



VAHLE

Insulated Conductor System U10

SYSTEMS IN MOTION



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System Overview

Safety Information

The U10 isolated conductor system has been constructed in accordance with VDE 0100. It complies with current conductor bar safety requirements and is protected against contact in accordance with VDE 0370, Part 1 (EN60529) (Protection class: IP 21).

Fig. 1 shows that the VDE test “fingers” are unable to come into contact with the live parts.

Protection from accidental contact applies to the compact collectors only when fully and properly inserted into the conductor system. Conductors systems located within reach of personnel and in which the collectors leave the system during operation, must be equipped with protection against contact at the installation site with the use of barriers, shutoff switches or other protection. This is required for voltages above 25 Volts AC or 60 volts DC.

General Specifications

Indoor applications only. Standard rail sections are 6 m long, shorter sections are available. Any number of conductors can be installed if allowed by minimum clearance tolerances.

The standard grounding conductor bar is marked with a yellow stripe on the housing. The U10 PE-VP grounding conductor bar utilizes a special geometrical design of the housing to prevent accidental contact of the PE collector with a phase conductor.

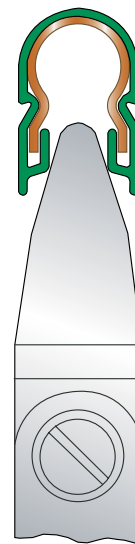


Fig. 1: VDE test finger

Approvals

UL approved. Please consult us when ordering.

Compact Hangers

Compact hangers are used for rail support and offer a spacing of 14mm between conductors. Standard support distance for U10 is every 0.6 m, in curves 0.3 m.

Joints

The mechanical connection of the conductor sections is done by the use of “Joint Feeds”. The standard U10 joint also doubles as a feed terminal. Each joint is protected against accidental touch with the use of a joint cap. Each joint can compensate an expansion of up to 3 mm.

Feed Terminals

The standard U10 joint also doubles as a feed terminal. Feed clips can also be installed at isolating assemblies and transfer guides with the use of spade connectors. For additional feeding points between joints, please use feed terminals.

Transfer Guides

Transfer guides serve as end protection for U10 systems and allow collector transfer at switches, drop sections, etc. In combination with the corresponding aluminium anchor bar (BFU), the transfer guide holds the conductor rail in place, creating a fixpoint.

Isolating assemblies

Isolating sections interrupts the conductor system electrically. 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 clips.

Curves

Insulated conductors U10 can be used for horizontal or vertical curves. A special curve tool for field preparation is available.

Collectors

The current collectors are made of re-enforced polyamide/poly-carbonate and stainless steel parts. The contact is composed of a carbon brush.

Electrical properties

Type	Di-electric strength DIN 53481	Specific resistance IEC 60093	Surface resistance IEC 60093	Comparable figure/tracking according to IEC 60112
standard shroud, color green	> 25 kV/mm	> 1×10^{16} Ohm x cm	$2,1 \times 10^{15}$ Ohm	CTI 400 – 1,1
high temp. shroud, color gray	> 25 kV/mm	> 1×10^{14} Ohm x cm	$2,1 \times 10^{15}$ Ohm	CTI 400 – 1,1

The length of the collector connecting cable must not exceed 3 m if the 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.

Safety Notice

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) to avoid the risk of pinching.

Mechanical properties

Type	Flexible strength according to ISO 178	Tensile strength according to ISO 527	Ultraviolet resistance	Max relativ humidity	Temperature resistance ⁽¹⁾	Flame test proof
standard shroud, color green	74 - 85 N/mm ²	44 - 55 N/mm ²	Xenon test > 1500	< 100 %	- 30 °C bis + 55 °C	no flaming particles, self extinguishing, UL 94 V0
high temp. shroud, color gray	90 - 100 N/mm ²	47 - 65 N/mm ²	Xenon test > 1500	< 100 %	- 30 °C bis + 85 °C	no flaming particles, self extinguishing, UL 94 V0

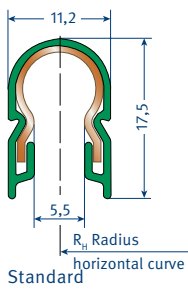
Resistance to chemicals:⁽²⁾ generally resistant against gasoline, oil, weak bases and weak acids

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

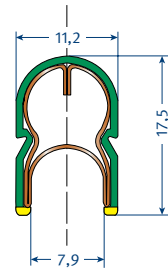
(2) Consult factory when synthetic oil and grease involved.

System Data & Order No.

