

INSULATED CONDUCTOR SYSTEMS

U10

VAHLE

ELECTRIFICATION SYSTEMS

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Slipring units made up from U 10 see leaflet no. 102 s.



VAHLE on duty for the automotive industry

General

VAHLE insulated conductors U 10 are designed in accordance with today's international safety requirements. They fully meet VDE 0100 and are finger safe to VDE 0470, part 1, protection code IP 21.

For the collectors is the finger safety only valid if the carbons are complete in the conductor. In hand areas, in which the collectors leave the conductor due to operating conditions, it must be a protection against contact installed on site. (i.e. barriers or cut-off) This is only necessary for voltages over 25 Volts AC or 60 Volts DC.

The adjacent picture demonstrates that the VDE test finger cannot reach life conductors – finger safety is guaranteed.



The shroud which envelopes the various conductors is an excellent insulator. Therefore our unipole insulated conductors guarantee utmost safety in operation.

Any number of conductors can be installed side by side at minimum space requirement.

Standard rail sections are 6 m long, shorter sections are available.

The grounding conductor is marked with a continous yellow stripe at the isolating housing. The non-interchangeability of the collector ground and phases is guaranteed.

Usage: Only for indoor systems

Approved and listed by:

UL. Consult factory label service.

Hangers

Bolted, snap-in and quarter turn type hangers are available. Standard support distance for U 10 is 600 mm, in curves 300 mm.

Joints

Feed joint splices provide mechanical end electrical continuity. They include insulated protection covers.

Expansion joint sections are only required in case of expansion joints in the monorail track.

Feed terminals

Joint assembly and mid-rail assembly feeds are available.

Furthermore transfer guides and isolating assemblies allow for spade connectors.

Transfer guides

Transfer guides serve as an end protection of system runs and accomplish smooth collector transfer in case of switches, drop sections etc. They can be supplied with or without feed clip.

Isolating assemblies

Isolating sections are electrical interrupts of the conductor. Under normal operating conditions a cross over with collectors to switch the voltage off or on is only allowed with low power ratings (control current).
Conductor isolating assemblies are available for sectionalizing control circuits, maintenance bays etc. They can be supplied with or without feed clip.

Curves

Insulated conductors U 10 can be used for horizontal or vertical curves. A special curve tool for individual field preparation is available.

Collectors

The current collectors are made of re-inforced polyamide/polycarbonate and stainless steel parts. The current is drawn with a carbon brush.

The length of the collector connecting cable does not exeed 3 m, if the prepend overload protection is not suitable for the load of the connecting cable. Please refer to DIN VDE 0100, Part 430 and DIN EN 60204-32.

(Note: Above mentioned takes often place in systems with multi collectors)

The delivered connecting cables are suitable for the mentionend nominal currents. For the different laying systems please consider the reduction factors according to DIN VDE 0298-4.

Safety advise

It must be ensured that the arrangement of the conductor system provides minimum distances (0,5 m) between fixed and mobile plant parts (i.e. between conductor rails, collector trolleys and towing arms) so as to avoid the risk of pinching.

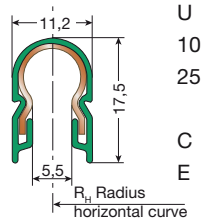
Engineering data of shroud

	standard shroud color green	high temp. shroud color gray
Electrical properties: Di-electric strength DIN 53481	> 25 kV/mm	> 25 kV/mm
Specific resistance IEC 60093	> 1 x 10^{16} Ohm x cm	> 1 x 10^{14} Ohm x cm
Surface resistance IEC 60093	2,1 10^{15} Ohm	2 10^{15} Ohm
Comparable figure / tracking according to IEC 60112	CTI 400 - 1,1	CTI 400 - 1,1
Mechanical properties: Flexible strength according to ISO 178	74-85 N/mm²	95 N/mm² ± 10 %
Tensile strength according to ISO 178	44-55 N/mm²	47-65 N/mm²
Ultraviolet resistance	Xenon test > 1500	
Max relativ humidity	< 100 %	
Temperature resistance:(2)	– 30 °C up to + 55 °C	– 30 °C up to +85 °C
Flame test proof	no flaming particles, self extinguishing, UL 94 V0	
Resistance to chemicals:(1)	gasoline mineral oil grease	hydrochloric acid. concentr. caustic soda solution 25% and 50%, sulphuric acid to 50%

(1) Consult factory when synthetic oil and grease involved.

(2) For use below 0 °C continous temperature (deep freeze storage) please contact the factory.

INSULATED CONDUCTORS U 10



Conductor code:

U = unipole insulated conductor
10 = shroud size
25 = conductor cross sectional area (mm^2)
C = copper conductor
E = stainless steel conductor

Length:
6 m is standard length, shorter lengths are available

Support spacing:
for straight runs 0.6 m
for curves 0.3 m

Conductor spacing:
on compact hangers 14 mm or variable

Bending of conductor:
Without prebending ∞ ≥ R ≥ 50000 mm
On site:
Horizontal curves 5000 mm > R ≥ 750 mm
Inside-/Oustside curves 5000 mm > R ≥ 750 mm
Factory 750 mm > R ≥ 300 mm

Chemical and electrical properties
see page 3

Use:
Only indoor

Type	U 10/25 C	U 10/25 E
Weight kg/m	0,267	0,246
Standard shroud, color green		
Order- No. phase [1]	167 00 •	167 02 •
Order- No. ground [1]	167 06 •	167 08 •
High temperature shroud, color gray		
Order- No. phase [1]	167 03 •	167 05 •
Order- No. ground [1]	167 09 •	167 11 •

