

Motor Controllers Variable Frequency AC Drives Type VariFlex² RVEF



RVEF

- AC variable speed drive for use with AC induction motors
- Sensorless vector control or V/F mode, high starting torque
- Input voltage ranges: 1-ph 110VAC, 1- ph 230VAC, 3-ph 230VAC, 3-ph 480VAC
- 2 physical frame sizes: Size 1 and 2
- Conforms to EMI radio standard and EMS immunity standard EN 61800-3 for the second environment (Industrial sites)
- All Parameters accessible both via Keypad and PC
- RS232 or RS485 MODBus RTU/ASCII serial communications available on all models through an option card
- Speed Setting by buttons and knob
- 8-step speeds setting
- Copy card option for fast and easy setup of identical drives
- I/O expansion (2 IN / 1 OUT expandable)
- DIN rail or panel mounting and remote Keypad available

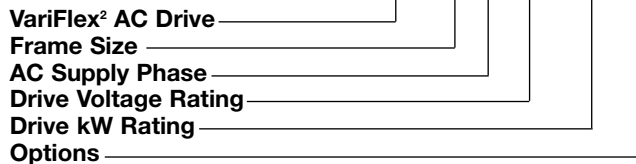
General description

The VariFlex² is a simple and compact AC variable speed drive for use with 3-phase AC induction motors. The drive's parameters are divided in two different lists: the first one is the Basic Parameter Function List for the standard setting of the inverter and the second one is the Advanced Function Parameter List for a more sophisticated setting of the drive according to the needs of the process. The drives have small

dimensions and can be installed Side by Side for saving and reducing space. The full range of product can supply all the voltage input from the single phase / 110VAC up to the three phase / 480VAC. The VariFlex² employs state of the art microprocessor technology which controls all drive functions. All printed circuit boards are manufactured using surface mount technology ensuring high quality and reliability.

Ordering Key

RVEF A 1 10 075 F



Approvals



Type Selection

Frame Size	AC Supply Phase	Drive Voltage Rating	Drive kW Rating	Options
A: Size 1	1: 1-phase	10: 110VAC	020: 0.20kW, 0.25HP	Nil
B: Size 2	3: 3-phase	20: 230VAC	040: 0.40kW, 0.50HP	F: Built-in filter
		40: 480VAC	075: 0.75kW, 1.0HP	N4: IP 65
			150: 1.5kW, 2.0HP	N4S: IP65 with water and dust proof switch
			220: 2.2kW, 3.0HP	

Selection Guide

Voltage Rating	AC Supply Phase	Motor Rating	Frame Size	
			Size 1	Size 2
100 - 120VAC (+10% - 15%)	1-Phase	0.20kW, 0.25HP	RVEFA110020	-
		0.40kW, 0.50HP	RVEFA110040	-
		0.75kW, 1.0HP	RVEFA110075	-
200 - 240VAC (+10% - 15%)	1-Phase	0.20kW, 0.25HP	RVEFA120020(F)	-
		0.40kW, 0.50HP	RVEFA120040(F)	-
		0.75kW, 1.0HP	RVEFA120075(F)	-
		1.5kW, 2.0HP	-	RVEFB120150(F)
		2.2kW, 3.0HP	-	RVEFB120220(F)
200 - 240VAC (+10% - 15%)	3-Phase	0.20kW, 0.25HP	RVEFA320020	-
		0.40kW, 0.50HP	RVEFA320040	-
		0.75kW, 1.0HP	RVEFA320075	-
		1.5kW, 2.0HP	-	RVEFB320150
		2.2kW, 3.0HP	-	RVEFB320220
380 - 480VAC (+10% - 15%)	3-Phase	0.75kW, 1.0HP	-	RVEFB340075(F)
		1.5kW, 2.0HP	-	RVEFB340150(F)
		2.2kW, 3.0HP	-	RVEFB340220(F)

