

Motor Controllers Variable Frequency AC Drives Type VariFlex² RVCF

CARLO GAVAZZI



- 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 230VAC, 3-ph 230VAC, 3-ph 480VAC
- 150%/1Hz (Vector mode) starting torque
- Simple built-in PLC function
- PID function
- Conforms to EMI radio standard and EMS immunity standard EN 61800-3 (category C2)
- All Parameters accessible both via Keypad and PC
- RS232 or RS485 MODBus RTU/ASCII serial communication available on all models through option card
- Speed setting by keys and dial
- Built-in EMC filter versions up to 11kW
- Memory stick (Copy card) option for fast and accurate drive to parameter transfer and storage
- NPN/PNP digital inputs
- Keypad extension available on all models

Product Description

VariFlex² RVCF is a simple, compact general purpose AC variable speed drive for use with 3-phase AC induction motors. A full range of power rating is available from 0.4kW (0.5HP) up to 55kW (75HP) with single phase AC input 240VAC and 3-phase AC input up to 480VAC.

The drives allow sensorless or V/F control mode, the speed is adjustable through the keypad, analog input and

digital input (preset speeds).

The standard display can be removed by the extension cable and put outside the cabinet.

The drives are easily configurable; the parameters are logically divided in sixteen different groups according to the needs of the process.

The VariFlex² employs state of the art microprocessor digital technology which controls all drive functions.

Ordering key **RVCF B 3 40 0220 F**

Model _____
 Frame size _____
 AC supply phase _____
 Voltage rating _____
 Power rating kW _____
 Option _____

Type Selection

Voltage rating	Output voltage	Power rating		Model	Housing size	
		kW	HP			
200-240VAC (+10% -15%) 1-phase	0-240V 3-phase 0.1-650Hz	0.40	0.50	RVCFA1200040	A	
		0.75	1.0	RVCFA1200075	A	
		1.5	2.0	RVCFB1200150	B	
		2.2	3.0	RVCFB1200220	B	
0.40		0.50	RVCFA3200040	A		
0.75		1.0	RVCFA3200075	A		
1.5		2.0	RVCFA3200150	A		
2.2		3.0	RVCFB3200220	B		
3.7		5.0	RVCFB3200370	B		
5.5		7.5	RVCFC3200550	C		
7.5		10.0	RVCFC3200750	C		
11.0		15.0	RVCFD3201100	D		
15.0		20.0	RVCFD3201500	D		
18.5		25.0	RVCFD3201850	D		
22.0		30.0	RVCFE3202200	E		
30.0		40.0	RVCFE3203000	E		
380-480VAC (+10% -15%) 3-phase		0-480V 3-phase 0.1-650Hz	0.75	1.0	RVCFA3400075	A
			1.5	2.0	RVCFA3400150	A
			2.2	3.0	RVCFB3400220	B
			3.7	5.0	RVCFB3400370	B
	5.5		7.5	RVCFC3400550	C	
	7.5		10.0	RVCFC3400750	C	
	11.0		15.0	RVCFC3401100	C	
	15.0		20.0	RVCFD3401500	D	
	18.5		25.0	RVCFD3401850	D	
	22.0		30.0	RVCFD3402200	D	
	30.0		40.0	RVCFE3403000	E	
	37.0		50.0	RVCFE3403700	E	
	45.0		60.0	RVCFF3404500	F	
	55.0		75.0	RVCFF3405500	F	

Input/Output Specification

Model	Motor capacity			Current (A)	
	kW	HP	kVA	Input	Output
RVCFA1200040	0.40	0.50	1.2	8.5	3.1
RVCFA1200075	0.75	1.0	1.7	12	4.5
RVCFB1200150	1.5	2.0	2.9	16	7.5
RVCFB1200220	2.2	3.0	4.0	23.9	10.5
RVCFA3200040	0.40	0.50	1.2	4.5	3.1
RVCFA3200075	0.75	1.0	1.7	6.5	4.5
RVCFA3200150	1.5	2.0	2.9	11.0	7.5
RVCFB3200220	2.2	3.0	4.0	12.5	10.5
RVCFB3200370	3.7	5.0	6.7	20.5	17.5
RVCFC3200550	5.5	7.5	9.9	33.0	26.0
RVCFC3200750	7.5	10.0	13.3	42.0	35.0
RVCFD3201100	11.0	15.0	20.6	57.0	48.0
RVCFD3201500	15.0	20.0	27.4	70.0	64.0
RVCFD3201850	18.5	25.0	34.0	85.0	80.0
RVCFE3202200	22.0	30.0	41.0	108.0	96.0
RVCFE3203000	30.0	40.0	54.0	138.0	130.0
RVCFA3400075	0.75	1.0	1.7	4.2	2.3
RVCFA3400150	1.5	2.0	2.9	5.6	3.8
RVCFB3400220	2.2	3.0	4.0	7.3	5.2
RVCFB3400370	3.7	5.0	6.7	11.6	8.8
RVCFC3400550	5.5	7.5	9.9	17.0	13.0
RVCFC3400750	7.5	10.0	13.3	23.0	17.5
RVCFC3401100	11.0	15.0	19.1	31.0	25.0
RVCFD3401500	15.0	20.0	27.4	38.0	32.0
RVCFD3401850	18.5	25.0	34.0	48.0	40.0
RVCFD3402200	22.0	30.0	41.0	56.0	48.0
RVCFE3403000	30.0	40.0	54.0	75.0	64.0
RVCFE3403700	37.0	50.0	68.0	92.0	80.0
RVCFF3404500	45.0	60.0	82.0	112.0	96.0
RVCFF3405500	55.0	75.0	110.0	142.0	128.0

