

												
Drives	NFX9000 Open Only	MVX9000 Open MVX9000 Enclosed	SLX9000 Open SLX9000 Enclosed	SVX9000 Open SVX9000 Enclosed	SPX9000 Open SPX9000 Enclosed	HVX9000 Open HVX9000 Enclosed	LCX9000 Open Only	SVX9000 Pump Package Enclosed Only	HVX9000 IntelliPass & IntelliDisconnect NEMA 1 Enclosed Only	HVX9000 IntelliPass & IntelliDisconnect NEMA 12/3R Enclosed Only	CPX9000 Enclosed Only	CFX9000 Enclosed Only
Applications	Machinery and OEM	Machinery and OEM	Light Industrial—Open Loop	Standard Industrial—Open Loop	High Performance Industrial—Open/ Closed Loop	HVAC: Indoor and Outdoor	Marine, Mining and Irrigation	Pump: Pumping	NEMA 1: HVAC, Indoor; NEMA 12/3R: HVAC, Outdoor	NEMA 1: HVAC, Indoor; NEMA 12/3R: HVAC, Outdoor	Water/Wastewater Treatment, Hospitals and Low Harmonics Applications	Water/Wastewater Treatment, Hospitals and Low Harmonics Applications
Ratings 90–132V	1/4 to 1/2 HP 1-phase input	Open: 1/4–1HP Enclosed: Future	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ratings 200–240V	1/4 to 2 HP 1-phase input except 2 HP	1/2–7.5 HP	N/A	3/4–100 HP I _h , 1–100 HP I _L	3/4–100 HP I _h , 1–100 HP I _L	Open: 1–100 HP I _L Enclosed: 1–200 HP	N/A	.75–60 HP I _h , 1–75 HP I _L	1–30 HP I _L	1–100 HP I _L	25–200 HP	7.5–100 HP
Ratings 380–500V	N/A	1–10 HP	Open: 1-30 HP I _h , 1-40 HP I _L Enclosed: 1–30 HP I _h , 1 1/2–40 HP I _L	Open: 1–200 HP I _h , 1 1/2–250 HP I _L Enclosed: 1–700 HP I _h , 1 1/2–800 HP I _L	Open: 1–1900 HP I _h , 1 1/2–2200 HP I _L Enclosed: 1–700 HP I _h , 1 1/2–800 HP I _L	1–600 HP	10–5000 HP	1–125 HP I _h , 1 1/2–150 HP I _L	1.5–75 HP I _L	1.5–150 HP	25–700 HP I _h , 25–800 HP I _L	7.5–400 HP I _L , 7.5–350 HP I _h
Ratings: 525–690V	N/A	Open: 1–10 HP Enclosed: N/A	N/A	Open: 2–150 HP I _h , 3–200 HP I _L Enclosed: N/A	Open: 2–2000 HP I _h , 3–2250 HP I _L Enclosed: N/A	2–600 HP	100–5000 HP	N/A	N/A	2–100 HP	25–600 HP	15–400 HP I _L , 7.5–300 HP I _h
Ambient Operating Temperature	–10°C to 40°C, non-condensing & not frozen	–10°C no frost to 50°C, –10°C no frost to 40°C, (above 7.5 HP)	Open: –10°C no frost to 50°C, I _h –10°C no frost to 40°C I _L Enclosed: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L	Open: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L Enclosed: FR9 and below: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L	Open: 250 HP and below: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L , 300 HP and above: –10°C no frost to 40°C Enclosed: FR9 and below: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L	–10°C no frost to 40°C	–10°C no frost to 50°C I _h , 50°C to 70°C Derating required	FR9 and below: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L	–10°C no frost to 40°C	–10°C no frost to 40°C	FR9 and below: –10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L	–10°C no frost to 50°C I _h , –10°C no frost to 40°C I _L
3% Line Reactors	Optional	Optional	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
EMI/RFI Filters	Standard	Optional	Standard	Std to 200 HP I _h 480V, Std to 100 HP I _h 230V	Std to 200 HP IH 480V, Std to 100 HP I _h 230V	Std to 200 HP I _h 480V Std to 100 HP I _h 230V	EMC Level T for IT Networks	Std to 200 HP I _h 480V , Std to 100 HP I _h 230V	FR4–FR9	FR4–FR9	FR6–FR9	FR6–FR9
Standards	NEMA, IEEE, NEC: Design Standards, UL, cUL, CE Marked	UL, cUL, CE Marked (Requires EMI Filter)	IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	ABS, DNV, Lloyds, IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	IEC 61800-2, cUL, cUL, CE Marked	IEC 61800-2, UL, cUL, CE Marked	UL, cUL
Enclosure Class	Protected Chassis IP20	Open: Protected Chassis IP20 Enclosed: NEMA Type 1, 3R, 4, 4X, 12	Open: NEMA Type 1/IP21, NEMA Type 12/IP54 Enclosed: NEMA Type 1 (Future—NEMA 12)	NEMA Type 1/IP21, NEMA Type 12/IP54, UL Type 3R	Open: NEMA Type 1/IP21, NEMA Type 12/IP54, Open Chassis/IP20 Enclosed: NEMA Type 1/IP21, NEMA Type 12/IP54	Open: NEMA Type 1/IP21, NEMA Type 12/ IP54, NEMA Type 3R Enclosed: NEMA Type 1/IP21, NEMA Type 12/IP54	Chassis	NEMA Type 12/IP54, NEMA Type 3R	NEMA Type 1/IP21	NEMA Type 12/IP54, NEMA Type 3R	UL Type 1, NEMA 12, and UL Type 3R	UL Type 1, UL Type 12 and NEMA 12 Filtered, UL Type 3R
