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System Description

General Information

ProfiDAT® is a system for data communication between fixed and mobile consumers such as crane systems or other material handling equipment. The ProfiDAT® system is installed in parallel with the electrification (conductor rail) system. The data transmission system consists of at least one fixed and one mobile transceiver, a feed-in antenna, and the collector antenna. The mobile collector antenna can continuously receive and transmit data. In addition to data transmission, the ProfiDAT® profile is used as a ground conductor rail (PE). The antenna for data transfer is an integral part of the current collector head in the PE profile.

The illustration above shows that the dual function of the ProfiDAT® profile results in a compact and fully integrated solution. An existing ground conductor rail can be replaced by the ProfiDAT® system without additional space requirements or attachments.

The contactless wireless system safely and reliably transfers data (video, audio and control data) through a slotted waveguide at very high data rates in real-time. Speeds up to 100 Mbit/s with very low delays can transfer data safely and reliably. The special design of the conductor profile and the mobile antenna allows a secure transfer of data in a screened system even in difficult radio environments (such as a harbor environment).

The ProfiDAT® data transmission system can be combined with numerous Conductix-Wampfler conductor rail ranges. Additionally:

- ProfiDAT simultaneously uses data and grounding profiles to allow full integration of the data transmission system into a conductor rail system
- Fewer parts and components result in less space requirement restrictions in a complete supply system (power and data)
- The data antenna is securely guided in the profile slot by the staggered contact brushes. No additional antenna guide is required
System Description

Main Applications

- STS (ship-to-shore) cranes
- RTG/E-RTG cranes (rubber-tired/electrified rubber-tired gantry cranes)
- Process cranes
- People movers, storage–retrieval units, transfer cars, amusement-park rides
- Other mobile machines

Your Benefits

- Secure and reliable wireless transmission method due to slotted waveguide technology
- Real-time data transfer by prioritization of PROFINET® data packets
- PROFlsafe compatible
- Expansion and separation points are possible
- Cost savings and space reduction by dual usage of the ProfiDAT® profile for data transmission and grounding (PE conductor rail)
- Compact design and full integration into conductor rail systems
- Supports various protocol types
- Possible to use even in harsh environmental conditions (ports)

Product Data

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data rate</td>
<td>Up to 100 Mbit/s</td>
</tr>
<tr>
<td>Real-time capable</td>
<td>Yes (PROFINET®)</td>
</tr>
<tr>
<td>Average latency</td>
<td>3 ms</td>
</tr>
<tr>
<td>Segment length with one access point</td>
<td>Up to 500 m</td>
</tr>
<tr>
<td>Secure transmission</td>
<td>Yes (PROFlsafe)</td>
</tr>
<tr>
<td>Utilization as a ground conductor rail (PE)</td>
<td>Yes (up to 1000 A rated current)</td>
</tr>
<tr>
<td>Max. number of nodes in a segment</td>
<td>5 (more after technical clarification)</td>
</tr>
<tr>
<td>Profile length</td>
<td>5000 mm</td>
</tr>
<tr>
<td>External dimensions (profile)</td>
<td>48 × 56 mm</td>
</tr>
<tr>
<td>Area of use</td>
<td>Indoor and outdoor areas</td>
</tr>
<tr>
<td>Temperature range</td>
<td>-25°C to +50°C</td>
</tr>
<tr>
<td>Installation orientation</td>
<td>- Antennas/current collectors engaging from below</td>
</tr>
<tr>
<td></td>
<td>- Antennas/current collectors engaging from the side (only for crossing ranges without transitions)</td>
</tr>
</tbody>
</table>

Note

- The slotted-waveguide profile must not be used as a power terminal (phase)
System Description

Functional Principle of the Slotted Waveguide

A waveguide is a hollow body with conducting walls where electromagnetic waves can grow. Rectangular and circular cross-sections are mostly used for this. How the electromagnetic waves grow in the waveguide depends on the geometry and the excitation of the wave. The geometry determines a lower frequency threshold, above which a wave can grow.

The underlying principle of a slotted waveguide is based on a rectangular waveguide. A radio wave is fed into this and travels perpendicular to the antenna through the profile. The slotted waveguide has a longitudinal slot on one side. A coupling element (antenna) can be inserted into the rectangular waveguide through the opening. The inserted coupling element can be moved along the slot. By mechanical means, the slotted waveguide is dimensioned such that a coupling of the radio wave and the electromagnetic waves in the vicinity of the slotted waveguide is ruled out.

System Advantages

The greatest advantage of the system is that the radio wave in the slotted waveguide (SWG) is electromagnetically decoupled from the surroundings of the SWG. This provides almost 100% protection against interference with the electromagnetic environment of the SWG, so the available frequency spectrum can be more efficiently used. Furthermore, the length-dependent signal attenuation is significantly less than with comparable communication systems, so that large signal-transmission ranges and longer segment lengths are achievable.

High emission rate

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No emission of the radio wave to the outside</td>
<td>Immune against potential interference from external sources</td>
</tr>
</tbody>
</table>

Electromagnetic emissions from a slotted waveguide

The field-distribution image shows the exponential decay in the slot with all waveguides.

The function of the slot is to attenuate the electromagnetic emission of the radio wave into the surroundings of the slotted waveguide.
Technical Specifications

ProfIDAT® Profile Type 051411

Area of use
Cranes (STS cranes, E-RTG cranes and process cranes), storage–retrieval units and other mobile machinery

Environment
Harsh outdoor conditions (harbor environments) as well as indoor applications

Installation orientation
Horizontal and vertical, lateral engagement and engagement from below; indoor and outdoor areas

Maximum distance between supports [m]
2.5/3 (for E-RTGs)

Rail length [mm]
5000 (196.9") (nominal size at 20°C/tolerance ±3 mm)

System length [m]
Up to 500 per segment

External dimensions [mm]
48 × 56

Nominal rail spacing [mm]
80 (3.15"; minimum spacing, expandable as required)

Traversing speed [m/min]
300 (straight section without interruptions) – higher speeds possible by arrangement

Max. rated current [A]
1000

Expansion / expansion joints
Compensation for up to 200 m (565’) system length; above 200 m, the use of expansion elements is necessary

Permitted ambient temperature
–25°C to 50°C (85°C for heat-resistant version / PPE + SB)

Maximum conductor temperature
+85°C (115°C for heat-resistant version / PPE + SB; briefly 125°C)

Storage temperature
–25°C to 50°C (store in a dry place, avoid condensation)

Conductor material
Aluminum with surface coating

Rail insulation
Stabilized rigid PVC (standard material) and PPE + SB (heat-resistant version for indoor applications)

Flammability / fire protection
Compliant with requirements for insulating materials in accordance with UL 94 V-0; flame-retardant and self-extinguishing