Input / Output Data

	RVEFA110020	RVEFA110040	RVEFA110075	RVEFA120020(F)
Nominal motor power	0.20kW	0.40kW	0.75kW	0.20kW
Horsepower rating	0.25HP	0.50HP	1.0HP	0.25HP
Input Current	7.1A	12.2A	17.9A	4.3A
Rated Output Current	1.7A	3.1A	4.2A	1.7A
Rated Capacity	0.53kVA	0.88kVA	1.60kVA	0.53kVA
AC Supply Voltage and Frequency	1-phase, 100 ÷ 120VAC +10% -15% (50/60Hz)			1-phase, 200 ÷ 240VAC +10% -15% (50/60Hz)
Output Voltage and Frequency	3-phase, 0 ÷ 240V, 0 ÷ 200Hz			
Input Displacement Factor (cos φ)	> 0.97			
	RVEFA120040(F)	RVEFA120075(F)	RVEFB120150(F)	RVEFB120220(F)
Nominal motor power	0.40kW	0.75kW	1.50kW	2.20kW
Horsepower rating	0.50HP	1.0HP	2.0HP	3.0HP
Input Current	5.4A	10.4A	15.5A	21.0A
Rated Output Current	3.1A	4.2A	7.5A	10.5A
Rated Capacity	0.88kVA	1.60kVA	2.90kVA	4.0kVA
AC Supply voltage and frequency	1-phase, 200 ÷ 240VAC +10% -15% (50/60Hz)			
Output Voltage and Frequency	3-phase, 0 ÷ 240V, 0 ÷ 200Hz			
Input Displacement Factor (cos φ)	> 0.97			
	RVEFA320020	RVEFA320040	RVEFA320075	RVEFB320150
Nominal motor power	0.20kW	0.40kW	0.75kW	1.50kW
Horsepower rating	0.25HP	0.50HP	1.0HP	2.0HP
Input Current	3.0A	4.0A	6.4A	9.4A
Rated Output Current	1.7A	3.1A	4.2A	7.5A
Rated Capacity	0.53kVA	0.88kVA	1.60kVA	2.90kVA
AC Supply Voltage and Frequency	3-phase, 200 ÷ 240VAC +10% -15% (50/60Hz)			
Output Voltage and Frequency	3-phase, 0 ÷ 240V, 0 ÷ 200Hz			
Input Displacement Factor (cos φ)	> 0.97			
	RVEFB320220	RVEFB340075(F)	RVEFB340150(F)	RVEFB340220(F)
Nominal motor power	2.20kW	0.75kW	1.50kW	2.20kW
Horsepower rating	3.0HP	1.0HP	2.0HP	3.0HP
Input Current	12.2A	3.0A	4.8A	6.6A
Rated Output Current	10.5A	2.3A	3.8A	5.2A
Rated Capacity	4.00kVA	1.70kVA	2.90kVA	4.0kVA
AC Supply Voltage and Frequency	3-phase, 200 ÷ 240VAC +10% -15% (50/60Hz)	3-phase, 380 ÷ 480VAC +10% -15% (50/60Hz)		
Output Voltage and Frequency	3-phase, 0 ÷ 240V, 0 ÷ 200Hz	3-phase, 0 ÷ 480V, 0 ÷ 200Hz		
Input Displacement Factor (cos φ)	> 0.97			

General Data

	RVEFA110020	RVEFA110040	RVEFA110075	RVEFA120020(F)	RVEFA120040(F)	
Recommended Max RK5 fuse	10A	15A	20A	8A	10A	
Recommended Max CC or T fuse	20A	30A	40A	15A	20A	
Weight kg/lb	0.62kg/1.7lb	0.68kg/1.5lb	0.72kg/1.59lb	0.65kg/1.43lb	0.67kg/1.48lb	
DIN rail mounting	yes					
Integrated cooling fan	yes					
Frequency setting resolution	Digital: 0.1Hz (0 ÷ 99.9Hz) / 1Hz (100 ÷ 200Hz) Analogue: 0.06Hz / 60Hz					
Switching frequency	4, 8, 12, 16kHz					
Preset speed	8					
Accel. / Decel. Time	up to 999.9					
Display	3 digit / 7 segments					
Keypad / LED	5 function keys / 1 status LED					
Frequency setting mode	Set directly with UP/DOWN keys or by Knob on keypad or setting through external analogue signal					
Max. Momentary Power Loss Time	1.0s					
	RVEFA120075(F)	RVEFB120150(F)	RVEFB120220(F)	RVEFA320020	RVEFA320040	
Recommended input supply fuse	15A	20A	25A	5A	8A	
Horsepower rating	30A	40A	50A	8A	10A	
Weight kg/lb	0.67kg/1.48lb	1.0kg/2.2lb	1.05kg/2.31lb	0.61kg/1.34lb	0.61kg/1.34lb	
DIN rail mounting	yes					
Integrated cooling fan	yes					
Frequency setting resolution	Digital: 0.1Hz (0 ÷ 99.9Hz) / 1Hz (100 ÷ 200Hz) Analogue: 0.06Hz / 60Hz					
Switching frequency	4, 8, 12, 16kHz					
Preset speed	8					
Accel. / Decel. Time	up to 999.9					
Display	3 digit / 7 segments					
Keypad / LED	5 function keys / 1 status LED					
Frequency setting mode	Set directly with UP/DOWN keys or by Knob on keypad or setting through external analogue signal					
Max. Momentary Power Loss Time	1.0s	2.0s		1.0s		
	RVEFA320075	RVEFB320150	RVEFB320220	RVEFB340075(F)	RVEFB340150(F)	RVEFB340220(F)
Recommended input supply fuse	12A	15A	20A	6A	10A	10A
Horsepower rating	15A	20A	30A	10A	15A	20A
Weight kg/lb	0.66kg/1.46lb	0.95kg/2.09lb	1.0kg/2.2lb	1.5kg/3.30lb	1.52kg/3.35lb	1.55kg/3.42lb
DIN rail mounting	yes					
Integrated cooling fan	yes					
Frequency setting resolution	Digital: 0.1Hz (0 ÷ 99.9Hz) / 1Hz (100 ÷ 200Hz) Analogue: 0.06Hz / 60Hz					
Switching frequency	4, 8, 12, 16kHz					
Preset speed	8					
Accel. / Decel. Time	up to 999.9					
Display	3 digit / 7 segments					
Keypad / LED	5 function keys / 1 status LED					
Frequency setting mode	Set directly with UP/DOWN keys or by Knob on keypad or setting through external analogue signal					
Max. Momentary Power Loss Time	1.0s	2.0s		1.0s	2.0s	

