

**AKAPP-
STEMMANN BV**



Fandstan Electric Group

Multiconductor®

Insulated conductor bar

Nijverheidsweg 14
NL 3771 ME Barneveld
The Netherlands

Phone +31 (0)342 403900
Fax +31 (0)342 403912
eMail info@akapp.com
URL www.akapp.com



AKAPP-STEMMANN

Member of the Fandstan Electric Group

AKAPP Multiconductor®

- The ideal conductor system for cranes, conveyors, automated warehouses and many other applications
- Current capacity of conductors: 35, 50, 80, 125, 160A and higher
- Conductor housing for 7 uninterrupted conductors
- Adjustable to almost all heights
- Flexible sealing against dust, moisture and corrosion
- Superb high travel speeds possible
- Particularly suitable for transmission of control and data signals
- Virtually maintenance free



AKAPP Multiconductor system has a unique concept. Based on free expansion of housing and conductors. Due to the absence of plug connectors, the conductors offer the most reliable transmission of energy and signals.

However, Multiconductor offers more! The illustration below shows the automatic concrete skipper installation whereby the positioning system is integrated in the conductor housing.



AKAPP Multiconductor® conductor system:

complete control of all your mobile equipment!

Compact, reliable and safe power supply for cranes, hoisting equipment, warehouse equipment, overhead conveyor tracks, etc.

Virtually world-wide application, in indoor and outdoor installations, even when ultimate weather circumstances apply.

This brochure provides a brief summary of the extensive possibilities of the system.

For further information please check our internet site: www.akapp.com.

You are always welcome to contact us directly, refer to the front cover of this brochure for detailed information on our address.

Some important features:

Optimum reliability is assured by the advantages listed below.

Continuous copper conductors. The flat copper conductors can be pulled from rolls into the previously installed PVC housing in long continuous lengths, without any connections in the conductor.

Low maintenance. The PVC housing needs no maintenance and as previously mentioned continuous copper conductors ensure minimal brush wear. Thus minimising the presence of carbon deposits.

Maximum power transmission. The brushes are positively located in the PVC housing and contact with the flat copper conductors is maintained by spring pressure. This guarantees a positive contact and power transmission.

Volt drop absolute minimum and constant due to continuous copper conductors, thus avoiding problems associated with added resistance at joints and increased volt drop characteristics when joints loosen or corrode.

Exceptionally long carbon brush life is achieved due to the absence of conductor joints and connectors which ensures trouble free operation.

Optimum transmission of control and data signals. Because of the continuous copper conductors combined with the constant and efficient contact between carbon brushes and flat copper conductors.

AKAPP Multiconductor is ideally suited and proven for both control and data signal transmission e.g. very important for automated/computerised warehouse systems.

Simple installation. Due to the light weight of the PVC housing, copper conductors without connections and the design of accessory components, system installation is a quick and easy operation.

Dust, humidity and corrosion protection. For these conditions the Multiconductor housing can be totally closed by the use of special flexible sealing strips.

No expansion problems. Due to the clearance that exists between the conductors and their location and the clearance between the PVC housing and sliding hangers, expansion due to changes in ambient temperature is accommodated without affecting the operation of the system. This also applies to extra long installations where standard components eliminate expansion problems often experienced with alternative systems.

Indoor and outdoor installation. AKAPP Multiconductor can be installed both indoors and outdoors under widely varying weather conditions.

Track lengths unlimited. Extremely long track lengths are possible when required either indoors/outdoors, by utilising the AKAPP expansion joint which still incorporates continuous copper conductors.

High travel speeds. Standard up to 250 metres/minute. Higher speeds on request.

High current capacity. Copper conductors with a variation of sections can be pulled into the channels in the housing. Standard up to 320 A. For higher ratings please consult the AKAPP sales office.

Multiconductor installations. Systems up to 7 conductors are available as standard and by parallel mounting of systems practically all circumstances, particularly control systems, can be catered for, where the continuous conductors again are of particular importance.

