

EAE Elektrik A.Ş.

Akcaburgaz Mahallesi, 119. Sokak, No:10 34510 Esenyurt-Istanbul-TURKEY Tel: +90 (212) 866 20 00 Fax: +90 (212) 886 24 20 www.eae.com.tr











E-LINED L





E-LINE KX

Compact Busbar Distribution System 630...6300 A





E-LINE KB

Compact Busbar Distribution System 800...6300 A





E-LINE KO

Plug-in Busbar Distribution System 160...800A





E-LINE MK

Small Power Plug-in Busbar Distribution System 100-160-225A





E-LINE KAP

Plug-in Busbar Distribution System 40-63A





E-LINE DL

Multi-Conductor Lighting Busbar System 25-32-40A





E-LINE KAM

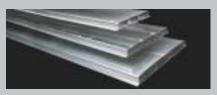
Lighting Busbar System 25-32-40A





E-LINE TB

Multi Conductor Trolley Busbar System 35...250A





E-LINE DK

Underfloor Ducting Systems





E-LINE DKY

Raised Floor Energy Distribution Systems 25...63A





E-LINE UK

Cable Tray Systems



CONTENTS

Introduction	
Order Code System	
Technical Characteristics	
Standard Components	6-7
Special Straight Length	8
Feeder Boxes	9-10
Tap-Off Plugs	
Tap-Off Boxes	
Support Systems	14-15
DL Joint Installation	16
DL Tap-Off Plug Installation	
EC Certificate of Conformity	18
Product Overview	19
Certificate	20

► General Characteristics



E-Line DL Busbar Trunking Systems are used in buildings with an energy requirement between 25A-40A. They are designed to feed lighting fittings due to the characteristics of the 10A-25A tap-off plugs.

EAE Busbar Systems are manufactured using the latest production technologies available worldwide according to ISO 9001 standards with certified Quality Assurance systems. The products are designed and tested in accordance with IEC 60439-2.



Tap-off Plugs

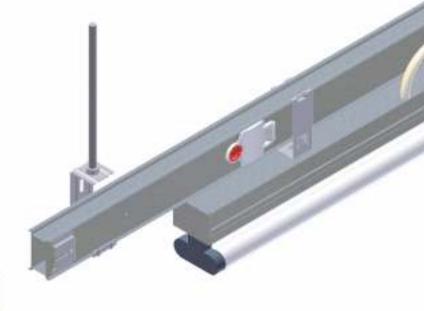
Arrangement of E-Line DL Busbar systems are designed with different contacts to prevent incorrect assembly.

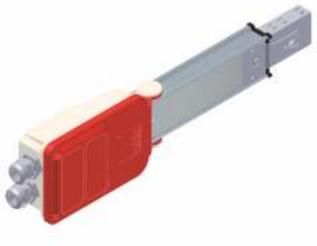
Safety

Earth contacts of the tap-off plugs make first during assembly, and the contact breaks last during disassembly.



The covers of the single phase, 10 Amp, wired tap-off plugs of the EAE DL Lighting busbar systems are designed with different colours to indicate which phase the light fittings are fed.

