



### General characteristics

|                            |     |                                            |
|----------------------------|-----|--------------------------------------------|
| Rated power supply voltage |     | 400...480VAC<br>50/60Hz                    |
| Rated output voltage       | VAC | Three-phase 0...<br>480VAC 0-599Hz         |
| Rated output current       | A   | 47                                         |
| Rated output power         | kW  | 22                                         |
| Rated output power         | HP  | 30 (Heavy load) /<br>40 (Standard<br>load) |
| EMC filter                 |     | Built-in EMC<br>suppressor cat.<br>C2      |
| Communication port         |     | RS485, Modbus-<br>RTU                      |

### Technical features

|                                      |            |                                                        |
|--------------------------------------|------------|--------------------------------------------------------|
| Input type                           |            | Three-phase                                            |
| Rated mains voltage                  | VAC        | 400...480                                              |
| Operating mains voltage range        | VAC        | 340...528                                              |
| Rated mains frequency                | Hz         | 50/60                                                  |
| Operating mains frequency range      | Hz         | 45...65                                                |
| Rated mains current with mains choke |            | 42 (heavy load) /<br>55 (standard<br>load)             |
| Output type                          |            | Three-phase                                            |
| Output voltage range                 | VAC        | 0...480                                                |
| Output frequency range               | Hz         | 0...599                                                |
| Current overload                     | %/s        | 150% for 60s;<br>200% for 3s                           |
| Apparent output power                |            | 32 (heavy load) /<br>38 (standard<br>load)             |
| Power loss                           |            | 4kHz: 520W<br>(heavy load) /<br>623 (standard<br>load) |
| Brake chopper                        |            | Yes                                                    |
| Switching frequency                  |            | 2...16kHz                                              |
| Max motor cable length               |            |                                                        |
|                                      | Shielded   |                                                        |
|                                      |            | Without EMC category    m    100                       |
|                                      |            | Category C1    m    3                                  |
|                                      |            | Category C2    m    20                                 |
|                                      |            | Category C3    m    35                                 |
|                                      | Unshielded |                                                        |
|                                      |            | Without EMC category    m    200                       |