Wiring data

	RVEFA110020	RVEFA110040	RVEFA110075	RVEFA120020(F)	RVEFA120040(F)	
Recommended power cable size (TM1 and TM3 terminals)	2.0mm ² (14AWG) / M4 screw terminals					
Power terminal Max. terminal Tightening torque	0.74Lbs-Ft / 0.1Kg-m					
Recommended signal cable size (TM2 terminal)	0.75mm ² (18AWG) / M3 screw terminals					
Input Power Terminal (TM1)	L1 (L) - L2 - L3 (N) - PE					
Output Motor Terminal (TM3)	T1 - T2 - T3 - PE					
Breaking Unit Terminal (TM3)	+ and -					
Analogue Common Terminal (TM2)	11 (COM) (common point for analogue input and output)					
Analogue Input terminal (TM2)	9(10V) - 10(AIN, analogue frequency signal input adaptable to PNP. Ref. to setting parameters F15.)					
Analogue Output Terminal (TM2)	12 (FM+) (configurable multi-function analogue output: 0/10VDC. Ref. to setting parameters F26.)					
Digital Common Terminal (TM2)	8 (COM) (common point for digital input and output)					
Digital Input Terminals (TM2)	4(S1) - 5(S2) - 6(S3) - 7(S4); (configurable multi-function input. Ref. to setting parameters F11, F14.)					
Digital output Terminal (TM2)	1(RA) - 2(RB) (configurable multi-function digital output, normally open contact 250VAC/10A. Ref. to setting parameters F21.)					
PNP Source Input (TM2)	3 (24V) PNP common terminal for S1 / S4 input.					
	RVEFA120075(F)	RVEFB120150(F)	RVEFB120220(F)	RVEFA320020	RVEFA320040	
Recommended power cable size (TM1 and TM3 terminals)	2.0mm ² (14AWG) M4 screw terminals		3.5mm ² (12AWG) M4 screw terminals	2.0mm ² (14AWG) M4 screw terminals		
Power terminal Max. terminal Tightening torque	0.74Lbs-Ft /0.1Kg-m		1.286Lbs-Ft / 0.18Kg-m		0.74Lbs-Ft /0.1Kg-m	
Recommended signal cable size (TM2 terminal)	0.75mm ² (18AWG) / M3 screw terminals					
Input Power Terminal (TM1)	L1 (L) - L2 - L3 (N) - PE					
Output Motor Terminal (TM3)	T1 - T2 - T3 - PE					
Breaking Unit Terminal (TM3)	+ and -					
Analogue Common Terminal (TM2)	11 (COM) (common point for analogue input and output)					
Analogue Input terminal (TM2)	9 (10V) - 10 (AIN, analogue frequency signal input adaptable to PNP. Ref. to setting parameters F15.)					
Digital Common Terminal (TM2)	8 (COM) (common point for digital input and output)					
Analogue Output Terminal (TM2)	12 (FM+) (configurable multi-function analogue output: 0/10VDC. Ref. to setting parameters F26.)					
Digital Input Terminals (TM2)	4(S1) - 5(S2) - 6(S3) - 7(S4); (configurable multi-function input. Ref. to setting parameters F11, F14.)					
Digital output Terminal (TM2)	1(RA) - 2(RB) (configurable multi-function digital output, normally open contact 250VAC/10A. Ref. to setting parameters F21.)					
PNP Source Input (TM2)	3 (24V) PNP common terminal for S1 / S4 input.					
	RVEFA320075	RVEFB320150	RVEFB320220	RVEFB340075(F)	RVEFB340150(F)	RVEFB340220(F)
Recommended power cable size (TM1 and TM3 terminals)	2.0mm ² (14AWG) M4 screw terminals		3.5mm ² (12AWG) M4 screw terminals	2.0mm ² (14AWG) / M4 screw terminals		
Power terminal Max. terminal Tightening torque	0.74Lbs-Ft /0.1Kg-m		1.286Lbs-Ft / 0.18Kg-m			
Recommended signal cable size (TM2 terminal)	0.75mm ² (18AWG) / M3 screw terminals					
Input Power Terminal (TM1)	L1 (L) - L2 - L3 (N) - PE					
Output Motor Terminal (TM3)	T1 - T2 - T3 - PE					
Breaking Unit Terminal (TM3)	+ and -					
Analogue Common Terminal (TM2)	11 (COM) (common point for analogue input and output)					
Analogue Input terminal (TM2)	9 (10V) - 10 (AIN, analogue frequency signal input adaptable to PNP. Ref. to setting parameters F15.)					
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Digital Common Terminal (TM2)	8 (COM) (common point for digital input and output)					
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Digital output Terminal (TM2)	1(RA) - 2(RB) (configurable multi-function digital output, normally open contact 250VAC/10A. Ref. to setting parameters F21.)					
PNP Source Input (TM2)	3 (24V) PNP common terminal for S1 / S4 input.					

