



INSULATED CONDUCTOR SYSTEM U10



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Fig.1 VDE test finger

GENERAL INFORMATION

The U10 Insulated Conductor System has been designed in accordance with VDE 0100. It complies with current conductor system safety requirements and protects against accidental human contact as stipulated by VDE 0470, Part 1 (DIN EN 60526), (Protection classification IP 21).

Fig. 1 illustrates that the VDE test “finger” cannot make contact with current carrying components.

Compact collectors provide accidental contact protection only when the contact brushes are correctly and fully inside the conductors and covered by the insulating shroud. Conductor systems located within reach of personnel, and with collectors exiting the conductors during operation, must have barriers or shut-off switches installed to prevent accidental contact. This is required only for conductor systems with operating voltage above 25 VAC or 60V DC.

U 10 Conductor System is approved for indoor installations only.

Conductor systems may consist of any number of conductors. Space requirements are minimal. Contact opening at either downward or side-ways orientation is possible.

Standard length for conductor sections is 6m, shorter sections are available.

The standard PE conductor is marked with a continuous yellow stripe at the insulating shroud. The PE-VP ground conductor has a specifically shaped profile which reliably prevents the PE-VP collector from entering a phase conductor; thus, the support structure cannot be inadvertently electrified.

APPROVALS

UL Certification. Please consult us when ordering

COMPACT HANGERS

Compact hangers are used for conductor installation and will also provide and maintain the defined 14 mm phase distance. Hanger center distance is max. 0.6 m at straight sections, 0.3 m at curved sections.

JOINT SPLICE/FEED

Joint Splice/Feeds are used to mechanically and electrically connect U10 conductor sections. The included Joint Splice cap protects personnel from accidentally making contact when the system is under current. Each Joint Splice/Feed can compensate for section expansion/contraction up to 4 mm.

FEED TERMINALS

A feed connection is possible at every Joint Splice. Also, each Isolating Assembly and Transfer Guide can serve as a feed location when a Feed Clip is installed. When additional feed points within a conductor section are required, Feed Terminals (inline only) may be installed.

TRANSFER GUIDES

Transfer guides serve as protection of the conductor end as well as a mechanical system separation. They also facilitate reliable passage of collector brushes at movable track sections such as track switches and lift stations. Installed with an aluminum Anchor Bracket (BFU), Transfer Guides lock the conductor ends in place at the support track thus creating a system fixpoint.

ISOLATING ASSEMBLIES (AIR GAP)

Isolating assemblies interrupt the electrical current flow in a conductor. To utilize Current Collectors with the operational task to switch current on/off is only permitted when using low energy control current. For control function, feed sections, maintenance sections etc. we are supplying Isolating Assemblies with or without SE Feed Clip.

CURVES

U10 Insulated Conductors can be bend horizontally or vertically. A Curve Bending Tool is available to produce curves at an installation site.

CURRENT COLLECTORS

Current Collectors are manufactured using impact resistant synthetic material and stainless steel components. Copper graphite or carbon contact brushes are used.

The length of the Current Collector cable cannot exceed 3m if the installed overload protection is not rated for the current capacity of

the cable. See also DIN VDE 0100, Part 430 and DIN EN 60204-32. Connecting cables as supplied are sufficiently dimensioned for the listed nominal current. For installation variation reduction factors, as with DIN VDE 0298-4, must be observed.

DIN EN 60204-1 and DIN-EN 60204-2 stipulate that the reliability of PE systems using conductor brushes must be ensured. Doubling the PE Collector is a practical and simple solution to achieve compliance.

INDUSTRIAL DESIGNATIONS

DIN — German Institute for Standards

EN — European Standard

ISO — International Organization for Standardization

IEC — International Electrotechnical Commission

VDE — German Electrotechnical Association

IP — International Protection type and classification

UL — Underwriters Laboratories

SAFETY NOTE

A safety distance of min. (0.5m) between Conductor / Current Collector arrangement and other moving or fixed equipment must be kept to prevent accidental injury of personnel!

INSULATING SHROUD VALUES (ELECTRICAL)

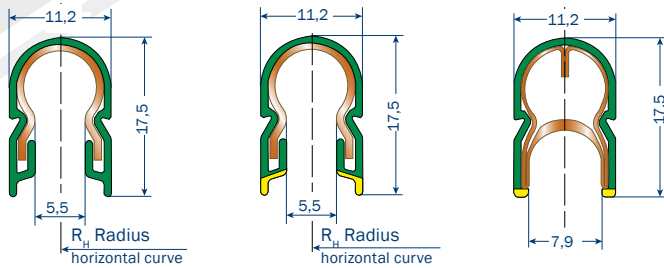
Type	Dielectric insulation DIN 53481	Specific resistance IEC 60093	Surface resistivity IEC 60093	Leakage path resistance IEC 60112
Standard shroud, green	> 25 kV/mm	> 1×10^{16} Ohm x cm	$2,1 \times 10^{15}$ Ohm	CTI 400 - 1,1
High temp. shroud, gray	> 25 kV/mm	> 1×10^{14} Ohm x cm	$2,1 \times 10^{15}$ Ohm	CTI 400 - 1,1

INSULATING SHROUD VALUES (MECHANICAL)

Type	Bending rigidity ISO 178	Tensile strength ISO 527	UV resistance	max. relative humidity	Ambient temperature range ⁽¹⁾	Flame test
Standard shroud, green	74 - 85 N/mm ²	44 - 55 N/mm ²	Xenon test > 1500	< 100 %	- 30 °C to + 55 °C	Flame resitant, self extinguishing, UL 94 V0
High temp. shroud, gray	90 - 100 N/mm ²	47 - 65 N/mm ²	Xenon test > 1500	< 100 %	- 30 °C to + 85 °C	Flame resitant, self extinguishing, UL 94 V0

TECHNICAL DATA

CONDUCTOR SECTION



PH-Standard

PE-Standard

PE-VP Standard

CONDUCTOR SPACING

Standard = 14 mm

BENDING CONDUCTORS

Without pre-bending $\infty \geq R \geq 5000$ mm

At site:

Horizontal curves $5000 \text{ mm} \geq R \geq 750 \text{ mm}$

Inward/outward facing curves $5000 \text{ mm} \geq R \geq 750 \text{ mm}$

Curves $R \leq 750$ mm pls. inquire.

CONDUCTOR CODE

U = Unipole insulated conductor

10 = Shroud size

25 = Conductor cross section (mm²)

C = Copper conductor

E = Stainless steel conductor

CONDUCTOR LENGTH

6 m (19.6") standard section,
shorter sections available

SUPPORT SPACING

Straight sections 0,6 m (2')

Curves 0,3 m (1')

APPROVAL

Indoor installations only

PHASE (STANDARD)

Type U10 Standard green shroud	Weight kg/m	Order No. Phase ⁽¹⁾
U10/25C-....PH-B	0,267	167 00 •
U10/25E-....PH-B	0,246	167 02 •

PE (STANDARD)

Type U10 Standard green shroud	Weight kg/m	Order No. PE ⁽¹⁾
U10/25C-....PE-A	0,267	167 06 •
U10/25E-....PE-A	0,246	167 08 •

PE-VP (STANDARD)

Type U10 Standard green shroud	Weight kg/m	Order No. PE-VP ⁽¹⁾
U10/25C-....VP-A	0,267	143 19 •
U10/25E-....VPG-A ⁽⁴⁾	0,267	143 31 •

PHASE (HIGH TEMP. SHROUD)

