

Climatix VFD



Figure 1. Climatix Variable Frequency Drive (VFD).

Description

Climatix rooftop unit solutions are designed to deliver better efficiency, comfort and savings to owners of small commercial buildings who want to use what they already have...just make it work more reliably, more cost effectively and improve the building environment and air quality.

The Climatix RT VFD compact drive series have been specifically designed for use in new or existing rooftop unit fan applications to provide energy efficiency in an easily integrated, compact, cost effective VFD.

Features

- Mobile app commissioning in 25 parameters or less.
- Compact form factor is 40% smaller than competitor products
- Plenum Rated
- Conformal Coated PCBs for harsh environments
- Safe Torque Off (STO) Standard
- High starting torque 200% at 0.5 Hz

Available Options

- EMC Filter Class A (C2) (bottom mount)
- Fan Kit
- Remote Mounting Kit for easy troubleshooting using the keypad
- Line/Load Reactors
- IP 21 Kit (future release)

Typical Specifications

This specification covers the typical requirements for VFDs used in rooftop solutions:

- All VFDs shall have the same customer interface regardless of horsepower rating.
- Input voltage shall be:
 - 0.25-1 HP 115 Vac (-15% +10%) 1-ph
 - 0.25-3 HP 230 Vac (-15%- +10%) 1-ph
 - 0.25-20 HP 230 Vac (-15%- +10%) 3-ph
 - 0.5-30 HP 460 Vac (-15%- +10%) 3-ph
 - 1-10 HP 575 Vac (-15%- +10%) 3-ph
- VFD shall utilize Mobile app for quick RTU system startup and shall feature built-in wizards for programming at the operator panel.
- All circuit boards shall be coated to protect against corrosion and meet IEC60721-3-3 Class 3C2.
- VFD shall have a "favorite" feature to allow the end user to create and save custom settings.
- VFD shall have built-in MODBUS, CANopen.
- EMC Filters EMI/RFI filters. The entire assembly shall be CE marked and meet EMC Immunity IEC61800-3 Category C2.
- VFD Shall be capable of zero stack installation without de-rating up to 104°F (40°C).

Technical Data

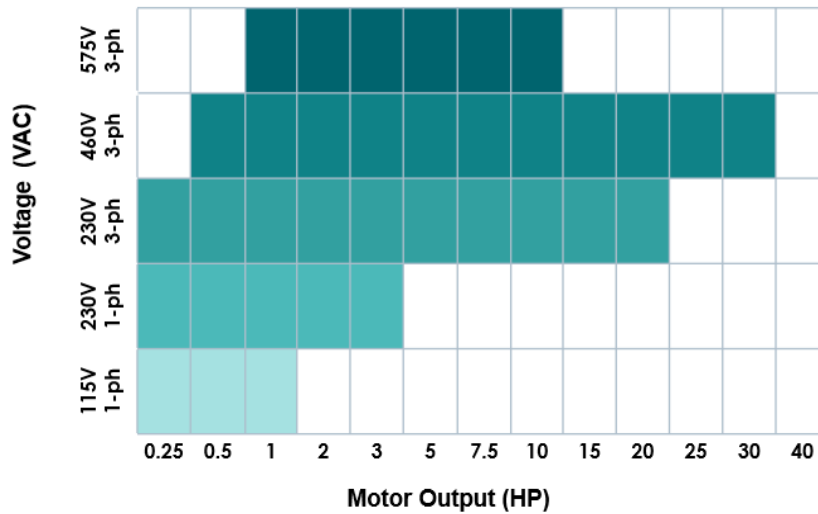
Input voltage and power ranges	0.25-1 HP 115 Vac (-15% +10%) 1-ph 0.25-3 HP 230 Vac (-15%- +10%) 1-ph 0.25-20 HP 230 Vac (-15%- +10%) 3-ph 0.5-30 HP 460 Vac (-15%- +10%) 3-ph 1-10 HP 575 Vac (-15%- +10%) 3-ph
Input frequency	50 to 60 Hz
Output frequency	0 to 599 Hz
Max output frequency	Standard model: 599.00 Hz/High speed model: 1500.0 Hz (with derating, V/F control only) >97.5%
Overload Capacity	Normal duty: 120% 60s, 150% 3s Heavy duty: 150% 60s, 200% 3s
Carrier Frequency	2 to 15 KHz (Default 4)