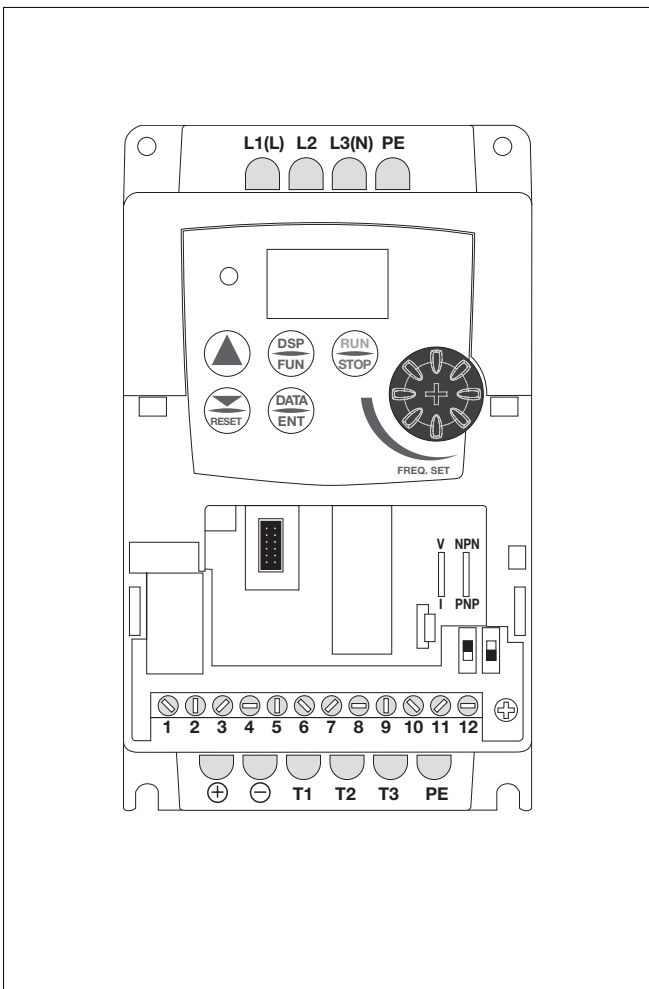
Environmental Data

Operating temperature	-10°C to +50°C (+14°F to +122°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F) for max. 12 months
Max. Relative Humidity	95% (non-condensing)
Protection Degree	IP20 (IP65 optional)
Pollution Degree	2
Installation Category	III
Max. altitude	1000m (3250ft)
Vibration	1G - 9.8m/s ²