Type U10 high temp. gray shroud	Weight kg/m	Order No. Phase ⁽¹⁾
U10/25C-....PH-D85	0,267	167 03 •
U10/25E-....PH-D85	0,246	167 05 •

PE (HIGH TEMP. SHROUD)

Type U10 high temp. gray shroud	Weight kg/m	Order No. PE ⁽¹⁾
U10/25C-....PH-C85	0,267	167 09 •
U10/25E-....PE-C85	0,246	167 11 •

PE-VP (HIGH TEMP. SHROUD)

Type U10 high temp. gray shroud	Weight kg/m	Order No. PE-VP ⁽¹⁾
U10/25C-....VP-C85	0,267	143 20 •
U10/25C-....VPG-C85 ⁽⁴⁾	0,246	143 32 •

CONDUCTOR ENGINEERING DATA

Type	leakage distance shroud mm	max. nominal Voltage ⁽³⁾	max. continuous current A	resistance Ohm/1000m	impedance ⁽²⁾ Ohm/1000m
U10/25 C	30	690	100	0,744	0,748
U10/25 E	30	690	10	31,328	31,328

SELECTION OF CONDUCTORS

Conductor selection must consider required current capacity and existing environmental conditions.

- U10/25 C Conductor System with copper conductor for main current, control signal and data
- U10/25 E Conductor System with stainless steel conductor for control signal and data transmission at corrosive environments

(1) Type designation to be completed, e.g. U10/25E-**6000**PH-B for 6 m phase, order number 167 026

The four-digit number (printed bold) at the type designation indicates the length of the conductor section.

(2) Based on 14 mm conductor spacing at 50 Hz

(3) Not with UL certification $U_{UL} = 600$ V

(4) Only for curves facing inward

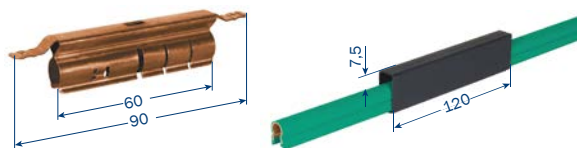
• The last numeral of the order number indicates the length of the conductor section in meters. Accordingly complete the order number with 1, 2, 3, 4, 5 or 6.

JOINT SPLICE/FEED

Max. 2 x 40 A continuous current

Compensates for up to 4 mm section expansion/contraction caused by temperature fluctuations

Connecting cables not included, please order from page 15

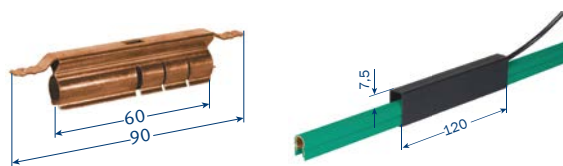


Type	Weight kg	Order No.
VM-UEV10/C	0,026	165 006
VM-UEV10VP/C	0,026	143 213

FEED TERMINAL (INLINE ONLY)

Max. 2 x 50 A continuous current

Connecting cable not included, please order from page 15



Type	Weight kg	Order No.
ES-UES10	0,026	165 212
ES-UES10VP	0,026	143 214

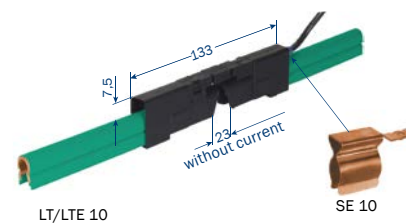
ISOLATING ASSEMBLY (AIR GAP)

Max. 40 A continuous current

Two halves are joined during installation

Feed Clip SE 10 with tab connector 6,3 x 0,8mm (max. continuous current 40 A), at least one additional Compact

Hanger required for each Isolating Assembly.



Type	Description	Weight kg	comprising	Order No.
ST-LT/LT10		0,017	2 x LT/U 10	165 025
ST-LT/LTE10		0,021	2 x LT/U 10 1 x Feed clip SE 10	165 114
ST-LTE/LTE10		0,025	2 x LT/U 10 2 x Feed clip SE 10	165 026

SPACER CLIP

to provide support for Isolating Assembly by filling gap between Isolating Assembly and web of aluminum monorail track at 16,5 mm system height⁽¹⁾.



Type	Weight kg	Order No.
EU-DK10/16,5	0,002	165 682

(1) System height = distance contact surface to back of Compact Hanger (at web of monorail track)

EXPANSION SECTION

single conductor, to be completed at installation site

Expansion capability of Expansion Section must equal the max. expansion capability of the EMS track.

Two Fix Points are required with each Expansion Section. Please order as required by the EMS track layout.

An additional Compact Hanger is required for each 15 mm expansion capability. Please add to your order as required.

Prefinished, complete Expansion Sections are also available as a 800mm long section.

STANDARD

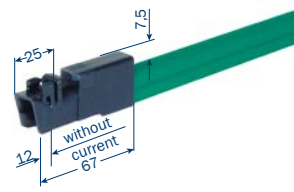
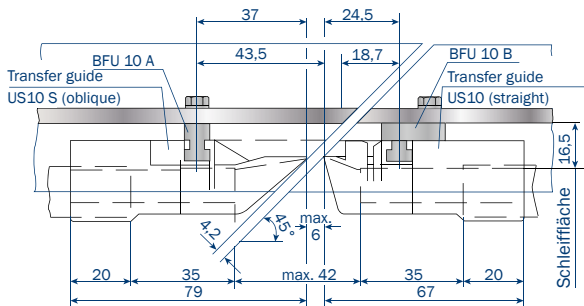
Type	Weight kg	Expansion	Order No.
VM-UDV10/C-30	0,052	up to 30 mm	166 542
VM-UDV10/C-45	0,075	up to 45 mm	166 543
VM-UDV10/C-60	0,104	up to 45 mm	166 544

PE-VP

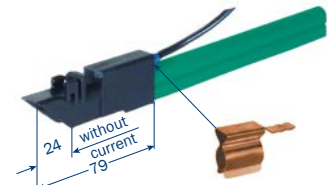
Type	Weight kg	Expansion	Order No.
VM-UDV10VP/C-30	0,052	up to 30 mm	143 356
VM-UDV10VP/C-45	0,078	up to 45 mm	143 357
VM-UDV10VP/C-60	0,104	up to 60 mm	143 358

TRANSFER GUIDES

max. vertical and horizontal offset ± 3 mm respective



without Feed Clip: US 10



with Feed Clip: USE 10 S
(tab connector 6.3 x 0.8 mm)

TRANSFER GUIDE

max. 40 A continuous current

Type	Weight kg/m	Version	Feed Clip	Order No.
MU-US10	0,008	straight	w/o	165 008
MU-US10S	0,008	oblique	w/o	165 009
MU-USE10	0,012	straight	with	165 010
MU-USE10S	0,012	oblique	with	165 011

TRANSFER GUIDE FOR PE-VP

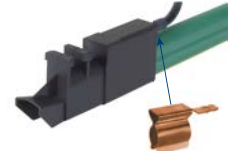
max. 40 A continuous current



w/o Feed Clip: US 10 PE-VP



w/o Feed Clip: US 10 SP



with Feed Clip: USE 10 S-VP
(tab connector 6.3 x 0.8 mm)

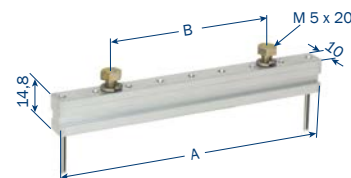
Type	Weight kg/m	Version	Feed Clip	Order No. Phase + PE
MU-US10-VP	0,007	straight	w/o	143 208
MU-US10S-VP	0,007	oblique	w/o	143 210
MU-US10SP-VP	0,008	oblique positive	w/o	143 212
MU-USE10-VP	0,011	straight	with	143 207
MU-USE10S-VP	0,011	oblique	with	143 209
MU-USE10SP-VP	0,012	oblique positive	with	143 211

ANCHOR BRACKET (ALUMINUM) FOR TRANSFER GUIDES

to be bolted to the track

Two holes to be drilled through the EMS track to screw on the Anchor Bracket from the back.

