CPS®
Contactless Power Supply

SYSTEMS IN MOTION
Contactless power supply for your applications

AGV – automated guided vehicles
Skillet conveyors

Transfer cars
EMS – electrified monorail systems

Sortation technology
Clean-room technology
The abbreviation “CPS®” stands for “Contactless Power Supply.” This system supplies power to mobile electrical consumers without any contact. The power is inductively transmitted from a stationary (primary) conductor to a mobile consumer. A unique feature of CPS® is that data can also be transmitted via this primary conductor.

VAHLE CPS® has been continuously developed since 1997 and is now used in more than 450 operational plants in a wide range of industries. This includes VAHLE’s vast know-how in finding problem-oriented solutions together with the customer.

Benefit from
– A large variety of possibilities
– Our technical know-how
– Our unique technology
OPERATING PRINCIPLE

Innovative development

During the development of the CPS® technology, a strong focus was put on important criteria such as efficiently covering a wide range of performance and multiple areas of application and also the greatest possible level of environmental compatibility.

The required track current of 70 A (35 A only with special applications) results in an exceptionally high degree of efficiency as well as excellent electromagnetic compatibility (EMC / EMF).

In addition to the basic current supply, features such as inductive data transmission and inductive track guidance may be integrated to meet a wide spectrum of material handling requirements.

Power supply

Data transmission
General CPS® operating principle

Transformer principle

VAHLE-CPS® technology provides electrical energy without any mechanical contact. It utilizes the induction principle similar to a transformer’s primary/secondary transfer. In a transformer, the primary and secondary windings are on a common, closed ferromagnetic core. CPS® technology, on the other hand, “stretches” the primary winding to a long loop and places the secondary winding onto an open ferromagnetic core. This allows relative motion of the two windings. The transmission characteristics are optimized by using a high transmission frequency of 20 kHz.

CPS® technology

Conventional transformer

E-shaped pick-up

Flat pick-up

Track guidance

High frequency

The CPS® primary inverter converts the customer’s existing three phase alternating current into single phase alternating current with a frequency of 20 kHz. The primary cable is charged with constant current by using an interface circuit. The voltage induced in the pick-up coil is rectified and adapted to consumer requirements.
Flat pick-up systems for automated guided vehicles

The pick-up facilitates the inductive transmission of the energy provided by the primary conductor. There are different types of pick-ups available, depending on the area of application.

**Flat pick-up PS 08**
- Capacity: 350 W/500 W with heat sink (nom./peak) 270 W without heat sink
- Output voltage: 24 VDC
- Dimensions (LxWxH): 310 x 210 x 98
- Protection class: IP54
- Weight: 7.3 kg
- Data transmission via primary conductor (see page 25)
- Pick-up system with integrated power electronics
- Optionally with 24-27 VDC output for battery charging
- Parallel connection of several pick-up systems possible

**Flat pick-up PS 18**
- Capacity: 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
- Output voltage: 560 VDC
- Dimensions (LxWxH): 765 x 360 x 80
- Protection class: IP54
- Weight: 26.3 kg
- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible

**Flat pick-up PS 19**
- Capacity: 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
- Output voltage: 560 VDC
- Dimensions (LxWxH): 895 x 360 x 80
- Protection class: IP54
- Weight: 31.5 kg
- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible

- Data transmission via primary conductor (see page 25)
Advantages for automated guided vehicles

- Barrier-free track path
- Complex track layouts possible
- System can easily be expanded
- Battery or UltraCap charging during travel
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free functionality even in damp conditions
- Data transmission and track guidance via primary cable

In the past, mainly batteries or underground conductor systems were used to supply automated guided vehicles (AGV) with power. Today, more and more contactless, inductive power supply systems are being utilized. In connection with a track guidance which is also inductive, the user can benefit from a completely smooth floor surface. This increases plant availability substantially as the system is nearly insensitive to dirt, oil or other types of contaminants. Thanks to the vast variety of available pick-up units, an inductive supply to automated guided vehicles of virtually any size category is possible.

