Pro-Ductor®
Insulated flat conductor bar for 4, 7 or 10 conductors

Technical information
AKAPP Pro-Ductor®

• The ideal flat conductor system for automated warehouses and many other applications

• Current capacity  50A, 80A, 125A, 160A, 200A, 250A, 320A and 400A

• Housing up to 4, 7 or 10 uninterrupted conductors

• Usable at most heights

• Self-aligning collector trolleys

• High travel speeds up to 500 m/min possible.

• Highly suited to transmission of control and data signals

• Extremely low maintenance costs

AKAPP Pro-Ductor conductor system is a unique concept, permitting the ultimate in possibilities and applications.

Pro-Ductor is specifically designed for use in automated warehouses, that are characterised by a range of extremely challenging demands.

Pro-Ductor offers many possibilities. An example is illustrated (left).
Here you can see a Pro-Ductor installation in an automated high bay warehouse with an aisle changing crane.

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Optimum reliability is assured by a number of advantages as described below.

Very low TCO
The Total Cost of Ownership is very low, because of the low maintenance costs and high reliability of the system.

Easy and quick installation
The steel support profiles (lengths 4 m each) are to be mounted directly to the adjusted uprights, which reduces the mounting time considerably. The profiles can be easily and quickly connected to each other.

No jointed connections
The best method to reduce voltage loss is an uninterrupted copper conductor. This is essential when it concerns reliable transmission of control signals. No problem whilst working with AKAPP!

4 (PR4), 7 (PR7) or 10 (PR10) copper channels
Due to the clearance between the conductors and their location, the copper channels offer sufficient room for up to 10 uninterrupted conductors, without plug connectors. Ideally suited for both control and data signal transmission.

5 different types of copper conductors
The flat copper conductors are available in 50A, 80A, 125A, 160A and 200A (80% D.C.).

High current options
Parallel-mounted systems provide a maximum current capacity of 400A (80% D.C.)! Above that, copper conductors for control signals can be added when applying the 10-pole profile PR10.

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 installed until the maximum number of slots is reached.

Some important advantages:

No expansion problems
The copper conductors lie separately in each channel, so that these can expand and contract independently of the PVC housing.

Wheel guide construction
The perfect guide construction optimizes the electrical contact of the carbon brushes with the copper conductors and reduces wear. Above this, it prevents carbon moisture within the housing (unlike panthograph based systems). The wheel guide construction enhances the life expectancy of the collector trolleys and brushes.

Compact construction
With inclusion of the support profile SP4, the system measures 46 x 128 mm; for profile SP7 this is 45 x 165 mm; for profile SP10 this is 40 x 240 mm. Suitable for most automated warehouses. Furthermore it can be installed, virtually at floor level!

Approvals and certifications
Pro-Ductor types PR4, PR7 and PR10 are CE-approved and UL-certified.

Feed and control in a single housing
Combine the feed strips with those for control, separating them safely with the ground conductor strip.

Uninterrupted yellow/green earth-marking
Clearly indicates the earth conductor. Safety!

Safety first!
The PVC-housing is self-extinguishing and has a conspicuous red colour for additional safety. Furthermore the housing is contact safe (IP2XB according to the standard IEC 60529).

AKAPP Pro-Ductor® conductor bar systems: the ultimate in design!

Compact, dependable and secure power supply system featuring our unique continuous smooth copper conductors. Most suitable for utilising in (automatic) high-bay warehouses. AKAPP Pro-Ductor is ideally suited and proven for both control and data signal transmission.

This brochure provides a brief summary of the extensive possibilities of the Pro-Ductor system. For further information please visit our website: www.akapp.com.

To contact us directly, we refer to the front cover of this brochure for detailed information on our address.

AKAPP Pro-Ductor offers easy and fast mounting, safety to personnel, high reliability, low maintenance and an advantageous total life-time cost!
The Pro-Ductor system is specifically designed for heavy duty tasks performed in automated warehouses.

The standard housing length is 4 metre. Any length less than 4 metres is possible. Connecting the sections is done using the click and lock system. No drilling or screws!

Up to 4 conductors can be positioned in the channels within the PVC conductor housing PR4; up to 7 conductors within the PVC conductor housing PR7 up to 10 conductors within the PVC conductor housing PR10.

The number and capacity of the conductors depend on the requirements.

It is possible to combine conductors for feed and control. The PR10 housing makes it possible to combine parallel switched conductors for very high current applications with conductors for control functions.

More details on page 5.

The most important details of the housings PR4, PR7 and PR10 are described in the section below.

### Railhousings

**Type PR4**

with 4 channels for up to 4 uninterrupted, loosely spaced conductors.

Color: signal red.

Temperature range: from -30 °C up to +60 °C.

A continuous yellow/green marking on the housing ensures correct fitting of the system. The PVC with a high impact strength is self extinguishing.

**Type PR7**

with 7 channels for up to 7 uninterrupted, loosely spaced conductors.

Color: signal red.

Temperature range: from -30 °C up to +60 °C.

A continuous yellow/green marking on the housing ensures correct fitting of the system. The PVC with a high impact strength is self extinguishing.

**Type PR10**

with 10 channels for 6 up to 10 uninterrupted, loosely spaced conductors.

Color: signal red.

Temperature range: from -30 °C up to +60 °C.

A continuous yellow/green marking on the housing ensures correct fitting of the system. The PVC with a high impact strength is self extinguishing.

### Technical data of housings

**Material**

Unplasticized Hard-PVC with approximate values:

- Notch shock strength 5-10 kJ/m²
- E-modulus 2500-3000 N/mm²
- Softening point (Vicat) 81-83°C
- Linear expansion 70.10⁻⁶ m/m/°C

**Electrical data**

- Volume resistivity with 100 V >4.10¹⁵ Ω/cm
- Dielectric strength with 50 Hz >30 kV/mm
- Flame class UL94 V0

Length of housing 4 m standard

### AKAPP ART. NO. DESCRIPTION linear exp. 10⁻⁶ m/m/°C min. temp. °C max. temp. °C combined with transfer guides

<table>
<thead>
<tr>
<th>ART. NO.</th>
<th>DESCRIPTION</th>
<th>10⁻⁶ m/m/°C</th>
<th>min. temp. °C</th>
<th>max. temp. °C</th>
<th>combined with transfer guides</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020010</td>
<td>PVC housing, red PR4</td>
<td>70</td>
<td>-30</td>
<td>60</td>
<td>x</td>
</tr>
<tr>
<td>2001080</td>
<td>PVC housing, red PR7</td>
<td>70</td>
<td>-30</td>
<td>60</td>
<td>x</td>
</tr>
<tr>
<td>2030010</td>
<td>PVC housing, red PR10</td>
<td>70</td>
<td>-30</td>
<td>60</td>
<td>x</td>
</tr>
</tbody>
</table>

Housing PR4 with copper conductors

Housing PR7 with copper conductors

Housing PR10 with copper conductors
Ultimate logistical control: uninterrupted feed at all times

Each Pro-Ductor 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 50, 80, 125, 160 and 200A (D.C. 80%). Material: electrolytic copper.

When 2 strips are parallel connected for each of the 3 phases of a three-phase system, current intensities of 250A (2x125), 320A (2x160) and 400A (2x200) are possible.

The 7th conductor being utilised as earth supply.

The order of the copper channels in the Pro-Ductor housing referring to the line feed clamp holders LCH and collector trolleys PCT can be viewed on the drawings on page 20, 21 and 22.

Partially due to the joint-free conductors the Pro-Ductor is well suited for control current and data transfer; especially when using silver-plated conductors.

Contact your AKAPP supplier on this subject.

Special material conductors
The concept of the Pro-Ductor 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 housing, the flat copper conductors can easily be pulled into the copper channels directly from the cable drum. This can be easily and quickly effected by means of the copper pulling cassette and drawing device, available as an option.

A simple straightener is supplied for conductors CU125, CU160 and CU200. This is designed to make installation easier and also to reduce any resistance on very long installations.

Voltage drop in copper conductors. By virtue of the continuous conductor concept, the voltage drop in an AKAPP Pro-Ductor system is kept to an absolute and constant minimum. With a power factor (cos. ϕ) of < 1 the figures mentioned in the adjacent table must be changed accordingly, e.g. with cos. ϕ = 0.85 the voltage drop figures have to be multiplied by 0.85.

