



Product designation

Variable speed  
drives

Product type designation

VLA1

### General characteristics

|                            |     |                                       |
|----------------------------|-----|---------------------------------------|
| Rated power supply voltage |     | 200...240VAC<br>50/60Hz               |
| Rated output voltage       | VAC | Three-phase<br>0...240VAC 0-<br>599Hz |
| Rated output current       | A   | 9.6                                   |
| Rated output power         | kW  | 2.2                                   |
| Rated output power         | HP  | 3                                     |
| EMC filter                 |     | Built-in EMC<br>suppressor cat.<br>C2 |
| Communication port         |     | None                                  |

### Technical features

|                                         |     |                              |
|-----------------------------------------|-----|------------------------------|
| Input type                              |     | Single-phase                 |
| Rated mains voltage                     | VAC | 200...240                    |
| Operating mains voltage range           | VAC | 170...264                    |
| Rated mains frequency                   | Hz  | 50/60                        |
| Operating mains frequency range         | Hz  | 45...65                      |
| Rated mains current without mains choke |     | 22.5                         |
| Rated mains current with mains choke    |     | 16.9                         |
| Output type                             |     | Three-phase                  |
| Output voltage range                    | VAC | 0...240                      |
| Output frequency range                  | Hz  | 0...599                      |
| Current overload                        | %/s | 150% for 60s,<br>200% for 3s |
| Power loss                              |     | 70W                          |
| Brake chopper                           |     | No                           |
| Switching frequency                     |     | 2...16kHz                    |
| Max motor cable length                  |     |                              |

Shielded

|                      |   |    |
|----------------------|---|----|
| Without EMC category | m | 50 |
| Category C2          | m | 20 |