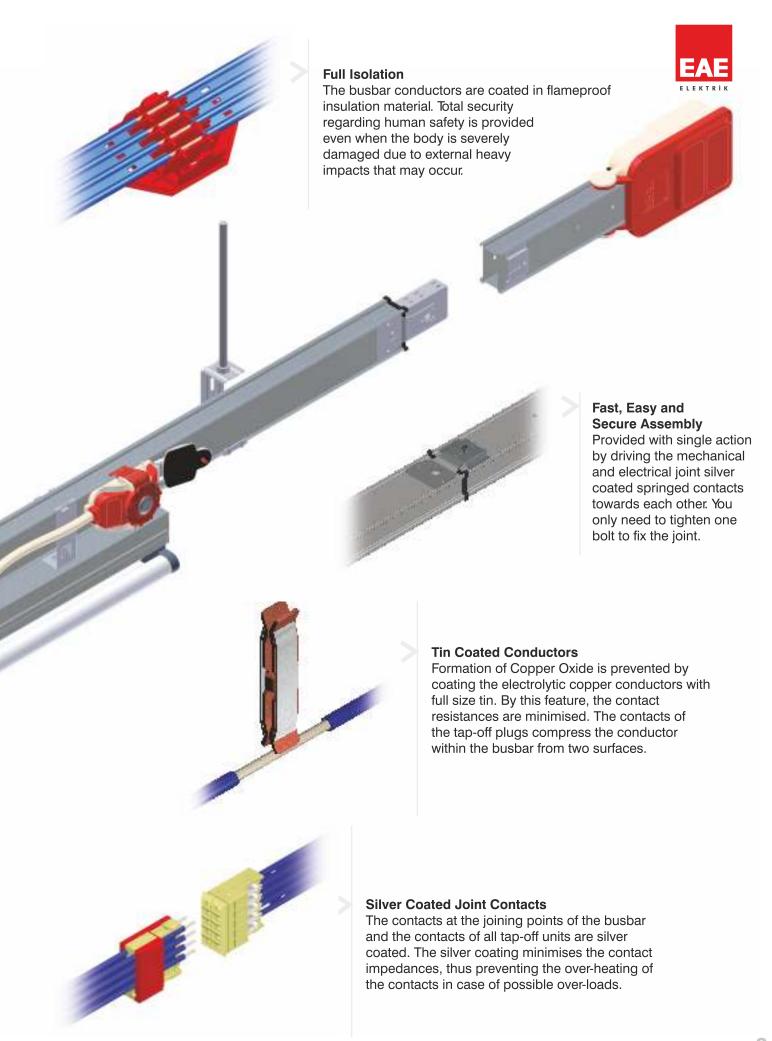


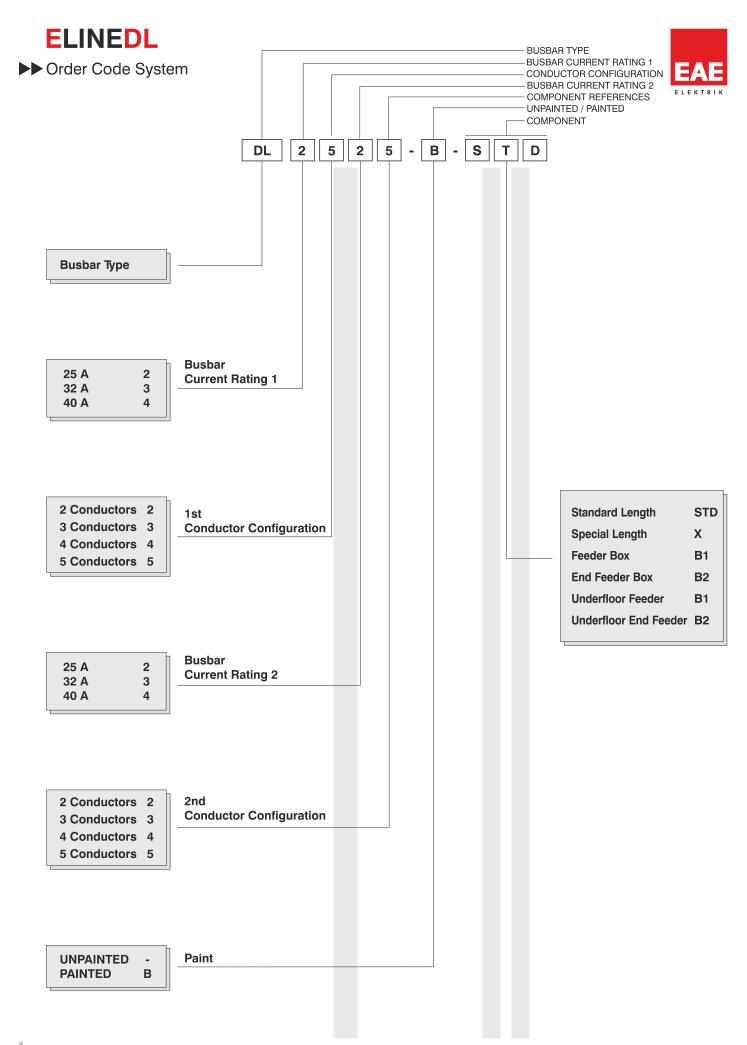


8 Plug-in Points are provided on a Standard 3 m Length

A total of 8 plug-ins on both sides of the busbar is provided as standard.