Arrangement of the copper conductors
A large number of combinations is possible, using the standard housings and 5 different copper conductors. Below some examples with PR7 and PR10 systems.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>max In (D=80%)</th>
<th>dimension (b x d)</th>
<th>cross section mm²</th>
<th>copper weight kg/m</th>
<th>DC resistance Ohm/m</th>
<th>max. length copper roll m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1002560</td>
<td>Copper conductor 50A</td>
<td>50</td>
<td>12.6 x 0.7</td>
<td>8.82</td>
<td>0.078</td>
<td>0.00198</td>
<td>525</td>
</tr>
<tr>
<td>1002640</td>
<td>Copper conductor 80A</td>
<td>80</td>
<td>12.5 x 1.1</td>
<td>13.75</td>
<td>0.120</td>
<td>0.00217</td>
<td>325</td>
</tr>
<tr>
<td>1002720</td>
<td>Copper conductor 125A</td>
<td>125</td>
<td>12.5 x 2.0</td>
<td>25.00</td>
<td>0.219</td>
<td>0.00119</td>
<td>150</td>
</tr>
<tr>
<td>1002870</td>
<td>Copper conductor 160A</td>
<td>160</td>
<td>12.5 x 2.6</td>
<td>32.50</td>
<td>0.284</td>
<td>0.00092</td>
<td>100</td>
</tr>
<tr>
<td>1002910</td>
<td>Copper conductor 200A</td>
<td>200</td>
<td>12.5 x 4.0</td>
<td>50.00</td>
<td>0.440</td>
<td>0.00068</td>
<td>525</td>
</tr>
<tr>
<td>1003370</td>
<td>Copper conductor silv. 50A</td>
<td>50</td>
<td>12.6 x 0.7</td>
<td>8.82</td>
<td>0.078</td>
<td>0.002</td>
<td>525</td>
</tr>
</tbody>
</table>

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

Solution: using next size copper conductors.

Voltage drop in V/metre Pro-Ductor/A nominal current, cos. ϕ=1, ambience temperature +20°C

<table>
<thead>
<tr>
<th>copper conductor</th>
<th>3 phase ~</th>
<th>1 phase ~ and =</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cu50</td>
<td>0.00339</td>
<td>0.00391</td>
</tr>
<tr>
<td>Cu80</td>
<td>0.00217</td>
<td>0.00251</td>
</tr>
<tr>
<td>Cu125</td>
<td>0.00119</td>
<td>0.00138</td>
</tr>
<tr>
<td>Cu160</td>
<td>0.00092</td>
<td>0.00106</td>
</tr>
<tr>
<td>Cu200</td>
<td>0.00068</td>
<td>0.00069</td>
</tr>
</tbody>
</table>

With +35 °C multiply with 1.079
With +45 °C with 1.118
With +55 °C with 1.157

On request, impedance data can be supplied.
Mounting of housings PR4: without or with the steel support profile

AKAPP Pro-Ductor housings PR4 can be mounted directly to the uprights. The support distance reaches 0.8m max. Applying the steel support profile SP4 however offers support distances up to 3300 mm between the uprights. While using the support profile, the PVC housing is optimally protected against mechanical damage (e.g. falling objects) which increases the reliability of the system.

The support profile can, in most cases, be mounted directly to the storage racks, without extra construction parts. However, it may occur that you need to mount the support profile in a different way. Information on alternative possibilities of mounting the support profile can be found on page 10 and 11.

Fast and easy mounting of the insulated Pro-Ductor housing is possible without using screws. (see drawing).

In most cases the Pro-Ductor system will be installed horizontally, with the conductors below one another. Mounting of the Pro-Ductor system vertically is also possible. We strongly recommend you to contact Wabtec Netherlands for technical advice in such a situation.

### Mounting of PR4 without support profile

For mounting of the pvc housing PR4 directly to the uprights without the steel support profile SP4, the mounting bracket PR4-MB is to be used. See figure below. Support distance max. 0.8 m.

### Mounting of the support profile SP4

#### Mounting bracket type SP4-MB

There are several ways of mounting the brackets to a construction. In most cases, the brackets can be mounted directly on to the storage racks by means of a bolt through the hole in the bracket and the upright. The maximum support distance depends on the number of collector trolleys:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>MAX. SUPPORT DISTANCE A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc.</td>
<td>Collector trolley PCT4-x-125</td>
<td>3300 mm</td>
</tr>
<tr>
<td>2 pc.</td>
<td>Collector trolleys PCT4-x-125</td>
<td>2750 mm</td>
</tr>
</tbody>
</table>

**Attention:** When using support posts, different support distances must be respected, see page 9.

#### Support profile type SP4

Galvanised steel, with mounting holes for mounting brackets and joint clamps.

Standard length 4 metre. Lengths less than 4 metre possible.

The shape of the support profile combines high rigidity with a low weight and minimal sizes. Above that it prevents bending of the PVC housing through pressure of the carbon brushes from the collector trolley.

The sections are fitted with punched holes that allow positioning of mounting clips (see picture below) for easily fixing the housing PR4 without any tools. Per 0.8 metre, 1 mounting clip is needed (to be ordered separately).

The PVC housing is supported over the entire track length, which results in high stability of the system. This makes very high travel speeds possible. **Attention:** both system ends require extra length support profile due to expansion of the pvc housing. Please see drawing on page 29.

#### Joint clamp type SP4-JC

The joint clamp is slid from the back side of the support profiles and fitted through 4 slot holes on the top and bottom of the clamp that correspond with holes in the support profiles.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020030</td>
<td>Support profile for PR4 SP4 L = 4 m</td>
<td>SP4</td>
</tr>
<tr>
<td>2040660</td>
<td>Mounting bracket for SP4, complete</td>
<td>SP4-MB</td>
</tr>
<tr>
<td>2040510</td>
<td>Mounting clip for PR4</td>
<td>PR4-MC</td>
</tr>
<tr>
<td>2040690</td>
<td>Mounting bracket with M6x20 bolt</td>
<td>PR4-MB-M6x20</td>
</tr>
<tr>
<td>2040695</td>
<td>Mounting bracket with self drilling screws</td>
<td>PR4-MB-SDS</td>
</tr>
<tr>
<td>2040700</td>
<td>Mounting bracket w. glide nut f. support post</td>
<td>PR4-MB-S</td>
</tr>
<tr>
<td>2040685</td>
<td>Joint clamp for SP4, complete</td>
<td>SP4-JC</td>
</tr>
</tbody>
</table>

**Suspender SP4**

**Support profile for housing PR4**

**Support profile with housing PR4**

**Mounting clip PR4-MC** (for mounting with SP4)

**Mounting bracket PR4-MB** (for mounting without SP4)

**Joint clamp SP4-JC**

**Connection of support profile SP4 with joint clamp SP4-JC**
Mounting of steel support profile SP7:
always a perfect support!

AKAPP Pro-Ductor housings PR7 are situated within the steel support profile SP7. Applying this profile offers support distances up to 3300 mm between the uprights. The PVC housing is optimally protected against mechanical damage (e.g. falling objects), which increases the reliability of the system.

The support profile can, in most cases, be mounted directly to the storage racks, without extra construction parts. However, it may occur that you need to mount the support profile in a different way.

Information on alternative possibilities of mounting the support profile can be found on pages 10 and 11.

Fast and easy mounting of the insulated Pro-Ductor housing is possible without using screws. (see drawing).

In most cases the Pro-Ductor system will be installed horizontally, with the conductors below one another. Mounting of the Pro-Ductor system vertically is also possible. We strongly recommend you contact Wabtec Netherlands for technical advice in such a situation.

Suspension of the support profile SP7

Mounting bracket type SP7-MB
There are several ways of mounting the brackets to a construction. In most cases, the brackets can be mounted directly on to the storage racks by means of a bolt through the hole in the bracket and the upright. The maximum support distance depends on the number of collector trolleys:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>MAX. SUPPORT DISTANCE A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc.</td>
<td>Collector trolley PCT7-x-125</td>
<td>3300 mm</td>
</tr>
<tr>
<td>2 pc.</td>
<td>Collector trolleys PCT7-x-125</td>
<td>2750 mm</td>
</tr>
</tbody>
</table>

Attention: When using support posts, different support distances must be respected, see page 9.

Special mounting brackets for transfer sections see page 24.

Support profile type SP7
Galvanised steel, with mounting holes for mounting brackets and joint clamps.

Standard length 4 metre. Lengths less than 4 metre possible.

The steel support profile can easily be mounted to the uprights. With the housing in vertical position (conductors below each other), the minimal mounting height is 200 mm (top of PCT7 trolley).

The shape of the support profile combines high rigidity with a low weight and minimal sizes. Above that it prevents bending of the PVC housing through pressure of the carbon brushes from the collector trolley.

The sections are fitted with punched holes that allow positioning of mounting clips (see picture below) for easily fixing the housing PR7 without any tools. Per metre, 1 set of mounting clips (top and bottom) is needed (to be ordered separately).

The PVC housing is supported over the entire track length, which results in high stability of the system. This makes very high travel speeds possible. Attention: both system ends require extra length support profile due to expansion of the PVC housing. Please see drawing on page 30.

Joint clamp type SP7-JC
The joint clamp connects 2 support profile sections SP7. It is slid from the back side of the support profiles and fitted through 4 slot holes on the top and bottom of the clamp that correspond with holes in the support profiles.

Every joint clamp comes with square nuts and socket head screws for fixing.
Mounting of steel support profile SP10:
the solid base of a compact system!

AKAPP Pro-Ductor housings PR10 are situated within the steel support profile SP10. Applying this profile offers support distances up to 3300 m between the uprights.
The PVC housing is optimal protected against mechanical damage (e.g. falling objects), which increases the reliability of the system.
The support profile can, in most cases, be mounted directly onto the storage racks, without extra construction parts. However, it may occur that you need to mount the support profile in a different way.

