

KSERIES 2000 - 5000 A



General



K SERIES è conforme alle norme:
K SERIES complies with the following standard:
IEC 61439-1
IEC 61439-6
CEI EN 61439-1
CEI EN 61439-6
DIN VDE 0660 part 500
DIN VDE 0660 part 502
IEC 529



K Series busbar is intended for high power distribution and transport in industrial, commercial and tertiary buildings.

4 aluminium conductors with identical cross-sections (3P + N + PE).

The conductors are isolated using a double polyester film pre-shaped, self-extinguishing V-0 halogen free TM, thermal class B conform to the glow-wire test according to IEC 60695-2-10.

Among the conductors are positioned four sheets of polyester that ensure the operation with an isolation voltage equal to 1.000V.

Standard busbar trunking is IP40 and can goes up to IP55.

Insulation voltage: 1000 Volts.

The system is of compact design and can be installed edgewise, flat or vertically.

The aluminium housing provides protection and mechanical fixing of the conductors. The black anodized finish enhances the dissipation of heat along the bus.

Moreover it is used as the PE protective conductor (in accordance with standard IEC 60367).

The conductors are sandwiched together inside the aluminium housing.

The junction between sections is made using a monoblock joint.

The joint provides the following:

- electrical junction between live conductors and between PE protective conductors
- mechanical connection between the two sections
- simultaneous continuity between all conductors

Joint is tightened using 2 torque bolts with snap-off heads.

The nut head snaps-off, when the correct tightening torque is reached.

This joint guarantees the necessary contact pressure between live conductors.

For dismantling or maintenance operations, the nut has a second head.

The tightening torque is 80 Nm

Joint block are to be bought separately. It is necessary to buy a joint for every straight element or elbow, two for every "T" element. Joint blocks are delivered in a separate box.

If the run has a feed unit at each end, an additional joint block must be ordered.



Trasporto e distribuzione orizzontale

Horizontal transport and distribution

2000 - 5000 A

RUN SECTION

Transport sections:

- Rating: 2000 - 5000 A
- Standard color: mat black
- fixed lengths: 1, 2 and 4 metres
- non-standard lengths: from 0.44 to 3.50 metres

Distribution sections:

- Rating: 2000 - 5000 A
- Standard color: mat black
- fixed lengths: 1, 2 and 4 metres
- non-standard lengths: from 0.5 to 3.50 metres

TAP-OFF UNITS

GDA busbar series plug-in tap-off units are compatible with the KSERIES busbar trunking:

- protection by 32 to 400 A with fuse bases
- protection by 32 to 400 A prefitted for circuit breakers

Fixed tap-off units:

- protection by 400 to 1250 A with fused switch
- protection by 400 to 1250 A prefitted for circuit breakers

CHANGE OF DIRECTION SECTIONS

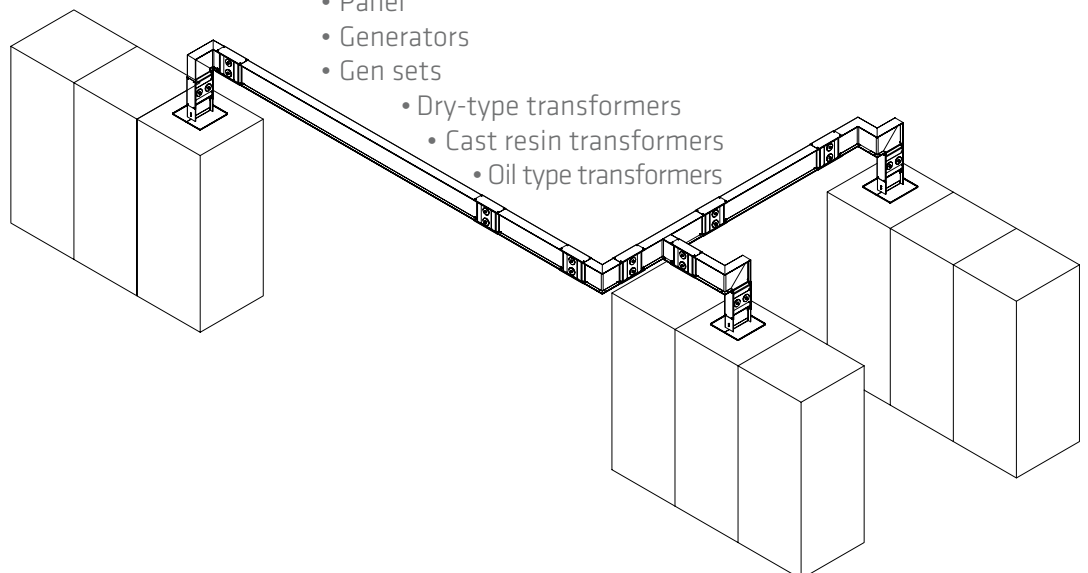
Change-of-direction sections adapt to all busbar trunking requirements.

There are both fixed and made to measure lengths.

FINAL CONNECTIONS

Prefabricated connections can be fixed to:

- Switchboards
- Power Centers
- Panel
- Generators
- Gen sets
- Dry-type transformers
- Cast resin transformers
- Oil type transformers



Distribuzione tra differenti livelli - colonne montanti

Distribution to different levels - rising mains

2000 - 5000 A

RUN SECTION

Transport sections:

- Rating: 2000 - 5000 A
- Standard color: mat black
- fixed lengths: 1, 2 and 4 metres
- non-standard lengths: from 0.44 to 3.50 metres

Distribution sections:

- Rating: 2000 - 5000 A
- Standard color: mat black
- fixed lengths: 1, 2 and 4 metres
- non-standard lengths: from 0.5 to 3.50 metres

VERTICAL FIXING SUPPORT

For installing the busbar trunking vertically, they ensure:

- height and depth adjustment
- load sharing
- absorption of expansions, vibrations, etc.

They can be fixed either to the floor, the wall or to a bracket.

