

Multiconductor Technical information



AKAPP-STEMMANN

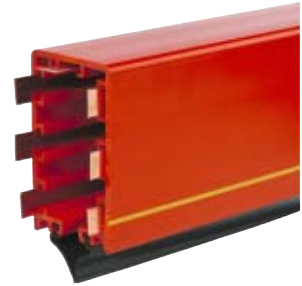
Member of the Fandstan Electric Group

Multiconductor[®] housing RN7: innumerable possibilities and variations!

The conductor housing RN7 is available in various models, indicated in the summary as detailed below. As such you are able to optimally gear your installation to the industrial circumstances. It provides you with the opportunity to easily adjust variations in the occupancy of the (copper) conductors, to tune your installation to your changing industrial circumstances.

All conductor models can be provided with flexible, rubber sealings, model AS7 (refer to photograph).

Protection class of all conductor models is IP23. Including **rubber sealing AS7** the protection class is **IP44**.



Standard performances:

Type RN7

Colour: signal red.

Temperature range as of -30 °C up to +60 °C.

The anti-reverse rib (A) in the housing ensures that the collector trolley can only be installed in one way and prevents cross phasing. A continuous yellow stripe (B) on one side of the housing ensures correct fitting of het system. The PVC with a high impact strength is self extinguishing.

Type RN7W

Colour: white. Dimensions similar to type RN7.

Temperature range as of -30 °C up to +60 °C.

When radiant heat is applicable, such as in green houses, a white conductor housing is advised.

Type RN7V

Colour: grey white. Dimensions similar to type RN7.

Temperature range as of -20 °C up to +80 °C.

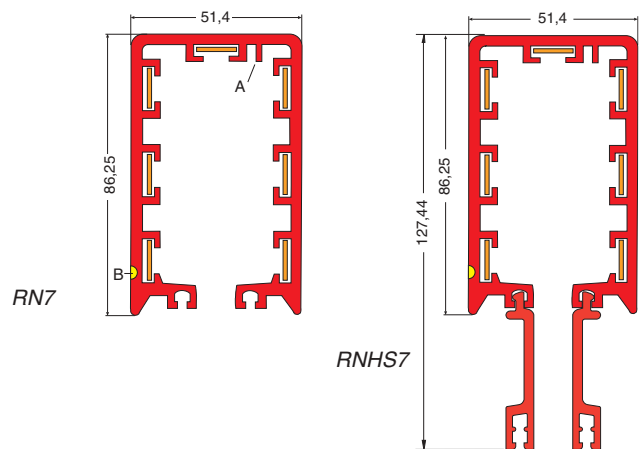
For applications with higher environmental temperatures.

Type RNHS7

Colour: signal red.

Temperature range as of -30 °C up to +60 °C.

Due to the spacer strips at the bottom side this conductor housing model is well suited for installations positioned at a low level. The strips provide additional protection against splashing water.



Technical data of housings

Material

Unplasticized Hard-PVC with approximate values:

Notch shock strength	5-10 kJ/m ²
E-modulus	2500-3000 N/mm ²
Softening point (Vicat)	81-83 °C
Lineair expansion	70.10 ⁻⁶

Elektrical data

Volume resistivity with 100 V	>4.10 ¹⁵ Ω/cm
Dielectric strength with 50 Hz	>30 kV/mm

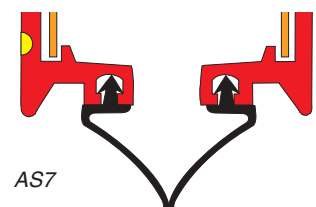
Length of housing 4 m standard

Flexible sealing strips AS7

Type AS7 C chloroprene, colour black

This is used to ensure the suitability of a Multiconductor installation for application in a **dusty, humid** or even **corrosive** atmosphere. Corrosion of copper conductors is nearly always prevented! This sealing is recommended for all outdoor installations and specific industries e.g. **concrete brickworks, coal storage and transshipment, dairies, galvanising plants, textile production** etc.

Rail type RN(HS)7 with **AS7** meets protection degree **IP44** and is permitted to be mounted on every desired height.



Type AS7-H, Hypalon, colour grey.

A special execution with higher resistance to acids for applications such as **galvanising plants**.

AKAPP Art. no.	Description	red	white	grey	linear expansion K ⁻¹	min. temp. °C	max. temp. °C	HS, extra protection	max speed m/min.	comb. with transfer guides	comb. with curves
1001050	PVC housing, red RN7	x			0,00007	-30	60		500	x	x
1000940	PVC housing, white RN7W		x		0,00007	-30	60		500	x	x
1001360	Railkoker, extra protection RNHS7	x			0,00007	-30	60	x	500	x	x
1001750	PVC housing, handsafe red RNHS7		x		0,00007	-30	60	x	500	x	x
1001960	PVC housing VICAT 93 RNV7			x	0,00009	-20	80		500	x	x

Ultimate logistical control: uninterrupted feed at all times

Each Multiconductor installation is supplied with the joint-free flat copper conductors, rolled on and based on track length. Copper strips are available for current intensities of **35, 50, 80, 125 and 160A** (DC 80%). Material: electrolytic copper.

When 2 strips are parallel connected for each of the 3 phases of a three-phase system, current intensities of **70A** (2x35), **100A** (2x50), **160A** (2x80), **250A** (2x125) and **320A** (2x160) are possible. The 7th conductor being utilised as earth supply.

Upon parallel installation of various Multiconductor installations a significant higher current capacities can be attained. By means of parallel installation the **multi-pole** installations can be assembled; **of importance with regard to control purposes.**

Partially due to the joint-free conductors the Multiconductor **is well suited for control current and data transfer**; eventually whilst using silver-plated conductors. Contact your AKAPP-STEMMANN supplier on this subject.

Special material conductors

The concept of the Multiconductor system allows the application of other metal apart from copper. For example silver-plated copper (advantageous for data transfer!).

Installation of the copper conductors

Following the installation of the conductor housings the flat copper conductors can easily be drawn into the copper channels directly from the cable drum. This can be easily and quickly effected by means of the copper pulling cassette, pulling block and pulling attachment, available as an option.

A simple stretchblock is supplied for conductors CU125 and CU160. This is designed to make installation easier and also to reduce any resistance on very long installations.

Volt drop in copper conductors. By virtue of the continuous conductor concept, Volt drop in the AKAPP Multiconductor system is kept to an absolute and constant minimum.

With a power factor ($\cos. \varphi$) of < 1 the figures mentioned in the adjacent table have to be changed accordingly, e.g. with $\cos \varphi = 0.85$ the Volt drop figures have to be multiplied by 0.85.



For applications where higher temperatures exist, the resistance, and therefore the Volt drop, increases.

Solution: using next size copper conductors.

Volt drop in V /meter Multiconductor/ A nominal current, $\cos \varphi = 1, +20^\circ \text{C}$ ambient

copper conductor	3 phase ~	1 phase ~ and =	When utilizing 2 copper conductors in parallel the volt drop values in the table will be halved. On request, impedance data can be supplied.
CU35 *	0.00588	0.00679	
CU50	0.00339	0.00391	
CU80	0.00217	0.00251	
CU 125	0.00119	0.00138	
CU 160	0.00092	0.00106	

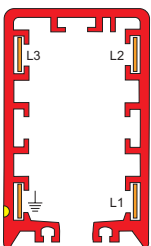
With + 35 °C multiply by 1.079;
with + 45 °C x 1.118;
with + 55 °C x 1.157.

* Copper conductors 35A can not be combined with expansion joints

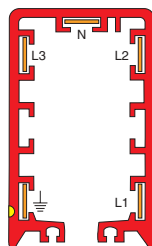
Arrangement of the copper conductors

Whilst using the standard conductor housings and the 5 different copper conductors, a vast array of combinations is possible.

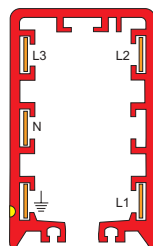
Please find some examples below. Attention: the earth conductor is always located at the yellow marker strip!



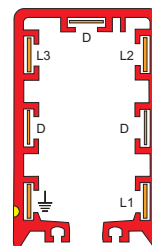
standard
4-pole



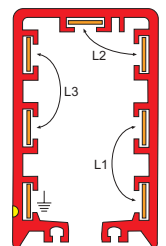
standard
5-pole



5-pole, for
installations
with curves



3 phase+earth and
3 conductors D for
control and data



per phase 2
conductors in
parallel+earth

AKAPP Art.no.	DESCRIPTION	max In (A) (ID=80%)	dimension mm (b x d)	linear expans. K ⁶	DC current resistance Ω /m	specific conductance (ρ) Sm/mm ²	max. length track part Δ t ≤ 25 °C	max. length track part Δ t > 25 °C	max. speed (m/m)
1002170	Copper conductor 35A CU35	35	12,7 x 0,4	1,70	0,003444882	58	90	60	80
1002560	Copper conductor 50A CU50	50	12,6 x 0,7	1,70	0,001984127	58	525	525	N/A
1002640	Copper conductor 80A CU80	80	12,5 x 1,1	1,70	0,001272727	58	325	325	N/A
1002720	Copper conductor 125A CU125	125	12,5 x 2,0	1,70	0,0007	58	200	200	N/A
1002870	Copper conductor 160A CU160	160	12,5 x 2,6	1,70	0,000538462	58	150	150	N/A
1003370	Silvered copper conduct.CU50AG	50	12,6 x 0,7	1,70	0,001984127	58	525	525	N/A

Hanging and fixation of the housing: free expansion at all times!