Kit comprises: 1 x Anchor Bracket, 2 x hex screws M5 with lock washer, 2 x roll pins 2 x 20.



BFU 10A

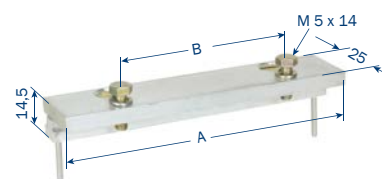
for system height⁽¹⁾ = 16.5 mm

Type	No. of conductors	A mm	B mm	Weight kg	Order No.
MU-BFU10H4/16,5/14-59/42	1 - 4	59	42	0,032	144 422
MU-BFU10H6/16,5/14-90/42	1 - 6	90	42	0,040	144 499
MU-BFU10H8/16,5/14-118/70	1 - 8	118	70	0,048	165 168
MU-BFU10H10/16,5/14-143/70	1 - 10	143	70	0,056	165 176

BFU 10B

to be used when EMS track has been cut obliquely (see drawing page 6).

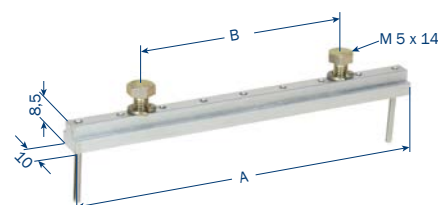
for system height⁽¹⁾ = 16.5 mm



Type	No. of conductors	A mm	B mm	Weight kg	Order No.
MU-BFU10H4/16,5/14-59/42-25	1 - 4	59	42	0,053	144 419
MU-BFU10H6/16,5/14-90/42-25	1 - 6	90	42	0,065	143 982
MU-BFU10H8/16,5/14-118/70-25	1 - 8	118	70	0,077	165 272
MU-BFU10H10/16,5/14-143/70-25	1 - 10	143	70	0,089	165 274

BFU 10

for system height⁽¹⁾ = 10,5 mm



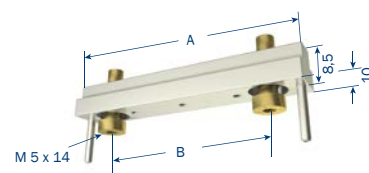
Type	No. of conductors	A mm	B mm	Weight kg	Order No.
MU-BFU10H4/10/14-62/42	1 - 4	62	42	0,022	144 022
MU-BFU10H6/10/14-90/42	1 - 6	90	42	0,026	143 983
MU-BFU10H8/10/14-118/70	1 - 8	118	70	0,030	165 115

BFU 10V

for system height⁽¹⁾ = 10.5 mm

Socketed head screws inserted at front of EMS track. Anchor Bracket kit consists of:

1 x Anchor Bracket, 2 x socket head screws M5, 2 x roll pins.



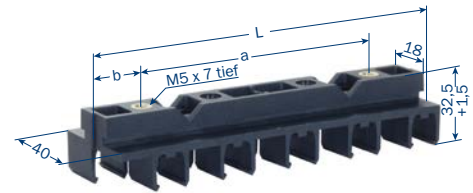
Type	No. of conductors	A mm	B mm	Weight kg	Order No.
MU-BFU10V4/10/14-59/42	1 - 4	59	42	0,015	144 355
MU-BFU10V6/10/14-90/42	1 - 6	90	42	0,021	144 513
MU-BFU10V8/10/14-118/70	1 - 8	118	70	0,026	144 514

(1) System height = distance contact surface to back of Compact Hanger (at web of monorail)

STANDARD COMPACT HOLDER

up to 10 conductors

These Compact Hangers may be combined to support any number of conductors.



Type	max. conductors	L	a	b	Weight kg	Order No.
AH-KA10L-2/16,5-N-PA-14	2	29	0	20,5	0,012	142 072
AH-KA10L-4/16,5-10N-PA-14	4	57	42	7,5	0,024	142 073
AH-KA10L-6/16,5-10N-PA-14	6	85	42	21,5	0,033	142 757
AH-KA10L-8/16,5-10N-PA-14	8	113	42	35,5	0,045	142 075
AH-KA10L-10/16,5-N-PA-14	10	141	100	20,5	0,056	142 076

COMPACT HOLDER KA10 (USED WITH SCREWS)

6 conductor + SMGM



Type	max. conductors	L	Weight kg	Order No.
AH-KA10-4/10,5-UNI-PA-SMG-14	4	100	0,027	144 354
AH-KA10-6/10,5-UNI-PA-SMG-14	6	128	0,036	100 102 11