Flat pick-up PS 18 compact
Capacity ................................ 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Output voltage .......................... 560 VDC
Dimensions (LxWxH) ........ 395 x 360 x 185
Protection class ............... IP54
Weight ..................... 27.3 kg

Flat pick-up PU 18/PU 18 compact
Capacity .......................... 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Dimensions (LxWxH)
  PU 18 ........ 620 x 360 x 80
  PU 18 compact ... 370 x 360 x 185
Protection class .............. IP54
Weight ...................... 22 kg

Flat pick-up PS 19 compact
Capacity ................................ 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Output voltage .......................... 560 VDC
Dimensions (LxWxH) ........ 455 x 360 x 185
Protection class .............. IP54
Weight ...................... 32.5 kg

Flat pick-up PU 19/PU 19 compact
Capacity .......................... 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Dimensions (LxWxH)
  PU 19 ........ 705 x 360 x 80
  PU 19 compact ... 455 x 360 x 185
Protection class .............. IP54
Weight ...................... 24 kg

Track guidance

- Inductive track guidance via primary conductor (see page 26)
- Pick-up system only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units possible
- Pick-up system with integrated power electronics
  - Additional 24 VDC output as auxiliary voltage
  - Parallel connection of several pick-up systems possible
Flat pick-up systems for skillet conveyors

The pick-up facilitates the inductive transmission of the energy provided by the primary cable. There are different types of pick-ups available, depending on the area of application.

U-shaped pick-up systems for skillet conveyors

The U-shaped design of the pick-up coil surrounds the primary cable resulting in a highly efficient electromagnetic coupling. Thus even relatively small pick-up units provide superior performance.

Data transmission

- Data transmission via primary cable (see page 25)
- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible

Flat pick-up PS 18

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>1.3 kW at 60% ED</td>
</tr>
<tr>
<td>(nom./peak)</td>
<td>2 kW max. 3 min.</td>
</tr>
<tr>
<td>Output voltage</td>
<td>560 VDC</td>
</tr>
<tr>
<td>Dimensions (LxWxH)</td>
<td>765 x 360 x 80</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP54</td>
</tr>
<tr>
<td>Weight</td>
<td>26.3 kg</td>
</tr>
</tbody>
</table>

Flat pick-up PS 19

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity</td>
<td>2 kW at 60% ED</td>
</tr>
<tr>
<td>(nom./peak)</td>
<td>3 kW max. 3 min.</td>
</tr>
<tr>
<td>Output voltage</td>
<td>560 VDC</td>
</tr>
<tr>
<td>Dimensions (LxWxH)</td>
<td>895 x 360 x 80</td>
</tr>
<tr>
<td>Protection class</td>
<td>IP54</td>
</tr>
<tr>
<td>Weight</td>
<td>31.5 kg</td>
</tr>
</tbody>
</table>
Advantages for skillet conveyors

- No wear and tear on mechanical components
- Trouble-free and safe “threading” on transfer stations
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free functionality even in damp conditions
- Data transmission via primary cable

Conventional power supplies (conductors) underneath skillet platforms require high maintenance because they are sensitive to contaminations. Whereas no maintenance is required when using CPS® technology. In addition, due to the contactless power transfer, mechanical damage of power supply components is generally impossible even in critical track sections such as at lifting stations and transfer stations.

Flat pick-up PU 18/PU 18 compact
Capacity ................. 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Dimensions (LxWxH) ... 620 x 360 x 80
Protection class ........ IP54
Weight .................... 22 kg

Flat pick-up PU 19/PU 19 compact
Capacity ................. 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Dimensions (LxWxH) ... 705 x 360 x 80
Protection class ........ IP54
Weight .................... 24 kg

Flat pick-up PS 18 compact
Capacity .................... 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Output voltage ........... 560 VDC
Dimensions (LxWxH) ... 395 x 360 x 185
Protection class ........ IP54
Weight .................... 27.3 kg

Flat pick-up PS 19 compact
Capacity .................... 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Output voltage ........... 560 VDC
Dimensions (LxWxH) ... 455 x 360 x 185
Protection class ........ IP54
Weight .................... 32.5 kg

U-shaped pick-up PP 25/F
Capacity (nom./peak) . 470 W/1200 W
Output voltage .......... 400 VDC ... 690 VDC
Dimensions (LxWxH) ... 108 x 110 x 210
Protection class ........ IP54
Weight .................... 5 kg

- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible
- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
- Pick-up system with passive power electronics
- Parallel connection of several pick-up systems possible
Flat pick-up systems for transfer cars

The pick-up facilitates the inductive transmission of the energy provided by the primary cable. There are different types of pick-ups available, depending on the area of application.