Local approvals
CR

Coloring
Rail insulation in safety warning color to RAL 1018 (lemon yellow) or RAL 1021 (rapeseed yellow) for the heat-resistant version; green stripes (PE rail) in RAL 6025 (fern green)

Relevant standards

DIN EN 60664-1, VDE 0110-1:2008-1
Insulation coordination for equipment within low-voltage systems – Part 1: Basic principles, requirements and tests

DIN EN 60204-1, VDE 0113-1:2007-06
Safety of machines – electrical equipment of machines – Part 1: General requirements

DIN EN 60529, VDE 0470-1:2000-09

DIN EN 60204-32, VDE 0113-32:2009-03
Safety of machines – electrical equipment of machines – Part 32: Requirements for hoisting machines

Subject to technical changes
The ProfiDAT® data transmission system can be used to provide communication between a stationary data network and a mobile consumer. Additionally, the ProfiDAT® profile can simultaneously be used as a ground conductor rail. While the system can vary in length, it must consist of at least one fixed and one mobile transceiver, the feed-in unit and the collector antenna. The profiles and conductor rails are attached by hanger clamps to the steel structure provided by the customer. The profiles are mechanically joined using connectors that ensure stability and a secure connection. Feed-in antennas at one end of the system are used to feed data into the profile. With a central feed-in, the feed-in point is located in the middle of the system and therefore distributes the signal to the left and right. The mobile consumer antenna can continuously receive and transmit data. The hinge-point transition element is mounted at the interface of the crane hinge, where it serves to provide uninterrupted data transfer. The data is fed out on one side of the hinge-point transition element and fed in on the other side.
ProfIDAT® is a data transmission system used to provide communication between the base unit and the drive-in unit of RTG container cranes. The ProfIDAT® system is installed in parallel with the E-RTG/RTG electrification system (current collector system for container-stacking cranes). Additionally, the ProfIDAT® profile can also be used as a ground conductor rail. While the system can vary in length, it must consist of at least one fixed and one mobile transceiver, the feed-in antenna and the collector antenna. The profiles and conductor rails attach to the steel structure by hanger clamps. The profiles are mechanically joined using connectors that ensure stability and a secure connection. Data is fed into and out of the profile by a feed-in / terminating resistor at the two ends of the system. The mobile collector antenna can continuously receive and transmit data.

The current-collecting trolley on the drive-in unit supplies the crane with power. The current-collecting trolley picks up power from conductor rails fixed to a steel structure along a container corridor. There is a drive-in/drive-out zone at each end of the container corridor to bring the current collectors into contact with the conductor rails. In the drive-in zone, an extending and vertical-positioning drive positions the current-collecting trolley. Once the current-collecting trolley is completely driven into the conductor rails, the crane can be supplied with power during its travel along the container corridor.
System Components

ProfiDAT® Profile

Part No.: 051411-3512
Profile (slotted waveguide). The profiles provide a channel for data. They are electrically conductive and are simultaneously used as a protective conductor (PE).
The standard length of a profile is 5000 mm. The external dimensions are 48 × 56 mm (width × height). The conductor cross-section is at least 585 mm².
For the insulating material, PVC is used in standard areas and halogen-free PPE + SB is used for higher ambient temperatures up to 85°C.

The overall profile consists of the aluminum slotted waveguide and the PVC insulating profile.

Color: Safety warning color RAL 1018 zinc yellow (PVC) or RAL 1021 canola yellow (PPE+SB) and RAL 6025 fern green (stripes)
Material: Aluminum

Optionally available with heating.
Over time, the profile surface can change color, which does not affect functionality.

Technical specifications – rail length 5000 mm ±3 mm

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC resistance [Ω/1000 m] 20°C</td>
<td>0.063</td>
</tr>
<tr>
<td>DC resistance [Ω/1000 m] 35°C</td>
<td>0.067</td>
</tr>
<tr>
<td>Impedance [Ω/1000 m] 20°C/50Hz</td>
<td>0.131</td>
</tr>
<tr>
<td>Impedance [Ω/1000 m] 35°C/50Hz</td>
<td>0.133</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td>11.04</td>
</tr>
</tbody>
</table>

Hanger Clamps

Part No.: 051414-03
A nut and bolt secure the hanger clamp to the support structure. The hanger clamps are pushed onto the profiles. Two hanger clamps are installed for each profile. The maximum spacing between hanger clamps is 2500 mm.

Material: Aluminum, stainless steel

Part No.: 051414-04
Hanger clamps for C-rails
The rails are suspended on free-rotating, self-aligning stainless-steel hanger clamps that allow low-friction slipping during thermal expansion. Hanger clamps are available with hexagonal or square nuts for the cross-arm/C-rail installation.
System Components

Hanger Clamps (cont.)

Part No.: 05-S280-0004
Hanger clamp with spacer
For use with hanger clamps with insulators on the phase conductor rail.

In stainless steel with hexagonal nut
Nominal distance between supports:
max. 2500 mm
Installation note: For suspended installation

Anchor Clamp

Part No.: 05-F080-0002
The rail is fixed at one point by an anchor clamp and can expand freely from this point.
The fixed point is usually installed near the feed-in.
It is secured via a connecting plate from the PE rail connector to the hanger clamp.

Hanger clamps are not included.

Rail Connectors

Part No.: 051412-01
Part No.: 051412-02
There are two types of connectors:
• Connector, simple (051412-01)
• PE connector, with connection to the grounding cable (051412-02) – to be used every 25 m!
The rail connector connects two profiles together and is screwed onto the profile.
The grounding cable is attached to the lug of the PE connector (051412-02).

Material: Aluminum, stainless steel

Grounding set
Part No.: 05-Z009-0004
Not included in the delivery - see Accessories on page 36
System Components

Feed-In/Feed-Out Unit (for End Feeding of Signals)

Part No.: 051415-01
The feed-in/feed-out unit is attached with screws to the profile at both ends of the system. It is used to feed data signals in and out. At the end of the ProfiDAT® section, there is a terminating element and resistance that reduces the amplitude of the signal to the point that no interference emissions are produced for other equipment in the vicinity of the data transmission system.

Material: Aluminum, stainless steel
For system lengths up to 250 m
Unit consisting of a feed-in unit, cable, feed-out unit and terminating resistor

Includes coaxial cable: Ecoflex® 10
Length: 10 m
Diameter: 10.2 mm
Impedance: 50 Ω
Attenuation @ 5 GHz / 100 m: 37 dB
\( f_{\text{max}} \): 6 GHz

HF Cable (Pre-assembled)

Part No.: 051451-002-10000
Coaxial cable: Ecoflex® 10
Length: 10 m
Diameter: 10.2 mm
Impedance: 50 Ω
Attenuation @ 5 GHz / 100 m: 37 dB
\( f_{\text{max}} \): 6 GHz
System Components

Feed-In/Feed-Out Unit (for Central Feed-In of Signals)

Part No.: 05-E015-0007
The feed-in/feed-out is used as a system termination point for a central feed-in. A comb filter and terminating resistor destroy the radio waves in a controlled manner, and eliminates the leaking of radio waves.

