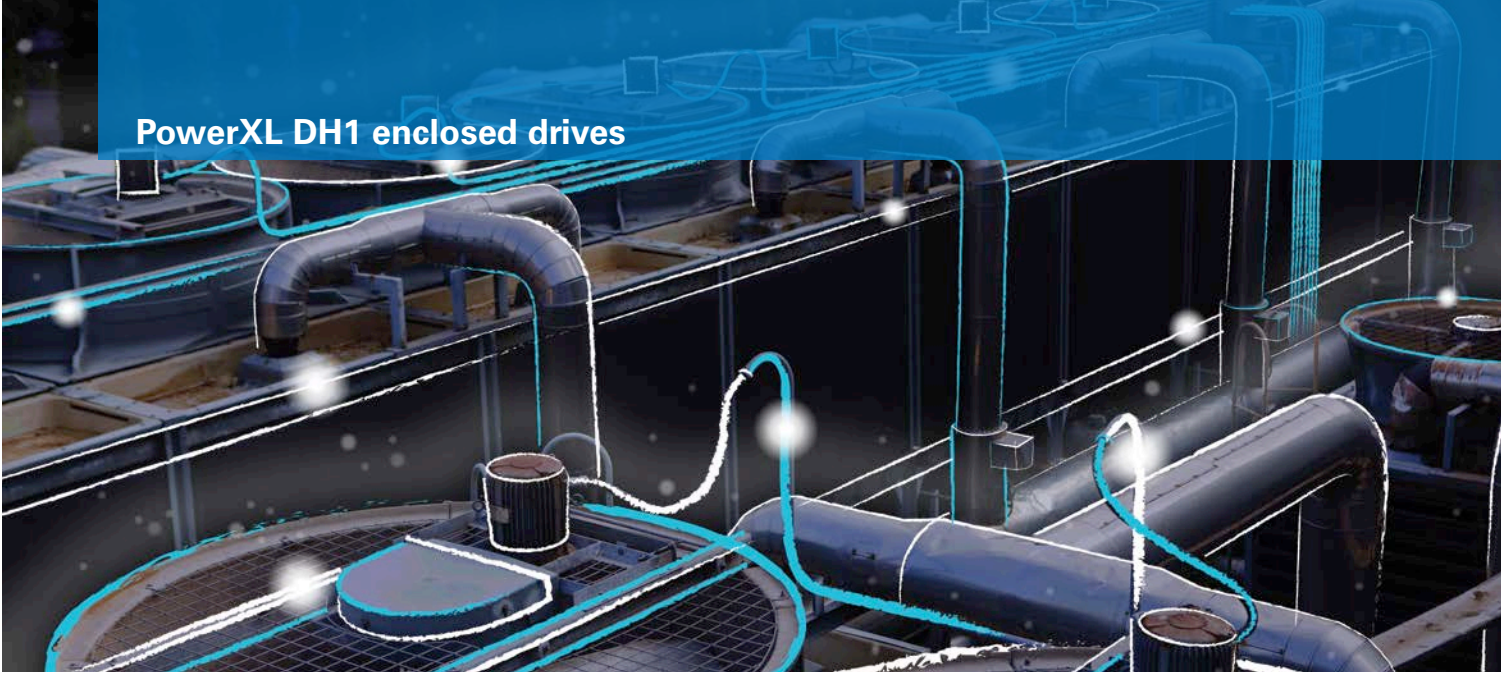


PowerXL DH1 enclosed drives



Modernizing the HVAC industry



The PowerXL™ series DH1 enclosed variable frequency drive is specifically designed to exceed the needs of the HVAC industry by offering a complete portfolio of advanced HVAC software and hardware packaging. With an industry-leading energy-efficiency algorithm, robust design, 100 kAIC short-circuit current rating and best-in-class serviceability, the enclosed DH1 is the ideal solution for your HVAC motor control needs.

Features

- Active Energy Control® algorithm
- Graphic display and keypad
- Onboard communications Modbus®/TCP, Modbus RTU, BACnet/IP and BACnet MS/TP
- Onboard I/O (8DI, 1DO, 2AI, 2AO, 3RO)
- Conformal-coated circuit boards
- Real-time clock with battery backup
- 5% dc link choke
- Multicolor LED indicating light
- Robust plastic design for enhanced serviceability
- Complete line of disconnect and bypass options



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Benefits

- Easy menu navigation with Quick Start Wizard
- Compact footprint
- Corrosion-resistant circuit boards
- NEMA 1/IP21, NEMA 12/IP54 and NEMA 3R/IP44 packaging protection available (NEMA 3R standard)
- HVAC firmware applications

