Noark

Catalog

Ex9VF7
Variable Frequency Drives

Excellent Products. Exceptional Value.

na.noark-electric.com

ABOUT US

NOARK Electric is a global manufacturer of low-voltage electrical components for industrial applications. We specialize in motor controls and circuit protection for original equipment manufacturers. Our mission is to provide customers with the highest quality products at an exceptional value and back them with world-class service and support. Every NOARK product is tested and certified to the highest industry standards and covered by our exclusive five-year or one-year limited warranty.

Research and Development

The entire portfolio of high-quality NOARK products is designed for manufacturing and assembly (DFMA). Each component is developed in-house by our engineering team to meet the strictest standards and performance requirements. This dedication to excellence has led to the development of patented technology found in many of our products.

World-class Manufacturing

After being thoroughly tested, approved and certified – each NOARK product is sent into production at our state-of-the-art manufacturing facilities. This allows us to maintain strict quality control standards throughout the manufacturing process. In addition, NOARK Electric adheres to a policy of environmental protection and sustainability.

North American Distribution

NOARK's distribution centers are located in Addison, Texas - USA and Kitchener, Ontario - Canada, with the aim of ensuring prompt and reliable deliveries of the entire product range to our customers all over North America. Our supply chain team works closely with our factories and logistics partners to ensure the availability of our products on the North American market and provide logistics services on the level which our customers expect. NOARK Electric is a subsidiary of the largest electrical manufacturing group in Asia with over 50 thousand employees and sales revenue of $22 billion USD. We have corporate facilities in Texas, Shanghai and Prague to service the requirements of individual markets and countries.

140+	300+	20	22	3	10,000,000+	50,000+
Countries	Overseas Distributors	Overseas Subsidiaries	Logistics Centers	R & D Centers	Sq.Ft. Manufacturing Space	Employees Worldwide

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Ex9VF7 Variable Frequency Drives

Product Overview

Noark's Variable Frequency Drives are designed to control the speed and torque of an electric motor by varying the frequency and voltage of its power supply. It helps improve energy efficiency and provides precise control in applications like pumps, fans, and conveyors. The series Ex9VF7 Variable frequency drives' operational voltage range options are Single phase @110V & 230V; and Three phase @230V, 480V & 600V.

Design Features

- Available in 0.2kW-400kW/0.3HP-540HP
- High-tech motor control concept, based on advanced DSP-technology
- Compact and advanced VFD design for Panel/MCC integration
- Flexible inverter control, high resolution analogue inputs, free mapping for all I/O channels
- NEMA 1 Enclosure (IP20 protection level)
- EMC filter (C3 class) integrated
- BACnet, Ethernet IP and Modbus communication options available
- Wide range of accessories; keypad, mounting kit, and so much more

Certifications

- UL Certification (0.4kW-185kW/5.5HP-245HP)
- ISO 9001
- cUL listed
- CCC

Ex9VF7 Variable Frequency Drives

Product Label/Product Selection Guide

1	Display
2	Brand
3	Keypad
4	Protecting Cover for Digital I/Os
5	Panel/Wall Mounting
6	Frame
7	Power inputs and outputs

Product Selection Guide

Ex9VF7	2	S1	0025	B	1	C
Noark Variable Frequency	Frame	Input Voltage	Full Load Amperage	Braking Unit	EMC Filter	Communications Module
	1: G1* 2: G2 3: G3 4: G4 5: G5 6: G6 7: G7 8: G8 9: G9 A: GA B: GB	S1: 1-Ø, 110V S2: 1-Ø, 230V T2: 3-Ø, 240V T3: 3-Ø, 480V T4: 3-Ø, 575V	0005: 0.5A 0011: 1.1A 0015: 1.5A 0017: 1.7A 0025: 2.5A 0035: 3.5A 0040: 4.0A 0045: 4.5A 0100: 10A 0170: 17A 0300: 30A 0400: 40A 1100: 110A 2200: 220A 3600: 360A	B: Brake Chopper Blank: No Brake Chopper	1: EMC Filter Blank: No EMC Filter	A: Modbus T: Bacnet + Modbus C: CAN + Modbus

* STO comes as a standard offering with all Ex9VF7 products except Frame G1

Ex9VF7 Variable Frequency Drives

Products

110V Single Phase Input

Item Number	Catalog Number	Frame	FLA (A)	KW	HP	Braking Resistor	EMC Filter	STO	Comms. Module
1330253	Ex9VF72S10025B1C	G2	2.5	0.4	0.5	•	•	•	•
1330254	Ex9VF72S10045B1C	G2	4.5	0.75	1	•	•	•	•
1330255	Ex9VF73S10070B1C	G3	7	1.5	2	•	•	•	•
1330256	Ex9VF73S10100B1C	G3	10	2.2	3	•	•	•	•

230V Single Phase Input

Item Number	Catalog Number	Frame	FLA (A)	KW	HP	Braking Resistor	EMC Filter	STO	Comms. Module
1330257	Ex9VF71S20015B1A	G1	1.5	0.2	0.25	•	•	-	•
1330258	Ex9VF71S20025B1A	G1	2.5	0.4	0.5	•	•	-	•
1330259	Ex9VF71S20045B1A	G1	4.5	0.75	1	•	•	-	•
1330260	Ex9VF71S20070B1A	G1	7	1.5	2	•	•	-	•
1330261	Ex9VF72S20100B1C	G2	10	2.2	3	•	•	•	•

230V Three Phase Input

Item Number	Catalog Number	Frame	FLA (A)	KW	HP	Braking Resistor	EMC Filter	STO	Comms. Module
1330263	Ex9VF71T20025B1A	G1	2.5	0.4	0.5	•	•	-	•
1330264	Ex9VF71T20045B1A	G1	4.5	0.75	1	•	•	-	•
1330265	Ex9VF71T20070B1A	G1	7	1.5	2	•	•	-	•
1330266	Ex9VF72T20100B1C	G2	10	2.2	3	•	•	•	•
1330267	Ex9VF72T20120B1C	G2	12	3	4	•	•	•	•
1330268	Ex9VF73T20170B1C	G3	17	4	5	•	•	•	•
1330269	Ex9VF74T20210B1C	G4	21	5.5	7.5	•	•	•	•
1330270	Ex9VF75T20300B1C	G5	30	7.5	10	•	•	•	•
1330271	Ex9VF75T20400B1C	G5	40	11	15	•	•	•	•

