



Single-phase AC motor drives VE1 series

 **Lovato**
electric

ENERGY AND AUTOMATION

VE1 series of single 0.2...2.2kW



- Built-in EMC suppressor (first environment, category C2)
- Wide power supply 200...240VAC
- Integrated potentiometer
- Integrated control panel
- Output frequency 0...650Hz
- 8 preset speeds with independent acceleration and deceleration time
- Built-in RS485 communication port (Modbus®-RTU)
- V/f curve configuration
- Sequencer (frequency/time cycles)
- Analog input 0...10V or 0/4...20mA
- Analog output 0...10V programmable
- Integrated PID
- Setup software standard supplied with VE1.

phase motor drives

General characteristics

Functions

- Method of motor control:
 - V/f constant torque
 - Variable torque
 - User programmable curves
 - Initial torque boost
- Output frequency setting:
 - By front panel
 - By digital inputs
 - By analog inputs
 - By communication protocol
- Motor run and stop:
 - By front panel
 - By digital inputs
 - By communication protocol
- Sequencer (work cycles)
- PID adjustment
 - With sleep and wake-up functions
- Alternative START control
- Alternative frequency selection control
- Hour counter:
 - Motor running hours
 - Power supply on hours
- Parameter security:
 - With settings lock
 - With password access.

Interface

- Digital inputs/outputs:
 - 5 programmable inputs (pNp)
 - 1 programmable output (250VAC/1A-30VDC/1A)
- Analog inputs/outputs:
 - 1 input 0... 10V or 0/4... 20mA
 - 1 output 0... 10V
- Integrated communication port
 - RS485 (RJ45), Modbus®-RTU and Modbus®-ASCII supported.

Protections

- Overload
- Overvoltage
- Minimum voltage
- Output short circuit
- Earth leakage dispersion
- Over-temperature
- Restart after momentary power loss, with programmable number of attempts.

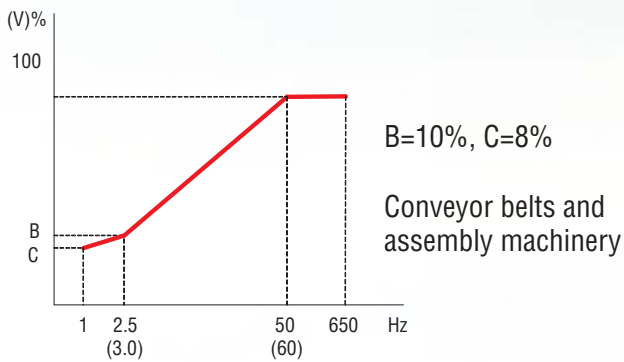
Technical characteristics

	VE1 02 A240	VE1 04 A240	VE1 07 A240	VE1 15 A240	VE1 22 A240
Output power at 240VAC [kW]	0.2	0.4	0.75	1.5	2.2
Output power at 240VAC [HP]	0.25	0.54	1	2	3
Output current [A]	1.8	2.6	4.3	7.5	10.5
Output voltage, three phase [VAC]	0... 240				
Rated power capacity [kVA]	0.68	1	1.65	2.9	4
Overload	150% for 60s				
Input voltage, single phase [VAC]	200... 240 (-15%...+10%)				
Input frequency [Hz]	50/60				
Input current [A]	4.9	7.2	11	15.5	21
Momentary power loss immunity [s]	1	1	1	2	2
EMC surge suppressor, built in	Per first environment, category C2 (IEC/EN 61800); group 1, class A (EN 55011)				
Degree of protection	IP20				
Operating temperature	-10... +40°C (50°C with forced ventilation (fan); otherwise with 20% output current derating)				
Storage temperature	-20...+60°C				
Relative humidity	95%				