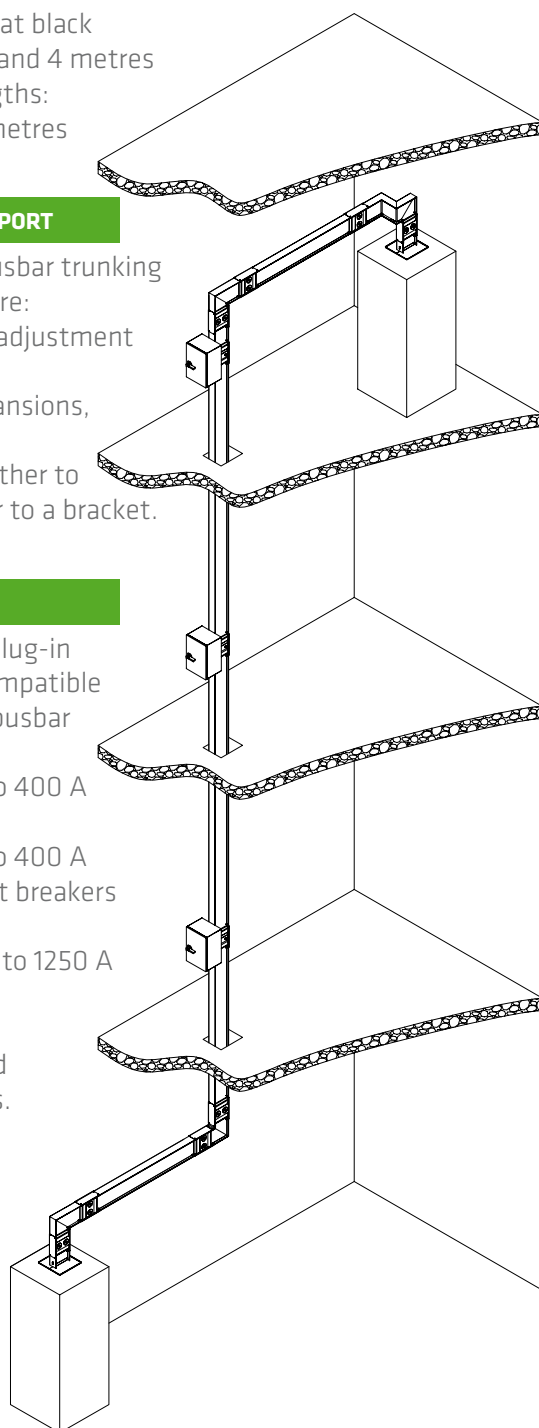
TAP-OFF UNITS

GDA busbar series plug-in tap-off units are compatible with the K SERIES busbar trunking:

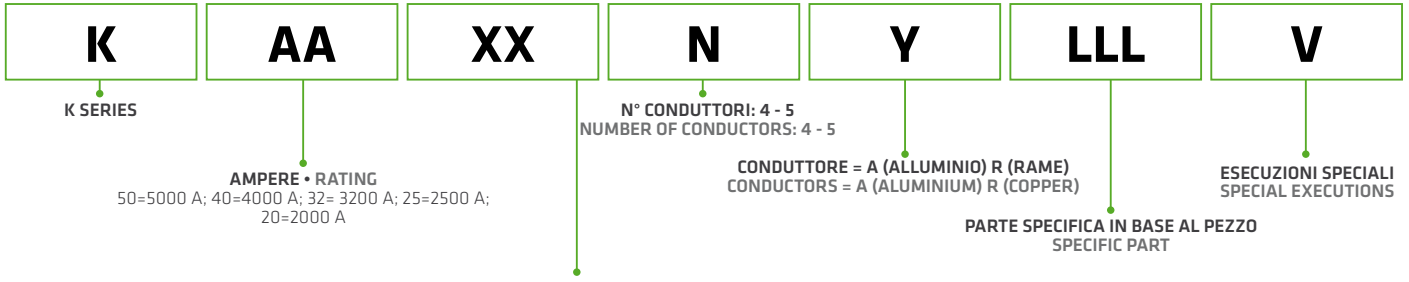
- protection by 32 to 400 A with fuse bases
- protection by 32 to 400 A prefitted for circuit breakers

Fixed tap-off units:

- protection by 400 to 1250 A with fused switch
- protection by 400 to 1250 A prefitted for circuit breakers.



CODIFICAZIONE K SERIES • CATALOGUE CODING K SERIES



TIPO PEZZO • TYPE OF COMPONENT		
RT = elemento trasporto / feeder length	TT = testata terminale / terminal header	CFI = cassonetto / protection box
RD = elemento distribuzione / distribution length	TP = testata con angolo orizz. / header with horiz. elbow	SS = staffa / hanger
GI = giunto monoblocco / monoblock joint	TS = testata con angolo vert. / header with vert. elbow	SV = staffa verticale / vertical hanger
AP = angolo orizzontale / horizontal elbow	TL = testata terminale lunga / long terminal header	BS = bloccabarre / busbar clamp
AS = angolo verticale / vertical elbow	RF = rotazione fasi / phase rotation	RED = riduttore portata / reduction unit
ET = elemento a T / T element	RN = rotazione neutro / neutral rotation	SOFF = soffietto / flexible cover
ZP = Z orizzontale / horizontal Z	GD = giunto dilatazione / expansion joint	TETT = tettuccio protezione / sunshield
ZS = Z verticale / vertical Z	AT = alimentazione testata / end feed box	DL = unità sezionamento / coupling isolator
ZM = Z mista / mix Z	AI = alimentazione intermedia / center feed box	F = con passamuro tagliafiamma 2 ore / fire barrier 2 h
Z3 = triplo angolo / triple elbow	CT = chiusura di testata / end cap	

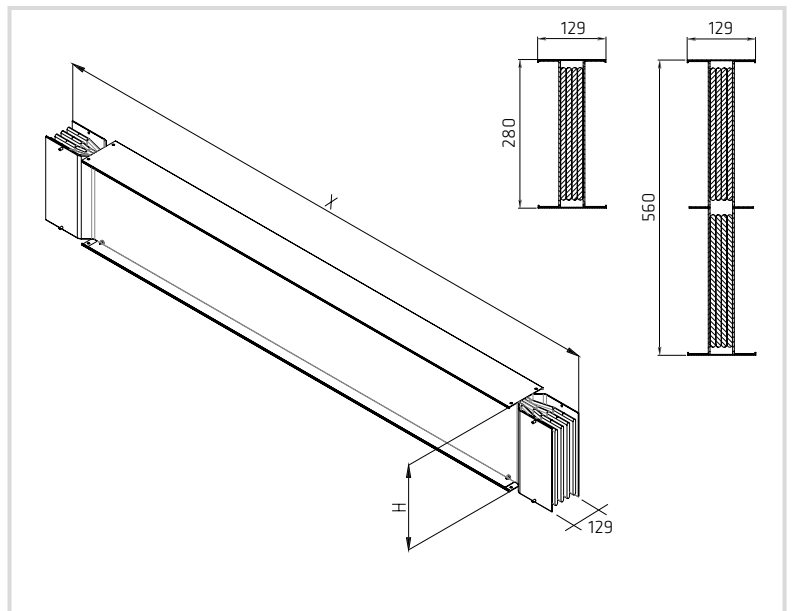
ELEMENTI RETTILINEI • RUN SECTION

ELEMENTI TRASPORTO - TIPO RT • FEEDER SECTIONS - TYPE RT

Transport the current without plug in points.
Available in 1 - 2 - 3 and 4 metre fixed lengths or made to measure from 0.44 to 3,5 metres.