Conductor cross-section



Standard



PE-VP

Conductor code

U = unipole insulated conductor
 10 = shroud size
 25 = conductor cross sectional area (mm²)
 C = copper conductor
 E = stainless steel conductor

Length

6 m (19.6 ft) standard length,
 Shorter lengths are available

Support spacing

for straight runs 0.6 m (2 ft)
 for curves 0.3 m (1 ft)

Conductor spacing

14 mm with compact hangers

Bending of conductor:

Without prebending $\infty \geq R \geq 5000$ mm
 On Site:
 Horizontal curves $5000 \text{ mm} \geq R \geq 750$ mm
 Vertical curves $5000 \text{ mm} \geq R \geq 750$ mm
 Factory $750 \text{ mm} \geq R \geq 300$ mm

Use

Indoor systems only

Phase (standard)

Type U 10 Green shroud	Approx. weight per meter	Order- No. ⁽¹⁾
U10/25C PH	.5 lbs	167 00 6
U10/25E PH	.5 lbs	167 02 6

Ground (standard)

Type U 10 Green shroud	Approx. weight per meter	Order- No. ⁽¹⁾
U10/25C PE	.5 lbs	167 06 6
U10/25E PE	.5 lbs	167 08 6
U10/25C PE - VP Profile	.6 lbs	143 19 6

Phase (high temperature)

Type U10 Gray shroud	Approx. weight per meter	Order- No. Phase ⁽¹⁾
U10/25C PH HT	.5 lbs	167 03 6
U10/25E PH HT	.5 lbs	167 05 6

Ground (high temperature)

Type U10 Gray shroud	Approx. weight per meter	Order- No. ground ⁽¹⁾
U10/25C PE HT	.5 lbs	167 09 6
U10/25E PE HT	.5 lbs	167 11 6
U10/25C PE-HT - VP Profile	.6 lbs	143 20 6

Engineering data

Type	Leakage distance of covers mm (inch)	max. Nominal Voltage (UL)	max. Continuous ampere capacity A	Resistance Ohm/1000 m	Impedanz ⁽²⁾ Ohm/1000 m
U10/25 C	30 (1.2)	690 (600)	100	0.744	0.748
U10/25 E	30 (1.2)	690 (600)	10	31.328	31.328

Selection of Conductors

in accordance to ampere load and environmental conditions

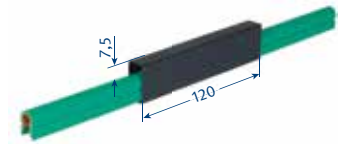
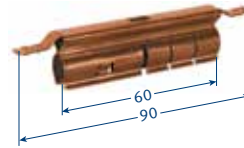
- U10/25 C copper conductor for power, control and data-transmission.
- U10/25 E stainless steel conductor for control and data-transmission in corrosive atmospheres.

(1) The last number in bold represents conductor length. Ex. ...**6** = 6 meter length

(2) Based on 14 mm conductor spacing and with 50 Hz.

Joint Feed

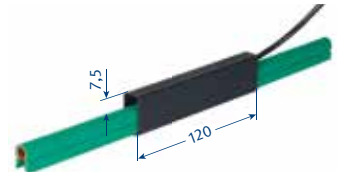
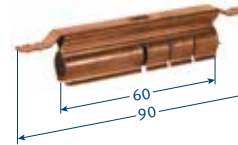
- Used at all joint locations, doubles as feed when necessary
- Max. 2 x 40 A continuous current
- Compensates for expansion up to 3mm.
- Cable sold separately (page 14)



Type	Weight kg (lb)	Order-No.
UEV 10	0.026 (.05)	165 006
UEV 10 VP	0.026 (.05)	143 213

Feed Terminal

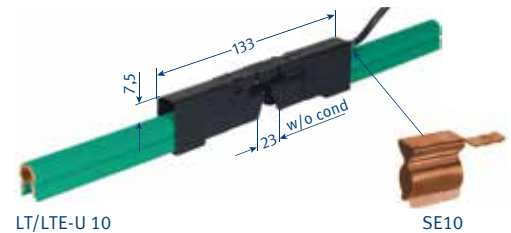
- Required for feeding along rail (not at joint)
- Max. 2 x 50 A continuous current
- Cable sold separately (page 14)



Type	Weight kg	Order-No.
UES 10	0.026 (.05)	165 212
UES 10 VP	0.026 (.05)	143 214

Isolating assembly

- Two ends of each isolation pressed together to form a single rigid unit.
- SE 10 feed clip with flat plug connection 6.3 x 0.8 mm available
- Max. 40A continuous current
- The connection cable has to be ordered separately (Page 14)



Type	Feed point	Weight kg (lb)	Comprising	Order-No.
LT/LT10 (no feed)		0.017 (.03)	2 x Isolation units	165 025
LT/LTE10 (1 feed clip)		0.021 (.04)	2 x Isolation units w/1 feed	165 114
LTE/LTE10 (2 feed clips)		0.025 (.05)	2x Isolation units w/ 2 feeds	165 026
SE10 Feed Clip		0.005 (.01)	Single loose feed clip	165 178

Distance bracket

for plugging onto the isolating assembly point at an installation height⁽¹⁾ of 16.5 mm.