Engineering data

Conductor rail Type	Cross sectional area mm^2		Leakage distance of covers mm	Nominal Voltage [3] V	Continuous ampere capacity A	Resistance Ohm/1000 m	Impedanz [2] Ohm/1000 m
	Copper	stainless					
U 10/25 C	25		30	690	100	0,744	0,748
U 10/25 E		25	30	690	10	31,328	31,328

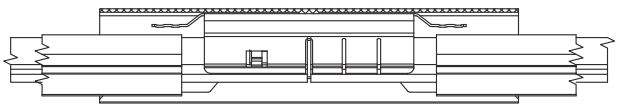
Selection of Conductors

in accordance to ampere load and environmetal conditions

U 10/25 C copper conductor for power-, control- and data-transmission.
U 10/25 E stainless steel conductor for control and data-transmission in corrosive atmospheres.

Feed joint (max. 2 x 40 A continous current)

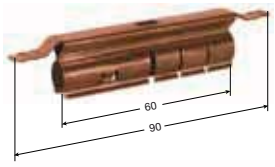
Balances the length extension during temperature fluctuation.

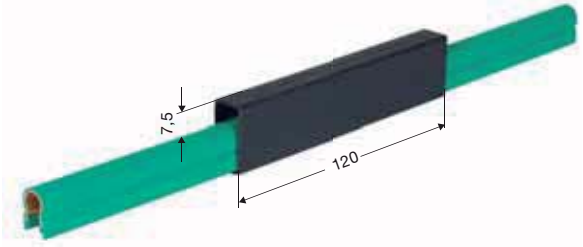


Type	Weight/kg	Order-No.
UEV 10	0,020	165 006

Connecting cable for UEV 10

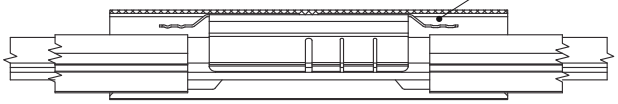
max. current load A	Connection cross section mm^2	Connection cable with flat plug Order- No.
2x32	2x2,5	165 049
2x40	2x4,0	165 051
2x40	2x6,0	166 368





[1] Fill-in last number (1, 2, 3, 4, 5 or 6 m suffix) in accordance to bars required.
[2] Based on 14 mm conductor spacing and with 50 Hz.
[3] Not with UL approval; U_{UL} = 600 V

Feed terminal (max. 2 x 50 A continous current)

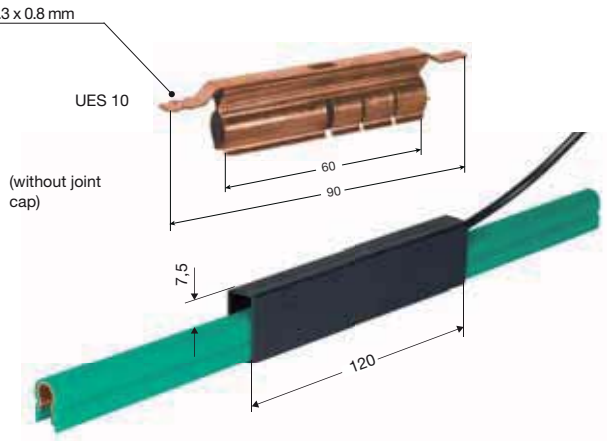


Type	Weight/kg	Order- No.
UES 10[1]	0,023	165 212

Usage: UES10 installed on the conductor section between the joint feeds.

Connecting cable for UES 10

max. current current load A	Connection cross section mm²	Connecting cable with flat plug Order-No.
2x32	2x2,5	165 049
2x40	2x4,0	165 051
2x50	2x6,0	166 368



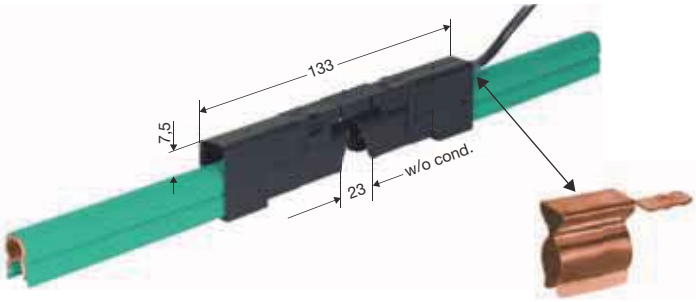
Isolating assembly

Type	symbol	Weight kg	comprising	Order- No.
LT /LT -U 10		0,010	2 x LT/U 10	165 025
LT /LTE-U 10[1]		0,015	2 x LT/U 10 units w/1 feed	165 114
LTE/LTE-U 10[1]		0,020	2 x LTU 10 units w/2 feed	165 026
separately available **SE 10** feed clip		0,005	1x	165 178

The two transfer button elements are pressed together to form a rigid, well aligned unit.