Technical Data, Continued

Speed Control Mode	1: 50 (V/f, SVC control for IM, Heavy duty) 1: 20 (SVC control for PM, heavy duty)	Motor capability	1 mm peak-peak 13.2Hz~55Hz: 0.7G~2.0G 55Hz~512Hz: 2.0G
Starting torque	150%/3 Hz (V/f, SVC control for IM, heavy duty) 100% (1/20 of motor rated frequency) (SVC control for PM, heavy duty)	Braking	Induction motors (IM), interior permanent magnet (IPM) motors, and surface permanent magnet (SPM) motors
Ambient Operating Conditions	-4 ~ +122°F (-20 ~ +50°C) -4 ~ + 140°F (-20 ~ +60°C) with derating	Protections	DC Injection Braking
Storage Temperature	-40 to 185°F (-40 to 85°C)	Certifications	Over-current, Over-voltage, Over-temperature, Phase loss, Stall prevention
Relative Humidity (Operating) (Storage/Transportation)	Max 90% Max 95%		UL, cUL, CE, RoHS, REACH, RCM, TUV (SIL2)
Altitude	1000 m/3280 ft (>1000 m w/ derating)		
Enclosure Class	IP20, IP21 Kit Future release		
Vibration	IEC60068-2-6: 2Hz~13.2Hz:		

Product Numbers

Part Number Breakdown				
	RT	001X	-11	N
Family	Power Rating	Voltage		
RT – Rooftop	0002 = 0.25 hp 0005 = 0.5 hp 001X = 1 hp 002X = 2 hp 003X = 3 hp 005X = 5 hp 0075 = 7.5 hp 010X = 10 hp 020X = 20 hp 030X = 30HP	11 = 115V 1-ph 21= 230V 1-ph 23 = 230V 3-ph 43= 400V 3-ph 53= 575V 3-ph		



Part Number	Product Information	Voltage	HP	Phase	Rated Output Current (A)	Frame
RT0002-11N	VFD 115V, 1-PH; 0.25 HP	115	0.25	1	1.6	A1
RT0005-11N	VFD 115V, 1-PH, 0.5 HP		0.5		2.5	A3
RT001X-11N	VFD 115V, 1-PH, 1 HP		1		4.8	C1
RT0002-21N	VFD 230V, 1-PH, 0.25 HP	230	0.25	3	1.6	A1
RT0005-21N	VFD 230V, 1-PH, 0.5 HP		0.5		2.8	A3
RT001X-21N	VFD 230V, 1-PH, 1 HP		1		4.8	B2
RT002X-21N	VFD 230V, 1-PH, 2 HP		2		7.5	C1
RT003X-21N	VFD 230V, 1-PH, 3 HP		3		11	C1
RT0002-23N	VFD 230V, 3-PH, 0.25 HP		0.25		1.6	A1
RT0005-23N	VFD 230V, 3-PH, 0.5 HP		0.5		2.8	A2
RT001X-23N	VFD 230V, 3-PH, 1 HP		1		4.8	A5
RT002X-23N	VFD 230V, 3-PH, 2 HP		2		7.5	B1
RT003X-23N	VFD 230V, 3-PH, 3 HP		3		11	C1
RT005X-23N	VFD 230V, 3-PH, 5 HP		5		17	C1
RT0075-23N	VFD 230V, 3-PH, 7.5 HP		7.5		25	D1
RT010X-23N	VFD 230V, 3-PH, 10 HP		10		33	E1
RT015X-23N	VFD 230V, 3-PH, 15.2 HP		15		49	E1
RT020X-23N	VFD 230V, 3-PH, 20 HP		20		65	F1
RT0005-43N	VFD 460V, 3-PH, 0.5 HP	460	0.5		1.5	A4
RT001X-43N	VFD 460V, 3-PH, 1 HP		1		2.7	A5
RT002X-43N	VFD 460V, 3-PH, 2 HP		2		4.2	B1
RT003X-43N	VFD 460V, 3-PH, 3 HP		3		5.5	C1
RT005X-43N	VFD 460V, 3-PH, 5 HP		5		9	C1
RT0075-43N	VFD 460V, 3-PH, 7.5 HP		7.5		13	D1
RT010X-43N	VFD 460V, 3-PH, 10 HP		10		17	D1
RT015X-43N	VFD 460V, 3-PH, 15 HP		15		25	E1
RT020X-43N	VFD 460V, 3-PH, 20 HP		20		32	E1
RT025X-43N	VFD 460V, 3-PH, 25 HP		25		38	F1
RT030X-43N	VFD 460V, 3-PH, 30 HP		30		45	F1
RT001X-53N	VFD 575V, 3-PH, 1 HP	575	1		1.7	A5
RT002X-53N	VFD 575V, 3-PH, 2 HP		2		3	B1
RT003X-53N	VFD 575V, 3-PH, 3 HP		3		4.2	C1
RT005X-53N	VFD 575V, 3-PH, 5 HP		5		6.6	C1
RT0075-53N	VFD 575V, 3-PH, 7.5 HP		7.5		9.9	D1
RT010X-53N	VFD 575V, 3-PH, 10 HP		10		12.2	D1