Ex9VF7 Variable Frequency Drives

Products

480V Three Phase Input

Item Number	Catalog Number	Frame	FLA (A)	KW	HP	Braking Resistor	EMC Filter	STO	Comms. Module
1330272	Ex9VF71T30005B1A	G1	0.5	0.2	0.25	•	•	-	•
1330273	Ex9VF71T30011B1A	G1	1.1	0.4	0.5	•	•	-	•
1330274	Ex9VF71T30020B1A	G1	2	0.75	1	•	•	-	•
1330275	Ex9VF71T30040B1A	G1	4	1.5	2	•	•	•	•
1330276	Ex9VF72T30065B1C	G2	6.5	2.2	3	•	•	•	•
1330277	Ex9VF72T30076B1C	G2	7.6	3	4	•	•	•	•
1330278	Ex9VF72T30090B1C	G2	9	4	5	•	•	•	•
1330279	Ex9VF73T30120B1C	G3	12	5.5	7.5	•	•	•	•
1330280	Ex9VF73T30170B1C	G3	17	7.5	10	•	•	•	•
1330281	Ex9VF74T30230B1C	G4	23	11	15	•	•	•	•
1330282	Ex9VF74T30320B1C	G4	32	15	20	•	•	•	•
1330283	Ex9VF75T30380B1C	G5	38	18.5	25	•	•	•	•
1330284	Ex9VF75T30440B1C	G5	44	22	30	•	•	•	•
1330285	Ex9VF75T30600B1C	G5	60	30	40	•	•	•	•
1330286	Ex9VF76T30750B1C	G6	75	37	50	•	•	•	•
1330287	Ex9VF76T30900B1C	G6	90	45	60	•	•	•	•
1330288	Ex9VF78T31100B1C	G8	110	55	75	•	•	•	•
1330289	Ex9VF78T31500B1C	G8	150	75	100	•	•	•	•
1330290	Ex9VF79T31800B1C	G9	180	90	125	•	•	•	•
1330291	Ex9VF79T32200B1C	G9	220	110	150	•	•	•	•
1330292	Ex9VF79T32650C	G9	265	132	200	-	-	•	•
1330293	Ex9VF7AT33200C	GA	320	160	225	-	-	•	•
1330294	Ex9VF7BT33600C	GB	360	185	250	-	-	•	•

Ex9VF7 Variable Frequency Drives

Products

600V Three Phase Input

Item Number	Catalog Number	Frame	FLA (A)	KW	HP	Braking Resistor	EMC Filter	STO	Comms. Module
1330295	Ex9VF72T40017B1C	G2	1.7	0.75	1	•	•	•	•
1330296	Ex9VF72T40035B1C	G2	3.5	1.5	2	•	•	•	•
1330297	Ex9VF72T40045B1C	G2	4.5	2.2	3	•	•	•	•
1330298	Ex9VF73T40055B1C	G3	5.5	3	4	•	•	•	•
1330299	Ex9VF73T40075B1C	G3	7.5	4	5	•	•	•	•
1330300	Ex9VF73T40100B1C	G3	10	5.5	7.5	•	•	•	•
1330301	Ex9VF73T40135B1C	G3	13.5	7.5	10	•	•	•	•
1330302	Ex9VF75T40190B1C	G5	19	11	15	•	•	•	•
1330303	Ex9VF75T40230B1C	G5	23	15	20	•	•	•	•
1330304	Ex9VF75T40270B1C	G5	27	18.5	25	•	•	•	•
1330305	Ex9VF77T40340BC	G7	34	22	30	•	-	•	•
1330306	Ex9VF77T40410BC	G7	41	30	40	•	-	•	•
1330307	Ex9VF77T40520BC	G7	52	37	50	•	-	•	•
1330308	Ex9VF78T40620BC	G8	62	45	60	•	-	•	•
1330309	Ex9VF78T40860BC	G8	86	55	75	•	-	•	•
1330310	Ex9VF79T41000BC	G9	100	75	100	•	-	•	•
1330311	Ex9VF79T41200BC	G9	120	90	125	•	-	•	•
1330312	Ex9VF79T41500BC	G9	150	110	150	•	-	•	•

Ex9VF7 Variable Frequency Drives

Technical Specifications

	Parameter	Ex9VF7
Input	Rated Voltage Range	1-Phase 110~120V ±15% 1-Phase 220~240V ±15% 3-Phase 380-480V (+10%, -15%) 3-Phase 220V~240V ±15% 3-Phase 525V~600V (+10%, -15%)
	Rated Frequency	50/60Hz
Output	Rated Voltage Range	3-phase 0-INPUT (V)
	Frequency Range	0.50 ~ 590.0H z (In SVC control mode, the max frequency should be lower than 500Hz.)
Control Mode	Carrier Frequency	800 16000Hz; Fixed carrier-wave and random carrier-wave can be selected by F159.
	Input Frequency Resolution	Digital setting: 0.01Hz, analog setting: max frequency X 0.1%
	Control Mode	For induction motor: SVC (open-loop vector control) control, V/F control, VC (Closed-loop vector control) control For PMSM: SVC (open-loop vector control) control
	Start Torque	0.5 Hz / 150% (SVC) 0Hz/180% (VC), 5% of rated speed/100% of rated torque (PMSM SVC)
	Speed-control Scope	1:100 (SVC), 1:1000 (VC), 1:20 (in PMSM SVC)
	Steady Speed Precision	±0.5% SVC), ±0.02%(VC)
	Torque Control Precision	±5%
	Overload Capacity	150% rated current, 60 seconds.
	Torque Elevating	Auto torque promotion, Manual Torque Promotion includes 1-20 curves.
	V/F Curve	3 kinds of modes: beeline type, square type and under-defined V/F curve.
	Startup mode	Direct startup, speed track startup (V/F control)
	DC Braking	DC braking frequency: 0.20-50.00 Hz, braking time: 0.00~30.00s
	Jogging Control	Jogging frequency range: min frequency~ max frequency, jogging acceleration/deceleration time: 0.1~3000s
	Auto Circulating Running and multistage speed running	Auto circulating running or terminals control can realize 15-stage speed running.
	Built-in PID adjusting	Easy to realize a system for process closed-loop control
	Auto voltage regulation (AVR)	When the source voltage changes, the modulation rate can be adjusted automatically, so that the output voltage is unchanged.