Connecting cable for SE 10

max. current current load A	Connection cross section mm²	Connecting cable with flat plug Order-No.
1x32	1x2,5	165 049
1x40	1x4,0	165 051
1x40	1x6,0	166 368



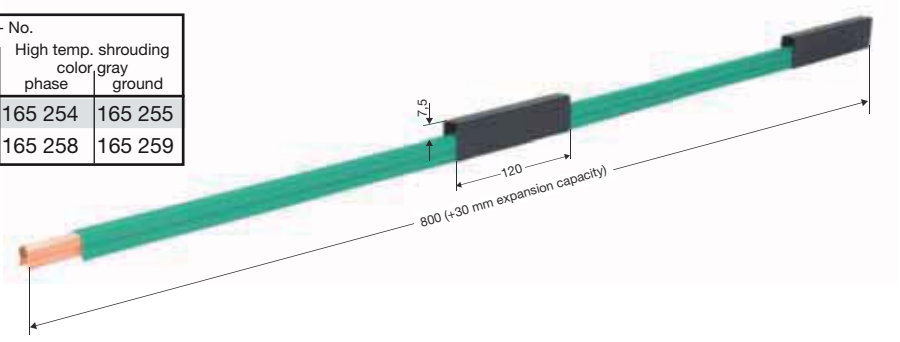
SE 10 with flat plug connection 6,3 x 0,8 mm (max. 40 A continous current)

Isolating assembly LT/LTE-U10

Expansion section

factory assembled to 0.8 m long conductor section incl. one joint splice. The 0.8 m expansion assembly is part of the system length

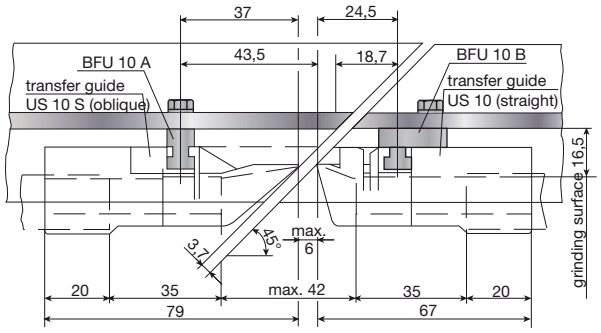
Type	Weight kg	Order- No. Standard shrouding color green phase	ground	High temp. shrouding color gray phase	ground
UDV 10/25 C	0,254	165 192	165 193	165 254	165 255
UDV 10/25 E	0,237	165 252	165 253	165 258	165 259

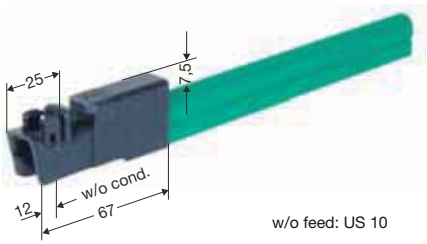


[1] Connecting cable with flat pin bushing FLA or FKA have to be ordered seperatly (See page 11).

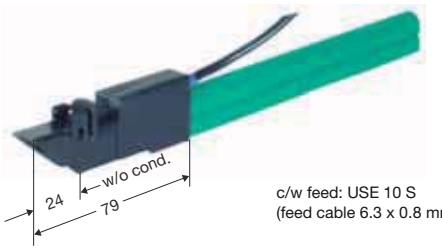
Transfer guide

with or without feed terminal (also serving for end **cap** and for anchor point in conjunction with BFU).





w/o feed: US 10



c/w feed: USE 10 S
(feed cable 6.3 x 0.8 mm)

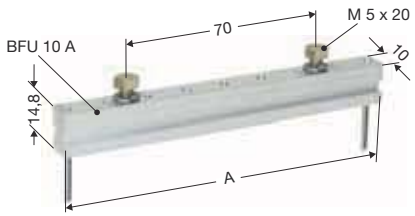
max. vertical and horizontal offset: ± 3 mm to each other

Type	Weight kg	feed clip	Order- No.
US 10	0,004	w/o	165 008
US 10 S	0,005	w/o	165 009
USE 10 (2)	0,009	c/w	165 010
USE 10 S (2)	0,010	c/w	165 011
Feed clip only **SE 10**	0,005		165 178

Anchor bar for transfer guide (Aluminium)

for bolting to the track, consisting of 1 aluminium profile bar, 2 hex. screws M 5 w/washer, 2 locking pins 2 x 20.

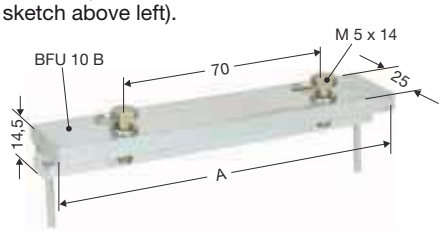
used in conjunction with bolted hangers



(16.5 mm distance between conductor-surface and track)

Type	poles	A/mm	Weight kg	Order- No.
BFU 10 A- 8	1- 8	118	0,042	165 168
BFU 10 A-10	1-10	143	0,052	165 176

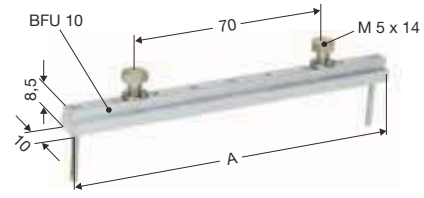
For compact hanger to bolt (1)
Use with oblique cut of the conductor.
(see sketch above left).



(16.5 mm distance between conductor-surface and track)

Type	poles	A/mm	Weight kg	Order- No.
BFU 10 B- 8 (1)	1- 8	118	0,087	165 272
BFU 10 B-10 (1)	1-10	143	0,101	165 274

used in conjunction with snap-in and quarter turn hangers



(10 mm distance between conductor-surface and track)

Type	poles	A/mm	Weight kg	Order- No.
BFU 10- 8	1- 8	118	0,022	165 115
BFU 10-10	1-10	143	0,026	165 123

(1) VB-Type anchor bar essential for more than 15 mm distance between conductor-surface and track on oblique cut tracks.
(2) Connecting cable with flat plug FLA is to be ordered separately (see page 10).