**Flat pick-up PS 08**

- Capacity .................. 350 W/500 W with heat sink (nom./peak) 170 W without heat sink
- Output voltage ............ 24 VDC
- Dimensions (LxWxH) .... 310 x 210 x 98
- Protection class .......... IP54
- Weight ..................... 7.3 kg

- Pick-up system with integrated power electronics
- Optionally with 24-27 VDC output for battery charging
- Parallel connection of several pick-up systems possible

**Flat pick-up PS 18**

- Capacity .................. 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
- Output voltage ............ 560 VDC
- Dimensions (LxWxH) .... 765 x 360 x 80
- Protection class .......... IP54
- Weight ..................... 26.3 kg

- Pick-up system with integrated power electronics
- Optionally with 24-27 VDC output for battery charging
- Parallel connection of several pick-up systems possible

**Flat pick-up PS 19**

- Capacity .................. 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
- Output voltage ............ 560 VDC
- Dimensions (LxWxH) .... 895 x 360 x 80
- Protection class .......... IP54
- Weight ..................... 31.5 kg

- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible
Advantages for transfer cars

- Barrier-free track path
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free functionality even in damp conditions
- Data transmission via primary cable

In the heavy industry (e.g. steel mills or aluminum smelters), general warehouse technology or even in the clean-room technology, rail-mounted transfer cars are frequently used for transporting material between the working stations or storage facilities. If CPS® technology is used for supplying power, the track is completely free of interfering installations (conductor systems, cable reels or similar) and is traversable without obstruction for possible cross traffic.

**Flat pick-up PS 18 compact**
Capacity ................. 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Output voltage .......... 560 VDC
Dimensions (LxWxH) ... 395 x 360 x 185
Protection class ........ IP54
Weight .................... 27.3 kg

**Flat pick-up PS 19 compact**
Capacity ................. 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Output voltage .......... 560 VDC
Dimensions (LxWxH) ... 455 x 360 x 185
Protection class ........ IP54
Weight .................... 32.5 kg

**Flat pick-up PU 18/PU 18 compact**
Capacity ................. 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Dimensions (LxWxH) ... 620 x 360 x 80
PU 18 compact ... 370 x 360 x 185
Protection class ........ IP54
Weight .................... 22 kg

**Flat pick-up PU 19/PU 19 compact**
Capacity ................. 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Dimensions (LxWxH) ... 705 x 360 x 80
PU 19 compact ... 455 x 360 x 185
Protection class ........ IP54
Weight .................... 24 kg

**Data transmission**
- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible
- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
- Data transmission via primary conductor (see page 25)
U-shaped pick-up systems for electric monorail systems

VAHLE’s twin conductor system specifically developed for this application has proven its suitability due to its outstanding EMF/EMC properties. The U-shaped design of the pick-up coil surrounds the primary cable resulting in a high efficient electromagnetic coupling.

U-shaped pick-up PU 14
Capacity (nom./peak) 900 W/1800 W
Output voltage .......... 250 VAC
Dimensions (LxWxH) .... 155 x 139 x 152
Protection class .......... IP54
Weight ...................... 3.72 kg

- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
Advantages for electrified monorail systems

- “C1” conformity
- Suitable for complex track layouts
- No contamination of conveyed material due to carbon abrasion
- Easy installation due to special fixture technology
- No restriction to travel speed
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free operation even in damp conditions
- Data transmission via primary cable

In the automotive as well as various other industrial sectors electrified monorail systems with numerous individually driven carriers are used to transport assembly related components and materials. Integrated into the carrier support track are all CPS® components needed for the power supply and control systems. Track switches are available to design spurs or merge tracks. Lifts may be incorporated to integrate several vertical levels of production.

CPS® technology will substantially increase system’s availability. Contactless operation eliminates wear components, therefore, no maintenance is required.

U-shaped pick-up PP 25/H
Capacity (nom./peak) . 470 W/1200 W
Output voltage .......... 400 VDC ... 690 VDC
Dimensions (LxWxH) ... 108 x 110 x 210
Protection class .......... IP54
Weight ..................... 5 kg

Data transmission
- Pick-up unit system with passive power electronics
- Parallel connection of several pick-up systems possible
- Data transmission via primary cable (see page 25)
**U-shaped pick-up systems for sortation technology**

Power supply components must meet high demand with respect to exceedingly limited space available as well as very high travel speeds usually occurring with sortation applications.

VAHLE designed a range of very compact U-shaped pick-ups to meet these requirements.