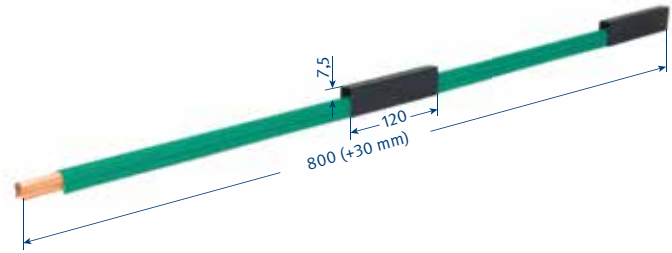


Type	Weight kg (lb)	Order-No.
EU-DK10/16.5	0.002 (.01)	165 682

Expansion sections

Expansion section

- 1 Pole
- Factory assembled including 1 joint
- 0.8m long w/ up to 30mm expansion



Type	Weight kg (lb)	Expansion	Order-No. Phase	Order-No. Ground	Order-No. PE-VP
UDV10/25 C	0.254 (.6)	up to 30 mm	165 192	165 193	143 216
UDV 10/25 E	0.237 (.6)	up to 30 mm	165 252	165 253	-
UDV 10/25 C- HT	0.254 (.6)	up to 30 mm	165 254	165 255	143 215
UDV 10/25 E - HT	0.237 (.6)	up to 30 mm	165 258	165 259	-

Expansion section

- 1 pole, loose components
- On site assembly
- Please use 2 fixpoints at each expansion section

Standard

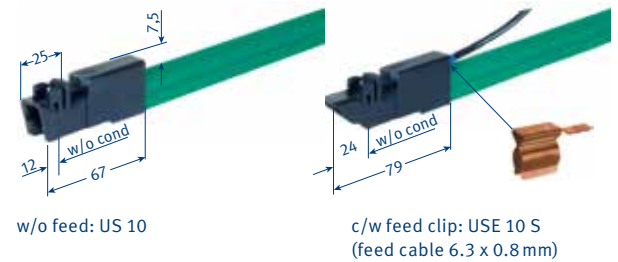
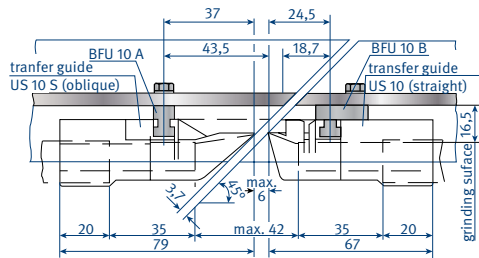
Type	Weight kg (lb)	Expansion	Order-No.
UDV10/C-30	0.052 (.05)	up to 30 mm	166 542
UDV10/C-45	0.078 (.05)	up to 45 mm	166 543

PE-VP

Type	Weight kg (lb)	Expansion	Order-No.
UDV10VP/C-30	0.052 (.05)	up to 30 mm	143 356
UDV10VP/C-45	0.078 (.05)	up to 45 mm	143 357

Transfer guides

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



Transfer guide

- With or without feed clip
- Also serves as end cap
- Feed clip : max. 40 A

Type	Weight kg (lb)	version	feed clip	Order-No.
US 10	0.008 (.01)	straight	w/o	165 008
US 10S	0.008 (.01)	oblique	w/o	165 009
USE 10	0.012 (.01)	straight	c/w	165 010
USE 10S	0.012 (.01)	oblique	c/w	165 011



w/o feed:
US 10 PE-VP



w/o feed:
US 10 SP



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

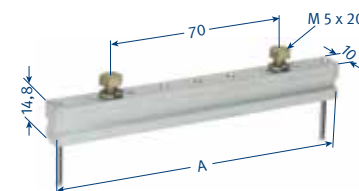
Transfer guide for PE- VP

Feed clip :max. 40A continuous current

Type	Weight kg (lb)	version	feed clip	Order-No.
US 10-VP	0.007 (.01)	straight	w/o	143 208
US 10S-VP	0.007(.01)	oblique	w/o	143 210
US 10SP-VP	0.008 (.01)	oblique positive	w/o	143 212
USE 10-VP	0.011(.01)	straight	c/w	143 207
USE 10S-VP	0.011(.01)	oblique	c/w	143 209
USE 10SP-VP	0.012 (.01)	oblique positive	c/w	143 211

Anchor bar

- For use with transfer guide
- Creates fixpoint, bolts to track.
- Consists of : 1 aluminium profile bar, 2 hex screws M 5 w/washer, and 2 locking pins 2 x 20.



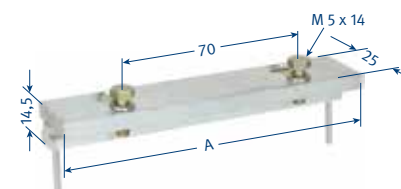
BFU 10A

16.5 mm distance between conductor-surface and track

Type	Poles	A mm	Weight kg	Order-No.
BFU 10A-8	1 - 8	118	0,048	165 168
BFU 10A-10	1 - 10	143	0,056	165 176

BFU 10B

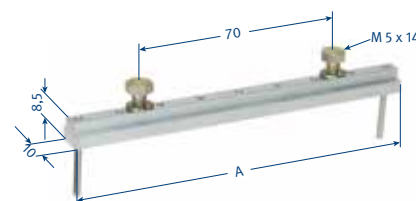
Use with oblique guide. (see sketch on page6),
16.5 mm distance between conductor-surface and track



Type	Poles	A mm	Weight kg	Order-No.
BFU 10B-8	1 - 8	118	0,077	165 272
BFU 10B-10	1 - 10	143	0,089	165 274

BFU 10 (low profile)