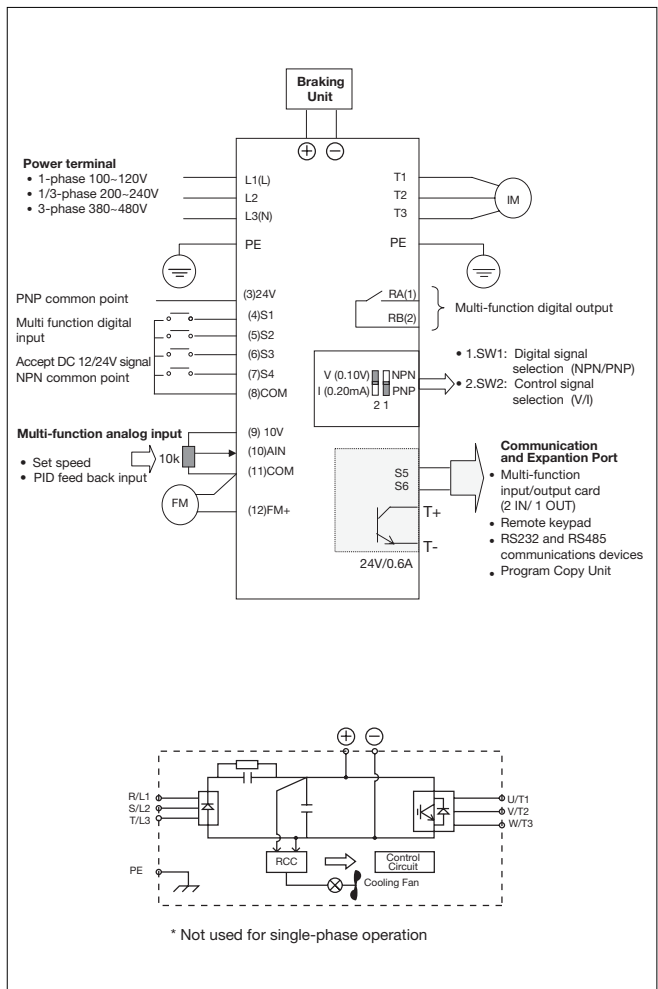
Protection Functions

Over current	Inverter rated current 150%/1min
Over voltage	230V class: DC voltage > 400V; 460V class: DC voltage > 800V
Under voltage	230V class: DC voltage < 190V; 460V class: DC voltage < 380V
Istantaneous power loss restart	Set to Enable or Disable
Stall prevention	ACC/DEC/Operation stall prevention and Stall prevention level
Output terminal short circuit	Electronic circuit protection
Other function	Grounding error, Fault reset limit, Directly start at power-on