LOCATING CLAMPS

2 ea. USK Location Clamps are required for each fix point



Illustration shows positioning of the two Locating Clamps at a Compact Hanger

LOCATING CLAMP STANDARD

Type	Weight kg	Order No.
USK10	0,006	165 645



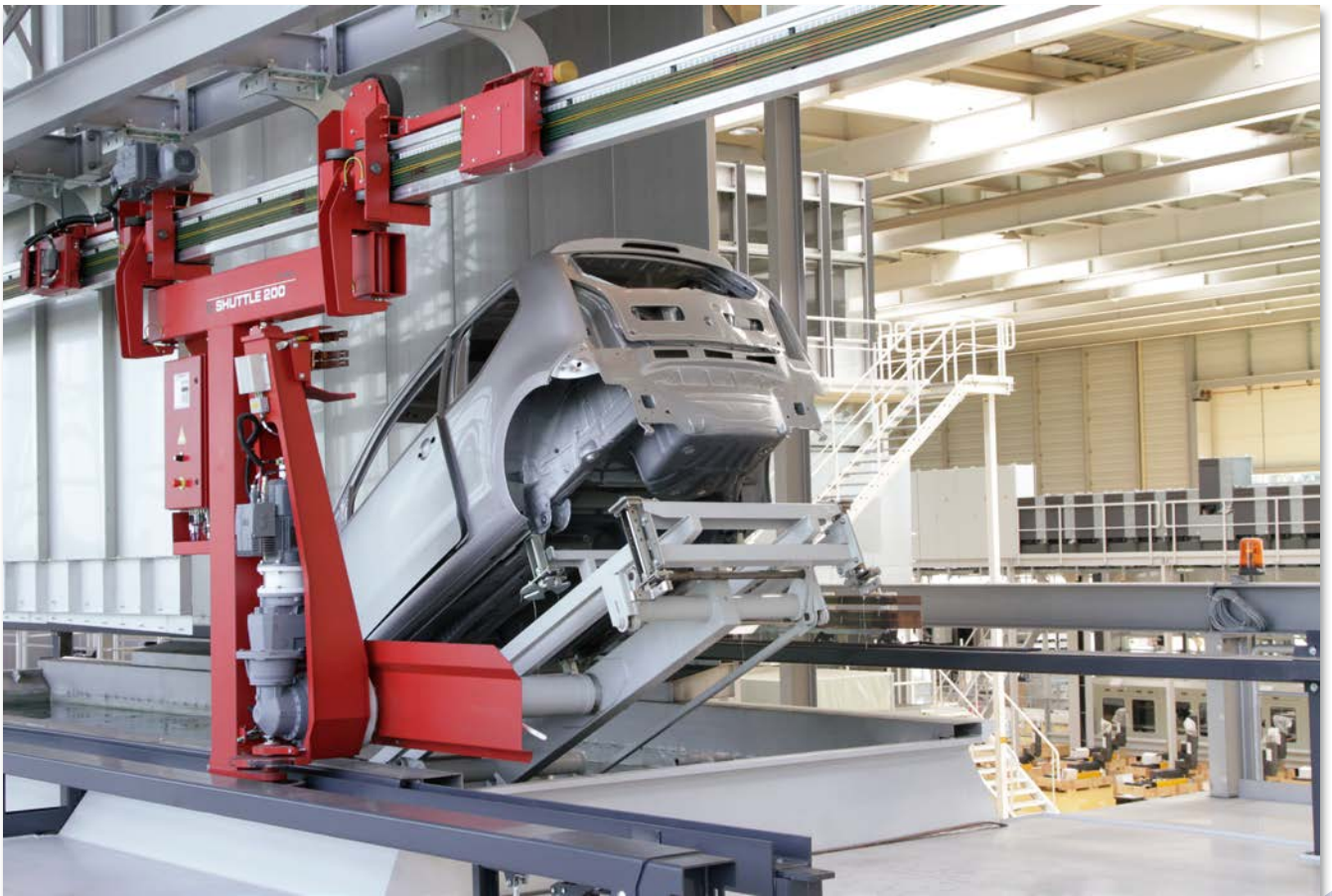
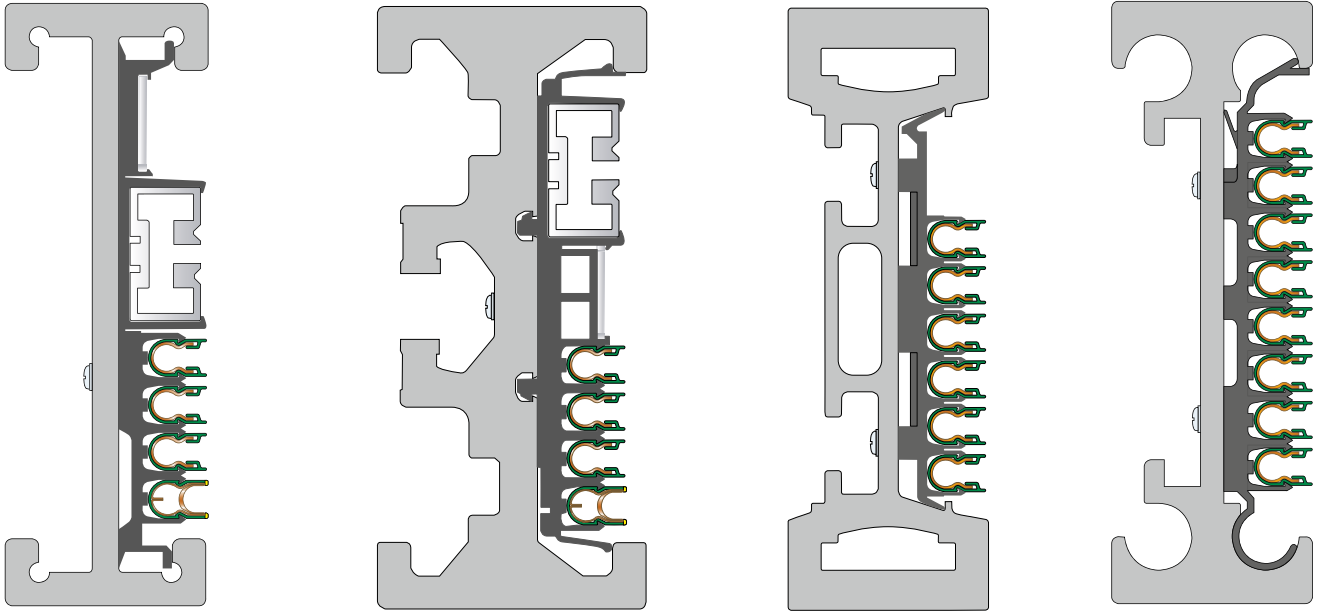
Illustration shows positioning of the two Locating Clamps at a Compact Hanger

LOCATING CLAMP PE-VP

Type	Weight kg	Order No.
USK10A-VP	0,001	2823268

COMPACT HANGERS (CUSTOMER SPECIFIC)

Engineered and manufactured to fit customer specific EMS track



COMPACT COLLECTOR SETS

KDS2/40

PE-VP for EMS installations

with 1 x 0.5 m connecting cable type WFLA 2,5

max. current: 1 connecting cable 2.5 mm² 25 A

2 connecting cables 2.5 mm² 40 A

Stroke: ± 15 mm

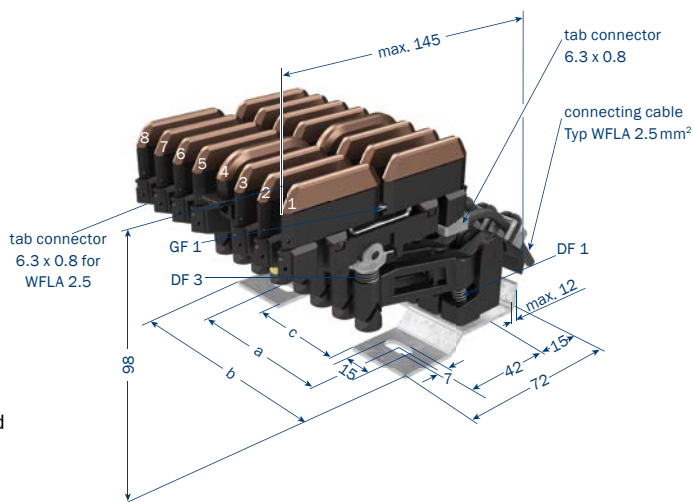
Swivel: ± 15 mm

Contact pressure: approx. 3.5 N per contact brush

Connecting cable: 2.5 mm² type WFLA 2,5 high flex included

PE standard at No. 4 position, variations are possible.

PE makes contact first when entering conductors.



Type	No. of cond.	Dim. a mm	Dim. b mm	Dim. c mm	Weight kg	Base plate	Order No.	
							with PE-VP	with PE Standard
SA-KDS2/40/4/14VP0,5/4/4	4	28	62	-	0,428	4 cond.	143 277	-
SA-KDS2/40/4/14HS0,5/4/4	4	28	62	-	0,428	4 cond.	-	168 082
SA-KDS2/40/5/14VP0,5/4/6/6	5	56	90	-	0,549	6 cond. (No. 6 open)	143 332	-
SA-KDS2/40/5/14HS0,5/4/6/6	5	56	90	-	0,549	6 cond. (No. 6 open)	-	168 083
SA-KDS2/40/6/14VP0,5/4/6	6	56	90	-	0,637	6 cond.	143 219	-
SA-KDS2/40/6/14HS0,5/4/6	6	56	90	-	0,637	6 cond.	-	168 084
SA-KDS2/40/7/14VP0,5/4/8/8	7	80	118	53	0,744	8 cond. (No. 8 open)	143 377	-
SA-KDS2/40/7/14HS0,5/4/8/8	7	80	118	53	0,744	8 cond. (No. 8 open)	-	168 085
SA-KDS2/40/8/14VP0,5/4/8	8	80	118	53	0,832	8 cond.	143 220	-
SA-KDS2/40/8/14HS0,5/4/8	8	80	118	53	0,832	8 cond.	-	168 086
SA-KDS2/40/9/14VP0,5/4/10/10	9	80	156	53	0,959	10 cond. (No. 10 open)	143 378	-
SA-KDS2/40/9/14HS0,5/4/10/10	9	80	156	53	0,959	10 cond. (No. 10 open)	-	168087
SA-KDS2/40/10/14VP0,5/4/10	10	80	156	53	1,047	10 cond.	143 379	-
SA-KDS2/40/10/14HS0,5/4/10	10	80	156	53	1,047	10 cond.	-	168 088
Single conductor available with 0.5 m connecting cable							Phase, black	PE, yellow
SA-KDS2/40/04PH-88/15-0,5					0,091	without	168 073	-
SA-KDS2/40/30VP-79/15-0,5					0,105	without	-	143 218
SA-KDS2/40/04PE-88/15-0,5					0,090	without	-	168 074

CURRENT COLLECTOR SETS (TRAILING UNIT)

Single conductor on base plate. PE standard at No. 4 position, variations possible!