Compact design. By virtue of design, the Multiconductor system utilises an absolute minimum of space.

Safety to personnel. The high standard of volume resistance of the PVC housing and the conspicuous red colour ensures absolute safety to personnel.

Degree of protection IP 44. AKAPP Multiconductor with flexible sealing strips meets the degree of protection IP 44. Without sealing strips the degree of protection is IP23. An extra security hand safe housing is also available.

High mechanical strengths. The PVC housing has a combination of high flexural yield, impact and tensile strengths and is complemented by the design of associated components.

Self-extinguishing. For safety reasons the housing materials have a self-extinguishing feature.

Approved by inspection authorities. In various countries, AKAPP Multiconductor systems are approved by Inspection Authorities eg UL, CSA, CCC etc, where the quality and safety of equipment is essential.

Integrated Positioning System optional. For the easy positioning of movable apparatus such as skippers and traverse cars, AKAPP Multiconductor can be fitted with a special pulse strip and pulse detectors. With an additional PLC application, one can realise a fully automated transport system.

Multiconductor[®] housing RN7: combines flexibility and efficiency!

The conductors can be positioned in the 7 channels within the PVC conductor housing RN7. The number and capacity of the conductors depend on the requirements.

The standard length of the conductor housing is 4 metre. The possibility for a length less than 4 metre is available as well. Coupling is provided by means of joints clamps. The principle of free expansion of the conductor housing as well as of conductors, ensure the possibility of a virtually unlimited length of the installation!

The conductor housing can be provided with a flexible rubber sealing. As such penetration of dust and moisture is kept to a minimum level, ensuring a continuous reliability!

Automated logistical processes can be effected by means of the AKAPP Positioning system, integrated in the conductor housing!

Utmost performance of efficiency ...

Some important features:

① 7 copper channels

Due to the clearance between the conductors and their location, the copper channels offer sufficient room for 2 up to 7 uninterrupted, loose spaced conductors, as required, without plug connectors. No expansion problems and ideally suited for power, control and data signal transmission!

② 5 types of conductors

The flat copper conductors, suitable for current capacity up to 35A, 50A, 80A, 125A and 160A. With parallel-mounted systems the maximum current capacity is 320A!

These values are applicable at a duty cycle (DC) of 80%.

③ Yellow uninterrupted earth marking

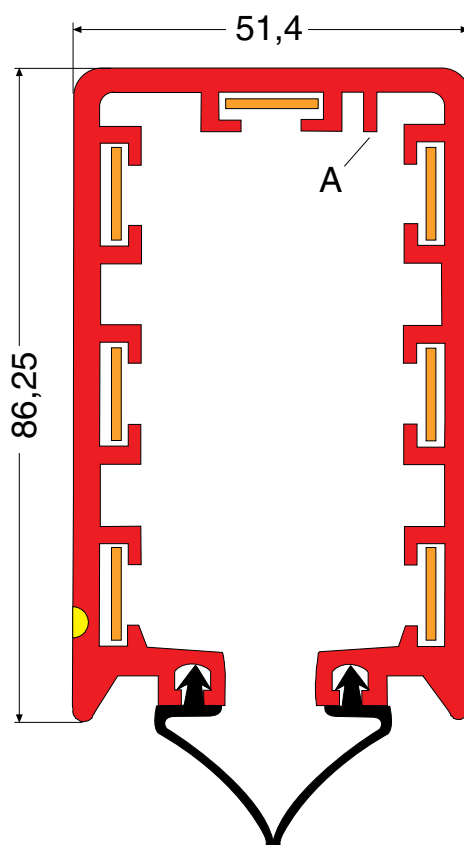
Clearly indicates the earth conductor. Safety!

④ Feed and control in one single housing

Combine the feed strips with those for the control/data transmission. You can construct a fully automatic controlled process!

