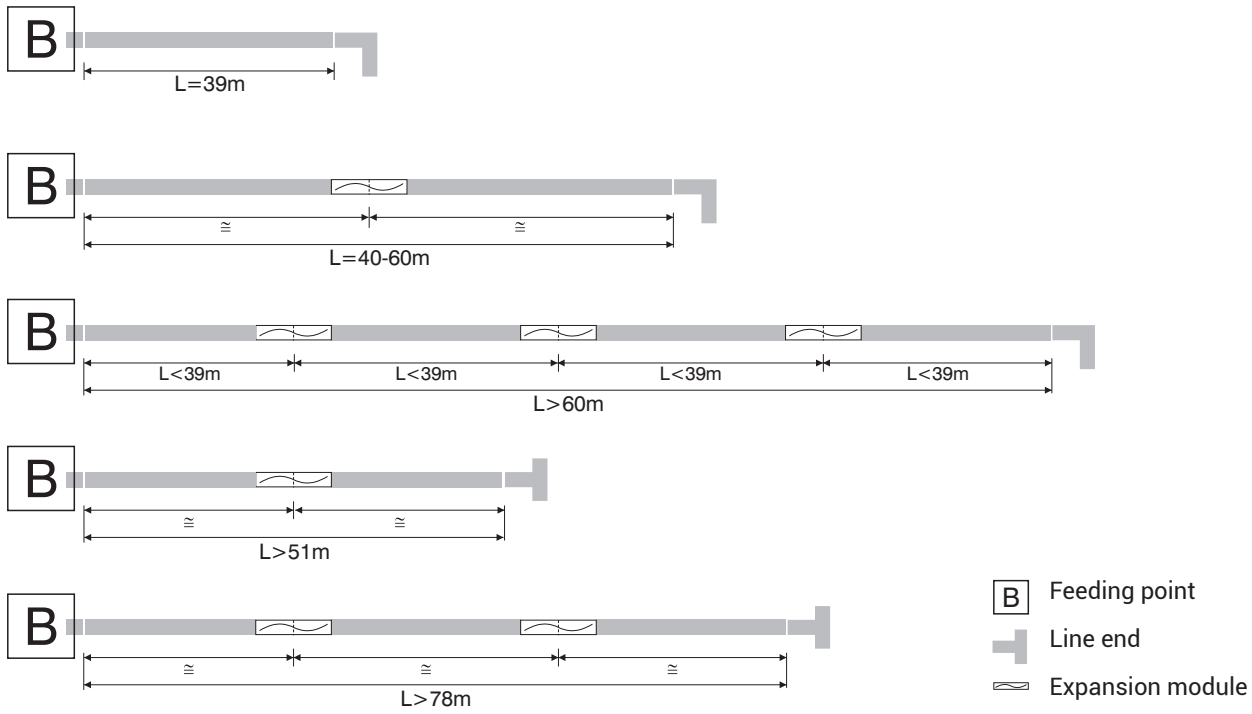


FIGURE-1 YDT APPLICATION

It is essential that a YDT is used if busbar runs cross a building expansion joint

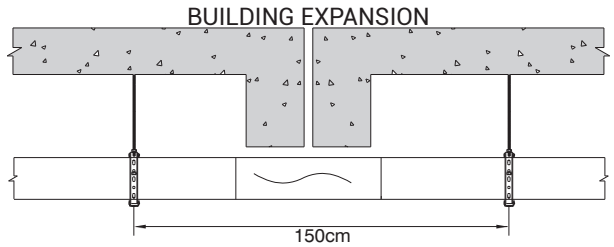


FIGURE-2 YDT BUILDING EXPANSION APPLICATION

Vertical expansion modüle (DDT) application

1-) DDT is used for vertical lines of multistorey buildings .

2-) DDT is used between two fixed supports at every floor crossing.

