

VACON AC DRIVES FOR LIFT APPLICATIONS

Overview

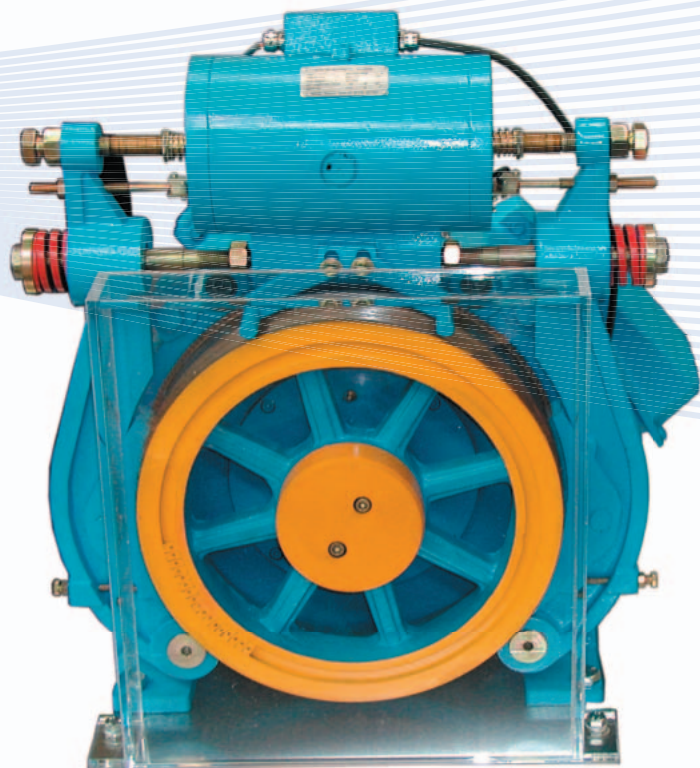
Lift markets can be divided into three main segments: low rise buildings where speeds are typically up to 0.6 m/s, medium rise buildings with geared or gearless lifts up to ~3 m/s and high rise buildings, geared or gearless, speeds up to 10 m/s. The medium rise residential apartment building are the main market area for Vacon.

Lifts are typically controlled by lift controllers. LC handles all calls from the lift car and door buttons. It also controls the frequency converter by sending direction and speed reference commands.

Vacon frequency converter runs both the motor and smooth landing as well as departures to correct floors. The frequency converter also controls the lift's mechanical brake.



Features and benefits

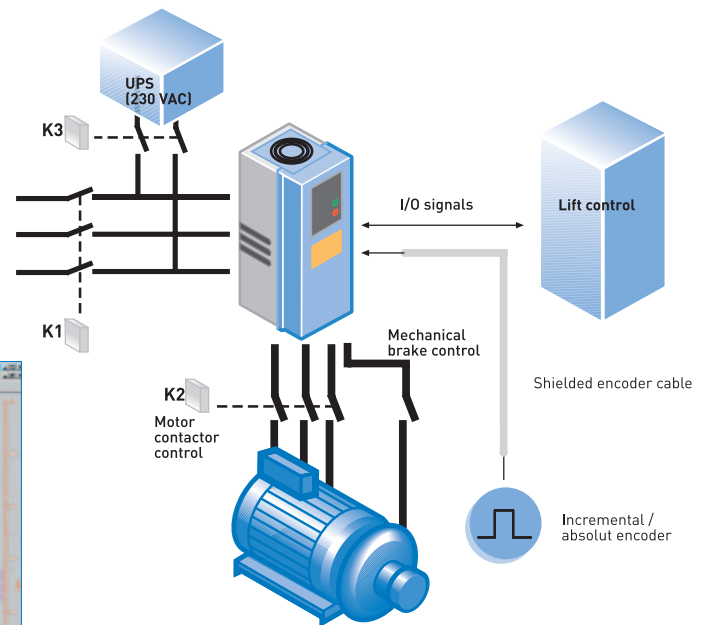
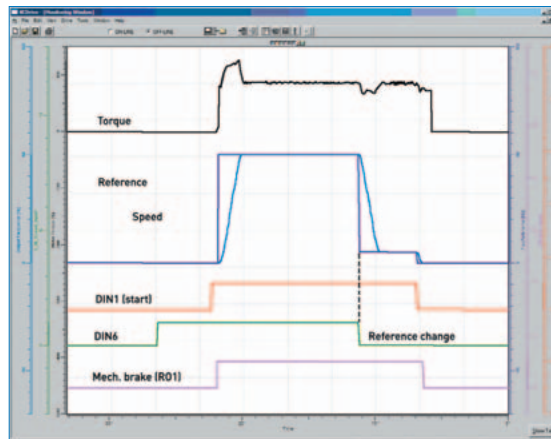


Vacon offers specially-designed frequency converters to satisfy most of the needs of lift customers.

- Specific lift application with lift function for easy commissioning
- Synchronous (PMSM) and asynchronous motor control
- Closed loop and open loop motor control modes
- Compact design with integrated brake chopper
- Integrated C-level EMC filtering to ease lift drive system packaging
- Low motor noise due to high switching frequency
- Advanced fan control to reduce drive noise
- Easy commissioning
- Lift speed parameters in [Hz] and [m/s]
- Versatile brake control logic
- Fieldbus control and programmable I/O's
- Lift evacuation feature. In case of power failure, the lift can be run to next floor
- Safe disable function EN954:3 with OPT-AF option board
- Motor contactor control

Application

The I/O connections for lift applications are designed for easy commissioning. The Vacon NXP uses a standard I/O configuration (OPT-A1 and OPT-A2). Drive connection via fieldbus is also possible. All I/Os are fully programmable. An incremental encoder (OPT-A4/A5) is needed for CL solutions and an absolute encoder (OPT-BB/BC) is needed with permanent magnet motors. Evacuation is based on the 230VAC UPS system.



Product information

Frequency converter type	Constant speed [50% duty cycle]	Acceleration/ Deceleration [3 sec.]	Dimensions and weight [WxHxD/kg]
NXP00125	12 A	15 A	128x292x190/5
NXP00135	15 A	21 A	128x292x190/5
NXP00315	20 A	25 A	144x391x214/8.1
NXP00325	25 A	38 A	144x391x214/8.1
NXP00615	40 A	69 A	195x519x237/18.5

Table 1: The ratings above are valid with the switching frequency of 8 kHz and 400 V input voltage, ambient temperature 40° C

Input voltage U_{in}	208...240 V; 380...500 V; 525...690 V; $\pm 10\%$
Input frequency	45...66 Hz
Output voltage	0- U_{in}
Output current	See table above
Control performance	Open loop vector control: speed control 0.5 %, dynamic 0.3 %/sec, torque lin. <2 %, torque rise time ~5 ms Closed loop vector control: speed control 0.01 %, dynamic 0.2 %/sec, torque lin. <2 %, torque rise time ~2 ms
Switching frequency	1...16 kHz; Factory default 10 kHz
EMC	EMC level C, EMC level H, EMC level L, EMC level T See the Vacon NXS/NSP product manual for more information.
Application software	NXP: APFIF33; NXS: ASFIF08
Safety	EN 50178 (1997), EN60204-1(1996), EN 60950 (2000, 3rd edition)(as relevant), IEC 61800-5, CE, UL, CUL, FI, GOST R; see the unit nameplate for more info
Protections	Overvoltage, undervoltage, earth fault, mains supervision, motor phase supervision, overcurrent, unit overtemperature, motor overload, motor stall, motor underload, short-circuit of +24 V and +10 V reference voltages