Suspension of the support profile SP10
Mounting bracket type SP10-MB
There are several ways of mounting the brackets to a construction. In most cases, the brackets can be mounted directly to the storage racks by means of a bolt through the hole in the bracket and the upright. The maximum support distance depends on the number of collector trolleys:

<table>
<thead>
<tr>
<th>QTY</th>
<th>DESCRIPTION</th>
<th>MAX. SUPPORT DISTANCE A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pc.</td>
<td>Collector trolley PCT10-x-125</td>
<td>3300 mm</td>
</tr>
<tr>
<td>2 pc.</td>
<td>Collector trolleys PCT10-x-125</td>
<td>2750 mm</td>
</tr>
</tbody>
</table>

**Attention:** When using support posts, different support distances must be respected, see page 9.

Support profile type SP10
Galvanised steel, with mounting holes for mounting brackets and joint clamps.
Standard length 4 metre. Lengths less than 4 metre possible.
The steel support profile can easily be mounted to the uprights. With the housing in vertical position (conductors below each other), the minimal mounting height is 275 mm (top of the PCT10 trolley).
The shape of the support profile combines high rigidity with a low weight and minimal sizes. Above that it prevents bending of the PVC housing through pressure of the carbon brushes from the collector trolley.
The sections are fitted with punched holes that allow positioning of mounting clips (see picture below) for easily fixing the housing PR10 without any tools. Per metre, 2 mounting clips (top and bottom) are needed (to be ordered separately).
The PVC housing is supported over the entire track length, which results in high stability of the system. This makes very high travel speeds possible. **Attention:** both system ends require extra length support profile due to expansion of the pvc housing. Please see drawing on page 30.

Joint clamp type SP10-JC
The joint clamp connects 2 support profile sections SP10. It is slid from the back side of the support profiles and fitted through 4 slot holes on the top and bottom of the clamp that correspond with holes in the support profiles.
Every joint clamp comes with square nuts and socket head screws for fixing.

Information on alternative possibilities of mounting the support profile can be found on page 10 and 11.
Fast and easy mounting of the insulated Pro-Ductor housing is possible without using screws. (see drawing).
In most cases the Pro-Ductor system will be installed horizontally, with the conductors below one another. Mounting of the Pro-Ductor system vertically is also possible. We strongly recommend you contact Wabtec Netherlands for technical advice in such a situation.
AKAPP Pro-Ductor® conductor systems: supporting the suspension

The support profiles SP4, SP7 or SP10 can, in most cases, be mounted directly onto the storage racks, without extra construction parts. However, it may be that you need extra supports or that you have to mount the support profile in an alternative way.

If extra supports are needed, e.g. because the distance between the storage racks is too wide, you can choose the standard supports posts that AKAPP offer.

Suspension to support posts

The steel support profile (standard length 4 m) is easily fixed to the storage racks. In most cases the rail will be installed with the conductors below one another.

If there are not enough uprights, the support profile can be suspended to support posts. In that case, the maximum centre distance between the posts should be 2900 mm (when SP7-P600 is applied).

Standard support posts are available with height of 600 mm. Other heights on request. See drawing and table for details.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003050.B0006</td>
<td>Support post h=600 including fastening materials</td>
<td>SP7-P600</td>
</tr>
</tbody>
</table>

The maximum allowed centre distance of the mounting brackets depends on the height of the support posts and the number of collector trolleys, as shown in the table below.

<table>
<thead>
<tr>
<th>SUPPORT POST TYPE</th>
<th>DESCRIPTION</th>
<th>MAX. CENTRE DISTANCE (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP7-600</td>
<td>1 pc. Collector trolley 125A</td>
<td>2900 mm</td>
</tr>
<tr>
<td>SP7-600</td>
<td>2 pc. Collector trolleys 125A</td>
<td>2400 mm</td>
</tr>
</tbody>
</table>

Support post for Pro-Ductor

Feed and control for warehouse crane in deep freeze storage  Pro-Ductor system for high speed operation
AKAPP Pro-Ductor® conductor systems: alternative ways of suspension

AKAPP Pro-Ductor systems will generally be mounted to the storage racks of a (high-bay) warehouse. Alternatively, (extra) support posts can be applied if the span between the racks is too wide to guarantee a stable system. See page 9 for more information on this.

There are however more ways of suspension.

You can use self drilling screws, e.g. for applications where a bolt with nut can not be used. See the detailed information below.

There is also a possibility for suspension with clamp constructions, enabling suspension without drilling in uprights, or mounting on HEA-profiles. See page 11 for more information on this.

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Alternative mounting with self-drilling screws

**Type SP4-MB/SDS**
Mounting brackets with self drilling screws for mounting to uprights without nuts. The 2 drill holes Ø 6 mm, provided in the mounting bracket, are used.

**Type SP7-MB/SDS**
Mounting brackets with self drilling screws for mounting to uprights without nuts. The 2 drill holes Ø 6 mm, provided in the mounting bracket, are used.

**Type SP10-MB/SDS**
Mounting brackets with self drilling screws for mounting to uprights without nuts. The 2 drill holes Ø 6,5 mm, provided in the mounting bracket, are used.

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<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2040695</td>
<td>Mounting bracket f. SP4 w. self drilling screw 5,5x19</td>
<td>SP4-MB/SDS</td>
</tr>
<tr>
<td>2010190</td>
<td>Mounting bracket f. SP7 w. self drilling screw 5,5x19</td>
<td>SP7-MB/SDS</td>
</tr>
<tr>
<td>2030102</td>
<td>Mounting bracket f. SP10 w. self drilling screw 5,5x19</td>
<td>SP10-MB/SDS</td>
</tr>
</tbody>
</table>
AKAPP Pro-Ductor® conductor systems: alternative ways of mounting

AKAPP Pro-Ductor systems will generally be mounted to the storage racks of a (high-bay) warehouse. Alternatively, (extra) support posts can be applied if the span between the racks is too wide to guarantee a stable system. See page 6 for more information on this.

There are however more ways of mounting.

Below, the special options with clamp constructions are described. You can use mounting brackets for mounting to uprights without drilling, or clamps for mounting to HEA-profiles. Applicable for PR4 and PR7 systems. See detailed information below.

Alternative mounting with clamps

Mounting systems for closed uprights

Type SPx-MBC...

Mounting bracket with clamp construction for suspension to storage racks without drill holes. The supplied C-profile is fixed with 2 bolts M8 (not included) and square nuts. Available for clamp widths (A) up to 90, 190 and 300 mm.

The length of the M8 bolts is determined by the width of the upright (dimension ‘C’). See drawing next.

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Clamp dimension between bolts A (mm)</th>
<th>Width mounting bracket B (mm)</th>
<th>Height mounting bracket D (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP4-MBC90</td>
<td>40 - 90</td>
<td>130</td>
<td>133</td>
</tr>
<tr>
<td>SP4-MBC190</td>
<td>90 - 190</td>
<td>240</td>
<td>133</td>
</tr>
<tr>
<td>SP4-MBC300</td>
<td>190 - 300</td>
<td>360</td>
<td>133</td>
</tr>
<tr>
<td>SP7-MBC90</td>
<td>40 - 90</td>
<td>130</td>
<td>170</td>
</tr>
<tr>
<td>SP7-MBC190</td>
<td>90 - 190</td>
<td>240</td>
<td>170</td>
</tr>
<tr>
<td>SP7-MBC300</td>
<td>190 - 300</td>
<td>360</td>
<td>170</td>
</tr>
</tbody>
</table>

Mounting systems for HEA-profiles

Type SP4-MBC-HEA260

This suspension system, including the mounting bracket SP4-JC with clamps, is used for mounting support profile SP4 to uprights limited to HEA 260, if welding is not prohibited.

The bracket is to be mounted by means of the included clamps.

Dimension D = 133 mm

Type SP7-MBC-HEA260

This suspension system, including the mounting bracket SP7-JC with clamps, is used for mounting support profile SP7 to uprights limited to HEA 260, if welding is not prohibited.

The bracket is to be mounted by means of the included clamps.

Dimension D = 170 mm
Mounting housings:

easily connecting of the housings

Housings PR4, PR7 and PR10 are connected to each other using joint sets, mounted at the back side of the housings. After connecting all housings, it is important to make a fixation of the PVC housing with the steel support profile by means of a fixed point, located at the end or line feed. From this fixed point, the PVC housing can expand and shrink freely into the support profile while sliding over the mounting clips (see page 6, 7 and 8).

At the end of each Pro-Ductor system an end rail (PR7) or end cap (PR4, PR10) is mounted. Detailed information on this and the required components are described in the section on page 13.

Joining housings PR4, PR7, PR10

Joint sets

Type PR4-J
A complete set PR4-J contains a joint and 4 joint pins to make a connection between two PR4 profiles. The joint is slid into the the slots of the profiles. When the holes in the strips correspond with the holes in the profiles, the joint pins can be mounted. This ensures a firm connection.

