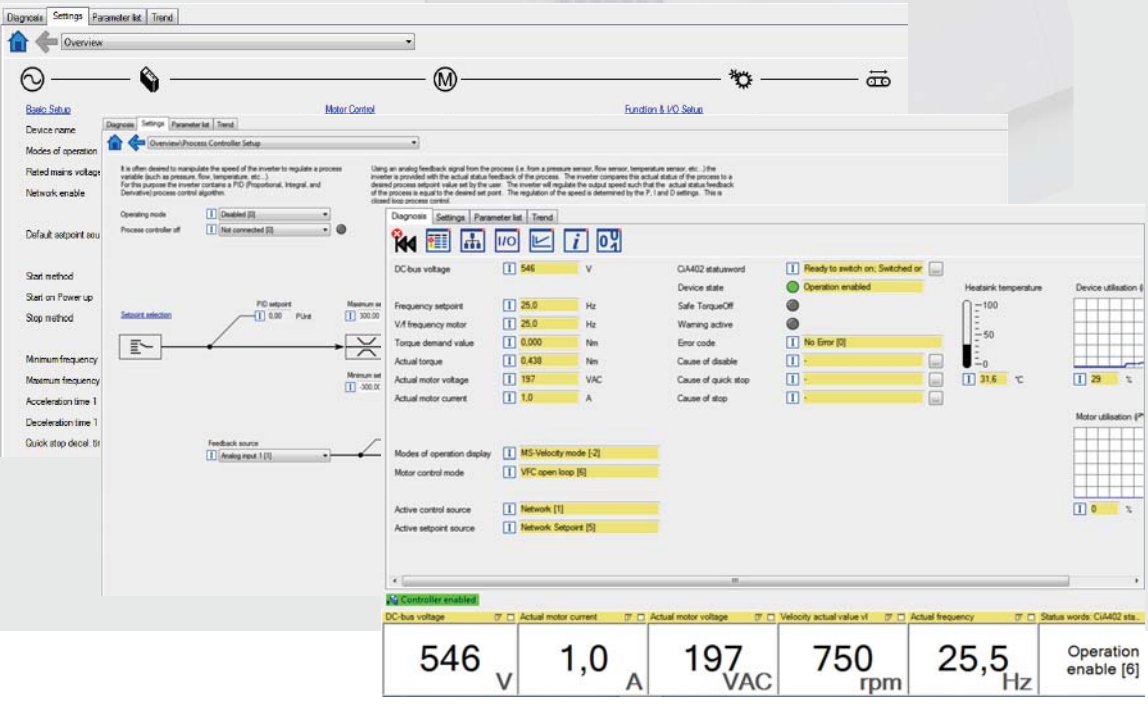
Variable speed drives

- Versions for single-phase up to 2.2kW / 3HP and three-phase up to 110kW / 150HP
- Special function for pump and fan control using PID algorithm
- Active earth leakage protection
- EMC suppressor built-in all versions
- Selectable motor control mode: V/f, vector, energy saving
- Selectable digital and analog input and output functions.



Page 6-3 and 4

VLA1…

- Single-phase 200...240VAC supply
- Three-phase motor power 0.25…2.2kW / 0.33…3HP ratings at 240VAC
- Compliant with standard IEC/EN 61800-3 cat.C2 without external filters
- Optional USB module for parameter programming.

Page 6-5

VFNC3…

- Single-phase 200...240VAC supply
- Three-phase motor power 0.2…2.2kW / 0.25…3HP ratings at 230VAC
- Compliant with standard IEC/EN 61800-3 cat.C1 or cat.C2 without external filters
- Built-in RS485 port, protocol Modbus-RTU
- Optional three-phase motor inductances
- Optional USB module for parameter programming.

Page 6-6

VLB3…

- Three-phase 400…480VAC supply
- Three-phase motor power 0.4…110kW / 0.5…150HP for heavy load, up to 132kW / 175HP for standard load, ratings at 400VAC
- Compliant with standard IEC/EN 61800-3 cat.C1 or cat.C2 without external filters
- Integrated dynamic braking circuit
- Optional STO safety input module
- Optional three-phase motor inductances
- Optional braking resistors
- Communication protocols available: Modbus-RTU, CANopen, Profibus, Profinet and Ethercat
- Optional USB and Wi-Fi modules for parameter programming.

Page 6-6

VFS15…

- Three-phase 380…575VAC supply
- Three-phase motor power 0.4…15kW / 0.5…20HP ratings at 400VAC
- Compliant with standard IEC/EN 61800-3 cat.C2 or cat.C3 without external filters
- Built-in RS485 port, protocol Modbus-RTU
- Integrated dynamic braking circuit
- Integrated STO safety input
- Optional three-phase motor inductances
- Optional braking resistors
- Optional USB module for parameter programming.

Description		 VLA1 1-phase	 VFNC3 1-phase	 VLB3 3-phase	 VFS15 3-phase
Three-phase motor power (kW)	standard load	—	—	5.5...132 (400V)	0.75...18.5 (400V)
	heavy load	0.25...2.2 (240V)	0.2...2.2 (240V)	0.4...110 (400V)	0.4...15 (400V)
Method of control					
	Constant torque V/f	●	●	●	●
	Sensorless vector	●	●	●	●
	Automatic torque boost	—	●	●	●
	Variable torque (for pump and fan)	●	●	●	●
	Energy saving	—	●	●	●
	Vector with encoder feedback	—	—	●	—
Maximum output frequency		599Hz	400Hz	599Hz	500Hz
Overload		150% for 60s	150% for 60s	150% for 60s	150% for 60s
Serial communications RS485		—	n° 1	n° 1	n° 1
Protocols		—	Modbus-RTU	Modbus-RTU, ProfiNET, CANopen, Ethercat, ProfiBUS,	Modbus-RTU, ProfiBUS
Digital inputs (inputs marked with ❶ can be configured as analog or digital)		5	4+1❶	5	6+2❶
Digital outputs		2	2	2	3
Analog inputs (inputs marked with ❶ can be configured as analog or digital)		2	1❶	2	1+2❶
Analog outputs		1	1	1	1
Sequencer (frequency/time cycles)		●	—	●	—
Onboard potentiometer		—	●	—	●
Auto-tuning		—	●	—	●
PID adjustment		●	●	●	●
PID SLEEP function		●	●	●	●
PID WAKE-UP function		●	—	●	—
Motor potentiometer		●	●	●	●
3-wire motor running		●	●	●	●
DC braking		●	●	●	●
Preset speed frequency		●	●	●	●
Pump and fan functions		●	●	●	●
Flying restart		●	●	●	●
Motor PTC thermistor input		—	—	●	●
S.T.O. (Safe Torque Off) per EN ISO 13849-1		—	—	Optional	●

VLA1 type

VLA1...