⑤ Easy installation

The individual lengths (max. 4 m) can easily be connected, after which the required number of copper conductors are pulled through the channels.



⑥ Compact construction

The housing is 51.4 mm wide and the height is 86.25 mm. It is therefore nearly always suitable for all situations. Furthermore it can be positioned, starting only a few decimetres above floor level!

⑦ Anti reverse rib (A)

Prevents improper installation of the collector trolley into the conductor housing.

⑧ Dust, moisture and corrosion-sealing

The conductor housing can be provided with a flexible rubber sealing to prevent penetration of dust, moisture and/or the occurrence of corrosion, the sealing is to be mounted in the groove at the bottom side of the conductor.

⑨ Safety first!

The PVC-housing is self-extinguishing and has a conspicuous red colour for additional safety. Furthermore the housing is contact safe (degree of protection IP44 according to the standard IEC 529).

⑩ No expansion problems

The copper conductors lie separately in each channel, these conductors can thus expand and contract independently of the PVC housing.

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

The conductor housing RN7 is available in a number of variations, which can be viewed in the following summary.

The range of conductor housings enable the possibility to optimally gear your installation to the operating conditions.

However, it is possible to easily apply variations in the existing application of the (copper) conductors, in order to adjust your installation to the changes within your

operational conditions. Refer to page 6.

All types of conductor housings can be applied to installations provided with a transfer guide and/or entry points.

The conductor housings RN7, RN7W and RNHS7 can be installed in installations with curved tracks as well.

Please contact our sales office for further information on this subject.

Standard performances:

Type RN7

Colour: signal red

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

The most frequent applied conductor housing. Suitable for nearly all installations, within the temperature range as detailed above.

Type RN7W

Colour: white

Temperatuurbereik: van -30 °C up to +60 °C

At the occurrence a significant radiant heat, as applicable in greenhouses, it is advised to use a white conductor housing (see illustration). Dimensions are equal to the dimension of RN7.

Type RNV7

Colour: gray white

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

When the ambient temperature is up to 80 °C, this type of conductor can be applied. Dimensions are equal to the dimension of RN7.

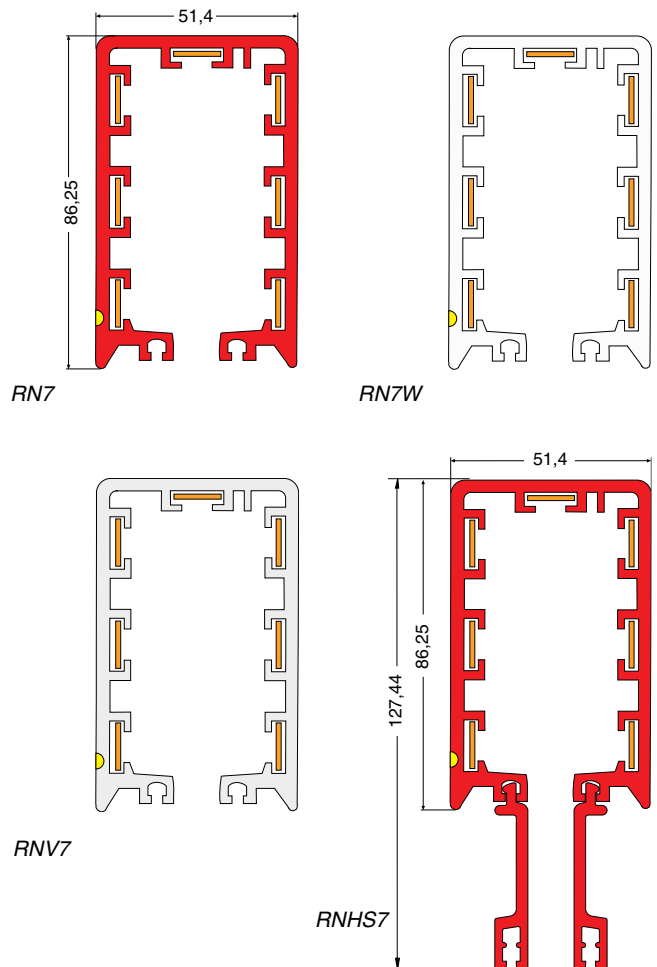
Type RNHS7

Colour: signal red

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

Due to the spacer strips, positioned at the bottom side, this type of conductor housing is extremely suitable for installations positioned on a low level which are susceptible to splashing water.

