

**Attn:** Eric Wemerman, Township of Edwardsburg Cardinal**Date:** December 23, 2022**Re:** Cardinal Waste Water Treatment  
Budget Pricing for Replacement VFD**Quotation:** 2022-0406-02**Project Description:**

Please see our budget pricing to replace VFD for 7.5 HP Seepex Pump with 3 thermistors. Note – existing drive appears to monitor thermal overload but does not appear to be any other specific monitoring of the thermistors. Also, appears to be no leak detection on existing pump and therefore no leak detection included in budget pricing. Any bypassing for work to be completed approx. 1 day to be done by others. Budget Pricing is based on a replacement Eaton VFD including start up, programming and commissioning. Price includes 1 day for investigation with shop drawings from new drive to ensure prep work is complete prior to switch over. ESA Permit included. Pricing includes utilizing existing pump, signals and cabling. No new cabling included. New drive to be wall mounted in position of existing drive. I don't believe there is an existing PLC on site so no new PLC programming or checks have been included in budget pricing.

Budget Price:     \$        8,989.60            HST Extra

Note – a replacement Rockwell VFD would be approx additional \$23,000.00 on top of the price listed.

**Notes:**

- All work completed during normal working hours Mon – Thursday 7:00 – 4:30PM. Any work outside of our normal working hours is charged at double time.
- Labour and Vehicle Rates are inclusive of all mark ups.
- Any hours worked outside of our normal working hours would be considered double time. Call in's during normal working hours 3 hour minimum charge, call in's outside normal working hours 3 hours at double time rate.
- HST Extra on all pricing
- Pricing is only valid for 30 days. Note pricing listed does not include any price escalations which are unpredictable in today's current market.

INDUSTRIAL ELECTRICAL CONTRACTORS BROCKVILLE LIMITED

Per : Danielle Gray, Project Manager

## PowerXL series DG1 general-purpose drives



# Next-generation drives for today's demands



The DG1 general-purpose drives are part of the Eaton next-generation PowerXL™ series of variable frequency drives specifically engineered for today's more demanding commercial and industrial applications. With an industry-leading energy efficiency algorithm, high short-circuit current rating and robust design, the DG1 offers customers increased efficiency, safety and reliability.

### Features

- Graphic LCD keypad display
- Active energy control algorithm
- On-board communications:
  - EtherNet/IP, Modbus®/TCP
  - RS-485: Modbus RTU, BACnet® MS/TP
- Onboard I/O:
  - 8DI, 1DO
  - 2AI, 2AO
  - 2 FC relays and 1 FA relay
- Real-time clock with battery backup
- 5% DC link choke
- Standard applications:
  - Standard
  - Multi-pump and fan control
  - Multi-PID
  - Multi-purpose
- Advanced configuration PC tool

### Benefits

- Dual VT and CT ratings
- Easy menu navigation
- Two configurable keypad soft keys
- Conformal coated boards standard
- EMC filter standard
- Brake chopper standard (FR1–FR3)

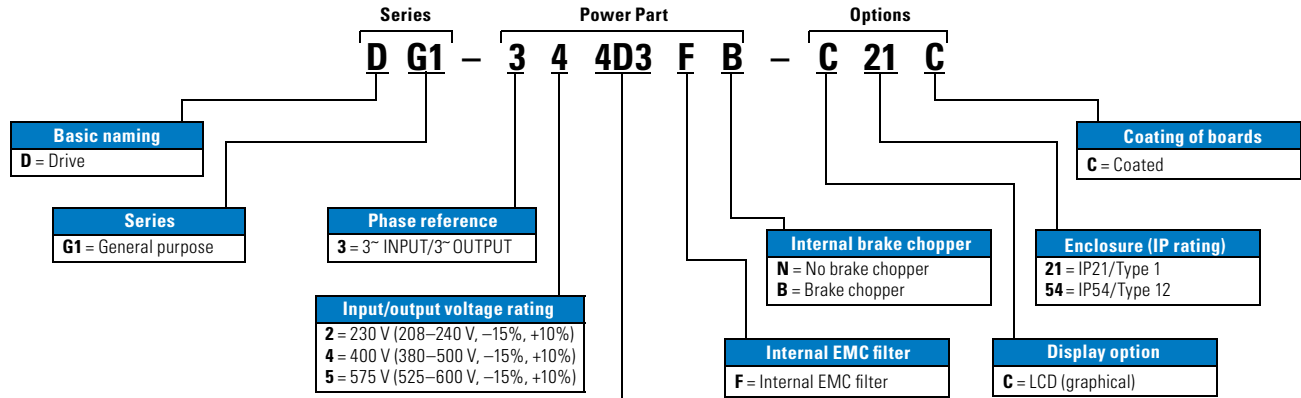


### Product range

- 230 V to 125 hp, 312 A, 90 kW
- 480 V to 250 hp, 310 A, 160 kW
- 575 V to 250 hp, 250 A, 187 kW
- Type 1/IP21 or Type 12/IP54 packaging