Ex9VF7 Variable Frequency Drives

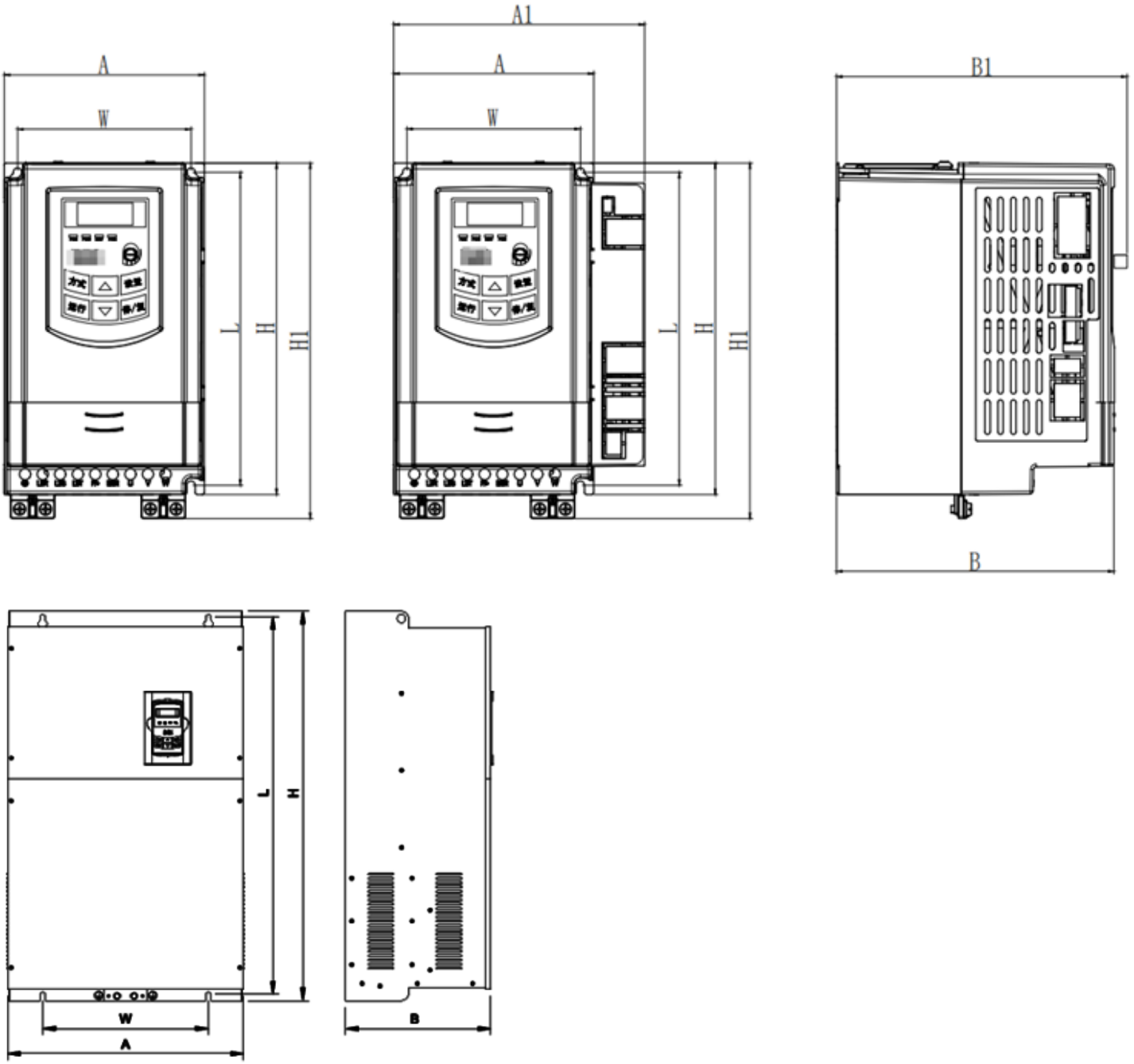
Technical Specifications

	Parameter	Ex9VF7
Operation Function	Frequency Setting	Potentiometer or external analog signal (0 5V, 0 10V, 0 20Ma); keypad (terminal) ▲▼ keys, external control logic and automatic circulation setting.
	Start/Stop Control	Terminal control, keypad control or communication control.
	Running Command Channels	3 kinds of channels from keypad panel, control terminal and MODBUS.
	Frequency Source	Frequency sources: given digit, given analog voltage, given analog current and given MODBUS
	Accessorial frequency Source	7 kinds of accessorial frequency
Optional	Built-in EMI filter, built-in braking unit, Modbus, tele-control panel	
Protection Function	Input phase loss, Output phase loss, input under-voltage, DC over-voltage, over-current, inverter over-load, motor over-load, current stall, over-heat, external disturbance, under-load, pressure control, analog line disconnected, PG line disconnection, keypad disconnection, open protection, STO and STO1	
Display	Keypad showing present output frequency, present rotate-speed (rpm), present output current, present output voltage, present linear velocity,	
	Types of faults, and parameters for the system and operation; LED indicators showing the current working status of inverter.	
Environmental Conditions	Equipment Location	In an indoor location, Prevent exposure from direct sunlight, Free from dust, tangy caustic gases, flammable gases, steam or the salt-contented, etc
	Environmental Temperature	-10°C~+50°C
	Environment Humidity	Below 90% (no water-bead coagulation)
	Vibration Strength	Below 0.5g (acceleration)
	Height above sea level	1000m or below
Protection Level	IP20/NEMA1	
Applicable Motor	0.2~400kW	

Ex9VF7 Variable Frequency Drives

Drawings

Unit: mm



Note1: If keypad control unit has potentiometer, the external dimension is B1.

If keypad control unit has no potentiometer, the external dimension is B.

Ex9VF7 Variable Frequency Drives

Dimensions

Structure Code	External Dimension [A(A1)×B(B1) ×H] mm	Mounting Size (W×L) mm	Mounting Bolt	Remarks
G1	80 × 135 (142) × 138 (153)	70 × 128	M4	Plastic Housing
G2	106 (136) × 150 (157) × 180 (195)	94 × 170	M4	
G3	142 (168) × 152 (159) × 235 (248)	126 × 225	M5	
G4	161 (187) × 170 (177) × 265 (280)	146 × 255	M5	
G5	210 (236) × 196 (203) × 340 (358)	194 × 330	M5	
G6	265 × 235 (242) × 435 (465)	235 × 412	M6	
G7	315 × 250 × 476	274 × 460	M6	Metal Housing
G8	360 × 265 × 630	320 × 605	M8	
G9	410 × 300 × 765	370 × 740	M10	
GA	516 × 326 × 765	360 × 740	M10	
GB	560 × 342 × 910	390 × 882	M10	