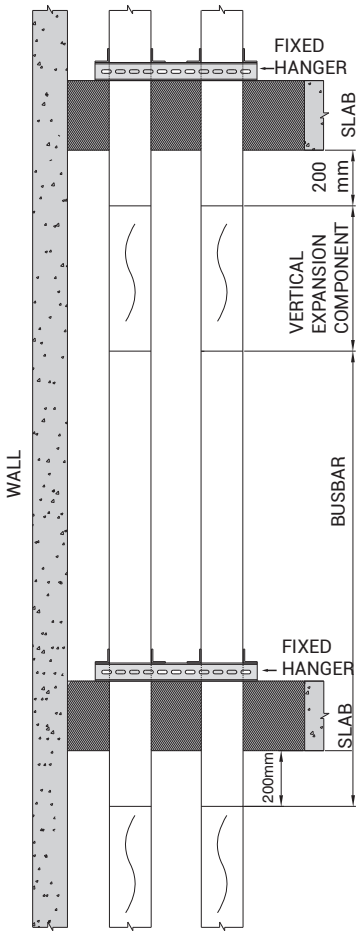
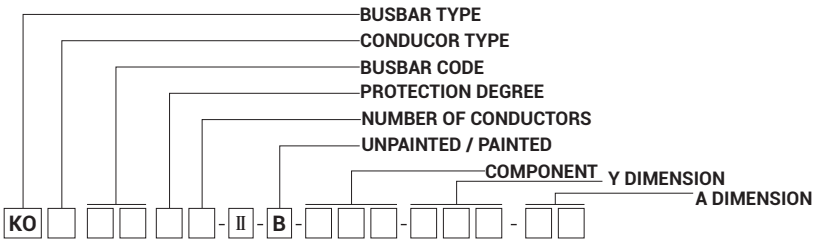