The principle of the AKAPP conductor bar systems with uninterrupted conductors is based on the free expansion of the pvc housing and the internal conductors. The conductor housing is therefore suspended in sliding hangers in which these conductors - upon the occurrence of differences of expansion - can slide continuously and who are fixed at the feed point only by means of a **fixed point clamp** at the construction. Sliding hangers and fixed point clamps are available in 3 types, for maximal adaption to the environmental conditions. See adjacent frame.

Finishing of metal sliding hangers and joints

Type Z - Galvanised, for **normal indoor installations**.

Type L - Galvanised + epoxy coated, for **outdoors and corrosive environments**.

Type R - Stainless steel AISI304, for **corrosive environments**.

Type LR - As Type L, but with stainless steel bolts and nuts

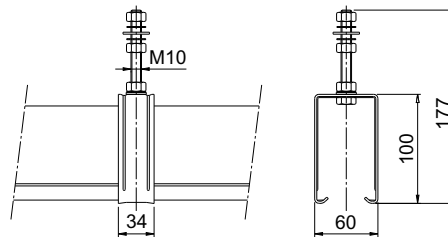
Sliding hanger

Type BN7-Z, Type BN7-L, Type BN7-R, and Type BN7-LR

The sliding hangers are fastened to the suspension frame by means of a bolt. As such the installation can be **aligned vertically**.

Centre distance of hanger supports:

- 1333 mm : travel speed up to 250 m/min.;
- 1000 mm : travel speed up to >250 m/min.;
- 2000 mm : with CU35, CU50, CU80, for 6- and 7-pole installations up to a max. ambient temperature difference of 40 °C.

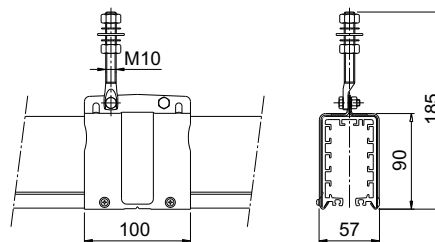


BN7-L

Fixed point clamp

Type VMN7-Z, Type VMN7-L, Type VMN7-R, and Type VMN7-LR

The complete conductor installation is to be fastened to the suspension frame by means of a self-gripping fixed point clamp. As of this location, the conductor housing can slide freely in the bow conductors when expansion differences, due to temperature variation, occurs.



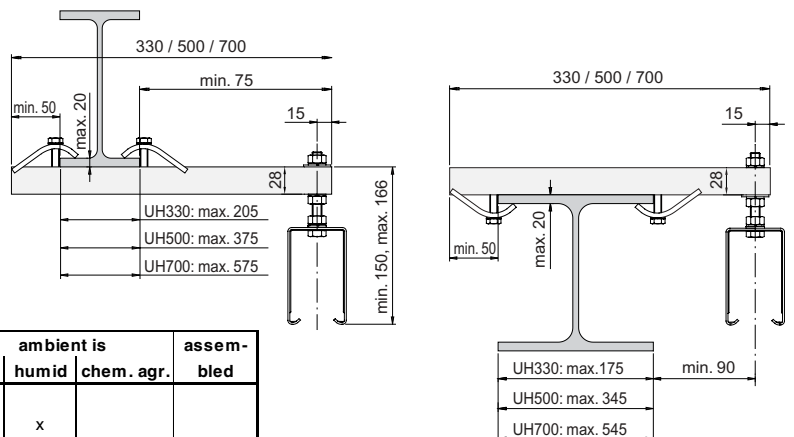
Support bracket

Type UH330 : l=330 mm, galvanised

Type UH500/(R): l=500 mm, galvanised/(RVS)

Type UH700/(R): l=700 mm, galvanised/(RVS)

Special length on request. These brackets have clamps attached to sliding nut assemblies thus facilitating a flexible mounting arrangement capable of accomodating various sizes of RSJ (INP) beams, allowing simple **horizontal alignment**.



AKAPP NO.	DESCRIPTION	ambient is			assembled
		dry	humid	chem. agr.	
1004570	Sliding hanger galvan. BN7-Z	x			
1004650	Sliding hanger epoxy c. BN7-L		x		
1004420	Sliding hanger galv.+epox., A2 BN7-LR			x	
1005540	Sliding hanger A2/304 BN7-R			x	
1005200	Rolling hanger galvanised RB7	x			
1004571.B0000	Sliding hanger galvan., assembled ABN7-Z	x			x
1004651.B0000	Sliding hanger epoxy c., assembled ABN7-L		x		x
1004421.B0000	Sliding hanger galv.+epox., A2 ABN7-LR			x	x
1004391.B0000	Sliding hanger A4/316 assembled ABN7-R			x	x
1004960	Fixed point clamp galv. VMN7-Z	x			
1005070	Fixed point clamp galv.+epoxy coating VMN7-L		x		
1005310	Fixed point clamp galv.+epox., A2 VMN7-LR			x	
1005770	Fixed point clamp A2/304 VMN7-R			x	

AKAPP NO.	DESCRIPTION	length (mm)	SS
1018010	Support bracket 330mm UH330	330	
1018160	Support bracket 500mm UH500	500	
1018320	Support bracket 700mm UH700	700	
1018370.B0000	Support bracket 330mm UH330-R	330	x
1018380	Support bracket 500mm UH500-R	500	x
1018390	Support bracket 700mm UH700-R	700	x

Joint clamps:

for the easy connection of conductor housings

The lengths of the housing are connected by means of standard joint clamps. There are 2 variations:

- standard metal joint clamp
- Noryl expansion joint clamp

Metal joint clamps are available in 4 types, to ensure a maximum tuning to the operating conditions. Also refer to the upper right frame on page 4.

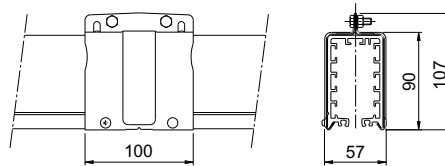


VN7-Z

Joint clamp

Type VN7-Z, Type VN7-L, Type VN7-R, and Type VN7-LR

The conductor housings are connected by means of a self-gripping joint clamp. The self-locking screws, as supplied, ensure an extra firm connection, if required.



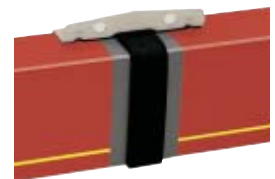
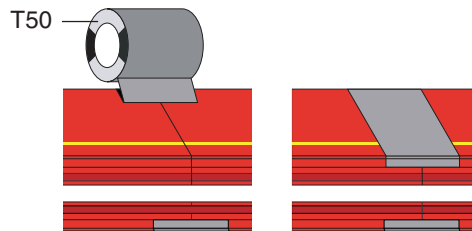
VN7-L

Insulating tape

Type T50 (50 mm width, roll of 10 m)

This adhesive tape is used to ensure a permanent shroud around the housing joints, prior to fitting the joint clamps, for both indoor and outdoor installations.

1 roll is sufficient for 35 joints.

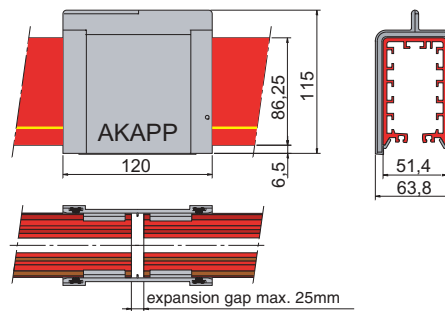


AB25

Sealing tape

Type AB25 (25 mm width, 230 mm length)

For outdoors and installations in humid or corrosive environments this adhesive sponge rubber tape should be fitted around the joint, additional to the tape T50 for extra protection. 1 piece required per joint.



KEV7

Expansion joint

Type KEV7

This Noryl expansion joint is applied when a free expansion of the Multiconductor from one fixed point is not possible. E.g. with very long installations, tracks in which there are several current supply connections, closed curved tracks, etc.

The PVC housing is then fixed to the support construction with a fixed point clamp adjacent to an expansion gap at recommended positions.

The rubber sealing at the inner side of the synthetic expansion joint clamp, together with the continuous AS7 sealing strips, also allows **installations outdoors.**

Installations with expansion joints require collector trolleys type “../E” (see page 11).

AKAPP NO	DESCRIPTION	ambient is			with VN7-	with VN7- and humidity	U max with humidity	max. free expansion in joint (mm)
		dry	humid	chemical aggressive				
1004730	Joint clamp galvanised VN7-Z	x				400V	0	
1004810	Joint clamp galv.+ epox. VN7-L		x			400V	0	
1004340	Joint clamp galv.+epox., A2 VN7-LR			x		400V	0	
1005620	Joint clamp stainl. steel A2/304 VN7-R			x		400V	0	
1006040	Insulating tape 10m x 50mm T50				x		0	
1005850	Sealing tape 22.5cm AB25-22.5					x	0	
1005460	Expansion joint clamp KEV7	x	x	x		400V	20	

Feed boxes

for end- and line feed

The fixed feed can be connected to the AKAPP collector trolley system as of nearly each point.