Fuse Type

Model	Motor rating		Max fuse rating (A)	
	kW	HP	Fuse RK5	Fuse CC or T
RVCFA1200040	0.40	0.50	10	20
RVCFA1200075	0.75	1.0	15	30
RVCFB1200150	1.5	2.0	20	40
RVCFB1200220	2.2	3.0	25	50
RVCFA3200040	0.40	0.50	8	10
RVCFA3200075	0.75	1.0	12	15
RVCFA3200150	1.5	2.0	15	20
RVCFB3200220	2.2	3.0	20	30
RVCFB3200370	3.7	5.0	30	50
RVCFC3200550	5.5	7.5	50	60
RVCFC3200750	7.5	10.0	60	70
RVCFD3201100	11.0	15.0	80	100
RVCFD3201500	15.0	20.0	100	125
RVCFD3201850	18.5	25.0	125	150
RVCFE3202200	22.0	30.0	160	200
RVCFE3203000	30.0	40.0	200	250
RVCFA3400075	0.75	1.0	6	10
RVCFA3400150	1.5	2.0	10	15
RVCFB3400220	2.2	3.0	10	20
RVCFB3400370	3.7	5.0	20	30
RVCFC3400550	5.5	7.5	25	35
RVCFC3400750	7.5	10.0	30	50
RVCFC3401100	11.0	15.0	50	60
RVCFD3401500	15.0	20.0	60	70
RVCFD3401850	18.5	25.0	70	80
RVCFD3402200	22.0	30.0	80	100
RVCFE3403000	30.0	40.0	100	125
RVCFE3403700	37.0	50.0	125	150
RVCFF3404500	45.0	60.0	150	200
RVCFF3405500	55.0	75.0	200	250

Input Specifications

Input supply	
1-phase	200-240V (+10% -15%)
3-phase	200-240V (+10% -15%) 380-480V (+10% -15%)
Frequency range	50-60Hz
Multifunctional input terminal	
Voltage input impedance	17.8 kΩ for 0.5~2HP 240V and 1~2HP 480V drives 330 kΩ for 3~30HP 240V and 3~75HP 480V drives
Current input impedance	253Ω for 0.5~2HP 240V and 1~2HP 480V drives 499Ω for 3~30HP 240V and 3~75HP 480V drives
Power factor	> 0.97

General Data

Mounting	Sizes A and B. Sizes C, D, E and F	DIN-rail and panel Panel
Integrated cooling fan	Yes	
Frequency setting resolution	Digital Analog	0.01Hz 0.06Hz/60Hz
Carrier frequency	2~16kHz (factory setting 10kHz, >10kHz with derating)	
Time accel./decel	Two stage acc/dec time (0.1~3.6s) and two stage S curve	
Display	4 digit/7 segments	
Keypad/LED	7 keypads/8 LEDs	
Frequency setting mode	Set directly with UP/DOWN keys or by dial on keypad or setting through external analogue signal or up to 8 preset speeds (through external digital signal)	
Options	Nil F	None Built-in filter

Output Specifications

Motor supply	
3-phase	
240V	0~mains voltage, 0.1~650Hz
480V	0~mains voltage, 0.1~650Hz
Multifunctional output terminal	
Contact rating	1A@250VAC 1A@30VDC