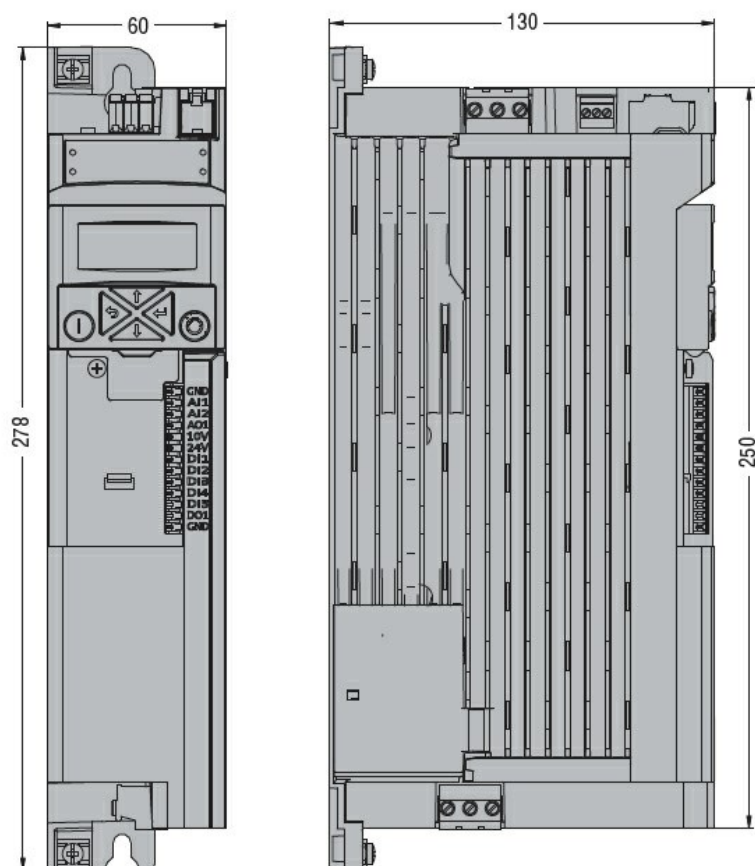
### Functions

Motor control modes

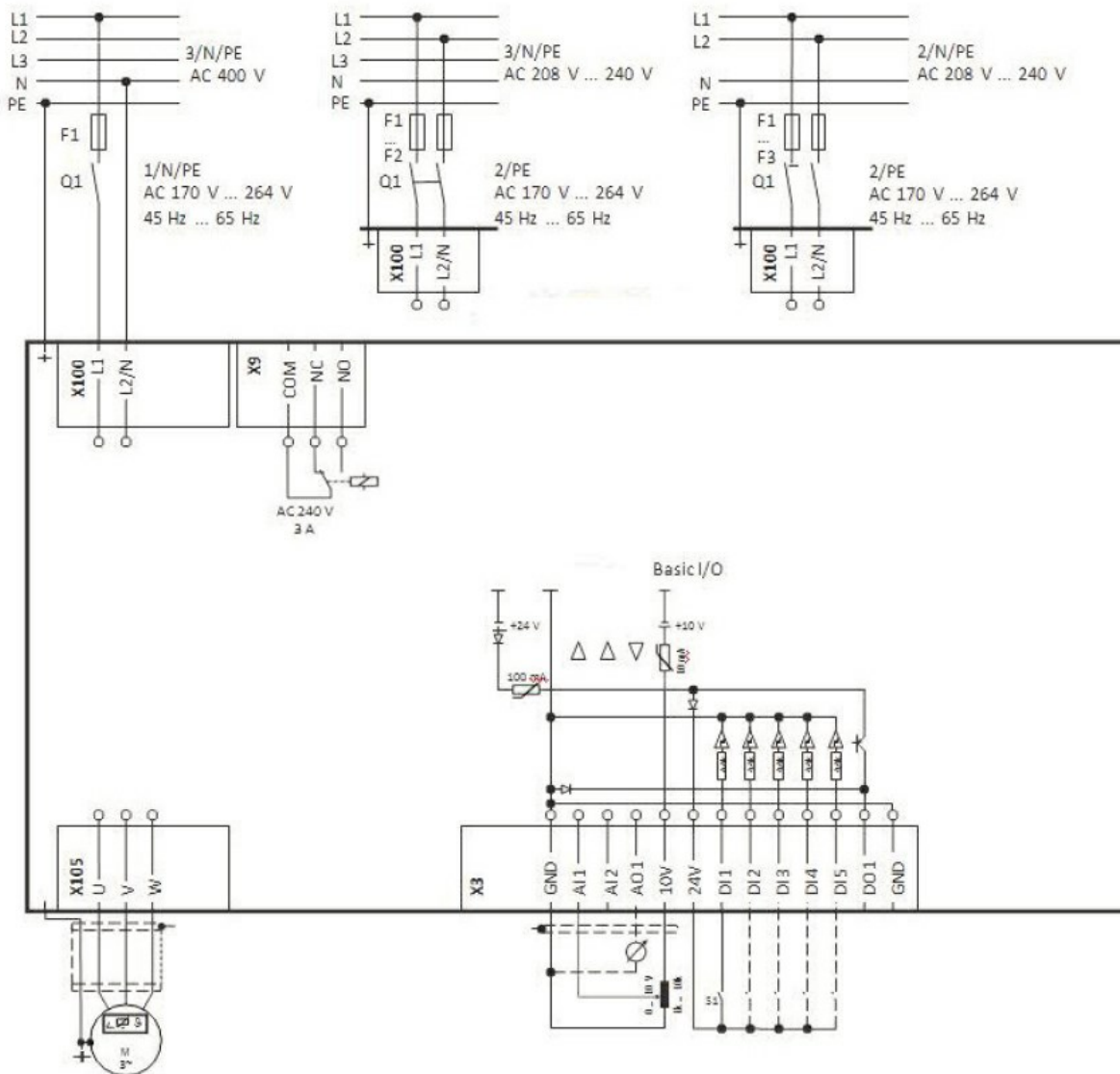
V/f linear,  
quadratic torque,  
sensorless  
vector control,  
ECO mode

|                                                |                                                                                                                                                                                                               |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Speed reference signals                        | External potentiometer<br>0...10kΩ Voltage signals: 0...10VDC Current signals: 0/4...20mA Buttons on front keyboard<br>Door-mount installation kit 15 preset speeds via digital inputs<br>Motor potentiometer |
| 3-wire control                                 | Yes                                                                                                                                                                                                           |
| S-shape curves                                 | Yes                                                                                                                                                                                                           |
| Slip compensation                              | Yes                                                                                                                                                                                                           |
| Flying restart                                 | Yes                                                                                                                                                                                                           |
| Access to DC bus                               | No                                                                                                                                                                                                            |
| DC braking                                     | Yes                                                                                                                                                                                                           |
| DC injection at start                          | Yes                                                                                                                                                                                                           |
| PID control                                    | Yes, with sleep 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          | No                                                                                                                                                                                                            |
| PTC probe input                                | No                                                                                                                                                                                                            |
| 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 Digital output: 100mA max 30VDC                                                             |    |
| Number of analog input     |  |                   | Nr. | 2                                                                                                                   |    |
| Analog input type          |  |                   |     | Analog input 1: configurable 0/2...10VDC, 0...5VDC, 0/4...20mA Analog input 2: configurable 0/2...10VDC or 0...5VDC |    |
| Number of analog output    |  |                   | Nr. | 1                                                                                                                   |    |
| Analog output type         |  |                   |     | configurable as 0...10VDC, 0...5VDC, 2...10VDC, 0/4...20mA                                                          |    |
| Ambient conditions         |  |                   |     |                                                                                                                     |    |
| Temperature                |  |                   |     |                                                                                                                     |    |
| Operating temperature      |  | min               | °C  | -10                                                                                                                 |    |
|                            |  |                   |     | max                                                                                                                 | °C |
| Current derating           |  | 2.5%/°C over 40°C |     |                                                                                                                     |    |
| Storage temperature        |  | min               | °C  | -25                                                                                                                 |    |
|                            |  |                   |     | max                                                                                                                 | °C |
| Relative humidity          |  |                   | %   |                                                                                                                     |    |
| 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)                                                                           |    |
| Housing                    |  |                   |     |                                                                                                                     |    |
| Installation position      |  |                   |     | Vertical                                                                                                            |    |
| IP degree of protection    |  |                   |     | IP20                                                                                                                |    |
| Dimensions (W x H x D)     |  |                   | mm  | 60 x 281 x 130                                                                                                      |    |
| Weight                     |  |                   | Kg  | 1.35                                                                                                                |    |
| Dimensions                 |  |                   |     |                                                                                                                     |    |



## Wiring diagrams



## Certifications and compliance

### Compliance

CSA 22.2 No. 274

EN 61800-5-1

UL61800-5-1

### Certificates

cULus

EAC

RCM

## ETIM classification

ETIM 8.0

EC001857 -  
Frequency  
converter =< 1 kV