-	3000-		-
-330750		750	420-
⊕ ⊕	O -O-O-	O -0	(]}{]}
420750	750-	750—	330-







►► Technical Characteristics



			DL 2424	DL 3434	DL 4444
Rated Current	In	А	25	32	40
Standards	IEC 60	0439 1-2			
Rated Insulation Voltage	Ui	V	1000	1000	1000
Rated Frequency	f	Hz 50/60			
Protection Degree	IP 55				
Short-Circuit (1 sec)	Icw	kA _{rms}	2.50	3.00	4.00
Short-Circuit (Peak)	lp	kA	4.00	5.00	6.50
Short Circuit(Peak)Tested 1 msec		kA	21	21	21
Resistance	R ₂₀	$m\Omega/m$	5.42	4.46	2.90
Reactance	X ₁	$m\Omega/m$	2.02	1.62	1.27
Impedance	Z	$m\Omega/m$	5.61	4.47	3.17
Joule Losses At In	I^2R	W / m	3.85	5.24	5.65
L1, L2, L3, N (Cross Section)		mm²	3.20	4.00	6.00
PE (Housing)		mm²	18.30	18.30	18.30
PE (Conductor)		mm²	3.20	4.00	6.00
Weight (4 Conductors)		kg/m	1.40	1.43	1.60
Weight (5 Conductors)		kg/m	1.50	1.55	1.72

The maximum permitted load for the support of light fittings of the system is 15 kg. concentrated or 20 kg. distributed for a recommended support span of every 2 meters without any deformation of the housing.

Voltage Drop Calculation

Voltage drop of a busbar system can be calculated with the following formula taking into account the " α " load distribution constant.

For single phase;

$$\Delta U = \alpha . I.2L (R.\cos \varphi + X.\sin \varphi).10^{-3} [V]$$

For three phase;

$$\Delta U = \alpha \cdot \sqrt{3.1.L} (R.\cos\varphi + X.\sin\varphi) \cdot 10^{-3} [V]$$

 $\Delta U = Voltage Drop V$

I = Rated Current [A]

L = Length of Line [mt]

 $\alpha = \text{Load Distribution Constant}$

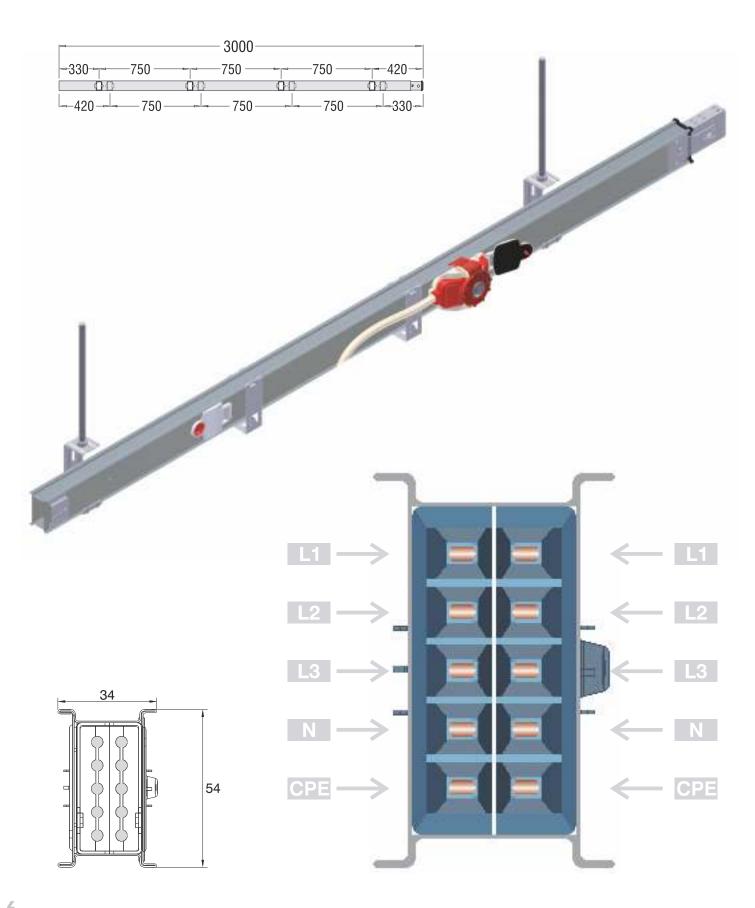
 $R = Resistance [m\Omega m]$

 $X = Reactance [m\Omega m]$

Lo	ad D	istrik	oution	n Con	stant	α
>				Δ	Load concentrated at the end of line. Line fed from one end of the line.	1.00
	Δ	Δ	Δ	Δ	Distributed load. Line fed from one end of the line.	0.50
>	Δ	Δ	Δ	Δ	Distributed load. Line fed from both ends of the line.	0.25

►► Standard Elements

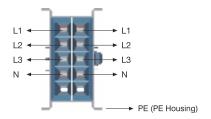




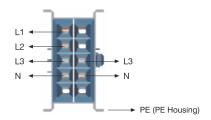


▶► Standard Elements

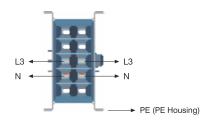




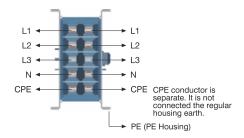
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2424 2x25 A Busbar	4+4	84165
32	DL 3434 2x32 A Busbar	4+4	84167
40	DL 4444 2x40 A Busbar	4+4	84169