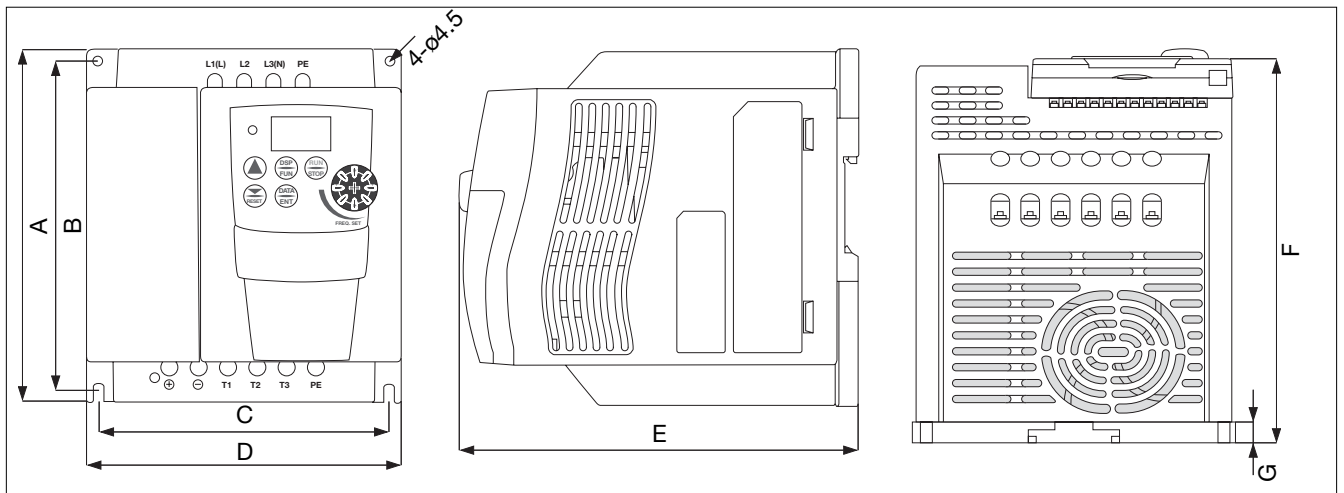
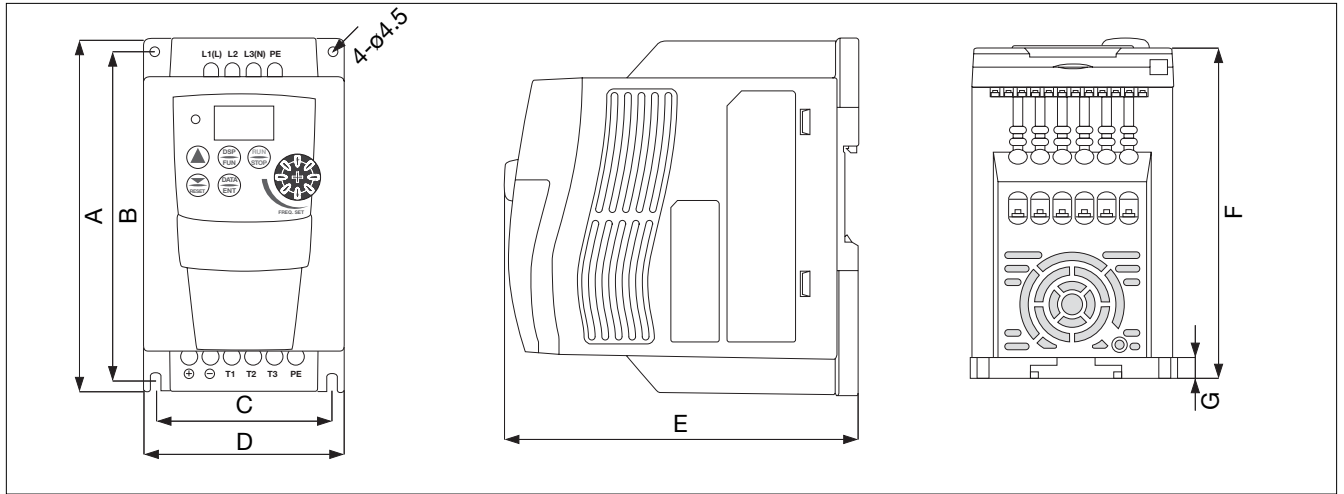
Terminal Layout



Connection Diagrams



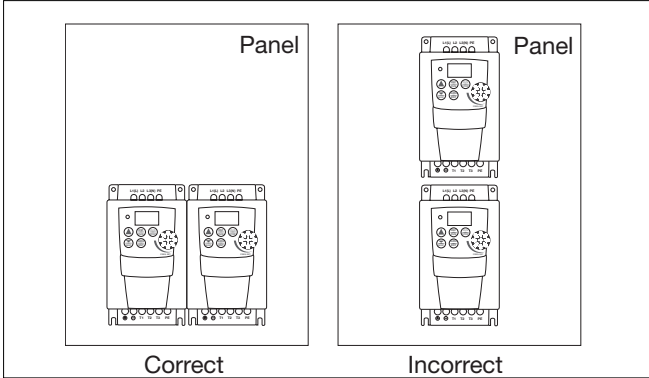
Dimensions



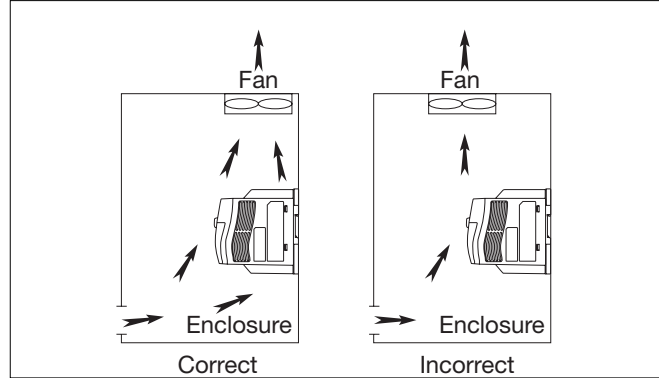
		Length Inch/mm			
		A	B	C	D
Model	Frame 1	5.2/132	4.86/123.5	2.64/67	3.03/77
	Frame 2	5.2/132	4.86/123.5	4.25/108	4.65/118
		E	F	G	
	Frame 1	5.13/130.5	5.06/138.45	0.315/8	
	Frame 2	5.83/148	5.67/144	0.315/8	