Weight

Model	Weight (with built-in filter)	
	Kg	lb
RVCFA1200040	1.2 (1.3)	2.65 (2.87)
RVCFA1200075		
RVCFB1200150	1.5 (1.8)	3.31 (3.97)
RVCFB1200220	1.9 (2.3)	4.19 (5.07)
RVCFA3200040	1.2	2.65
RVCFA3200075		
RVCFA3200150		
RVCFB3200220	1.75	3.86
RVCFB3200370	1.9	4.19
RVCFC3200550	5.6	12.35
RVCFC3200750		
RVCFD3201100	15	33.01
RVCFD3201500		
RVCFD3201850		
RVCFE3202200	33	72.75
RVCFE3203000	34	74.96
RVCFA3400075	1.2 (1.3)	2.65 (2.87)
RVCFA3400150		
RVCFB3400220	1.8 (2.2)	3.97 (4.85)
RVCFB3400370		
RVCFC3400550		
RVCFC3400750	5.6 (6.6)	12.35 (14.55)
RVCFC3401100		
RVCFD3401500	15	33.01
RVCFD3401850		
RVCFD3402200		
RVCFE3403000	33	72.75
RVCFE3403700		
RVCFF3404500	50	110.23
RVCFF3405500		

Protection Functions

Overcurrent		150% of rated current for 1 min. 123% of rated current for 1 min.
General load		
HVAC load		
Overvoltage	240V 480V	DC voltage > 410V DC voltage > 820V
Undervoltage	240V 480V	DC voltage < 190V DC voltage < 380V
Max. momentary power loss function		Stop for more than 15ms power loss can be restarted with speed search in max. momentary power loss time
Function		
Momentary power loss time		
RVCFA		
RVCFB		
RVCFC		
RVCFD		
RVCFE		
RVCFF		
Stall prevention		Acc/dec/operation stall prevention and stall prevention level
Output terminal short circuit		Electronic circuit protection
Other functions		Electronic circuit protection for earth fault, protection for heat sink overheating, overtorque detection, reverse prohibition, restriction for direct start after power up and error recovery, parameter lock-up

General Specifications

Operating temperature	From -10°C to +50°C (from +14°F to +122°F)
Storage temperature	From -20°C to +60°C (from -4°F to +140°F) for max 12 months
Max. relative humidity	95% (non-condensing)
Cooling	Forced ventilation with fans
Degree of protection	IP00 or IP20 (Nema 1 by external upper cover only for sizes "A" and "B")
Pollution degree	2
Installation category	Ground class III Special ground class
240V 480V	
Max. altitude	1000m (3250ft)
Vibration	1G-9.8m/s ²
Approvals	CE, cUL _{us} listed
EMC	According to EN61800-3

General Functions

Control mode	Sensorless control (starting torque: 150%/1Hz in sensorless mode) or V/F control
Output frequency limit function	Respectively setting upper/lower frequency limits and two-stage prohibited frequencies
Control features	8 preset speeds, acc/dec switch (2 stages), S curve, 3-wire control, PID control, torque boost, slip compensation, frequency upper/lower limit, auto energy saving, MODBus slave and PC link, auto restart, built-in PLC.

Supply terminal		Analog output terminal	
1-phase	L1, L3(N)	Output terminal	
3-phase	L1, L2, L3	FM+	for all drives
Motor terminal	T1(U), T2(V), T3(W)	Common terminal	
Multifunctional input terminal		COM	for 0.4~1.5kW at 240V and 0.75~1.5kW at 480V drives
Input terminal	S1~S6 (and AIN: High level >8V, low level <2V)	AGND	for 2.2~30kW at 240V and 2.2kW~55kW at 480V drives
Common terminal			
24V	PNP input	Braking resistor	
COM	NPN input (for 0.4~1.5kW at 240V and 0.75~1.5kW at 480V drives)	P, BR	for 0.4~7.5kW at 240V and 0.75~11kW at 480V drives
24G	NPN input (for 2.2~30kW at 240V and 2.2kW~55kW at 480V drives)	B1/P, B2	for 11~15kW at 240V and 15kW at 480V drives
		Through braking unit	for 18.5~30kW at 240V and 18.5~55kW at 480V drives
Multifunctional output terminal		DC reactor	
R1A, R1B, R1C	Change over relay contact	P, P1	for 0.4~7.5kW at 240V and 0.75~11kW at 480V drives
R2A, R2B	NO relay contact	Not available	for 11~30kW at 240V and 15~55kW at 480V drives
Analog input terminal		Braking unit	
Input terminal		+, -	for 18.5~30kW at 240V and 18.5~55kW at 480V drives
AIN	for all drives		
AI2	for 2.2~30kW at 240V and 2.2kW~55kW at 480V drives		
S6	for 0.4~1.5kW at 240V and 0.75~1.5kW at 480V drives		
Common terminal			
COM	for 0.4~1.5kW at 240V and 0.75~1.5kW at 480V drives		
AGND	for 2.2~30kW at 240V and 2.2kW~55kW at 480V drives		