Type PR7-J
A complete set PR7-J contains 2 joint strips(PR7-JS) and 4 joint pins (PR7-JP) to make a connection between two PR7 profiles. Joint strips are slid into the the slots of the profiles. When the holes in the strips correspond with the holes in the profiles, the joint pins can be mounted. This ensures a firm connection.

Type PR10-J
A complete set PR10-J contains a joint and 6 joint pins to make a connection between two PR10 profiles. Mounting is equal to set PR4-J.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2040705</td>
<td>Set for PR4 joint</td>
<td>PR4-J</td>
</tr>
<tr>
<td>2010500</td>
<td>Set for PR7 joint</td>
<td>PR7-J</td>
</tr>
<tr>
<td>2030510</td>
<td>Set for PR7 joint</td>
<td>PR10-J</td>
</tr>
</tbody>
</table>
Mounting housings:
finishing the system

At the end of each Pro-Ductor system an end cap set (Type S-ER4, S-ER7 or S-ER10) is mounted. Here the copper conductors can move freely when they expand or shrink through temperature changes.
The black end caps with end strips provide smooth finishing of the ends of both the PVC rail housing and the support profile.
Detailed information on this and the required components are described in the section below.

End cap sets

Set End cap Type S-ER4
Each PR4 system requires 1 set end cap, containing an end rail (length 300 mm), 2 pcs end covers for housing PR4 and 2 pcs end strips for support profile SP4 (see picture).
The end rail catches the expansion of the copper conductors. At the other side of the system there should be approx. 250 mm extra housing for eliminating copper expansion.

Set End cap Type S-ER7
Each PR7 system requires 1 set end cap, containing an end rail (length 300 mm), 2 pcs end covers for housing PR7 and 2 pcs end strips for support profile SP7 (see picture).
The end rail catches the expansion of the copper conductors. At the other side of the system there should be approx. 250 mm extra housing for eliminating copper expansion.

Set End cap Type S-ER10
Each PR10 system requires 1 set end cap, containing an end rail (length 300 mm), 2 pcs end covers for housing PR10 and 2 pcs end strips for support profile SP10 (see picture).
The end rail catches the expansion of the copper conductors. At the other side of the system there should be approx. 250 mm extra housing for eliminating copper expansion.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2040745</td>
<td>Set End cap PR4 L=300mm</td>
<td>S-ER4</td>
</tr>
<tr>
<td>2001800</td>
<td>Set End cap PR7 L=300mm</td>
<td>S-ER7</td>
</tr>
<tr>
<td>20030525</td>
<td>Set End cap PR10 L=300mm</td>
<td>S-ER10</td>
</tr>
</tbody>
</table>
Feed boxes for PR4:
practical and easy ways to connect!

There are several possibilities for connecting feed- and control cables to a Pro-Ductor-installation. The cables can either be connected to the end of the Pro-Ductor installation (end feed) or at a chosen point in the installation (line feed).

In most cases, a line feed can be applied as an end feed. The order of the copper channels in the Pro-Ductor housing referring to the line feed clamp holders LCH and collector trolleys PCT can be viewed on the drawing on page 20.

When parallel mounting of the copper conductors is needed, e.g. to increase the maximum current capacity or to decrease the voltage drop, then you should use Pro-Ductor PR7, applying the line feed solutions as shown on pages 5 and 18. Alternatively, you can use the Pro-Ductor PR10 system featuring 10 copper channels. It offers sufficient space for parallel mounted conductors for feed, combined with conductors for control functions.

See detailed information on page 17.

Feed boxes for Pro-Ductor PR4.

Line feed (normal connection):
Connects the feed cable (and/or control cable) to the end of, or at a chosen point in, a Pro-Ductor system (see picture beside).

This feed box comes with a clamp holder (PR4-LCH), needed for mounting between two rail housing ends. In this clamp holder, the required feed clamps - to be ordered separately- are inserted (see page 18).

The copper conductors can be connected easily and safely to the feed clamps. The copper conductors will not be interrupted! Also, a set connection strips (CS) to connect the steel support profile ends at both sides of the clamp holder is included.

Please note that all feed clamps and connectors are not included and must be ordered separately, depending on your copper configuration (see page 18).

The feed box is fitted with cable glands M63 (cable entry up to Ø44,5 mm) and M20 (entry up to Ø12 mm).

Alternatively, the feed box is fitted with a grommet (cable entry Ø20 - Ø75 mm).

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
<th>LENGTH FEED BOX A (mm)</th>
<th>LENGTH CS B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2040710</td>
<td>Line feed assembly</td>
<td>PR4-LBS40</td>
<td>309</td>
<td>680</td>
</tr>
<tr>
<td>2040715</td>
<td>Line feed assembly</td>
<td>PR4-LB63</td>
<td>411</td>
<td>680</td>
</tr>
<tr>
<td>2040720</td>
<td>Line feed assembly exp. rail</td>
<td>PR4-LB63-EXP-R</td>
<td>781</td>
<td>1395</td>
</tr>
<tr>
<td>2040725</td>
<td>Line feed assembly exp. rail+Cu</td>
<td>PR4-LB63-EXP-R-CU</td>
<td>1086</td>
<td>1395</td>
</tr>
<tr>
<td>2040728</td>
<td>Line feed assembly exp. rail+Cu+1xLCH</td>
<td>PR4-LB63-EXP-R-CU-1xLCH</td>
<td>582.3</td>
<td>1395</td>
</tr>
<tr>
<td>2040730</td>
<td>Line feed assembly with grommet</td>
<td>PR4-LB63</td>
<td>411</td>
<td>680</td>
</tr>
<tr>
<td>2040735</td>
<td>Line feed assembly with grommet exp. rail</td>
<td>PR4-LB63-EXP-R</td>
<td>781</td>
<td>1395</td>
</tr>
<tr>
<td>2040740</td>
<td>Line feed assembly with grommet exp. rail+Cu</td>
<td>PR4-LB63-EXP-R-CU</td>
<td>1086</td>
<td>1395</td>
</tr>
<tr>
<td>2040765</td>
<td>Line feed assembly with grommet exp. rail+Cu+1xLCH</td>
<td>PR4-LB63-EXP-R-CU-1xLCH</td>
<td>582.3</td>
<td>1395</td>
</tr>
<tr>
<td>2040775</td>
<td>Line feed clamp holder</td>
<td>PR4-LCH</td>
<td>1202</td>
<td>1395</td>
</tr>
</tbody>
</table>
Feed boxes for PR7:
practical and easy ways to connect!

There are several possibilities for connecting feed- and control cables to a Pro-Ductor-installation. The cables can either be connected to the end of the Pro-Ductor installation (end feed) or at a chosen point in the installation (line feed). In most cases, a line feed can be applied as an end feed. The order of the copper channels in the Pro-Ductor housing referring to the line feed clamp holders LCH and collector trolleys PCT can be viewed on the drawing on page 21.

When parallel mounting of the copper conductors is needed, e.g. to increase the maximum current capacity or to decrease the voltage drop, then you can use the line feed solutions as shown on pages 5 and 18. Alternatively, you can use the Pro-Ductor PR10 system featuring 10 copper channels. It offers sufficient space for parallel mounted conductors for feed, combined with conductors for control functions. See detailed information on page 17.

Feed boxes for Pro-Ductor PR7.

Line feed PR7-LB63/20 (normal connection):
Connects the feed cable (and/or control cable) to the end of, or at a chosen point in, a Pro-Ductor system (see picture beside). Fitted with cable glands M63 (cable entry up to Ø44,5 mm) and M20 (entry up to Ø12 mm).
Alternative: with grommet (cable entry Ø20 - Ø75 mm).
This feed box comes with a clamp holder (PR7-LCH), needed for mounting between two rail housing ends. In this clamp holder, the required feed clamps - to be ordered separately- are inserted.
The copper conductors can be connected easily and safely to the feed clamps. The copper conductors will not be interrupted! Also, a set connection strips (CS) to connect the steel support profile ends at both sides of the clamp holder is included.
Attention: all feed clamps and connectors are not included and must be ordered separately, depending on your copper configuration (see page 18).

Line feed PR7-LBS40/20 (normal connection):
As above, however with smaller cover and fitted with cable glands M40 (entry up to Ø33 mm) and M20 (entry up to Ø12 mm).

End feed box PR7-EK M40+M20 (on request)
Connects the feed cable (and/or control cable) to the end of a Pro-Ductor system (see picture next). Applicable up to copper conductors 125A.
The end feed box is supplied with cable glands M40 (entry up to Ø33 mm) and M20 (entry up to Ø12 mm). At the bottom 7 inserts M6 are provided for cable connection.
The recesses at the bottom of the feed box slide into the slots of the PR7 housing. The feed box is fixed with 2 joint pins (see picture). After connecting the wires of the feed cable to the copper conductors, the cover is placed.

Fixed point, type PR7-FP
The entire Pro-Ductor installation is to be fastened to the support profile by means of a fixed point set at the feed point or transfer side. This set contains 2 fixed point bolts with square nuts (see drawing). While screwing, the cone point of the bolt tightens itself into the PVC housing. From this point the PVC housing can slide freely into the support profile.