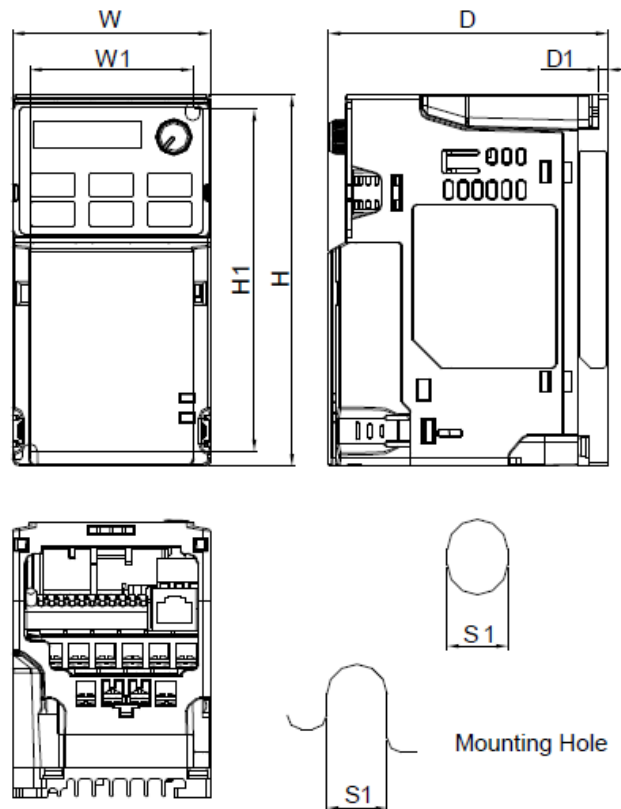
Accessories

Item	Part Number	Description
Conduit Kit	RT-CONDUIT-FRA	NEMA1 Kit, Frame A3, A4, A5
	RT-CONDUIT-FRB	NEMA1 Kit, Frame B1, B2, B3
	RT-CONDUIT-FRC	NEMA1 Kit, Frame C1, C2
	RT-CONDUIT-FRD	NEMA1 Kit, Frame D1, D2
	RT-CONDUIT-FRE	NEMA1 Kit, Frame E1, E2
	RT-CONDUIT-FRF	NEMA1 Kit, Frame F1, F2
Din Rail Kit	RT-MNTK-FRAB	DIN Rail Kit, Frame A or B
	RT-MNTK-FRC	DIN Rail Kit, Frame C
Grounding Plate Kit	RT-EP-FRA	Grounding Plate Kit Frame A
	RT-EP-FRB	Grounding Plate Kit Frame B
	RT-EP-FRC	Grounding Plate Kit Frame C
	RT-EP-FRD	Grounding Plate Kit Frame D
	RT-EP-FRE	Grounding Plate Kit Frame E
	RT-EP-FRF	Grounding Plate Kit Frame F
EMC Filter	RT-EMCF-10AM23A	EMC Filter,10A,230V,3PH
	RT-EMCF-11AM21A	EMC Filter,11A,230V,1PH
	RT-EMCF-12AM43B	EMC Filter,12A,460V,3PH
	RT-EMCF-23AM43B	EMC Filter,23A,460V,3PH
	RT-EMCF-24AM23B	EMC Filter,24A,230V,3PH
	RT-EMCF-27AM21B	EMC Filter,27A,230V,1PH
	RT-EMCF-33AM23B	EMC Filter,33A,230V,3PH
	RT-EMCF-6A0M43A	EMC Filter,6A,460V,3PH
	RT-EMCF-6A0M63B	EMC Filter,6A,575V,3PH
Replacement Fan Kit	RT-FANKIT-FRB	RT Fan Kit for Frame B
	RT-FANKIT-FRC	RT Fan Kit for Frame C
	RT-FANKIT-FRD	RT Fan Kit for Frame D
	RT-FANKIT-FRE	RT Fan Kit for Frame E
	RT-FANKIT-FRF	RT Fan Kit for Frame F