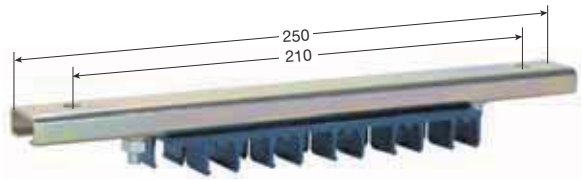
COMPACT HANGERS AND LOCATING CLAMPS FOR U 10

Any number of conductors can be assembled by combining the compact hangers.

Compact hanger with hardware, for up to 10 conductors

Conductor spacing 14 mm

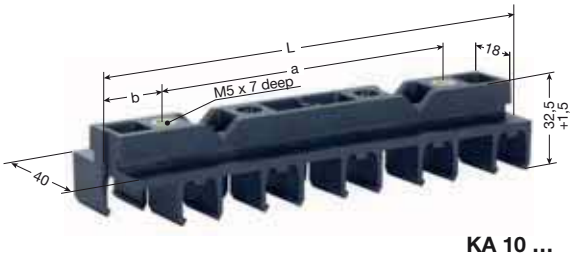
Hanger KA 10 is for direct bolting
Hanger KH 10 to go with bracket profile



KH 10-10 N

Phase distance: Standard = 14 mm

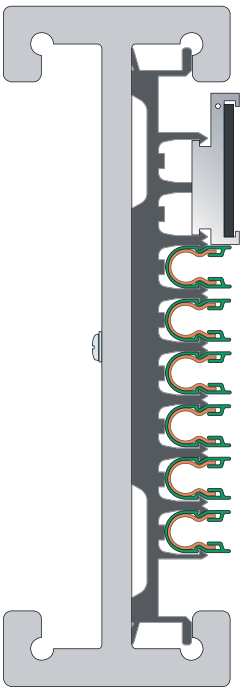
Type	Poles engaged	Length L	a	b	Weight kg	Order- No. Order- No.
KH 10-10 N	10	141	-	-	0,295	142 077



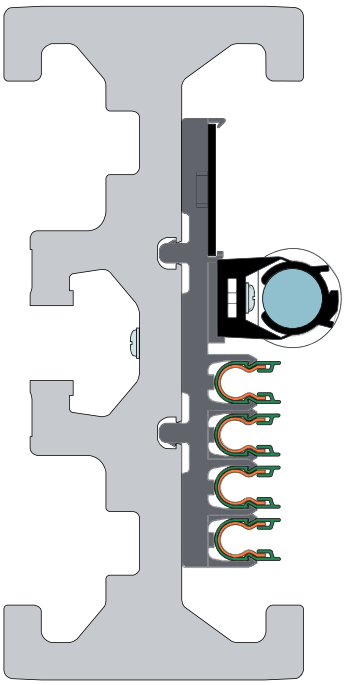
KA 10 ...

Type	Poles engaged	Length L	a	b	Weight kg	Order- No.
KA 10- 2 N	2	29	0	20,5	0,012	142 072
KA 10- 4 N	4	57	42	7,5	0,024	142 073
KA 10- 6 N	6	85	42	21,5	0,033	142 757
KA 10- 8 N	8	113	42	35,5	0,045	142 075
KA 10-10 N	10	141	100	20,5	0,056	142 076

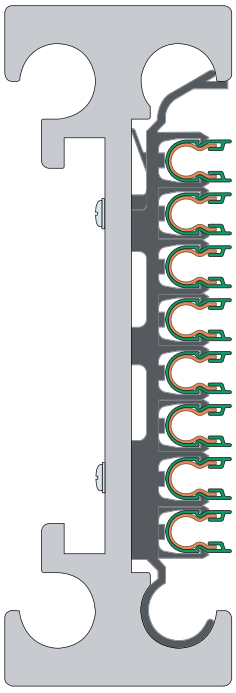
Compact hanger, self-locking, for up to 10 conductors on special order to fit your monorail track

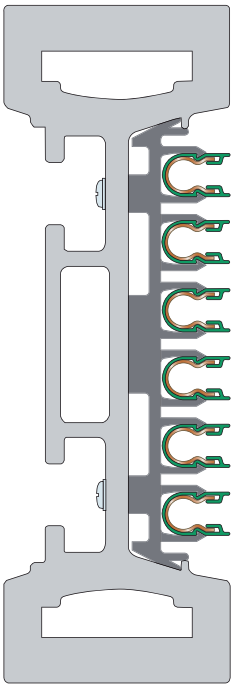


Compact hanger incl. holder for support profile with barcode band



Compact hanger incl. holder for support profile with barcode band and leaky feeder