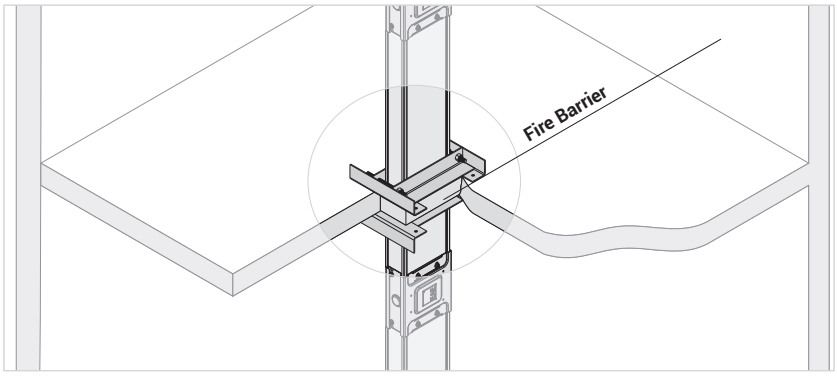
FIGURE-3 DDT APPLICATION

E-LINEKO-II

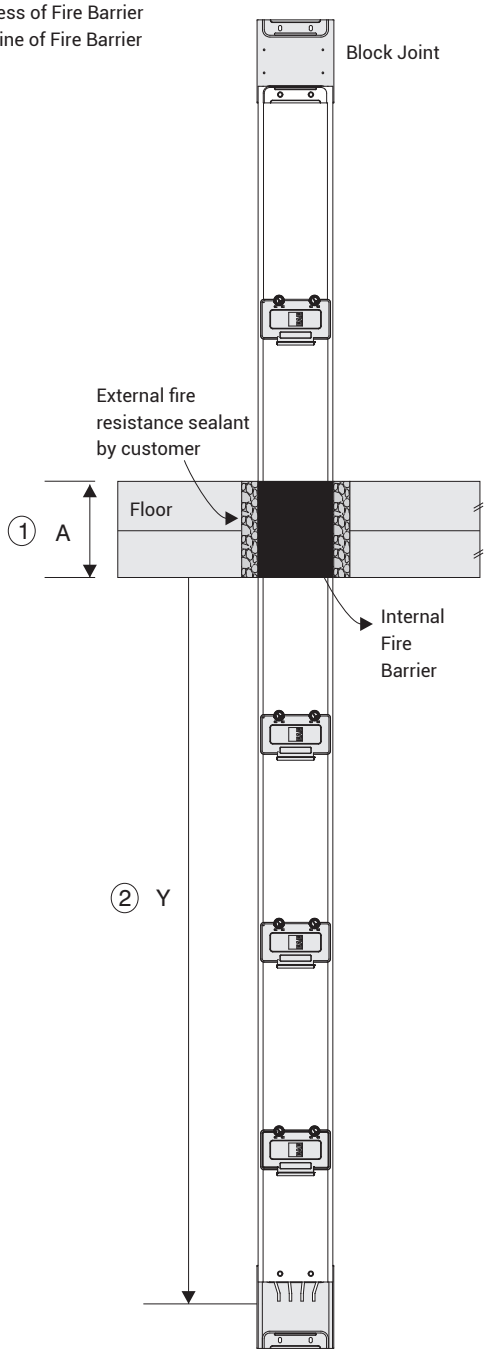
▶▶Fire Barrier



A (mm): Thickness of Fire Barrier
Y (mm): Centreline of Fire Barrier



Sample Order:
250 A, Copper, IP 55, 5 Conductors
Fire Barrier
KOC 0255- II -STD-150-40



Fire Barriers

Fire barriers are used to prevent the transition of flame and smoke from one zone to another in case of fire. The fire barriers prevent the chimney effect of air insulated busbar.

Dimensioning of Fire Barrier

When placing an order for fire barriers to be installed in the KO-II busbar, the following information is required :

1- Thickness of floor or wall in cm. (A mm)

2- Centreline dimension of the fire barrier should be measured from the side without the block joint. (Y mm)

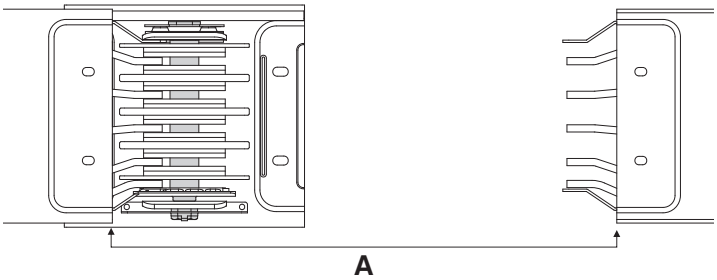
3- There will be no plug-in points at the fire barrier location.

4- EAE Supplies a 300 mm thick fire barrier as standard when wall or floor thickness is not stated.

5- The minimum length for these special elements with fire barrier is 600 mm.

▶▶Determination of Special Lengths

After the installation of standard 3m lengths, special lengths shorter than 3m may be required.
The minimum length for these special lengths is 350 mm. Please measure these special lengths as shown below.



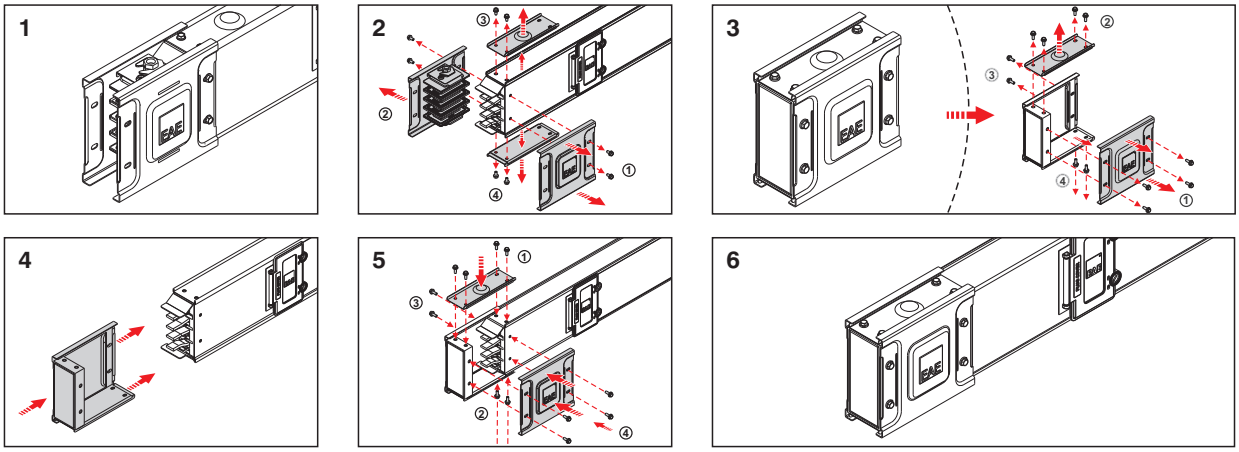
Measure "A" length in cm, to determine the length of special busbar subtract 12 from "A".