Type	Dim. a mm	Dim. b mm	Dim. c mm	Weight kg	Base plate	Order No. PE-VP	Order No. PE
SA-KDS2/40/1/14VP0,5/4/4/1-3	28	62	-	0,164	4 cond.	143 361	-
SA-KDS2/40/1/14HS0,5/4/4/1-3	28	62	-	0,164	4 cond.	-	168 079-D
SA-KDS2/40/1/14VP0,5/4/6/1-3U5-6	56	90	-	0,197	6 cond.	143 369	-
SA-KDS2/40/1/14HS0,5/4/6/1-3U5-6	56	90	-	0,197	6 cond.	-	167 454
SA-KDS2/40/1/14VP0,5/4/8/1-3U5-8	80	118	53	0,216	8 cond.	143 635	-
SA-KDS2/40/1/14HS0,5/4/8/1-3U5-8	80	118	53	0,216	8 cond.	-	167 830

KUFR2/40

for installations requiring bi-directional travel

with 1 x 0.5 m connecting cable type WFLA 2,5

max. current: 1 connecting cable 2.5 mm² 25 A
 2 connecting cables 2.5 mm² 40 A

Stroke: ± 15 mm

Swivel: ± 15 mm

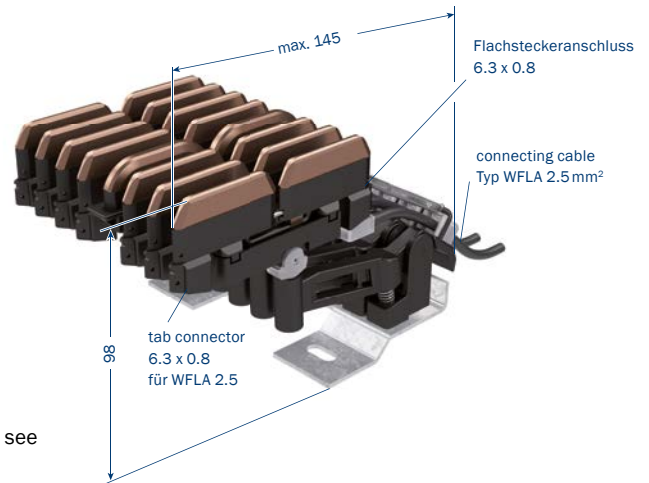
Contact pressure: approx. 3.5 N per contact brush

Connecting cable: 2.5 mm² type WFLA 2,5

Length: 0.5 m, high flex included

PE standard at No. 4 position, variations are possible. Dimensions of base plate see

KDS2/40. PE makes contact first when entering conductors.



Type	No. of cond.	Weight kg	Base plate	Order No.	
				with PE-VP	with PE-Standard
SA-KUFR2/40/4/14VP0,5/4/4	4	0,448	4 cond.	144 474	-
SA-KUFR2/40/4/14HS0,5/4/4	4	0,448	4 cond.	-	165 927
SA-KUFR2/40/5/14VP0,5/4/6/6	5	0,573	6 cond. (No. 6 open)	144 475	-
SA-KUFR2/40/5/14HS0,5/6/6	5	0,573	6 cond. (No. 6 open)	-	165 928
SA-KUFR2/40/6/14VP0,5/4/6	6	0,666	6 cond.	144 476	-
SA-KUFR2/40/6/14HS0,5/6	6	0,666	6 cond.	-	165 929
SA-KUFR2/40/7/14VP0,5/4/8/8	7	0,779	8 cond. (No. 8 open)	144 478	-
SA-KUFR2/40/7/14HS0,5/8/8	7	0,779	8 cond. (No. 8 open)	-	165 930
SA-KUFR2/40/8/14VP0,5/4/8	8	0,872	8 cond.	144 479	-
SA-KUFR2/40/8/14HS0,5/8	8	0,872	8 cond.	-	165 931
SA-KUFR2/40/9/14VP0,5/4/10/10	9	1,004	10 cond. (No. 10 open)	144 480	-
SA-KUFR2/40/9/14HS0,5/10/10	9	1,004	10 cond. (No. 10 open)	-	165 932
SA-KUFR2/40/10/14VP0,5/4/10	10	1,097	10 cond.	144 481	-
SA-KUFR2/40/10/14HS0,5/10	10	1,097	10 cond.	-	165 933
Single conductor available with 0.5 m connecting cable				Phase, black	PE, yellow
SA-KUFR2/40/20PH-88/15-0,5		0,093		165 955	-
SA-KUFR2/40/20PE-88/15-0,5		0,091		-	165 956
SA-KUFR2/40/04VP-79/15-0,5		0,105		-	143 776

CURRENT COLLECTOR SETS (TRAILING UNIT)

Single conductor on base plate. PE standard at No. 4 position, variations possible!

Type	Dim. a mm	Dim. b mm	Dim. c mm	Weight kg	Base plate	Order No. PE-VP	Order No. PE
SA-KUFR2/40/1/14VP0,5/4/4/1-3	28	62	-	0,164	4 cond.	143 774	-
SA-KUFR2/40/1/14HS0,5/4/4/1-3	28	62	-	0,164	4 cond.	-	166 491
SA-KUFR2/40/1/14VP0,5/4/6/1-3U5-6	56	90	-	0,197	6 cond.	143 836	-
SA-KUFR2/40/1/14HS0,5/4/6/1-3U5-6	56	90	-	0,197	6 cond.	-	167 573
SA-KUFR2/40/1/14VP0,5/4/8/1-3U5-8	80	118	53	0,216	8 cond.	144 482	-
SA-KUFR2/40/1/14HS0,5/4/8/1-3U5-8	80	118	53	0,216	8 cond.	-	167 661

ENTRY FUNNEL

EFT10

to be used with Current Collector KUFU25 or KESR32

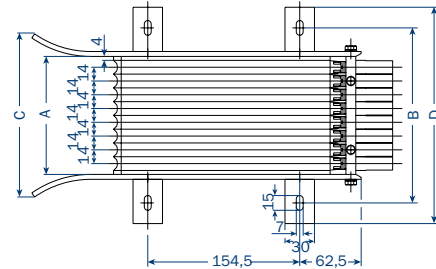
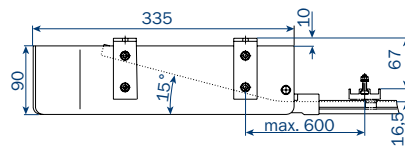
Please note: Entry Funnel without current.