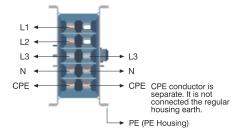
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2422 2x25 A Busbar	4+2	84177
32	DL 3432 2x32 A Busbar	4+2	84179
40	DL 4442 2x40 A Busbar	4+2	84181



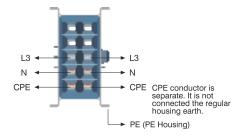
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2222 2x25 A Busbar	2+2	84189
32	DL 3232 2x32 A Busbar	2+2	84191
40	DL 4242 2x40 A Busbar	2+2	84193



Current (A)	Description	Conductor Conf.	Order Code
25	DL 2525 2x25 A Busbar	5+5	84201
32	DL 3535 2x32 A Busbar	5+5	84203
40	DL 4545 2x40 A Busbar	5+5	84205



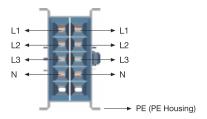
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2523 2x25 A Busbar	5+3	84213
32	DL 3533 2x32 A Busbar	5+3	84215
40	DL 4543 2x40 A Busbar	5+3	84217



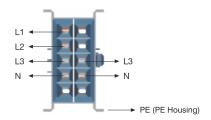
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2323 2x25 A Busbar	3+3	84225
32	DL 3333 2x32 A Busbar	3+3	84227
40	DL 4343 2x40 A Busbar	3+3	84229

▶► Special Straight Length Busbars

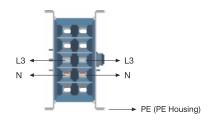




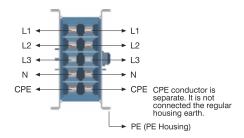
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2424 2x25 A Special Length	4+4	84237
32	DL 3434 2x32 A Special Length	4+4	84239
40	DL 4444 2x40 A Special Length	4+4	84277



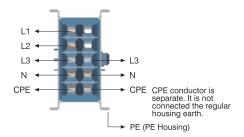
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2422 2x25 A Special Length	4+2	84249
32	DL 3432 2x32 A Special Length	4+2	84251
40	DL 4442 2x40 A Special Length	4+2	84253



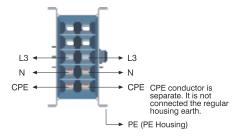
Current (A)	Description	Conductor Conf.	Order Code
25	DL 2222 2x25 A Special Length	2+2	84261
32	DL 3232 2x32 A Special Length	2+2	84263
40	DL 4242 2x40 A Special Length	2+2	84265



Current (A)	Description	Conductor Conf.	Order Code
25	DL 2525 2x25 A Special Length	5+5	84273
32	DL 3535 2x32 A Special Length	5+5	84275
40	DL 4545 2x40 A Special Length	5+5	84277



Current (A)	Description	Conductor Conf.	Order Code	
25	DL 2523 2x25 A Special Length	5+3	84285	
32	DL 3533 2x32 A Special Length	5+3	84287	
40	DL 4543 2x40 A Special Length	5+3	84289	

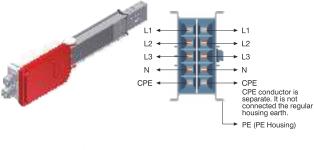


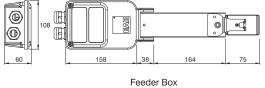
Current (A)	Description	tion Conductor Conf	
25	DL 2323 2x25 A Special Length	3+3	84297
32	DL 3333 2x32 A Special Length	3+3	84299
40	DL 4343 2x40 A Special Length	3+3	84301



►► Standard Elements







Feeder Box

Current (A)) Description	Busbars	Order Code
25	DL 2525 - B1 Feeder Box	DL 2525-DL 2523 DL 2323-DL 2424 DL 2422-DL 2222	84345
32	DL 3535 - B1 Feeder Box	DL 3535-DL 3533 DL 3333-DL 3434 DL 3432-DL 3232	84347
40	DL 4545 - B1 Feeder Box	DL 4545-DL 4543 DL 4343-DL 4444 DL 4442-DL 4242	84349

^{*} With PE Conductor and M25 Gland as standard. End Closer is supplied together with the feeder unit.