<table>
<thead>
<tr>
<th>AKAPP ART.NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
<th>L FEED BOX A (mm)</th>
<th>L FEED BOX B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001140</td>
<td>End feed box</td>
<td>PR7-EK M40+M20</td>
<td>200</td>
<td>-</td>
</tr>
<tr>
<td>2001590</td>
<td>Fixed point for PR7</td>
<td>PR7-FF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001900</td>
<td>Line feed with M63+M20</td>
<td>PR7-LB63/20</td>
<td>402</td>
<td>680</td>
</tr>
<tr>
<td>2001910</td>
<td>Line feed with grommet</td>
<td>PR7-LBG</td>
<td>402</td>
<td>680</td>
</tr>
<tr>
<td>2030330</td>
<td>Line feed assembly compl</td>
<td>PR7-LBS40/20</td>
<td>302</td>
<td>680</td>
</tr>
<tr>
<td>2030630</td>
<td>Line feed clamp holder</td>
<td>PR7-LCH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mounting end feed box to PR7 housing)
Fixation of housing PR7 with set PR7-FP
Feed boxes for PR7:
advanced solutions for parallel switching and expansion

The PR7 Pro-Ductor system offers the possibility to use parallel switched copper conductors. This is necessary for very high capacities up to 400A and/or decreasing of the voltage drop. The line feed clamp holder (LCH) can be fitted with a variety of line feed clamps and connectors in parallel settings. More on this, you can find on page 18. When parallel mounting of the copper conductors should be combined with conductors for control functions, it can be necessary to use more than 7 copper channels. In these cases Pro-Ductor PR10, with 10 copper channels, is the ideal system.

Feed boxes for Pro-Ductor PR7 (continued).

**Line feed (parallel connection):**
The same procedure as mentioned on page 11, however there are special clamp sets available for parallel mounting, fitting within the clamp holder. It enables connection of the connection cable simultaneously to 2 copper conductors. The line feed comes with 1 connection core 50 mm² (see drawing) for the parallel connection of the both connectors next to the earth conductor.

Please note that all feed clamps and connectors are not included and must be ordered separately, depending on your copper configuration (see page 18).

The feed box is fitted with cable glands M63 (entry up to Ø44,5 mm) and M20 (entry up to Ø12 mm). Alternatively, the feed box is fitted with a grommet (entry Ø20 - Ø75 mm).

**Line feed (for housing expansion):**
As mentioned above, however with extended cover, for a line feed clamp holder LCH and connection terminal.

These feed boxes are typically used for systems where the pvc housing is ‘locked up’ between 2 fixed points but the copper conductors are uninterrupted, e.g. when transfers are used. Within this line feed box an expansion of the pvc housing of up to 376 mm is possible. The connecting cable is connected to the fixed terminal, while the flexible cores move with the housing and line feed clamp holder. For dimensions of the line feed box see drawing below.

The line feed box terminal is pre-wired, with 5 cores 50 mm² and 2 cores 6 mm² (see drawing). Please note that all feed clamps and connectors are not included and must be ordered separately, depending on your copper configuration (see page 18).

The feed box is fitted with cable glands M63 (entry up to Ø44,5 mm) and M20 (entry up to Ø12 mm). Alternatively, the feed box is fitted with a grommet (entry Ø20 - Ø75 mm).

**Line feed (for housing and copper expansion):**
These feed boxes are typically used for systems with expansion gaps or isolation sections. Please contact our sales office for further information on this.

See detailed information on page 17.

On this page, also the line feed boxes are listed for use in installations with expansion gaps or isolation sections. Within these line feeds, expansion of housing and/or copper conductors can be eliminated.

For alternative solutions, not listed here, please contact our sales office.
Feed boxes for PR10: easily connecting up to 400A!

For the connection of feed and control cables to an AKAPP Pro-Ductor system type PR10, two options exist: normal and parallel connection. Special connectors are available for parallel switching of copper conductors.

The feed box can be applied as end feed or as line feed; the cables can either be connected to the end of the Pro-Ductor installation (end feed) or at a chosen point in the installation (line feed).

Useful for increasing the maximum current or reducing the voltage drop.

Feed boxes for Pro-Ductor PR10.

**Line feed (normal connection):**

Connects the feed cable (and/or control cable) to the end of, or at a chosen point in, a Pro-Ductor system (see picture beside). The feed box is fitted with cable glands M63 (entry up to Ø44.5 mm) and M20 (entry up to Ø12 mm).

This feed box comes with a clamp holder (PR10-LCH), needed for mounting between two rail housing ends. In this clamp holder, the required feed clamps - to be ordered separately - are inserted.

The copper conductors can be connected easily and safely to the feed clamps. The copper conductors will not be interrupted! Also, a set connection strips (CS) to connect the steel support profile ends at both sides of the clamp holder is included.

**Line feed (parallel connection):**

The same procedure as mentioned above, however there are special clamp sets available for parallel mounting, fitting within the clamp holder. It enables connection of the connection cable simultaneously to 2 copper conductors. More information on this you'll find on page 18.

**Line feed (extended performance):**

As above, however with extended cover, for 2 pcs line feed clamp holders LCH. These feed boxes are typically used for systems with expansion gaps or isolation sections. The latter will split 2 current circuits from each other. For dimensions of the feed box see drawing below.

Special cable inlets on request.

<table>
<thead>
<tr>
<th>AKAPP ART.NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
<th>L FEED BOX A (mm)</th>
<th>L CS B (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2030705</td>
<td>Line feed assembly M63-M20</td>
<td>PR10-LB63/20</td>
<td>420</td>
<td>620</td>
</tr>
<tr>
<td>2030707</td>
<td>Line feed assembly f. expansion M63-M20</td>
<td>PR10-LB63/20-EXP</td>
<td>420</td>
<td>620</td>
</tr>
<tr>
<td>2030710</td>
<td>Line feed ass. extended cmpl M63-M20</td>
<td>PR10-LB63/20-2xLCH</td>
<td>662</td>
<td>987</td>
</tr>
<tr>
<td>2030715</td>
<td>Line feed ass. f. expansion M63-M20</td>
<td>PR10-LB63/20-EXP-R-CU</td>
<td>610</td>
<td>987</td>
</tr>
<tr>
<td>2030720</td>
<td>Line feed ass. f exp. w. grommet Ø20-75mm</td>
<td>PR10-LBG-EXP-R-CU</td>
<td>610</td>
<td>987</td>
</tr>
<tr>
<td>2030730</td>
<td>Line feed ass. extended cmpl w. grommet</td>
<td>PR10-LBG-2xLCH</td>
<td>662</td>
<td>987</td>
</tr>
<tr>
<td>2030530</td>
<td>Line feed clamp holder</td>
<td>PR10-LCH</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The PR10 system offers sufficient space for parallel mounted conductors for feed, combined with conductors for control functions.

Line feed boxes can also be applied for installations with expansion gaps or isolation sections.

The order of the copper channels in the Pro-Ductor housing referring to the line feed clamp holders LCH and collector trolleys PCT can be viewed on the drawing on page 22.
Connecting the copper conductors: skilful solutions with feed clamps

All line feed systems require clamp holders and feed clamps to connect the copper conductors within the rail housing to the cores of the supply cable.

There are 2 types of feed clamps: LC80 and LC200.

Feed clamps LC200 are used in combination with connectors. Copper conductors can be easily switched parallel or serial (coupled through). Even a combination is possible.

See details below.

**Feed clamps**

**Type LC80**
Applicable for mounting of copper conductors CU35 - CU80.
Supplied without cable lug.

**Type LC200**
Applicable for mounting of copper conductors CU125 - CU200. A connector should be applied (to be ordered separately) to mount the cable lug.
Supplied without cable lug.

**Connectors**
Connectors are applied in combination with line feed clamps LC200. The connectors are supplied with a bolt M10, a nut and a washer to fix the cable lug (not supplied) of the feed cable.

There are 2 connector types:
Type C-LC.. for continuous copper conductors
Type CJ-LC.. for serial coupling of copper conductors
Connectors C(J)-LC400 are applied for parallel connecting of copper conductors in the line feed clamp holder LCH.

See the overview in the table below.

---

<table>
<thead>
<tr>
<th>Connector</th>
<th>For feed clamp LC200</th>
<th>( I_{\text{max}} ) (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single row of feed clamps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-LC200</td>
<td>1 pc.</td>
<td>200</td>
</tr>
<tr>
<td>C-LC400</td>
<td>2 pc., parallel</td>
<td>400</td>
</tr>
<tr>
<td>Double row of feed clamps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C(J)-LC200</td>
<td>2 pc., serial</td>
<td>200</td>
</tr>
<tr>
<td>C(J)-LC400</td>
<td>4 pc., 2 parallel + 2 serial</td>
<td>400</td>
</tr>
</tbody>
</table>

---

**LINE FEED CLAMP AKAPP NO.**

<table>
<thead>
<tr>
<th>LINE FEED CLAMP AKAPP NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>( I_{\text{max}} ) (A) 80% D.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1012750</td>
<td>Feed clamp LC80</td>
<td>1 per conductor</td>
<td>80</td>
</tr>
<tr>
<td>1013000</td>
<td>Feed clamp LC200</td>
<td>1 per conductor</td>
<td>200</td>
</tr>
</tbody>
</table>

**CONNECTOR AKAPP NO.**

<table>
<thead>
<tr>
<th>CONNECTOR AKAPP NO.</th>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>( I_{\text{max}} ) (A) 80% D.C.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000170</td>
<td>Connector C-LC200</td>
<td>1 per clamp</td>
<td>200</td>
</tr>
<tr>
<td>2000175</td>
<td>Connector C-LC400</td>
<td>1 per 2 clamps</td>
<td>400</td>
</tr>
<tr>
<td>2000180</td>
<td>Connector CJ-LC200</td>
<td>1 per 2 clamps</td>
<td>200</td>
</tr>
<tr>
<td>2000185</td>
<td>Connector CJ-LC400</td>
<td>1 per 4 clamps</td>
<td>400</td>
</tr>
</tbody>
</table>
Collector trolleys: designed for continuity!