Carrier Frequency	3–10 kHz	1–15 kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz	1–16kHz
Overload Capability	150% for 60 sec.	150% for 60 sec.	150% for 60 sec. I _h , 110% for 60 sec. I _L	150% for 60 sec. I _h , 110% for 60 sec. I _L	150% for 60 sec. I _h 110% for 60 sec. I _L	Open: 110% for 60 sec. Enclosed: 150% for 60 sec. I _h 110% for 60 sec. I _L	Sizing dependent	150% for 60 sec. I _h , 110% for 60 sec. I _L	110% for 60 sec.	110% for 60 sec.	150% for 60 sec I _h , 110% for 60 sec I _L	150% for 60 sec I _h , 110% for 60 sec I _L
Output Frequency Range	1.0–400 Hz	0.1–400 Hz	0–320 Hz	0–320 Hz, Up to 1000Hz with software	0–320 Hz Up to 1900Hz with software	Open: 0–320 Hz Enclosed: 0–320 Hz Up to 1900Hz with software	0–320 Hz, Up to 1900Hz with software	0–320 Hz, Up to 1000Hz with software	0–320 Hz	0–320 Hz	0–320 Hz, up to 1000Hz with software	0–320 Hz, up to 1000Hz with software
Motor Control Method	V/hz	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless Vector, Closed Loop Vector, Open/Closed Loop Torque Control	Open: V/hz, Sensorless (Open Loop) Vector Enclosed: V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless Vector, Closed Loop Vector, Open/Closed Loop Torque Control	V/hz, Sensorless (Open Loop) Vector, SPX—Flux (Closed Loop) Vector	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless (Open Loop) Vector	V/hz, Sensorless (Open Loop) Vector
User Interface	Local Keypad, Software	Local Keypad, Remote Keypad Software,Copy/Paste Keypad Optional	Local Keypad, Remote Keypad Software	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad, Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad, Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/ Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std	Local Keypad, Remote Keypad Software, Copy/Paste Keypad Std
Communication Options	Modbus RS-485	Modbus RS-485DeviceNet	Modbus RS-485, DeviceNet, Johnson Controls N2, Modbus TCP, BACnet, Profibus DP, LonWorks, CANopen(Slave),Modbus RS-232	Open & Enclosed: Modbus RS-485, DeviceNet, Johnson Controls N2, Modbus TCP, Profibus DP, LonWorks, CANopen (Slave), CANopen (Master), Modbus RS-232, Ethernet IP, BACnet	Open & Enclosed: Modbus RS-485, DeviceNet, Johnson Controls N2, Modbus TCP, Profibus DP, LonWorks, CANopen(Slave),Modbus RS-232 Open Only: BACnet	Open & Enclosed: Johnson Controls N2, LonWorks,Modbus TCP,Modbus RS-485, Modbus RS-232 Open Only: Siemens APOGEE P1, BACnet Enclosed Only: CANopen(Slave)	Open & Enclosed: Modbus RS-485, DeviceNet, Johnson Controls N2, Modbus TCP, Profibus DP, LonWorks, CANopen (Slave), CANopen (Master), Modbus RS-232, Ethernet IP, BACnet	Mdobus RS-485 ,DNET, Johnson Controls N2, Modbus TCP, Profibus DP, LonWorks, CANopen(Slave), Modbus RS-232	Siemens APOGEE P1, BACnet, Johnson Controls N2, LonWorks, Modbus TCP, Modbus RS-485, Modbus RS-232	Siemens APOGEE P1, BACnet , Johnson Controls N2, LonWorks, Modbus TCP, Modbus RS-485,Modbus RS-232	Modbus RS-485, DNET, Johnson Controls N2, Modbus RTU, Modbus TCP, BacNet, Profibus DP, LonWorks, CANopen (Slave)	Modbus RS-485, DNET, Johnson Controls N2, Modbus RTU, Modbus TCP, BacNet, Profibus DP, LonWorks, CANopen (Slave)
Preset Speeds	3	7	3	15	15	15	15	15	15	15	15	15
Std Analog Inputs	1 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)	2 (0–10V or 4–20 mA)
Std Digital Inputs	3 (24Vdc)	6 (24Vdc)	3 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)	6 (24Vdc)
Std Analog Outputs	N/A	1 (0–10V or 4–20 mA)	1 (0–20ma)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)	1 (0–10V or 4–20 mA)
Std Digital Outputs	N/A	1 (50 mA/48V)	N/A	1 (50 mA/48V)	1 (50 mA/48V)	1 (50 mA/48V)	1 (50 mA/48V)	1 (50 mA/48V)	1 (50 mA/48V)	1 (50 mA/48V)	N/A	1 (50 mA/48V)
Std Relay Outputs	1 (Form A)	1 (Form C)	1 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)	2 (Form C)