Feed boxes for end feed as well as for line feed are available. Furthermore connection possibilities for various cable diameters are available as well.

The standard possibilities are listed below.



AK7-28 (opened)

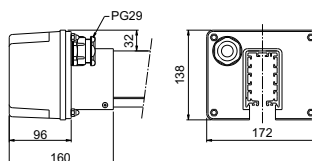
End feed boxes

Type AK7-28

For connecting the supply cable to the copper conductors at the end of the Multiconductor system (see photo). Connecting screws included.

Type AKHT-29

Similar to type AK7-28, but suitable for higher ambient temperatures (see label below).



AK7-28

Line feed boxes

Type LK28

For connecting the supply cable to the copper conductors at any position along the Multiconductor system. The supply cable is connected to the line feed housing (length 1 m). See also page 9.

Standard gland PG28 (for cables Ø10-28 mm).

Type LKHT29

Similar to type LK28, but suitable for higher temperatures (see table below).

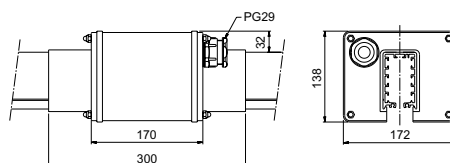
Type LK21-4

Provided with 4 glands PG21, for feeding and control cables Ø10-21 mm. To be applied in combination with transition box OGV (see pag. 8).

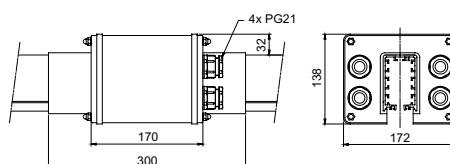
Type LK21-7

Similar to LK21-4, but with 7 glands PG21, divided over sides of the box. To be applied in combination with transition box OGV (see pag. 8).

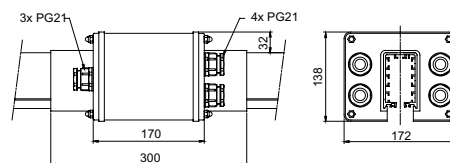
Special arrangements and gland sizes on request.



LK28



LK21-4



AKAPPNO.	DESCRIPTION	max temp. (°C)	max. outer diametre of feeding cable (mm)	I max (100% ID) in parallel (A)	I max (100% ID) non parallel (A)	max. surface in parallel (mm ²)	protection degree
1006510	End feed box 10-28mm AK7-28	60	28	71,56	112	8,82	IP44
1007010	End feed box for RNHT7 AKHT7-29	80	28	71,56	112	8,82	IP44
1012050	Line feed box 10-28mm LK28	60	28	71,56	112	n/a	IP44
1010040	Line feed RNHT7 10-28mm LKHT-29	80	28	71,56	112	n/a	IP44
1011550	Line feed box w. 4x Pg21 LK21-4	60	n/a	286	286	n/a	IP44
1011240	Line feed box for RNHT7 LKHT21-4	80	n/a	286	286	n/a	IP44
1011710	Line feed box w. 7x Pg21 LK21-7	60	n/a	286	286	n/a	IP44
1011320	Line feed box for RNHT7 LKHT21-7	80	n/a	286	286	n/a	IP44

Line feed housings: always a solution that fits!

A line feed housing is to be used in combination with a line feed box. There are 2 performances:

LRNK7: 1 piece of 1 m, supplied with 7 notches in which the feed clamps VKK or VKG (to be ordered separately) fit (see also page 8).

LRN7 : 2 pieces of housing 0,5 m each, with 7 notches for protruding copper conductor ends. Necessary only if a track section exceeds the maximum length of the copper conductor on the roll.

A line feed housing is mounted by means of 2 joint clamps in the Multiconductor and is secured to the support construction by 2 fixed point clamps.

Apart from the line feed housings listed below, other performances, e.g. for curved sections or for special circumstances, or available on request. Please consult your AKAPP-STEMMANN supplier for more information on this.

Line feed housing types LRNK

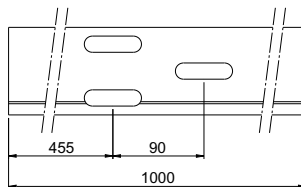
Type LRNK7

1 piece of housing 1 m length, with 7 notches for feed clamps VKK.



Type LRNK7W-V

Similar to LRNK7, but colour white.

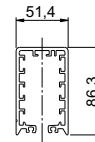


Type LRNKHS7-V

Similar to LRNK7 but with distance strips, for Multiconductor type RNHS7.

Type LRNKHS7W-V

Similar to LRNKHS7-V, but colour white.

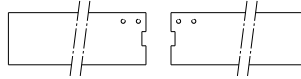


LRNK7

Line feed housing types LRN

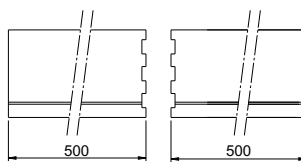
Type LRN7

2 pieces of housing 0,5 m each, with 7 notches for protruding copper ends.



Type LRNV7

Similar to type LRN7, but suitable for higher temperatures (see table).



Type LRN7-W

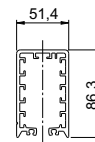
Similar to type LRN7, but colour white.

Type LRNHS7

Similar to LRN7 but with distance strips, for Multiconductor type RNHS7.

Type LRNHS7-W

Similar to LRNHS7, but colour white.



LRN7

LINE FEED HOUSINGS: AKAPP NO.	DESCRIPTION	red	white	grey	length m	min. temp. °C	max. temp. °C	max. poles	rubber sealing AS7 insertable	HS, extra protection	with end feed
1007550	PVC housing red 200mm RAKHS7	x			0,2	-30	60	7	x	x	x
1007590	PVC hous. w hite 200mm RAKHS7W		x		0,2	-30	60	7	x	x	x
1012910	Line feed hous. red 1m LRNK7	x			1	-30	60	7	x		
1012990	Line feed housing LRNK7W-V		x		1	-30	60	7	x		
1012210	Line feed housing LRNKHS7-V	x			1	-30	60	7	x	x	
1012400	Line feed housing LRNKHS7W-V		x		1	-30	60	7	x	x	
1013490	Line feed hous.Vicat1mLRNKV7-V			x	1	-20	80	7	x		
1013020	Line feed hous.red 2x0.5m LRN7	x			1	-30	60	7	x		
1015000	Line feed housing LRNV7			x	1	-20	80	7	x		
1012170	Line feed housing w hite LRN7W		x		1	-30	60	7	x		
1013250	Line feed housing 2x,5m LRNHS7	x			1	-30	60	7	x	x	
1012200	Line feed housing LRNHS7W		x		1	-30	60	7	x	x	

Connecting the copper conductors: skilful solutions with clamps and boxes

All line feed housing types LRNK7 require feed clamps to connect the copper conductors to the cores of the supply cable.

There are 2 types: VKK and VKG.

For doubling current capacities, parallel connection plates for copper conductors are available. To be used with end feed or line feed (line feed housing LRN7 only).



VKK

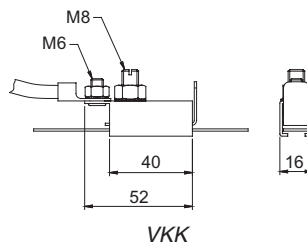
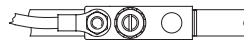
Feed clamps

Type VKK

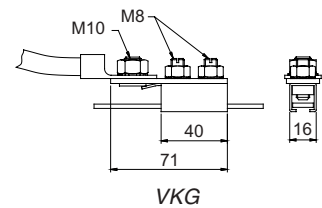
To be applied for mounting copper conductors Cu35 - Cu80.

Type VKG

To be applied for mounting copper conductors Cu125 - Cu160.



VKK



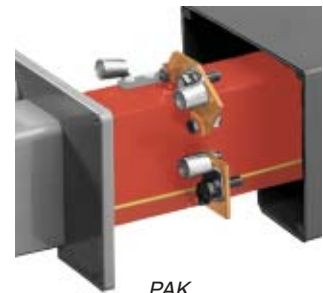
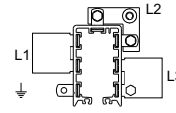
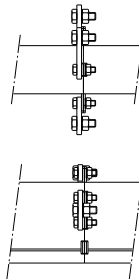
VKG

Parallel connections copper conductors for doubling current capacities

Type PAK

For end feed AK7-28 and for line feed with LRN7. Current capacity up to 100A (2x50).

For current capacities 160A (2x80), 250A (2x125) en 320A (2x160) a connecting possibility is provided by use of a transition box OGV320 (see below).

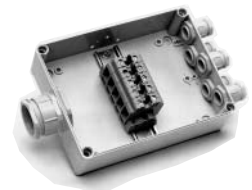
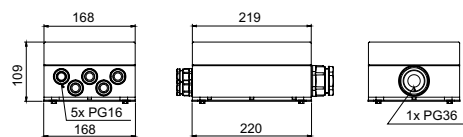


PAK

Transition boxes for for feed connection Multiconductor

Type OGV125

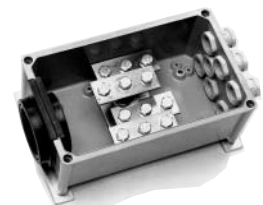
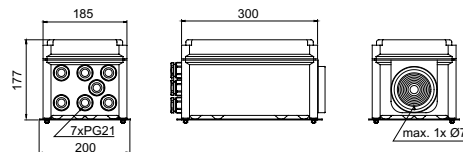
Complete with 5 terminals 25 mm², 5 glands PG16 and 1 gland PG36.