The current conduction of the Pro-Ductor 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-carbon alloy.

The collector trolley is mounted to a special designed mounting bracket. This is fixed to the towing arm of the moving machine to be fed.

See also page 23.

Some important features:

Wheel guided collector trolley

The parabolic wheels and the unique four spring construction ensure correct guidance of the collector trolleys in the section grooves of the housing. This results in minimal wear of carbon brushes and p.v.c. railhousing and optimizes the electrical contact with the copper conductors.

Perfect signal transmission

As a result of the optimal correcting characteristics the carbon brushes always glide straight on the flat, smooth copper conductors. This ensures optimal feed and control. Furthermore, each brush is equipped with a compression spring (see picture below).

Quick installation

It is simple to mount the collector trolley to the mobile construction. The terminal box and the supporting profile both have the same height. This makes adjusting the collector trolley easy. Swinging of the warehouse crane during travelling is eliminated by the unique spring construction of the trolleys (horizontal 20 mm, vertical 10 mm deviation max.).

Steel terminal box

The trolley is fitted with a solid steel terminal box. Cables can be inserted from any side of the box. Standard with 2 cable glands; types PCT7: M40 and M20; types PCT10: M63 and M20. Furthermore there are blind covered holes in the other 3 sides of the box for mounting cable glands.

Suitable for curves, switches en transfers

The collector trolleys can, without any problem, travel within or outside the rail section. For instance, when the crane travels from one aisle to the next. In order to maintain an uninterrupted signal the two collector trolleys can be switched parallel. See also page 24 and 25.

Very low maintenance costs

The wheels and carbon brushes have minimum wear, since they are made of high quality, wear resistant, materials. This results in high reliability and performance, with minimal maintenance.

The construction of the collector trolley permits quick and easy replacement of the wheels and carbon brushes. Other components do not require any maintenance.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>INDICATIVE LIFE CYCLE (KM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010811</td>
<td>Carbon brush PCT-P, phase</td>
<td>20.000</td>
</tr>
<tr>
<td>2010821</td>
<td>Carbon brush PCT-E, earth</td>
<td>20.000</td>
</tr>
<tr>
<td>2010831</td>
<td>Carbon brush PCT-PZ, silver graphite, phase</td>
<td>7.500</td>
</tr>
<tr>
<td>2010841</td>
<td>Carbon brush PCT-EZ, silver graphite, earth</td>
<td>7.500</td>
</tr>
<tr>
<td>2040630</td>
<td>Wheel PUR PCT4-W (for PCT4)</td>
<td>40.000</td>
</tr>
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<td>1512650</td>
<td>Wheel PUR PCT-W (for PCT7 / PCT10)</td>
<td>40.000</td>
</tr>
<tr>
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<td>Torsion spring set left complete, for PCT</td>
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</tr>
<tr>
<td>1449140.800000</td>
<td>Torsion spring set right complete, for PCT</td>
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</tbody>
</table>

*) these values are without warranty

Replacing of carbon brushes is very easy

Inspection of the contact surface of the carbon brush
Collector trolleys series PCT4: combination of stability and reliability!

Pro-Ductor collector trolleys are available for range 3 to 4 conductors with nominal current carrying capacity up to 125A (D.C. 80%). Applicable from -30°C, which is especially important for deep freeze warehouses. The collector trolleys are provided with terminals for cable cross sections from 4 mm² up to 25 mm².

The stable construction of the collector trolley, combined with the uninterrupted copper conductors enable very high travel speeds (standard up to 500 m per minute!). There is a suitable trolley for each application. Not only for straight systems, but also for aisle changing cranes we offer you the best solution. More information on this, you’ll find on pages 24 and 25.

Collector trolleys series PCT4

Type PCT4-..-125/BI
Current capacity up to 125A (80% I.D.). With double carbon brushes, internal wiring connected to a terminal. Integrated metal connection box, with cable glands M40 and M20. Low-wear, ball-beared parabolic wheels, perfectly guided in the section grooves of the housing. This prevents the brushes from touching the housing and so prevents wear of the housing and deposit of housing dust onto the copper conductors. Also, the wear of the carbon brushes and deposit of the carbon are reduced to the minimum.

Unique four spring construction, eliminating mechanical tolerances in horizontal and vertical movements during crane travel.

Mounting bracket
Type PCT4-MB125
Galvanised steel, with mounting holes for mounting to a towing device of the movable machine. See also page 23. Slots enable vertical adjustment of the trolley.

The dimensional sketch shows the most important dimensions and distances to calculate with when mounting a Pro-Ductor system.

The drawing above shows the order of the copper conductors in the housing.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
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<tbody>
<tr>
<td>2040755</td>
<td>Collector trolley 4-pole 125A</td>
<td>PCT4-4-125/BI-40</td>
</tr>
<tr>
<td>2040750</td>
<td>Mounting bracket complete</td>
<td>PCT4-MB125</td>
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</tbody>
</table>
Collector trolleys series PCT7: combination of stability and reliability!

Pro-Ductor collector trolleys are available for range 4 to 7 conductors with nominal current carrying capacity up to **125A** (D.C. 80%). Applicable from -30°C, which is especially important for deep freeze warehouses. The collector trolleys are provided with terminals for cable cross sections from 4 mm² up to 25 mm².

The stable construction of the collector trolley, combined with the uninterrupted copper conductors enable very high travel speeds (standard up to 500 m per minute!). There is a suitable trolley for each application. Not only for straight systems, but also for aisle changing cranes we offer you the best solution.

More information on this, you’ll find on pages 24 and 25.

**Collector trolleys series PCT7**

**Type PCT7-..-125/BI**

Current capacity up to 125A (80% I.D.). With double carbon brushes, internal wiring connected to a terminal. Integrated metal connection box, with cable glands M40 and M20.

Low-wear, ball-beared parabolic wheels, perfectly guided in the section grooves of the housing. This prevents the brushes from touching the housing and so prevents wear of the housing and deposit of housing dust onto the copper conductors. Also, the wear of the carbon brushes and deposit of the carbon are reduced to the minimum.

Unique four spring construction, eliminating mechanical tolerances in horizontal and vertical movements during crane travel.

An overview of available trolley types is listed in the table below.

**Mounting bracket**

**Type PCT7-MB125**

Galvanised steel, with mounting holes for mounting to a towing device of the movable machine. See also page 23. Slots enable vertical adjustment of the trolley.

The dimensional sketch shows the most important dimensions and distances to calculate with when mounting a Pro-Ductor system.

The drawing above shows the order of the copper conductors in the housing.

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>2012360</td>
<td>Collector trolley 4-pole 125A</td>
<td>PCT7-4-125/BI</td>
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<tr>
<td>2012370</td>
<td>Collector trolley 5-pole 125A</td>
<td>PCT7-5-125/BI</td>
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<tr>
<td>2012380</td>
<td>Collector trolley 6-pole 125A</td>
<td>PCT7-6-125/BI</td>
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<tr>
<td>2012350</td>
<td>Collector trolley 7-pole 125A</td>
<td>PCT7-7-125/BI</td>
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<tr>
<td>2010270</td>
<td>Mounting bracket incl. fastening materials</td>
<td>PCT7-MB125</td>
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</table>
Collector trolleys series PCT10:
combine high currents with control functions!

Pro-Ductor collector trolleys PCT10 are available for range
5 to 10 conductors with nominal current carrying capacity
up to 125A (D.C. 80%) or up to 250A with parallel switched
carbon brushes.
Applicable from -30°C, which is especially important for deep
freeze warehouses.
The collector trolleys are provided with terminals for cable
cross sections from 4 mm² up to 25 mm².

The stable construction of the collector trolley, combined with
the uninterrupted copper conductors enable very high travel
speeds (standard up to 500 m per minute!).
Combining high current capacities with control functions is
very easy with AKAPP Pro-Ductor PR10, that offers up to
400A nominal current! Of course, the collector trolley series
PCT10 offer the perfect match to this system.
Read more below.