new

Order code	Output current	3-phase motor power at 240VAC		Qty per pkg	Weight
	[A]	[kW]	[HP]	n°	[kg]
Single phase supply 200…240VAC 50/60Hz. Three-phase motor output 240VAC max. Built-in EMC suppressor, cat. C2.					
VLA1 02 A240	1.7	0.25	0.33	1	0.750
VLA1 04 A240	2.4	0.4	0.5	1	0.750
VLA1 07 A240	4.2	0.75	1	1	0.950
VLA1 15 A240	7	1.5	2	1	1.350
VLA1 22 A240	9.6	2.2	3	1	1.350

Accessories for VLA1

VLAX C01

VLAX C02

VLAX P01

new

Order code	Descrizione	Qty per pkg	Weight
		n°	[kg]
VLAX C01	Display and keypad	1	0.050
VLAX C02	USB communication module	1	0.050
VLAX P01	Door-mount installation kit for the keypad VLAX C01. IP65, Type 4/4X. Connecting cable included, 3m long.	1	0.340

General characteristics
VLA1 is an ultra-compact drive with high performance. It integrates different motor control modes, like V/f linear and quadratic and sensorless vector control. VLA1 is extremely versatile and can be used in several applications such as conveyor belts, machine tools, control of automatic doors, packaging machines and in particular to manage pumps and fans thanks to specific integrated functions like the PID control and flying restart. Simple to install and configure. The user interface, which comprises of a built-in keypad and display, allows to access the setting parameters easily, thanks to the use of extended texts describing the functions and codes. Using the optional USB communication module, the programming, monitoring and diagnostic can be performed using a PC with software VLBXSW, downloadable from the website www.LovatoElectric.com.

SPEED REFERENCE SIGNALS
Reference signals for speed adjustment are obtained by:
- External potentiometer 1…10kΩ
- Voltage signal 0…10VDC or current signal 0/4…20mA
- Buttons on front keypad
- Door-mount installation kit
- 15 preset speeds via digital inputs
- Motor potentiometer.

PROGRAMMABLE INPUTS
- Selectable pNp or nPn I/O logic
- 5 digital inputs
- 1 digital output, 1 changeover relay output
- 2 analog inputs configurable as voltage inputs 0…10VDC or current inputs 0/4…20mA
- 1 analog output configurable as voltage output 0…10VDC or current output 0/4…20mA.

PROTECTIONS
- Overcurrent
- Output short circuit and earth/ground leakage
- Overvoltage
- Undervoltage
- Phase loss
- Motor heat overload (i2t)
- Overspeed
- Speed reverse.

FUNCTIONS
- Speed control
- V/f linear or squared curves
- Sensorless vector control
- Flying restart
- DC braking and DC injection at start
- Integrated PID with sleep and wake-up thresholds
- Programmable frequency/time cycles
- Different parameter configurations
- User menu (favorite parameters)
- Programming and monitoring software VLBX SW, downloadable from the website www.LovatoElectric.com.

Operational characteristics
- Input voltage: 200…240VAC single-phase
- Rated operational current Ie: 1.7…9.6 A
- Mains frequency: 50/60Hz
- Output frequency: 0…599Hz
- Frequency modulation: 2…16kHz
- Current overload: 150% for 60s; 200% for 3s
- IEC degree of protection: IP20
- Ambient conditions:
  - Operating temperature: -10…+55°C (45°C without derating)
  - Maximum altitude: 2000m (without derating)
  - Relative humidity: 5…95% (with no condensing)
- Side-by-side installation
- Built-in EMC suppressor (EN61800-3), cat. C2
- IE2 efficiency level (EN50598-2).

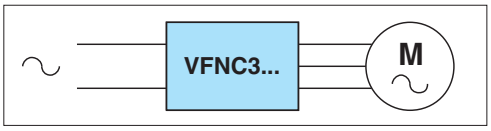
Certifications and compliance
Certifications: cULus, EAC, RCM.
Compliant with standards: EN61800-5-1, UL61800-5-1, CSA 22.2 No. 274.

VFNC3 type

VFNC3...

Order code	Output current ❶	3-phase motor power at 240V		Qty per pkg	Weight
	[A]	[kW]	[HP]	n°	[kg]
Single-phase supply 200...240VAC 50/60Hz. Three-phase motor output 240VAC max. Built-in EMC suppressor, cat. C1.					
VFNC3S 2002 PLW	1.4	0.2	0.25	1	1.100
VFNC3S 2004 PLW	2.4	0.4	0.5	1	1.260
VFNC3S 2007 PLW	4.2	0.75	1	1	1.348
VFNC3S 2015 PLW	7.5	1.5	2	1	1.960
VFNC3S 2022 PLW	10	2.2	3	1	1.985

❶ Operation up to 50°C without derating.



"Side by Side" installation
Multiple units can be installed without side clearance for space saving.

Standard installation with gaps between one drive and the next one.

General characteristics
VFNC3 is an ultra-compact drive with high performance and extremely reliable (printed circuit surface protection per IEC/EN 60721-3-3).
Easily installed, VFNC3 is equipped with a front display and innovative jog dial control, which simplifies the programming and control processes of the drive and motor. The on-board RS485 interface permits an overall remote control (supervision and communication protocols). VFNC3 can be used in simple applications such as exhaust fans, ventilators, conveyor belts, machine tools, car washes, fitness equipment, but also in applications of intermediate complexity, such as pumps, waterworks.
The vector control and the possibility to enable the motor auto-tuning warrants efficiency and high torques even with very low operating frequencies.
Using the optional USB module USB001Z, the programming can be performed by using a PC with software PCM001Z.
For details see page 6-9 or contact our Technical support.

SPEED REFERENCE SIGNALS
Reference signals for speed adjustment are obtained by:
- Front jog dial control (potentiometer)
- External potentiometer: 1...10kΩ
- Voltage signal: 0...10V
- Current signal: 4...20mA
- Remote keypad option
- 15 preset speeds via digital inputs
- RS485 serial signals.

PROGRAMMABLE INPUTS
- Selectable pNp or nPn I/O logic
- 4 digital multifunction inputs
- 1 digital configurable as analog input.

PROGRAMMABLE OUTPUTS
- 1 relay with changeover contact
- 1 static configurable as analog 0...10V/4...20mA.

PROTECTION
- Overcurrent and overvoltage
- Input phase loss
- Output phase loss
- Motor drive overload
- Motor overload
- Output short circuit
- Motor stall.

SPECIAL FUNCTIONS
- PID function for pump and fan application
- Dual set of independent parameters and ramps for two different motor controls
- Automatic restarting and instantaneous speed tuning
- 15 viewable frequency values
- Start-up DC injection
- DC injection braking
- Motor control: constant torque V/f, sensorless vector, variable torque.