Codice/Code	KAARTNYLLL	LLL = lenght in cm
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A	H	X Min	X Max
2000-3200	280	500	4000
4000-5000	560	500	4000

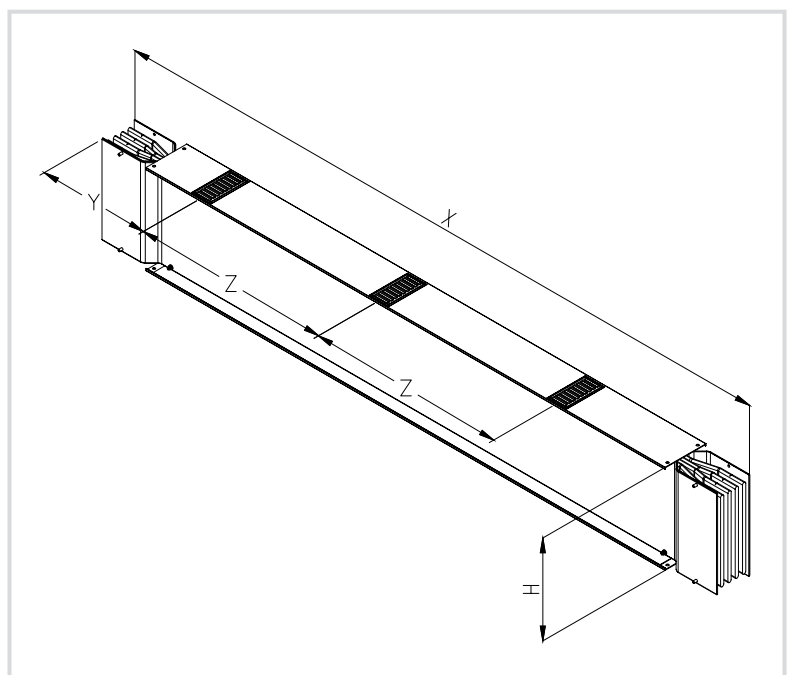


ELEMENTI DI DISTRIBUZIONE TIPO RD SECTIONS WITH TAP-OFF POINTS - TYPE RD

This sections are for current distribution for plug-in tap-off units.
They use 32 to 400 A GDA tap-off boxes.
These tap-off units can be plugged-on live, but off-load.
Available in fixed 2 or 4 metre lengths with plug-in points.

Codice/Code	KAARDNYLLL	LLL = lenght in cm
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A	H	X Min	X Max	Y	Z
2000-3200	280	1500	4000	730	1000
4000-5000	560	1500	4000	730	1000

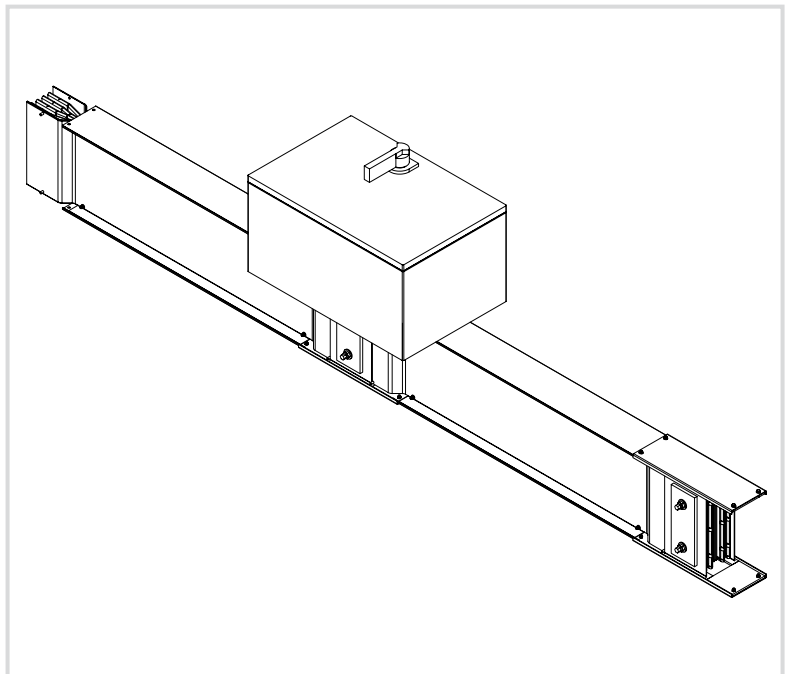


ELEMENTI CON CASSETTE FISSE - TIPO RT SECTIONS FOR FIXED TAP-OFF BOXES - TYPE RT

The normal transport section (Type RT) can be used for current distribution with fixed tap-off boxes fitted in every joint. They use specific KSeries 400 to 1250 A tap-off units. These tap-off units can only be fitted / removed when the line is not energised. Tap off box can be supplied empty, with fused switch or with MCCB.

Codice/Code	KAADVNLLL
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AA = Portata linea / Line rating		NN = Portata cassetta / Tap off rating	
LLL = tipo cassetta / tap off type	PDV = vuota / empty	FUS = sezionatore portafusibili / fused switch	INT = interruttore / MCCB

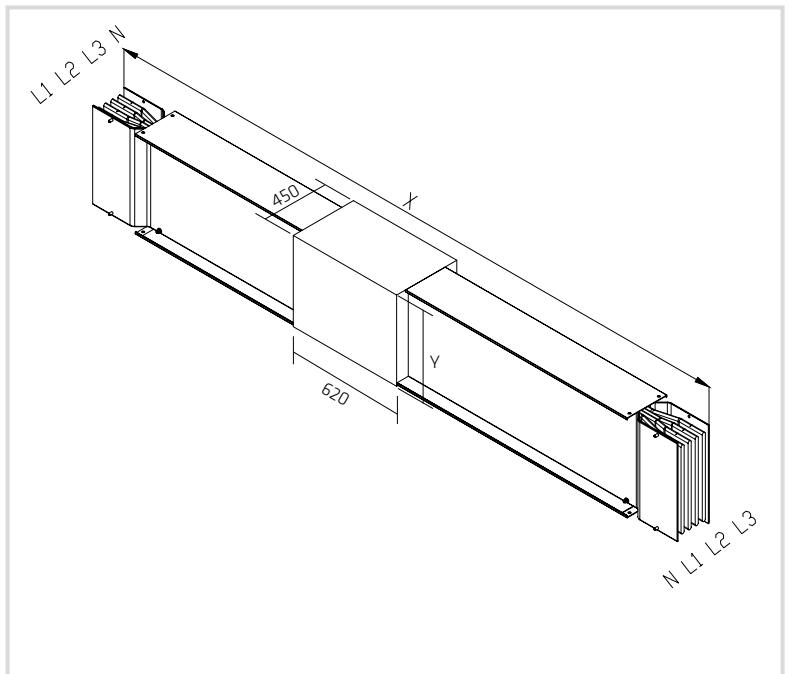


ROTAZIONE FASI - TIPO TN, TP • PHASES ROTATION - TYPES TN, TP

Used when the phases order is changing position. Available in a 1 metre length and is the same physical size as a transport section. The TN version transposes the neutral.