- 10 mm distance between conductor-surface and track

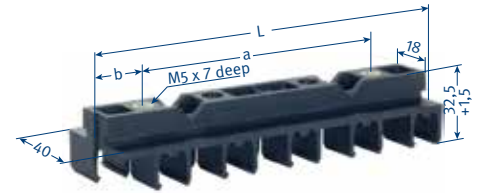


Type	Poles	A mm	Weight kg	Order-No.
BFU 10-8	1 - 8	118	0,030	165 115
BFU 10-10	1 - 10	143	0,034	165 123

Hangers

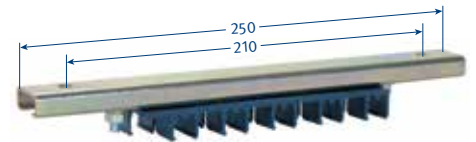
Compact hanger

- For up to 10 conductors per hanger
- Any number of conductors can be assembled by combining the compact hangers



KA10 (direct bolting)

Type	Max # of poles	L	a	b	Weight kg	Order-No.
KA 10-2N	2	29	0	20,5	0.012 (.02)	142 072
KA 10-4N	4	57	42	7,5	0.024 (.03)	142 073
KA 10-6N	6	85	42	21,5	0.033 (.04)	142 757
KA 10-8N	8	113	42	35,5	0.045 (.05)	142 075
KA 10-10N	10	141	100	20,5	0.056 (.05)	142 076

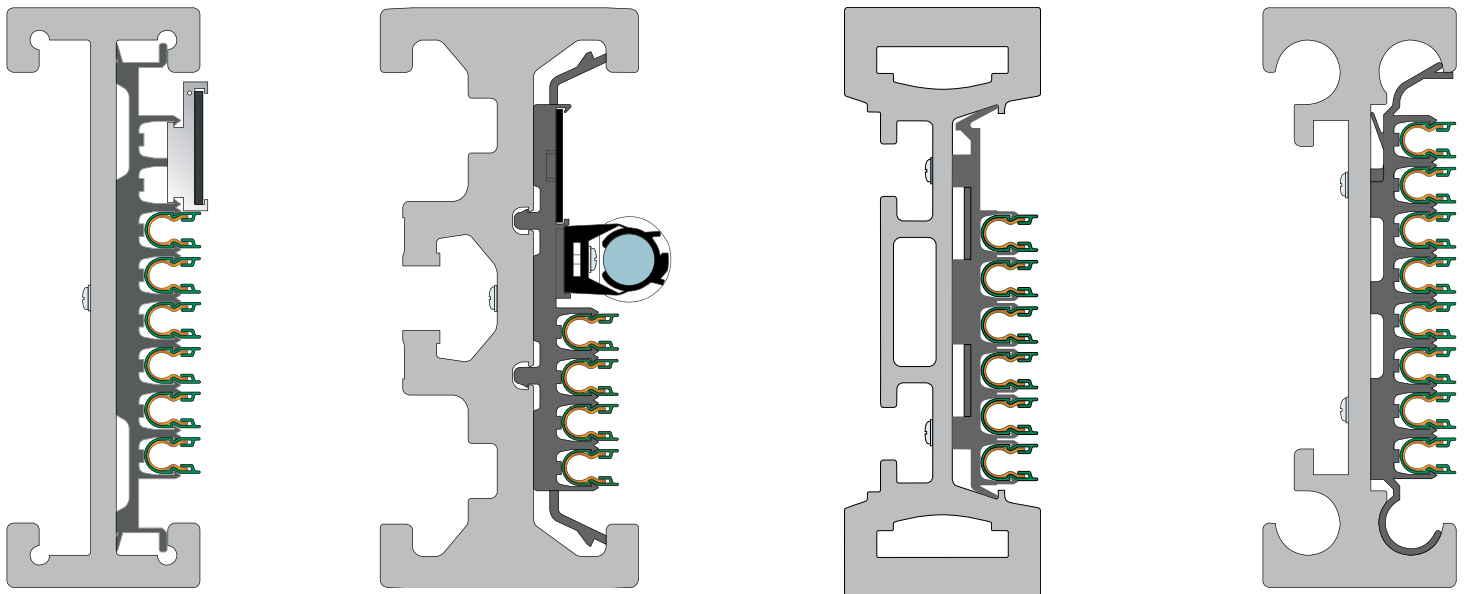


KH10 (with bracket profile)

Type	Max # of poles	L	Weight kg	Order-No.
KH 10H-10N	10	141	0.356 (.8)	142 077

Compact hangers

custom built to fit to your monorail track⁽¹⁾



(1) Consult factory for ordering. Minimum volume and other restrictions apply. Monorail track supplied by others.