End Feeder Box

Current (A)	Description	Busbars	Order Code
25	DL 2525 - B2 End Feeder Box	DL 2525-DL 2523 DL 2323-DL 2424 DL 2422-DL 2222	84417
32	DL 3535 - B2 End Feeder Box	DL 3535-DL 3533 DL 3333-DL 3434 DL 3432-DL 3232	84419
40	DL 4545 - B2 End Feeder Box	DL 4545-DL 4543 DL 4343-DL 4444 DL 4442-DL 4242	84421

^{*} With PE Conductor and M25 Gland as standard.

CPE CPE conductor is separate. It is not connected the regular housing earth. PE (PE Housing) **(10)**

End Feeder Box

Flexible Elbow



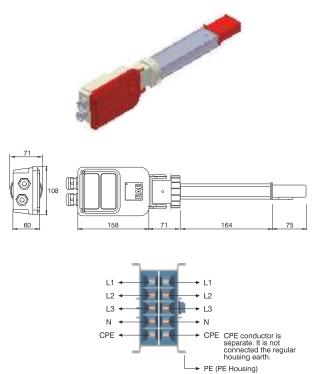


Flexible Elbow



►► Standard Elements





Feeder Box

Underfloor Feeder Box (Movable Neck)

Current (A)	Description	Busbars	Order Code
25	DL 2525 - B1 Underfloor Feeder Unit	DL 2525 DL 2523 DL 2323 DL 2424 DL 2422 DL 2222	65000
32	DL 3535 - B1 Underfloor Feeder Unit	DL 3535 DL 3533 DL 3333 DL 3434 DL 3432 DL 3232	65004
40	DL 4545 - B1 Underfloor Feeder Unit	DL 4545 DL 4543 DL 4343 DL 4444 DL 4442 DL 4242	65008

^{*} With PE Conductor and M25 Gland as standard. End Closer is supplied together with the feeder unit.

L1 L1 L2 L2 L3 N CPE CPE conductor is separate. It is not connected the regular housing earth. PE (PE Housing) End Feeder Box

Underfloor End Feeder Box (Movable Neck)

Current (A)	Description	Busbars	Order Code
25	DL 2525 - B2 Underfloor End Feeder Unit	DL 2525 DL 2523 DL 2323 DL 2424 DL 2422 DL 2222	65009
32	DL 3535 - B2 Underfloor End Feeder Unit	DL 3535 DL 3533 DL 3333 DL 3434 DL 3432 DL 3232	65013
40	DL 4545 - B2 Underfloor End Feeder Unit	DL 4545 DL 4543 DL 4343 DL 4444 DL 4442 DL 4242	65017

^{*} With PE Conductor and M25 Gland as standard.

Max diameter of feeder cable is Ø 11 mm.

The body is manufactured from 0,50 mm galvanised sheet metal as standard.

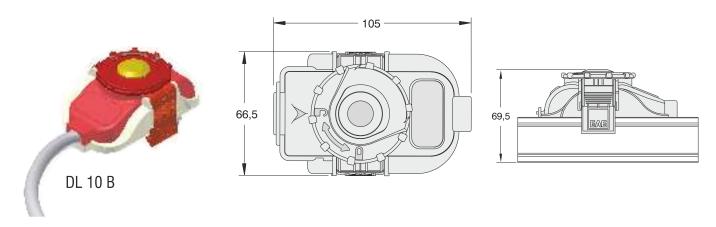
For non-standard product, please contact our technical office.



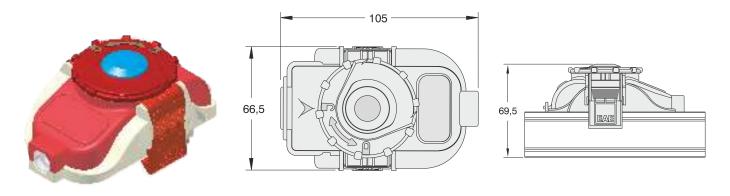


Current (A)	Description	Cable Length	Phase	Properties	Order Code
	DL 10 - B Tap Off Plug L1*	1 m. TTR Cable	L1, N, PE	With Black Cover	84453
10	DL 10 - B Tap Off Plug L2*	1 m. TTR Cable	L2, N, PE	With Yellow Cover	84455
_	DL 10 - B Tap Off Plug L3*	1 m. TTR Cable	L3, N, PE	With Blue Cover	84457

^{*} Plugs with different length cable available upon request.