Codice/Code	KAATNNY
Codice/Code	KAATPNY

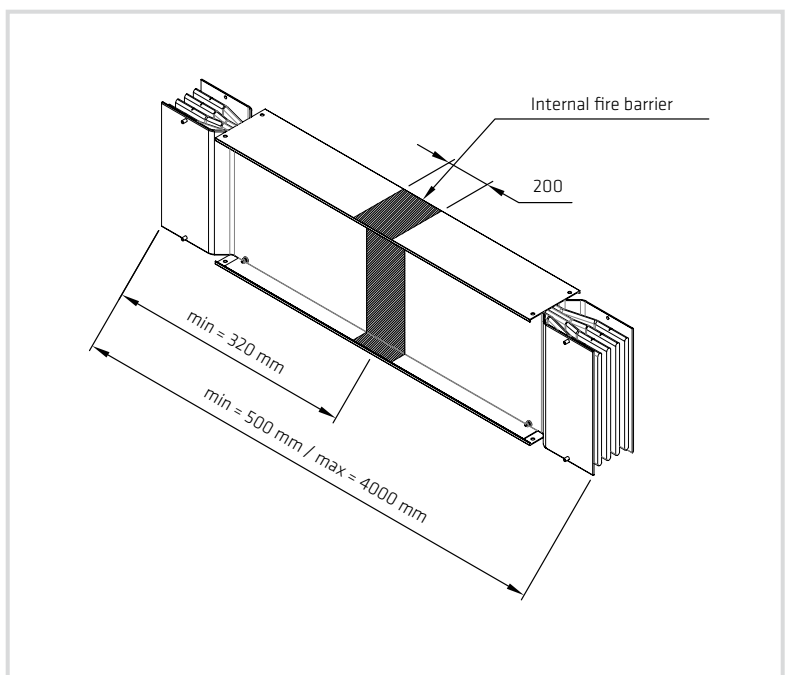
A		X Min	X Max
2000-3200	450	1300	4000
4000-5000	728	1300	4000



PASSAMURO TAGLIAFIAMMA • FIRE BARRIER

The fire barrier is pre-fitted directly on the busbar in the position required by the customer. Our devices contain "REI 120" fire-proof material preventing the passage of flames. It is possible to mount up to 2 fire barriers every 4 m piece.

2000-3200 A	K32F2
4000-5000 A	K50F2



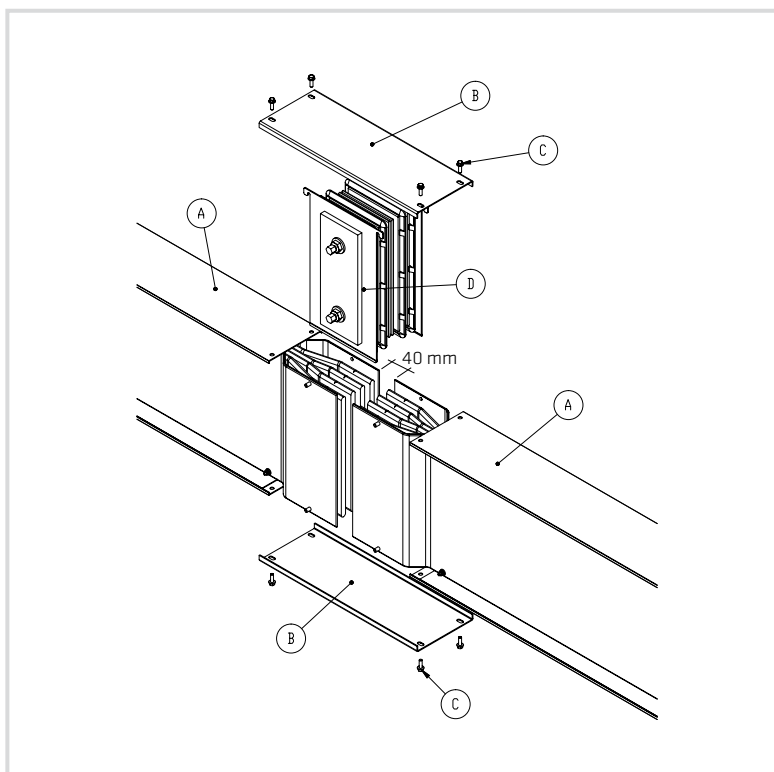
GIUNZIONE MONOBLOCCO - TIPO GI • MONOBLOCK JOINT - TYPE GI

If the run has a feed unit at each end, an additional joint block must be ordered. Each joint block is supplied with the necessary covers, nuts and bolts.

To joint 2 elements of the K Series busbar it is a very easy job:

- Align 2 elements (straight or elbows)
- Insert the monoblock joint (D)
- Screw the joint until the bolts head is broken
- Install the 2 cover joints (B)
- Fix the screws of cover joints
- Finish: fast and easy.

Codice/Code	KAAGINY	
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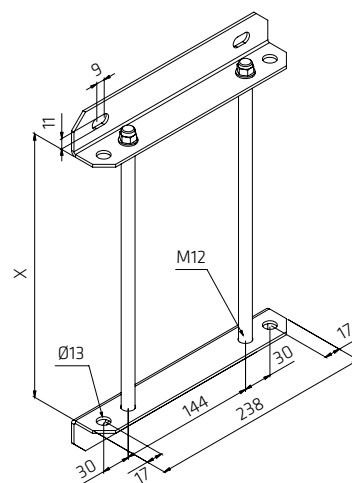


STAFFE E SUPPORTI • HANGERS AND SUPPORTS

STAFFE UNIVERSALI- TIPO SS UNIVERSAL FIXING HANGER - TYPES SS

The SS types allow the busbar trunking to be fixed and adjusted along its length, as well as absorbing its movements. The maximum distance between supports is: 2 metres. See installation instructions.