Ex9VF7 Variable Frequency Drives

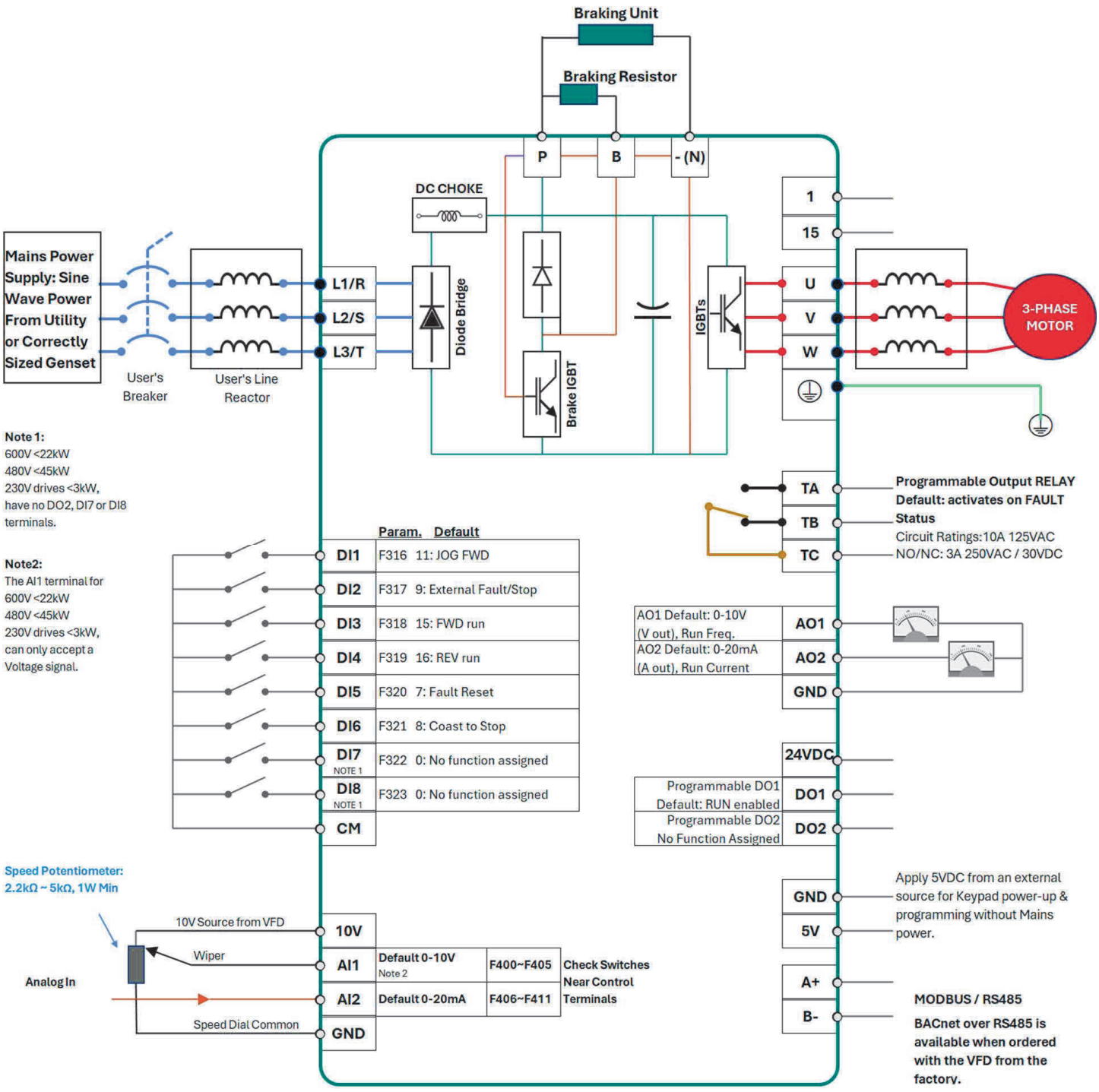
Connections

Category	Control Terminals	Description
Input	L1/R	Single or three phase input L1
	L2/S	Single or three phase input L2
	L3/T	Three phase input L3
Braking Unit	P	Braking Resistor
	B	Braking Resistor
Output	U	Motor Output phase 1
	V	Motor Output phase 2
	W	Motor Output phase 3

Category	Control Terminals	Description
Digital Input	DI1	Digital Input 1
	DI2	Digital Input 2
	DI3	Digital Input 3
	DI4	Digital Input 4
	DI5	Digital Input 5
	DI6	Digital Input 6
	DI7	Digital Input 7
	DI8	Digital Input 8
	24V	24 VDC Power output
	CM	0 V DC common
Digital Output	TA	Alarm N/O relay contact, 10A/125VAC, NO/NC 3A 250VAC/30VDC
	TB	Alarm N/C relay contact, 10A/125VAC, NO/NC 3A 250VAC/30VDC
	TC	Drive Alarm common
	DO1	Digital Output 1
	DO2	Digital Output 2
Analog Input	AI1	Analog input 1
	AI2	Analog input 2
	GND	Power Supply 0V
	10V	10 V Reference supply (max 20 mA)
Analog Output	AO1	Analog Output 1
	AO2	Analog Output 2
RS485 MODBUS	A+	Signal Positive
	B-	Signal Negative
	5V	Signal Power
	GND	Signal Ground
1-15 Expand Slots	D89	Expand Fieldbus
	8Spec	Remote Keypad Receptacle
	Reserve	Expansions By Order Variant

Ex9VF7 Variable Frequency Drives

Wiring Diagram



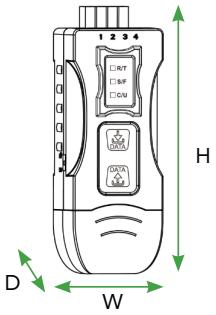
Ex9VF7 Variable Frequency Drives

Accessories

Copy Stick

CST1N is a product which integrates parameters copying and USB/RS-485 converter. It is plug-and-play and convenient to be operated. Transient voltage suppressor (TVS) is adopted to protect the RS-485 interfaces. The protector can effectively restrain lightning or ESD with a protection voltage of 600W on each line for lightning surge and surge voltage or transient over voltage possibly caused up by various reasons, and at the same time, a high-speed transmission of RS-485 interfaces is ensured by the tiny capacitance between the poles. The unique I/O circuit of the internal zero delay auto transceiver contained in the converter controls the data stream direction automatically without any handshaking signal (for example RTS, DTR etc). The product is plug-and-play without any jumper settings needed for mode shift for half duplex (RS-485). All these features ensure a universal application on all the existing communication software and hardware interfaces.

The Copy Stick is available for all VFD models. CST1N can be used to save a configuration from a computer and load onto the VFD and vice versa, or to other VFDs.



Catalog Number	Description
CST1N	Copy Stick for VFD

Catalog Number	H(mm)	W(mm)	D(mm)
CST1N	77	30	20

	CST1N
Standards	Conforming to USBV1.0, 1.1 and 2.0, EIA RS-485, RS-422
USB signals	+5V, DATA+, DATA-, GND, FG
RS-485 signals	GND, +5V, A+, B-
Working modes	Asynchronous, point-to-point or point-to-multipoint, and 2-line half duplex
Direction control	Adoption of automatic data stream control for automatic recognition and control of data transmission direction
Baud rate	300-921600bps, automatic detection of the transmission rate of the serial interface signal
Workload ability	Point-to-multipoint supported, a maximum of 32 RS-485 interface equipment are supported.
Transmission distance	5,000 meters for RS-485 end (when 9,600bps) and a maximum of 5 meters for USB
Interface protection	600W lightning strike and surge protection and ±15KV electrostatic protection
Interface forms	An interface female connector for USB end, 4 Pin pluggable terminal for RS-485 end
Transmission media	Twisted-pair cable or shielded cable
Dimensions (HxWxD)	77mm × 30mm × 20mm
Operating Ambient Temperature	-40°C to 80°C, relative humidity 5% to 95%

Ex9VF7 Variable Frequency Drives

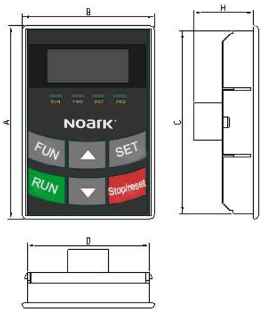
Accessories

Keypad

Two kinds of controllers (four lines of LCD and LED segment display) are available for Ex9VF7 series inverters. Both keypads consist of three sections: data display section, status indicating section and keypad operating sections.

Press “FUN” for function code, and “SET” for original parameters. The up and down arrow keys can be used to select function codes and parameters. Press the “Stop/Reset” button to reset the inverter when in fault status. Press the “FWD/REV” button to change the motor running direction.

The ALM indicator blinks when a fault occurs. LOC/REM blinks in the data transmission process. FWD is ON when rotating forward, REV is ON when rotating reversely, and STOP is always ON and FWD/REV blinks when not running.