Operational characteristics
- Input voltage: 200...240VAC single-phase
- Output voltage: ≤ input voltage
- Rated operational current: 1.4...10A
- Mains frequency: 50/60Hz
- Output frequency: 0.1...400Hz
- Frequency modulation: 2...16kHz
- Current overload: 150% for 60s; 200% for 0.5s
- IEC degree of protection: IP20
- Ambient conditions
  - Operating temperature: -10...+60°C (50°C with non derating)
  - Maximum altitude: 3000m (with derating)
  - Relative humidity: 5...95% (with no condensing).

Certifications and compliance
Certifications obtained: UL Listed for USA and Canada (File E204788) as Power Conversion Equipment;
CSA certified for Canada (File 231252) as Motor Controllers - Miscellaneous, EAC.
Compliant with standards: IEC/EN 61800-5-1, IEC/EN 61800-3 - first environment cat. C1, IEC/EN 60721-3-3, UL508 C, CSA C22.2 n° 14.

VLB3 type

VLB3...

VLB3...XX

Order code	Output❸ current	3-phase motor power at 400VAC with heavy load❹		Qty per pkg.	Weight
	[A]	[kW]	[HP]	n°	[kg]
COMPLETE DRIVES❶ Three-phase supply 400…480VAC 50/60Hz. Three-phase motor output max 480VAC. Built-in EMC suppressors.					
VLB3 0004 A480	1.3	0.4	0.5	1	0.850
VLB3 0007 A480	2.4	0.75	1	1	1.100
VLB3 0015 A480	3.9	1.5	2	1	1.380
VLB3 0022 A480	5.6	2.2	3	1	1.380
VLB3 0040 A480	9.5	4	5	1	2.450
VLB3 0055 A480	13	5.5	7.5	1	2.450
VLB3 0075 A480	16.5	7.5	10	1	3.950
VLB3 0110 A480	23.5	11	15	1	3.950
VLB3 0150 A480	32	15	20	1	10.650
VLB3 0185 A480	40	18.5	25	1	10.650
VLB3 0220 A480	47	22	30	1	10.650
VLB3 0300 A480	61	30	40	1	17.500
POWER UNITS❷ Three-phase supply 400…480VAC 50/60Hz. Three-phase motor output max 480VAC. Built-in EMC suppressors.					
VLB3 0004 A480XX	1.3	0.4	0.5	1	0.800
VLB3 0007 A480XX	2.4	0.75	1	1	1.000
VLB3 0015 A480XX	3.9	1.5	2	1	1.350
VLB3 0022 A480XX	5.6	2.2	3	1	1.350
VLB3 0040 A480XX	9.5	4	5	1	2.300
VLB3 0055 A480XX	13	5.5	7.5	1	2.300
VLB3 0075 A480XX	16.5	7.5	10	1	3.700
VLB3 0110 A480XX	23.5	11	15	1	3.700
VLB3 0150 A480XX	32	15	20	1	10.300
VLB3 0185 A480XX	40	18.5	25	1	10.300
VLB3 0220 A480XX	47	22	30	1	10.300
VLB3 0300 A480XX	61	30	40	1	17.200
VLB3 0370 A480XX	76	37	50	1	17.200
VLB3 0450 A480XX	89	45	60	1	17.200
VLB3 0550 A480XX	110	55	75	1	24.000
VLB3 0750 A480XX	150	75	100	1	24.000
VLB3 0900 A480XX	180	90	120	1	35.600
VLB3 1100 A480XX	212	110	150	1	35.600

new

IE2 COMPLIANT

The drive efficiency is 25% higher than the reference value for the IE1 class.

Operational characteristics for standard load❺

Order code		Ie❸	3-phase motor power at 400VAC with standard load	
Complete drives❶	Power units❷	[A]	[kW]	[HP]
VLB3 0004 A480	**VLB3 0004 A480XX**	❻	❻	❻
VLB3 0007 A480	**VLB3 0007 A480XX**	❻	❻	❻
VLB3 0015 A480	**VLB3 0015 A480XX**	❻	❻	❻
VLB3 0022 A480	**VLB3 0022 A480XX**	❻	❻	❻
VLB3 0040 A480	**VLB3 0040 A480XX**	11.9	5.5	7.5
VLB3 0055 A480	**VLB3 0055 A480XX**	15.6	7.5	10
VLB3 0075 A480	**VLB3 0075 A480XX**	23	11	15
VLB3 0110 A480	**VLB3 0110 A480XX**	28.2	15	20
VLB3 0150 A480	**VLB3 0150 A480XX**	38.4	18.5	25
VLB3 0185 A480	**VLB3 0185 A480XX**	48	22	30
VLB3 0220 A480	**VLB3 0220 A480XX**	56.4	30	40
VLB3 0300 A480	**VLB3 0300 A480XX**	73.2	37	50
–	**VLB3 0370 A480XX**	91.2	45	60
–	**VLB3 0450 A480XX**	107	55	75
–	**VLB3 0550 A480XX**	132	75	100
–	**VLB3 0750 A480XX**	180	90	120
–	**VLB3 0900 A480XX**	216	110	150
–	**VLB3 1100 A480XX**	254	132	175

❶ Complete drive: power unit + logic unit with Modbus-RTU + control unit with keypad and display.
❷ To be completed with logic unit VLBX L.. and control unit VLBX C...
❸ Operation up to 45°C without power derating.
❹ Heavy load: 150% overload for 60s
❺ Standard load: 120% overload for 60s
❻ Functioning for standard load not available for this size.

General characteristics

VLB3 is a compact drive with three-phase supply input.
It is ideal for general applications and, in particular, to control and manage pumps and fans, thanks to several specific built-in functions (S Curve, PID, torque squared control). It does not require any space for side ventilation, allowing to install several side-by-side drives. The user interface, which comprises of a built-in keyboard and display, allows to access the setting parameters easily, thanks to the use of extended texts describing the functions and codes. Using the USB or Wi-Fi connection accessories, the programming, monitoring and diagnostics can be performed using a PC with software VLBX SW, downloadable from the website www.LovatoElectric.com. The RS485 communication port with built-in modbus RTU (integrated in the complete drives VLB3... A480) and EMC filter complete the hardware supply. The logic unit can be replaced with one of the VLBXL... codes, obtaining a communication port with different protocol.

SPEED REFERENCE SIGNALS
- External potentiometer: 0…10kΩ
- Voltage signals: -10…10VDC (two-pole)
- Current signals: 0/4…20mA
- Buttons on front keyboard
- Remote control panel
- 15 preset speeds via digital inputs
- Motor potentiometer
- Setting via modbus protocol (RS485).

PROGRAMMABLE INPUTS/OUTPUTS
- pNp or nPn connections
- 5 digital inputs
- 1 digital output, 1 changeover relay output
- 2 voltage analog inputs -10…10VDC (two-pole) or current analog inputs 0/4…20mA
- 1 voltage analog output 0…10VDC (two-pole) or current analog output 0/4…20mA.