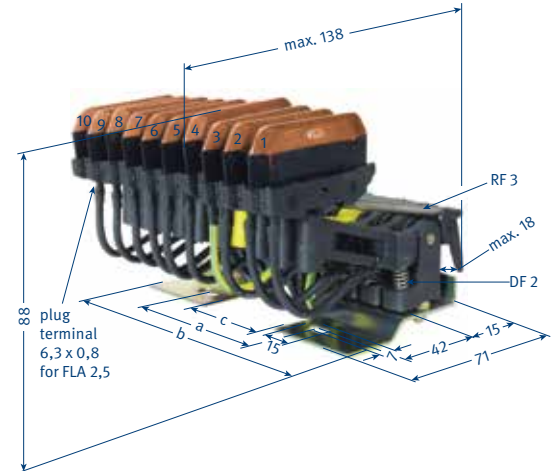
Compact Collectors

KUFU25

for transfer funnel EFT10
w/ 1m⁽¹⁾ connecting cable: Type FLA 2,5
Max Amp: 25 A

Lift: +15 mm / -10 mm
Swivel: ±15 mm
Contact pressure: ca. 3.5 N per brush

Ground at No. 4, 3-pole at No. 3, 2-pole at No. 2
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 lb	Base plate	Order-No. ⁽¹⁾	
							For power w/1 ground (HS)	For control (SS)
KUFU 25-2-14 HS or SS	2	-	34	-	.50	2 - pole	168 040.1	168 051.1
KUFU 25-3-14 HS or SS	3	28	62	-	.75	4 - pole (No. 4 = blank)	168 041.1	168 052.1
KUFU25-4-14 HS or SS	4	28	62	-	1	4 - pole	168 042.1	168 053.1
KUFU25-5-14 HS or SS	5	56	90	-	1.2	6 - pole (No. 6 = blank)	168 043.1	168 054.1
KUFU25-6-14 HS or SS	6	56	90	-	1.4	6 - pole	168 044.1	168 055.1
KUFU25-7-14 HS or SS	7	80	118	53	1.6	8 - pole (No. 8 = blank)	168 045.1	168 056.1
KUFU25-8-14 HS or SS	8	80	118	53	1.8	8 - pole	168 046.1	168 057.1
KUFU25-9-14 HS or SS	9	80	146	53	2.1	10 - pole (No. 10 = blank)	168 047.1	168 058.1
KUFU25-10-14 HS or SS	10	80	146	53	2.3	10 - pole	168 048.1	168 059.1
Single unit, without connecting cable							Phase black	Ground yellow
KUFU 25 PH or PE					.10	-	168 015	168 016

Current collector trailer

1-pole on base plate

Type	dim. a mm	dim. b mm	dim. c mm	Weight lb	base plate	Order-No.
KDS 2/40-1-14 PE-VP	28	62	-	.40	4 - pole	143 361
KDS 2/40-1-14 PE-VP	56	90	-	.45	6 - pole	143 369
KDS 2/40-1-14 PE-VP	80	118	53	.50	8 - pole	143 635

(1) Other cable lengths available on request. Order No .1 designates 1 meter cable

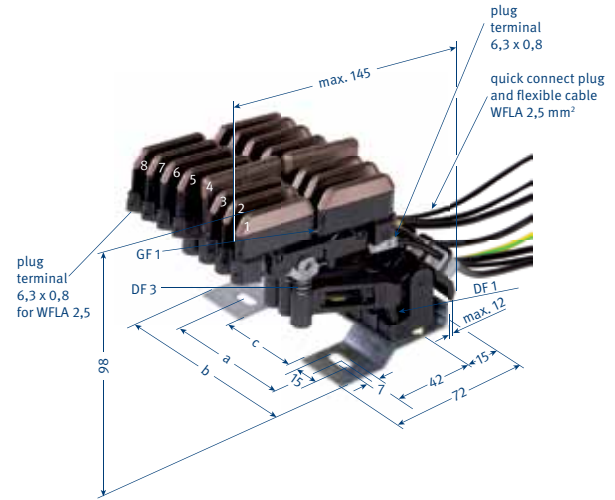
KDS2/40

Standard power or control w/ no PE
w/ 0.5 m connecting cable: Type WFLA 2,5

Max Amp: 1 Plug terminal 2,5 mm² 25 A
2 Plug terminals 2,5 mm² 40 A

Lift: ± 15 mm
Swivel: ± 15 mm
Contact pressure: ca. 3.5 N per brush
Feed cable: 2,5 mm² Typ WFLA 2,5
high-flexible, incl.

Ground at No. 4, other positions on request.



Type	Poles	dim. a mm	dim. b mm	dim. c mm	Weight lb	base plate	Order-No.*	
							For power w/ 1 ground (HS)	For control (SS)
KDS 2/40-4-14	4	28	62	-	.80	4-pole	168 082.05	168 094.05
KDS 2/40-5-14	5	56	90	-	1	6-pole (Nr. 6 =blank)	168 083.05	168 095.05
KDS 2/40-6-14	6	56	90	-	1.2	6-pole	168 084.05	168 096.05
KDS 2/40-7-14	7	80	118	53	1.4	8-pole (Nr. 8 =blank)	168 085.05	168 097.05
KDS 2/40-8-14	8	80	118	53	1.6	8-pole	168 086.05	168 098.05
KDS 2/40-9-14	9	80	146	53	1.8	10-pole (Nr.10 =blank)	168 087.05	168 099.05
KDS 2/40-10-14	10	80	146	53	2	10-pole	168 088.05	168 100.05
KDS 2/40-11-14	11	120	174	80	2.2	12-pole (Nr. 12=blank)	168 089.05	168 101.05
KDS 2/40-12-14	12	120	174	80	2.4	12-pole	168 090.05	168 102.05
Single unit with 0.5 m connecting cable							phase black	ground yellow
KDS 2-40 Compact Collector					.20	--	168 073.05	168 074.05