OGV125

Type OGV320

Complete with 2x5 bolts M10 for cable lug connections, 7 glands PG21 and a special inlet for cables of Ø20 - Ø75 mm.



OGV320

LINE FEED CLAMPS:	DESCRIPTION	NUMBER	max. current (A) (100% ID)	with type line feed housing
AKAPP NO.				
1012750	Feed clamp small VKK	1 per conductor	72	LRNK
1012710	Feed clamp large VKG	1 per conductor	179	LRNK

PARALLEL CLAMP:	DESCRIPTION	NUMBER	max. current (A) (100% ID)	with type feed housing	installation parallel
AKAPP NO.					
1008670	Doorverbindingsstrip, ZAK-PAK	1 per installation	112	LRN. or end feed	x

TRANSITION BOXES:	DESCRIPTION	NUMBER	max. current (A) (100% ID)	protection degree
AKAPP NO.				
1010820	Transition box OGV125	1 per installation	111,8	IP44
1010510	Transition box OGV320	1 per installation	286,3	IP44

Other components: end caps, inspection units

An end cap is to be mounted for sealing off the open ends of a Multiconductor system.

In order to eliminate length differences between copper conductors and pvc housing due to temperature variations, it is important that the conductors have sufficient length within the end cap. For installations with extreme length differences, extra long end caps can be applied. Your AKAPP-STEMMANN supplier can advise you further on this subject.

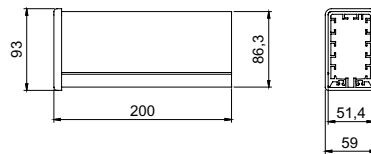
An inspection unit is fitted with 2 joint clamps VN7 in Multiconductor installations where inspection of the trolley is not possible by removing an end cap or end feed. E.g. on endless curved tracks or on applications where several collector trolleys are fitted, or where a special location area for the inspection is available.

Alternatively, a special wooden wedge set can be used for taking out and inserting a trolley. Both possibilities are described on this page.

End caps

Type EN7

Length 200 mm. Attached to the housing by means of a joint clamp (to be ordered separately). See photo.



Type EN7-W

Similar to EN7, but colour white.

Type ENHS7

For Multiconductor RNHS7, with distance strips.

Type ENHS7-W

Similar to ENHS7, but colour white.

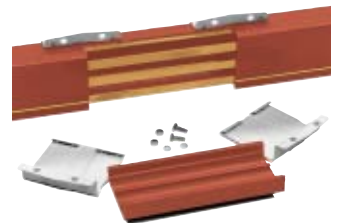
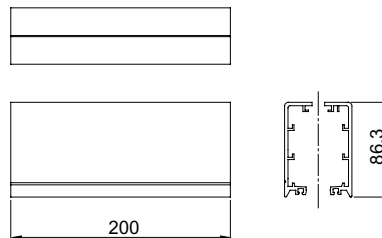
Type ENV7

For Multiconductor RNV7. Similar to EN7, but for temperature range -20 °C to +80 °C. Colour grey white.

Inspection unit

Type UN7

Length 200 mm. The inspection unit is fitted with 2 joint clamps VN7 in Multiconductor installations. Inspection units for **curves** can be supplied on request.



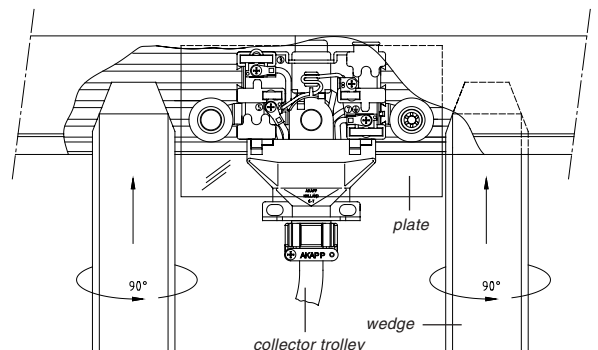
Type UNHS7

For Multiconductor RNHS7.

Wooden wedge set

Type OBA

For fast taking out and inserting trolleys at almost any location of a Multiconductor installation. The set consists of two wooden wedges with two pvc plates. By inserting the wedges into the housing and then turning it, the housing will widen and the trolley can be taken out easily. When inserting the trolley again, the two plates can be used to guide it into the housing.



AKAPP NO.	DESCRIPTION	length (m)	red	white	grey	linear expansion K ⁶	max. poles	IP23	sealing rubber AS7 applicable	HS, extra protection
1014140	End cap red EN7	0,20	x			7	7	x	x	
1014800	End cap white EN7W	0,20		x		7	7	x	x	
1014370	End cap red for RNHS7 ENHS7	0,20	x			7	7	x	x	x
1014400	End cap white for RNHS7W ENHS7W	0,20		x		7	7	x	x	x
1014690	End cap for RNV7 ENV7	0,20			x	7	7	x	x	
1015030	Inspection unit red UN7	0,20	x			7	7		x	
1015260.B0000	Inspection unit red for RNHS7 UNHS7	0,20	x			7	7		x	x

Other components: standard collector trolleys

The current conduction of the Multiconductor to the device to be fed is effected through the collector trolley. The contact with the flat copper conductors is maintained uninterruptedly by means of flexible, extreme wear-resistant carbon brushes manufactured from a specific bronze-coal alloy. The collector trolley is pulled into the Multiconductor by the device to be fed and by means of a trolley towing arm mounted onto the device. The uninterrupted copper conductors of the Multiconductor system ensure **extreme high traverse speeds**.

The standard collector trolleys, supplied with low wear Nylon wheels, are suitable for **traverse speeds** up to **100 m/min**. For **higher traverse speeds**, for **heavy duty** and/or for **dusty environments** the collector trolleys are fitted with **dust proof, ball bearing, steel wheels** (type "S"). See also special current collectors, page 11. For **traverse speeds > 250 m/min**, special instructions with regard to the Multiconductor installation are applied. Please consult your AKAPP-STEMMANN supplier.

Standard collector trolleys

Multiconductor collector trolleys are available for range 2 to 7 conductors with current carrying capacities of **35A**, **70A** and **100A** (duty cycle 60%) or **27,11A**, **54,22A** and **77,46A** (duty cycle 100%).
Applicable up to -20°C (types ../LT up to -30°C).

These collector trolleys are fitted as standard with a supply cable. The connection with the apparatus/machine to be fed is via a transition box (ordered separately) which can be located adjacent to the collector trolley towing arm position (see page 13).

Selection chart of standard collector trolleys + transition boxes

A max.	35		70		100	
number of poles	type trolley	type trans. box	type trolley	type trans. box	type trolley	type trans. box
2	CL7-2-35	OG35-7	CL7-2-70	OG70-5	CL7-2-100	OG 100-5
3	CL7-3-35		CL7-3-70		CL7-3-100	
4	CL7-4-35		CL7-4-70		CL7-4-100	
5	CL7-5-35		CL7-5-70	CL7-5-100		
6	CL7-6-35		CL7-6-70	CL7-6-100		
7	CL7-7-35		CL7-7-70	CL7-7-100	OG 100-7	

When application of **2 or 3 separate collector trolleys per apparatus to be fed** (e.g. for transfer installations), the following transition boxes are used:

2 collector trolleys	CL7-2 t/m 5-35	transition box	OG70-5
2 collector trolleys	CL7-6 and 7-35	transition box	OG70-7
2 collector trolleys	CL7-2 t/m 5-70	transition box	OG200-5
2 collector trolleys	CL7-6 and 7-70	transition box	OG200-7
2 collector trolleys	CL7-2 t/m 5-100	transition box	OG300-4
2 collector trolleys	CL7-6 and 7-100	transition box	OG300-7
3 collector trolleys	CL7-2 t/m 5-35	transition box	OG100-5
3 collector trolleys	CL7-6 and 7-35	transition box	OG100-7

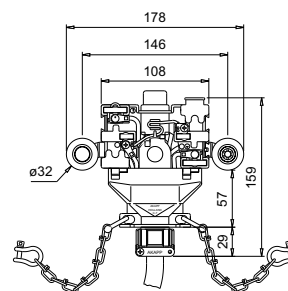
Carbon brushes

The collector trolleys are supplied as standard with carbon brushes for 35A, according to the table below.

The brushes in positions 4 and 5 are both fitted as double brushes ("twin brushes"). Twin brushes are smaller than the others and their capacity is 35A per set. Advantages of this construction are a **perfect balanced** collector trolley and an **improved transmission of control signals**.

CARBON BRUSH TYPES		Standard brushes	Silver graphite brushes*
Application	Brush position in collector trolley	for normal conductors	for silvered conductors
Phase brush** norm.	1,2,3 and 6	K91P	KZ91P
Phase brush** twin	4 and 5	C91D	CZ91A
Ground brush	7	C91A	CZ91A

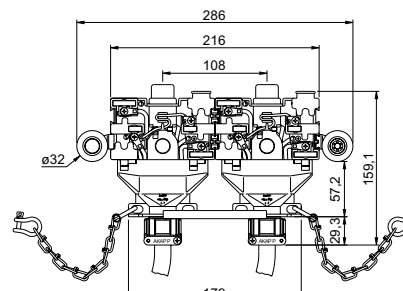
* Silver graphite brushes are softer than the conductors
** Also suitable for DC, data etc.