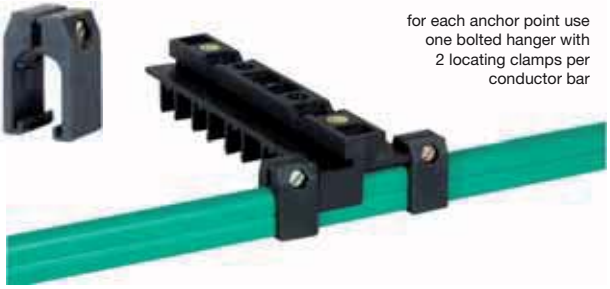




snap-in & quarter turn type hangers for typical monorail track electrification

Locating clamp

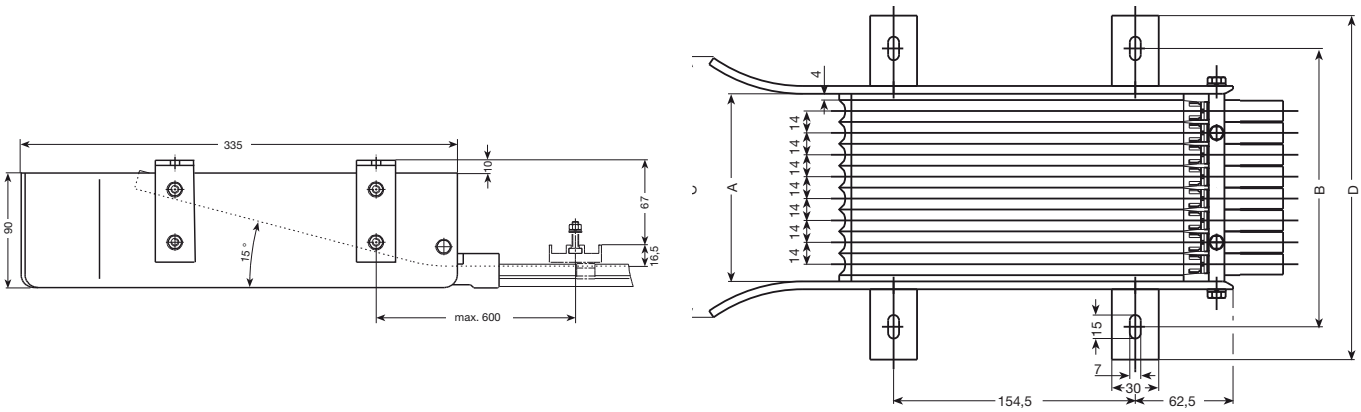
Type	Weight /kg	Order- No.
USK 10	0,030	165 645



for each anchor point use one bolted hanger with 2 locating clamps per conductor bar

TRANSFER FUNNELS AND CURRENT COLLECTORS FOR U 10

Transfer Funnels for KUFU 25



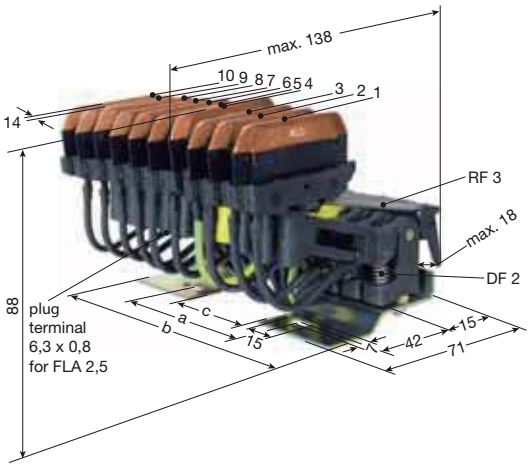
Type	A mm	B mm	C mm	D mm	Weight kg	Order- No.
EFT U 10- 2-KUFU	36	94	82	136	1,145	167 675
EFT U 10- 3-KUFU	50	108	96	150	1,230	167 676
EFT U 10- 4-KUFU	64	122	110	164	1,315	167 677
EFT U 10- 5-KUFU	78	136	124	178	1,400	167 678
EFT U 10- 6-KUFU	92	150	138	192	1,485	167 679
EFT U 10- 7-KUFU	106	164	152	206	1,570	167 680
EFT U 10- 8-KUFU	120	178	166	220	1,655	167 681
EFT U 10- 9-KUFU	134	192	180	234	1,740	167 682
EFT U 10-10-KUFU	148	206	194	248	1,825	167 683

Compact-collector KUFU 25 for transfer funnel EFT U10

with 1m connecting cable
max. current load: 1 flat plug 25 A

Phase distance 14 mm
Lift and swivel +/- 15 mm
Contact pressure:
approx. 3.5 N per carbon

Ground at Pos.4, with 3 poles at Pos. 3
other arrangements on request
Ground is always first contact



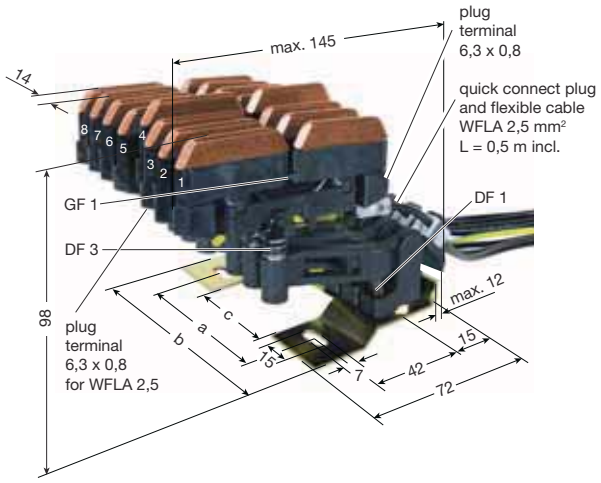
Type	Poles	dim. a mm	dim. b mm	dim. c mm	weight kg	base plate	Order- No. for power w/1 ground HS	Order- No. for control ST
KUFU 25- 2	2	–	34	-	0,244	2-pole	168 040	168 051
KUFU 25- 3	3	28	62	-	0,378	4-pole (Nr. 4 = blank)	168 041	168 052
KUFU 25- 4	4	28	62	-	0,479	4 pole	168 042	168 053
KUFU 25- 5	5	56	90	-	0,617	6-pole (Nr. 6 = blank)	168 043	168 054
KUFU 25- 6	6	56	90	-	0,718	6-pole	168 044	168 055
KUFU 25- 7	7	80	118	53	0,826	8-pole (Nr. 8 = blank)	168 045	168 056
KUFU 25- 8	8	80	118	53	0,927	8-pole	168 046	168 057
KUFU 25- 9	9	80	146	53	1,060	10-polie (Nr. 10 = blank)	168 047	168 058
KUFU 25-10	10	80	146	53	1,161	10-pole	168 048	168 059
Single unit: collector **KUFU 25**					0,068		phase black 168 015	ground yellow 168 016

Compact double collector KDS 2/40 (two-way conveying)[1]

for conductor spacing of 14 mm
Ampacity: 1 Plug terminal 25 A
2 Plug terminals 2 x 20 A

swivel ± 15 mm · lift ± 15 mm;
contact pressure ca. 3.5 N per brush
feed cable WFLA 2.5 mm²
0.5 m long high-flexible incl.