Set consists of two feed-out units
with terminating resistor

Terminating Resistor

Part No.: 05-3170540
The N terminating resistor is also available separately and as a spare part.
This can simply be screwed on by means of an N connection.

Wave impedance: 50 Ω
Signal attenuation: 26 dB / 6 GHz
System Components

Single Current Collector S – for Engagement from Below

Part No.: 051410-1011
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Use:
– If there are no transition points in the system
– If there are no expansion joints in the system
– When the feed-in is at the system’s end
– For systems up to 200 m in length

Double Current Collector D – for Engagement from Below

Part No.: 051410-1012
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Two separate contact brushes guide the current collector on the ProfiDAT® profile. The antennas are inserted into the slot in the ProfiDAT® profile and are electrically isolated from the carbon brushes.

Use:
– If there are transition points in the system
– When using expansion joints
– At higher current loads
– With central feed-ins

Technical specifications

<table>
<thead>
<tr>
<th></th>
<th>Single collector (SAP CONFIG 3192047)</th>
<th>Double collector (SAP CONFIG 3192070)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum current load</td>
<td></td>
<td>The determining factors for the maximum current are the type of conductor used, the cross section, the installation method and the ambient temperature.</td>
</tr>
<tr>
<td>Max. speed</td>
<td></td>
<td>300 m/min; higher speeds available on request</td>
</tr>
<tr>
<td>Contact force</td>
<td></td>
<td>28 N</td>
</tr>
<tr>
<td>Lateral displacement</td>
<td></td>
<td>±100 mm</td>
</tr>
<tr>
<td>Working stroke in the direction of insertion</td>
<td></td>
<td>±40 mm</td>
</tr>
<tr>
<td>Connecting cable (PE cable)</td>
<td></td>
<td>70/35/16 mm², length configurable (0–10 m), highly flexible; longer connecting cable on request</td>
</tr>
<tr>
<td>Distance between the towing arm and the contact surface of the rail (nominal dimension on installation)</td>
<td></td>
<td>100.5 mm</td>
</tr>
</tbody>
</table>

Note: Using the wrong cables and incorrectly routing them will lead to high levels of wear in the brushes; broken strands can lead to overload conditions and product damage. Caution – fire hazard!
System Components

Single Current Collectors S (Short Arm) – for Engagement from Below

Part No.: 05-S265-0011
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Use:
– Arm length: Short-arm version for compact installation situation and low rail misalignment to the ideal line
– If there are no transition points in the system
– If there are no expansion joints in the system
– When the feed-in is at the system’s end
– For systems up to 200 m in length

Technical specifications

<table>
<thead>
<tr>
<th></th>
<th>Single collector (SAP CONFIG 3192047)</th>
<th>Double collector (SAP CONFIG 3192070)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum current load</td>
<td>The determining factors for the maximum current are the type of conductor used, the cross section, the installation method and the ambient temperature.</td>
<td></td>
</tr>
<tr>
<td>Max. speed</td>
<td>300 m/min; higher speeds available on request</td>
<td></td>
</tr>
<tr>
<td>Contact force</td>
<td>26 N</td>
<td></td>
</tr>
<tr>
<td>Lateral displacement</td>
<td>±35 mm</td>
<td></td>
</tr>
<tr>
<td>Working stroke in the direction of insertion</td>
<td>±30 mm</td>
<td></td>
</tr>
<tr>
<td>Connecting cable (PE cable)</td>
<td>70/35/16 mm², length configurable (0–10 m), highly flexible; longer connecting cable on request</td>
<td></td>
</tr>
<tr>
<td>Distance between the towing arm and the contact surface of the rail (nominal dimension on installation)</td>
<td>94 mm</td>
<td></td>
</tr>
</tbody>
</table>

Note: Using the wrong cables and incorrectly routing them will lead to high levels of wear in the brushes; broken strands can lead to overload conditions and product damage. Caution – fire hazard!

Double Current Collectors D (Short Arm) – for Engagement from Below

Part No.: 05-S265-0005
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Use:
– Arm length: Short-arm version for compact installation situation and low rail misalignment to the ideal line
– If there are transition points in the system
– When using expansion joints
– At higher current loads
– With central feed-in
System Components

Single Current Collectors S (Short Arm) – for Lateral Engagement without Transition Points

Part No.: 05-S265-0010 (right version)
Part No.: 05-S265-0012 (left version)
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Use:
– Horizontal installation orientation of the conductor rail with current collector engagement from the side.
In general, engagement of the current collectors from below is preferable to lateral engagement in outdoor areas.

Double Current Collector D (Short arm) – for Lateral Engagement without Transition Points

Part No.: 05-S265-0007
(Cables 10 m / 16 mm² – other lengths / cross sections configurable)

Use:
– Horizontal installation orientation of the conductor rail with current collector engagement from the side.
In general, engagement of the current collectors from below is preferable to lateral engagement in outdoor areas.

<table>
<thead>
<tr>
<th>Technical specifications</th>
<th>Single collector (SAP CONFIG 3192047)</th>
<th>Double collector (SAP CONFIG 3192070)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum current load</td>
<td>The determining factors for the maximum current are the type of conductor used, the cross section, the installation method and the ambient temperature.</td>
<td></td>
</tr>
<tr>
<td>Max. speed</td>
<td>300 m/min; higher speeds available on request</td>
<td></td>
</tr>
<tr>
<td>Contact force</td>
<td>28 N</td>
<td></td>
</tr>
<tr>
<td>Lateral displacement</td>
<td>±35 mm</td>
<td></td>
</tr>
<tr>
<td>Working stroke in the direction of insertion</td>
<td>±30 mm</td>
<td></td>
</tr>
<tr>
<td>Connecting cable (PE cable)</td>
<td>70/35/16 mm², length configurable (0–10 m), highly flexible; longer connecting cable on request</td>
<td></td>
</tr>
<tr>
<td>Distance between the towing arm and the contact surface of the rail (nominal dimension on installation)</td>
<td>94 mm</td>
<td></td>
</tr>
</tbody>
</table>

Note: Using the wrong cables and incorrectly routing them will lead to high levels of wear in the brushes; broken strands can lead to overload conditions and product damage. Caution – fire hazard!
Lateral Engagement of Current Collectors

3 × PH cable, product range 0812
1 × ProfiDAT®

Engagement of Current Collectors from Below

3 × PH cable, product range 0812
1 × ProfiDAT®

Engagement of Current Collectors from Below

3 × PH cable, product range 0812
1 × ProfiDAT®
System Components

Transceivers

SAP CONFIG 3188984

The ProfiDAT® transceiver sends and receives data via MAC-based data communication in accordance with the IEEE 802.11 standard. The transceiver provides the interface between the Ethernet connection and wireless data transmission in the ProfiDAT® profile. In addition, the ProfiDAT® transceiver coordinates communication between devices configured as the access point and the client. There are at least two transceivers installed in a system: a stationary transceiver for feeding in the signal, and one mobile transceiver for each movable node. Prioritization of the PROFINET® (PROFIsafe) protocols guarantees real-time data communication and the highest security and reliability in transmission.