	A	Codice/Code
	2000/3200	K25SS X = 280 mm
	4000/5000	K50SS X = 560 mm
	2000/3200	K25SSV X = 280 mm
	4000/5000	K25SSV X = 560 mm
VERTICAL	2000/3200	K25SSV
	4000/5000	K50SSV

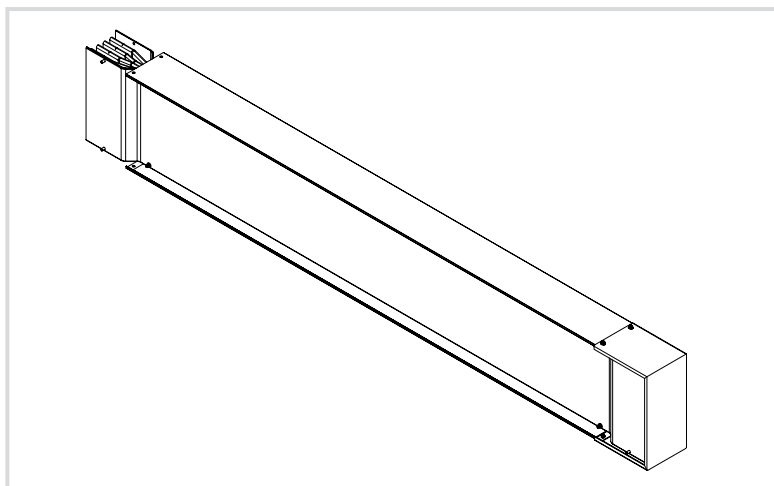


K**SS

CHIUSURA DI TESTATA - TIPO CT • END CAP - TYPE CT

The end cover protects and insulates the conductor ends and is mounted in the last section.

Codice/Code	KAACT	
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ELEMENTI AD ANGOLO • CHANGE DIRECTION SECTION

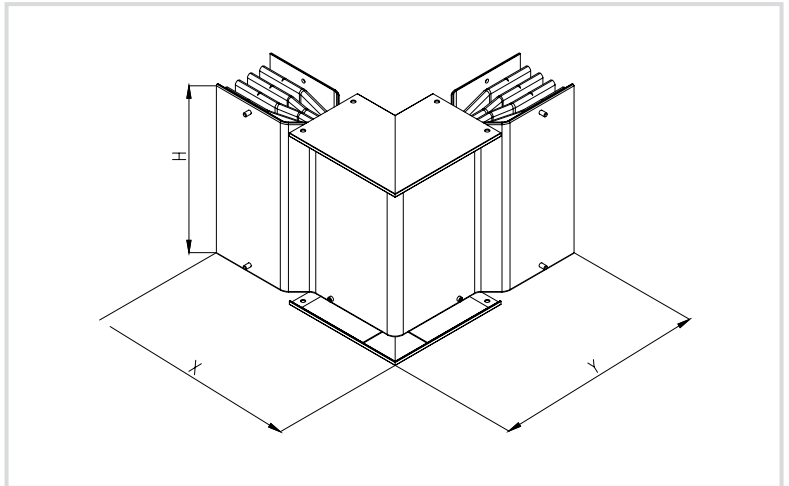
ANGOLI ORIZZONTALI - TIPO AP • HORIZONTAL ELBOWS - TYPES AP

Made to turn right or left.

This elbow is available in fixed or customized lengths or $90^\circ > 90^\circ$.

Codice/Code	KAAAPNYL	B: standard M: su misura / on measure G: $> 90^\circ$
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A	H	X-Y Min	X - Y Max
2000-3200	280	370	869
4000-5000	560	370	869



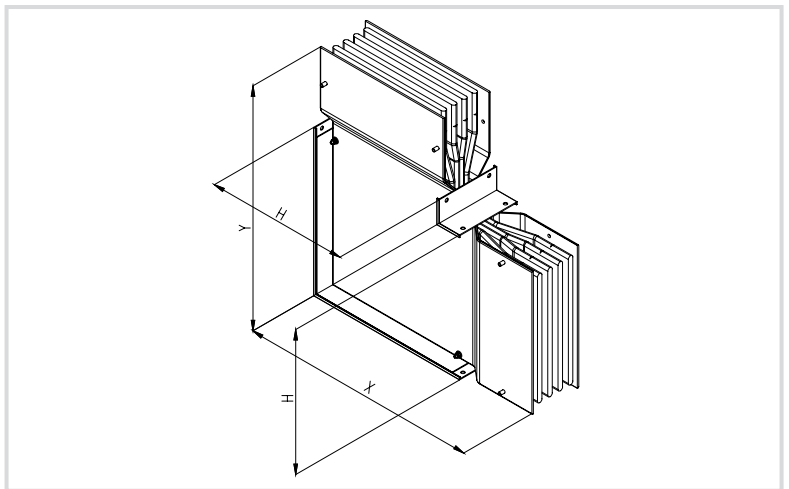
ANGOLI VERTICALI - TIPO AS • VERTICAL ELBOWS - TYPES AS

Made to turn up or down.

This elbow is available in fixed or customized lengths or $90^\circ > 90^\circ$.

Codice/Code	KAAASNYL	B: standard M: su misura / on measure G: elbow $> 90^\circ$
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A	H	X-Y Min	X - Y Max
2000-3200	280	550	1049
4000-5000	560	830	1329



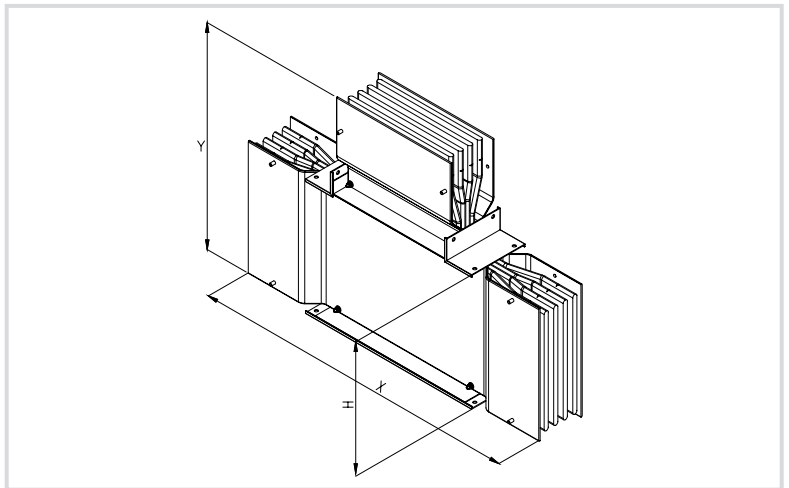
ELEMENTI A "T" - TIPO ET • "T" ELEMENTS - TYPES ET

Made to split in two part the line.

This element is available in fixed or customized lengths at 90° .