**U-shaped pick-up PU 11**

- Capacity (nom./peak) .. 300 W/900 W
- Output voltage ............ \( U_1 = 110...125 \text{ VAC}, 20kHz \)
- \( U_2 = 75...105 \text{ VAC}, 20kHz \)
- Dimensions (LxWxH) ..... 150 x 73 x 95.5
- Protection class .......... IP54
- Weight .................... 1.26 kg

- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
**Advantages for sortation technology**

- No restriction to travel speed
- No noise is generated
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free operation even in damp conditions
- Data transmission via primary cable

**U-shaped pick-up PU 14**
- Capacity (nom./peak) .. 900 W/1800 W
- Output voltage .......... 250 VAC, 20 kHz
- Dimensions (LxWxH) ... 155 x 139 x 152
- Protection class ........ IP54
- Weight .................... 3.72 kg

**U-shaped pick-up PK 31**
- Capacity (nom./peak) .. 300 W/900 W
- Dimensions (LxWxH) ... 114 x 75 x 65
- Protection class ........ IP65
- Weight .................... 1.2 kg

- Pick-up unit only in connection with a separate voltage regulation (see page 26)
- Parallel connection of several pick-up units to one voltage regulator possible

**SORTATION TECHNOLOGY**

For transportation and sortation of parcels, luggage or other general cargo, distribution centers use large, automated sortation installations which presort the arriving cargo and prepares it for distribution to target destinations. CPS® technology will substantially increase system’s availability. Contactless operation eliminates wear components, therefore, no maintenance is required.
U-shaped pick-up systems for clean-room technology

Due to the very high electrical power requirements of equipment installed in clean-room technology, the use of U-shaped or E-shaped pick-ups is a preferred option. These designs provide particularly high electromagnetic coupling with the primary conductor’s magnetic field and assure optimum current transfer.

**U-shaped pick-up PU 14**
- Capacity (nom./peak) 900 W/1800 W
- Output voltage 250 VAC, 20 kHz
- Dimensions (LxWxH) 155 x 139 x 152
- Protection class IP54
- Weight 3.72 kg

- Pick-up unit only in connection with a separate voltage regulation (page 26)
- Parallel connection of several pick-up units to one voltage regulator possible

**U-shaped pick-up PP 25/H**
- Capacity (nom./peak) 470 W/1200 W
- Output voltage 400 VDC ... 690 VDC
- Dimensions (LxWxH) 108 x 110 x 210
- Protection class IP54
- Weight 5 kg

- Pick-up system with passive power electronics
- Parallel connection of several pick-up systems possible
Advantages for clean-room technology

- No contamination of the environment caused by carbon abrasion
- Clean-room class 1 in accordance with US Fed. Std. 209
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free functionality even in damp conditions
- Data transmission via primary cable

E-shaped pick-up PU 22

- Capacity (nom./peak) .... 10 kW/22 kW
- Output voltage .......... 225 VAC, 20 kHz
- Dimensions (LxWxH) ... 250 x 420 x 322
- Protection class ........... IP54
- Weight ..................... 29 kg

Data transmission

- Pick-up unit only in connection with a separate voltage regulation (page 26)
- Parallel connection of several pick-up units to one voltage regulator possible
- Data transmission via primary cable (see page 25)
Flat pick-up and U-shaped pick-up for elevators

Depending on required capacity and existing installation space at the elevator cab, both flat pick-ups and U-shaped pick-ups are suitable for this application.
Advantages for elevators

- Unlimited travel speed
- Unlimited elevation height
- Ideal for inclined elevators
- Absolutely maintenance-free
- Maximum utilization
- Insensitive to dirt
- Trouble-free functionality even in damp conditions
- Data transmission via primary cable

As an alternative to the traveling cable, CPS® technology perfectly meets the power requirements to be supplied to an elevator cab, maintenance-free and reliable, regardless of the ambient conditions. Whether it is for the standard elevator or the inclinator: This alternative offers elevator systems completely new opportunities without any restrictions to speed or elevation heights.