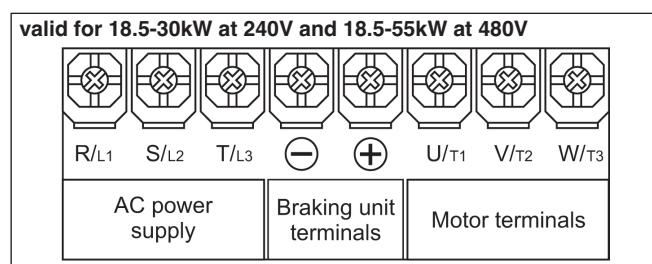
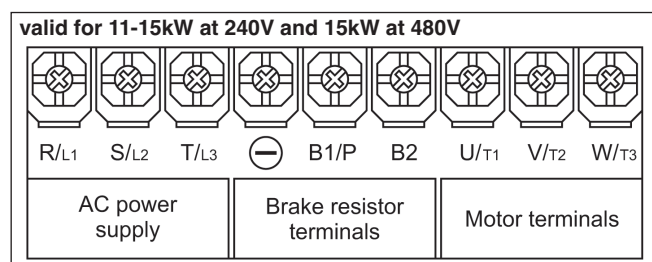
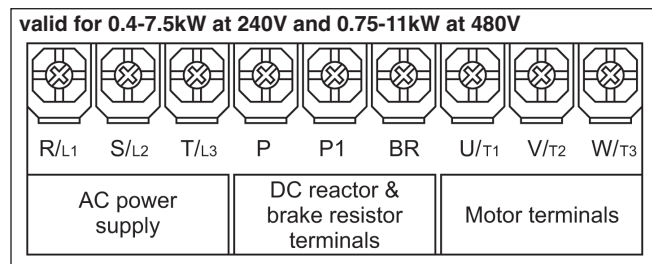
Diagram 1 (valid for 0.4-1.5kW at 240V and 0.75-1.5kW at 480V)

Diagram 2 (valid for 2.2-7.5kW at 240V and 2.2-55kW at 480V)

Diagram 1 (valid for 0.4-1.5kW at 240V and 0.75-1.5kW at 480V)

Diagram 2 (valid for 2.2-7.5kW at 240V and 2.2-55kW at 480V)

Main Circuit Terminals (TM1)



Terminals layout



Description of SW1~SW3

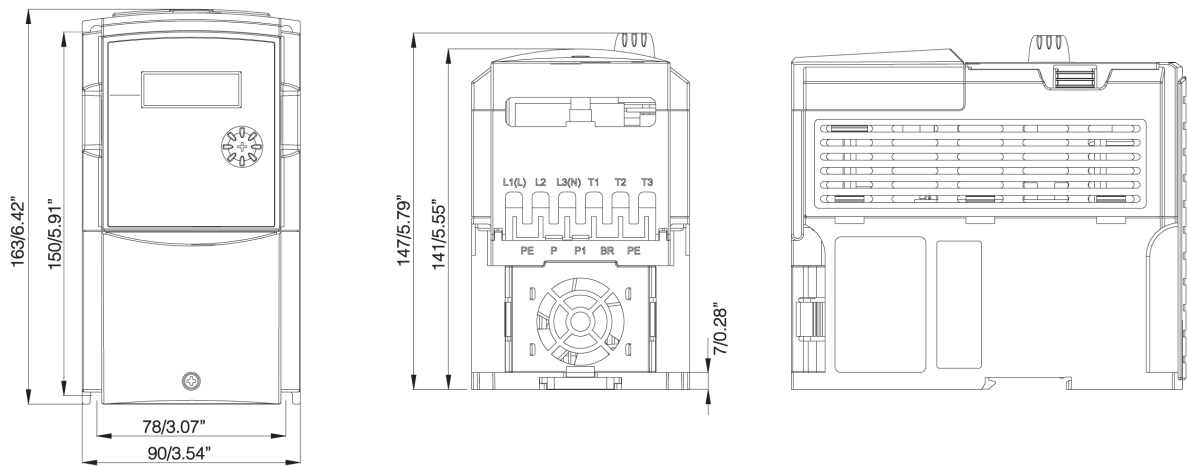
	SW1	SW2/SW3
	NPN input	0~10VDC analog signal
	PNP input	0~20mA analog signal