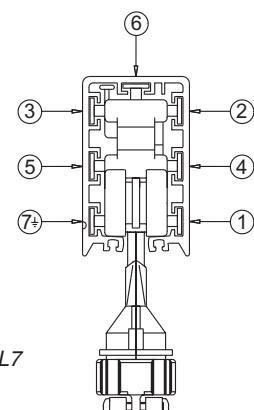
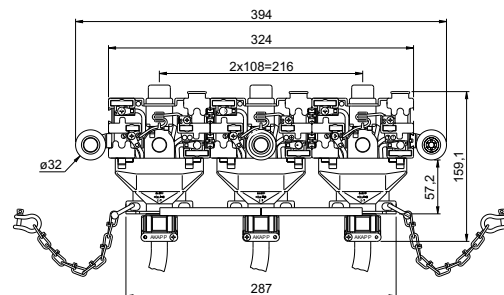
CL7-7-35



CL7-7-35/SE



CL7-7-70



Schedule brush positions in CL7

Other components: more on collector trolleys

Apart from the numerous models of the standard collector trolleys, a vast array of special models are possible and available.

The collector trolleys of the CL7 series can easily be adapted to **exceptional** circumstances such as installations with **very high traverse speeds, transfer guides, curves, expansion gaps** etcetara.

In many cases, the available pre-mounted wheel sets make the right adaption. The dove-tail construction makes it very easy to install or exchange the wheel sets and create the

trolley that fits the specific needs. You can of course also order trolleys with the adaptations you need. In the table below, an overview of the possibilities is listed, together with the respective suffix. Please refer to these suffixes when ordering.

For unlisted models, please contact your supplier of AKAPP-STEMMANN.

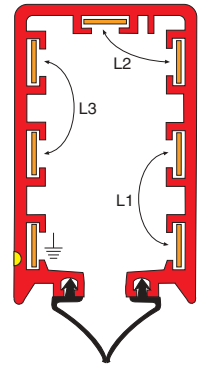
Current collector trolleys series S(L)7 and NLHS7 are available for installations with **curves** or **housing type HS, extra protection**.

Current collecting capacity doubles when parallel connecting copper conductors.

A Multiconductor with 7 copper conductors offers the opportunity to double the current capacity when 3 phase ~, by application of 2 conductors per phase in parallel. The 7th conductor is utilised for the earth supply. The extra capacity is also reflected with regard to the selection of suitable collector trolleys.

Selection chart of 7-pole trolleys and transition boxes for installations with copper conductors in parallel for 3 phase+earth feed.

A max.	type trolley	number of poles	type trans. box
70	CL7-7-35	7	OG70-5
140	CL7-7-70	7	OG140
200	CL7-7-100	7	OG300-4
280	CL7-7-70 2 pcs	7	OG300-4



Collector trolleys for special applications

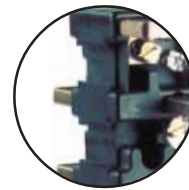
There is a number of possibilities to adapt the standard current collector series CL7. Wheel sets are available that can be mounted or exchanged easily by means of dove-tail connections (see photo).

In the table below a number of special performances is listed with its respective suffix.

Performance	Type	Performance	Type
Expansion (KEV's)	CL7-.../E	Low temperatures *	CL7-.../LT
Top wheels	CL7-.../T	90 degree gland	CL7-.../HWK
Side and top wheels	CL7-.../TZ	Silver graphite brushes	CL7-.../AG
Dust proof wheels	CL7-.../S	Special cable length	CL7-.../M
High travel speeds *	CL7-.../S	Transfer guide (ITKN)	CLTK7-.../...
For galvanising plants	CL7-.../G	Transfer guide (ITN)	CLTG7-.../...

* from 100 m/min.

* up to -30 °C



Dove-tail connections



Extra wheel (../E)



Top wheels (beared ../T/S, or not beared ../T)



Double top wheels with side wheels (../TZ)

Collector trolleys for Multiconductor RNHS7

Type NLHS7-...-

For Multiconductor type RNHS7 special trolleys with an elongated lower moulding are utilised.

Collector trolleys for curves

Type S7-...-35

For installations with curves of a radius < 800 mm, special flexible current collectors are required. See also page 16. More information via your AKAPP-STEMMANN supplier.



NLHS7-5-35 (for RNHS7)



S7-4-35 (for BRN7)

Other components:

towing arms, transition boxes for trolleys

A towing arm is attached to the moving machinery and connected to the collector trolley via chains.

The arrangement is such that when pulling in either direction one of the collector towing chains is taut, the other remaining slack. In this way lateral movements of the crane, hoist, etc. are not transmitted to the trolley.

This tolerance provides ultimate **security of service!**

Attention: The towing connector on the arm should be installed 10 mm lower than the towing connection on the trolley in the highest position and at 30 mm lower than the towing connection on the trolley in the lowest position and should be aligned directly below the housing opening in the vertical plane.

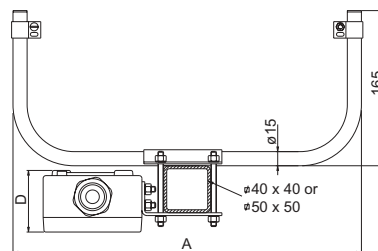
A transition box can be mounted on the towing arm or close by the apparatus/machine. This unit facilitates the connection of the flexible cable from the collector trolley with the fixed wiring from the apparatus/machine being fed.

Standard performances towing arms

Type BMV35 for collector trolleys 35A

Type BMV70 for collector trolleys 70A

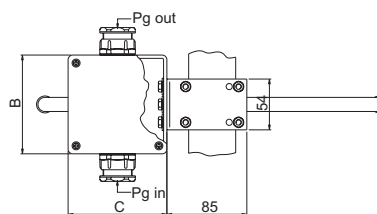
Type BMV100 for collector trolleys 100A



	BMV35 + OG35	BMV70+ OG70	BMV100 + OG100
A	370	505	640
B	105	170	170
C	105	135	135
D	65	85	85
Pg in	1xPg21	2xPg21	3xPg21
Pg out	1xPg21	1xPg29	1xPg36

Types of transition boxes for collector trolleys

type trans. box	dimensions l _w xh mm	connecting terminals	cable inlets
OG35-7	100x100x65	7 pcs 6 mm ²	2 glands PG21
OG70-5 and OG70-7	170x135x85	5 pcs 16 mm ²	2 glands PG21 and
		7 pcs 16 mm ²	1 gland PG29
OG100-5 and OG100-7	170x135x85	5 pcs 35 mm ²	3 glands PG21 and
		7 pcs 35 mm ²	1 gland PG36
OG140	220x165x105	4 pcs 50 mm ²	2 glands PG21 1 gland PG36
OG200-5 and OG200-7	330x140x180	5 bolts M10	4 glands PG21 and 1 special inlet
		7 bolts M10	20-70 mm \varnothing
OG300-4 and OG300-7	330x190x180	4 bolts M10	6 glands PG21 and 1 special inlet
		7 bolts M10	20-70 mm \varnothing



BMV35 + OG35-7



BMV70 + OG70-7



BMV100 + OG100-7

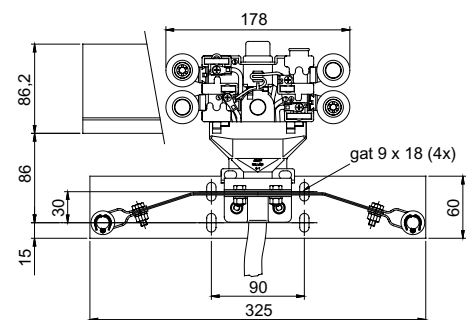
When using the transition boxes OG200 and OG300 the cables of the collector trolleys are connected utilising the cable bushes supplied.

The boxes OG35-7 up to OG140 can be mounted directly on the fastening clamp of the towing arm type BMV. The boxes OG200 and OG300 are supplied with 2 mounting strips, which can be easily welded or screwed to the apparatus to be fed.

Spring loaded towing arm

For installations with large transfer guides (type ITN7, see page 14) special spring loaded towing arms are supplied (see picture).

Type MVSP35 for trolleys 35A



CL7-7-35 + BMVSP

Overview standard collector trolleys, towing arms and transition boxes

In the chart below you can view the most common standard collector trolleys of the series CL7 and NLHS7. The AKAPP reference numbers and some details are listed for each type.

This overview however does not show all possibilities. For further information on this (see also page 11), we recommend you to contact your AKAPP-STEMMANN supplier.

The other charts show all towing arms and transition boxes including their reference numbers.