X=A-120 (mm) X=Length of Special Busbar

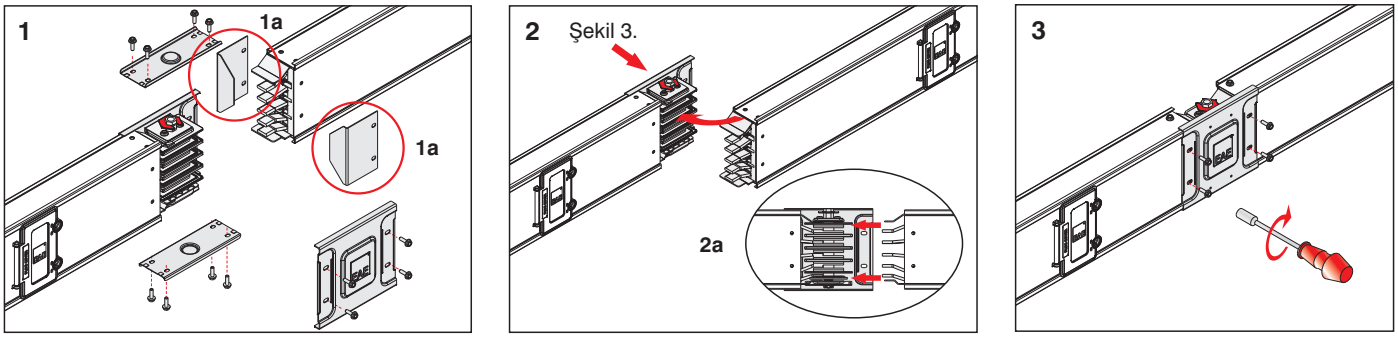
Please call us for more information.

E-LINEKO-II

▶▶KO-II Installation of End Closer



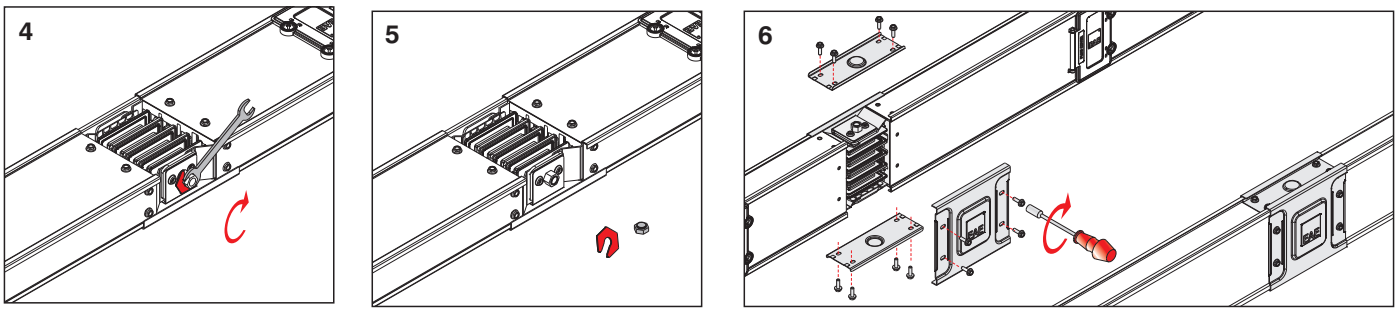
▶▶KO-II Mounting instructions for Joints



1- Remove joint top cover plate, joint side cover plate and the screws from non-block joint bolt. (Pieces marked as 1a should be thrown away.)