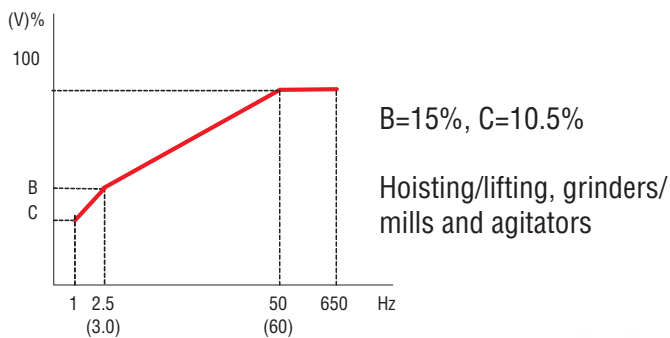
V/f curve programming

VE1 series motor drives can handle three V/f preset curves and one programmed by the user.

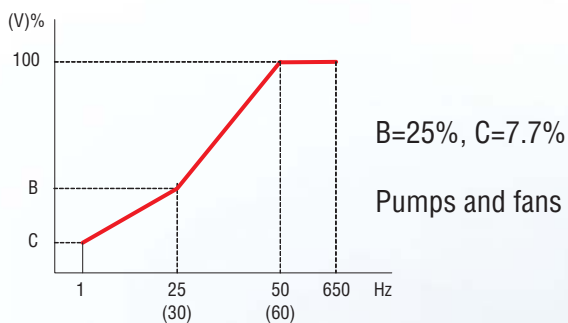
1 - General use



2 - High initial torque

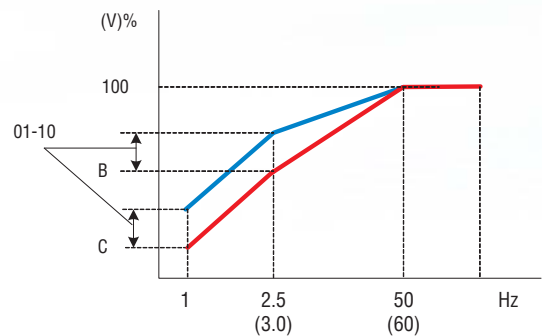


3 - Variable curve



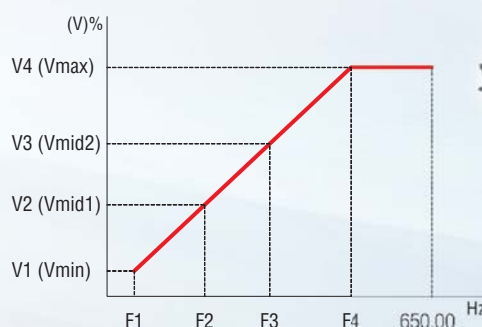
Boost

Torque boost can be applied on all preset curves with up to 10% voltage to overcome very high inertia load conditions.



Programmable V/f curve

The user can customise a curve by defining 4 voltage / frequency points.



VE1 series of single

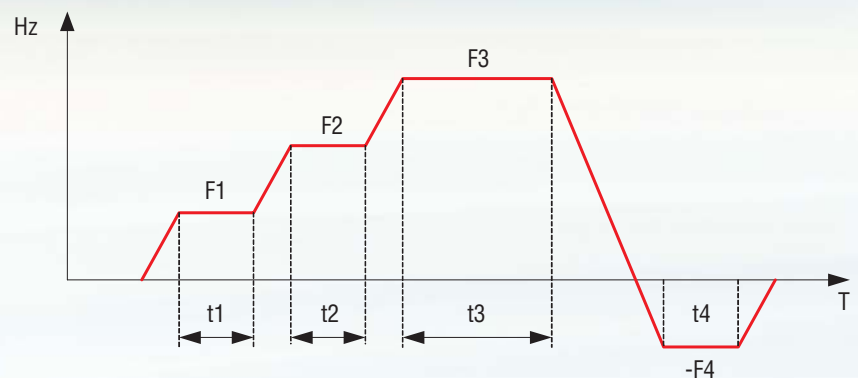
Sequencer function

The user can program frequency-time cycles made up of a maximum of 8 steps, each characterised by motor speed, rotation direction and step duration.