Flat pick-up PS 18
Capacity ................. 1.3 kW at 60% ED (nom./peak) 2 kW max. 3 min.
Output voltage ........ 560 VDC
Dimensions (LxWxH) ... 765 x 360 x 80
Protection class ........ IP54
Weight ................... 26.3 kg

Flat pick-up PS 19
Capacity ................. 2 kW at 60% ED (nom./peak) 3 kW max. 3 min.
Output voltage ........ 560 VDC
Dimensions (LxWxH) ... 895 x 360 x 80
Protection class ........ IP54
Weight ................... 31.5 kg

U-shaped pick-up PP 25/H
Capacity (nom./peak) . 470 W/1200 W
Output voltage .......... 400 VDC ... 690 VDC
Dimensions (LxWxH) ... 108 x 110 x 210
Protection class ........ IP54
Weight ................... 5 kg

- Pick-up system with integrated power electronics
- Additional 24 VDC output as auxiliary voltage
- Parallel connection of several pick-up systems possible

Data transmission

- Pick-up system with passive power electronics
- Parallel connection of several pick-up systems possible
- Data transmission via primary cable (see page 25)
Primary inverter switch cabinet

As the centerpiece of the contactless power supply, the primary inverter delivers the required electrical power for all mobile consumers located on the track. Standard three-phase alternating current of 400 V / 50 Hz (or different regional standards) is initially converted to single-phase alternating current of 20 kHz and then fed to the primary cable at a constant current of 70 A. A suitable diagnostics interface is available for displaying or monitoring the actual operating condition.

Complete cabinet 11 kW
Capacity (nom./peak) .. 8.8 kW/11 kW
Supply voltage .......... 3 x 400 VAC
Protection class ........ IP54
Temperature range ...... 0 – 30 °C
Dimensions (HxWxD) ... 2000 x 1200 x 500
+ 200 mm socket

Complete cabinet 45 kW
Capacity (nom./peak) .. 36 kW/45 kW
Supply voltage .......... 3 x 400 VAC
Protection class ........ IP54
Temperature range ...... 0 – 30 °C
Dimensions (HxWxD) ... 2000 x 1200 x 500
+ 200 mm socket

- Cabinet ready for use
- Technical design depending on installed system
- Design according to customer specifications
- Several cabinets can be interconnected for large systems with a high power requirements
The primary inverter units shown here are generally suitable for all areas of application indicated in this catalog. From a technical and economical aspect, an optimum adaptation to the respective conditions of a specific installation is assured due to an available, wide-ranging performance grading scale. Whether a complete cabinet is needed, a mounting plate or compact unit—our experienced project team will always be glad to help you selecting the best suitable components.

**Mounting plate 11 kW**
Capacity (nom./peak) .. 8.8 kW/11 kW
Supply voltage .......... 3 x 400 VAC
Protection class ........ ip00
Temperature range ..... 0 – 30 °C
Dimensions (WxH) ...... 700 x 1900

**Mounting plate 45 kW**
Capacity (nom./peak) .. 36 kW/45 kW
Supply voltage .......... 3 x 400 VAC
Protection class ........ ip00
Temperature range ..... 0 – 30 °C
Dimensions (WxH) ...... 700 x 1900
- All 20 kHz CPS® components are pre-mounted and completely wired
- Installation in an existing power switch cabinet
- Supply with 400 V, three-phase alternating current
- 20 kHz output for supplying the primary loop

**Compact cabinet 4 kW**
Capacity (nom./peak) .. 3.2 kW/4 kW
Supply voltage .......... 3 x 400 VAC
Protection class ........ IP54
Temperature range ..... 0 – 30 °C
Dimensions (HxWxD) ... 700 x 540 x 302
- Operational for the connection to the primary conductor
- Very compact construction
- Highly suitable for small stand-alone systems
- Integration into larger systems possible
Track equipment

A loop (primary cable) must be installed along the track to supply the mobile consumers with the power created in the primary inverter unit. Depending on the type of conveying system, the primary cable can be laid underground, i.e. into the floor, or above ground, such as on the runway beam. Compensation boxes must be installed along the track for long distances in order to compensate the cable inductivity.

**Track compensation KB 10**

Dimensions (HxWxD) ... 194 x 154 x 100
Protection class .......... IP65
Weight ...................... 1.5 kg

- Compact design
- Positioning near track possible
- A box is required every 33 to 44 m

**Primary cable 8x4**

Area of application ...... Floor skid conveyor
Diameter ..................... 15.7 mm
Weight ...................... 0.49 kg/m

- For standard applications
- Single insulated copper conductors
- Easy installation with standard cable tools

**Primary cable HF 25**

Area of application ...... EMS
Diameter ..................... 11 mm
Weight ...................... 0.28 kg/m

- For EMS and sortation technology applications
- Special conductor made of single insulated copper braid
- Small outside diameter
**Primary cable HF 50**