The ProfiDAT® transceiver may only be used in combination with the patented ProfiDAT® profile.

The ProfiDAT® transceivers are configured specifically for the application. SIEMENS industrial WLAN devices are specifically configured for use in ProfiDAT® slotted waveguides.

STANDARD Transceiver – CXW 734 / CXW 774 – Indoor

Access point and client modules for use in the control cabinet. Space-saving integration through DIN-rail mounting, such as in the control cabinet. Metal housing, protection class IP30. This transceiver is used for standard applications with a double current collector.

Access point: in a wireless local area network, an access point (AP) is a station that receives and transmits data. An access point connects users to other users in the network and can also act as a connection point between the wireless network and the local area network (LAN).

Client: a device is called a WLAN client if it connects to a wireless network via WLAN and thus can use the services offered by the WLAN.

BASIC Transceiver – CXW 721 / CXW 722 / CXW 761 – Indoor


This transceiver can only be used in conjunction with the ProfiDAT® current collector S (single), Part No.: 051410-1011.

ADVANCED Transceiver – CXW 786 – Outdoor

- Especially well suited to applications with high mechanical and climatic requirements
- Robust, impact-resistant plastic housing, shock- and vibration-proof
- Good protection against dust and water jets due to protection class IP65
- Ambient temperatures from -40°C to +60°C
- UV and salt-spray resistant
- DIN-rail, profile and mast mounting possible with additional mounting plate
- Variants designed for use with the Hpath WLAN controller
- Flexible use for 12–24 V DC or 110–230 V AC
- Optional fiber-optic connection for large distances

Transceiver Housing

See Accessories – page 37
## System Components

### Transceivers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission rate for WLAN / maximum</td>
<td>100 Mbit/s</td>
<td>100 Mbit/s</td>
<td>100 Mbit/s</td>
</tr>
<tr>
<td>Number of electrical connections</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– for network components or terminals</td>
<td>2</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>– for power supply</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>– for redundant power supply</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Design of the electrical connection</td>
<td>RJ45 socket</td>
<td>RJ45 socket</td>
<td>RJ45 socket</td>
</tr>
<tr>
<td>for network components or terminals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for power supply</td>
<td>3-pole screw terminal (24 V DC); PoE</td>
<td>3-pole screw terminal (24 V DC)</td>
<td>2-pin plug (24 V DC) or optionally available power-supply adapter (4-pole 24 V DC or 3-pole 110 V to 230 V AC)</td>
</tr>
<tr>
<td>Removable media type: C PLUG</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Removable media type: KEY PLUG</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of wireless cards / permanently installed</td>
<td>1</td>
<td>1</td>
<td>up to 2</td>
</tr>
<tr>
<td>Supply type / supply voltage 1</td>
<td>DC</td>
<td>DC</td>
<td>DC</td>
</tr>
<tr>
<td>Power supply from Power over Ethernet in accordance with IEEE802.3at with Type 1 and IEEE802.3af</td>
<td>48 V</td>
<td>–</td>
<td>48 V</td>
</tr>
<tr>
<td>from optionally integrable power supply with AC</td>
<td>–</td>
<td>–</td>
<td>100–240 V</td>
</tr>
<tr>
<td>from optionally integrable power supply with DC</td>
<td>–</td>
<td>–</td>
<td>12–24 V</td>
</tr>
<tr>
<td>Current consumption with DC at 24 V, typical</td>
<td>0.25 A</td>
<td>0.15 A</td>
<td>0.45 A</td>
</tr>
<tr>
<td>Current consumption with AC at 230 V, typical</td>
<td>–</td>
<td>–</td>
<td>0.05 A</td>
</tr>
<tr>
<td>with Power over Ethernet in accordance with IEEE802.3at with Type 1 and IEEE802.3af, typical</td>
<td>0.125 A</td>
<td>–</td>
<td>0.22 A</td>
</tr>
<tr>
<td>Power loss [W] with DC at 24 V, typical</td>
<td>6 W</td>
<td>3.6 W</td>
<td>10.7 W</td>
</tr>
<tr>
<td>Power loss [W] with AC at 230 V, typical</td>
<td>–</td>
<td>–</td>
<td>10.7 W</td>
</tr>
<tr>
<td>with Power over Ethernet in accordance with IEEE802.3at with Type 1 and IEEE802.3af, typical</td>
<td>6 W</td>
<td>–</td>
<td>10.7 W</td>
</tr>
<tr>
<td>Permissible ambient temperature during operation</td>
<td>–24°C to +60°C</td>
<td>0°C to +55°C</td>
<td>–40°C to +60°C</td>
</tr>
<tr>
<td>Permissible ambient temperature during storage</td>
<td>–40°C to +85°C</td>
<td>–40°C to +85°C</td>
<td>–40°C to +85°C</td>
</tr>
<tr>
<td>Permissible ambient temperature during transport</td>
<td>–40°C to +85°C</td>
<td>–40°C to +85°C</td>
<td>–40°C to +85°C</td>
</tr>
<tr>
<td>Relative humidity / at 25 °C / without condensation / during operation / maximum</td>
<td>96%</td>
<td>95%</td>
<td>100%</td>
</tr>
</tbody>
</table>
### System Components

#### Transceivers (cont.)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>IP protection class</td>
<td>IP30</td>
<td>IP20</td>
<td>IP65</td>
</tr>
<tr>
<td>Width</td>
<td>26 mm</td>
<td>50 mm</td>
<td>251 mm</td>
</tr>
<tr>
<td>Height</td>
<td>156 mm</td>
<td>114 mm</td>
<td>251 mm</td>
</tr>
<tr>
<td>Depth</td>
<td>127 mm</td>
<td>74 mm</td>
<td>72 mm</td>
</tr>
<tr>
<td>Net weight</td>
<td>0.52 kg</td>
<td>0.13 kg</td>
<td>2.24 kg</td>
</tr>
<tr>
<td>Mounting type</td>
<td>Profile-rail mounting / wall mounting</td>
<td>Profile-rail mounting</td>
<td>An additional mounting plate is required for mast mounting, 35 mm, DIN-rail mounting, and S7-300 profile-rail mounting</td>
</tr>
<tr>
<td>Radio frequencies for WLAN in the 5-GHz frequency band</td>
<td>4.9–5.8 GHz</td>
<td>4.9–5.8 GHz</td>
<td>4.9–5.8 GHz</td>
</tr>
</tbody>
</table>