Frame sizes

Product	Voltage (Vac)	Horsepower	Amperes
FR1	208	1–3	4.6–10.6
	230	1–3	4.2–9.6
	480	1–7.5	3–11
	575	3–7.5	3.9–9
FR2	208	5–10	16.7–30.8
	230	5–10	15.2–28
	480	10–20	14–27
	575	10–20	11–22
FR3	208	15–20	46.2–59.4
	230	15–20	42–54
	480	25–40	34–52
	575	25–40	27–41
FR4	208	25–40	74.8–114
	230	25–40	68–104
	480	50–75	65–96
	575	50–75	52–77
FR5	208	50–75	143–211
	230	50–75	130–192
	480	100–150	124–180
	575	100–150	99–144
FR6	208	100	273
	230	100–125	248–312
	480	200–250	240–302
	575	200–250	192–242

Primary design features

	Compact disconnect	Disconnect	Bypass
Description	EHC	EHD	EHB
100 kAIC disconnect option	Standard	Standard	Standard
Two-contactor bypass	N/A	N/A	Standard
Isolation contactor	N/A	N/A	Optional
Output contactor	N/A	Optional	Standard
Isolation switch	N/A	N/A	Optional
Top entry (power)	N/A	Standard	Standard
Bottom entry (power)	Standard	Standard	Standard
Isolation fusing	N/A	N/A	Optional
NEMA 1	Standard	Standard	Standard
NEMA 12/3R	N/A	Optional	Optional
Oversized enclosure	N/A	Optional	Optional

Ambient conditions

Description	Specification
Ambient operating temperature	−10 °C (no frost) to +40 °C, up to +60 °C with derating (VT)
Storage temperature	−40 °C to +70 °C
Relative humidity	0–95% RH, noncondensing, non-corrosive
Air quality	IEC 60068-2-60
Altitude	100% load capacity (no derating) up to 3280 ft (1000 m)
Vibration	5–150 Hz
Shock	Storage and shipping: maximum 15 g, 11 ms (in package)
Enclosure class	FR0: Open type/IP20 FR1–FR6: IP21/Type 1 standard in entire kW/hp range IP54/Type 12 option

Note: Keypad or keypad hole plug required to be mounted in drive for IP54/Type 12 rating.

Input ratings

Description	Specification
Input voltage (V_{in})	208 V to 240 V, 380 V to 500 V, 525 V to 600 V, −15 to 10%
Input frequency (f_{in})	50 Hz to 60 Hz (variation up to 45 Hz to 66 Hz)
Connection to power	Once per minute or less
Short-circuit withstand rating	100 kAIC (fuses and circuit breakers)

Output ratings

Description	Specification
Output voltage	0 to U_{in}
Continuous output current	I_L : ambient temperature maximum 40 °C, up to 60 °C with derating, overload 1.1 x I_L (1 min./10 min.) I_H : ambient temperature maximum 50 °C, up to 60 °C with derating, overload 1.5 x I_H (1 min./10 min.)
Overload current	150% respectively 110% (1 min./10 min.)
Initial output current	200% (2 s / 20 s) based off the drives rated nameplate I_H current rating
Output frequency	0–400 Hz (standard)
Frequency resolution	0.01 Hz

Control characteristics

Description	Specification
Control method	Frequency control Speed control Open-loop speed control Open-loop torque control
Switching frequency	230 V / 480 V range: FR0–3: 1 kHz to 12 kHz FR4–6: 1 kHz to 10 kHz 230 V / 480 V defaults: FR0–3: 4 kHz FR4–5: 3.6 kHz FR6: 2 kHz 600 V range: FR1–6: 1 kHz to 6 kHz 600 V defaults: FR1–6: 1.5 kHz Automatic switching frequency derating in case of overload
Frequency reference	Analog input: resolution 0.1% (10-bit), accuracy +1% Analog output: resolution 0.1% (10-bit), accuracy +1% Panel reference: resolution 0.01 Hz
Field weakening point	20 Hz to 400 Hz
Acceleration time	0.1 s to 3000 s
Deceleration time	0.1 s to 3000 s

Standards

Description	Specification
EMC (with filter)	EC/EN 61800-3 (2004) + A1 (2012) 230/480 V series: Category C2 575 V series: Category C3 The drive can be modified for IT networks and corner grounding TN system

Protections

- Overcurrent protection
- Overvoltage protection
- DC bus overvoltage control
- Undervoltage protection
- Earth fault protection
- Input phase supervision
- Motor phase supervision
- Overtemperature protection
- Motor overload protection
- Motor stall protection
- Motor underload protection
- Short-circuit protection
- Surge protection
- Conformal-coated boards
- Fire mode



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