All types of conductor housings can be provided with flexible, rubber sealing strips AS7 (also refer to page 4).



Conductor housing, type RN7 for feed and control of a traverse car in a carton processing plant.



AKAPP Multiconductor provided with a white conductor housing is extremely suitable for application in greenhouses.

Ultimate logistical control: uninterrupted feed at all times

For each Multiconductor installation, uninterrupted flat copper conductors, available in track lengths, will be delivered on rolls.

The strips are positioned, uninterrupted along the complete track length, notwithstanding the position of the feed box. The absence of plug connectors offers a number of considerable advantages !

Copper strips are available for current intensities of 35, 50, 80, 125 and 160A (DC 80%). When 2 strips are parallel connected, a current intensity of 320A is possible for each of the 3 phases of a three-phase system !

The high quality of the electrolytic copper is your guarantee for an optimal energy- and signal transmission.

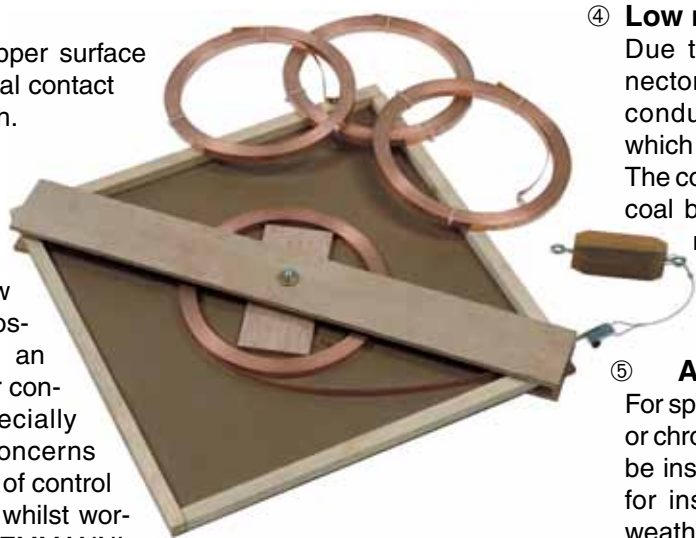
Why uninterrupted copper conductors?

① Optimal contact

The flat, smooth copper surface guarantees an optimal contact with the carbon brush.

② No plug connectors

The best method to secure an as low and constantly as possible voltage loss is an uninterrupted copper conductor. This is especially essential when it concerns reliable transmission of control signals. No problem whilst working with AKAPP-STEMMANN!



④ Low maintenance

Due to the absence of plug connectors the surface of the copper conductors is extremely smooth, which ensures minimal brush wear. The copper conductors as well as the coal brushes are therefore virtually maintenance free.

⑤ Alternative conductors

For specific applications, silver-plated or chromium-plated copper strips can be installed in the copper channels, for instance for usage in extreme weather conditions.

③ Capacity extendable

The installation can be extended at all times and at any moment. For instance, due to a changed situation additional or heavier copper conductors can be applied.

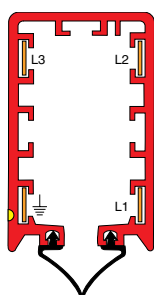
⑥ Quick installation

The strips, delivered on rolls, can quickly and easily be pulled into the channels, by means of the provided copper cassette (see photograph) and a copper pulling attachment.