Entry speed: max. 100 m/min

Entry tolerance: horizontal: ± 10 mm

vertical: ± 10 mm

Version with PE-VP please inquire; KESR required



Type	No. of cond.	A mm	B mm	C mm	D mm	Weight kg	Order No.
MU-EFT10-2-KUFU	2	36	94	82	136	1,145	167 675
MU-EFT10-3-KUFU	3	50	108	96	150	1,230	167 676
MU-EFT10-4-KUFU	4	64	122	110	164	1,315	167 677
MU-EFT10-5-KUFU	5	78	136	124	178	1,400	167 678
MU-EFT10-6-KUFU	6	92	150	138	192	1,485	167 679
MU-EFT10-7-KUFU	7	106	164	152	206	1,570	167 680
MU-EFT10-8-KUFU	8	120	178	166	220	1,655	167 681
MU-EFT10-9-KUFU	9	134	192	180	234	1,740	167 682
MU-EFT10-10-KUFU	10	148	206	194	248	1,825	167 683

COMPACT CURRENT COLLECTOR SETS

KUFU25

for Entry Funnel EFT10

With 1 m connecting cable type FLA 2.5

max. continuous current: 25 A

Stroke: +15 mm / -10 mm

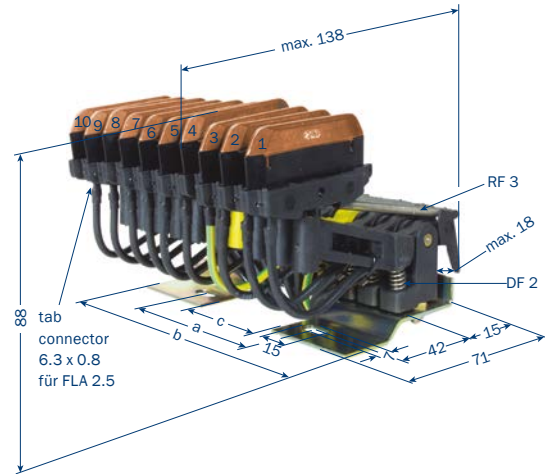
Swivel: ±15 mm

Contact pressure: approx. 3,5 N per contact brush

PE at No. 4 position, with 3 conductors at No. 3, with

2 conductors at No. 2. Variations are possible.

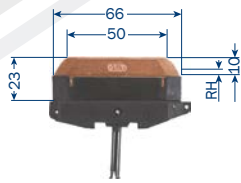
PE makes contact first when entering conductors.



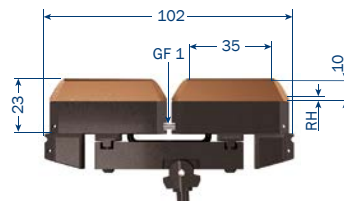
Type	No. of cond.	Dim. a mm	Dim. b mm	Dim. c mm	Weight kg	Base plate	Order No.	
							mit PE	ohne PE
SA-KUFU25/2/14HS1,0/2/2	2	-	34	-	0,228	2 - polig	168 040	-
SA-KUFU25/2/14SS1,0/2	2	-	34	-	0,228	2 - polig	-	168 051
SA-KUFU25/3/14HS1,0/3/4/4	3	28	62	-	0,340	4 - polig (Nr. 4 = frei)	168 041	-
SA-KUFU25/3/14SS1,0/4/4	3	28	62	-	0,340	4 - polig (Nr. 4 = frei)	-	168 052
SA-KUFU25/4/14HS1,0/4/4	4	28	62	-	0,428	4 - polig	168 042	-
SA-KUFU25/4/14SS1,0/4	4	28	62	-	0,428	4 - polig	-	168 053
SA-KUFU25/5/14HS1,0/4/6/6	5	56	90	-	0,549	6 - polig (Nr. 6 = frei)	168 043	-
SA-KUFU25/5/14SS1,0/6/6	5	56	90	-	0,549	6 - polig (Nr. 6 = frei)	-	168 054
SA-KUFU25/6/14HS1,0/4/6	6	56	90	-	0,637	6 - polig	168 044	-
SA-KUFU25/6/14SS1,0/6	6	56	90	-	0,637	6 - polig	-	168 055
SA-KUFU25/7/14HS1,0/4/8/8	7	80	118	53	0,744	8 - polig (Nr. 8 = frei)	168 045	-
SA-KUFU25/7/14SS1,0/8/8	7	80	118	53	0,744	8 - polig (Nr. 8 = frei)	-	168 056
SA-KUFU25/8/14HS1,0/4/8	8	80	118	53	0,832	8 - polig	168 046	-
SA-KUFU25/8/14SS1,0/8	8	80	118	53	0,832	8 - polig	-	168 057
SA-KUFU25/9/14HS1,0/4/10/10	9	80	146	53	0,959	10 - polig (Nr. 10 = frei)	168 047	-
SA-KUFU25/9/14SS1,0/10/10	9	80	146	53	0,959	10 - polig (Nr. 10 = frei)	-	168 058
SA-KUFU25/10/14HS1,0/4/10	10	80	146	53	1,047	10 - polig	168 048	-
SA-KUFU25/10/14SS1,0/10	10	80	146	53	1,047	10 - polig	-	168 059
Single conductor available, without connecting cable							Phase, black	PE, yellow
SA-KUFU25/28PH-78/15-0,0					0,051		168 015	-
SA-KUFU25/28PE-78/15-0,0					0,051		-	168 016

COLLECTOR BRUSHES

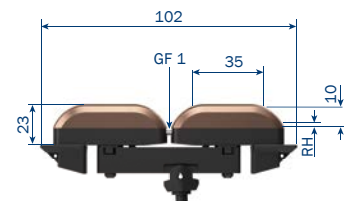
width of Contact Brushes = 3.8mm



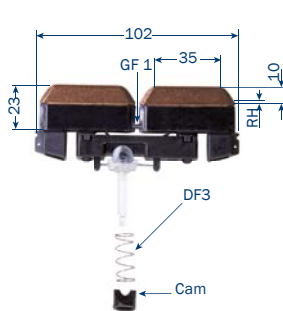
SK-KMKU25-20-14



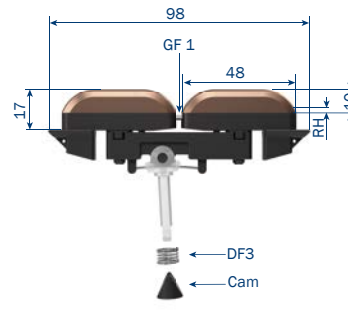
SK-KMKF2/40-04-14



KMKF2/40VP-04-14



SK-DSW2/40-04-14-FN

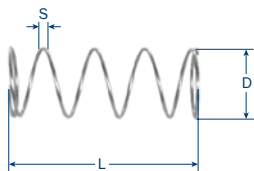


SK-DSW2/40VP-04-14-FN

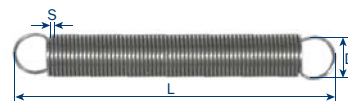
Min. remaining Brush height (RH) = 3 mm

Type	for Current Collector	Weight kg	Order No.
SK-KMKU25-20-14	KUFU25	0,030	168 284
SK-DSW2/40-04-14-FN	KDS2/40	0,049	168 151
SK-DSW2/40VP-04-14-FN	KDS2/40 PE-VP	0,060	144 059
SK-KMKF2/40-04-14	KUFR2/40	0,050	144 277
SK-KMKF2/40VP-04-14	KUFR2/40VP	0,060	143 777