The sequence cycle can be carried out in diverse modes:

- One single cycle with final motor stopping.
- One single cycle with final motor running at last speed set.
- Repeat cycles with no pause.

The sequence cycle can be stopped at any moment.



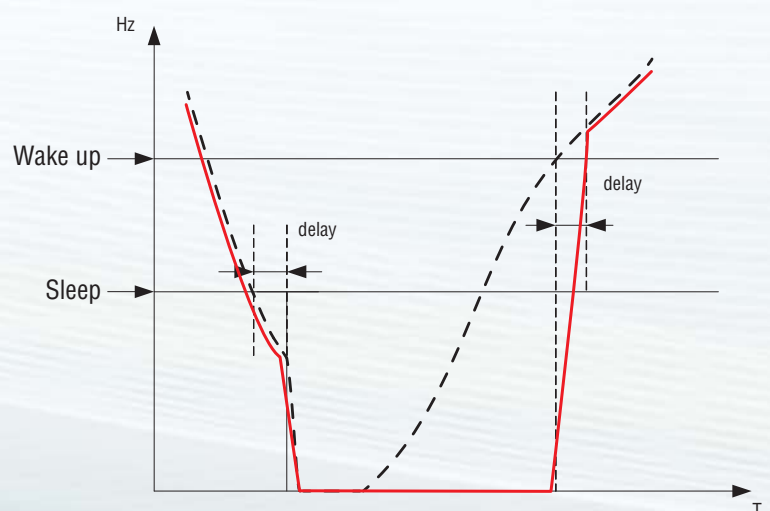
PID control

In some applications, for instance pumps or fans, the output frequency of the drive is defined by the target to keep pressure or flow constant. Typically, by using the analog input, feedback is monitored and, with the PID offset control, the motor drive sets motor speed to obtain the target setpoint.

PID control of VE1 series motor drives also includes the following functions:

- **Sleep:** When the PID output frequency is lower than a programmed limit, that is the motor speed is close to the allowable minimum when propulsion is not needed, the motor drive completely stops the motor for energy saving.
- **Wake-up:** During sleep phase, when the PID output frequency is higher than the programmed limit, the motor drive picks up motor control again at a suitable speed to reach the target setpoint without a manual starting.

Each function also has a programmable delay time to avoid inopportune and repetitive start-stop motor cycles.



--- PID calculated frequency

— Generated frequency

phase motor drives



How to order

Current [A]	Three-phase motor power 240VAC		Q.ty per pkg [n°]	Weight [kg]
	[kW]	[HP]		

SINGLE-PHASE AC MOTOR DRIVES

Model	Current [A]	Power [kW]	Power [HP]	Q.ty per pkg [n°]	Weight [kg]
VE1 02 A240	1.8	0.2	0.25	1	1.200
VE1 04 A240	2.6	0.4	0.54	1	1.200
VE1 07 A240	4.3	0.75	1	1	1.200
VE1 15 A240	7.5	1.5	2	1	1.800
VE1 22 A240	10.5	2.2	3	1	1.800

Setup software standard supplied with the product.