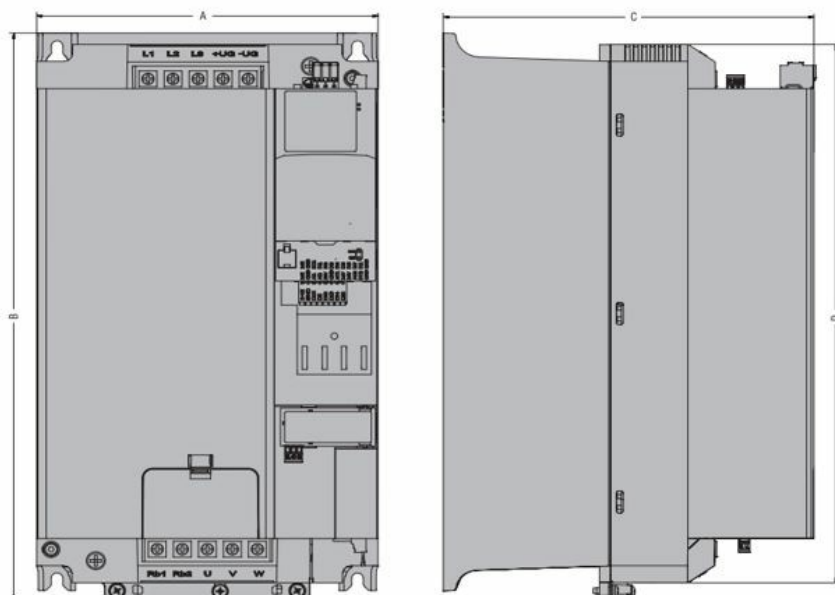
## Functions

|                                                |                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Motor control modes                            | V/f linear,<br>quadratic torque,<br>sensorless<br>vector control,<br>ECO mode,<br>servo control with<br>encoder<br>feedback,<br>multipoint V/f<br>curve, V/f closed<br>loop control with<br>encoder<br>feedback, torque<br>setpoint,<br>sensorless<br>control for<br>synchronous<br>motors up to<br>22kW |
| Speed reference signals                        | External<br>potentiometer<br>0...10kΩ<br>Voltage signals:<br>0...10VDC or<br>-10...+10VDC<br>Current signals:<br>0/4...20mA<br>Buttons on front<br>keyboard<br>Door-mount<br>installation kit<br>15 preset<br>speeds via digital<br>inputs<br>Motor<br>potentiometer<br>Fieldbus                         |
| 3-wire control                                 | Yes                                                                                                                                                                                                                                                                                                      |
| S-shape curves                                 | Yes                                                                                                                                                                                                                                                                                                      |
| Slip compensation                              | Yes                                                                                                                                                                                                                                                                                                      |
| Flying restart                                 | Yes                                                                                                                                                                                                                                                                                                      |
| Access to DC bus                               | Yes                                                                                                                                                                                                                                                                                                      |
| DC braking                                     | Yes                                                                                                                                                                                                                                                                                                      |
| DC injection at start                          | Yes                                                                                                                                                                                                                                                                                                      |
| PID control                                    | Yes, with sleep<br>and rinse function                                                                                                                                                                                                                                                                    |
| Sequencer (programmable frequency/time cycles) | Yes                                                                                                                                                                                                                                                                                                      |
| Preset speeds                                  | Yes                                                                                                                                                                                                                                                                                                      |
| Motorpotentiometer                             | Yes                                                                                                                                                                                                                                                                                                      |
| Different parameter configuration sets         | Yes                                                                                                                                                                                                                                                                                                      |
| Parameters changeover function                 | Yes                                                                                                                                                                                                                                                                                                      |
| Favorite parameters menu                       | Yes                                                                                                                                                                                                                                                                                                      |
| Autotuning                                     | No                                                                                                                                                                                                                                                                                                       |
| Safe torque Off (STO) safety function          | Optional                                                                                                                                                                                                                                                                                                 |
| PTC probe input                                | Yes                                                                                                                                                                                                                                                                                                      |

|                            |                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Protections                | Overcurrent<br>Output short circuit and earth/ground leakage<br>Overvoltage<br>Undervoltage<br>Phase loss<br>Motor heat overload (i2t)<br>Overspeed<br>Speed reverse |
| Special funct.             | Multi-pump PID control (1 main pump frequency regulated + 2 auxiliary pumps activated in direct mode in case of necessity)                                           |
| <b>Input and Output</b>    |                                                                                                                                                                      |
| Number of digital input    | Nr. 5                                                                                                                                                                |
| Digital input type         | Selectable PNP or NPN logic                                                                                                                                          |
| Number of digital output   | Nr. 2                                                                                                                                                                |
| Digital output arrangement | 1 relay output with changeover contact (C/O-SPDT) + 1 digital output                                                                                                 |
| Output contacts ratings    | Relay output: 3A 250VAC<br>Digital output: 100mA max 30VDC                                                                                                           |
| Number of analog input     | Nr. 2                                                                                                                                                                |
| Analog input type          | Configurable 0/2...10VDC, -10...+10VDC, 0...5VDC, 0/4...20mA                                                                                                         |
| Number of analog output    | Nr. 1                                                                                                                                                                |
| Analog output type         | configurable as 0...10VDC, 0...5VDC, 2...10VDC, 0/4...20mA                                                                                                           |
| <b>Ambient conditions</b>  |                                                                                                                                                                      |
| Temperature                | Operating temperature                                                                                                                                                |
|                            | min °C -10                                                                                                                                                           |
|                            | max °C +55                                                                                                                                                           |