Catalog Number	Description
KP0N	External LED Keypad for Ex9VF7 (One line)
KP1N	4-Line LCD Keypad for Ex9VF7
KP2N	4-Line LCD Keypad for Cabinet Frame

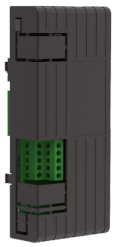
Code	A	B	C	D	H	Opening size
AA	76	52	72	48	24	73*49
A6-1	124	74	120	70	26	121*71
A9	124	74	120	70	24	121*71

Ex9VF7 Variable Frequency Drives

Accessories

I/O Cards

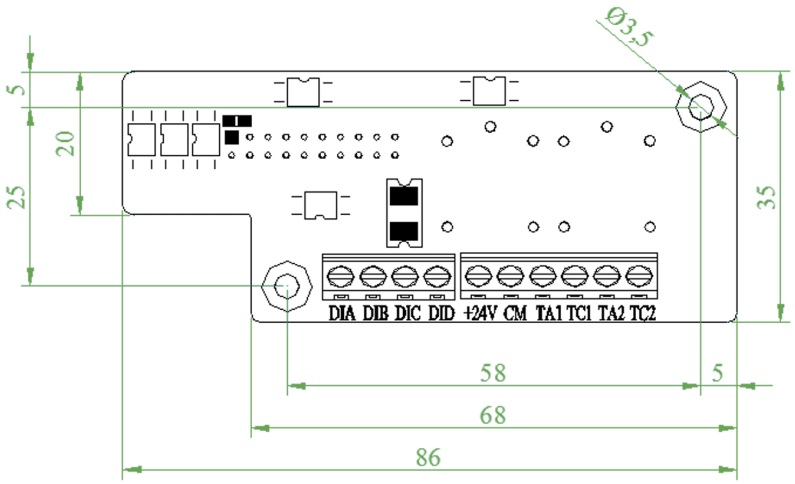
An expandable module that adds extra digital/analog inputs and outputs to the VFD. Used for integrating the VFD with external devices.



Catalog Number	Description
TC13X	Built-in I/O card for Frame G3 and above
TC02	External I/O card for Frame G2(with Plastic Casing)

TC13X

Unit: mm



	Function	Response speed	Output resistance	Voltage range	Output current	Frequency-division range
DIA~DID	4 terminals for digital input	---	---	0~24V	---	---
TA1/TC1, TA2/TC2	2 terminals for relay normal-open contact	---	---	---	12A/125VAC 7A/250VAC 7A/30VDC	---
+24V,CM	DIA~DID power	---		24±1.5V	50mA	---

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Accessory Drawings & Dimensions

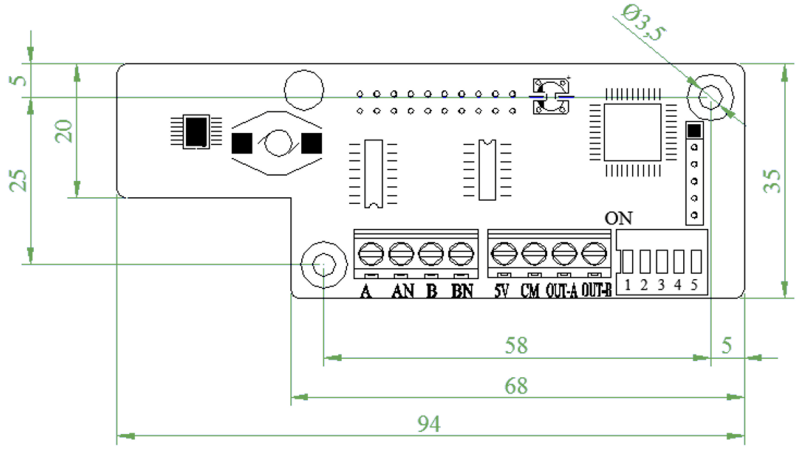
Differential & Non-Differential Encoder Cards

A differential encoder is a feedback device that sends two opposite-phase signals to the VFD. Offers high noise immunity and precise speed/position feedback over extended runs.
A non-differential encoder is a feedback device that sends single-line signals referenced to ground. Susceptible to noise and typically used for short-distance, lower-noise applications.

Catalog Number	Description
EC113X	Built-in Differential Encoder Card for Frame G3 and above
EC103X	Built-in Non-Differential Encoder Card for Frame G3 and above
EC012	External Differential Encoder Card for Frame G2 (with Plastic Casing)
EC002	External Non-Differential Encoder Card for Frame G2 (with Plastic Casing)

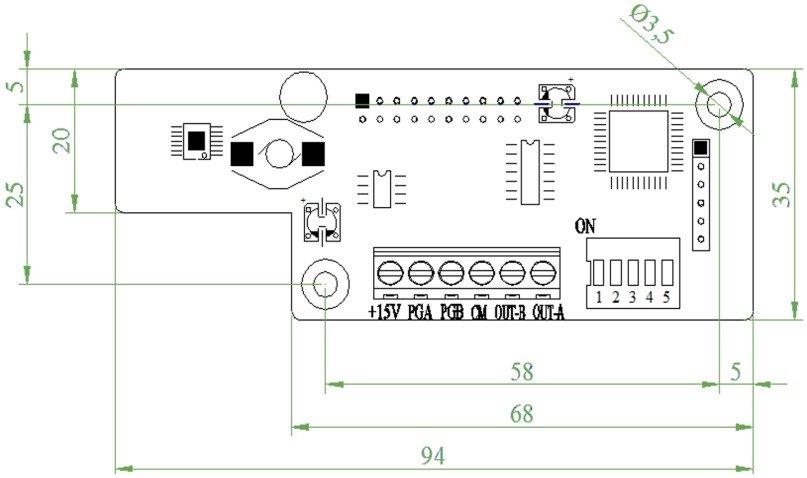
EC113X

Unit: mm



EC103X

Unit: mm



Ex9VF7 Variable Frequency Drives

Accessories

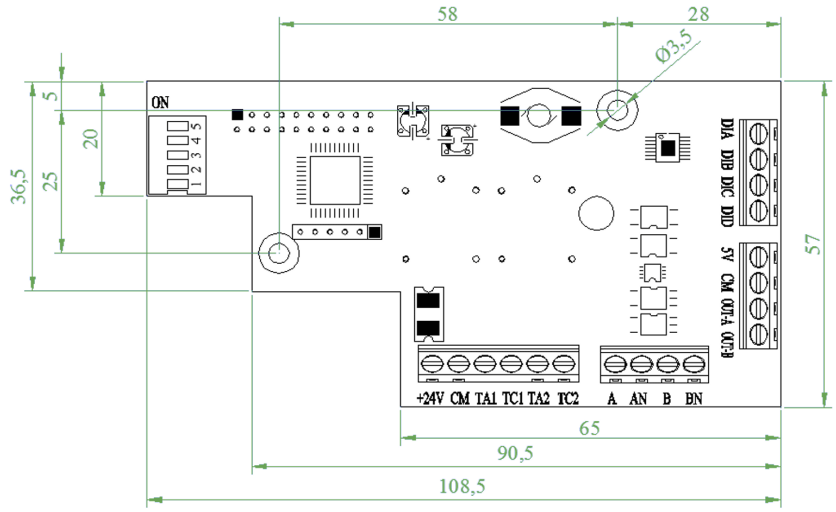
Differential & Non-Differential Encoder Cards with I/O Cards

A single integrated module designed to process both differential and single-ended encoder signals while supporting input and output connections for system control.