#### Product characteristics, functions, components / general

<table>
<thead>
<tr>
<th>Product function / access-point mode</th>
<th>Yes (only CXW774)</th>
<th>Yes (only CXW761)</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product function / client mode</td>
<td>Yes</td>
<td>Yes (CXW722/CXW761)</td>
<td>Yes</td>
</tr>
<tr>
<td>Number of SSIDs</td>
<td>4</td>
<td>–</td>
<td>up to 16</td>
</tr>
<tr>
<td>Dual client</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>iPCF client</td>
<td>Yes, only in combination with KEY PLUG W780 iFeatures or KEY PLUG W740 iFeatures</td>
<td>Yes (only W722)</td>
<td>Yes, only in combination with KEY PLUG W780 iFeatures or KEY PLUG W740 iFeatures</td>
</tr>
<tr>
<td>Number of iPCF-capable wireless modules</td>
<td>1</td>
<td>1 (only W722)</td>
<td>up to 2</td>
</tr>
</tbody>
</table>

#### Standards, specifications and approvals

<table>
<thead>
<tr>
<th>for FM</th>
<th>FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4</th>
<th>FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4</th>
<th>FM 3611: Class I, Division 2, Groups A,B,C,D, T4 / Class 1, Zone 2, Group IIC, T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>for safety / CSA and UL</td>
<td>UL 60950-1 CSA C22.2 No. 60950-1</td>
<td>UL 60950-1 CSA C22.2 No. 60950-1</td>
<td>UL 60950-1 CSA C22.2 No. 60950-1</td>
</tr>
<tr>
<td>Proof of suitability</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>EC conformity declaration</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>CE mark</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>C tick</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
System Components

Key to Order Numbers

Component: 0-0 = transceiver
Type: 1 = access point
2 = client
Plug-connector type: 1 = RJ45
2 = SFP (fiber optic)
3 = M12
Installation situation: 1 = indoor (customer’s control cabinet)
2 = indoor in control cabinet
3 = outdoor (without control cabinet)
Number of control cabinets: -O0 = 0 units
-01 = 1 unit

Overview and Layout of Electrical Components (End Infeed)

1 ProfiDAT® adapter cable
2 Feed-in connection
3 Hinge-point connection (optional)
4 Antenna adapter cable
5 Antenna connection
10 ProfiDAT® transceiver with 24-V power-supply cable
11 R-SMA plug, terminating resistor, 50 Ohm / 6 GHz / 1 W
12 N-connector, terminating resistor, 50 Ohm / 6 GHz / 1 W
A Feed-in control cabinet
B Current collector
C Control cabinet (mobile side)
D ProfiDAT® profile
System Components

Hinge-Point Transition Element (for STS Cranes)

Part No.: 051413-01
The hinge-point transition element secures the data connection between the folding and fixed parts of the crane. The hinge-point transition element bolts to the support structure at the two fixing points.

- **Including**: Ecoflex® 10 cable
- **Length**: 20 m
- **Diameter**: 10.2 mm
- **Impedance**: 50 Ω
- **Attenuation @ 1 GHz / 100 m**: 14.2 dB
- **f_{max}**: 6 GHz

Includes 2 × angled connectors

---

Central Signal Feed-In

Part No.: 051415-04
Includes:
- HF coaxial cable
- Signal splitter
- Attenuator

In order to extend system lengths from 250 m to 500 m in a segment, it is possible to install a central feed-in instead of an end feed-in. In this case, the signal feed-in point or stationary transceiver (access point) is positioned in the middle of the traversing range. In order to feed the wireless signal from the transceiver into the ProfiDAT® profile, an expansion element is used for the signal feed-in. This means that the expansion element, which is designed to compensate for the temperature-dependent change in length of the profiles, fulfills two functions.

- **Including**: Ecoflex® 10 cable
- **Length**: 2 × 10 m
- **Diameter**: 10.2 mm
- **Impedance**: 50 Ω
- **Attenuation @ 5 GHz / 100 m**: 37 dB
- **f_{max}**: 6 GHz

**Material**: Aluminum, stainless steel
For system lengths greater than 250 m
System Components

Central Signal Feed-In – Components

- **Media converter** (provided by customer)
- **RJ45 Ethernet cable** (provided by customer)
- **Optical fiber** (provided by customer)
- **RJ45 Ethernet cable** (provided by customer)
- **Protective conductor** (provided by customer)
- **Comb filter**
- **2 × HF cable, 10 m** (from Conductix-Wampfler)
- **Splitter** (supplied by Conductix-Wampfler)
- **Attenuator** (supplied by Conductix-Wampfler)
- **HF cable, 1 m** (from Conductix-Wampfler)
- **Access point (AP) standard transceiver** for indoor applications #3188984 (CXW 734/774) (W x H x D: 26 × 156 × 127 mm)
  - Space-saving solution for use in the control cabinet
  - DIN-mounting fastening
  - Metal housing, protection class IP30
  - Temperature range: -20°C to +60°C

* Ecoflex 10 HF cable #3173092
  - A flexible coaxial cable for the 5 GHz frequency.
  - Pre-assembled, cannot be shortened!
  - Diameter: 10.2 mm
  - Min. bending radius: 40 mm

** Aircell 5 HF cable #3173091
  - A flexible coaxial cable for the 5 GHz frequency.
  - Diameter: 5.0 mm
  - Min. bending radius: 50 mm
System Components

Expansion Element (including Fixed Point)

Part No.: 051416-01
The aluminum expansion element connects two ProfiDAT® profiles, compensating for changes in the length of profiles due to temperature fluctuations.

Including Ecoflex® 10 cable
Cable length: 500/502/165 mm
Diameter: 10.2 mm
Impedance: 50 Ω
Attenuation @ 5 GHz / 100 m: 37 dB

Expansion: 0–45 mm
Includes 2 × angled connectors
Used for system lengths of 200 m or more

Technical specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC resistance [Ω/1000 m] 20°C</td>
<td>0.000126</td>
</tr>
<tr>
<td>DC resistance [Ω/1000 m] 35°C</td>
<td>0.000134</td>
</tr>
<tr>
<td>Impedance [Ω/1000 m] 20°C/50Hz</td>
<td>0.000262</td>
</tr>
<tr>
<td>Impedance [Ω/1000 m] 35°C/50Hz</td>
<td>0.000266</td>
</tr>
<tr>
<td>Weight [kg]</td>
<td></td>
</tr>
</tbody>
</table>
System Components

Central Feed-In + Expansion Element
Part No.: 05-S260-0003
The 5 m rail segment consists of an expansion element, a central feed-in for the signal feed and two hanger clamps.
Since the feed-in segment also has an expansion function, the expansion gap adds up to a total of 90 mm ($2 \times 45$ mm).
Includes $2 \times 10$-m coax cable for connection to the access point transceiver.
Includes $3 \times 1.5$-m 16-mm$^2$ grounding cable.