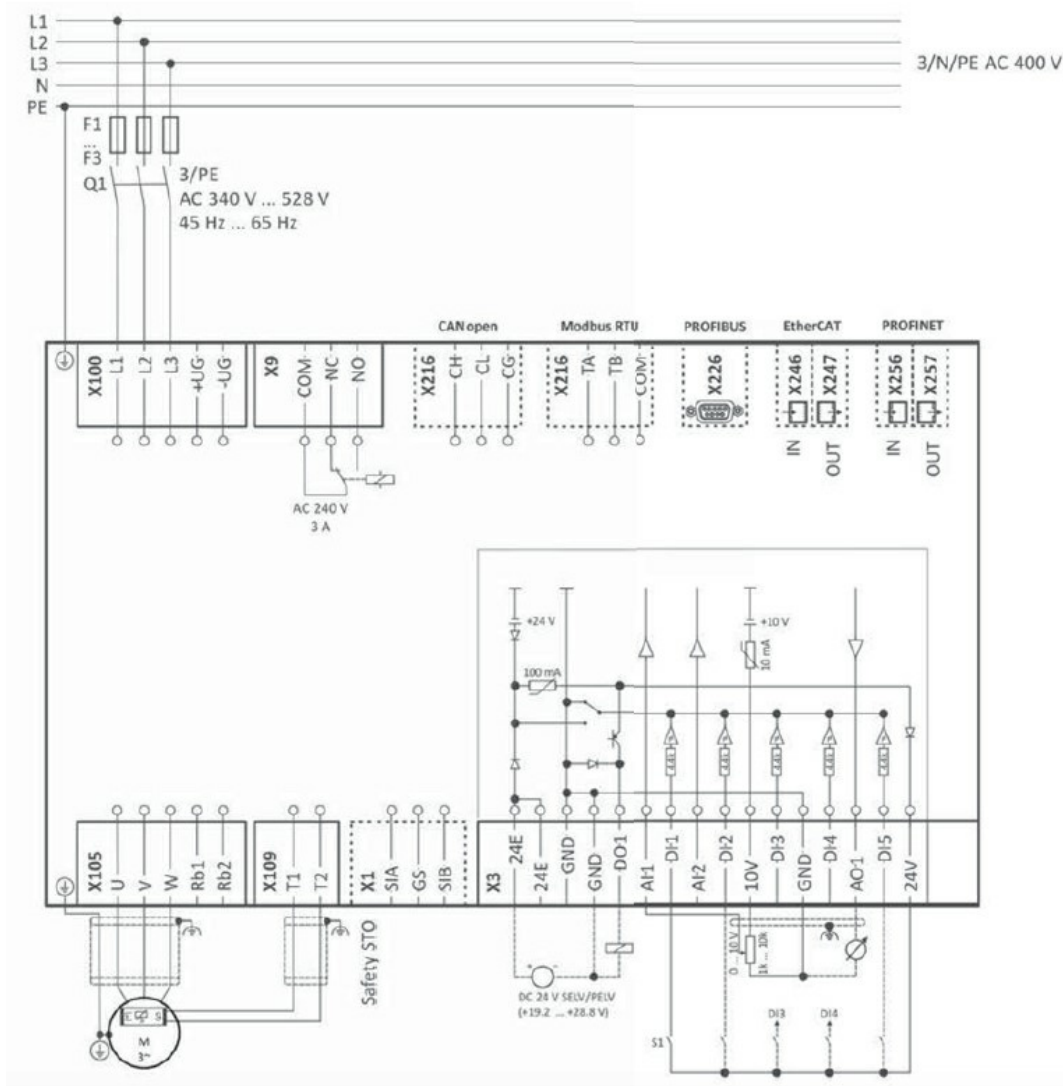
|                          |                                                                                                       |          |                                                          |
|--------------------------|-------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------|
| Current derating         | Switching frequency 2 or 4kHz: 2.5%/°C over 45°C<br>switching frequency 8 or 16kHz: 2.5%/°C over 40°C |          |                                                          |
|                          | Storage temperature                                                                                   |          |                                                          |
|                          | min<br>max                                                                                            | °C<br>°C | -25<br>+60                                               |
| Relative humidity        |                                                                                                       | %        | 5...95% (with no condensing)                             |
| Max altitude             |                                                                                                       | m        | 4000m (over 1000m derate the rated current by 5%/1000m)  |
| Maximum Pollution degree |                                                                                                       |          | 2                                                        |
| Overvoltage category     |                                                                                                       |          | III up to 2000m altitude (II above 2000m)                |
| <b>Housing</b>           |                                                                                                       |          |                                                          |
| Installation position    |                                                                                                       |          | Vertical                                                 |
| IP degree of protection  |                                                                                                       |          | IP20                                                     |
| Dimensions (W x H x D)   |                                                                                                       | mm       | Batch <=D 204.5 x 366 x 222<br>Batch >=E 180 x 384 x 165 |
| Weight                   |                                                                                                       | Kg       | 10.65                                                    |

#### Dimensions



| Batch number        | A     | B   | C   | D   |
|---------------------|-------|-----|-----|-----|
| letter D or lower   | 204,5 | 366 | 222 | 347 |
| letter E or greater | 180   | 384 | 165 | 342 |

#### Wiring diagrams



## Certifications and compliance

### Compliance

EN 61800-5-1

UL61800-5-1

### Certificates

cULus

EAC

RCM

## ETIM classification

ETIM 8.0

EC001857 -  
Frequency  
converter =< 1 kW