Powering Business Worldwide



Output current rating (CT)		
208–240 V	380–500 V	525–600 V
<b>3D7</b> = 3.7 A, 0.55 kW, 0.75 hp	<b>2D2</b> = 2.2 A, 0.75 kW, 1 hp	<b>3D3</b> = 3.3 A, 1.5 kW, 2 hp
<b>4D8</b> = 4.8 A, 0.75 kW, 1 hp	<b>3D3</b> = 3.3 A, 1.1 kW, 1.5 hp	<b>4D5</b> = 4.5 A, 2.2 kW, 3 hp
<b>6D6</b> = 6.6 A, 1.1 kW, 1.5 hp	<b>4D3</b> = 4.3 A, 1.5 kW, 2 hp	<b>7D5</b> = 7.5 A, 3.7 kW, 5 hp
<b>7D8</b> = 7.8 A, 1.5 kW, 2 hp	<b>5D6</b> = 5.6 A, 2.2 kW, 3 hp	<b>010</b> = 10 A, 5.5 kW, 7.5 hp
<b>011</b> = 11 A, 2.2 kW, 3 hp	<b>7D6</b> = 7.6 A, 3 kW, 5 hp	<b>013</b> = 13.5 A, 7.5 kW, 10 hp
<b>012</b> = 12.5 A, 3 kW, 5 hp (VT)	<b>9D0</b> = 9 A, 4 kW, 7.5 hp (VT)	<b>018</b> = 18 A, 11 kW, 15 hp
<b>017</b> = 17.5 A, 3.7 kW, 5 hp	<b>012</b> = 12 A, 5.5 kW, 7.5 hp	<b>022</b> = 22 A, 15 kW, 20 hp
<b>025</b> = 25 A, 5.5 kW, 7.5 hp	<b>016</b> = 16 A, 7.5 kW, 10 hp	<b>027</b> = 27 A, 18 kW, 25 hp
<b>031</b> = 31 A, 7.5 kW, 10 hp	<b>023</b> = 23 A, 11 kW, 15 hp	<b>034</b> = 34 A, 22 kW, 30 hp
<b>048</b> = 48 A, 11 kW, 15 hp	<b>031</b> = 31 A, 15 kW, 20 hp	<b>041</b> = 41 A, 30 kW, 40 hp
<b>061</b> = 61 A, 15 kW, 20 hp	<b>038</b> = 38 A, 18 kW, 25 hp	<b>052</b> = 52 A, 37 kW, 50 hp
<b>075</b> = 75 A, 18.5 kW, 25 hp	<b>046</b> = 46 A, 22 kW, 30 hp	<b>062</b> = 62 A, 45 kW, 60 hp
<b>088</b> = 88 A, 22 kW, 30 hp	<b>061</b> = 61 A, 30 kW, 40 hp	<b>080</b> = 80 A, 55 kW, 75 hp
<b>114</b> = 114 A, 30 kW, 40 hp	<b>072</b> = 72 A, 37 kW, 50 hp	<b>100</b> = 100 A, 75 kW, 100 hp
<b>143</b> = 143 A, 37 kW, 50 hp	<b>087</b> = 87 A, 45 kW, 60 hp	<b>125</b> = 125 A, 90 kW, 125 hp
<b>170</b> = 170 A, 45 kW, 60 hp	<b>105</b> = 105 A, 55 kW, 75 hp	<b>144</b> = 144 A, 110 kW, 150 hp
<b>211</b> = 211 A, 55 kW, 75 hp	<b>140</b> = 140 A, 75 kW, 100 hp	<b>208</b> = 208 A, 132 kW, 200 hp
<b>248</b> = 248 A, 75 kW, 100 hp	<b>170</b> = 170 A, 90 kW, 125 hp	
	<b>205</b> = 205 A, 110 kW, 150 hp	
	<b>245</b> = 245 A, 132 kW, 200 hp	

## Frames and power ranges

Frame size	Voltage	hp (CT/I <sub>n</sub> )	kW ①	Amperes (CT/I <sub>n</sub> )
FR1	230 Vac	0.75–3	0.55–2.2	3.7–11
	480 Vac	1–5	0.75–3.7	2.2–7.6
	575 Vac	2–5	1.5–3.7	3.3–7.5
FR2	230 Vac	4–7.5	3–5.5	12.5–25
	480 Vac	7.5–15	5.5–11	12–23
	575 Vac	7.5–15	5.5–11	10–18
FR3	230 Vac	10–15	7.5–11	31–48
	480 Vac	20–30	15–22	31–46
	575 Vac	20–30	15–22	22–34
FR4	230 Vac	20–30	15–22	61–88
	480 Vac	40–60	30–45	61–87
	575 Vac	40–60	30–45	41–62
FR5	230 Vac	40–60	30–45	114–170
	480 Vac	75–125	55–90	105–170
	575 Vac	75–125	55–90	80–125
FR6	230 Vac	75–100	55–75	211–248
	480 Vac	150–200	110–132	205–245
	575 Vac	150–200	110–132	144–208

① kW ratings are at 400 V / 50 Hz. The above guidelines apply unless testing has been completed to validate a design outside of these recommendations.

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## Input ratings

Description	Specification
Input voltage (B <sub>in</sub> )	208–240 V, 380–500 V, 525–600 V, –15 to 10%
Input frequency (f <sub>in</sub> )	50–60 Hz (variation up to 45–66 Hz)
Connection to power	Up to one connection every 60 seconds
Short-circuit withstand rating	100 kAIC (with fuses and circuit breakers)

## Output ratings

Description	Specification
Output voltage	0 to V <sub>in</sub>
VT/I <sub>L</sub> overload	Overload 1.1 x I <sub>L</sub> (1 min./10 min.)
CT/I <sub>H</sub> overload	Overload 1.5 x I <sub>H</sub> (1 min./10 min.)
Initial output current	200% (2 sec./20 sec.)
Output frequency	0–400 Hz (standard)
Frequency resolution	0.01 Hz

## Ambient conditions

Description	Specification
Operating temperature	–10 °C (no frost) to +50 °C, up to +60 °C with derating
Storage temperature	–40 °C to +70 °C
Relative humidity	0–95% RH, noncondensing, non-corrosive
Altitude	100% load capacity (no derating) up to 3280 ft (1000 m); 1% derating for each 328 ft (100 m) above 3280 ft (1000 m) 9843 ft (3000 m) maximum

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