2- Introduce bolted and non-bolted ends of the busbar into each other carefully, until the cover plate screws can be put in.

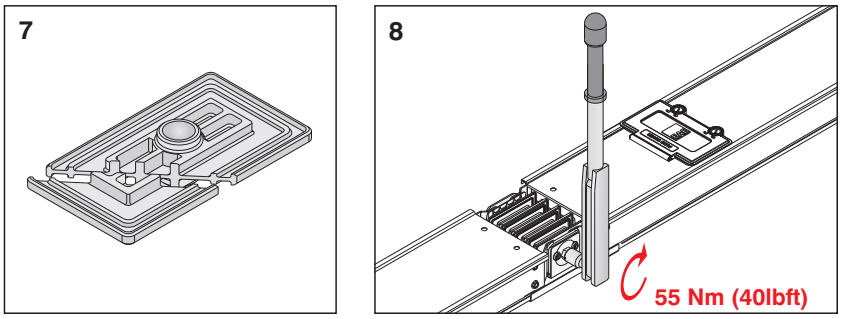
3- Fix the joint side cover of the block joint.



4- Tighten the double headed nut untill upper nut is broken.

5- Take away the broken nut and plastic seperator.

6- Install top and bottom joint cover plates. Check the joint before fitting the last joint side cover plate. Fit the joint cover side plate and tighten the screws. Check the position of the earth conductor when installing KO-II with five conductors.



7- Ensure that the insulation plates of the joint, are not cracked or broken.

8- If removal is required for any reason, tighten the nut using a calibrated torque wrench adjusted to 55 Nm (40 lbft) after re-fitting the block joint set.

CE DECLARATION OF CONFORMITY

Product Group E-Line KO-II Busbar Energy Distribution System

Manufacturer EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
Akcaburgaz Mahallesi, 3114. Sokak,
No:10 34522 Esenyurt-Istanbul-Turkey

The objects of the declaration described below is in conformity with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

Standard:

EN 61439-6
Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems

CE - Directive:

2014/35/EU "The Low Voltage Directive"

2014/30/EU "Electromagnetic Compatibility (EMC) Directive"

2011/65/EU "Restriction of the use of certain hazardous substances (RoHS)"

Technical Document Preparation Official:

EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
Akcaburgaz Mahallesi, 3114. Sokak, No:10 34522 Esenyurt-Istanbul-Turkey

Emre GÜRLEYEN

Date

20.04.2022

Document Authorized Signatory

Elif Gamze KAYA OK
Deputy General Manager







CER ATE

EAE Elektrik Asa
Insaat San. ve Ti
Akçaburgaz Mah
34510 Esenyurt
Turkey

For the product: Low-voltage busbar trunking system

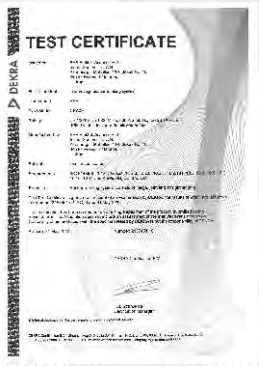


EAE

CRA06

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IP68, IK: 50J, for





EAE Elektrik Asa
Insaat San. ve Ti
Akçaburgaz Mah
34510 Esenyurt
Turkey

Design verificatio

Requirements: IEC 61439-6: 2012; Clauses: 10.2.3, 10.2.6, 10.2.7, 10.2.101, 10.3, 10.4, 10.5, 10.9, 10.10, 10.11 and Annex BB, CC, and DD



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DEKRA Certification B.V. Utrechtseweg 310, 6812 AR Arnhem P.O. Box 5185, 6802 ED Arnhem, The Netherlands
T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Company registration 09085396

160A 800A BUSBAR SYSTEM
PRODUCT OVERVIEW (E-LINE KO-II)

1- Standards & Certification:
- Busbar system shall be designed and manufactured as per IEC 61439-6 standard. Each individual rated busbar shall have separate type test certificate from an independent internationally accredited laboratory.
- Manufacturing facility of busbar systems shall have ISO 9001 and ISO 14001 certification.
- Busbar system shall have CE marking.
- Each product shall have a "Type Label", which indicates the brand, type of the unit, conductor number and electrical details.