Current (A)	Description	Cable Length	Phase	Properties	Order Code
	DL 16 - FS Tap Off PlugL1	-	L1, N, PE	With 5 x 20 fuse	84465
16	DL 16 - FS Tap Off PlugL2	-	L2, N, PE	holders. Max diameter of feeder cable is Ø 11 mm.	84467
16	DL 16 - FS Tap Off PlugL3	-	L3, N, PE		84469
	DL 16 - FS Tap Off PlugL123		L1, L2, L3, N, PE		84479
16	DL 16 - K Tap Off PlugL1	-	L1, N, PE	Without Fuses. Max diameter	75013
	DL 16 - K Tap Off PlugL2	-	L2, N, PE		75011
	DL 16 - K Tap Off PlugL3	-	L3, N, PE	of feeder cable	75003
	DL 16 - K Tap Off PlugL123	-	L1, L2, L3, N, PE	is Ø 11 mm.	75001



DL 16 FS DL 16 K



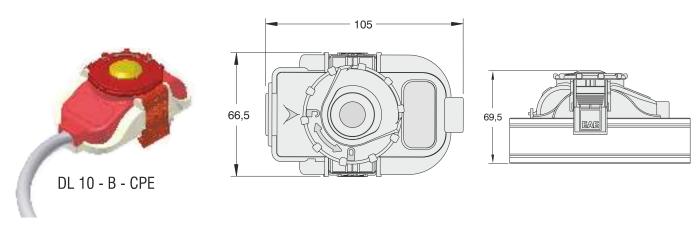
►► Tap off Plugs (Clean Earth)



Tap off Plugs (CPE)

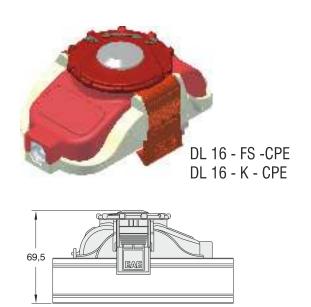
Current (A)	Description	Cable Length	Phase	Properties	Order Code
	DL 10 - B - CPE Tap Off Plug L1*	1 m. TTR Cable	L1, N, CPE	With Black Cover	80002
10	DL 10 - B - CPE Tap Off Plug L2*	1 m. TTR Cable	L2, N, CPE	With Yellow Cover	80010
	DL 10 - B - CPE Tap Off Plug L3*	1 m. TTR Cable	L3, N, CPE	With Blue Cover	80024

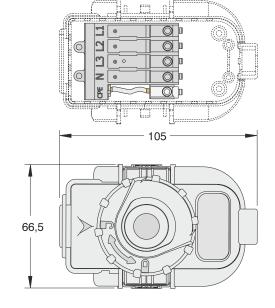
^{*} Plugs with different length cable available upon request.



Plug with Fuse Holder / Plug with Clips (CPE)

Current (A)	Description	Cable Length	Phase	Properties	Order Code
	DL 16 - FS - CPE Tap Off PlugL1	-	L1, N, CPE	With 5 x 20 fuse	84493
16 -	DL 16 - FS - CPE Tap Off PlugL2	-	L2, N, CPE	holders. Max diameter of feeder	83459
10	DL 16 - FS - CPE Tap Off PlugL3	-	L3, N, CPE		83457
	DL 16 - FS - CPE Tap Off PlugL123	-	L1, L2, L3, N, CPE		83447
	DL 16 - K - CPE Tap Off PlugL1	-	L1, N, CPE	Without Fuses. Max diameter	67352
16	DL 16 - K - CPE Tap Off PlugL2	-	L2, N, CPE		67351
	DL 16 - K - CPE Tap Off PlugL3	-	L3, N, CPE	of feeder cable	67350
	DL 16 - K - CPE Tap Off PlugL123	-	L1, L2, L3, N, CPE	is Ø 11 mm.	67349