SPRINGS



Compression Spring DF3



Tension Spring RF3



Alignment Spring GF1



Cam

Type	for Current Collector	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 CABLE

CONNECTING CABLE, HIGHLY FLEXIBLE

for Current Collector, Feed Terminal, Transfer Guide and Isolating Assembly
(for Current Collector KDS and KUFR use Connecting Cable WFLA 2.5)



WFLA

FLA / FKA

FH

CONNECTING CABLE, DOUBLE INSULATION

for Current Collector or Feed Terminal

Length: 0.5m with tab plug 6,3 x 0,8
Longer connecting cable available

Length: 1m with tab plug 6,3x0,8
Longer connecting cable available

Type	Cross section mm ²	Ø mm		Weight kg		Order No. Phase black	Order No. PE green/yellow
		PH	PE	PH	PE		
AL-FLA2,5PH1-6,3	2,50	3,9	-	0,037	-	165 049	-
AL-FLA2,5PE1-6,3	2,50	-	3,6	-	0,035	-	165 050
AL-FLA4PH1-6,3	4,00	5,4	-	0,064	-	165 051	-
AL-FLA4PE1-6,3	4,00	-	5,2	-	0,059	-	165 052
AL-FLA6PH1-6,3	6,00	5,7	-	0,086	-	166 368	-
AL-FLA6PE1-6,3	6,00	-	5,7	-	0,083	-	166 369
AL-WFLA2,5PH0,5-6,3	2,50	3,9	-	0,020	-	168 107	-
AL-WFLA2,5PE0,5-6,3	2,50	-	3,6	-	0,018	-	168 108

CONNECTING CABLE, SINGLE INSULATION

for Isolating Assembly only

Type	Cross section mm ²	Ø mm		Weight kg		Bestell-Nr. Phase black	Bestell-Nr. PE green/yellow
		PH	PE	PH	PE		
AL-IFKA1,5PH1-6,3	1,50	3,0	-	0,020	-	166 557	-
AL-IFKA1,5PE1-6,3	1,50	-	3,0	-	0,020	-	166 558
AL-IFKA2,5PH1-6,3	2,50	3,7	-	0,032	-	166 238	-
AL-IFKA2,5PE1-6,3	2,50	-	3,7	-	0,032	-	166 239
AL-IFKA4PH1-6,3	4,00	4,3	-	0,050	-	166 240	-
AL-IFKA4PE1-6,3	4,00	-	4,3	-	0,050	-	166 241
AL-IFKA6-PH1-6,3	6,00	4,9	-	0,064	-	166 242	-
AL-IFKA6-PE1-6,3	6,00	-	4,9	-	0,064	-	166 243

TAB PLUG ONLY (WITHOUT CABLE)

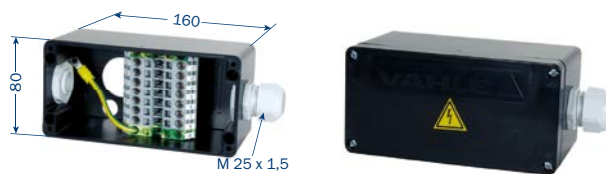
Type	for cable cross section mm ²	Weight kg	Order No.
FH2,5	2,5	0,002	165 120
FH4-6	4-6	0,002	165 121
WFH2,5	2,5	0,002	168 109

TERMINAL BOX

TERMINAL BOX AKE

for conductor current supply with max. 7 x 6 mm² terminal clamps and 2 x 6 mm² PE terminal clamps.

Please inquire when terminal clamp variations are desired.



Type	Weight kg	Order No.
ES-AKE1-PH7x2L6-PE2x2L6-M25	0,445	169 462

BRUSH WEAR INDICATOR

Brush wear indicator can be supplied installed on 0.5m conductor section. Please specify the corresponding conductor arrangement when ordering.

The Brush Wear Indicator checks the remaining brush height each time a collector set passes. Max. travel speed 70m/min. When the remaining brush height reaches the preset value of 3 mm the Brush Wear Indicator will send an impulse. It is practical to install the Brush Wear Indicator ahead of a track switch, then the impulse can actuate the track switch to send the unit directly into a maintenance spur.

An opening, min. width 70mm height 50mm, must be cut at the EMS track web. PE position is variable, similarly to the conductor arrangement; please inquire. Differing remaining brush height settings above 3 mm are also available.



BRUSH WEAR INDICATOR WITH INDUCTIVE PROXIMITY SWITCH

The last slot of a Brush Wear Indicator with an uneven number of conductors remains unoccupied.

Type	No. of conductors	Weight kg	Order No. PE-VP at No. 4	Order No. PE at No. 4
VT-KVT10-4-14VP4B	4	2,011	143 637	-
VT-KVT10-4-14HS4B	4	2,011	-	166 957
VT-KVT10-5-14VP4B/6	5	2,252	144 093	-
VT-KVT10-5-14HS4B/6	5	2,252	-	167 440
VT-KVT10-6-14VP4B	6	2,453	143 304	-
VT-KVT10-6-14HS4B	6	2,453	-	166 895
VT-KVT10-7-14VP4B/8	7	2,692	143 466	-
VT-KVT10-7-14HS4B/8	7	2,692	-	167 441
VT-KVT10-8-14VP4B	8	2,893	143 646	-
VT-KVT10-8-14HS4B	8	2,893	-	166 896
VT-KVT10-9-14VP4B/10	9	3,131	144 094	-
VT-KVT10-9-14HS4B/10	9	3,131	-	167 442
VT-KVT10-10-14VP4B	10	3,335	144 095	-
VT-KVT10-10-14HS4B	10	3,335	-	166 897

INSTALLATION TOOLS

CURVE TOOL

for forming U10 vertical and horizontal curves.

Filler Rods must be ordered separately.



Type	Description	Weight kg	Order No.
MZ-BVU10-VP	Curve tool	6,918	143 318
MZ-FU10-V ⁽¹⁾	Filler rod for PH/PE (4 m)	0,371	165 234
MU-FU10-H ⁽²⁾	Filler rod for PH/PE (4 m)	0,354	144 416
MZ-FU10-S-VP	Filler rod for PE-VP hollow body (4 m)	0,156	143 279
MZ-FU10-VP-E	Filler rod for PE-VP contact surface (4 m)	0,208	143 280

TABLE SAW

for cutting U10 insulator shroud and conductor profiles, with length stop

Voltage required: 230V, 50 Hz



Type	Description	Weight kg	Order No.
MZ-KS10	Table Saw, compl.	6,500	165 276
MZ-SB	spare saw blade	0,070	165 263

CONDUCTOR PUNCH TOOL

for punching Joint Splice window into conductor profile after cutting standard length section.

For phase and PE and PE-VP conductors.



Standard PH/PE



PE-VP

Type	Description	Weight kg	Order No.
MZ-LZ10PE-VP	Conductor Punch Tool for PE-VP	0,595	143 223
MZ-LZ10PH/PE	Conductor Punch Tool for Phase und standard PE	0,480	144 363

DEBURRING FILE



RF



HRF

Type	use for	Weight kg	Order No.
ROUND FILE RF-150 LANG/HIEB 3/D=6MM	debur inside profile after cutting section	0,085	143 330
HALF ROUND FILE HRF-150 LANG/HIEB 3	debur outside profile after cutting section	0,085	165 264

ADJUSTMENT JIG

facilitates cutting precise length of insulation shroud without using measuring tape.



Type	Weight kg	Order No.
MZ-ST10	0,150	165 091

⁽¹⁾ For making vertical EMS curve sections.

