



Safe passenger traffic in crowded cities

Urbanization is an ongoing megatrend. On the one hand, it leads to the emergence of new mega-cities as economic and innovation centers. On the other hand, it causes increased environmental pollution and congestion of the existing transport infrastructure.

Digital technologies and automated traffic systems help to manage increased passenger traffic in public transport buildings in a smart and safe way. Thus, accidents can be avoided, and the existing infrastructure can be maintained.

Access control systems play an important role in these developments. In urban areas, public buildings such as office complexes, shopping centers, train and bus stations are visited and used by countless people every day. To reliably ensure security in these congested areas and prevent unauthorized access both during rush hours daytime and at night, more and more access control systems are being deployed. When thinking about the recent staffing problems at European airports, the need for this technology becomes even clearer.

To operate those automated access systems, appropriate drive solutions are required. These must be characterized by robustness and implemented safety functions.

Drives for automated access systems

Dunkermotoren, a brand of Ametek, has been a global expert in motorized building automation for many years. Besides brushed or brushless motors as part of the drive concept, motor control and communication capabilities are increasingly gaining on importance. The motor controller (or drive) is the electronic device, which enables, for example, an automated access system to respond to different scenarios. In the motor controller, a variety of motion profiles can be parameterized, or customer-specific object detections can be programmed. This allows manufacturers to differentiate the movement behavior of their door leaves.

Using the Motioncode programming environment, the control logic of the Dmove and Dpro motor series, for example, can be programmed in C and is accommodated directly on the motor. The communication capability enables exchange of data and parameters with other controllers and devices, or reports occurring events (e.g. a blockage) to a higher-level system.

CANopen and CiA 402 support

All Dunkermotoren motors with integrated electronics support a CANopen interface. CANopen offers an open, standardized, and cost-effective interface for communication with external devices and controllers. The implemented support of the CiA 402 device profile for drives and motion control allows to access the motor parameters and further operation data via a CANopen network in a standardized

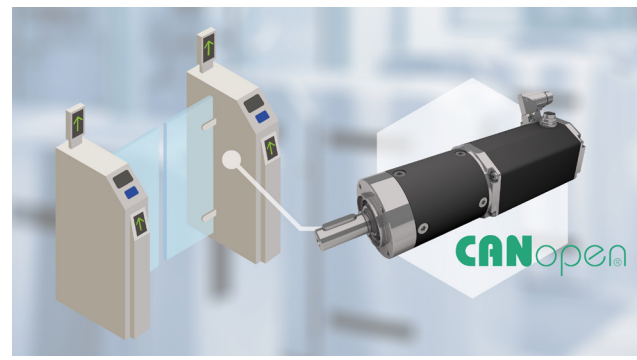


Figure 1: The Dunkermotoren motors used in access control systems provide CANopen connectivity (Source: Dunkermotoren)

manner. Thereby, acyclic reading and writing access via SDOs (service data objects) and cyclical access via PDOs (process data objects) is possible. The CANopen network can be used to parameterize a motor initially, e.g., for the assignment of the node-ID and bit rate via the LSS (layer setting services). The network is also used to send new commands such as movement instructions to the motor or to receive the status and current parameters from the motor during operation. The readout of operating data and events programmed in the motor controller enables further functionalities such as condition monitoring or predictive maintenance.

Implementation according to EN 17352

With the IIoT (industrial Internet of Things) brand Nexofox, the manufacturer offers solutions for analysis and use of the motor's operation data. Via CANopen, the motor operation data can be read out and further processed and evaluated locally or in the cloud. For example, the recorded motor data allows to draw conclusions about the current wear state of the mechanical drive train. The Nexofox devices support the communication setup with the motor, programming of the motor control using the Motioncode tool, and data integration in the cloud.

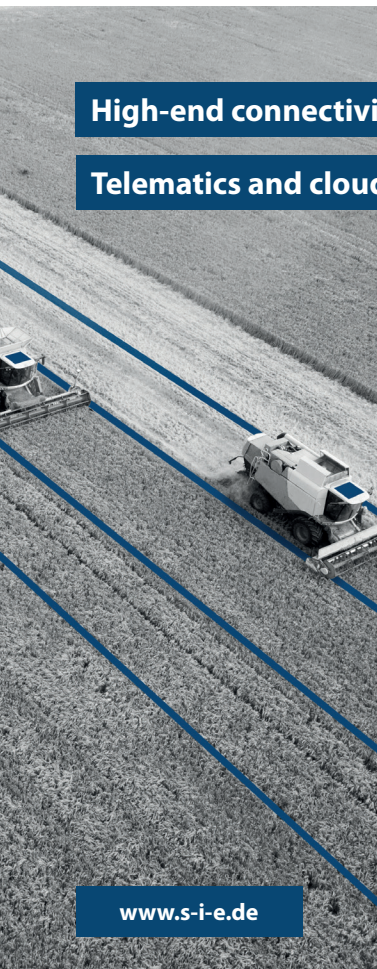
The combination of integrated motor control, communication capability, and supportive services offers new approaches for realizing applications compliant with new standards or safety concepts. For example, the recently

published EN 17352 standard specifies the safety-in-use requirements for the power-operated pedestrian entrance control equipment. It only allows to deploy control units, which are operating in accordance to the Performance Level D in Category 3 as defined in the ISO 13849-1. Dunkermotoren offers integrated as well as external control solutions fulfilling these requirements already in the standard version. The implemented safe torque off (STO) function ensures the drive unit to be switched torque-free in fractions of a second. This function is protected by hard-ware redundancy and ensures that neither people are injured, nor objects are damaged in case of an emergency. ◀



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