Area of application: Floor skid conveyor/crane installations

Diameter: 16.5 mm

Weight: 0.56 kg/m

- For very long track sections
- Special conductor made of single insulated copper braid
- Very low power loss due to large conductor cross section
Data transmission

In many cases it is necessary—besides supplying power to the drive motors—to transmit corresponding control signals from a central PLC control system to the conveyor system’s mobile units. Because a free radio transmission is quickly limited due to the susceptibility to interference, the use of the power supplied to the primary conductor offers an alternative to ensure interference immune data transmission. This concept of the integrated data transmission “VAHLE Powercom® CPS®” is designed for reliable transmission of control data with a data rate of 19.2 kbps based on a standard RS485 interface as featured by the Profibus DP, for example.

Transceiver TU 01
Area of application ....... Floor skid conveyor/EMS
Supply voltage ............ 24 VDC
Transmission rate .......... 19.2 kBit/s
Dimensions (LxWxH) ...... 40 x 111 x 74
Protection class .......... IP40
Weight ...................... 500 g

- Connection to the antenna or charging coupler
- RS485 interface e.g. for Profibus DP

Charging coupler CC
Area of application ....... Floor skid conveyor/EMS
Supply voltage ............ 24 VDC
Dimensions (LxWxH) ...... 162 x 380 x 145
Protection class .......... IP10
Weight ...................... 4 kg

- Stationary arrangement at the beginning of the track
- Modulates the data stream of the stationary transceivers to a carrier frequency and transmits it to the primary cable
Data transmission benefits with VAHLE Powercom® CPS®

- No additional components are necessary along the track by simultaneously using the primary cable for transmitting the data signal
- Data rate 19.2 kbps
- Absolute interference immune transmission due to the high frequency separation to the currently common radio transmission systems
- Subsequent changes to the number of vehicles or to the mechanical environment can be easily made without carrying out a complex HF field analysis
- Fully transparent transmission of the data signal without modifying the programming software

ANT F/ANT E antenna

Area of application ........... vehicle side
ANT F ...................... in combination
with flat pick-up
ANT E ...................... in combination with
U-shaped pick-up

Dimensions (LxWxH)
ANT F ...................... 100 x 238 x 85
ANT F ...................... 100 x 150 x 85

Weight
ANT F ...................... 1.3 kg
ANT E ...................... 1.0 kg

Protection class .............. IP65

RF-termination box AB

Area of application ........... Floor skid conveyor/EMS
Supply voltage .............. 24 VDC
Dimensions (LxWxH) ........ 600 x 760 x 210
Protection class .............. IP54
Weight ...................... 32 kg

- Arrangement on the vehicle
- Receives the carrier frequency from the primary cable and forwards this frequency to the transceiver on the vehicle for demodulation
- RF-termination of the data transmission path
- Undesirable RF- reflections are filtered out
Voltage regulation

A wide range of voltage regulation units for providing supply voltages on the vehicle side of the conveyor system deviating from the 560 VDC supply commonly available can be supplied. These voltage regulation units are connected downstream from the pick-up units and provide application-specific custom voltages, such as for charging batteries or UltraCaps.

Voltage regulator RE 7.4

Area of application ...... Floor skid conveyor/EMS
Capacity ..................... depends on the
(nom./peak) pick-up connected,
max. 3 kW
Output voltage ............. 288...680 VDC
Auxiliary voltage 24 VDC
Dimensions (LxWxH) .... 320 x 320 x 203
Protection class .......... IP54
Weight ....................... 16 kg

Voltage regulator RE 7.1

Area of application ...... Floor skid conveyor/EMS
Capacity ..................... depends on the
(nom./peak) pick-up connected,
max. 3 kW
Output voltage ............. 288...680 VDC
Auxiliary voltage 24 VDC
Dimensions (LxWxH) .... 240 x 200 x 160
Protection class .......... IP54
Weight ....................... 5.8 kg

CPS® track guidance sensor SS-01 / 02

Area of application ...... Floor skid conveyor
Output signal ............... 4-20 mA, 0-20 mA,
0-10 V, 0-5 V, Profibus
Dimensions (LxWxH) .... 160 x 80 x 60
Protection class .......... IP65
Weight ....................... 0.35 kg

- Inductive track guidance via primary conductor
- Suitable for switches and transfers