Codice/Code	KAAETNYL	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	820	1550	550	1049
4000-5000	560	1100	2040	830	1329



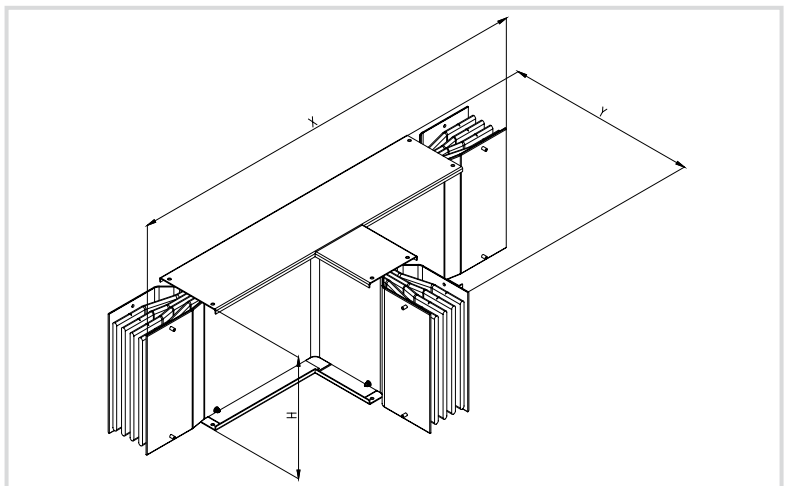
ELEMENTI A "T" - TIPO ETO • "T" ELEMENTS - TYPES ETO

Made to split in two part the line with exit made in horizontal position.

This element is available in fixed or customized lengths at 90° .

Codice/Code	KAAETONYL	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	2000	2000	1000	1000
4000-5000	560	2000	2000	1000	1000

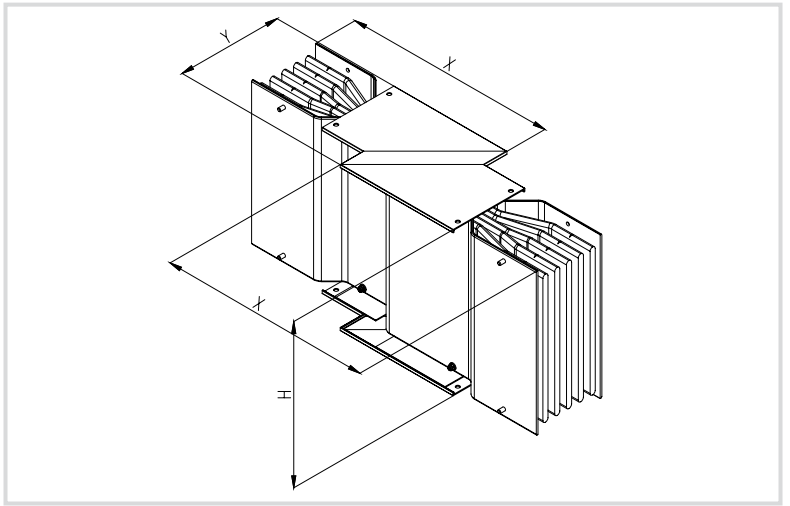


**DOPPIO ANGOLO ORIZZONTALE "Z" TIPO ZP
"Z" DOUBLE HORIZONTAL ELBOWS - TYPES ZP**

Made to double turn right and left.
This elbow is available in fixed or customized lengths at 90° or a customized angle.

Codice/Code	KAAZP ^{NYL}	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	370	869	200	739
4000-5000	560	370	869	200	739

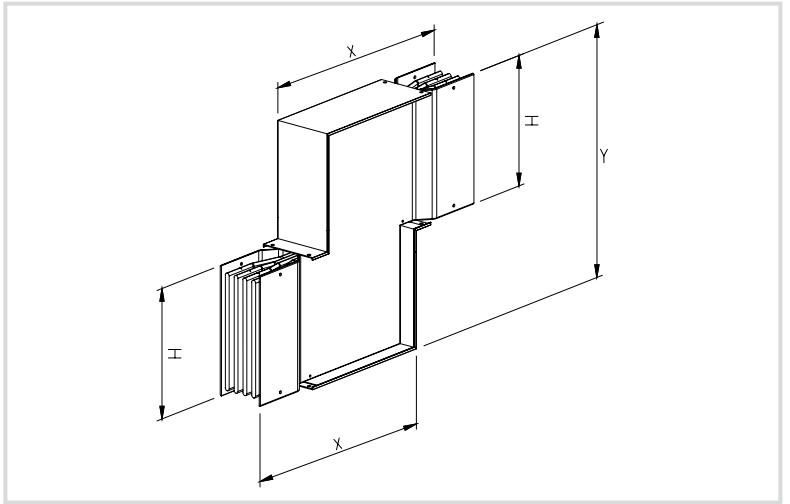


**DOPPIO ANGOLO VERTICALE "Z" TIPO ZS
"Z" DOUBLE VERTICAL ELBOWS - TYPES ZS**

Made to double turn up or down and return horizontal.
This elbow is available in fixed or customized lengths at 90° or a customized angle.

Codice/Code	KAAZS ^{NYL}	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	550	1049	530	1099
4000-5000	560	830	1329	840	1659

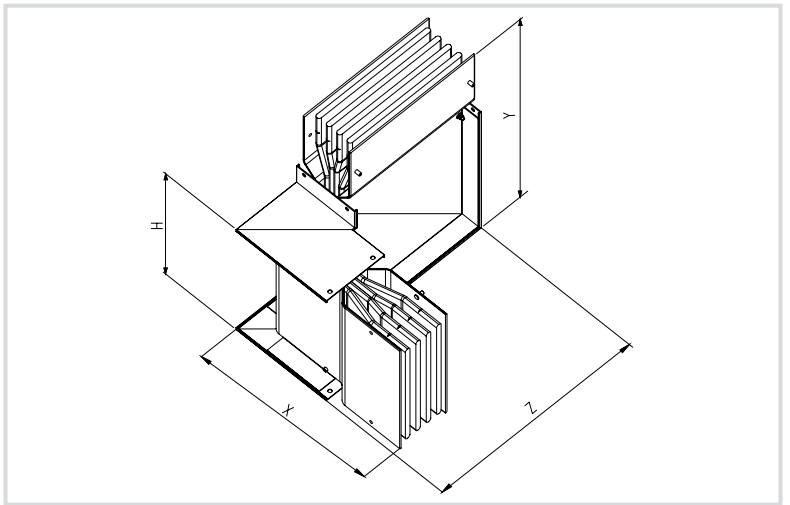


**DOPPIO ANGOLO ORIZZONTALE - VERTICALE "Z" TIPO ZM
"Z" DOUBLE HORIZONTAL AND VERTICAL ELBOWS - TYPES ZM**

Made to double turn right or left and up or down.
This elbow is available in fixed or customized lengths at 90° or a customized angle.