Selection chart standard collector trolleys

AKAPP NO.	DESCRIPTION	max In (A) (ID=100%)	number of poles	max. speed m/min.	APPLICABLE FOR						
					expansion joint (KEV)	transfer guides ITN7	transfer guides ITKN7	HS, extra protection	silvered	vertical	
1088470	Collector trolley + cable CL4-35	27,11	4	80	-	-	-	-	-	-	
1089360	Collector trolley + cable CL4-70	54,22	4	80	-	-	-	-	-	-	
1089750	Collector trolley + cable CL4-100	77,46	4	80	-	-	-	-	-	-	
1093440.0	Collector trolley + cable CL7-4-35	27,11	4	100	-	-	-	-	-	-	
1093510.0	Collector trolley + cable CL7-5-35	27,11	5	100	-	-	-	-	-	-	
1093580.B0000	Collector trolley + cable CL7-6-35	27,11	6	100	-	-	-	-	-	-	
1093650.0	Collector trolley + cable CL7-7-35	27,11	7	100	-	-	-	-	-	-	
1093860.0	Collector trolley + cable CL7-4-70	54,22	4	100	-	-	-	-	-	-	
1093930.B0000	Collector trolley + cable CL7-5-70	54,22	5	100	-	-	-	-	-	-	
1094000.B0000	Collector trolley + cable CL7-6-70	54,22	6	100	-	-	-	-	-	-	
1094070.0	Collector trolley + cable CL7-7-70	54,22	7	100	-	-	-	-	-	-	
1094280.0	Collector trolley + cable CL7-4-100	77,46	4	100	x	-	-	-	-	-	
1094350.B0000	Collector trolley + cable CL7-5-100	77,46	5	100	x	-	-	-	-	-	
1094420.B0000	Collector trolley + cable CL7-6-100	77,46	6	100	x	-	-	-	-	-	
1094490.0	Collector trolley + cable CL7-7-100	77,46	7	100	x	-	-	-	-	-	
1094720.0	Collector trolley + cable CLTG7-4-35	27,11	4	100	-	x	-	-	-	-	
1094780.B0000	Collector trolley + cable CLTG7-5-35	27,11	5	100	-	x	-	-	-	-	
1094840.B0000	Collector trolley + cable CLTG7-6-35	27,11	6	100	-	x	-	-	-	-	
1094900.0	Collector trolley + cable CLTG7-7-35	27,11	7	100	-	x	-	-	-	-	
1095120.0	Collector trolley + cable CLTK7-4-35	27,11	4	100	-	-	x	-	-	x	
1095180.B0000	Collector trolley + cable CLTK7-5-35	27,11	5	100	-	-	x	-	-	x	
1095240.B0000	Collector trolley + cable CLTK7-6-35	27,11	6	100	-	-	x	-	-	x	
1095300.0	Collector trolley + cable CLTK7-7-35	27,11	7	100	-	-	x	-	-	x	
1095480.B0000	Collector trolley + cable CLTK7-4-70	54,22	4	100	-	-	x	-	-	x	
1095540.B0000	Collector trolley + cable CLTK7-5-70	54,22	5	100	-	-	x	-	-	x	
1095600.B0000	Collector trolley + cable CLTK7-6-70	54,22	6	100	-	-	x	-	-	x	
1095660.0	Collector trolley + cable CLTK7-7-70	54,22	7	100	-	-	x	-	-	x	
1095840.B0000	Collector trolley + cable CLTK7-4-100	77,46	4	100	-	-	x	-	-	x	
1095900.B0000	Collector trolley + cable CLTK7-5-100	77,46	5	100	-	-	x	-	-	x	
1095960.B0000	Collector trolley + cable CLTK7-6-100	77,46	6	100	-	-	x	-	-	x	
1096020.0	Collector trolley + cable CLTK7-7-100	77,46	7	100	-	-	x	-	-	x	
1072020.B0000	Coll. trolley for RNHS7 NLHS7-4-35	27,11	4	100	-	x	x	x	-	-	
1072170.B0000	Coll. trolley for RNHS7 NLHS7-5-35	27,11	5	100	-	x	x	x	-	-	
1072250.B0000	Coll. trolley for RNHS7 NLHS7-6-35	27,11	6	100	-	x	x	x	-	-	
1072330.0	Coll. trolley for RNHS7 NLHS7-7-35	27,11	7	100	-	x	x	x	-	-	
1076820.B0000	Coll. trolley for RNHS7 NLHS7-4-70	54,22	4	100	x	x	x	x	-	-	
1076970.B0000	Coll. trolley for RNHS7 NLHS7-5-70	54,22	5	100	x	x	x	x	-	-	
1077010.B0000	Coll. trolley for RNHS7 NLHS7-6-70	54,22	6	100	x	x	x	x	-	-	
1077160.B0000	Coll. trolley for RNHS7 NLHS7-7-70	54,22	7	100	x	x	x	x	-	-	
1080430.B0000	Coll. trolley for RNHS7 NLHS7-4-100	77,46	4	100	x	x	x	x	-	-	
1080510.B0000	Coll. trolley for RNHS7 NLHS7-5-100	77,46	5	100	x	x	x	x	-	-	
1080660.B0000	Coll. trolley for RNHS7 NLHS7-6-100	77,46	6	100	x	x	x	x	-	-	
1080740.B0000	Coll. trolley for RNHS7 NLHS7-7-100	77,46	7	100	x	x	x	x	-	-	

Selection chart towing arms

AKAPP NO	DESCRIPTION	FOR CURRENT COLECTOR TYPE
1019050	Towing arm BMV35	...-35
1019130	Towing arm BMV70	...-70
1019210	Towing arm BMV100	...-100
1018940	Towing arm, stainl.st. BMV35-R	...-35
1019830	Towing arm, stainl.st. BMV70-R	...-70
1019910	Towing arm, stainl.st. BMV100-R	...-100
1019440	Spring loaded arm MVSP35	...-35

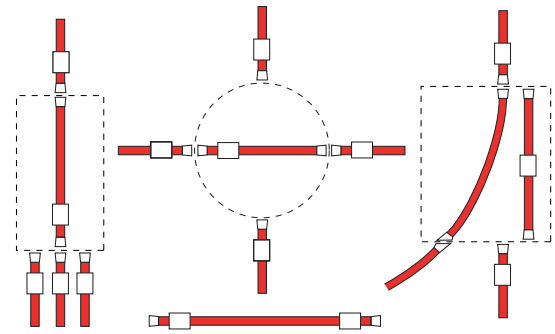
Selection chart transition boxes

AKAPP NO.	OMSCHRIJVING
1009410.E0000	Transition box for coll.trolleys OG35-5
1009410.0	Transition box for coll.trolleys OG35-7
1009560.E0001	Transition box for coll.trolleys OG70-5
1009640.0	Transition box for coll.trolleys OG70-7
1009720.0	Transition box for coll.trolleys OG100-5
1009870.0	Transition box for coll.trolleys OG100-7
1009950.0	Transition box for coll.trolleys OG140
1010120.0	Transition box for coll.trolleys OG200-5
1010270.0	Transition box for coll.trolleys OG200-7
1010350.0	Transition box for coll.trolleys OG300-4
1010430.0	Transition box for coll.trolleys OG300-7

Other components: transfer guides

These units are for the passage of collector trolleys through conductor transfers on e.g. turn or slide switches (see drawing). The type is related to the mechanical tolerance of the transfer system itself.

The correct execution of a transfer guide shall be detailed by your AKAPP-STEMMANN supplier after receipt of a clear description and a situation drawing of the installation to be fed.

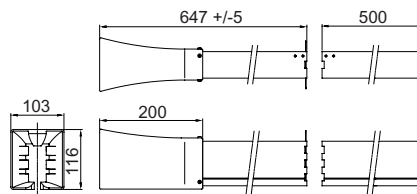


Type ITN7

Suitable for mechanical tolerances vertical and horizontal planes of less than 10 mm; infinite gap.

Type ITNHS7

for Multiconductor RNHS7

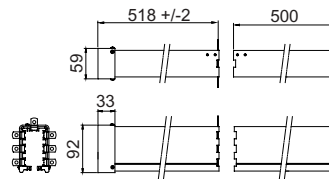


Type ITKN7

Suitable for mechanical tolerances, vertical and horizontal planes less than 2 mm and gap less than 3 mm.

Type ITKNHS7

for Multiconductor RNHS7



N.B.1. It is important to consider the travel speed on transfer systems.

N.B.2. The transfer guides are not suitable for switching higher currents.

This transfer guide includes: 1 trumpet to which is fitted 500 mm of line feed housing LRN7 (page 7), in which are already fitted copper conductors CU 125 (ITN7) or CU80 (ITKN7), 500 mm of line feed housing LRN7, to attach the transfer guide section to the Multiconductor. To be ordered separate: a line feed box for shrouding the connection between the trumpet line feed housing and the line feed housing (this position can be used for connecting the supply cable) and 2 fixed point clamps placed each side of the line feed.