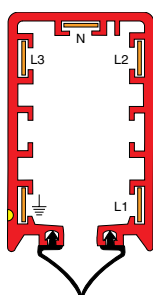
Arrangement of the copper conductors

A large number of combinations is possible, while using the standard conductor housing and 5 different copper conductors.

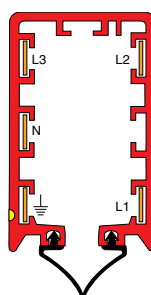
Several examples are detailed below. Note: the earth-conductor is always at the yellow marker strip!



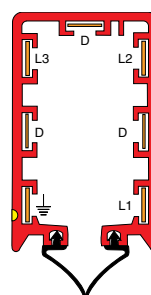
standard
4-pole



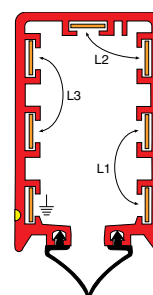
standard
5-pole



5-pole, for
installations
with curves



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



per phase 2
conductors in
parallel+earth

Well-considered components: progress by innovation!

The summary, as detailed below, lists all standard components of a Multiconductor installation.

In nearly all operational circumstances this installation is suited to construct a reliable supply system.

The ultimate performance is guaranteed due to the fact that all individual components comply to stringent quality requirements.

Quality is an aspect, continuously viewed by our Research & Development department.

If required, components can be adjusted and new components can be designed in order to further increase the user-friendliness and/or durability. As such, the installation will still comply to the requirements as imminent for such a system. You can rely on us !

Suspension and connection of conductor housings.

Sliding hanger

Type BN7-Z: galvanised

Type BN7-L: galvanised + epoxy coated

Type BN7-R: stainless steel

When expansion differences occur between the suspension frame and Multiconductor, the latter can continuously slide in the sliding hangers. The sliding hangers are fastened to the suspension frame by means of a bolt. As such the installation can be aligned vertically.



BN7

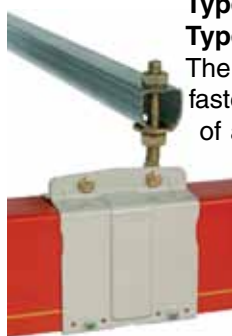
Fixed point clamp

Type VMN7-Z: galvanised

Type VMN7-L: galvanised + epoxy coated

Type VMN7-R: stainless steel

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 sliding hangers when expansion differences, due to temperature variation, occurs.



VMN7

Joint clamp

Type VN7-Z: galvanised

Type VN7-L: galvanised + epoxy coated.

Type VN7-R: stainless steel

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

Expansion joint

Type KEV7

Noryl joint clamp, which is where free expansion of the Multiconductor from one single fixed location, is not possible, e.g. at extreme long installations, closed curved tracks, transfer systems, multiple feed connections, etc..



KEV7

Location of the feed box:

1. End feed box:

With this you can connect the feeder cable to the outer end of the Multiconductor installation (see picture).

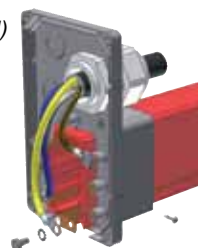
2. Line feed box:

For connection of the feeder cable on any random point of the installation. The feeder cable is connected to line feed clamps, kept in place by the line clamp holder that slides over the 2 housing parts in which up to 7 line feed clamps can be fitted. The copper conductors will not be interrupted!

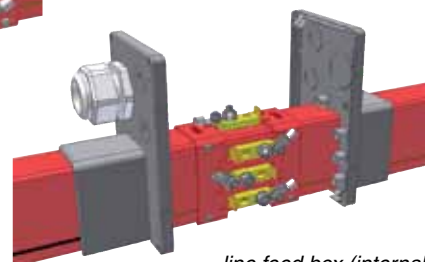
All feed boxes are fitted with gland M32 (for cables Ø10-Ø21 mm) or M40 (for cables Ø16-Ø28 mm) or M63 (for cables Ø30-Ø44,5 mm).