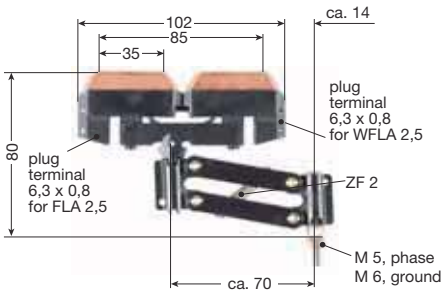
ground at No. 4, 3-pole at No. 3,
other positions on request.
For safety reasons during maintenance
ground collector is always first and last contact.



Type	Poles	dim. a mm	dim.b mm	dim. c mm	Weight kg	base plate	Order- No. for power w/1 ground	Order- No. for control
KDS 2/40- 1-14	1	28	62	-	0,170	4-pole (Nr. 2-4 = blank)	168 079	168 091
KDS 2/40- 2-14	2	28	62	-	0,240	4-pole (Nr. 3+4 = blank)	168 080	168 092
KDS 2/40- 3-14	3	28	62	-	0,310	4 pole (Nr. 4 = blank)	168 081	168 093
KDS 2/40- 4-14	4	28	62	-	0,380	4-pole	168 082	168 094
KDS 2/40- 5-14	5	56	90	-	0,490	6-pole (Nr. 6 = blank)	168 083	168 095
KDS 2/40- 6-14	6	56	90	-	0,560	6-pole	168 084	168 096
KDS 2/40- 7-14	7	80	118	53	0,675	8-pole (Nr. 8 = blank)	168 085	168 097
KDS 2/40- 8-14	8	80	118	53	0,745	8-pole	168 086	168 098
KDS 2/40- 9-14	9	80	146	53	0,860	10-pole (Nr. 10 = blank)	168 087	168 099
KDS 2/40-10-14	10	80	146	53	0,930	10-pole	168 088	168 100
KDS 2/40-11-14	11	120	174	80	1,020	12-pole (Nr. 12 = blank)	168 089	168 101
KDS 2/40-12-14	12	120	174	80	1,090	12-pole	168 090	168 102
Single unit: collector **KDS 2/40**	1				0,070	w/o	phase black 168 073	ground yellow 168 074

Double Collector[1]

Ampacity: 1 Plug terminal 25 A
2 Plug terminals 2 x 20 A



swivel ± 10 mm · lift ± 10 mm;
contact pressure 3.5 N per brush

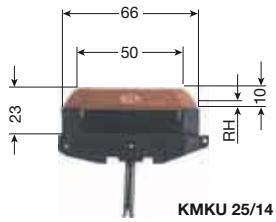
feed cable FLA 2.5 or WFLA 2.5 is to be ordered separately.
(see page 11)

Type	Weight kg	Order- No. phase black	Order- No. ground yellow
KST 2/40	0,080	168 137	168 138

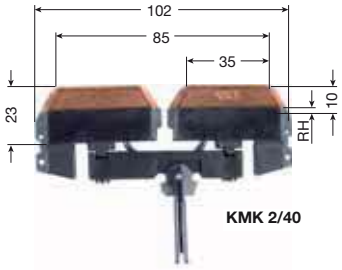
[1] Replaces obsolete KUF and KUFR collectors

COLLECTOR & COMPONENTS FOR U 10

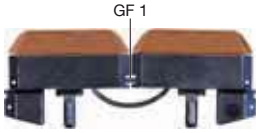
Copper-graphite brush assembly



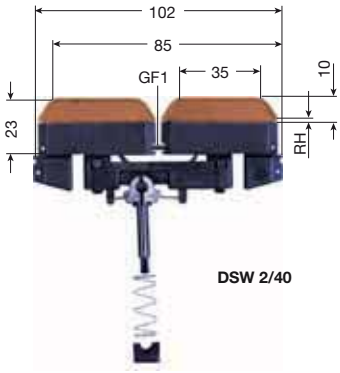
KMKU 25/14



KMK 2/40



DS 2/40

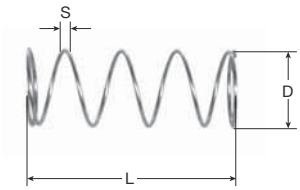


DSW 2/40

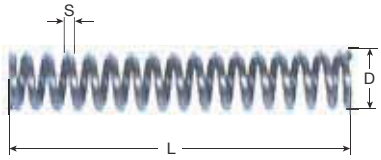
Dim. RH = allowed rest of hight
3,8 mm width of all copper-graphite brushes

Type	for collectors	RH/mm	Weight kg	Order- No.
KMKU 25/14	KUFU 25	3,00	0,035	168 000
KMK 2/40	KST 2/40	3,00	0,050	168 135
DS 2/40	KDS 2/40	3,00	0,050	168 065
DSW 2/40 [2]	KDS 2/40	3,00	0,050	168 151

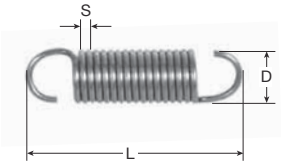
Springs



Pressure Spring DF 3



Pressure Spring DF 1
Guiding Spring GF



Tension Spring ZF / RF

Type	for collectors	S mm	D mm	L mm	Order- No.
DF 1	KDS 2/40	1,00	7,00	38,00	153 847
DF 2	KESR	0,90	7,70	43,00	153 848
DF 3	KDS 2/40	0,55	9,55	24,00	152 011
RF 3	KUFU 25, KESR	0,40	4,40	31,00	153 849
ZF 2	KST 2/40, KSTF 2/40	0,85	6,45	24,00	153 515
GF 1	KDS, KSTF	0,35	2,00	22,00	153 850

(1) Install collector in dragging position when equipment moves one way only.
(2) Also for obsolete KUF 2/40 and KUFR 2/40.