2-General Structure of Products:
- Busbar system shall be Air-Insulated and Plug-in type. Aluminium or Copper conductors shall be tin plated along the entire length. Housing shall be galvanized steel or if required RAL 7038-Electrostatic painted.

2.1- Electrical Characteristics:
- Busbar systems nominal insulation voltage shall be 1000V.
- As per ampere rates, minimum short circuit values shall be like below:

For Aluminium Conductor;
160A: 1sec/rms-10kA, Peak-17kA
250 and 315A: 1sec/rms-15kA, Peak-30kA
400 and 500A: 1sec/rms-30kA, Peak-63,5kA
600A and above: 1sec/rms-35kA, Peak-73,5kA

For Copper Conductor;
250A - 315A:1sec/rms-18kA, Peak-36kA
400A:1sec/rms-25kA, Peak-52,5kA
600A and above:1sec/rms-35kA, Peak-73,5kA

2.2- Housing and Structure:
- Busbar system shall be of air insulated type. The bars shall be supported by insulators installed into the housing at every 25 cm.
- On a three meter standard length busbar the distance between the plug-in points on one side shall be 50cms. The points shall be on both sides of the busbar making the average distance of plug-in points 25cm.
- To prevent wrong alignment of the phase sequence during installation there shall be mechanical barriers on the joint that shall ensure correct mounting.
- IP Plug-in covers of the busbar system should be hinged.Plug-in windows shall have automatic shutter system. This shutter shall open automatically when the earth contact of tap-off box is inserted.
- Busbar system shall have all necessary accessories (elbows, offsets, panel-transformer connections, reductions, etc). Manufacturer shall supply special dimensioned units in short time, if the project conditions requires.
- For horizontal runs, a horizontal expansion unit shall be used at every 40m and expansion points of the building.
- For vertical applications, a vertical expansion unit shall be used at every floor. Busbar system shall be rigidly fixed by supports at every floor.

2.3-Conductors:
- Busbar system shall have Nickel and Tin-plated 6101 class aluminium conductors (160-800A). / Busbar system shall have Tin-plated Electrolytic copper conductors (250-800A).
- Busbar system shall have below number of conductors and phase configuration;

a) 4 Conductors : (4 full size conductors + Housing (earthing)
b) 4 ½ Conductors : (4 full size conductors + ½ earth conductor + Housing)
c) 5 Conductors : (5 full size conductors + Housing (earthing))
d) 5 Conductors : (5 full size conductors, 5th bar shall be used as clean earth + Housing).
- Neutral conductor shall have the same cross-section (100%) of phase conductors.

2.4- Insulation:
- Busbars shall have air-insulation system.
- Rated insulation voltage of the system shall be 1000 V.

2.5- Joint Structure:
- Electrical and mechanical connection shall be made at joints by "single bolt" joint construction and each joint shall have two "Belleville" washers.
- Insulators of the joint shall be manufactured of glass-reinforced polyester.
- Joints shall be realized by a torque spanner (wrench) set at 55 Nm.
- To prevent the joints from transportation damages, they shall be protected by metal caps, which shall be removed before installation.
- Joint bolt shall be locked from both sides (Bolt head and nut).

2.6- Protection:
- Protection degree of the busbar system shall be minimum IP55.

3- Tap Off Boxes:
- Rating of plug-in tap off boxes shall be up to and including 400A. Plug-in tap off boxes shall be installed, when the busbar line is energized.
- Tap off boxes shall have an electrical interlock mechanism, which ensures that plug-in tap off box cannot be removed mechanically from the busbar, when the switch is at "ON" position. Mechanical interlock mechanism shall prevent the cover of the box from opening, when the switch is at "ON" position.
- When the switch is at "OFF" position and the cover is open, tap off box shall provide IP2X protection level. (There shall not be any accessible live part in the box).
- Tap Off boxes shall be suitable for any brand of MCB.
- Contacts of plug-in tap off box shall be silver-plated copper.
- While inserting the contacts of Plug-in tap off boxes, earth contact shall make first contact.
- Tap off boxes up to 80A shall be manufactured of (850 GLW) type plastic material. Tap off boxes from 160A up to 400A shall be manufactured of sheet steel and epoxy painted RAL 3020.