The line feed boxes are also available with 4 or 7 glands M32 (LB32-4 or LB32-7). For custom configurations, you can easily add glands by removing the pre-cut sections.

end feed box(internal)



clamp holder with clamps



line feed box (internal)

Collector trolleys series C7:

excellent contact characteristics!

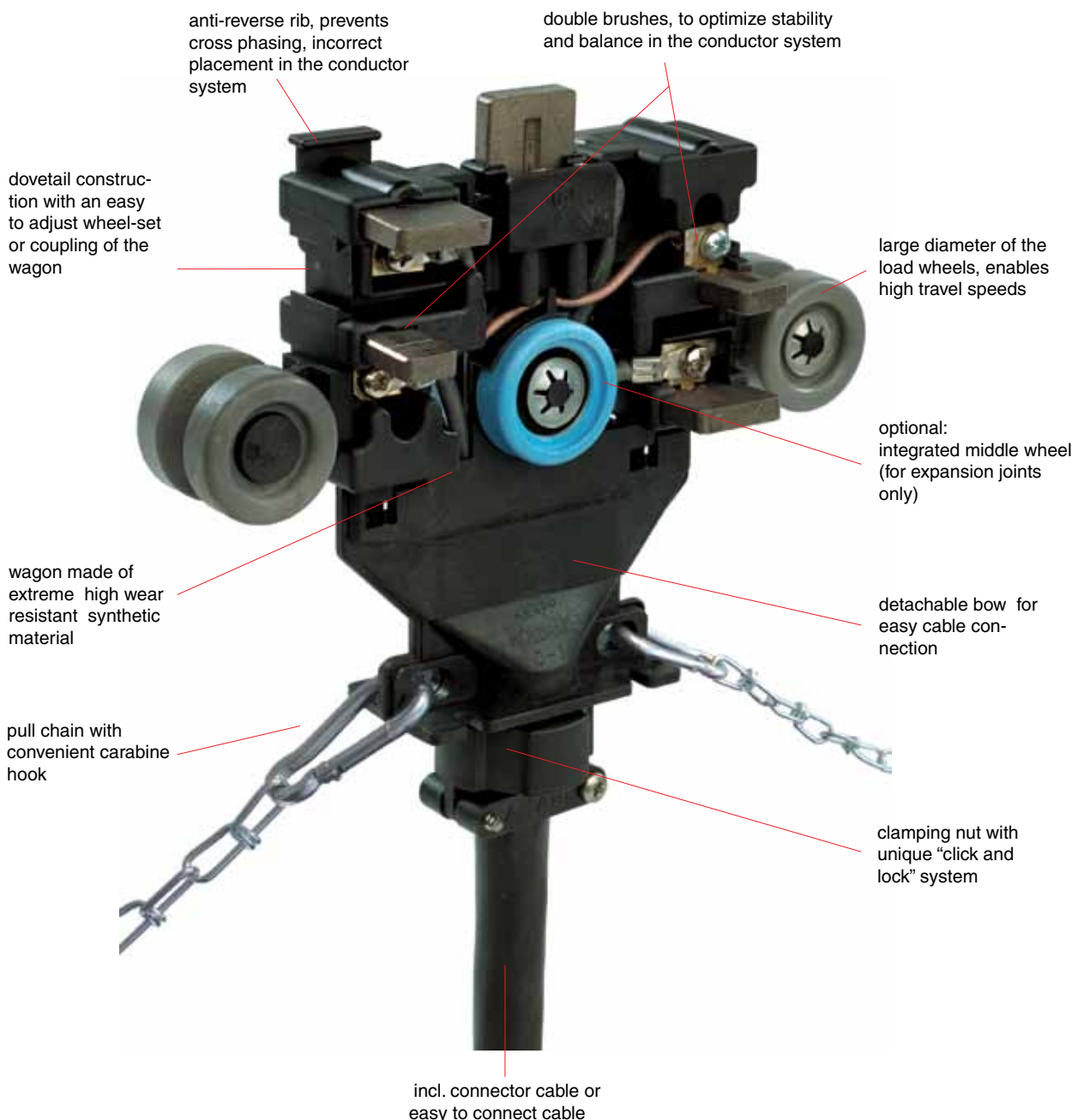
The C7 collector trolleys are available to suit 2 to 7 guides, as required, and are suitable for maximum current capacity of 35A, 70A and 100A; duration of duty cycle is 60%.