Collector trolleys series PCT10
Type PCT10-..-125/BI
Current capacity up to 125A (80% I.D.). With double carbon
brushes, internal wiring connected to a terminal. Integrated
metal connection box, with cable glands M63 and M20.
Low-wear, ball-beared parabolic wheels, perfectly guided in
the section grooves of the housing. This prevents the brushes
from touching the housing and so prevents wear of the housing
and deposit of housing dust onto the copper conductors. Also,
the wear of the carbon brushes and deposit of the carbon are
reduced to the minimum.
Unique four spring construction, eliminating mechanical to-
erances in horizontal and vertical movements during crane
travel.

An overview of available trolley types is listed in the table
below.

Mounting bracket
Type PCT10-MB125
Galvanised steel, with mounting holes for mounting to a towing
device of the movable machine. See also page 23.
Slots enable vertical adjustment of the trolley.

The dimensional sketch shows the most important dimensions
and distances to calculate with when mounting a Pro-Ductor
system.

The drawing above shows the order of the copper conductors
in the housing.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>2031100</td>
<td>Collector trolley 10-pole 125A</td>
<td>PCT10-10-125/BI-63/20</td>
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<tr>
<td>2031105</td>
<td>Collector trolley 9-pole 125A</td>
<td>PCT10-9-125/BI-63/20</td>
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<td>2031110</td>
<td>Collector trolley 8-pole 125A</td>
<td>PCT10-8-125/BI-63/20</td>
</tr>
<tr>
<td>2031120</td>
<td>Collector trolley 6-pole 125A</td>
<td>PCT10-6-125/BI-63/20</td>
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<tr>
<td>2030555</td>
<td>Brush guide</td>
<td>PCT10-G</td>
</tr>
<tr>
<td>2030166</td>
<td>Mounting bracket incl. fastening materials</td>
<td>PCT10-MB125</td>
</tr>
</tbody>
</table>
More on collector trolleys: leading edge design; optimal performance!

When developing the collector trolleys, reliability and durability were the most important issues. The leading edge design, combined with the high quality components, form the basis for outstanding trolley performance.

Mounting and adjusting of the trolleys is very quick and easy. The solid construction and easy alignment of the collector trolleys contribute to the extremely low wear, with optimal performance!

Mounting of the collector trolley

The collector trolleys PCT7 and PCT10 are easily mounted to the moving apparatus using a mounting bracket (ordered separately). See picture.

The glands for the connection cables can be mounted on any of the sides of the steel terminal box by removing the appropriate blank hole.

After fixing of the mounting bracket, the trolley needs to be aligned.

Horizontal alignment

It is very important that the carbon brushes maintain the proper spring force when determining the exact length of the towing arm. See pictures to check the distances between towing arm end and the mounting bracket. A tolerance of 20 mm is permitted.

Vertical alignment

The height of the mounting bracket and the steel support profile are the same. This makes vertical alignment easy, e.g. by means of a level. A tolerance of 10 mm is permitted.

After alignment of the mounting bracket, the collector trolley can be mounted to it. Finally, the appropriate cables can be connected to the terminals.

Special collector trolleys

There are special types available for aisle changing cranes, which demand the use of transfer guides. See page 24 and 25 for more information about these applications.
**Special applications with Pro-Ductor®:**

**aisle-changing cranes**

AKAPP Pro-Ductor system is extremely flexible and versatile because of the unique design. It offers solutions for feeding problems in numerous applications, in a wide variety of circumstances. Pro-Ductor systems can be applied for **aisle changing** (warehouse) cranes, where the crane moves from the main aisle into one or more side corridors. These applications require transfer guides.

In the main aisle one or more straight transfer guides are located. At the end of each side corridor there are curved transfer guides (left or right curves). A bend can also be realised by a curved housing section PR7. Aisle changing cranes are provided with 2 collector trolleys. A special guide construction on these collector trolleys enables smooth and trouble free operation. For more information on collector trolleys, see page 25.

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### Aisle-changers for Pro-Ductor (PR7/PR10)

**Transfer guide sections**

At the end of each aisle is a curved transfer guide, while in the main aisle straight transfer guides must be installed. These transfer guides are needed to lead the collector trolleys smoothly into the other track. The crane can approach transfer sections from both sides, so the travelling direction is not relevant. The travelling speed at the transfer guide may not exceed 80 m/minute.

Transfer guide sections PRx-TGC are supplied with a special **mounting bracket**, with 2 holes for bolts M10 located just above and below the level of the support profile SP7/SP10, that enables vertical adjustment of the support profile even after the p.v.c. housing PR7 or PR10 is mounted.

### Mounting bracket for support post, type SPx-MB/P

This special mounting bracket is used in combination with SPx-P support posts. In contrast to the standard SPx-MB it can be adjusted after the SP7 or SP10 support profile is mounted by means of 2 holes for bolts M10, just above and below the level of the support profile.

Therefore it is used as the last bracket at the end of aisles with transfer guides for optimal adjustment of the transfer guide section. See drawing next.

<table>
<thead>
<tr>
<th>AKAPP ART.NO.</th>
<th>DESCRIPTION</th>
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<tr>
<td>2005020.B0000</td>
<td>Transfer guide curved, right</td>
<td>PR7-TGC-R</td>
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<tr>
<td>2005020.B0001</td>
<td>Transfer guide curved f. expansion, right</td>
<td>PR7-TGC-EXP-R</td>
</tr>
<tr>
<td>2005020.B0002</td>
<td>Transfer guide curved f. expansion, left</td>
<td>PR7-TGC-EXP-L</td>
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<tr>
<td>2005020.B0003</td>
<td>Transfer guide curved, left</td>
<td>PR7-TGC-L</td>
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<tr>
<td>2005000.B0000</td>
<td>Set Transfer guide straight, incl. fasteners</td>
<td>PR7-TGS</td>
</tr>
<tr>
<td>2005000.B0001</td>
<td>Set Transfer guide curved, incl. fasteners</td>
<td>PR7-TGS</td>
</tr>
<tr>
<td>2005000.B0002</td>
<td>Set Transfer guide straight, incl. fasteners</td>
<td>PR7-TGS</td>
</tr>
<tr>
<td>2005000.B0003</td>
<td>Set Transfer guide curved, incl. fasteners</td>
<td>PR7-TGS</td>
</tr>
<tr>
<td>2005000.B0004</td>
<td>Set Transfer guide curved, incl. fasteners</td>
<td>PR7-TGS</td>
</tr>
</tbody>
</table>

---

**Situation for an aisle changing crane, with a straight and a curved transfer guide, plus 2 special collector trolleys.**

---

**Guide construction on collector trolley for smooth operation at transfer guides.**
Special applications with Pro-Ductor®:
collector trolleys for aisle changing cranes

Collector trolleys for aisle changing cranes are provided with a special guide construction for smooth and trouble free movement through the transfer guides. On page 18 the principle of a transfer is shown.

A bend section can also consist of a curved Pro-Ductor housing. The radius of the housing should be between 1200 and 4000 mm.

In that case, the carbon brushes of the collector trolley will remain contact with the copper conductors.

This requires special prepared collector trolleys. These types are listed in the table below.

Standard the collector trolleys feature a terminal box with cable gland M40 for the cable entry. Terminal connectors for cables up to 10 mm².

You’ll find an overview of standard available collector trolleys in the table below.

Alternative performances on request.

Collector trolleys for aisle changing cranes

Collector trolleys type PCT7-.-63/CA/..
Capacity up to 63A (80% I.D.) per collector trolley. Available in 4, 5, 6 or 7-pole performance.

An aisle changing crane must be fitted with 2 collector trolleys, using a special guide construction. These trolleys are parallel mounted to prevent interruption of the current while the crane is changing from aisle.

Mounting set PCT-SB for PCT7-.-63/CA/..
This set contains 2 steel brackets, mounted on both sides of the trolley, which enables the trolley to be mounted to the towing construction of the moving apparatus to be fed.

Sensor bracket PCT63 for PCT7-.-63/CA/..
Brackets can be positioned on the wheel assembly of the PCT63, enabling placement of an inductive sensor (Ø18 mm). This sensor signal can be used to switch on/off of the PCT when changing aisle. Sensor not included.

You’ll find an overview of standard available collector trolleys in the tabel below.

Collector trolleys for curved sections PR7 (radius 1200 - 4000 mm)

Collector trolleys for aisle changing cranes are provided with a special guide construction for smooth and trouble free movement through the transfer guides. On page 18 the principle of a transfer is shown.

A bend section can also consist of a curved Pro-Ductor housing. The radius of the housing should be between 1200 and 4000 mm.

In that case, the carbon brushes of the collector trolley will remain contact with the copper conductors.

This requires special prepared collector trolleys. These types are listed in the table below.

Standard the collector trolleys feature a terminal box with cable gland M40 for the cable entry. Terminal connectors for cables up to 10 mm².

You’ll find an overview of standard available collector trolleys in the table below.

Alternative performances on request.
Special applications with Pro-Ductor®:
‘Mast conductor bar’, vertical system on warehouse cranes

AKAPP Pro-Ductor PR7 can be mounted vertically to the mast of a warehouse crane for the feeding and/or control of the control unit. Within the Pro-Ductor type PR7 housing, up to 7 copper conductors can be applied according to the specific demands of the control unit. This system can be applied without support profile.