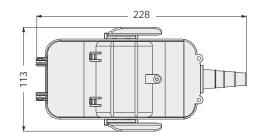


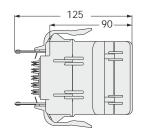
Tap Off Box

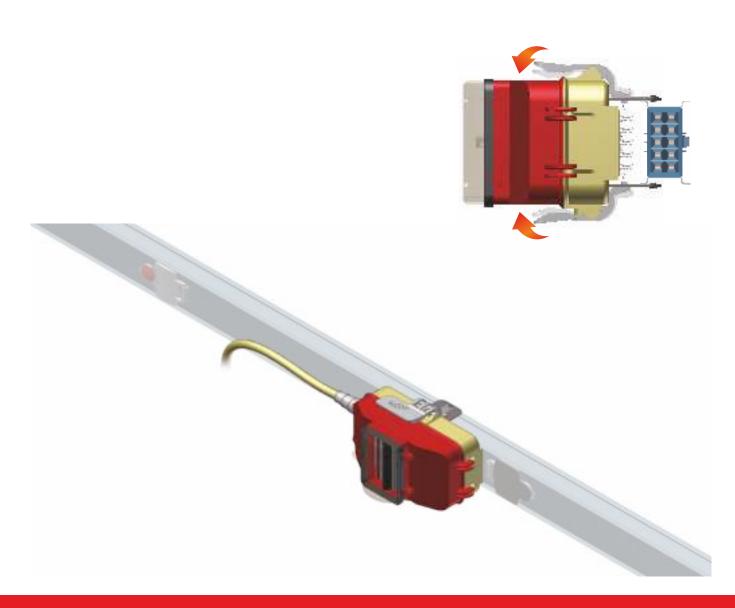
Current (A)	Description	Phase	Properties	Order Code
25	DL 25 - S Empty Tap Off Box (CPE)*	L1, L2, L3, N, CPE	5 x 38 fuse holders. Max diameter of feeder cable is Ø 20 mm.	60026
	DL 25 - S Empty Tap Off Box (PE)	L1, L2, L3, N, PE		60027
	DL 25 - S Empty Tap Off Box (2N)	L1, L2, L3, 2N		60028

 $^{^{\}star}$ Tap off box can be fitted with MCB's of different ratings and brands.







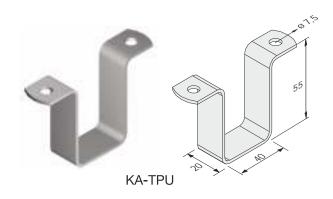


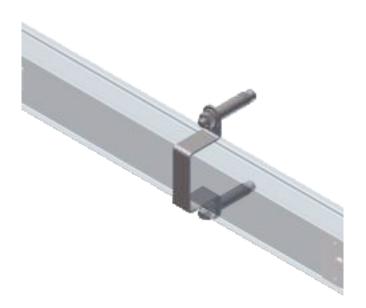




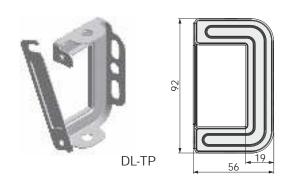


Description	Order Code
KA - TPU Fixing unit "U" type	98699





Description	Order Code	
DL Fixing Unit	72535	



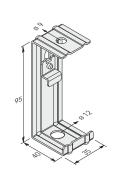






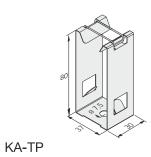
Description		Order Code	
KA - TP	Lighting fixture fixing unit		98698

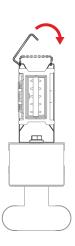




Description	Order Code
KA-TPL Fixing unit "L" t	ype 98525



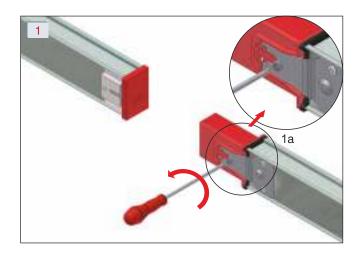




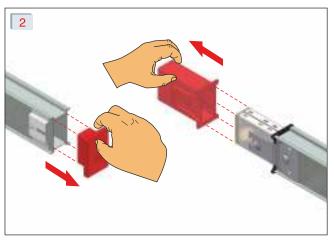


▶ Busbar Joint Installation

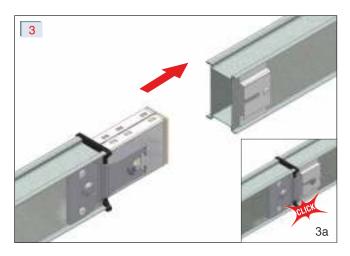




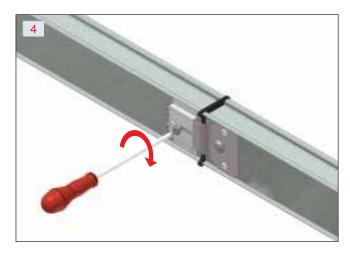
Detach the protective plastic from both ends of the channel. (1a)



Remove the plastic protective covers from the system as shown in the figure.