The collector trolley series "CL7" are supplied with a connector cable (approx. 1 m) with numbered wires. The trolley series "C7" are supplied without cable.

The standard models of the C(L)7- collector trolleys are suitable for nearly all possible situations and are easy to adjust at the same time. The summary below indicates the most common used models and options. The required model often depends on specific organisational circumstances.

Should you require further advice do not hesitate to contact us.

The standard collector trolley with its specific characteristics:



AKAPP Multiconductor® system:

efficiency per linear meter!

By using AKAPP Multiconductor, you save on costs. This starts and is evident, immediately during installation. All components are adapted to one another, as a result of which the components can be applied easily.

Ensure an even easier task and have our Technical Service install all, quickly and with expertise!

The fast experience and know-how of the material involved guarantees an optimal functioning installation.

You would prefer advice on your installation first? No problem, our advisors can assist you with all your questions, free of charge and no strings attached !

No technique without maintenance! Maintenance is however kept at a minimum and when you decide on a contract via our Technical Service, we will periodically perform the maintenance for you. As a result of such a contract, maintenance is out of your hands!

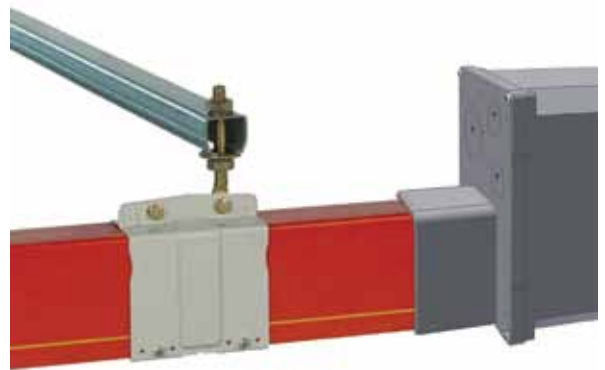
Suspension of the conductor housing

AKAPP Multiconductor can easily be fastened to a profiled beam. In most cases the standard support brackets (available in various lengths) will suffice. These bolt connections are to be applied and adjusted easily.

The conductor housings are simply positioned into the sliding hangers and connected by means of joint clamps.

Subsequently the copper strips are positioned. In general these strips are uninterrupted, e.g. without contact breakers!

As soon as the conductor trolley has been positioned in the rail, the feed box can be connected. If the installation is completed, you will have a guarantee for a perfect operating feed system with a high efficiency and low maintenance costs..... for years on end.



The AKAPP support brackets are of the type 'universal fitting' and easy to position and adjust!

Inspection of the collector trolley

AKAPP-STEMMANN has ensured that the inspection of the conductor trolley can be effected quickly.

All vital components of the conductor trolley are to be replaced in a trice!

The carbon brushes are marked, this marking indicates if and when exchange is required. Due to the smooth surface of the conductors and the absence of the plug connectors, the wear of the carbon brushes minimal!

The running wheels are of high quality and based on a wear-resistant synthetic, and under normal circumstances these require virtually no maintenance.

For extreme heavy applications, high travelling speeds or extreme operational circumstances running wheels with dust-free ball bearings are applied in order to ensure that even in those specific circumstances maintenance is virtually limited!

Visual inspection of carbon brushes is rather simple due to the markings as applied.