KDS2/40 PE-VP

Type	Poles	dim. a mm	dim. b mm	dim. c mm	Weight lb	base plate	Order-No.*
							For power w/ PE-VP
KDS 2/40-4-14	4	28	62	-	.80	4-pole	143 277.05
KDS 2/40-5-14	5	56	90	-	1	6-pole (Nr. 6 =blank)	143 332.05
KDS 2/40-6-14	6	56	90	-	1.2	6-pole	143 219.05
KDS 2/40-7-14	7	80	118	53	1.4	8-pole (Nr. 8 =blank)	143 377.05
KDS 2/40-8-14	8	80	118	53	1.6	8-pole	143 220.05
KDS 2/40-9-14	9	80	146	53	1.8	10-pole (Nr.10 =blank)	143 378.05
KDS 2/40-10-14	10	80	146	53	2	10-pole	143 379.05
KDS 2/40-11-14	11	120	174	80	2.2	12-pole (Nr. 12=blank)	143 380.05
KDS 2/40-12-14	12	120	174	80	2.4	12-pole	143 381.05
Single unit with 0.5 m connecting cable							ground yellow
KDS 2-40 PE-VP Compact Collector					0.20	--	143 218.05

* Other cable lengths available on request. Order No .05 designates 0.5 meter cable

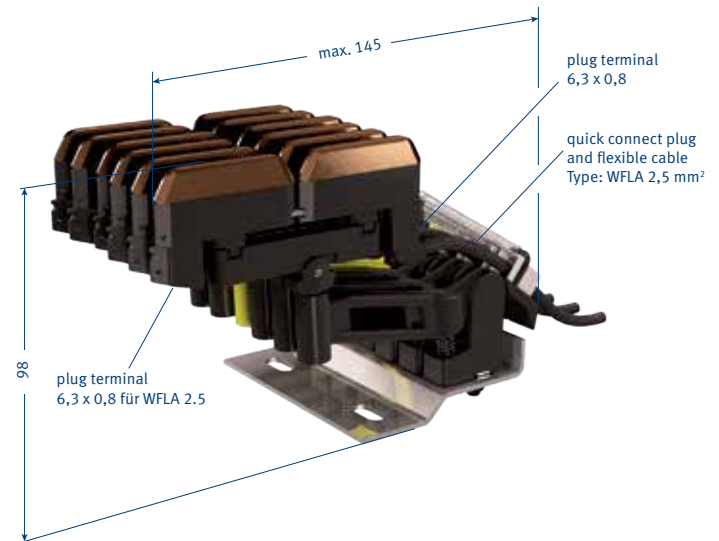
KUFR2/40

two-way conveying
with 1 x 0.5 m connecting cable, type WFLA 2,5

Ampacity: 1 Plug terminal 2,5 mm² 25 A
 2 Plug terminal 2,5 mm² 40 A

Lift: ± 15 mm
Swivel: ± 15 mm
Contact pressure: ca. 3,5 N per brush
Feed cable: 2,5 mm² Typ WFLA 2,5

Ground at No. 4, other positions on request
Dimensions of the base plate similar to KDS2/40.



Type	Poles	Weight lb	base plate	Order-No.*	
				for power w/1 ground (HS)	for control (SS)
KUFR 2/40-2-14	2	.50	2 - pole	165 925.05	165 936.05
KUFR 2/40-3-14	3	.60	4 - pole (No. 4 = blank)	165 926.05	165 937.05
KUFR 2/40-4-14	4	.80	4 - pole	165 927.05	165 938.05
KUFR 2/40-5-14	5	1	6 - pole (No. 6 = blank)	165 928.05	165 939.05
KUFR 2/40-6-14	6	1.2	6 - pole	165 929.05	165 940.05
KUFR 2/40-7-14	7	1.4	8 - pole (No. 8 = blank)	165 930.05	165 941.05
KUFR 2/40-8-14	8	1.6	8 - pole	165 931.05	165 942.05
KUFR 2/40-9-14	9	1.8	10 - pole (No. 10 = blank)	165 932.05	165 943.05
KUFR 2/40-10-14	10	2	10 - pole	165 933.05	165 944.05
KUFR 2/40-11-14	11	2.2	12 - pole (No. 12 = blank)	165 934.05	165 945.05
KUFR 2/40-12-14	12	2.4	12 - pole	165 935.05	165 946.05
Single unit with 0.5 m connecting cable				phase black	ground yellow
KUFR 2/40		.20		165 955.05	165 956.05