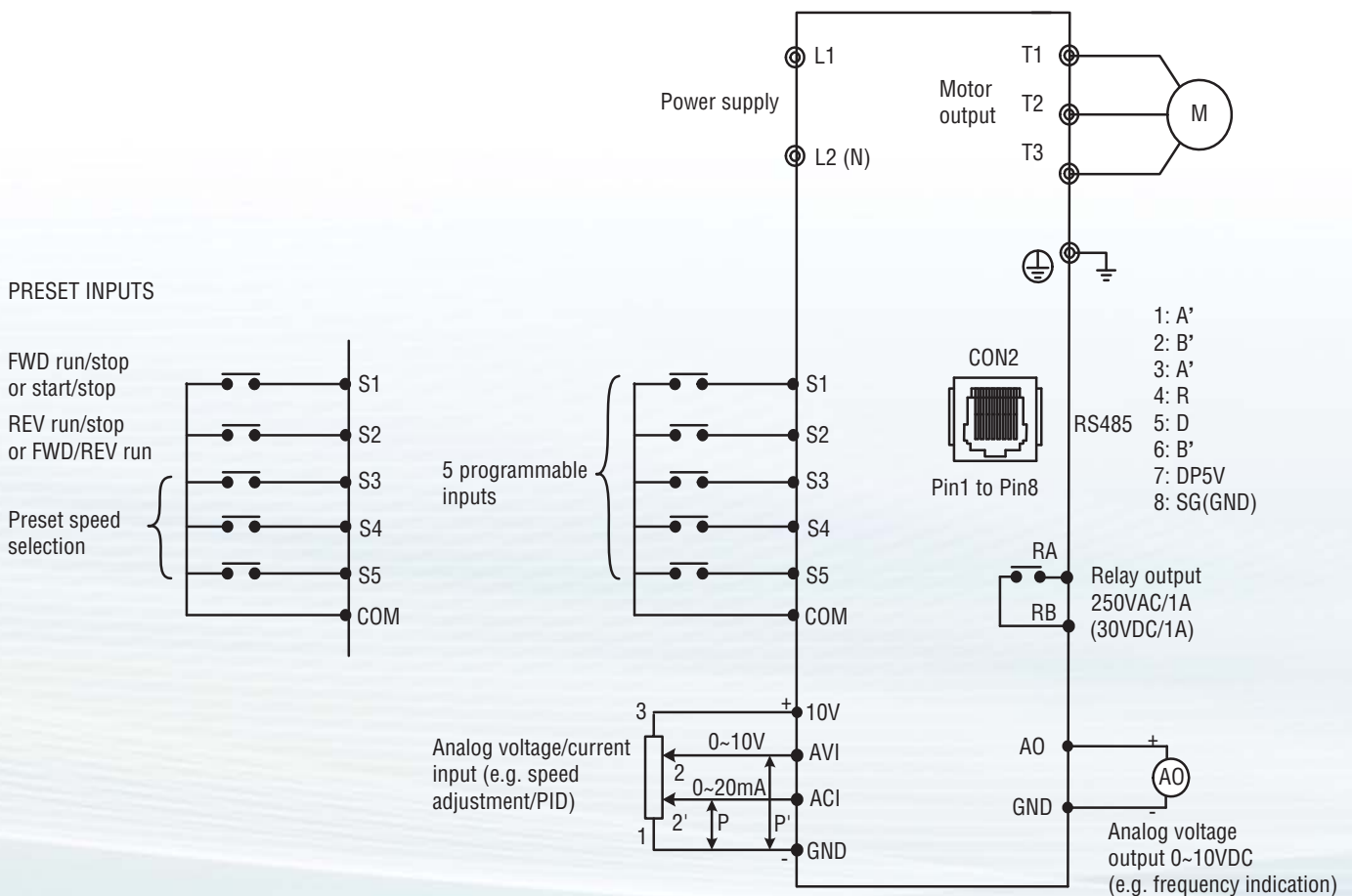


Description	Q.ty per pkg [n°]	Weight [kg]
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ACCESSORIES

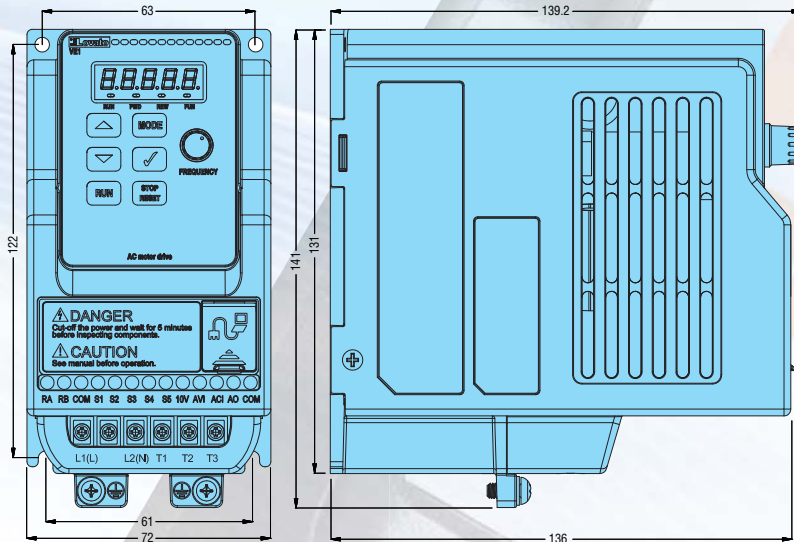
VEX C00	Connecting cable RS485-PC (USB)	1	0.080
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Wiring diagram