Voltage regulator RE 22

Area of application ...... Crane plants
Capacity ..................... for 1 pc PU 22
(nom./peak) 12.5 kW/20 kW –
for 2 pieces PU 22
25 kW/40 kW
Output voltage ............. 288...680 VDC
Auxiliary voltage 24 VDC
Dimensions (LxWxH) .... 660 x 328 x 290
Protection class .......... IP20
Weight ....................... 25.65 kg

- For PU18/19 and PU14 series pick-ups
- Connection for a pick-up
- Connection of up to four PU14s or one PU 18/19
- Also for direct charging of batteries or UltraCaps

- For PU22 series pick-ups
- Connection for up to two pick-ups
We can develop custom solutions for your company

The successful range of VAHLE systems is complemented by a comprehensive range of services tailored to meet our customer's requirements, including

- System design
- Project management
- Commissioning
- Engineering
- Installation supervising
- After-sales service
- Product training courses
- Maintenance packages

We will be glad to apply our expertise to develop specific solutions for your company. Give us a call and arrange for an appointment to learn more about VAHLE systems and services to meet your requirements.
<table>
<thead>
<tr>
<th></th>
<th><strong>Scope of delivery and services</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Open powerails</strong></td>
</tr>
<tr>
<td></td>
<td>Open powerails</td>
</tr>
<tr>
<td>2</td>
<td><strong>Insulated powerails</strong></td>
</tr>
<tr>
<td></td>
<td>U10</td>
</tr>
<tr>
<td></td>
<td>FABA 100</td>
</tr>
<tr>
<td></td>
<td>U15, U25, U35</td>
</tr>
<tr>
<td></td>
<td>U20, U30, U40</td>
</tr>
<tr>
<td>3</td>
<td><strong>Compact conductor lines</strong></td>
</tr>
<tr>
<td></td>
<td>VKS 10</td>
</tr>
<tr>
<td></td>
<td>VKS - VKL</td>
</tr>
<tr>
<td>4</td>
<td><strong>Powerail Enclosed Conductor Systems</strong></td>
</tr>
<tr>
<td></td>
<td>KBSL - KSL</td>
</tr>
<tr>
<td></td>
<td>KBH</td>
</tr>
<tr>
<td></td>
<td>MKLD - MKLF - MKLS</td>
</tr>
<tr>
<td></td>
<td>LSV - LSVG</td>
</tr>
<tr>
<td>5</td>
<td><strong>Contactless power supply (CPS®)</strong></td>
</tr>
<tr>
<td></td>
<td>Contactless power supply (CPS®)</td>
</tr>
<tr>
<td>6</td>
<td><strong>Data transfer</strong></td>
</tr>
<tr>
<td></td>
<td>VAHLE Powercom®</td>
</tr>
<tr>
<td></td>
<td>Slotted Microwave Guide (SMG)</td>
</tr>
<tr>
<td>7</td>
<td><strong>Position Encoding Systems</strong></td>
</tr>
<tr>
<td></td>
<td>VAHLE APOS®</td>
</tr>
<tr>
<td>8</td>
<td><strong>Cable carriers and cables</strong></td>
</tr>
<tr>
<td></td>
<td>Cable carriers for ⊙ tracks</td>
</tr>
<tr>
<td></td>
<td>Cable carriers for flat cables on ⊀ tracks</td>
</tr>
<tr>
<td></td>
<td>Cable carriers for round flat cables on ⊀ tracks</td>
</tr>
<tr>
<td></td>
<td>Cable carriers for ◇ tracks</td>
</tr>
<tr>
<td></td>
<td>Cables</td>
</tr>
<tr>
<td>9</td>
<td><strong>Reels</strong></td>
</tr>
<tr>
<td></td>
<td>Spring Operated Cable Reels</td>
</tr>
<tr>
<td></td>
<td>Motor Powered Cable Reels</td>
</tr>
<tr>
<td>10</td>
<td><strong>Other</strong></td>
</tr>
<tr>
<td></td>
<td>Battery charging systems</td>
</tr>
<tr>
<td></td>
<td>Heavy enclosed conductor systems</td>
</tr>
<tr>
<td></td>
<td>Tender</td>
</tr>
<tr>
<td></td>
<td>Contact wire</td>
</tr>
</tbody>
</table>

**Assemblies / Commissioning**

**Spare parts / Maintenance service**

Certified by DQS according to DIN EN ISO 9001:2008 OHSAS 18001:2007 (Reg. Nr. 003140 QM 08/1506)