Line Reactor Selection

VFD Part Number	AC Reactor	Reactor Product Description
RT0002-11N	994-640-01	RCTR, 1.4A MTR CRRNT, 240V
RT0005-11N	994-640-02	RCTR, 2.4A MTR CRRNT, 240V
RT001X-11N	994-640-04	RCTR, 4.6A MTR CRRNT, 240V
RT0002-21N	994-640-01	RCTR, 1.4A MTR CRRNT, 240V
RT0005-21N	994-640-03	RCTR, 3.5A MTR CRRNT, 240V
RT001X-21N	994-640-04	RCTR, 4.6A MTR CRRNT, 240V
RT002X-21N	994-640-07	RCTR, 7.5A MTR CRRNT, 240V
RT003X-21N	994-731-02	RCTR, 21A MTR CRRNT, 480V
RT0002-23N	994-640-02	RCTR, 2.4A MTR CRRNT, 240V
RT0005-23N	994-640-03	RCTR, 3.5A MTR CRRNT, 240V
RT001X-23N	994-640-05	RCTR, 6.6A MTR CRRNT, 240V
RT002X-23N	994-640-07	RCTR, 7.5A MTR CRRNT, 240V
RT003X-23N	994-731-01	RCTR, 16.7A MTR CRRNT, 240V
RT005X-23N	994-731-07	RCTR, 24.2A MTR CRRNT, 240V
RT0075-23N	994-732-02	RCTR, 30.8A MTR CRRNT, 240V
RT010X-23N	994-732-03	RCTR, 46.2A MTR CRRNT, 240V
RT015X-23N	994-732-07	RCTR, 59.4A MTR CRRNT, 240V
RT020X-23N	994-733-05	RCTR, 74.8A MTR CRRNT, 240V
RT0005-43N	994-640-15	RCTR, 1.6A MTR CRRNT, 480V
RT001X-43N	994-640-17	RCTR, 3A MTR CRRNT, 480V
RT002X-43N	994-640-19	RCTR, 4.8A MTR CRRNT, 480V
RT003X-43N	994-640-21	RCTR, 6.2A MTR CRRNT, 480V
RT005X-43N	994-640-22	RCTR, 11A MTR CRRNT, 480V
RT0075-43N	994-640-23	RCTR, 14A MTR CRRNT, 480V
RT010X-43N	994-731-02	RCTR, 27A MTR CRRNT, 480V
RT015X-43N	994-731-06	RCTR, 34A MTR CRRNT, 480V
RT020X-43N	994-732-04	RCTR, 40A MTR CRRNT, 480V
RT025X-43N	994-732-05	RCTR, 52A MTR CRRNT, 480V
RT030X-43N	994-733-02	RCTR, 16.7A MTR CRRNT, 480V
RT001X-53N	994-640-35	RCTR, 1.7A MTR CRRNT, 575V
RT002X-53N	994-730-10	RCTR, 3.2A MTR CRRNT, 575V
RT003X-53N	994-730-11	RCTR, 4.8A MTR CRRNT, 575V
RT005X-53N	994-730-12	RCTR, 7.6A MTR CRRNT, 575V
RT0075-53N	994-730-13	RCTR, 9.6A MTR CRRNT, 575V
RT010X-53N	994-730-14	RCTR, 11A MTR CRRNT, 575V

Product Frame Sizes and Dimensions



Frame Size	W	H	D	W1	H1	D1	S1
A1	2.68 (68.0)	5.04 (128.0)	3.78 (96.0)	2.2 (56.0)	4.65 (118.0)	0.12 (3.0)	0.2 (5.2)
A2			4.33 (110.0)				
A3			4.92 (125.0)				
A4			5.08 (129.0)				
A5			5.63 (143.0)				
B1	2.83 (72.0)	5.59 (142.0)	5.63 (143.0)	2.36 (60.0)	5.53 (130.0)	0.25 (6.4)	0.20 (5.2)
B2			6.26 (159.0)			0.12 (3.0)	
B3			7.05 (179.0)			0.17 (4.3)	
C1	3.43 (87.0)	6.18 (157.0)	5.98 (152.0)	2.87 (73.0)	5.69 (144.5)	0.2 (5.0)	0.22 (5.5)
C2			7.05 (179.0)				
D1	4.29 (109.0)	8.15 (207.0)	6.06 (154.0)	3.70 (94.0)	7.63 (193.8)	0.24 (6.0)	0.22 (5.5)
D2			7.36 (187.0)				
E1	5.12 (130.0)	9.84 (250.0)	7.83 (185.0)	4.53 (115.0)	9.32 (236.8)	0.24 (6.0)	0.22 (5.5)
E2			8.62 (219.0)				
F1	6.89 (175.0)	11.81 (300.0)	7.56 (192.0)	6.06 (154.0)	11 (279.50)	0.26 (6.5)	0.33 (8.4)
F2			9.61 (244.0)				

Figure 2. Dimensions in Inches (Millimeters).

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