Codice/Code	KAAZM ^{NYL}	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max	Z Min	Z Max
2000-3200	280	370	869	550	1049	450	919
4000-5000	560	370	869	830	1329	730	1199

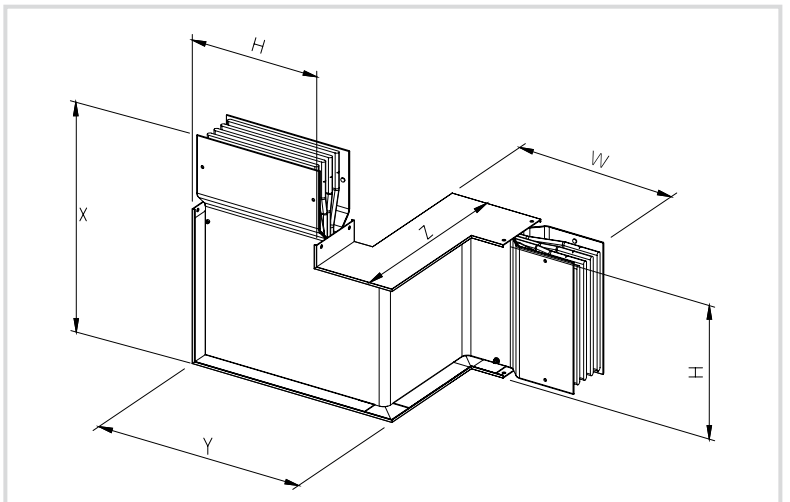


TRIPLO ANGOLO TIPO Z3 • "Z" TRIPLE ELBOWS - TYPES Z3

Made to turn 3 times when the space to make 2 elbows is not enough.
This elbow is available in customized lengths at 90°.

Codice/Code	KAAZ3 ^{NYL}	B: standard M: su misura / on measure
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A	H	X Min	X Max	Y Min	Y Max	Z Min	Z Max	W Min	W Max
2000-3200	280	550	1049	450	919	200	739	370	869
4000-5000	560	830	1329	1000	1199	200	739	370	869

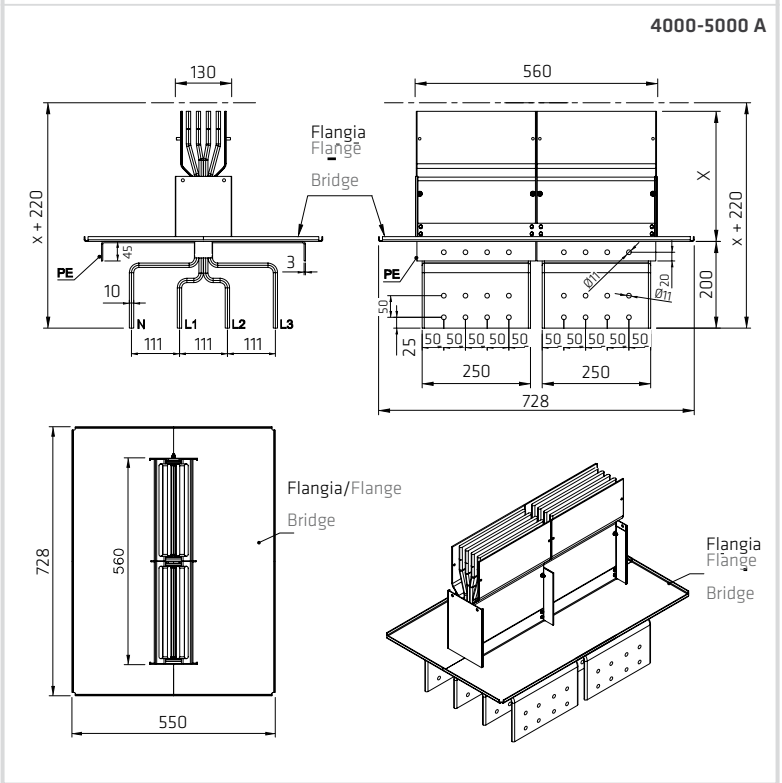
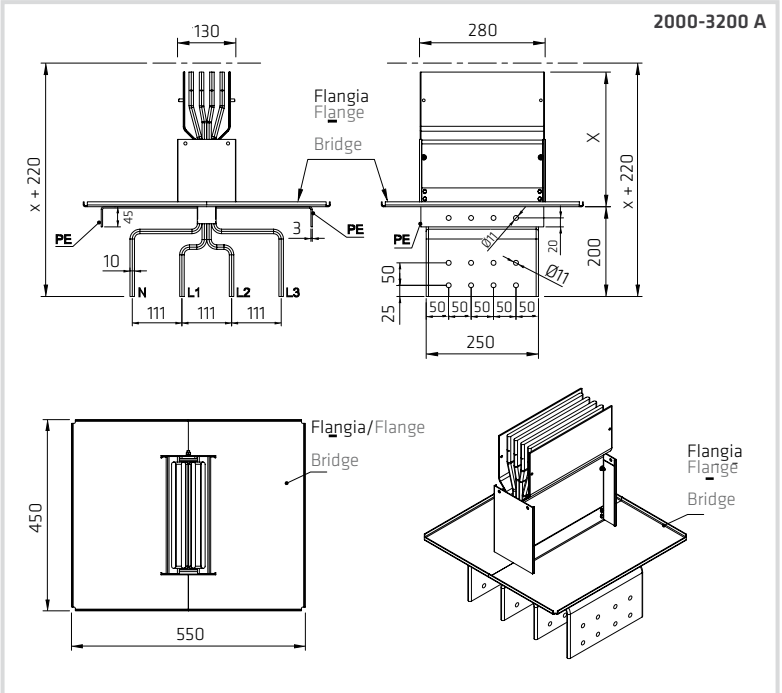


TESTATE TERMINALI • TERMINAL HEADER

To connect the K Series busbar to:

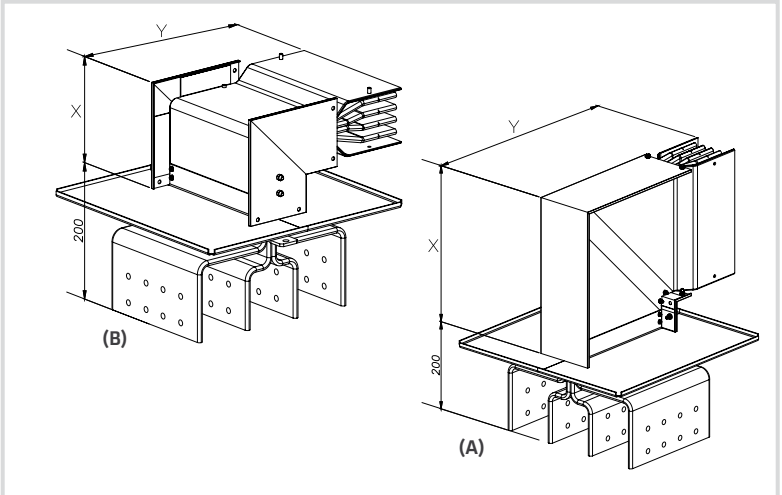
- Switchboards
- Power Centers
- Panel
- Generators
- Gen sets
- Dry-type transformers
- Cast resin transformers
- Oil type transformers.