AKAPP NO.	DESCRIPTION	left	right	space between transf. guides <= 3mm	vertical tolerance <= 2mm	horizontal tolerance <= 10mm	red	white	m	linear expansion.	min. temp. °C	max. temp. °C	max. number of poles	protection degree IP23	sealing strips AS7 applicable	HS, extra protection	max. space between 2 transf. guides mm
1016310	Transfer guide, large red ITN7-L	x					x		1,15	7	-30	60	7	x	x		n/a
1016540	Transfer guide, large red ITN7-R		x				x		1,15	7	-30	60	7	x	x		n/a
1017830.B0000	Transfer guide large, white ITN7W-L	x						x	1,15	7	-30	60	7	x	x		n/a
1017840.B0000	Transfer guide large, white ITN7W-R		x					x	1,15	7	-30	60	7	x	x		n/a
1016770.B0000	Transfer guide large ITNHS7-L for RNHS7	x					x		1,15	7	-30	60	7	x	x	x	n/a
1017510.B0000	Transfer guide large ITNHS7-R for RNHS7		x				x		1,15	7	-30	60	7	x	x	x	n/a
1016630.B0000	Transfer guide vicat ITNV7-L	x							1,15	9	-20	80	7	x	x		n/a
1016640.B0000	Transfer guide vicat ITNV7-R		x						1,15	9	-20	80	7	x	x		n/a
1017040	Transfer guide, small red ITKN7-L	x		x	x	x	x		7	-30	60	7	x	x			3
1016930	Transfer guide, small red ITKN7-R		x	x	x	x	x		1,025	7	-30	60	7	x	x		3
1017270.B0000	Transfer guide small ITKNHS7-L for RNHS7	x		x	x	x	x		1,025	7	-30	60	7	x	x	x	3
1018710.B0000	Transfer guide small ITKNHS7-R for RNHS7		x	x	x	x	x		1,025	7	-30	60	7	x	x	x	3

Other components: conductor isolation sections

Copper conductor isolation sections are used in the event an electrical division between one single or various conductors for i.e. control, is required.

Two models are available:

SO7 - for electrical isolation of 1 - 7 strips

SO1/SRN1 - for electrical isolation of 1 strip

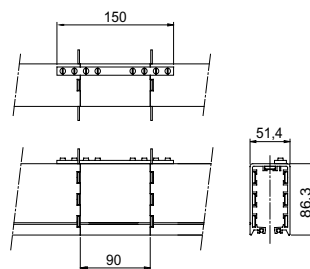
It is important to consider the correct compensation for the expansion differences.

The correct execution of an isolation section shall be detailed by your AKAPP-STEMMANN supplier after receipt of a clear description and a situation drawing of the installation to be fed.

Conductor isolation sections

Type SO7

This isolation section is fitted into a Multiconductor in between 2 line feed housings LRN7 (ordered separately) of 500 mm each. This section is shrouded with one of the line feed boxes (see page 7, ordered separately) on each side of which a fixed point clamp is positioned (2 pc., ordered separately).

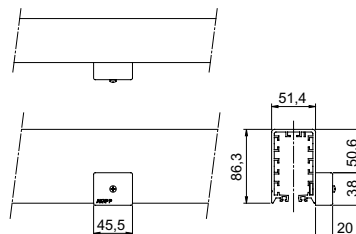


Type SOHS7 for Multiconductor RNHS7.

Special conductor isolation sections:

Type SO1

In case only 1 or 2 isolations in the controlling current conductors are required, these small isolation sections can be used. At the position of the required isolation, slots are made in the housing, through which the copper conductors are bent outwards. A small isolation section is then placed between the conductors after which the assembly is enclosed by a small cover 45x38x20 mm. Connecting of a supply cable is possible by piercing a hole in the cover. When sealed with silicone-mastic (not supplied) this unit is also suitable for outdoor installations.

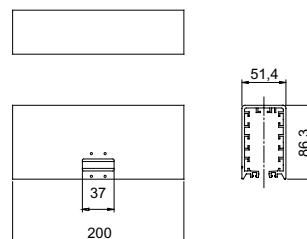


Type SRN1

This prepared housing (200 mm length) is available as an alternative to cutting slots in the standard housing and is fitted in the Multiconductor by means of 2 joint clamps typeVN7.

Type SRNHS7 for Multiconductor RNHS7.

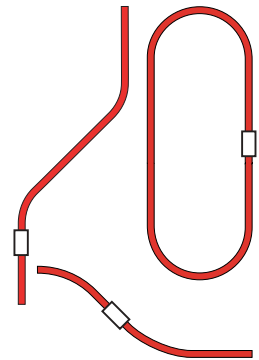
N.B. The conductor isolation section is not suitable for switching higher currents.



Curved tracks: horizontal and vertical

The AKAPP Multiconductor is also used for curved installations such as i.e. at concrete skipper installations. In general the curved segments are made to measure in the required radius.

A correct drawing is therefore of utmost importance. Horizontal curves do not have a marking strip and no anti-reverse rib in the conductor, which implicates that it is not required to take the positioning thereof into consideration with regard the other conductor segments, when ordering.



Curved housings

Type BRN7- . . . (radius)

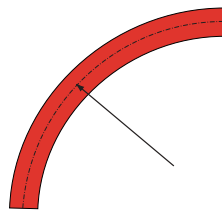
Horizontal curves are available from R=600 mm and vertical curves from R=1800 mm (center sizes, see drawing).

In curves the center distance of the hanger support varies from 600 - 1000 mm.

Vertical curves exist in 2 varieties:

concave: biggest radius at the bottom (=opening) of the housing;

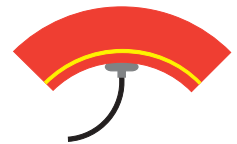
convex: smallest radius at the bottom of the housing. See drawings.



Horizontal curve BRN7



vertical curve, concave



vertical curve, convex

Type BRNHS7- .. (radius)

Curves for Multiconductor RNHS7.

Collector trolleys in installations with curves

We strongly recommend to use only 35A collector trolleys in installations with curves. It is possible to use more collector trolleys in parallel for higher current capacities. For curves with bending radius <800 mm the flexible trolley type S7-...-35 is used (see photo). See also page 11.



Copper conductors in curved tracks

Should, when horizontal curves are applicable, the copper channel in the topside also be used for a copper conductor, these conductors can be supplied as pre-bend. However this depends on radius of the curve as well as on the thickness of the conductors. The same applies for vertical curves and the copper conductors in the side of the Multiconductor. See table below. In all other cases the copper conductors can be rolled directly from the drum through the curves.

Pre-bend strips are required for installations with following conductors and radii:

copper conductor type	curves up to radius R
CU35 *)	1200 mm
CU50 *)	1500 mm
CU80	2000 mm
CU125	2500 mm
CU160	3000 mm

*) Copper conductors Cu35 and Cu50 can not be pre-bend. If required, Cu80 shall be applied in the curve(s).

Installation tools: for optimal efficiency

AKAPP Multiconductor can easily be installed. All components have been designed as such that a combined installation is perfectly suitable.

However several operations during the installation process may be arranged even more efficient if you should opt for the auxiliary tools as detailed below. In a number of cases these tools can be added to the delivery of a **complete installation, free of charge** (refer to the relevant product).

It is of importance to use the products as detailed below, whenever possible. You could save time. Read the instructions carefully and prior to the use of said products.

Should you have any questions, please feel free to contact your AKAPP-STEMMANN supplier. Further information can be obtained via our web site as well (see back cover).

Our Engineering staff could ensure the perfect installation of your AKAPP Multiconductor, if so required. We would be pleased to submit a fitting quotation!

Copper pulling-cassette

This device is included in all new installations of the AKAPP Multiconductor, free of charge.

The copper rolls are placed onto the cassette after which the roll will be rolled off smoothly. The roll is provided with a feed-through aperture. A limiter prevents the rolling off of the roll onto the platform.



Copper pulling-block

In order to smoothen the pulling of the copper conductor into the copper channels of the Multiconductor, a wooden pulling block is included in all new complete installations, **free of charge**. This pulling block includes a drawbar eye into which a rope can be attached. To be used in combination with the aforementioned copper pulling cassette.



Pressing tool for sealing strips

To be used for the easy application of the flexible rubber seal AS7 to the bottom side of the Multiconductor. In one single movement, the rubber strips can be applied to both rubber channels of the Multiconductor.



Copper straightener

It is strongly recommended to use this tool for the easy feeding of the copper conductors 125A and 160A in the Multiconductor. The stretcher eliminates the ridged form of the copper during the feeding thereof. This is mainly of importance with regard to track lengths from approximately 50 meter.



AKAPPNO	DESCRIPTION	length >25m	AS7	HS	CU 125	CU 160
1003610	Pulling block for conductors	x				
1003760	Pressing tool for AS7 Tom Thumb	x	x			
1003800	Press. tool for AS7 for RNHS5/7	x	x	x		
1003920	Straight.device f.copper CU125	x			x	
1003950	Straight.device f.copper CU160	x				x
1039510	Reel with core for AS7	x	x			

AKAPPNO	DESCRIPTION	length >25m	size inner core mm	max. outer diametre Cu mm
1039740	Copper cassette 40cm	x	245	350
1039820	Copper cassette 50cm	x	245	450
1039970	Copper cassette 60cm	x	245	550
1040060	Copper cass. large core 60cm	x	455	550
1040140	Copper cass. large core 70cm	x	455	650
1040220	Copper cass. large core 80cm	x	455	750
1040370	Copper cass. large core 90cm	x	455	850
1040450	Copper cass. large core 1m	x	455	950

More on Multiconductor: technical data and ordering references

General technical data

Nominal voltage: 660 Volt. Under humid conditions and on all outdoor installations for the 6and 7-pole Multiconductor systems: 500 Volt.

For further technical details refer to the components description in this catalogue.

Comprehensive installation instructions will accompany every AKAPP conductor system.

System extensions

It is generally possible to increase the length of an existing system utilising standard components. Please consult the AKAPP-STEMMANN sales office giving full details of the existing system and required extension.

Design and dimensions

We reserve the right to amend dimensions/design of components in the interests of design advancement without prior notification.