PROTECTIONS
- Overcurrent
- Output short circuit and earth/ground leakage
- Overvoltage
- Undervoltage
- Phase loss
- Motor heat overload (I^2t)
- Motor PTC heat protection
- Drive, motor and braking resistor overload
- Overspeed
- Speed reverse.

FUNCTIONS
- Speed or torque control
- V/f linear or squared curves
- Open or closed ring vector control
- Energy-saving ECO control
- S curves
- Quick speed search
- Access to DC bus
- DC braking and DC injection at start
- Built-in PID with sleep and wake-up thresholds
- Programmable frequency/time cycles
- Ideal for asynchronous or synchronous motors (up to 22kW)
- Different parameter configurations
- User menu (favorite parameters)
- Safe Torque Off (STO) input accessory class SIL 3 (EN62061 / EN61800-5-2)
- Programming and monitoring software VLBX SW downloadable from the website www.LovatoElectric.com.

Operational characteristics
- Input voltage: 400...480VAC three-phase
- Rated operational current: 1.3…212A
- Mains frequency: 45...65Hz
- Output frequency: 0...599Hz
- Frequency modulation: 2...16kHz
- Current overload: 150% for 60s; 200% for 3s
- IEC degree of protection: IP20
- Ambient conditions
  - Operating temperature: -10...+55°C (45°C without derating)
  - Maximum altitude: 4000m (with power derating)
  - Relative humidity: 5...95% (with no condensing)
- Side-by-side installation
- Built-in EMC suppressor (EN61800-3)
  motor cable length: up to 3m for cat. C1 (for sizes 0.4 and 0.75kW); up to 20m for cat. C2
- IE2 efficiency level (EN50598-2).

Certifications and compliance

Certifications obtained: cULus, EAC, RCM.
Compliant with standards: EN61800-5-1, UL61800-5-1, CSA 22.2 No. 274.

Accessories for VLB3

VLBX C01

VLBX C02

VLBX C03

VLBX SM

VLBX L...

EXC RDU1

VLBX P01

Order code	Description	Qty per pkg.	Wt
		n°	[kg]
VLBX C00	Blanking cover	4	0.128
VLBX C01	Keypad and display	1	0.080
VLBX C02	USB communication module	1	0.080
VLBX C03	Wi-Fi communication module	1	0.080
VLBX SM	Safe Torque Off (STO) module	1	0.080
VLBX L01	Logic unit with CANopen	1	0.209
VLBX L02	Logic unit with ProfiBUS	1	0.209
VLBX L03	Logic unit with ProfiNET	1	0.209
VLBX L04	Logic unit with Ethercat	1	0.209
VLBX L06	Logic unit with Modbus RTU	1	0.209
VLBX P01	Door-mount installation kit for the keypad VLBX C01, IP65, Type 4/4X, connecting cable included 3m long.	1	0.340
EXC RDU1	Remote display unit, LCD graphic touch screen, RS485 port integrated, for monitoring and control of up to 32 drives, IP65 and 4X, cable included 3m long	1	0.360

General characteristics

CONTROL UNITS VLBX C…
The variable speed drives VLB3 series can be programmed with the control unit VLBX C01 (keypad and display) or alternatively from a PC with the software VLBX SW (freely downloadable from the website www.LovatoElectric.com) by using the communication modules VLBX C02 (USB) and VLBX C03 (Wi-Fi).

SAFE TORQUE OFF (STO) MODULE VLBX SM
The VLBX SM module allows to increase and optimize the safety functions of the drive providing two inputs dedicated to the function Safe Torque Off (STO) with performance level ISO 13849-1 (EN 954-1), safety class SIL 3 (EN62061 / EN 61800-5-2).

LOGIC UNITS VLBX L…
Thanks to their modular structure, on the VLB3 series variable speed drives it is possibile to replace the logic unit with Modbus RTU protocol (integrated as standard on the complete drives VLB3...A480) with one of the logic units VLBX L.., available in the versions with the most common fieldbus, obtaining a drive with a different communication port, which allows its integration inside control systems.

DOOR-MOUNT INSTALLATION KIT VLBX P01
With the kit VLBX P01 is possible to mount the keypad and display VLBX C01 (provided as standard on the complete drives VLB3…A480 or purchased as an optional accessory for the power units VLB3…A480XX) on the panel door.
The door-mounting kit has an IP65 and Type 4/4X degree of protection and it is provided with an Ethernet connection cable 3 meters long.

REMOTE DISPLAY UNIT EXC RDU1
The remote display unit EXC RDU1 allows the command and monitoring of up to 32 variable speed drives VLB3 series, connected in RS485 (Modbus RTU protocol).
It provides the following functions:
- Command of the start and stop of the motor
- Adjustment of the speed of the motor
- Inversion of the sense of rotation of the motor
- Monitoring of the main electrical measures of the system
- Control of the status of the drive and presence of alarms
- PID control and monitoring of the status.

Technical characteristics:
- Auxiliary supply 100...240VAC / 110...250VDC
- Graphic LCD display with touch screen, 128x112 pixel
- Opto-isolated RS485 port, Modbus RTU protocol
- Flush mount housing, compatible with DIN 96x96mm and ANSI 4”
- Compatible with VLB3 drives equipped with Modbus RTU logic unit
- Cable for RS485 connection included, 3 meters long
- Degree of protection on front IP65 and 4X.

Certifications and compliance

Certifications obtained:
- VLBX C..., VLBX SM, VLBX L...: cULus, EAC, RCM
- VLBX P01 and EXC RDU1: cULus, EAC

Compliant with standards: EN61800-5-1, UL61800-5-1, CSA 22.2 No. 274.

VFS15 type

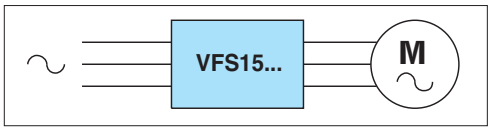
VFS15...

Order code	Output current ❶	3-phase motor power at 400V heavy load ❷		Qty per pkg	Weight
	[A]	[kW]	[HP]	n°	[kg]
Three-phase supply 380...500VAC 50/60Hz ❸. Three-phase motor output 500VAC max. Built-in EMC suppressor, cat. C3.					
VFS15 4004 PLW	1.5	0.4	0.5	1	1.800
VFS15 4007 PLW	2.3	0.75	1	1	1.800
VFS15 4015 PLW	4.1	1.5	2	1	1.800
VFS15 4022 PLW	5.5	2.2	3	1	3.200
VFS15 4037 PLW	9.5	4	5	1	3.200
VFS15 4055 PLW	14.3	5.5	7.5	1	5.500
VFS15 4075 PLW	17	7.5	10	1	5.500
VFS15 4110 PLW	27.7	11	15	1	8.400
VFS15 4150 PLW	33	15	20	1	8.400

Operational characteristics for standard load conditions

Type	Current ❶	3-phase motor power at 400VAC with standard load❷	
VFS15 4004 PLW	2.1A	0.75kW	1HP
VFS15 4007 PLW	3A	1.1kW	1.5HP
VFS15 4015 PLW	5.4A	2.2kW	3HP
VFS15 4022 PLW	6.9A	3kW	4HP
VFS15 4037 PLW	11.1A	5.5kW	7.5HP
VFS15 4055 PLW	17A	7.5kW	10HP
VFS15 4075 PLW	23A	11kW	15HP
VFS15 4110 PLW	31A	15kW	20HP
VFS15 4150 PLW	38A	18.5kW	25HP

❶ Operation up to 50°C without derating.
❷ Heavy-duty load: 150% overload for 60s.
Standard load: 120% overload for 60s.
❸ 200-240VAC three-phase version available on request; consult Technical support for details; see contact details on inside front cover.



