ECO PRO+

The Elevator Control System
LiFTCORE is part of an international group of companies with locations in Germany, China and USA. Partner companies in Europe, Southeast Asia and the Middle East offer our customers high-quality products and best services. Due to our international set up we are always close to our valued customers.

Our management and the entire workforce is fascinated about elevator technology. Our passion for elevators drives us to the uncompromising perfection of our products. In order to move you reliably, comfortably, energy-saving and with maximum safety. Every employee is focused on our high-quality standards by his own conviction. The performance and longevity of our products is our reference and your success.

Ready for the future! We think far ahead when starting a new development. For example, our control technology has already been designed with regard to “Smart Elevators” respectively “Elevator 4.0”. As a result, many function extensions are possible, which ensure future safety over a very long period of time. We first started implementing “smart functions”, that contribute to higher security, better availability and easier use. Let yourself be inspired by the new possibilities!
System Overview

Control System Structure

Control system composed of main components: Control Cabinet, CDB (Car Distribution Box), CCI (Car Core Interface), and Pit Box, etc.

Hardware design is highly integrated. It is consequently based on Plug & Play philosophy. The components communicate via CAN-BUS and Ethernet, depending on the kind of data to be transmitted.

Complying with European standards EN81-20 & EN81-50
Smart On-Line Elevator Monitoring System

Advanced Technology

- Reliable, highly integrated control system with decentralized components, which communicate via a CAN bus
- Several 32-bit high-performance microprocessors ensure network communication and information management
- The modern vector frequency control ensures outstanding driving dynamics and saves energy
- Sensors enable the optional recording of the driving characteristics, which can be supervised via online monitoring
- The system’s functional reliability can be monitored online, which considerably increases availability
- Consistent Plug & Play technology allows the fast integration of different components in order to flexibly implement a variety of functions

Convenient Operation

- The pushbuttons with the two-zone RGB LED lighting improve the visibility, give a clearly recognizable feedback signal after actuation and can be used for better orientation in the building
- The full-graphic LCD displays in the car and landings clearly show all elevator functions, operating conditions and warning messages. The display in the car can also display customer-specific content, which can be updated optionally, even online
- The possibility of parameterization in the car makes the commissioning of the elevator system easy
- A smartphone app supports the work of the service technician
- The five-way communication system is activated by pushing the alarm button and contacts the emergency call center

Safety and Reliability

- In addition to European safety standards, the control system also covers North American and Asian characteristics of its safety standards
- Outstanding product design know-how means that the products exceed the strict requirements of the directives for EMC, LVD and RED
- In the event of a power failure, the built-in UPS keeps the power supply and evacuates the passengers to the nearest easy-to-reach stop
- Passengers can be automatically evacuated in the event of a fire alarm or smoke in the building

Environmentally Friendly and Energy-Saving

- Vector-controlled frequency inverter with direct landing approach reduces driving time, energy consumption and sound emissions
- The highly efficient switching power supplies save up to 20% of energy
- Sleep and standby modes reduce energy consumption and increase the lifespan of electronic components
Control System Main Components

1 Control Cabinet

- Machine Room ECO PRO+ (MR)
- Machine Roomless ECO PRO+ (MRL)

Control Cabinet Main Components

- LCDR series inverters with Safe Torque Off (STO) function and "plug-in" Main Control Unit (CPU)
- Highly efficient two-channel switching power supply for the separate supply of the emergency call device and the controller components
- Dual-channel brake power supply with freely selectable pick-up voltage and holding voltage 207 ... 40 VDC
- Fully integrated interface unit with safety circuit visualization
- Unit for phase monitoring and UPS management
Main Control Unit

Functions
- The main control unit is installed directly on the frequency inverter (plug-in) thereby ensuring fast communication and maximum system reliability
- Control of the information shown at the LCD-displays of the COP, LIP and LIOP, as well as processing of all incoming commands and signals
- Continuous recording of all operating conditions and events
- Coordination of the functional sequences of all electronic components via the CAN bus

Features
- Maximum driving comfort due to optimized driving curve and highly developed motor initialization by using the frequency inverter of LCDR series
- Direct landing approach significantly increases the driving dynamics and the elevator capacity
- Universal input and output interfaces allow easy connection of electrical components
- Selective sleep modes and switch-off functions considerably reduce the standstill energy consumption of the system
- Extensive monitoring functions, such as the monitoring of the brake control switches and the brake torque of the machine brake, ensure maximum safety
- The operation safety of the system can be monitored online

Technical specifications
- Operating voltage: 24 VDC, 5 VDC
- Communication BUS: CAN
- Outer dimensions L*W: 296 * 102mm

Service Panel

Functions
- Emergency Recall; PIN protected reset function
- UPS test mode
- Full electric brake test; UPS-buffered brake for emergency rescue
- Remote activation and reset of the OSG; Test mode for acceptance test
- Main switch with UPS shutdown function
- Function for bridging the door safety system
- Separate battery backup of the emergency call system

Emergency Call System
- GSM, for connection to the emergency call center
- Integrated electronic elevator warden
- LCD display for showing different elevator conditions for the service technicians