Multiconductor internal heating

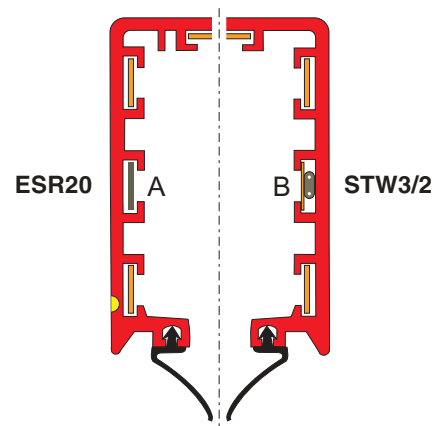
When extreme stringent circumstance apply and condensation and ice is to be prevented, the Multiconductor can be heated along the entire length of the system or if required, partially.

Type ESR20 (A), Not insulated.

For installations up to 6-poles. Maximum track length 77 m. Connecting voltage: AC 230V. Capacity 20W/m at +10°C. Automatic control of the required capacity based on the ambient temperature. The system includes the delivery of a special mounting belt to simplify the pulling into the copper channel.

Type STW3/2 (B), Insulated.

For 7-pole installations including a minimum of one single channel, 35A copper conductor. Maximum track length 60 m. Connecting voltage: AC 230V. Automatic control of the required capacity based on the ambient temperature. Capacity 10W/m at +10°C.



Example for ordering indoor installation

1 AKAPP Multiconductor, 3 phase + earth, type RN7-4-35, without flexible sealing strips, track length 50 m, 4 poles, nominal capacity up to 35A, duty cycle 80%, with end feed. Apparatus to be fed: 1 overhead crane, maximum total power 7,5 kW, 380V, speed 40 m/min, in warehouse, dry, no excessive dust, ambient temperatures from +10°C up to +35°C. Supports every 2m..

The installation consists of:

48 m	type RN7	PVC housing (12x4 m)
2 m	type RN7	dito (1 x 2 m)
200 m	type CU35	copper conductor 35A (4 x 50 m)
24 pcs	type BN7-Z	sliding hangers, galvanised
13 pcs	type VN7-Z	joint clamps, galvanised
1 pc	type VMN7-Z	fixed point clamps, galvanised
1 rl	type T50	isolation tape (10 m)
1 pc	type AK7-28	end feed box
1 pc	type EN7	end cap
1 pc	type CL7-4-35	collector trolley
1 pc	type BMV35	towing arm
1 pc	type OG35-7	transition box

and recommended:

25 pcs	type UH330	support brackets
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Example for ordering outdoor installation

1 AKAPP Multiconductor, 3 phase + earth, type RN7-4-50, with flexible sealing strips, track length 85 m, 4 poles, nominal capacity up to 50A, duty cycle 80%, with line feed at 24,5 m. Apparatus to be fed: 2 cranes, 12 kW each, 380V, speed 60 m/min, in concrete industry, alternate dusty, humid and corrosive, ambient temperatures from -15°C up to +35°C. Supports every 2 m.

The installation consists of:

84 m	type RN7	PVC housing (21 x 4 m)
1 m	type LRNK7	line feed housing
170 m	type AS7	flexible sealing strips (2 x 85 m)
340 m	type CU50	copper conductor 50A (4x85 m)
43 pcs	type BN7-L	sliding hangers, galv. + coated
24 pcs	type VN7-L	joint clamps, galv. + coated
2 pcs	type VMN7-L	fixed point clamps, galv. + coated
1 rl	type T50	isolation tape (10 m)
24 pcs	type AB25	sealing tape (230 mm)
1 pc	type LK-28	line feed box
4 pcs	type VKK	feed clamps
2 pcs	type EN7	end caps
2 pcs	type CL7-4-35	collector trolleys
2 pcs	type BMV35	towing arms
2 pcs	type OG35-7	transition boxes

and recommended:

45 pcs	type UH330	support brackets
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Installation examples: system configuration

The construction method to be used with the AKAPP Multiconductor is based on "controlled expansion". This guarantees the solution of expansion related problems which coincide with three different elements: synthetics, copper and suspension frame. The linear expansion and shrinking of the PVC conductor housing is 0.07 mm/°C/m. Which is the 5-fold of copper conductors to be mounted into the conductor housing as well as the suspension frame.

The AKAPP Multiconductor design permits the free movement of the three elements thus resolving problems often experienced with other systems.

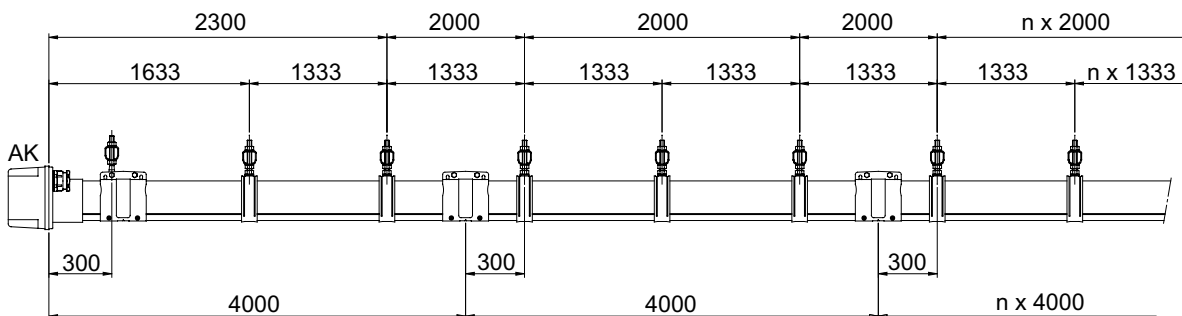
Most common installations with one feed point at the end or somewhere along the installation (see illustration below, examples A or B) are mounted on the basis of free expansion. The expansion movement takes place from the fixed point. Maximum lengths for application of **fixed** joints type VN7 are mentioned in the list on page 3.

For installations where the required system is longer than stated in this list or where similar to one of the applications C up to F, please refer to your AKAPP-STEMMANN sales office for additional installation instructions.

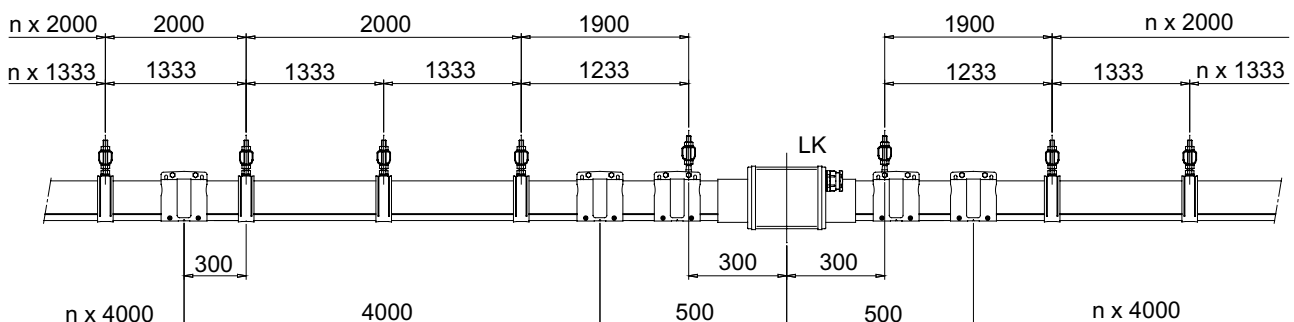
Multiconductor system construction



Multiconductor system configuration End feed



Multiconductor system configuration Line feed



With AKAPP Multiconductor an optimum reliability is achieved by the unique composition of this conductor system. We offer our experience following many years of service to industry, covering practically all types of ambient conditions.

We should be most pleased to assist with your system selection. Please do not hesitate to seek the advice of our specialised sales team. For more information you can visit our web site: www.akapp.com.

All information in this brochure is under proviso. All dimensions in this brochure are in mm.

Multiconductor and automation: sure communication options

With the AKAPP Multiconductor data and control signals can be transmitted - trouble-free and uncomplicated. This is amongst other based on the concept of the uninterrupted conductors, which ensures a reliable signal transmission.

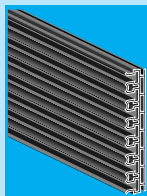
The possibility even exists that one single AKAPP Multiconductor installation contains conductors for feeding as well as control for a machine. Moreover, a special pulse strip can be applied with which an advanced positioning and automation system can be constructed.

A further developed form of signal transmission can be effected by means of industrial networks such as Profibus. Ultimate reliable Profibus-DP and FMS communication through AKAPP Multiconductor is possible in combination with PLC-control.

Should you require further information on the vast array of data transmission via the AKAPP Multiconductor, please feel free to contact us. We would be pleased to advise you in detail.



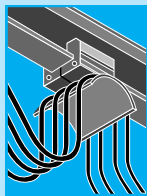
More AKAPP products:



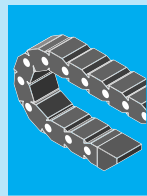
Flat conductor bar systems



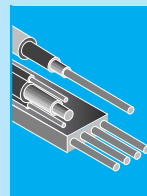
Spring- and motor driven reels



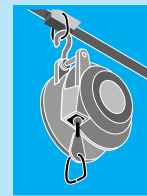
Festoon



Plastic and steel chains



Special-cables



Balancers

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AKAPP-STEMMANN is represented world-wide in over 40 countries!