"Side by Side" installation
Multiple units can be installed without side clearance for space saving.

Standard installation with gaps between one drive and the next one.

General characteristics
The high quantity of functions available and the construction characteristics allow to use the VFS15... speed drive in many fields: waterworks and methane piping ducts, cement, paper, chemical and petrochemical industries.
The EASY function key allows direct switching to a customised menu with typical programming parameters for a dedicated application in order to quickly reach them for eventual consultation or changes.

SPEED REFERENCE SIGNALS
Reference signals for speed adjustment are obtained by:
- Front potentiometer
- External potentiometer: 1...10kΩ
- Voltage signal: 0...10V
- Current signal: 4...20mA
- Keypad on front
- Remote keypad option
- 15 preset speeds via digital inputs
- RS485 serial signals.

PROGRAMMABLE INPUTS
- Selectable pNp or nPn I/O logic
- 6 digital multifunction inputs
- 2 digital configurable as analog input.

PROGRAMMABLE OUTPUTS
- 1 relay with changeover contact and 1 relay with NO contact; 1 transistor and 1 analog configurable as 0...10VDC or 4...20mA.

PROTECTION
- Overcurrent and overvoltage
- Input and output phase loss
- Drive, motor and braking resistor overload
- Drive overtemperature and excessive torque
- Earth/ground fault.

SPECIAL FUNCTIONS
- PID function for pump and fan application
- Dual set of independent parameters and ramps for two different motor controls
- Automatic restarting and instantaneous speed tuning
- 15 viewable frequency values
- DC-Bus access for DC power supply
- Integrated dynamic braking circuit; optional external braking resistor
- Motor control: constant torque V/f, variable torque, sensorless vector
- Automatic motor torque boost control
- DC injection braking
- Auto-tuning
- Motor potentiometer
- Sequential starting control for sets of motors
- SLEEP function: automatic motor stopping after continuous running at minimum frequency
- Start-up DC injection
- OVERRIDE function for summing analog VIA-VIB inputs
- Built-in STO (Safe Torque Off) input class SIL 2 (EN 61800-5-2).

Operational characteristics
- Input voltage: 380...500VAC three-phase
- Output voltage: ≤ input voltage
- Rated operational current: 1.5...38A three-phase
- Mains frequency: 50/60Hz
- Output frequency: 0...500Hz
- Frequency modulation: 2...16kHz
- Current overload for 60s: 120% for normal load; 150% for heavy load
- Low speed torque: 200% 0.3Hz
- IEC degree of protection: IP20;
- Ambient conditions
  - Operating temperature: -10...+60°C (50°C without derating)
  - Maximum altitude: 1000m
  - Relative humidity: 20-93% (with no condensing).

Certifications and complience
Certifications obtained: UL Listed for USA and Canada (File E204788) as Power Conversion Equipment;
CSA certified for Canada (File 231252) as Motor Controllers - Miscellaneous; AS C-tick, EAC.
Compliant with standards: EN 50178, IEC/EN 61800-3 - first environment cat. C2 or second environment cat. C3, UL508 C, CSA C22.2 n° 14.

Three-phase inductances

IND...

new

Order code	Ie	Induc-tance	Power	Qty per pkg.	Weight
	[A]	[mH]	[kW]	n°	[kg]
Inductances for VLB3... variable speed drives.					
VLBX L590	50	0.59	22...30	1	8.350
VLBX L370	80	0.37	37	1	12.500
VLBX L330	90	0.33	45	1	16.000
VLBX L300	100	0.30	55	1	19.000
VLBX L190	160	0.19	75	1	26.000
VLBX L140	200	0.14	90...110	1	32.000
Inductances for VF... variable speed drives.					
IND2020	12	1	0.75...4	1	1.850
IND2030	25	0.6	5.5...11	1	2.670
IND3040	50	0.2	15	1	7.220

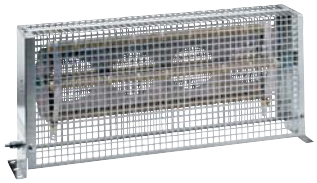
General characteristics
VLBX L... three-phase inductance applies to VLB3... drives, from 22kW to 110 kW.
The three-phase inductances, IND type, can be connected to the drives type VFNC3... and VFS15... in the following ways:
– Drive input, to reduce the harmonic content upstream, with consequent reduction of the input current absorbed by the drives;
– Drive output, to reduce the voltage peaks generated by the drive towards the motor, or when several parallel motors are simultaneously controlled by the drives.
Inductances can be applied also on the input of drives with single-phase power supplies.
For the correct choice, select the inductance with Ie current rating equal to or greater than the rated current of the drive they will be used with.

Operational characteristics VLBX L... type
– Current: 50...200A.
– Operating temperature: -10...+55°C (40°C without derating)

Operational characteristics IND...type
– Current: 12...50A
– Operating temperature: -25...+100°C.

Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN 61558-1.

Braking resistors



ROF...

Order code	Output	Resis-tance	Power	Qty per pkg.	Wt
	[W]	[Ω]	[kW]	n°	[kg]
Resistors for VLB3... variable speed drives.					
VLBX R390	100	390	0.4...0.75	1	0.260
VLBX R180	200	180	1.5...2.2	1	0.630
VLBX R047	200	47	4...5.5	1	0.500
VLBX R027	200	27	7.5...11	1	0.500
VLBX R018	800	18	15	1	4.200
VLBX R015	800	15	18.5...22	1	4.200
VLBX R007	1900	7.5	30...75	1	9.500
Resistors for VF... variable speed drives.					
ROF20150	200	150	0.4...0.75	1	0.220
ROF20100	200	100	1.5...2.2	1	0.210
ROF35060	350	60	3.7...5.5	1	0.610
ROF50035	500	35	7.5	1	0.773
ROF80030	800	30	11...15	1	1.570

General characteristics
Braking resistors can be connected to drives in order to absorb the power generated during the motor stop phase.

Operational characteristics
– Maximum applicable voltage: 1000V
– Connection: With 250mm cable for ROF; directly on the resistor terminal for ROPPE
– IEC degree of protection: IP54 for ROF; IP20 for ROPPE.

Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: IEC/EN 60204-1, IEC/EN 60664-1.

Others

MITOS...

LPC PA001

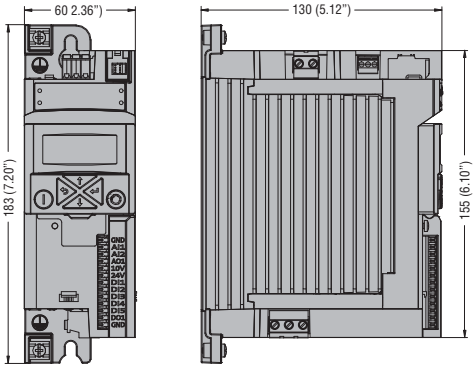
Order code	Description	Qty per pkg.	Wt
		n°	[kg]
For VFNC3...-VFS15... variable speed drives.			
MITOSVT6	Remote control panel with functions: motor running, inverse rotation, speed adjustment and quantities control. IP65. 16 character-2 line display. Cable excluded ❶	1	0.200
MITOSVT6ECO	Remote control panel for quantities retention and control of a system (PID: pressure, temperature, etc). IP65. 16 character-2 line display. Cable excluded ❶	1	0.200
RJ45SH05000	RJ45 wire for MITOS... connection RKP002Z and USB001Z on the drive. 5m long	1	0.140
RKP002Z	Remote control panel with functions: motor running, speed adjustment, quantities control and parameter setting. IP20. 4 character-7 segment display. Cable excluded ❶	1	0.280
USB001Z	Drive programming module❶❷❸	1	0.260
For VLA1...-VLB3...-VFNC3...-VFS15... variable speed drives.			
LPC PA001	1kOhm potentiometer 1 turn, complete with operating knob. IP66, IP67 and IP69K❹	10	0.040

❶ RJ45 cable to be purchased separately; order code RJ45SH05000.
❷ For USB001Z module → PC USB port connection, use a normal USB cable, USB1.1/2.0 compatible, type A-B connection, maximum recommendable length 1m only.
❸ Consult our Technical support to request the drive remote control software; see contact details on inside front cover.
❹ For more information consult page 7-14.

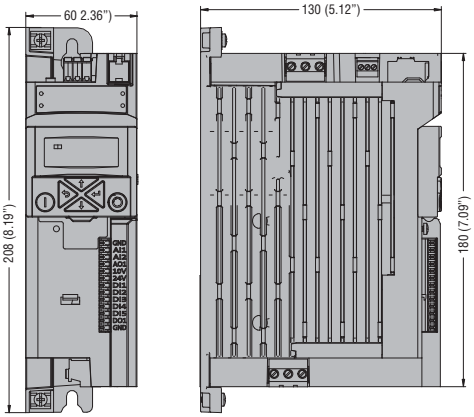
Certifications and compliance
Certifications obtained: EAC.
Compliant with standards: EN 50178, IEC/EN 61000-6-2, IEC/EN 61000-6-3 for MITOS... and RKP....

SINGLE-PHASE VARIABLE SPEED DRIVES

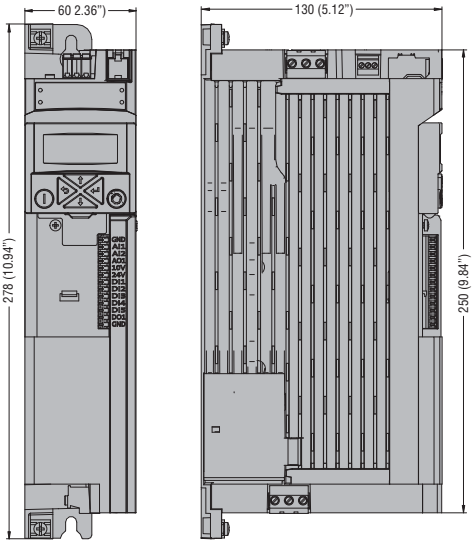
VLA1 02 A240 - VLA1 04 A240



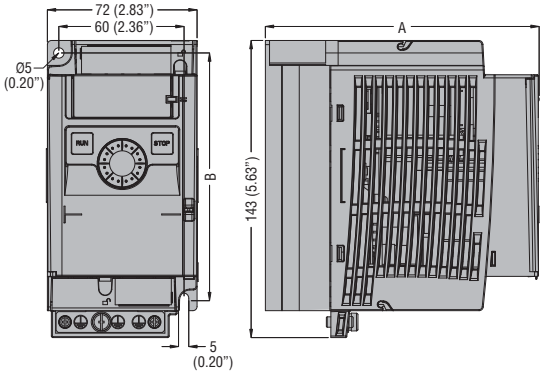
VLA1 07 A240



VLA1 15 A240 - VLA1 22 A240

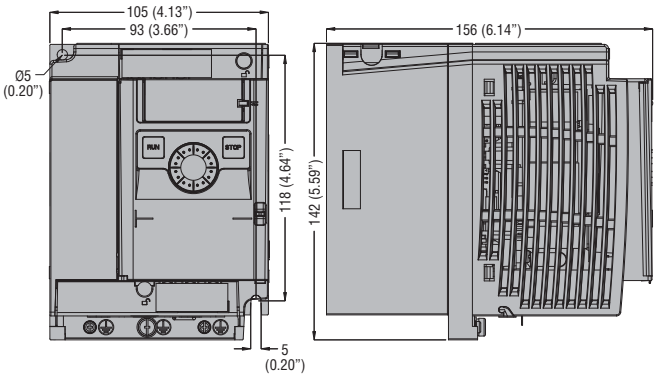


VFNC3S 2002 PLW...VFNC3S 2007 PLW



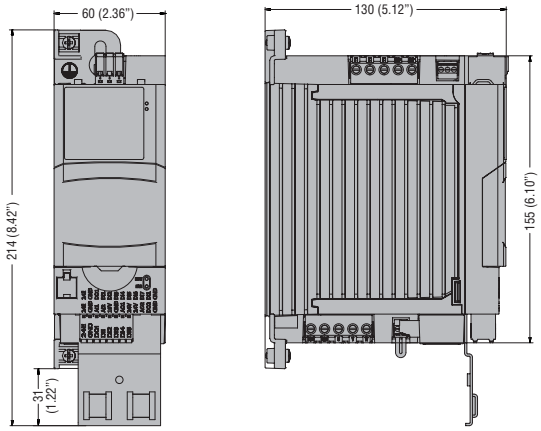
TYPE	A	B
VFNC3S 2002PL W	102 (4.01")	131 (5.16")
VFNC3S 2004PL W	121 (4.76")	118 (4.64")
VFNC3S 2007PL W	131 (5.16")	118 (4.64")