Two Expansion Elements in a 5-m Segment
Part No.: 05-S260-0004
The 5 m rail segment consists of two expansion elements, the expansion gap adds up to a total of 90 mm ($2 \times 45$ mm).
This is ideal for combining with the expansion element from the 0813 conductor rail range, which also has an expansion gap of 90 mm in total.
Includes $3 \times 1.5$-m 16-mm$^2$ grounding cable.
System Components
Calculating the Air Gap/Expansion Elements

Determining the Air Gap

![Diagram of Air Gap Determination](image)

Instructions:
- \( t_{\text{min}} \) = lowest temperature occurring in the given application
- \( t_{\text{max}} \) = highest possible temperature in the given application
1. Enter a tie line from \( t_{\text{min}} \) to \( t_{\text{max}} \).
2. Enter a horizontal line at the ambient temperature during installation.
3. Drop a line down from the intersection of the two lines, and read off the air gap to be installed.

Examples:
1. Temperature range: -15 °C to +85 °C
   Ambient temperature during installation: +30 °C
   Air gap: 25 mm
2. Temperature range: 0 °C to +60 °C
   Ambient temperature during installation: +10 °C
   Air gap: 37 mm

Number of Expansion Elements for Systems over 200 m

For conductor rail systems longer than 200 m, expansion elements must be placed at certain intervals in accordance with Diagrams 1 & 2. Specific distances must be observed for special systems and when the fixed point is located at the end of the system. Please contact us with any questions.

Number of Expansion Elements (open end)

<table>
<thead>
<tr>
<th>Number of Expansion Elements</th>
<th>Total length of the conductor rail [m]</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>300 500</td>
</tr>
<tr>
<td>20</td>
<td>295 389 484 500</td>
</tr>
<tr>
<td>30</td>
<td>263 326 389 452 515</td>
</tr>
<tr>
<td>40</td>
<td>247 295 342 389 436 484 531</td>
</tr>
<tr>
<td>50</td>
<td>238 276 313 351 389 427 465 503</td>
</tr>
<tr>
<td>60</td>
<td>223 263 295 326 358 389 421 452 484 515</td>
</tr>
<tr>
<td>70</td>
<td>227 254 281 308 335 362 389 416 443 470 497 524</td>
</tr>
<tr>
<td>80</td>
<td>224 247 271 295 318 342 365 389 413 436 460 484 507</td>
</tr>
<tr>
<td>90</td>
<td>221 242 263 284 305 326 347 368 389 410 431 452 473 494 515</td>
</tr>
<tr>
<td>100</td>
<td>219 238 257 276 295 313 332 351 370 389 408 427 446 465 484 500</td>
</tr>
</tbody>
</table>

Intermediate length [\( \Delta l \)]:

Maximum length: 500 m
Max. expansion possible for expansion element: 45 mm
Expansion coefficient of aluminum: 0.0000238 1/K

Gap:

- \( G = L \times \Delta l \times \alpha \)
- \( L = \frac{G}{\Delta l \times \alpha} \)

Diagram 1 – Open ends:

- Total system length ≤ 200 m
- 1 EE
- 2 EE
- Expansion element
- Fastening point
- 100 m
- z
- x
- 100 m
System Components
Calculation of Expansion Elements

Number of Expansion Elements (Limited End/Funnel)

<table>
<thead>
<tr>
<th>No. of expansion elements</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length of the conductor rail [m]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial length, a</td>
<td>95</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate length, z</td>
<td>47</td>
<td>95</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>End length, e</td>
<td>47</td>
<td>95</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ \Delta L_e \]

<table>
<thead>
<tr>
<th>No. of expansion elements</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total length of the conductor rail [m]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial length, a</td>
<td>95</td>
<td>100</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermediate length, z</td>
<td>47</td>
<td>95</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>End length, e</td>
<td>47</td>
<td>95</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum length: 500 m
Max. expansion possible for expansion element: 45 mm
Max. expansion possible for funnel: 22.5 mm
Expansion coefficient of aluminum: 0.0000238 1/K

Diagram 2 – Limited ends/funnels
(minimum distance to limit = 50 m):

0 EE
Funnel
Funnel

1 EE

2 EE

3 EE

Note
- No heating by the current load as this is a ground conductor rail
- Total systems lengths greater than 500 m only after consultation
Description of Interfaces

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum length of the feed cable</td>
<td>10 m</td>
</tr>
<tr>
<td>Profile length</td>
<td>5000 mm</td>
</tr>
<tr>
<td>Outer dimensions of the profile (width × height)</td>
<td>48 mm × 56 mm</td>
</tr>
<tr>
<td>Distance between poles</td>
<td>80 mm</td>
</tr>
<tr>
<td>Power supply: ProfiDAT® transceiver</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Maximum data transmission rate</td>
<td>100 Mbit/s</td>
</tr>
<tr>
<td>Maximum traversing speed of the mobile transceiver</td>
<td>300 m/min</td>
</tr>
<tr>
<td>Interface</td>
<td>100 Mbit/s, RJ45 or LC</td>
</tr>
<tr>
<td>Permissible rated current for the conductor-rail system (L, N)</td>
<td>1000 A</td>
</tr>
<tr>
<td>Maximum suspension interval for hanger clamps</td>
<td>2.5 m (for E-RTG: 3 m)</td>
</tr>
</tbody>
</table>

### Electrical Interfaces

- Data interface
- Power supply/control voltage
- Power feed to conductor rails
- PE
- PE connector cable at the hinge point

**Data interface:**
ProfiDAT® 100 Mbit/s, RJ45 connection. At both ends of the ProfiDAT® system, customers must provide an RJ45 connector to connect the ProfiDAT® with their system.

- 1 × RJ45 socket
- TCP/IP signal transmission (Ethernet protocol)
- PLC communication + safety-related control-signal communication
- Only data transmission of safety-related signals; additional safety equipment + controllers (PROFIsafe devices, etc.) are not included.
- Video/audio signals in digital Ethernet format
- Analog video signals converted into a digital format (by a multiplexer, for example)

**PE interface:**
The interface for the customer’s grounding cable is located at the PE rail connector (Part No.: 051412-02). At the flap (M10 drilled hole), the PE cable must be connected according to the applicable standards.