Technical specifications
- Operating voltage: 24 VDC
- Operating Current: 500 mA
- Communication bus: CAN
- Operating temperature: +5 °C ~ +40 °C
- Storage temperature: -30 °C ~ +70 °C
- Humidity ≤ 75%
- Protection class: IP21
- Flush mounting in the wall or in the shaft door frame
- Outer dimensions H*W*D: 1796 * 140 * 140mm
**Control Cabinet Data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated Speed</td>
<td>≤ 4 m/s</td>
</tr>
<tr>
<td>Available Inverter Range [kW]</td>
<td>3.7; 5.5; 7.5; 11; 15; 18.5; 22; 30</td>
</tr>
<tr>
<td>Stops</td>
<td>≤ 64</td>
</tr>
<tr>
<td>Group Control</td>
<td>8-unit group control; no additional group control cabinet needed</td>
</tr>
<tr>
<td>Voltage [VAC]</td>
<td>220...240; 380...415</td>
</tr>
<tr>
<td>Frequency [Hz]</td>
<td>50/60</td>
</tr>
<tr>
<td>Applicable Elevator Type</td>
<td>MMR/MRL, traction</td>
</tr>
<tr>
<td>Operating Temperature [℃]</td>
<td>+5°C ~ +40°C</td>
</tr>
<tr>
<td>Protection Class Cabinet</td>
<td>IP21</td>
</tr>
<tr>
<td>Communication Type</td>
<td>CAN</td>
</tr>
<tr>
<td>Standard</td>
<td>EN81-20 &amp; EN81-50</td>
</tr>
<tr>
<td>Outer Dimensions Cabinet [w/o choke &amp; filter]</td>
<td>With Machine Room: 190X546X1678 (3.7kW<del>15kW) 198X696X1688 (18.5kW</del>30kW) 320X730X1900 (37kW<del>45kW) Machine Room Less: 169X395X1689 (3.7kW</del>15kW)</td>
</tr>
<tr>
<td>Cabinet Housing Material</td>
<td>Galvanized plate (standard) Stainless Steel (optional)</td>
</tr>
</tbody>
</table>

**2 Car Distribution Box**

**Functions**
- Inspection drive, emergency call device for car roof
- Emergency stop, shaft light switch, 230 V socket
- Pluggable connections for:
  - Door drive, light curtain
  - Safety switch, car door
  - Load measuring device, shaft sensors
  - Car light, fan
  - Traveling cable, COP
  - Emergency call device for COP
- Universal input and output interfaces allow easy integration of additional components

**Features**
- Pluggable connectors for Plug & Play installation
- Supports a variety of door drives
- Supports load measuring sensors with analogue voltage signal (0V ~ 10V), as well as digital signals
- Includes optional leveling, advanced door opening and UCM functions
- Elevator settings can be viewed and parameterized at the car roof
- Reduction of assembly errors due to selective plug geometry
- Safety circuit visualization of the main spots

**Technical specifications**
- Operating voltage: 24 VDC (electronics)
- Operating voltage: 230 VAC (socket, safety circuit)
- Operating current: 500 mA
- Communication bus: CAN
- Data rate: 125 kbit / s
- Operating temperature: +5 °C ~ +40 °C
- Storage temperature: -30 °C ~ +70 °C
- Humidity ≤ 75%
- Protection class: IP42
- Outer dimensions H*W*D: 320 * 300 * 90mm
### Functions
- Inspection
- Emergency call device
- Emergency Stop
- 230 V socket
- Shaft light switch

### Features
- Pluggable connectors for Plug & Play installation
- Reduction of assembly errors due to selective plug geometry
- Safety circuit visualization of the main spots
- Plug-in technology for all components in the shaft to the safety circuit

### Technical specifications
- Operating voltage: 24 VDC (electronics)
- Operating voltage: 230 VAC (socket, safety circuit)
- Operating temperature: +5 °C ~ +40 °C
- Storage temperature: -30 °C ~ +70 °C
- Humidity ≤ 75%
- Protection class: IP54
- Outer dimensions H*W*D: 325 * 250 * 145 mm
**Car Operation Panel (Non Touch)**

- 10.1 inch, wall mounted & hinged
- Panel: Hair line
- Frame: Sand Silver
- Corner: Sand Silver
- H:820 * W:256 * D:18 mm

- 17.3 inch, wall mounted
- Panel: Hair line
- Frame: Sand Silver
- Corner: Sand Silver
- H:1380 * W:254 * D:14.5 mm

**Landing Indication & Operation Panel**

- Display templates with elevator information and customized configurable content

- Panel: Gold sand
  - Frame: Gold shining
- Panel: Titanium sand
  - Frame: Chrome
- Panel: Chrome
  - Frame: Chrome
- Panel Hair line
  - Frame: Silver painting
- Stainless Steel Hair Line

**Emergency Run**
- Normal
- Car Attendance
- Fireman Run
- Power fault

**VIP Run**
- Fire Evacuation
- VIP Run
- Emergency Run