Catalog Number	Description
ECT114X	Built-in DifferentialEncoder Card + I/0 card for Frame G4 and above
ECT104X	Built-in Non-Differential Encoder Card + I/0 card for Frame G4 and above
ECT0123	External DifferentialEncoder Card + //0 card for Frame G2 and G3 (with Plastic Casing)
ECT0023	External Non-Differential Encoder Card + //0 card for Frame G2 and G3 (with Plastic Casing)

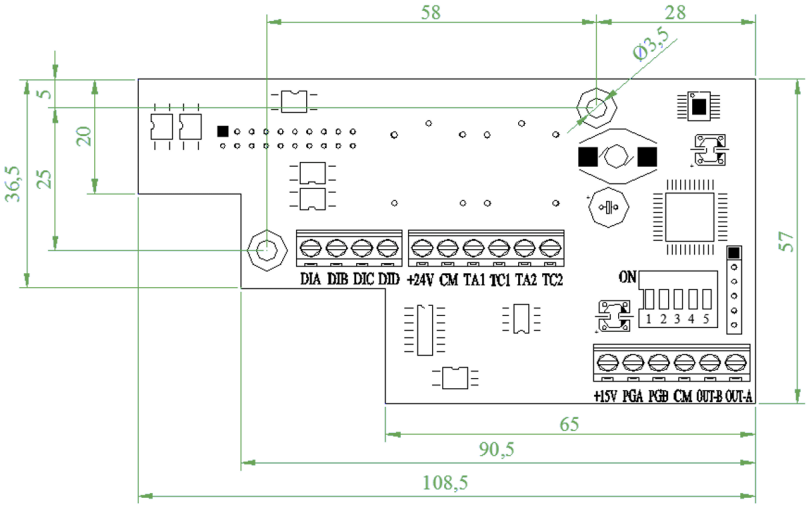
ECT114X

Unit: mm



ECT104X

Unit: mm

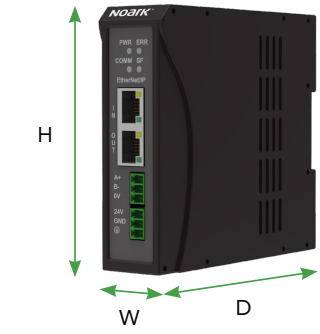


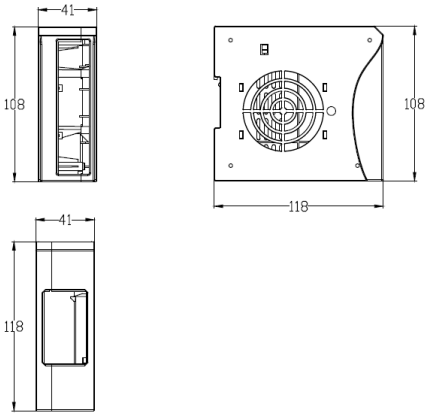
Ex9VF7 Variable Frequency Drives

Accessories

External Ethernet IP Card

External Ethernet/IP Card (EPC1N) is a communication interface for industrial devices that adds standard Ethernet and EtherNet/IP protocol capabilities to a system, allowing it to connect to industrial networks for real-time control, monitoring, and data collection from devices like PLCs, drives, and sensors.





Catalog Number	Description
EPC1N	External Ethernet IP Card for Ex9VF7

EPC1N	Contents
Input rated voltage	DC 24V±15%
Input rated current	0.2A (24V)
Environment	Free from dust, tangy caustic gases, flammable gases, steam or the salt-contented, etc
Environment Temperature	-10℃ ~ 50℃
Storage temperature	-20℃ ~70℃
Environment Humidity	<95% (no water-bead coagulation)

The status indicator is located in the upper part of the module which is composed of four indicators: PWR, ERR, COMM, and SF.

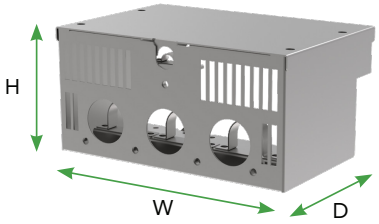
PWR	Power indicator	On	Power source is normal
ERR	EtherNet/IP status indicator	Flash	EtherNet/IP communication abnormal
		Off	EtherNet/IP communication is normal
COMM	RS485 communication indicator	Flash	RS485communication is normal
SF	RS485 link indicator	Off	RS485 link is normal
		Flash	RS485link is abnormal

Ex9VF7 Variable Frequency Drives

Accessories

Conduit Boxes

Conduit box is an electrical enclosure that protects and manages wires and connections to Ex9VF7.



Catalog Number	H(mm)	W(mm)	D(mm)
CB1N	364.3	217.2	204.6
CB2N	280.8	348.9	236.5
CB3N	241.7	439.7	267.9
CB4N	367	353	227
CB5N	280.3	501.7	350.8