⁽²⁾ For making horizontal and outward facing AEM curve sections.

JOINT SPLICE/FEED ASSEMBLING TOOL

- To push conductor into Joint Splice clip
- If necessary, to widen conductor slot opening
- To move Joint Splice cap in place



Type	Weight kg	Order No.
MZ-MG-SW10	0,125	165 093

LOCKING PIN DRIVER

to insert BFU Anchor Bar Transfer Guide locking pins



Type	Weight kg	Order No.
MZ-ED10	0,010	165 277

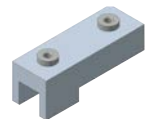
CONDUCTOR REMOVAL TOOL

to release and remove conductors from Compact Hangers



Type	Weight kg	Order No.
MZ-DMW10	0,039	165 119

DRILLING JIG FOR FIX POINT (PE-VP)



Type	Weight kg	Order No.
MZ-BS10A	0,036	143 425

SPIRAL DRILL

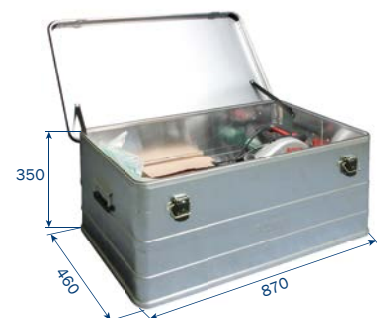
to drill holes for Locating Clamps USK 10A-VP at fix points



Type	Weight kg	Order No.
SPIRAL DRILL Ø 3,2 MM, TYPE N	0,003	143 426

INSTALLATION TOOL BOX

includes 1x BVU10-VP Curve Tool, with Filler Rods 1x FU10, 1x FU10S-VP and 1x FU10VP-E, 1x KS10 Table Saw, 1x SB spare blade, 1x LZ10PE-VP and 1x LZ10PH/PE Conductor Punch Tool, 1x RF round file and 1x HRF half round file, 1x ST10 Adjustment Jig, 1x MG-SW 10 Joint Splice/Feed assembly tool, 1x ED10 Locking Pin Driver, 1x DMW10 Conductor Removal Tool, 1x BS10A Drilling Jig, 1x spiral drill Ø 3,2 mm
Installation tool box can be locked.



Type	Weight kg	Order No.
MZ-MWK-K	26,500	166 548

APPLICATION QUESTIONNAIRE FOR U10

Customer _____ Date _____
 Final customer _____ Project No. _____
 Installation _____

CUSTOMER CONTACT

	Name	Fon	E-Mail
Technical planning			
Purchasing			

SCOPE OF SUPPLY

- vCONDUCTOR vPOS vCOM vDRIVE
 Installation VAHLE components Installation Non-VAHLE components _____
 Disassembly Disassembly Non-VAHLE components _____

SCHEDULE

Proposal submittal _____ week/date Delivery _____ week/date
 Installation start _____ finish _____ week/date weekdays weekends

MECHANICAL DATA

1. INSTALLATION CONCEPT:

- New installation
 Alteration / Expansion Original Conductor System Delivery No.: _____
 Replacement 1:1 Original Conductor System Delivery No.: _____

2. ART DER ANLAGE:

- EMS Floor Track Systems (2 tracks)
 Skillet system Other _____

3. CARRIER TRACK / CARRIER TRACK SUPPLIER / TRACK DESIGNATION:

- 180x60 / _____ / _____ Other _____ / _____ / _____
 240x80 / _____ / _____

4. CONDUCTOR ORIENTATION:

- Facing sideways in direction of travel: right left
 Facing downward

5. INSTALLATION HEIGHT:

Off facility floor or support floor _____ mm freely traversible

6. TRACK EXPANSION GAPS:

Expansion distance / gap dimension _____ mm

7. BUILDING EXPANSION GAPS:

Expansion distance / gap dimension _____ mm

8. SPECIFIC BUILDING FEATURES:

ELECTRICAL DATA

9. OPERATING VOLTAGE:

Three-phase current Alternating current Direct current _____ V _____ Hz

10. TYPE OF CONDUCTOR:

U10/25C copper conductor
 U10/25E stainless steel conductor

11. NUMBER OF CONDUCTORS (POLES):

Main current _____ Control current _____ Ground (PE) standard _____
 PE-VP Ground conductor with phase collector avoidance protection available only in copper _____

12. CONDUCTOR SEQUENCE:

Compact hanger number of conductors Location top to bottom:

Conductor	Position	Example 12. Cond. Hanger w/6 pos. used
1.		open
2.		open
3.		L1
4.		L2
5.		L3
6.		PE-VP
7.		C1
8.		C2
9.		open
10.		open
11.		open
12.		open

13. TRAVEL MODE:

One direction only _____ bi-directional _____ / _____ %

14. TRAVEL SPEEDS:

Travel speed V max. straight: _____ m/min

Travel speed V max. curve: _____ m/min

Acceleration _____ m/s² acceleration time _____ s

15. CONNECTING CABLES FOR CONDUCTORS

Joint Splice/Feed, Feed Terminal main current conductors _____ cross section _____ mm²
 Track switch Transfer Guides main current conductors _____ cross section _____ mm²
 Feeds and Transfer Guides control current _____ cross section _____ mm²

ENVIRONMENTAL REQUIREMENTS**16. INSTALLATION LOCATION**

Indoors Cool storage Freezer (to -30°C)

17. AMBIENT TEMPERATURE

_____ °C min. _____ °C max.

INSTALLATION TEMPERATURE

approx. _____ °C

18. RELATIVE HUMIDITY _____%

at ambient temperature _____ °C

 OXYGEN REDUCED ATMOSPHERE

Oxygen content _____%

19. EXTRAORDINARY ENVIRONMENTAL CONDITIONS:

vPOS - POSITIONING SYSTEM**20. TYPE:**

APOS Optic APOS Magnetic
 Support system for Leuze Barcode (35 mm)

vCOM - DATA TRANSMISSION**21. TYPE:**

SMGM
 Powercom (utilizing conductor system)
 Semi-Wave (utilizing conductor system, only together with vDRIVE)
 CAN-Bus (utilizing conductor system, only together with vDRIVE)

CONFIGURATION NOTES:

Not suited for outdoor installation.

QUANTITY FRAMEWORK

Position	Quantity	Piece/m	Description	
1.		pieces	carrier	
2.		m	length total	
3.		m	length straight	
4.		pieces	H-curves to 15°	R= mm
5.		pieces	H-curves to 30°	R= mm
6.		pieces	H-curves to 45°	R= mm
7.		pieces	H-curves to 60°	R= mm
8.		pieces	H-curves to 75°	R= mm
9.		pieces	H-curves to 90°	R= mm
10.		pieces	H-curves to 180°	R= mm
11.		pieces	TS-connection curves	R= mm
12.		pieces	V-curves to 45°	R= mm
13.		pieces	two-way track switches	
14.		pieces	three-way track switches	
15.		pieces	V-track switches	
16.		pieces	turntables	
17.		pieces	quattro track switches	
18.		pieces	lift stations vertical	No. of connections___ beams___
19.		pieces	shift units horizontal	No. of connections___ beams___
20.		pieces	track expansions	
21.		pieces	building expansions	
22.		pieces	brush wear indicator	
23.		pieces	PE verification	
24.		pieces	connecting cables, capacity	
25.		pieces	connecting cables, PE	
26.		pieces	connecting cables, control	
27.		pieces	terminal boxes	
28.		pieces	conductor vacuum incl. suction head	

REMARKS

DRAWINGS





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