Above this, the system can optionally be fitted with a code rail, which offers exact positioning of the crane control unit while moving up- and downwards.

For this application, a special designed self-aligning collector trolley featuring double carbon brushes per conductor offers a trouble free transfer of power and control signals.

The most important advantages of this ‘Mast conductor bar’ application are e.g. the very compact performance, easy installing, flexibility of applied copper conductors, low maintenance and very high dependability.

Details for PR4 and PR10 systems on request.

Components of a Mast conductor bar system
(see also the system lay out on page 27)

Rail housing PR7
The rail housing can be mounted to the mast of a warehouse crane up to a length of 30 metres, which means that it can be used on large warehouse cranes and on mini loads.

The rail housing is fitted by means of mounting brackets type PR7-MB (see drawing). For free expansion of the housing, it glides into these mounting brackets.

Feed box PR7-EBS
At the bottom of the system the feed box PR7-EBS is mounted to the mounting bracket type PR7-MP (see drawing). From this point the pvc housing can expand and shrink freely if the ambient temperature changes. The feed box is provided with 7 glands M16, for the connection of the feed cables to the copper conductors. This feed box is applicable for use with 50A and 80A conductors. Because of expansion issue, the conductors will be fixed at the top of the system (see under ‘End cap’).

End cap PR7-EC
The end cap encloses the system on top. The copper conductors are mounted in ‘hanging position’, using the provided brass screw connecting clamps at the top of the rail housing. See drawing next.

Collector trolley PCT7-7-70/NT
The collector trolley PCT7-7-70/NT has been designed especially for this application. It is featured with a double carbon brushes (2x35A) for each conductor and with self-aligning wheels. The spring system ensures that the trolley follows the movements of the crane control unit perfectly, eliminating horizontal and vertical tolerances and preventing the carbon brushes to affect the pvc housing. The collector trolley is provided with 7 glands M16, for putting out the connection cables to the crane unit. See drawing.

Code rails
In combination with the housing PR7, code rails can be applied (see also page 28), which offers very precise vertical positioning of the control unit.
Configuration ‘Mast conductor bar’ system:
Pro-Ductor in vertical application

Mast conductor bar application (7-pole Pro-Ductor system) on mini-load

<table>
<thead>
<tr>
<th>AKAPP ART.NO.</th>
<th>DESCRIPTION</th>
<th>TYPE</th>
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<tbody>
<tr>
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<td>PR7</td>
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<tr>
<td>2003450</td>
<td>Mounting bracket bottom</td>
<td>PR7-MP</td>
</tr>
<tr>
<td>2010340.B0000</td>
<td>End feed box vertical-below, expansion</td>
<td>PR7-EBS</td>
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<tr>
<td>2010610</td>
<td>Mounting bracket</td>
<td>PR7-MB-S</td>
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<tr>
<td>2010500</td>
<td>Set for PR7 joint</td>
<td>PR7-J</td>
</tr>
<tr>
<td>201060.B0000</td>
<td>End cap for vertical-top</td>
<td>PR7-EC</td>
</tr>
<tr>
<td>2012370.B0000</td>
<td>Collector trolley 70A for PR7 vertical</td>
<td>PCT7-7-70NT/16-7</td>
</tr>
</tbody>
</table>
Special applications with Pro-Ductor®: positioning systems

AKAPP Pro-Ductor systems can be used in combination with electronic control systems, such as PROFIBUS®. Advanced methods of positioning (e.g. with barcode) are also possible. The support profile can be extended with a special barcode strip.

Below are some examples.

Positioning systems for Pro-Ductor.

Barcode tape BCB
A metal strip provided with barcode tape is mounted on the top or below the support profile SP4, SP7 or SP10. This strip, made of spring steel, is mounted between 2 tensioners, to maintain the straight shape of the strip. This is very important because of the accurate reading of the barcode.

The reader fitted on the (warehouse) crane reads the barcode while the crane moves and determines the crane position relative to the barcode tape.

Depending on the operating system, this information can be sent through the Pro-Ductor system to a processor for further use with additional software.

Code rail WCS3
On the top or at the bottom of the support profiles SP4, SP7 and SP10 a special punched code rail can be mounted. On the (warehouse-)crane an optical device is mounted, that reads the punched code while the crane moves and accurately determines the position of the crane.

Depending on the operating system, this information can be sent through the Pro-Ductor system to a processor for further use with additional software.

Please contact our sales office for further information on this and other positioning systems that can be combined with AKAPP Pro-Ductor.

<table>
<thead>
<tr>
<th>AKAPP ART. NO.</th>
<th>DESCRIPTION</th>
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<tr>
<td>2095025.B0005</td>
<td>Coderail stainless steel without mounting holes</td>
<td>WCS3-CS70-M1</td>
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<tr>
<td>2095020.B0000</td>
<td>Coderail stainless steel without mounting holes</td>
<td>WCS3-CS70-M1</td>
</tr>
<tr>
<td>2010700</td>
<td>Clamp set for SP7</td>
<td>SP7-WCS3</td>
</tr>
<tr>
<td>2010900</td>
<td>Clamp set for SP10</td>
<td>SP10-WCS3</td>
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<td>2001345.B0035</td>
<td>BCB-T</td>
<td>Tensioner for BCB-S complete</td>
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<tr>
<td>2001350</td>
<td>Bracket for barcodeband BCB-H</td>
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<tr>
<td>2001325.B0000</td>
<td>BCB-S Bar Code on steel strip H=50mm</td>
<td>BCB-S</td>
</tr>
</tbody>
</table>

For further information please contact our head office. The addresses are listed on the front cover of this brochure.

Application of a 10-pole Pro-Ductor system with code rail
Configuration Pro-Ductor PR4 systems:

some important remarks

Pro-Ductor systems offer a high level of mounting flexibility. You can determine the most suitable location of the feed point (end- or line feed), considering the local situation and volt drop. The minimum mounting height is 160 mm (top PCT4). The graphics below show the typical configuration options for PR4 systems, with and without support profile SP4.

LEGENDE:
1. Housing PR4
2. Support profile SP4
3. Mounting bracket for support profile
4. Joint for support profile
5. Feed box
6. Mounting clip for housing
7. Joint for housing
8. End cap
9. Support
10. Collector trolley
11. Mounting bracket for collector trolley

1 System  
type PR4 + SP4  
Line feed as  
End feed

2 System  
type PR4 + SP4  
Line feed

3 System  
type PR4  
Without SP4  
Line feed as  
End feed

4 System  
type PR4  
Without SP4  
Line feed
Pro-Ductor systems offer a high level of mounting flexibility. You can determine the most suitable location of the feed point (end- or line feed), considering the local situation and volt drop.

The minimum mounting height is 200 mm (top PCT7 and 275 mm (top PCT10). The graphics below show the typical configuration options for PR7 and PR10 systems, complete with support profile SP7 and SP10.

**LEGENDE:**
1. Housing PR7/PR10
2. Support profile SP7/SP10
3. Mounting bracket f. support profile
4. Joint for support profile
5. Feed box
6. Mounting clip for housing
7. Joint for housing
8. End cap
9. Support
10. Collector trolley
11. Mounting bracket for collector trolley

**Configuration Pro-Ductor PR7/PR10 systems:**

**some important remarks**

1. **System type PR7**
   - **Line feed as End feed**

2. **System type PR7**
   - **Line feed**

3. **System type PR10**
   - **Line feed as End feed**

4. **System type PR10**
   - **Line feed**
AKAPP conductor bar systems: always a perfect solution!

AKAPP Pro-Ductor is a very reliable and efficient conductor system, successfully used in many warehouses, but it is only one of our products. Wabtec Netherlands supplies many more conductor systems, to create an optimal solution for each and every application. Whatever system you opt for, you can always count on the perfect functioning of the installation.

Wabtec Netherlands appreciates your interest in our products and our specialised personnel will be pleased to advise you, no strings attached and without any costs. Would you like more information? One phone call, fax or e-mail will do. You will find the relevant details on the front of this brochure or visit our website www.akapp.com.

**Multiconductor**

A compact and multi purpose conductor system. The **uninterrupted** conductors ensure a perfect transmission of **current feed** as well as **control** and **data signals**. Current capacities from 35, 50, 80, 125 up to 160A. A flexible double sided rubber sealing prevents penetration of dust or liquids and allows functioning in extreme weather conditions. No expansion problems due to the clearance that exists between the conductors and the PVC housing. No effect on the performance of the system. Well suited for extremely long tracks and high travel speeds.

AKAPP Multiconductor is used world-wide for cranes, traverse cars, (automated) warehouses, elevators, textile production, sluices, trains etc., even under extremely dusty, humid or even corrosive environments.

**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.
Wabtec Netherlands: Flexible with energy!

Wabtec Netherlands 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 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.

The AKAPP products are designed by the highest standards and are certified by UL, CCC and CE.

More information on our products can be found in our brochures, which we are happy to send you on request. Or visit our website www.akapp.com, where you can find more relevant information, download brochures and make online inquiries; fast and easy!