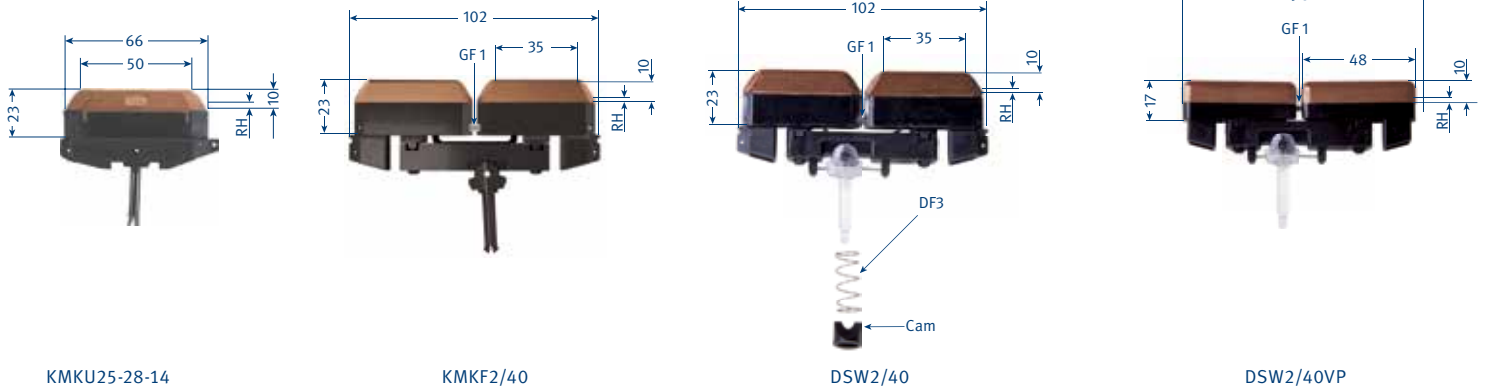
* Other cable lengths available on request. Order No .05 designates 0.5 meter cable

Spare Parts

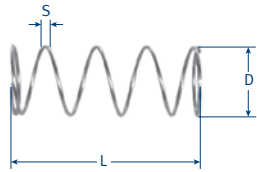
Collector Brushes

Rest of height (RH) min. 3 mm

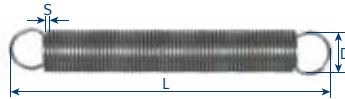
3.8 mm width of all copper-graphite brushes



Type	for collectors	Weight kg (lb)	Order-No.
KMKU 25-28-14	KUFU 25	0.030 (.06)	168 000
DSW 2/40	KDS 2/40	0.049 (.07)	168 151
DSW 2/40 VP	KDS 2/40 PE-VP	0.060 (.08)	143 221
KMKF 2/40	KUFR 2/40	0.050 (.07)	143 942



Pressure spring DF3



Tension spring RF3



Guiding spring GF1



Cam

Springs

Type	for collectors	S mm	D mm	L mm	Order-No.
DF3	KDS2/40	0.55	9.55	24.00	152 011
RF3	KUFU25, KUFR2/40	0.40	4.40	31.00	153 849
GF1	KDS2/40, KUFR2/40	-	2.00	21.50	153 850
Cam	KDS2/40				1011917

Connecting cables

Connecting cables, high flexible

For collectors, feed terminals, transfer guides and isolating assemblies- heavy double insulation (for collector KDS, connecting cable WFLA 2.5)



WFLA

Length: 0.5 m long with quick connect plug 6.3x0.8. Longer cable available.



FLA

Length: 1 m long with quick connect plug 6.3x0.8. Longer cable available.

Type	Cross section mm ²	ø mm		Weight kg (lb)		Order-No. phase black	Order-No. ground green/yellow
		PH	PE	PH	PE		
FLA 2.5	2.50	3.9	3.6	.037 (.06)	.035 (.06)	165 049.1*	165 050.1*
FLA 4	4.00	5.4	5.2	.064 (.08)	.059 (.08)	165 051.1	165 052.1
FLA 6	6.00	5.7	5.7	.086 (.09)	.083 (.09)	166 368.1	166 369.1
WFLA 2.5	2.50	3.9	3.6	.020 (.04)	.018 (.04)	168 107.05	168 108.05

Connecting cables, simple insulation

Not for use with collectors



FKA

Type	Cross section mm ²	A ø mm		Weight kg (lb)		Order-No. phase black	Order-No. ground green/yellow
		PH	PE	PH	PE		
FKA 1.5	1.50	3.0	3.0	.020 (.04)	.020 (.04)	166 557.1*	166 558.1*
FKA 2.5	2.50	3.7	3.7	.032 (.06)	.032 (.06)	166 238.1	166 239.1
FKA 4	4.00	4.3	4.3	.050 (.07)	.050 (.07)	166 240.1	166 241.1
FKA 6	6.00	4.9	4.9	.064 (.08)	.064 (.08)	166 242.1	166 243.1

Plug only



WFH

FH

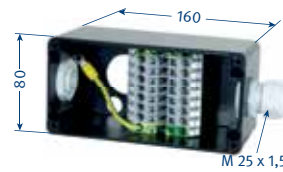
Type	for cable ø mm	Weight kg (lb)	Order-No.
FH 2.5	2.5	0.002 (.01)	165 120
FH 4-6	4-6	0.002 (.01)	165 121
WFH2.5	2,5	0.002 (.01)	168 109

* Other cable lengths available on request.

Terminal boxes

Terminal box AKE

- For feeding, with max. 7 x 6 mm² series terminals, phase and 2 x 6 mm² earth conductor terminals.



Terminal box AKB

- for sectionalizing with 7 x 6 mm² series terminals, phase and 2 x 6 mm² earth conductor terminals.