Accessories

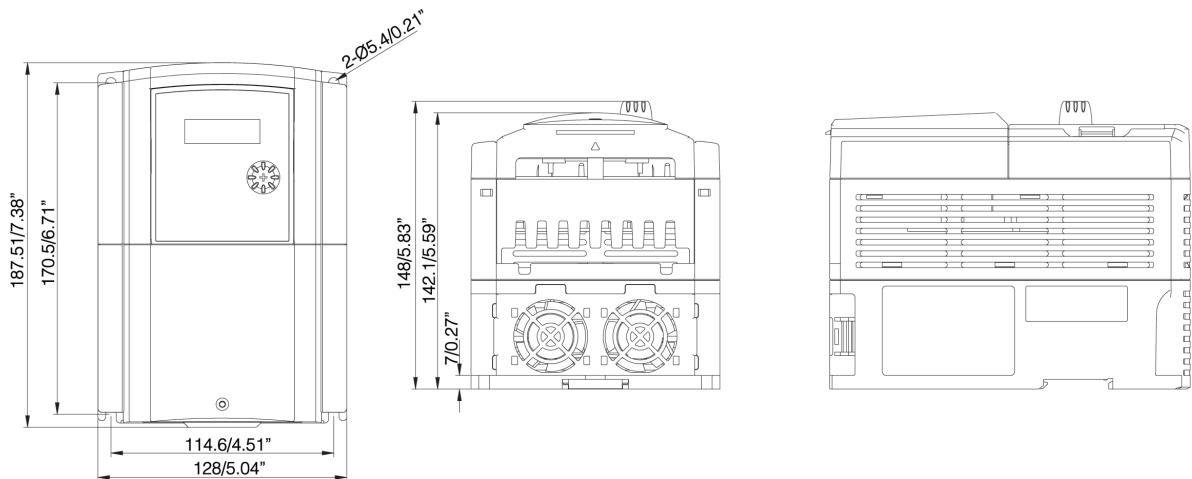
Code	Description
RVFSIF485	AC Drive RS485 option card
RVFSIF232	AC Drive RS232 adapter
RVFSIFMP	AC Drive Program copy unit
RVFSW3001	AC Drive Keypad extension cable 1m
RVFSW3003	AC Drive Keypad extension cable 3m
RVFSW3005	AC Drive Keypad extension cable 5m
RVCFTBU230	AC Drive RVCF 230VAC brake unit device
RVCFTBU430	AC Drive RVCF 480VAC brake unit device
RVFDEMO	AC Drive Demo Case

Dimensions (mm/inches)

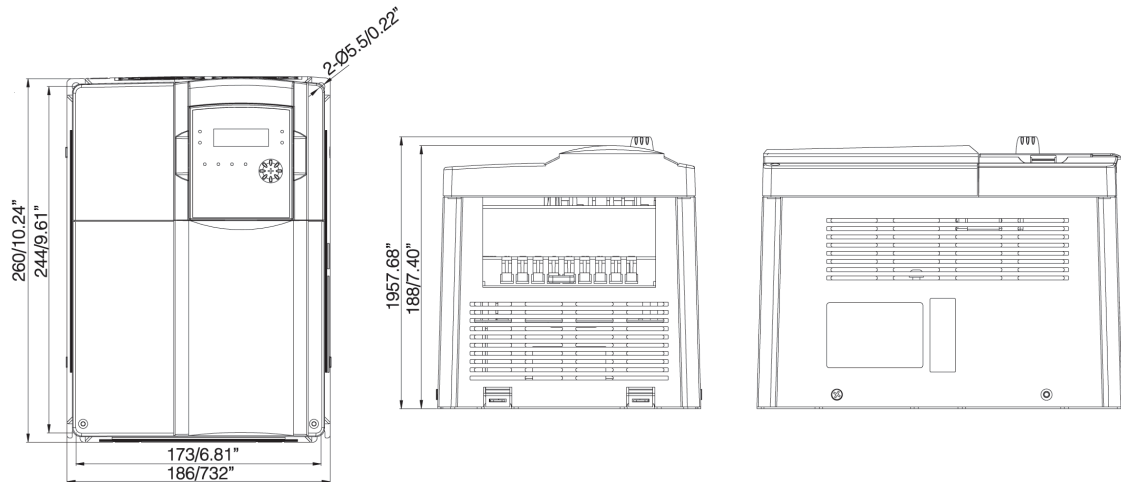
Size “A”



Size “B”



Size “C”



Dimensions (mm/inches) (cont.)