CONNECTING CABLES, CONNECTING BOXES AND BRUSH WEAR INDICATOR FOR U 10

Connecting cable, high flexible

for collectors, feed terminals, transfer guides and isolating assemblies (for collector KDS, connecting cable WFLA 2.5)

WFH **WFLA**



0.5 m long with quick connect plug 6.3 x 0.8
Longer cable available.

FLA (FKA)



FH

1 m long with quick connect plug 6.3 x 0.8
Longer cable available.

Plug only

Type	for cable Ø mm²	Order- No.
FH 2,5	2,5	165 120
FH 4,0	4,0	165 121
WFH 2,5	2,5	168 109

Heavy double insulation

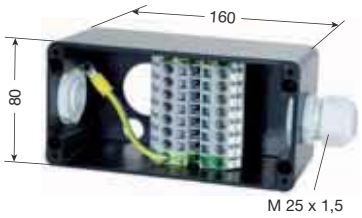
Type	Cross section mm²	A Ø mm	Weight kg	Bestell-Nr.. phase black	ground green/yellow
FLA 1,5	1,5	4,0	0,014	166 555	166 556
FLA 2,5	2,5	4,4	0,080	165 049	165 050
FLA 4	4,0	6,4	0,100	165 051	165 052
FLA 6	6,0	7,0	0,150	166 368	166 369
WFLA 2,5	2,5	4,4	0,080	168 107	168 108

Simple insulation (not for collectors)

Type	Cross section mm²	A Ø mm	Weight kg	Order- No. phase black	ground green/yellow
FKA 1,5	1,5	3,0	0,014	166 557	166 558
FKA 2,5	2,5	3,5	0,026	166 238	166 239
FKA 4	4,0	5,0	0,040	166 240	166 241
FKA 6	6,0	6,0	0,060	166 242	166 243

Terminal box AKE

for feeding and sectionalizing
(max. 7 terminals 6 mm² plus 2 idem for ground)





Type	Weight kg	Order- No.
AKE	0,445	169 462

Terminal box AKB

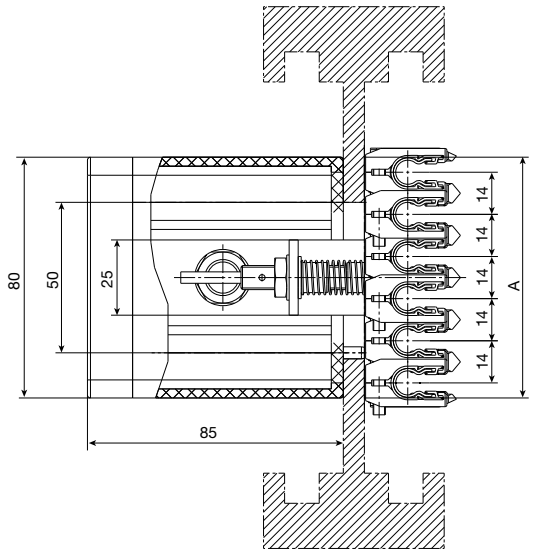
for process-zones control



Type	Weight kg	Order- No.
AKB	0,469	169 481

Brush wear indicator KVT 10 N

Please advise the conductor type when ordering the brush wear indicator. The unit is installed on 0,5 m conductor rail.



Shown KVT 10 N-6 in a 6-pole system

The brush wear indicator checks the carbon wear automatically. The indicator can be infinitely adjusted to the wear height of the carbon. If the carbon is worn-out a impulse will be released. Practical is the installation before a repair zone to automatic activation of a switch.

Track- and vehicle-drawings will be useful for a smooth coordination. Opening in the track, length: min. 70 mm, height: 50 mm.

Brush wear indicator for U 10 with inductive proximity switch

Type	Poles	dim A	Weight kg	Order- No.	Order- No. high temp. shroud
KVT 10 N- 4	4	60	0,809	166 957	142 452
KVT 10 N- 5	5	88	0,957	167 440	142 453
KVT 10 N- 6	6	88	1,104	166 895	142 454
KVT 10 N- 7	7	116	1,252	167 441	142 455
KVT 10 N- 8	8	116	1,400	166 896	142 456
KVT 10 N- 9	9	144	1,546	167 442	142 457
KVT 10 N-10	10	144	1,694	166 897	142 458
KVT 10 N-11	11	172	1,842	167 443	142 459
KVT 10 N-12	12	172	1,990	167 444	142 460

With brush wear indicators of a odd numbered type the lower Pole is not used.

INSTALLATION TOOLS U 10



Curve tool

for bending of conductor U10 and U15 vertically and horizontally. The filling rod has to be ordered seperatly.