With dovetail connections, can be positioned easily and quickly.



Special applications: the sky is the limit!

AKAPP Multiconductor can be applied in installations with transfer guides, horizontal and/or vertical curves. Even closed curved tracks are a possibility!
Your specific configuration can be further and detailed adjusted by our professionals to become a perfect fitting installation!

On this page only a brief section of the numerous possibilities are given.

Please contact us for further information!



Four closed curved tracks for feeding of a rotating elevator.



Curved installation for window cleaning equipment



A 500 m long enclosed track for a passenger train in the zoo



Feed and control of bridge cranes in a galvanising plant



Feed and control of a concrete skipper

Other AKAPP conductor bar systems: always the perfect solution!

The AKAPP Multiconductor is an ultimate reliable and efficient conductor system, which is world-wide, successfully used in indoor and outdoor installations.

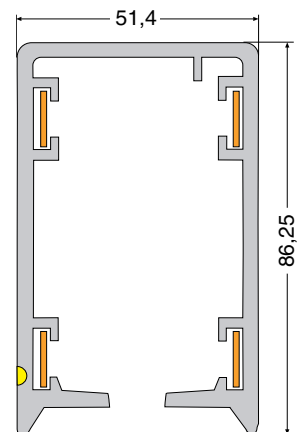
This brochure details a brief outline of the unique characteristics. However, AKAPP-STEMMANN supplies many conductor systems, a fitting solution for the most diverse situations.

AKAPP-STEMMANN aims to provide all information you need: our professional team is available for free and non committal advice.

Further information required? Just a single telephone call, fax or e-mail will suffice. Please see the front cover for details or check www.akapp.com to find your nearest distributor.

4-Ductor

If four conductors suffice, no flexible rubber sealing is required, but you do want to make use of all the advantages of the uninterrupted conductors, opt for the most ideal conductor system for your organisation, opt for the AKAPP 4-Ductor! Ideal, for it has: no expansion problems, a constant and low voltage loss, a choice of 5 current intensities (see above) and virtually no maintenance. In all, an uninterrupted current supply for a variety of movable and/or mobile equipment at a **very profitable cost-benefit analysis**.



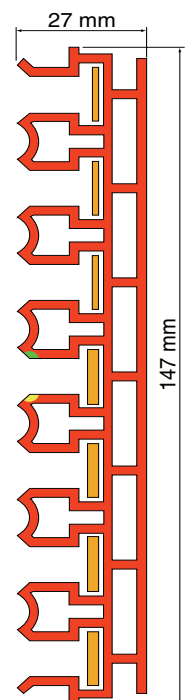
Pro-Ductor

The most compact, varied conductor system for automated warehouses and many other applications! Suitable for up to 4 copper conductors (PR4), up to 7 copper conductors (type PR7), or up to 10 copper conductors (type PR10).

The p.v.c. housing PR7 has a height of only 147 mm and is 27 mm wide and can be applied only centimetres above floor level. The **uninterrupted** conductors ensure a perfect transmission of both **feed, control and data signals**.

Choices in current capacity from 50A, 80A, 125A, 160A up to 200A (80% D.C.).

Pro-Ductor is suitable for **extreme long travelling lengths** and **high travel speeds**.



AKAPP - STEMMANN: Flexible with energy!



AKAPP-STEMMANN is a market leader with our made to order conductor bar systems. We offer you the best possible solution for almost any application in whatever the circumstances. We welcome your inquiries!



Our cable reels prove their worth daily in numerous situations, whether it concerns cable reels on harbour cranes or cable reels for earthing at ports of transshipment. Naturally, we can also supply the correct high-flexible cable!



Our festoon systems offer the most flexible solutions for transporting flat or round cables and hoses. A wide variety of profiles and components guarantees reliable installations, adapted to the environment.

More informations on our products can be found in our brochures. We are happy to send you the catalogues on request. You can also visit our internet site, www.akapp.com.