Codice/Code	KAATPNYL	B: standard M: su misura / on measure
A	X Min	X Max
2000-3200	300	799
4000-5000	320	819



TESTATA TERMINALE CON ANGOLO • TERMINAL HEADER WITH ELBOW

Codice (A) /Code (A)	KAATSNYL	B: standard M: su misura / on measure			
Codice (B) /Code (B)	KAATPNYL	B: standard M: su misura / on measure			
A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	200	689	370	869
4000-5000	560	200	689	370	869
A	H	X Min	X Max	Y Min	Y Max
2000-3200	280	350	869	550	1049
4000-5000	560	630	1149	830	1329



DATA SHEET K SERIES

AL

Nominal current	I_n	[A]	2000 A	2500 A	3200 A	4000 A	5000 A
Dimensions	D	[mm]	129 x 280 mm	129 x 280 mm	129 x 280 mm	129 x 560 mm	129 x 560 mm
Weight			22 kg/m	28 kg/m	31 kg/m	45 kg/m	59 kg/m
Nominal voltage	U_e	[V]	1000 V	1000 V	1000 V	1000 V	1000 V
Insulation voltage	U_i	[V]	1000 V	1000 V	1000 V	1000 V	1000 V
Frequency	f	[Hz]	50-60Hz	50-60Hz	50-60Hz	50-60Hz	50-60Hz
Cross section phases	S_f	[mm ²]	1296 mm ²	1754 mm ²	1996 mm ²	3508 mm ²	3992 mm ²
Cross section neutral	S_n	[mm ²]	1296 mm ²	1754 mm ²	1996 mm ²	3508 mm ²	3992 mm ²
section of protective conductor (housing)	S_{PE}	[mm ²]	2540 mm ²	2540 mm ²	2540 mm ²	4800 mm ²	4800 mm ²
Rated short circuit time current (I_{cw})	I_{cw}	[kA]	80/110	95/110	110	140	140
Peak current	I_{pk}	[kA]	176	176	176	198	198
Rated short circuits time of neutral (I_{cn})	I_{cn}	[kA]	48	48	48	54	54
Peak current of neutral bar	I_{pk}	[kA]	106 kA	106 kA	106 kA	119 kA	119 kA
Rated short circuit time of protective circuit (I_{cw})	I_{cw}	[kA]	48 kA	48 kA	48 kA	54 kA	54 kA
Peak current of protective circuit	I_{pk}	[kA]	106	106	106	119	119
Phase resistance (T=20°C)	R_{20}	[mΩ/m]	0,0302 mΩ/m	0,0262 mΩ/m	0,0210 mΩ/m	0,0131 mΩ/m	0,0078 mΩ/m
Phase reactance	X	[mΩ/m]	0,0084 mΩ/m	0,0070 mΩ/m	0,0073 mΩ/m	0,0034 mΩ/m	0,0034 mΩ/m
Phase Impedance (T=20°C)	Z_{20}	[mΩ/m]	0,0313 mΩ/m	0,0271 mΩ/m	0,0222 mΩ/m	0,0135 mΩ/m	0,0085 mΩ/m
Neutral resistance	R_N	[mΩ/m]	0,0302	0,0262	0,0210	0,0131	0,0078
Neutral reactance	X_N	[mΩ/m]	0,0084	0,0070	0,0073	0,0034	0,0034
Neutral impedance	Z_N	[mΩ/m]	0,0313	0,0271	0,0222	0,0135	0,0085
Protective conductor resistance	R_{PE}	[mΩ/m]	0,0231	0,0231	0,0231	0,0074	0,0074
Protective conductor reactance	X_{PE}	[mΩ/m]	0,0022	0,0022	0,0022	0,0026	0,0026
conductor impedance	Z_{PE}	[mΩ/m]	0,0231	0,0231	0,0231	0,0078	0,0078
Resistance of the fault loop	R_D	[mΩ/m]	0,0533	0,0493	0,0441	0,0205	0,0152
Reactance of the fault loop	X_D	[mΩ/m]	0,0086	0,0072	0,0075	0,0060	0,0060
Impedance of the fault loop	Z_D	[mΩ/m]	0,0540	0,0498	0,0447	0,0214	0,0163
Degree of protection IP		IP	IP40/IP55	IP40/IP55	IP40/IP55	IP40/IP55	IP40/IP55
Losses for the Joule effect at nominal current	P_j	[W/m]	362	491	645	629	585
Calorific power		MJ/m	12,3	12,3	12,3	24,6	24,6
Mechanical Protection			IK09	IK09	IK09	IK09	IK09

CADUTA DI TENSIONE PER CARICO A FONDO LINEA - VOLTAGE DROP WITH END LOAD [ΔV]

		[A]	2000	2500	3200	4000	5000
$\cos\phi = 0,7$		[mV/m]	94,00	101,06	110,38	80,36	68,32
$\cos\phi = 0,8$		[mV/m]	101,16	108,94	117,40	86,74	71,70
$\cos\phi = 0,9$		[mV/m]	106,84	115,32	122,40	91,96	73,64
$\cos\phi = 1,0$		[mV/m]	104,62	113,46	116,40	90,76	67,56

COEFFICIENTE K_t DI CORREZIONE TERMICA PER CALCOLARE LA CORRENTE NOMINALE AMMISSIBILE I_n IN FUNZIONE DELLA TEMPERATURA AMBIENTE MEDIA NELLE 24 ORE - SCHEDULE OF RATINGS K_t FOR THE AMBIENT TEMPERATURE ON AVERAGE 24 H

		15° C	20° C	25° C	30° C	35° C	40° C	45° C	50° C	55° C
	K _t	1,12	1,10	1,07	1,03	1	0,85	0,7	0,6	0,5



Conformity declaration

K SERIES busbar described in this publication complies with the following standards:



IEC61439-1
IEC61439-6
IEC60529
CEI EN50102
CEI EN61439-1
CEI EN61439-6
CEI EN60529

Type test

- Short-circuit resistance
- Casing degree of protection (IP code)
- Insulation resistance
- Overheating limit
- Applied voltage resistance
- Resistance to normal loads
- Protective circuit efficiency
- Air and surface distances
- Casing degree of protection (IK code)

The product object of this declaration exceeds the test types above mentioned and therefore this material is marked:

Rivoli, 07/02/2012
GRAZIADIO & C. S.p.A.

Certifications



K SERIES

CE