VFNC3S 2015 PLW - VFNC3S 2022 PLW

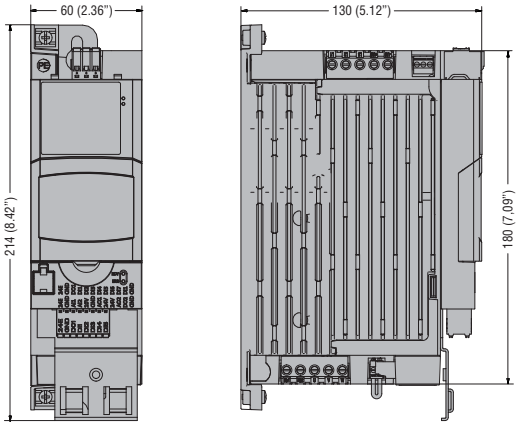


THREE-PHASE VARIABLE SPEED DRIVES

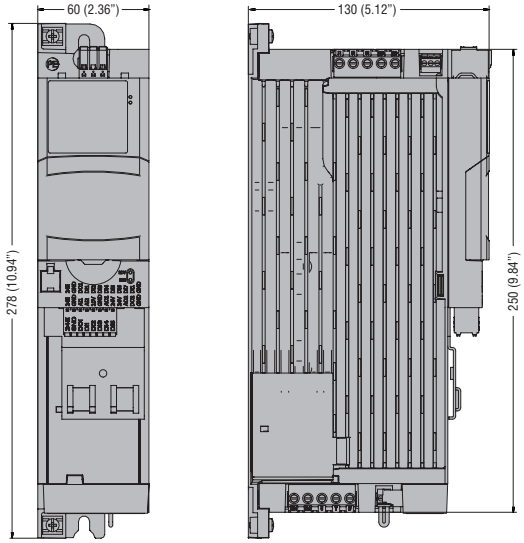
VLB3 0004 A480



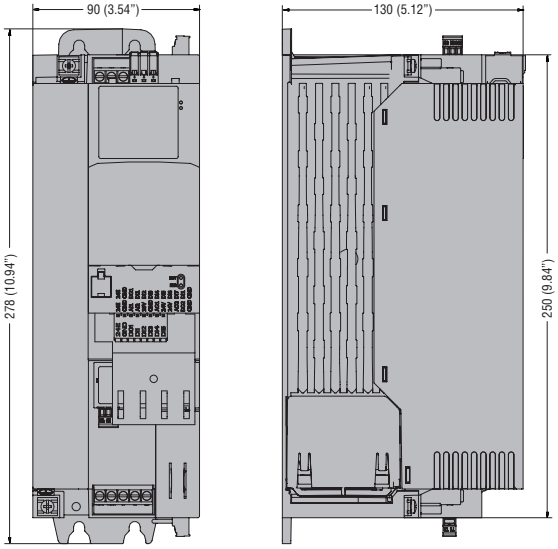
VLB3 0007 A480



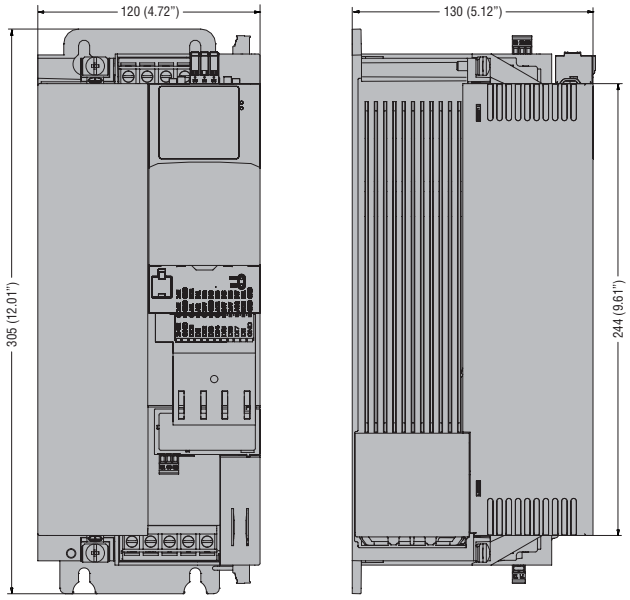
VLB3 0015 A480 - VLB3 0022 A480



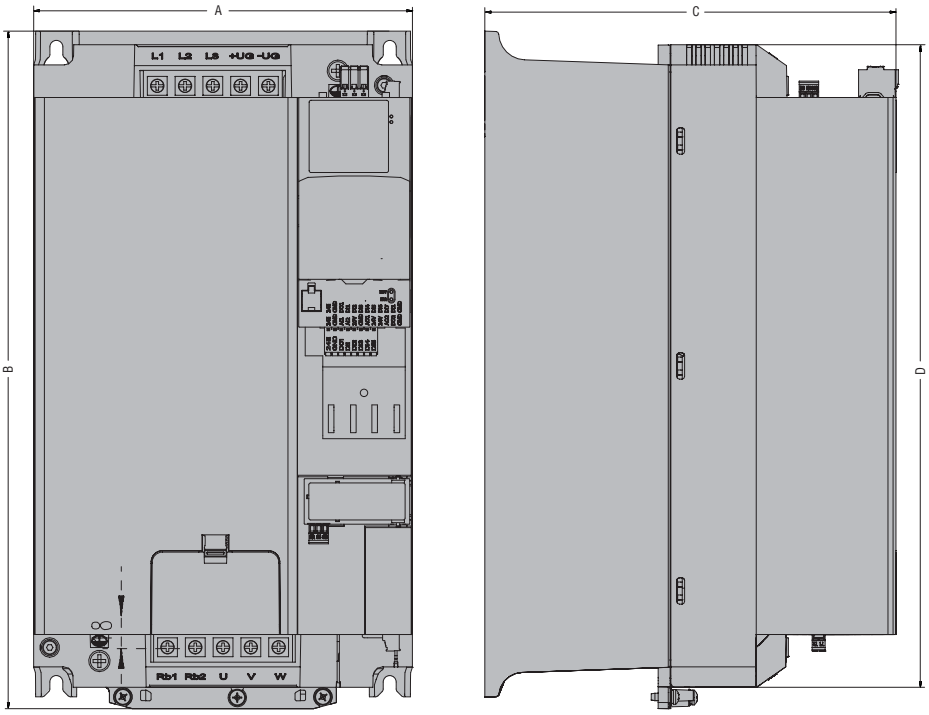
VLB3 0040 A480 - VLB3 0055 A480



VLB3 0075 A480 - VLB3 0110 A480



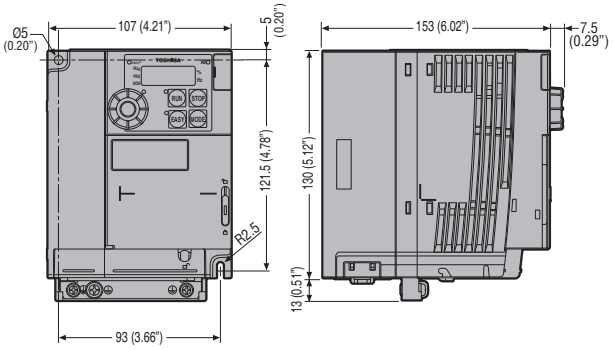
VLB3 0150 A480 - VLB3 0185 A480 - VLB3 0220 A480 - VLB3 0300 A480



