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CANopen Lift

Interoperable building blocks enable scalability

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The die is cast

The CANopen profile for lift control systems is the standardized communication system demanded increasingly for new lifts and refurbishment projects. It specifies interfaces for functional entities such as controllers and units. The specification of these building blocks does not determine implementations. This means, device suppliers may implement as many functional entities as they want, but in minimum one functional entity.

The functional entities comprise controllers and units. Nowadays, most of the available lift controllers provide the call controller, the car controller, and the car door controller in the same device. Of course, they could be implemented in separate devices.

Since many years, the following basic building blocks have been standardized in CiA 417:

- ◆ Call controller: It manages the call requests from the input panel units and acknowledges them to the output panel units. It requests the car drive controller to move the car and requests the car door controller to open or close the doors.
- ◆ Input panel unit: It is installed as in-car call panel or as floor call panel. There are also general input devices (e.g. for key-switch or fire alarm).
- ◆ Output panel unit: It is installed as in-car display panel or as floor display panel. It could be also a generic output panel providing acoustic announcements.
- ◆ Car drive controller: It commands the car drive unit to move the car.

The benefit for lift system designers: They can choose those devices, which fit best to the dedicated application requirements. You do not need to pay for not needed functions. This also enables scalability. CANopen Lift is suitable for very small applications as well as for complex systems.

Over the last ten years, the CiA 417 specification has been extended. It covers modern system requirements including pre-emptive maintenance and the link to cloud services.

- ◆ Car drive unit: It moves the car upwards and downwards.
- ◆ Car position unit: It measures the position of the car. Optionally, it provides speed, acceleration, and jerk values. There may be four units in the lift control system.
- ◆ Car door controller: It commands to open and to close up to four car lift doors. It receives optionally data from the light-barrier unit.
- ◆ Car door unit: It opens or closes the car lift doors.
- ◆ Light barrier unit: It detects subjects and objects entering the protected area of the car doors.
- ◆ Load-measuring unit: It provides the current load of the car and indicates overload situations to the car drive controller.

The functional entities comprise controllers and units

In the last few years, the following functional entities have been added to the CiA 417 set of specifications:

- ◆ Power-measuring unit: It provides the measured power consumption. It can measure the overall or the device-individual power consumption.
- ◆ Remote data transmission unit: It features gateway functionality for remote control or remote diagnostics purposes.
- ◆ Access remote unit: It reads different media to allow access, e.g. chip and smart cards, RFID tags, bar codes, or finger prints.
- ◆ Monitoring unit: It serves as condition monitoring as recommended in VDMA 24582.
- ◆ Position supervisor unit: It comprises the car position unit 1 and monitors speed, deceleration, door contacts, safety limit switches, and unintended car moves.

CiA plugfests

The interoperability of these functional entities is tested by means of plugfests. CiA members implementing the CiA 417 profile in their CANopen Lift devices proof jointly that their products provide a high degree of plug-and-play capability. CiA organizes regularly plugfests.

The benefit for the user:
The pre-tested devices simplify system integration.

Scalability is an important issue. You can use the same communication technology in simple as well as complex lift control systems. This reduces effort in training and you can gain experiences. In addition, you can tailor the control system to such functions you need. Nevertheless, you can extend and retrofit your lift application, when required.

CANopen Lift is the open standard for lift control system. It is supported by a growing number of controller and unit suppliers. Everyone may implement the specified functional entities. The CiA association is the neutral platform to maintain the CiA 417 application profile specification and to organize plugfests. It also provides supplier- and product-independent training and education services.



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