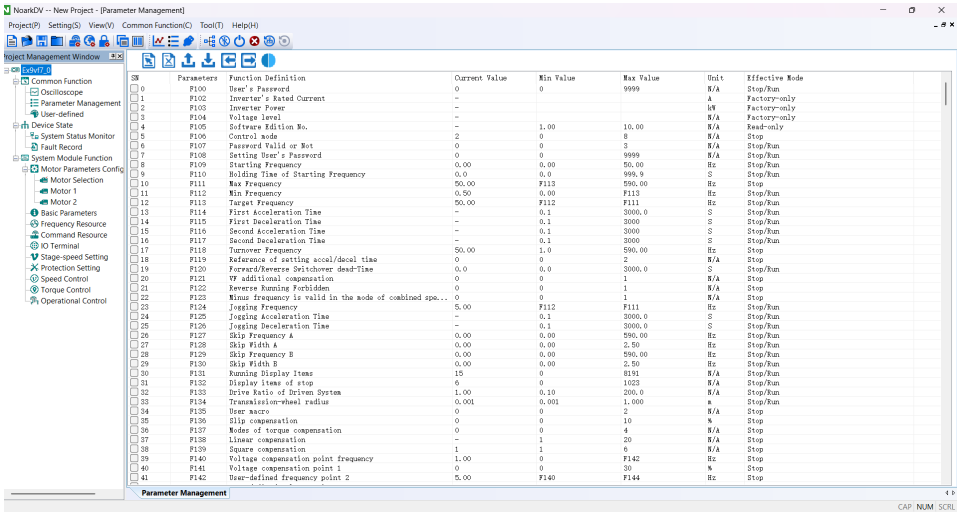
Ex9VF7 Variable Frequency Drives

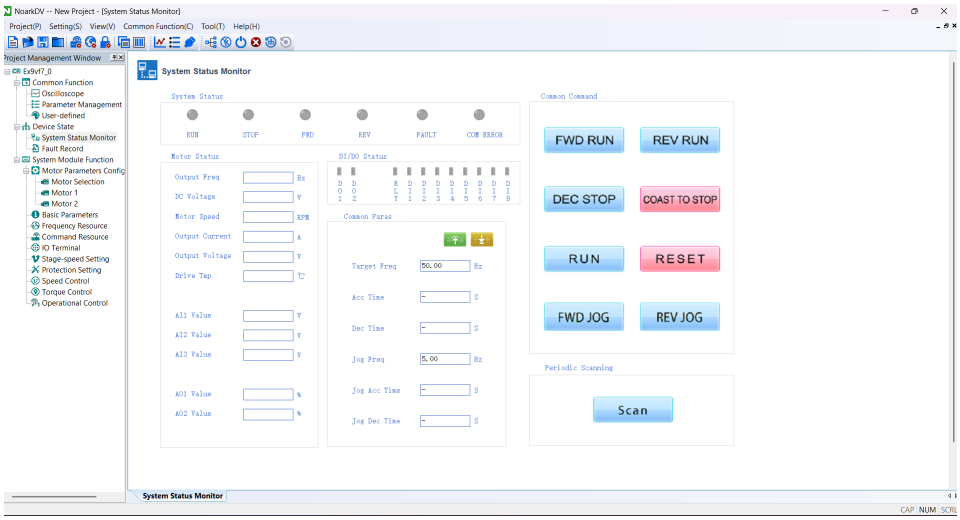
Software

Noark DV Drive Application

Noark's DV Drive Application is a user-friendly configuration tool designed to simplify application programming without compromising functionality.

Built on a clear block-based programming approach and an intuitive interface, Noark's DV supports custom configurations while providing real-time monitoring and charting. It enables users to create, adjust, and configure their own applications, as well as set parameters and link predefined motor control blocks.





Click here to download the Ex9VF7 software

Appendix I

Ex9VF7 series inverter has its power range between 0.2 ~ 800kW. Refer to Tables 3-1 and 3-2 for main data. There may be two (or more than two) kinds of structures for certain products. Please make a clear indication when placing your order. Inverter should operate under the rated output current, with overload permitted for a short time. However, it shall not exceed the allowable values at working time.

Product List of Ex9VF7

Model	Applicable Motor (kW)	Rated Current Output	Structure Code	Weight	Cooling Mode	Remarks
Ex9VF72S10025	0.4	2.5	2	1.6	Self-cooling	1-phase 110V plastic housing
Ex9VF72S10045	0.75	4.5	2	1.6	Air-Cooling	
Ex9VF73S10070	1.5	7	3	2.6	Air-Cooling	
Ex9VF73S10100	2.2	10	3	2.8	Air-Cooling	
Ex9VF71S20025	0.4	2.5	1	1.2	Self-cooling	1-phase 220V plastic housing
Ex9VF71S20045	0.75	4.5	1	1.3	Air-Cooling	
Ex9VF71S20070	1.5	7	1	1.3	Air-Cooling	
Ex9VF71S20025	0.4	2.5	1	1.2	Self-cooling	
Ex9VF71S20045	0.75	4.5	1	1.3	Self-cooling	
Ex9VF71S20070	1.5	7	1	1.3	Air-Cooling	
Ex9VF72S20100	2.2	10	2	2	Air-Cooling	
Ex9VF71T20025	0.4	2.5	1	1.3	Air-Cooling	3-phase 220V plastic housing
Ex9VF71T20045	0.75	4.5	1	1.3	Air-Cooling	
Ex9VF71T20070	1.5	7	1	1.3	Air-Cooling	
Ex9VF71T20025	0.4	2.5	1	1.5	Self-cooling	
Ex9VF71T20045	0.75	4.5	1	1.5	Self-cooling	
Ex9VF71T20070	1.5	7	1	2	Air-Cooling	
Ex9VF72T20100	2.2	10	2	2	Air-Cooling	
Ex9VF72T20120	3	12	2	2.1	Air-Cooling	
Ex9VF73T20170	4	17	3	2.4	Air-Cooling	
Ex9VF74T20210	5.5	21	4	3.4	Air-Cooling	
Ex9VF75T20300	7.5	30	5	6.5	Air-Cooling	
Ex9VF75T20400	11	40	5	6.8	Air-Cooling	

Appendix I

Model	Applicable Motor (kW)	Rated Current Output	Structure Code	Weight	Cooling Mode	Remarks
Ex9VF71T30020	0.75	2	1	1.3	Air-Cooling	3-phase 380V plastic housing
Ex9VF71T30040	1.5	4	1	1.3	Air-Cooling	
Ex9VF72T30065	2.2	6.5	2	2	Air-Cooling	
Ex9VF72T30076	3	7.6	2	2	Air-Cooling	
Ex9VF72T30090	4	9	2	2.1	Air-Cooling	
Ex9VF73T30120	5.5	12	3	3.2	Air-Cooling	
Ex9VF73T30170	7.5	17	3	3.5	Air-Cooling	
Ex9VF74T30230	11	23	4	4.9	Air-Cooling	
Ex9VF74T30320	15	32	4	5	Air-Cooling	
Ex9VF75T30380	18.5	38	5	8.1	Air-Cooling	
Ex9VF75T30440	22	44	5	8.3	Air-Cooling	
Ex9VF75T30600	30	60	5	9	Air-Cooling	
Ex9VF76T30750	37	75	6	15.3	Air-Cooling	
Ex9VF76T30900	45	90	6	15.3	Air-Cooling	
Ex9VF78T31100	55	110	8	35	Air-Cooling	3-phase 380V metal housing
Ex9VF78T31500	75	150	8	36	Air-Cooling	
Ex9VF79T31800	90	180	9	50	Air-Cooling	
Ex9VF79T32200	110	220	9	52	Air-Cooling	
Ex9VF79T32650	132	265	9	54	Air-Cooling	
Ex9VF7AT33200	160	320	A	83	Air-Cooling	
Ex9VF7BT33600	185	360	B	100	Air-Cooling	
Ex9VF72T40017	0.75	1.7	2	2.2	Air-Cooling	3-phase 575V plastic housing
Ex9VF72T40035	1.5	3.5	2	2.2	Air-Cooling	
Ex9VF72T40045	2.2	4.5	2	2.2	Air-Cooling	
Ex9VF73T40055	3	5.5	3	3.8	Air-Cooling	
Ex9VF73T40075	4	7.5	3	3.8	Air-Cooling	
Ex9VF73T40100	5.5	10	3	3.8	Air-Cooling	
Ex9VF73T40135	7.5	13.5	3	3.8	Air-Cooling	
Ex9VF75T40190	11	19	5	8.8	Air-Cooling	
Ex9VF75T40230	15	23	5	8.8	Air-Cooling	
Ex9VF75T40270	18.5	27	5	8.8	Air-Cooling	
Ex9VF77T40340	22	34	7	22.7	Air-Cooling	3-phase 575V metal housing
Ex9VF77T40410	30	41	7	22.7	Air-Cooling	
Ex9VF77T40520	37	52	7	22.7	Air-Cooling	
Ex9VF78T40620	45	62	8	35	Air-Cooling	
Ex9VF78T40860	55	86	8	36	Air-Cooling	
Ex9VF79T41000	75	100	9	50	Air-Cooling	
Ex9VF79T41200	90	120	9	52	Air-Cooling	
Ex9VF79T41500	110	150	9	54	Air-Cooling	