Optional Extended I/O	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Motor Overload, Output Short Circuit and Groundfault, Over/ Under-voltage Protection	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Enclosed Options	N/A	Enclosed: Door mounted keypad, Circuit breaker, Fusible disconnect, Cover control, Bypass/isolation contactors, Bus choke, EMI/RFI filter, Line reactors, DeviceNet, Push buttons, Pilot lights, Speed pot, HOA switch, Auxiliary contacts, Control power transformer, Control relays, Bell alarm	N/A	Enclosed: Circuit breaker disconnect, Line fuses, MOV, Output contactor, Output filter, MotoRx dv/dt filter, Overload relays, Manual/Auto HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA or Manual/Auto switches, Start/Stop pushbutton, Bypass test, ETM, Pilot lights, Space heater, Control power transformer, Floor stands, Enclosure expansion	Enclosed: Circuit breaker disconnect, Line fuses, MOV, Output contactor, Output filter, MotoRx dv/dt filter, Overload relays, Manual/ Auto HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA or Manual/Auto switches, Start/Stop pushbutton, Bypass test, ETM, Pilot lights, Space heater, Control power transformer, Floor stands, Enclosure expansion	Enclosed: Circuit breaker disconnect, Line fuses, MOV, Output contactor, Output filter, MotoRx dv/dt filter, Overload relays, Manual/Auto HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA or Manual/Auto switches, Start/Stop pushbutton, Bypass test, ETM, Pilot lights, Space heater, Control power transformer, Floor stands, Enclosure expansion	N/A	Circuit breaker disconnect, Line fuses, MOV, Output contactor, TVSS surge suppressor, Manual HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA, Manual/Auto, Start/Stop, Bypass test, ETM, Pilot lights, Space heater, Floor stands, Control relay, Control power transformer	Line fuses, 3rd contactor (IntelliPass), Output contactor (IntelliDisconnect)	Line fuses, 3rd contactor (IntelliPass), Auxiliary contacts (IntelliPass), Output contactor (IntelliDisconnect)	Circuit breaker disconnect, Output contactor, Output filter, MotoRx dv/dt filter, Overload relays, Manual/Auto HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA or Manual/Auto switches, Start/Stop pushbutton, Bypass test, ETM, Pilot lights, Space heater, Control power transformer, Floor stands, Enclosure expansion	Circuit breaker disconnect, Line fuses, MOV, Output contactor, Output filter, MotoRx dv/dt filter, Overload relays, Manual/Auto HOA/IOB bypass, Speed pot, Speed pot with HOA, 3–15 psig follower, HOA or Manual/Auto switches, Start/Stop pushbutton, Bypass test, ETM, Pilot lights, Space heater, Control power transformer, Floor stands, Enclosure expansion
Engineered Options	N/A	N/A	N/A	Enclosed: High temperature rating (50C), Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/PTT lights/switches, Control relays, On/Off delay timer, Terminal blocks	Enclosed: High temperature rating (50C), Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/PTT lights/switches, Control relays, On/Off delay timer, Terminal blocks	Enclosed: High temperature rating (50C), Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/PTT lights/ switches, Control relays, On/Off delay timer, Terminal blocks	N/A	Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/PTT lights/ switches, Control relays, On/Off delay timer, Terminal blocks		MOV, TVSS surge suppressor, Speed pot, 3–15 psig follower, Start/Stop, ETM, Pilot lights, Space heater, Floor stands, Control relay, Control power transformer Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/ PTT lights/switches, Control relays, On/Off delay timer, Terminal blocks	High temperature rating (50C), Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/PTT lights/ switches, Control relays, On/Off delay timer, Terminal blocks	High temperature rating (50C), Varnished boards, 5% line reactor, Meters, Misc pushbutton/lights/ PTT lights/switches, Control relays, On/Off delay timer, Terminal blocks