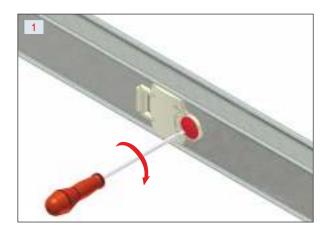
Connect the male side of the channel with the female side of the other channel. Make sure that you hear the locking sound for correct connection. (3a)



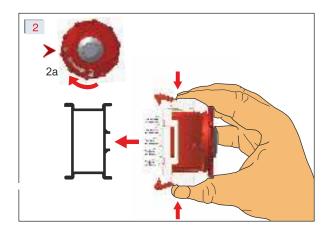
Complete the joint assembly by tightening the joint bolt. (4a)

▶▶ DL Tap Off Plug Fixing

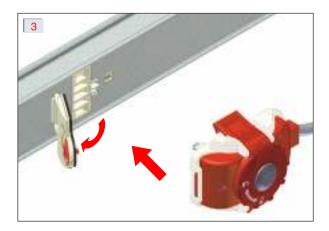


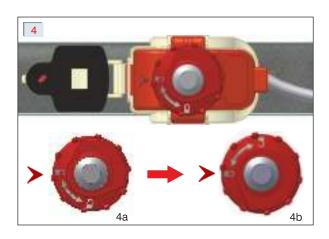


Turn the locking button on the busbar to OPEN (☐) position (Figure 1).



Turn the locking knob to OPEN (➤□) position. Clips are open now. Insert the plug while aligning contacts correctly to the busbar (Figure 2 & 3).





After fixing the plug to the busbar properly, turn the locking knob to LOCK ($\triangleright \blacksquare$) position as shown on (Figure 4).





CE DECLARATION OF CONFORMITY

Product Group E-Line DL Busbar Energy Distribution System

Manufacturer EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.

Akcaburgaz Mahallesi, 119. Sokak, No:10 34510 Esenyurt-Istanbul

This is to attest, under our sole responsibility, that the aforementioned products conforms with the determined regulations, guidelines and the below standards.

Standard : IEC 60439-1

IEC 60439-2

CE - Directive

2006/95/EC "Low Voltage Directive"

Type Tests include verification of;

- 1- Temperature-rise Limits (8.2.1)
- 2- Dielectric Properties (8.2.2)
- 3- Short-circuit Strength (8.2.3)
- 4- The Effectiveness of The Protective Circuit (8.2.4)
- 5- Clearances and Creepage Distances (8.2.5)
- 6- Mechanical Operation (8.2.6)
- 7- Degree of Protection (8.2.7)

Date

- 8- The Resistance of Insulating Materials to Abnormal Heat and Fire (8.2.9)
- 9- Structural Strength (8.2.10)
- 10- Crushing Resistance (8.2.12)
- 11- Resistance of Insulating Materials to Abnormal Heat (8.2.13)
- 12- Resistance to Flame Propagation (8.2.14)
- 13- Fire Resistance in Building Penetration (8.2.15)

EAE Elektrik A.S.

31.10.2005





25-32-40A PLUG-IN BUSBAR SYSTEMS PRODUCT SPECIFICATION (E-Line DL)

- 1- The manufacturer of the busbar systems shall have ISO 9001 and ISO 14001 certification and busbar systems shall be type tested and certified according to IEC 60439-2 by international laboratories.
- 2- The rated insulation voltage of the system shall be 1000V.
- 3- The busbar sytem shall have rated current levels between 25A and 40A and shall have tin plated copper conductors
- 4- The conductors in the housing shall be continuously insulated and only peeled off at the plug-in points to create contact area.
- 5- The busbar system shall conform to the following phase configuration.
 - a) 2 Conductors: L1 / N / Housing (Earthing)
 - b) 3 Conductors: L1 / N / CPE + Housing (PE conductor and housing are not connected)
 - c) 4 Conductors: L1 / L2 / L3 / N / Housing (Earthing)
 - d) 5 Conductors: L1 / L2 / L3 / N / CPE + Housing (PE conductor and housing are not connected) Housing shall be used as earth conductor.
- 6- A total of 8 plug-in points on the standard 3 m length of the busbar system. It shall be possible to increase the number of windows on request. Protective covers shall be provided on plug-in windows.
- 7- There shall be insulator supports at the plug-in points
- 8- The conductors shall be of electrolytic copper and continuously tin plated
- 9- Joint of the busbar shall slide into each other; joint contacts shall be silver plated. To ensure a safe joint contact there shall be springs on both sides of joint contacts.
- 10- IP Protection degree of the busbars shall be 55
- 11- The housing of the busbar shall be manufactured of 0,50 mm thick galvanised sheet metal. It shall be possible for the manufacturer to produce in Ral 7038 coloured electrostatic oven-dried paint finish when requested.
- 12- Contacts in the tap offs shall be of the jawed construction, which contact the conductors on both sides. The contacts shall also have steel springs.
- 13- Standard support fittings and fixing components suitable for the external structure of the busbar system shall be provided and shall be produced by the manufacturer.