**Power supply / control voltage:**
The controller of the ProfiDAT® data-transmission system requires the following power supply:

- **AC power supply for the feed-in control cabinet:** 100–500 V, 50/60 Hz
- **DC control voltage for transceivers:** 24 V

### Mechanical Interface

- **Current collector**
The current collector on the ProfiDAT® profile performs a dual function. Two divided carbon brushes guide the current collector in the ProfiDAT® profile.

The carbon brushes guarantee the connection to the ground cable (ProfiDAT® profile), while the two built-in antennas support the data transmission. The antennas are inserted into the slot in the ProfiDAT® profile and are electrically isolated from the carbon brushes.
Description of Interfaces

Comb Filter
A Comb filter filters certain frequencies from signal groups. This prevents the radio wave from escaping from the profile. No interference with surrounding radio systems.

Central Feed-in
When the system length exceeds 250 m (or segments the data path), the signal is fed in over stretches or by central feed-in. To this end, the signal is fed through an expansion element, in which case the maximum system length of the data path is 250 m per side.

Ethernet
"Industrial Ethernet” is the generic term for all efforts to make the Ethernet standard usable for networking devices used in industrial production. The characteristics of pure Ethernet technology include the following points:

- Standardization in accordance with IEEE 802.3
- Transmission via twisted-pair or fiber-optic cable
- Connectors for copper wiring: RJ45 (see Figure on the right)
- Maximum cable length of 100 m for twisted-pair cables

Industrial Ethernet encompasses many different protocols, of which the well-known PROFINET® is only one.

Transmittable protocol types:

<table>
<thead>
<tr>
<th>Industrial Ethernet protocol Direct transmission</th>
<th>Indirect transmission</th>
</tr>
</thead>
<tbody>
<tr>
<td>EtherNet/IP™</td>
<td>ProFINET® IO</td>
</tr>
<tr>
<td>PROFINET® IO</td>
<td></td>
</tr>
<tr>
<td>Modbus TCP</td>
<td></td>
</tr>
</tbody>
</table>

Further protocols are possible after technical clarification.

ProfiBUS®
Optionally, the ProfiBUS® connection (DP/DP coupler) can be implemented using specially developed translation blocks. In this case, the customer’s ProfiBUS® protocol is transparently translated and can be transmitted directly by the standard ProfiDAT® transceiver. To do this, a ProfiBUS® master module is connected directly to a transceiver access-point module; on the opposite side, a ProfiBUS® slave module is connected to a client transceiver.
Description of Interfaces

Power over Ethernet (PoE)

Power over Ethernet (PoE) encompasses standardized procedures for supplying power to network terminals via the network cable. Power over Ethernet eliminates the need for the separate power connector and plug-in power-supply units. Siemens-manufactured WLAN devices offer this option, so the WLAN access point and client can be supplied with power directly via the Ethernet cable or Ethernet interface.

Wireless LAN in an industrial environment

In many environments, a wireless network is the preferred medium due to its special characteristics. However, the number of wireless communication devices installed will continue to increase, making it increasingly difficult to communicate wirelessly at the 2.4-GHz and 5-GHz radio frequencies. Various radio technologies also share the same frequency band, leading to a certain coexistence of different systems. When planning and implementing the use of radio networks, special attention must be given to avoid signal interference. The slotted-waveguide technology used with ProfiDAT® eliminates this planning effort and the coexistence of other wireless systems has no interfering influence on the ProfiDAT® system. Similarly, the screened wireless signal in the slotted waveguide has no effect on the communication of nearby systems.

PROFINET®

The PROFINET® technology is developed by Siemens and the ProfiBUS® user organization. It is the implementation of ProfiBUS® for networking technology, bringing together the advantages of Ethernet and the successful field bus. It is used for applications where fast data communication is required in combination with industrial IT functions.

Performance classes:

- TCP/IP: Open communication via Ethernet TCP/IP without real-time requirements
- RT: Real-time communication for I/O data transfer in automation technology
  - Reaction times less than 10 ms for time-critical applications
  - RT data has a higher priority than TCP/IP data

The specified connectors are the RJ45 connector for data and the M12 connector for electrical transmission over copper wires, and the LC connector for optical transmission via optical fibers.

- The PROFIsafe protocol can be used for safety-related applications up to SIL3 in accordance with IEC 61508 / IEC 62061 or PL “e” / category 4 in accordance with ISO 13849. The required safety class depends on the end use and the definition of the safety functions.

EtherNet/IP™

The Ethernet Industrial Protocol (EtherNet/IP™) is an open standard for industrial networks. EtherNet/IP™ was developed by Rockwell Automation and the ODVA (Open DeviceNet Vendor Association) and standardized in the international IEC 61158 series of standards. EtherNet/IP™ is a widely used communication standard, especially in the US market and where Rockwell controllers are used. ProfiDAT® makes the direct and transparent transmission of EtherNet/IP™ possible.

Modbus/TCP

Since its development by Schneider Electric in 1979, the Modbus protocol has been a de-facto standard for industrial communications. It is effective, easy to implement, and freely available both to device vendors and to users. With ProfiDAT®, the direct and transparent transmission of Modbus/TCP is possible.
Example of the System Composition

Sample Order – Required Information (Basis for the Quotation)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Quantity</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>051411-3512</td>
<td>30</td>
<td>ProfiDAT® conductor rail, PVC PE 5 m</td>
<td>–</td>
</tr>
<tr>
<td>051414-03</td>
<td>62</td>
<td>ProfiDAT® hanger clamps</td>
<td>Oversupply of two items</td>
</tr>
<tr>
<td>051412-01</td>
<td>15</td>
<td>ProfiDAT® connectors</td>
<td>The feed-in/feed-out set includes connectors (2 units), take into account the number of PE connectors</td>
</tr>
<tr>
<td>051412-02</td>
<td>13</td>
<td>ProfiDAT® PE connector</td>
<td>Used every 25 meters</td>
</tr>
<tr>
<td>051415-01</td>
<td>1</td>
<td>Feed-in/feed-out set 0514</td>
<td>Use of end feed</td>
</tr>
<tr>
<td>051410-1011</td>
<td>1</td>
<td>ProfiDAT® S collector</td>
<td>Since there is 1 consumer / traversing range without interruption</td>
</tr>
<tr>
<td>3188984</td>
<td>1</td>
<td>Transceiver access point</td>
<td>Custom configured</td>
</tr>
<tr>
<td>3188984</td>
<td>1</td>
<td>Transceiver client</td>
<td>Custom configured</td>
</tr>
<tr>
<td>051419-01</td>
<td>1</td>
<td>Spare parts kit</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Commissioning</td>
<td>–</td>
</tr>
</tbody>
</table>