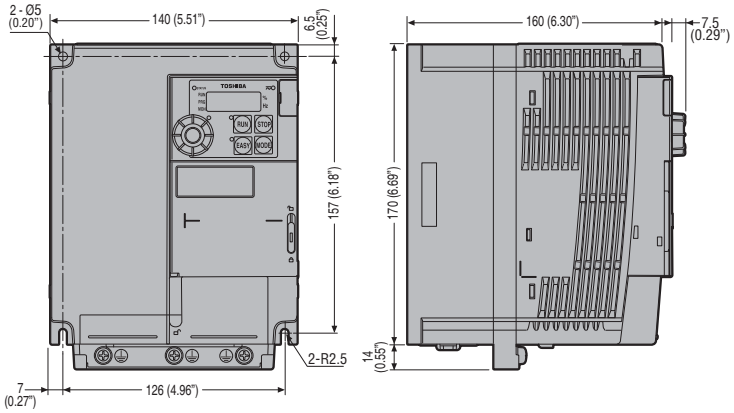
TYPE	A	B	C	D
VLB3 0150 A480	204.5 (8.05")	366 (14.41")	222 (8.74")	347 (13.66")
VLB3 0185 A480	204.5 (8.05")	366 (14.41")	222 (8.74")	347 (13.66")
VLB3 0220 A480	204.5 (8.05")	366 (14.41")	222 (8.74")	347 (13.66")
VLB3 0300 A480	250 (9.84")	520 (20.47")	230 (9.05")	450 (17.72")
VLB3 0370 A480	250 (9.84")	520 (20.47")	230 (9.05")	450 (17.72")
VLB3 0450 A480	250 (9.84")	520 (20.47")	230 (9.05")	450 (17.72")
VLB3 0550 A480	250 (9.84")	623 (24.53")	265 (10.43")	536 (21.10")
VLB3 0750 A480	250 (9.84")	623 (24.53")	265 (10.43")	536 (21.10")
VLB3 0900 A480	258 (10.16")	775 (30.51")	304 (11.97")	685 (26.97")
VLB3 1100 A480	258 (10.16")	775 (30.51")	304 (11.97")	685 (26.97")

THREE-PHASE VARIABLE SPEED DRIVES

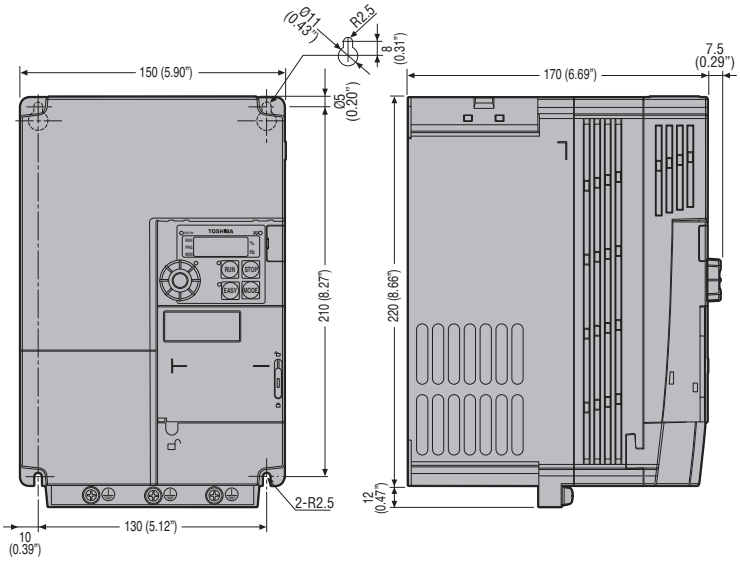
VFS15 4004 PLW - VFS15 4007 PLW - VFS15 4015 PLW



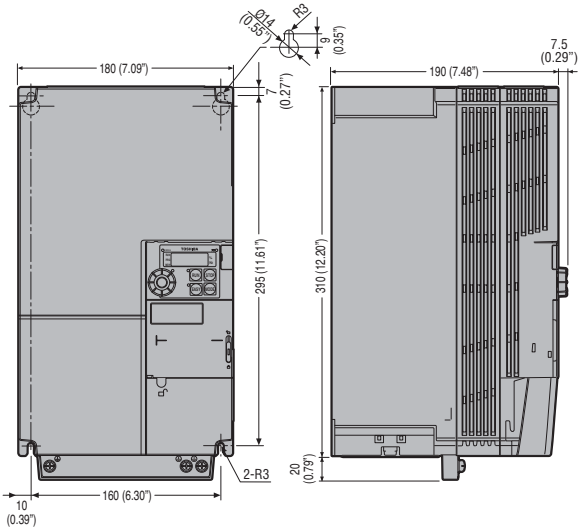
VFS15 4022 PLW...VFS15 4037 PLW



VFS15 4055 PLW - VFS15 4075 PLW

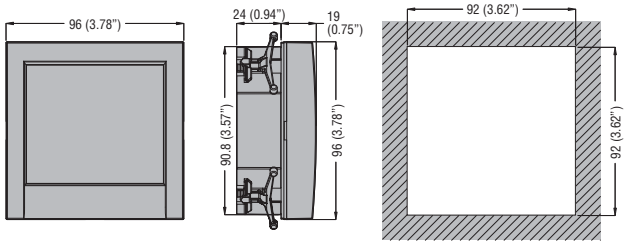


VFS15 4110 PLW - VFS15 4150 PLW

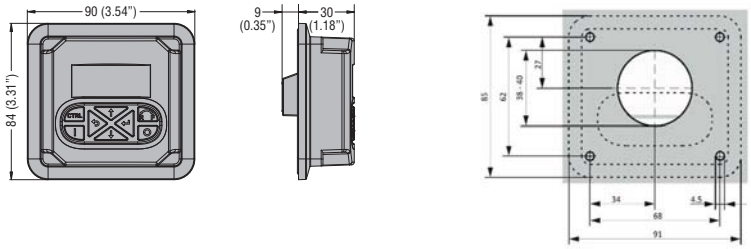


Remote keypads

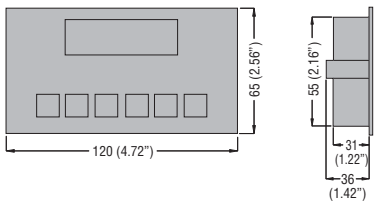
EXC RDU1



VLBX P01



MITOS...



RKP002Z