Installation information

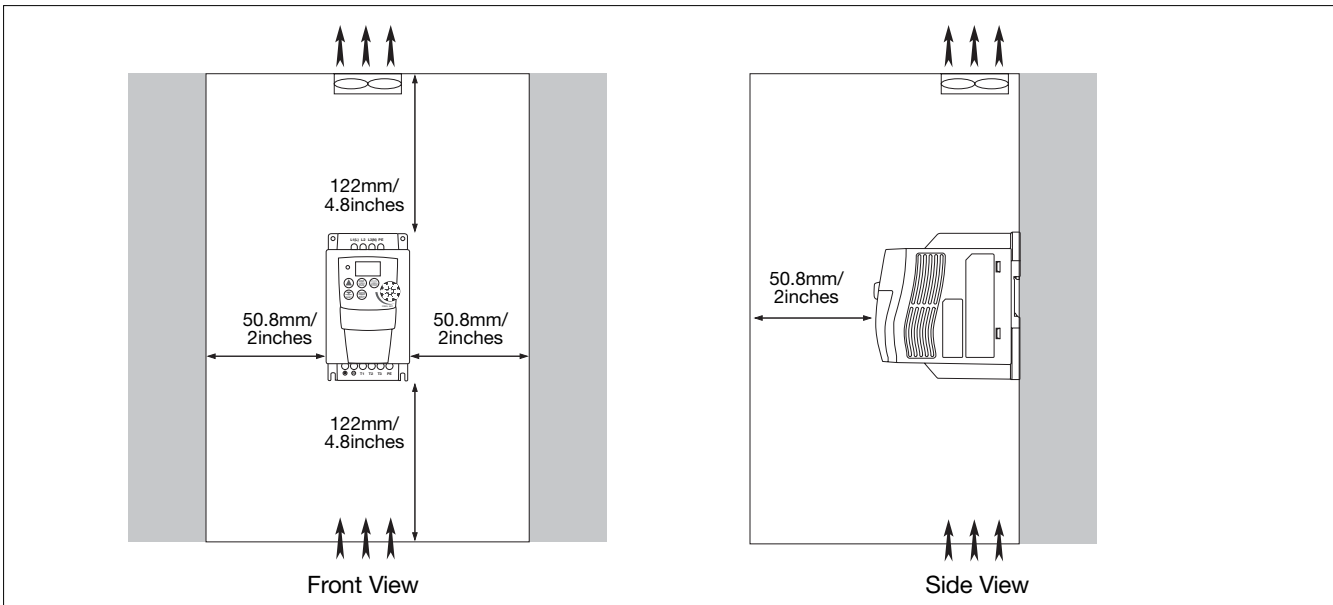
Panel positioning



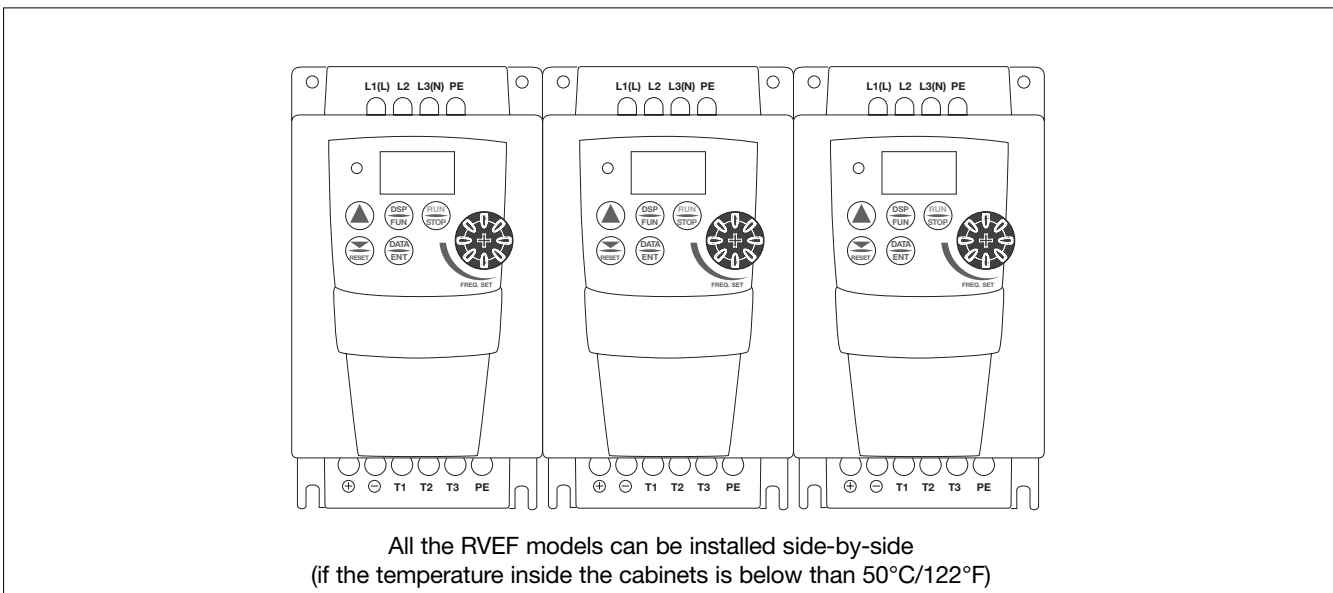
Enclosure positioning



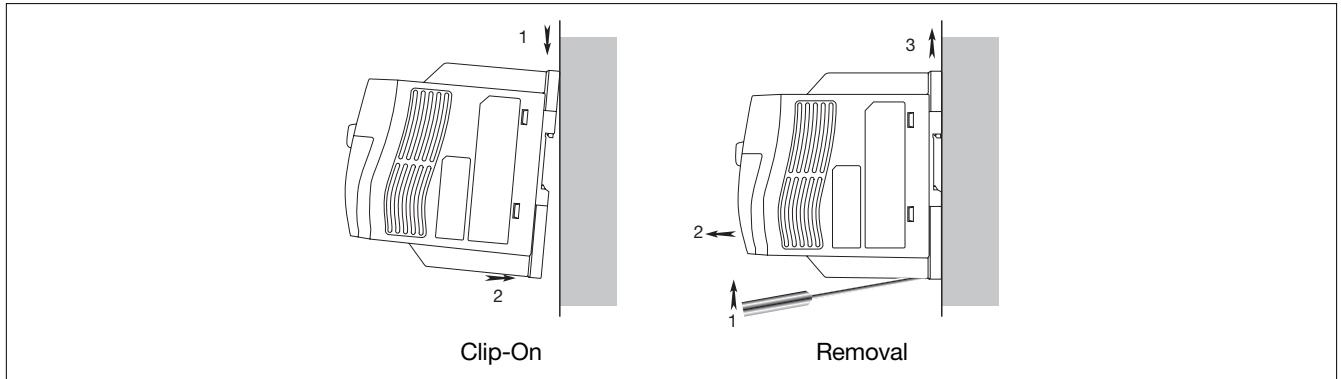
Minimum clearance



Side-by-Side Mounting



DIN-Rail installation



Additional EMC Filters

These additional external class A filters are designed to operate together with the drive's own integral EMC filter in areas of sensitive equipment.

RVVF-2202	RVFFS21019-8.9-07	RVFFS21015-22-07	RVFFS21016-15-07	RVFFS20858-7-07
RVEFA110020	RVEFA320020	RVEFB120150	RVEFB320150	RVEFB340075
RVEFA110040	RVEFA320040	RVEFB120220	RVEFB320220	RVEFB340150
RVEFA110075	RVEFA320075	RVEFB120150F*		RVEFB340220
RVEFA120020		RVEFB120220F*		RVEFB340075F*
RVEFA120040				RVEFB340150F*
RVEFA120075				RVEFB340220F*
RVEFA110020F*				
RVEFA110040F*				
RVEFA110075F*				

Optional features

Description	Code
AC Drive RS485 option card	RVFSIF485
AC Drive RS232 option card	RVFSIF232
AC Drive Program copy unit	RVFSIFMP
AC Drive Remote keypad	RVFSDOPLED2M
AC Drive I/O expansion card	RVFSIFIO
AC Drive 230VAC brake unit device	RVFTBU230
AC Drive 480VAC brake unit device	RVFTBU430
AC Drive Demo Case	RVFDEMO

*Note: Drives with built-in filter