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Efficient RFID Solutions
HF Bus Mode

Efficient RFID Solutions with HF Bus Mode

Industrial automation applications must continually increase their efficiency in order to increase productivity. But how can manufacturers monitor and control their internal processes cost-effectively and completely? This is only possible through the use of innovative approaches.

Cost argument for RFID solutions

The ability to communicate without optical contact is one benefit of radio frequency identification (RFID) compared to optical identification processes using a barcode or QR code. Furthermore, RFID not only enables the reading but also the writing of tags. RFID is thus ideal for tracking and identifying objects.

HF bus mode offsets the price benefit of barcodes

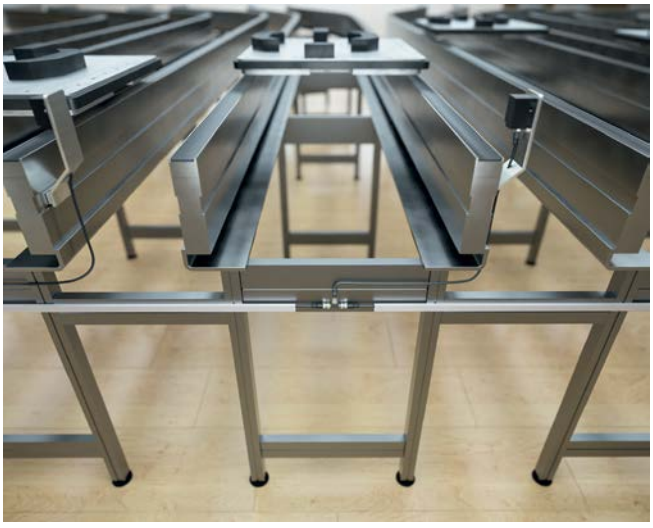
However, the benefits of RFID also come with a cost disadvantage. This is because only one read/write head can be connected on conventional RFID channels. These costs for modules and cables mostly make RFID solutions expensive compared to alternative technologies. HF bus mode, however, enables this cost disadvantage to be offset.

Up to 32 connectable read/write heads

Compared to IO-Link for example, HF bus mode does not require any point-to-point connection so that up to 32 suitable read/write heads can be connected to an RFID interface on each channel.

The cabling is implemented here in a line topology, so that the system can be installed and extended easily. Each of the 32 read/write heads can be addressed individually in HF bus mode in order to execute a wide range of commands such as the read, write or inventory commands. The read/write heads can be addressed both manually as well as automatically. In an exchange between individual read/write heads, addressing is carried out automatically in ascending order according to the order of connection. Thanks to the minimal use of modules and cables, the user not only benefits from cost savings but also from shorter mounting and commissioning times.

Connecting up to 32 bus-capable read/write heads on one RFID channel



Conveyor line with bus-capable read/write head and T splitter for creating a line topology

Maximum performance in Continuous mode

Continuous HF bus mode is similar to HF bus mode in its design and cost benefits but enables all read/write heads to be activated at the same time. Thanks to its higher performance, Continuous mode is therefore suitable both for static as well as slow dynamic applications, in which tags can be read or written simultaneously. The individual heads in this case store the read data in a buffer until the RFID interface queries it cyclically in sequence. The data is stored in the FIFO memory of the interface and can be fetched by the controller via the "Get data from buffer" command.

The "Track & Trace" function of Continuous HF bus mode opens up new application fields, such as in logistics or materials handling. This includes parallel detection in multi-track transfer/conveying systems, for products with different tag position heights in a line and applications with synchronized production machines.

Identification of printer ink cartridges

HF bus mode is already being used successfully in applications, such as the identification of printer ink cartridges. In this application, the tanks are identified automatically by the read/write head in order to reliably prevent faulty print results and production downtimes. The system can also remind operators to change an ink in time. The system determines the timing of the message according to the time when the ink cartridge was fitted and its expiry date. The current ink consumption is used to approximate the level of each individual tank. The main applications for the HF bus mode therefore cover tool and format changes, as well as the brand protection of tools.

Simultaneous identification of tool carriers on parallel conveyor lines

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