Appendix II

Selection of Braking Resistance

Inverter Models	Applicable Motor Power (kW)	Min Resistor Value (Ω)	Min Power of Resistor (W)	Recommended Resistor/power
Ex9VF72S10025	0.4	80	200W	150Ω/300W
Ex9VF72S10045	0.75			
Ex9VF73S10070	1.5			80Ω/500W
Ex9VF73S10100	2.2			
Ex9VF71S20025	0.4	80	200W	150Ω/300W
Ex9VF71S20045	0.75			
Ex9VF71S20070	1.5			80Ω/500W
Ex9VF72S20100	2.2			
Ex9VF71T20025	0.4	80	200W	150Ω/300W
Ex9VF71T20045	0.75			
Ex9VF71T20070	1.5		200W	80Ω/500W
Ex9VF72T20100	2.2			
Ex9VF72T20120	3.0			
Ex9VF73T20170	4.0	30	400W	30Ω/1KW
Ex9VF74T20210	5.5	30	550W	
Ex9VF75T20300	7.5	15	1.1kW	15Ω/2KW
Ex9VF75T20400	11	15	1.5kW	
Ex9VF71T30020	0.75	145	80W	300Ω/300W
Ex9VF71T30040	1.5	95	150W	
Ex9VF72T30065	2.2	95	250W	
Ex9VF72T30076	3.0	90	300W	90Ω/1.5kW
Ex9VF72T30090	4.0	90	400W	
Ex9VF73T30120	5.5	90	550W	
Ex9VF73T30170	7.5	90	750W	
Ex9VF74T30230	11	50	1.1kW	50Ω/1.5kW
Ex9VF74T30320	15	30	1.5kW	30Ω/3kW
Ex9VF75T30380	18.5	30	2.0kW	
Ex9VF75T30440	22	30	2.2kW	
Ex9VF75T30600	30	25	3.0kW	

Appendix II

Selection of Braking Resistance

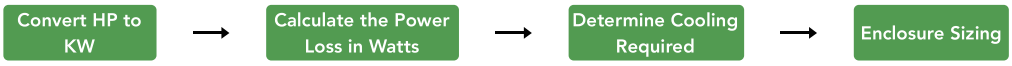
Inverter Models	Applicable Motor Power (kW)	Min Resistor Value (Ω)	Min Power of Resistor (W)	Recommended Resistor/power
Ex9VF76T30750	37	25	3.0kW	30Ω/3kW
Ex9VF76T30900	45	15	4.0kW	15Ω/4kW
Ex9VF78T31100	55	15	4.0kW	15Ω/4kW
Ex9VF78T31500	75	12	6.0kW	12Ω/6kW
Ex9VF79T31800	90	8	9.0kW	8Ω/9kW
Ex9VF79T32200	110	8	9.0kW	
Ex9VF72T40017	0.75	200Ω	80W	300Ω/300W
Ex9VF72T40035	1.5		150W	
Ex9VF72T40045	2.2		250W	300Ω/450W
Ex9VF73T40055	3	80Ω	300W	300Ω/800W
Ex9VF73T40075	4		400W	
Ex9VF73T40100	5.5	50Ω	550W	220Ω/1.1KW
Ex9VF73T40135	7.5		750W	160Ω/1.5KW
Ex9VF75T40190	11	30Ω	1.1KW	90Ω/3KW
Ex9VF75T40230	15		1.5KW	
Ex9VF75T40270	18.5		2KW	65Ω/4KW
Ex9VF77T40340	22	20Ω	3KW	75Ω/3KW
Ex9VF77T40410	30		4KW	55Ω/4KW
Ex9VF77T40520	37		5KW	45Ω/5KW
Ex9VF78T40620	45		6KW	35Ω/6KW
Ex9VF78T40860	55		8KW	30Ω/8KW

Note:
In the occasion of large inertia load, if the braking resistor heat is serious, please adopt the larger power of resistor than recommended resistor.

Appendix III

Heat Dissipation and Enclosure Sizing

Ex9VF7 has a 3% power loss (in watts). This is crucial for the enclosure selection process. There are four steps involved in this process.



For example, to calculate the panel cooling requirement for a 20 HP, 460V VFD with 3% power loss in 30°C ambient temperature, follow these steps:

Step 1. Convert HP to kW
1HP ≈ 0.746kW
20 HP × 0.746 = 14.92 kW (output power)

Step 2. Calculate Power Loss in Watts
Since Ex9VF7 loses 3% of output power as heat:
14.92 kW × 0.03 = 0.4476 kW = 447.6 W

So, the VFD dissipates ~448 W of heat inside the panel.

Step 3. Determine Cooling Required (in BTU/hr or CFM)
Converting from watts to BTU/hr (British Thermal Units per hour):
1 watt = 3.412 BTU/hr

448 W × 3.412 = 1,529 BTU/hr

Result:
- Heat load: ≈ 448 W
- In BTU/hr: ≈ 1,530 BTU/hr

This is the cooling capacity the panel must handle (at minimum).

Cooling Methods
If the panel is sealed (NEMA 12 or higher):
An active cooling system (like an air conditioner or heat exchanger) rated for ≥ 1,530 BTU/hr is required.

If the panel is ventilated (NEMA 1):
You can calculate the required airflow (CFM):

CFM = (3.16 x Power Loss in Watts) / (Temp Rise in °C)
From thermal management standards.

Appendix III

Heat Dissipation and Enclosure Sizing

Assuming a 10°C rise above ambient (i.e., max internal temp = 40°C):
CFM = (3.16 × 448) / 10 ≈ 141.5 CFM

Step 4. Enclosure Sizing (Physical Fit Only)

To calculate the minimum enclosure size, the following needs to be considered:

- VFD footprint + clearance
- Wiring space
- Accessories (breakers, contactors, etc.)

Assuming:

- Typical 20 HP VFD size: ~400 × 250 × 200 mm (HxWxD)
- Minimum clearance: 100 mm top/bottom, 50 mm sides

Ballpark internal enclosure space:

- Height: 400 + 2×100 = 600 mm
- Width: 250 + 2×50 = 350 mm
- Depth: ≥ 250 mm (200 mm VFD + wiring room)

A 600×400×250 mm enclosure would be a tight fit (for a basic panel).

For easier wiring and airflow, use a panel that is 800×600×300 mm or larger.

Parameter	Value
VFD Power	20 HP (14.92 kW)
Power Loss (3%)	448 W
Heat Load in BTU/hr	1,530 BTU/hr
Required Cooling (vented)	~142 CFM
Recommended Enclosure Size (min)	800×600×300 mm
Max Internal Temp (design)	40°C (with 30°C ambient)

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