Type	Weight kg (lb)	Order-No.
AKE 1-PH7x2L6-PE2x2L6-M25	0.445 (1)	169 462
AKB 1-PH4x2L6-PE2x2L6	0.469 (1)	169 481

Brush wear indicator

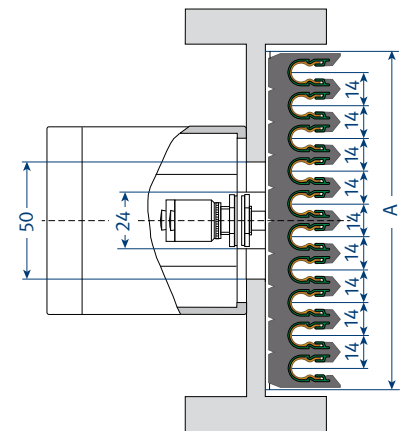
The brush wear indicator checks the carbon wear each time the collector passes by. The indicator can be adjusted to the desired height. If the brush is worn-out a impulse signal will be sent. Signals can be intergrated for automated maintenance and removal processes.

Info

Opening in track: L = 120mm, H=50mm

Dim A: Various

When using indicators for odd numbered type the lower pole is not used.



Type	Poles	Weight kg (lb)	Order-No.	
			Standard shroud	PE-VP
KVT 10N-4	4	2.011(4.4)	166 957	143 637
KVT 10N-5	5	2.252 (4.9)	167 440	144 093
KVT 10N-6	6	2.453 (5.4)	166 895	143 304
KVT 10N-7	7	2.692 (5.9)	167 441	143 466
KVT 10N-8	8	2.893 (6.4)	166 896	143 646
KVT 10N-9	9	3.131 (6.9)	167 442	144 094
KVT 10N-10	10	3.335 (7.4)	166 897	144 095
KVT 10N-11	11	3.595 (7.9)	167 443	144 096
KVT 10N-12	12	3.801 (8.4)	167 444	144 097

Installation tools

Curve tool

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



Type	Description	Weight kg(lb)	Order-No.
BVU10-VP	Curve tool	10.000 (22)	143 318
FU 10	Filler rod for PH/PE (4 m)	0.200 (.5)	165 234
FU 10-S-VP	Filler rod for PE-VP (4 m)	0.340 (.75)	143 279

Table saw

To cut the isolating and conductor profiles with length gauge.
Connection 230V, 50 Hz.



Type	Weight kg	Order-No.
KS 10	6.500 (15)	165 276
SB (spare blade)	0.070 (.10)	165 263

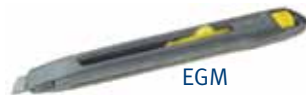
Conductor punch tool

To stamp the joint notch into the conductor profile at short lengths.
All shroud types.



Type	Weight kg	Order-No.
LZ 10PE-VP	2.400 (5.3)	143 223

Deburring tools



EGM



RF



HRF

Type	Weight kg	Application	Order-No.
Round file RF-150 long/ Cut 3/D=6MM	0.085 (.2)	Round file RF to deburr the inner sides of the conductor profile on short lengths.	143 330
Half round file HRF-150 long/Cut 3	0.085 (.2)	Half round file HRF to deburr the outer sides of the conductor profile on short lengths	165 264
Deburring tool EGM	0.018 (.03)	Deburring tool EGM for the inner side of the conductor profile PE-VP at short length	165 275

Adjustment jig

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



Type	Weight kg (lb)	Order-No.
ST 10	0.150 (.33)	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 (lb)	Order-No.
MG-SW10	0.125 (.27)	165 093

Locking pin driver

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



Type	Weight kg (lb)	Order-No.
ED10	0.010 (.02)	165 277

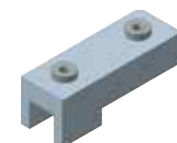
Conductor dismantle tool

To dismantle the conductor from the compact hangers.



Type	Weight kg (lb)	Order-No.
DMW10	0.039 (.08)	165 119

Drilling jig at fixpoint



Type	Weight kg (lb)	Order-No.
BS10A	0.036 (.07)	143 425

Spiral drill

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



Type	Weight kg (lb)	Order-No.
SPIRAL DRILL Ø3,2 MM, TYP N	0.003 (.006)	143 426



1 Open conductor systems		
Open conductor systems		1a
2 Insulated conductor systems		
U10		2a
U15, U25, U35		2c
U20, U30, U40		2d
3 Compact conductor systems		
VKS 10		3a
VKS - VKL		3b
VMT		3c
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
VAHLE APOS® Optic		7b
8 Festoon systems and cables		
Festoon systems for □-tracks		8a
Festoon systems for flat cables on I-track		8b
Festoon systems for round cables on I-track		8c
Festoon systems for ◇-track		8d
Cables		8e
9 Reels		
Spring operated cable reels		9a
Motor powered cable reels		9b
10 Other		
Battery charging systems		10a
Heavy enclosed conductor systems		10b
11 Automotive Handling		
VAHLE-DETO Control Systems		11a
BOK		11b
Installation / Commissioning		
Spare parts / Maintenance service		



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