4- Installation and Commissioning:
- Busbar systems shall be installed as per single-Line drawings respect to required ampere rates and manufacturer installation guide (torque values, lockers, etc.).
Electrical installer shall run an insulation test after installation according to manufacturer's test procedures. The results of the test shall be reported to the manufacturer.
Minimum insulation value shall be 1Mohm.

Component List

Item	Component	Quantity

Company :
Project :
Project No :

Prepared by

Name :
Date :
Signature :

Please duplicate this page for your own use.

Component List

Item	Component	Quantity

Company :
Project :
Project No :

Prepared by

Name :
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Component List

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Company :
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Name :
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PRODUCT TYPES



BUSBAR ENERGY DISTRIBUTION SYSTEMS



CABLE TRAYS



TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS



INDOOR SOLUTIONS



SUPPORT SYSTEMS



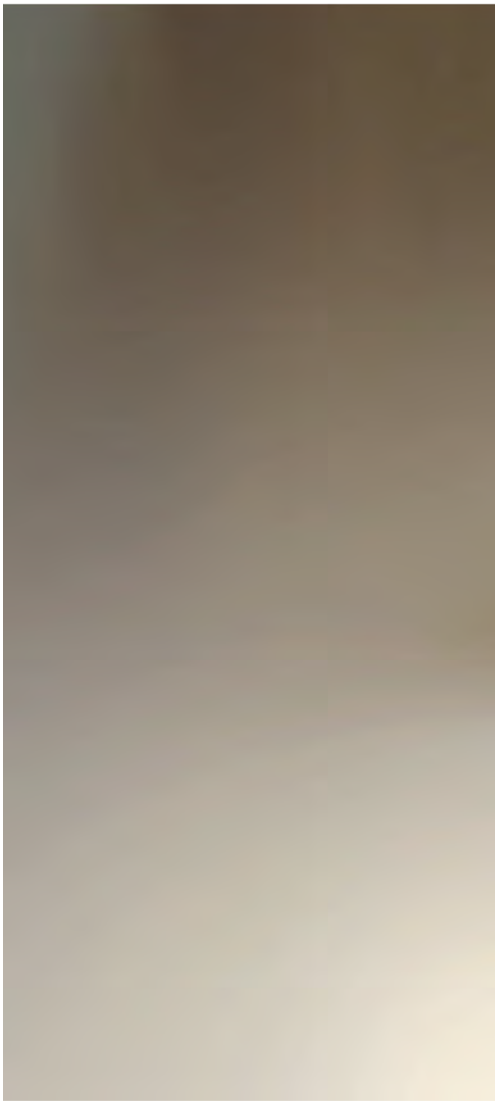
EAE Elektrik A.S.
Head Office
Akcaburgaz Mahallesi,
3114. Sokak, No:10 34522
Esenyurt - Istanbul - TURKEY
Tel: +90 (212) 866 20 00
Fax: +90 (212) 886 24 20

EAE DL 3 Factory
Busbar
Gebze IV Istanbul Makine ve Sanayicileri
Organize Bolgesi, 6. Cadde,
No: 6 41455 Demirciler Koyu,
Dilovası - Kocaeli - TURKEY
Tel: +90 (262) 999 05 55
Fax: +90 (262) 502 05 69

EAE DL 1 Factory
Cable Tray
Gebze IV Istanbul Makine ve Sanayicileri
Organize Bolgesi, 6. Cadde,
No: 2 41455 Demirciler Koyu,
Dilovası - Kocaeli - TURKEY
Tel: 0 (262) 999 05 55
Faks: 0 (262) 502 05 70

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IEC 61439-6



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