Application: Data transmission system for an automatic gantry crane  
System length: 150 m  
Number of systems: 1  
Number of vehicles/systems: 1  
Arrangement: Horizontal (downward-facing opening)  
Number of poles: 1 x data transmission including PE (replaces PE in the 0813 energy system)  
Voltage: 400 V / 50 Hz  
Feed-in: End feed-in  
Traversing speed: Approx. 60 m/min  
Existing PLC system: SIEMENS S7-400  
Protocol: Ethernet (TCP/IP, layer 2)  
Bus system: PROFINET® & PROFIsafe  
Interface: RJ45  
Safety PLC integrated: Yes (by customer)  
Data to be transferred: Control-signal data (yes)  
Environmental conditions: Metal dust (scrap-metal shredder on adjacent site); Proximity to water (German inland port); grain dust  
Ambient temperatures: approx. +5°C to approx. 45°C  
Energy supply: Yes, already installed (0813 series – 500 A – 150 m – 4 pole; 3×PH + PE)  
Fastening: Suggestion: fasten to existing structure installed on site. Support interval: max. 2500 mm  
Max. traversing speed: 5 m/s (300 m/min; 18 km/h) for ProfiDAT®  
Cable length: 10 m transceiver to antenna; 10 m antenna cable
System Layout

Feed-in/feed-out set
Hanger clamps
Connector
Hinge-point transition element (only for STS cranes)

System Layout
E-RTG Crane

Feed-in
Hanger clamps
Current collector
Transceiver
Rail connector
Spare Parts and Accessories

Small Parts Replacement Package
Part No.: 051419-01

Contents:
4 × Collector brush
1 × Heat-shrink sleeve
1 × Terminating resistor
4 × Hanger clamp
2 × Rail connector
4 × Cylinder-headed screw, M3
2 × Cylinder-headed screw, M5
4 × Hexagonal bolt, M4
2 × Nut, M4
1 × Cable lug

Spare Parts for Current Collectors
Part No.: 05-K154-0005
Set of collector brushes

Part No.: 05-A150-0002
Antenna

Part No.: 051410-2
Replacement current collector (set of collector brushes with antenna and collector head)

Grounding Kit
Part No.: 05-Z009-0004
Connecting cable, 16 mm², length 2 m

For grounding connection of the hanger clamp (PE) # 051412-02 and the steel structure
Spare Parts and Accessories

Transceiver Housing

Part No.: GE-3198151
Polycarbonate plastic housing with knockouts

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>254 × 180 × 111 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature range:</td>
<td>-35°C to +80°C</td>
</tr>
<tr>
<td>Material:</td>
<td>glass-fiber-reinforced polycarbonate</td>
</tr>
<tr>
<td>Color:</td>
<td>RAL7035</td>
</tr>
<tr>
<td>Protection class:</td>
<td>IP66</td>
</tr>
<tr>
<td>Cable entry:</td>
<td>24 × M20</td>
</tr>
<tr>
<td></td>
<td>4 × M29/32</td>
</tr>
<tr>
<td></td>
<td>4 × M32/40</td>
</tr>
</tbody>
</table>

Anti-condensation heating

In outdoor areas, the conductor rail should be protected from the environment as much as possible when installed. The ProfiDAT® data transmission system is suitable for use in harsh environmental conditions. However, condensation, frost or ice can cause insulation faults and oxidation of the rail, which increases the wear of the contact brushes. Weather-related deposits can be largely prevented with the help of anti-condensation heating. The anti-condensation heating consists of the trace-heating cable, the wiring components and the temperature-dependent power supply. The heating power required depends on numerous parameters. It must be taken into consideration that whether ice forms on a profile or not depends on the installation situation of the profile and its environment.

A trace-heating cable is inserted into the slotted waveguide and supplied with external auxiliary power as a conductor loop. The trace-heating cable is a resistive heating cable used in different sizes. It is fitted between the profile rail and the profile insulation (see the figure below).

The controller of the profile anti-condensation heating has temperature and dew-point sensors (see the figure below right). The anti-condensation heating is switched on if the temperature falls below a certain value and reaches the dew point. Our sales department will be happy to assist you with the design.

Please contact us with your detailed inquiry.
Your Applications – our Solutions

ProfiDAT® from Conductix-Wampfler represents only one of the many solutions made possible by the broad spectrum of Conductix-Wampfler components for the transport of energy, data and fluid media. The solutions we deliver for your applications are based on your specific requirements. In many cases, a combination of several different Conductix-Wampfler systems can prove advantageous. You can count on all of Conductix-Wampfler’s Business Units for hands-on engineering support – coupled with the perfect solution to meet your energy management and control needs.

**Festoon systems**
It’s hard to imagine Conductix-Wampfler cable trolleys not being used in virtually every industrial application. They’re reliable and robust and available in an enormous variety of dimensions and designs.

**Conductor rails**
Whether they’re enclosed conductor rails or expandable single-pole systems, the proven conductor rails by Conductix-Wampfler reliably move people and material.

**Non-insulated conductor rails**
Extremely robust, non-insulated conductor rails with copper heads or stainless steel surfaces provide the ideal basis for rough applications, for example in steel mills or shipyards.

**Slip ring assemblies**
Whenever things are really “moving in circles”, the proven slip ring assemblies by Conductix-Wampfler ensure the flawless transfer of energy and data. Here, everything revolves around flexibility and reliability!

**Motorized Cable & Hose Reels**
Motorized reels by Conductix-Wampfler hold their own whenever energy, data, media and fluids have to cover the most diverse distances within a short amount of time – in all directions, fast and safe.

**Spring Cable & Hose Reels**
With their robust and efficient design Spring Cable and Hose Reels from Conductix-Wampfler are unbeatably reliable in supplying energy, signals, data and fluids to a vast range of tools, cranes and vehicles.

**Inductive Power Transfer IPT®**
The no-contact system for transferring energy and data. For all tasks that depend on high speeds and absolute resistance to wear.

**Retractors and Balancers**
Our wide range of high reliable retractors and balancers remove the load from your shoulders and allow you to reach top productivity.

**Energy guiding chains**
The “Jack of all trades” when it comes to transferring energy, data, air and fluid hoses. With their wide range, these energy guiding chains are the ideal solution for many industrial applications.

**Jib booms**
Complete with tool transporters, reels, or an entire media supply system – here, safety and flexibility are key to the completion of difficult tasks.

**Conveyor systems**
Whether manual, semiautomatic or with Power & Free – flexibility is achieved with full customization concerning layout and location.
Conductix-Wampfler has just one critical mission: To provide you with energy and data transmission systems that will keep your operations up and running 24/7/365.

To contact your nearest sales office, please refer to: www.conductix.com/contact-search