Type	Weight kg	Order- No.
BVU 10 VP	10,000	143 318
Filler rod **FU 10** (4 m long)	0,340	165 234
Filler rod **FU 10 S-VP** (4 m long)	0,340	143 279



Table saw

To cut the isolating and conductor profiles with length gauge. Connection: 220 V, 50 Hz.

Type	Weight kg	Order- No.
KS	6,500	165 276
SB Spare blade	0,070	165 263

Conductor punch tool

To stamp the joint notch into the conductor profile at short lengths. Combitool U10 and U10-VP.



Type	Weight kg	Order- No.
LZ 10 PE-VP	2,400	143 223

Deburing tools

Round file RF to debur the inner sides of the conductor profile on short lengths.



RF



HRF

Half round file HRFto debur the outer sides of the conductor profile on short lengths

Type	Weight kg	Order- No.
RF	0,085	143 330
HRF	0,085	165 264



Adjustment jig

To adjust the conductor profile and the isolating profile at short length.

Type	Weight kg	Order- No.
ST 10	0,150	165 091



Conductor joint assembling tool

1. To push the conductor profile in the joint.
2. If necessary, to expand the conductor opening.
3. To move the joint cap.

Type	Weight kg	Order- No.
MG-SW 10	0,125	165 093



Locking pin driver

To adopt the split pins while using the anchor bar for transfer guide (Aluminium).

Type	Weight kg	Order- No.
ED 10	0,010	165 277

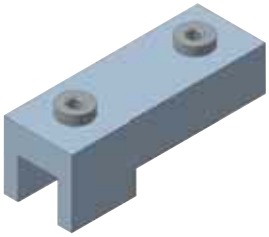


Conductor dismantle tool

To dismantle the conductor from the compact hangers.

Type	Weight kg	Bestell Nr.
DMW 10	0,039	165 119

Drilling jig at fixpoint



Type	Weight kg	Order- No.
BS 10 A	0,150	143 425

Spiral drill

To create drillings for the locating clamps USK 10 A at fixpoints



Type	Weight kg	Order- No.
Spiral drill Ø 3,2 mm	0,003	143 426

QESTIONNAIRE FOR INSULATED CONDUCTOR SYSTEMS

Company:_____ Date:_____

Tel:_____ Fax:_____

E-Mail:_____ Internet:_____

1. Number of powerail systems:_____
2. Type of equipment to be powered:_____
3. Operating voltage:_____Volts, Frequency:_____Hz
   Three phase voltage: ☐ AC voltage: ☐ DC voltage: ☐
4. Track length:_____
5. Number of conductors:_____ (Neutral:_____ control:_____ ground:_____
6. Mounted position of powerail:
   - ☐ Powerail pendant, collector cable facing to the bottom
   - ☐ Powerail pendant, collector cable lateral payout [1]
   - ☐ Support distance m ☐ Other:_____
7. Number of consumers per system:_____
8. Indoor: ☐ Outdoor: ☐
9. Other operating conditions (humidity, dust, chemical influence etc.)_____
10. Ambient temperature:_____ °C min. _____ °C max.
11. Hall expansion gaps:_____ pc._____ max. expansion
12. Position and number of feed points[1]:_____
13. Position and number of dead sections (e.g. maintenance bays)[1]_____
14. How will the conductor system be arranged?[1]:_____
15. Brackets required: yes ☐ no ☐ c/c distance beam / powerail_____
    Flange width of beam_____
16. Travel speed (long travel):_____ in curves:_____ at transfers:_____
17. Power consumption of the individual consumers:_____
18. Max. Voltage drop from the powerail feed point to the consumer considering starting current:
    3% ☐ or _____ % ☐ referring to nominal voltage.

Motor data	Crane 1							Crane 2						
	Power kW	Nominal current			Starting current		Type of–Motors [2]	Power KW	Nominal current			Starting current		Type of–Motors[2]
		A	cos φ_N	% ED	A	cos φ_A			A	cos φ_N	% ED	A	cos φ_A	
Hoist motors														
Auxiliary hoist														
Long travel														
Cross travel														

Mark with * those motors which can run simultaneously.
Mark with Δ those motors which can start up simultaneously.

Further remarks:_____

_____

Signature:

[1] Sketch required
[2] Note type of Motor: K for Squirrel cage motor, S for slipring motor, F for frequency controlled motor.
We reserve the right for technical changes due to further developments.
Please copy and fax this questionnaire.

Catalog No. 2a/E 2010

Products and Service

	Catalog No.
1 Open conductor systems	
Open conductor systems	1a
2 Insulated conductor systems	
U 10	2a
FABA 100	2b
U 15 - U 25 - U 35	2c
U 20 - U 30 - U 40	2d
3 Compact conductor systems	
VKS 10	3a
VKS - VKL	3b
4 Enclosed conductor systems	
KBSL - KSL	4a
KBH	4b
MKH	4c
LSV - LSVG	4d
5 Contactless power supply	
Contactless power supply (CPS®)	5a
6 Data transmission	
VAHLE Powercom®	6a
Slotted Microwave Guide (SMG)	6b
7 Positioning systems	
VAHLE APOS®	7a
8 Festoon systems and cables	
Festoon systems for ▢- tracks	8a
Festoon systems for flat cables on I- tracks	8b
Festoon systems for round flat cables on I- tracks	8c
Festoon systems for ◇- tracks	8d
Cables	8e
9 Reels	
Spring operated cable reels	9a
Motor powered cable reels	9b
10 Others	
Battery charging systems	10a
Heavy enclosed conductor systems	10b
Tender	10c
Contact wire	10d
Assemblies/Commissioning	
Spare parts/Maintenance service	

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ISO 9001:2008 OHSAS 18001:2007
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