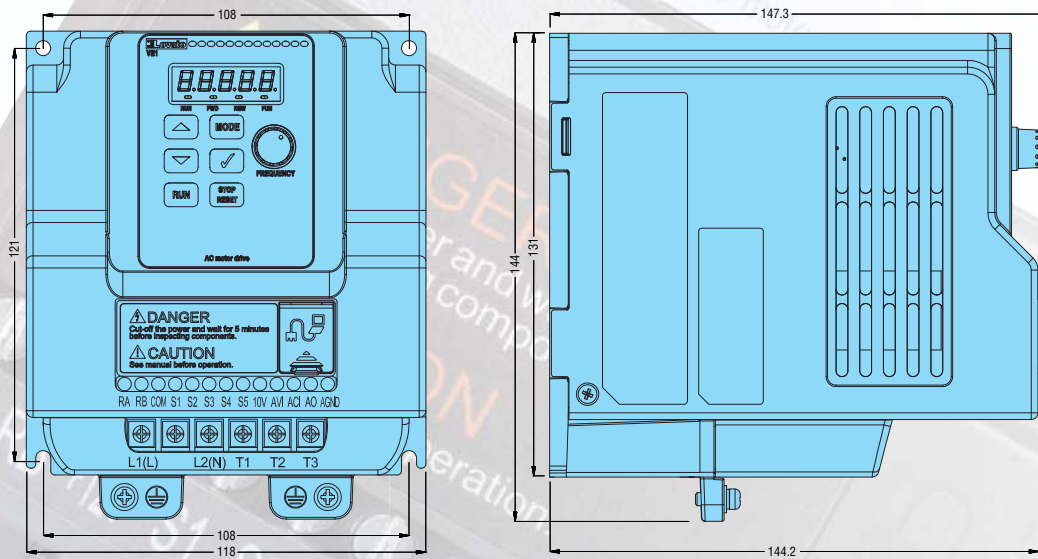


Dimensions [mm]

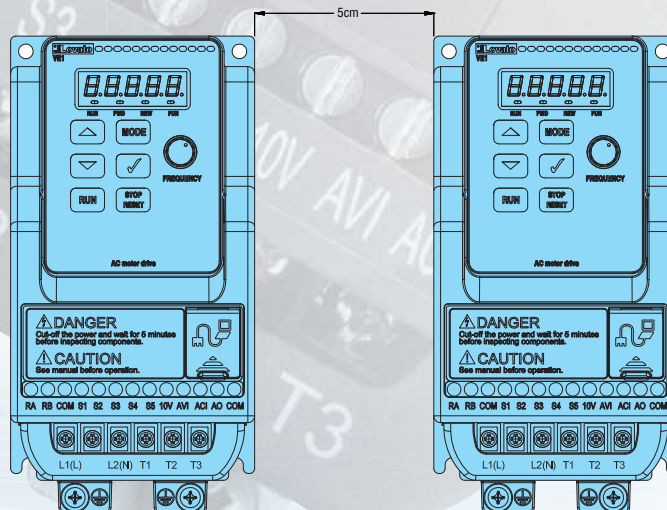
VE1 02 A240 - VE1 04 A240 - VE1 07 A240



VE1 15 A240 - VE1 22 A240



Installation



When more than one motor drive is installed side by side in a control panel, provide sufficient air circulation space of at least 5cm in order to ensure proper cooling effect.



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