

Save significant Energy and Money on Pool / Feature pumps, using time-tested Variable Frequency Drive (VFD) Technology



CES introduces one of the most dynamic energy-saving devices in the pool industry. Cut your power consumption by 20-87% while protecting your pump and pool piping systems.

Manufactured and pre-wired by the VFD industry leader with over 30 yrs of manufacturing and installation expertise.

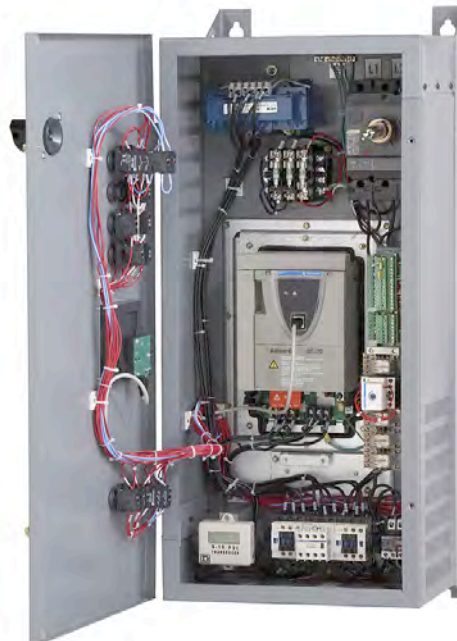


- Integrated 3% line reactor provides protection against power surges, over-voltage situations, and minimizes harmonic current.

- Connects to your CES controller to provide DIRECT control of system GPM regardless of filter soiling, heaters, and valve settings.

- Automatically uses only minimum power required to maintain desired Flow (GPM) for maximum savings.

- Energy saving programs allow night-time flow reductions for huge power and money savings.



- Takes the place of a motor starter, with additional phase protection, HOA switch, and an integrated bypass system to avoid down-time.

- Easy installation with pre-wired design and construction.

- Soft Start circuit ramps up pump flow to avoid water hammer.

- Save thousands of dollars in power company Demand Charges by avoiding peak starts.

- Supported by CES on-site service and warranty program.

- Positive Cash Flow lease plan.



•All CES EF Enclosed Drive Controllers are UL508C listed and coordinated with NEMA ICS 7.1 standards to exceed minimum UL short circuit requirements. Professional installation is provided via CES's network of qualified, licensed, and insured electrical contractors. Start up, training, and on-site support by CES.

Input Voltage	208 V+/- 10%, 230 V+/- 10%, 460 V+/- 10%
Displacement Power Factor	98% through speed range
Input Frequency	60 Hz+/- 5%
Output Voltage	Three Phase Output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Converter	0.1 to 500 Hz (factory setting of 60 Hz)
Torque/over torque	110% of nominal motor torque for 60 s
Current (transient)	110% of controller rated current for 60 s
Switching Frequency	Selectable from 0.5 to 16 kHz ^[1] Factory setting: 8 kHz for 208 V, 230 V and 1-100 hp @ 460 V A1: 0 to +10 V, Impedance = 30 kOhms Can be used for Speed potentiometer, 1 - 10 kOhms A2: FACTORY SETTING: 4 to 20mA, Impedance = 2
Speed Reference	A1: 0 to +10 V, Impedance = 30 kOhms Can be used for Speed potentiometer, 1 - 10 kOhms A2: FACTORY SETTING: 4 to 20mA, Impedance = 2
Factory Resolution in Analog Reference	0.1 for 100 Hz (11 bits) Vf control: equal to the motor's rated slip SLFV (sensorless flux vector): 10% of motor's rated slip from 20% to 100% of nominal motor torque.
Speed Regulation	nominal motor torque.
Efficiency	97% at full load typical
Reference Sample Time	2 ms +/- 0.5 ms
Acceleration and Deceleration Ramps	0.1 to 999.9 seconds (definition in 0.1 s increments)
Drive controller protection	Thermal protection of power converter Phase loss of AC mains Circuit breaker rated to Class 10 electronic overload protection
Motor Protection	Class 20 electromechanical overload protection with Bypass ^[2] Self diagnostics with fault messages in three languages; also refer to the instruction bulletin, Graphic Display Terminal VW3A1101 ^[3]
Graphic Display Terminal	UL Listed per UL 508C under category NMMS. Conforms to applicable NEMA ICS, NFPA and IEC standards. Manufactured under ISO 9001 standards.
Codes and Standards	Manufactured under ISO 9001 standards.

[1] On 1-100 hp VT controllers, above 8 kHz, select the next largest drive controller.

[2] Class 10 electromechanical for 1 hp at 460 V.

[3] Refer to Table 1 for the Instruction bulletin number.

Type 1 or Type 12/12K Enclosure Overall Dimensions (mm. and inches) and Weight (kg. and lbs.)

HP		Height		Width		Depth		Weight	
208/230 V	460 V	mm	In.	mm	In.	mm	In.	kg.	lbs.
1-5	1-7.5	889	35"	374.9	14.76"	353.91	13.93"	37.7	83
7.5-10	10-25	1041.4	41"	521.21	20.52"	353.91	13.93"	57.2	126
15-25	30-50	1244.6	49"	524.51	20.65"	427.49	16.83"	80.5	177
30-50	60-100	1600.2	63"	651.51	25.65"	427.49	16.83"	95.9	211

Type 3R Enclosure Overall Dimensions (mm. and inches) and Weight (kg. and lbs.)

HP		Height		Width		Depth		Weight	
208/230 V	460 V	mm	In.	mm	In.	mm	In.	kg.	lbs.
1-5	1-7.5	889	35"	620.52	24.43"	347.73	13.69"	52.3	115
7.5-10	10-25	1041.4	41"	766.83	30.19"	347.73	13.69"	74.1	163
15-25	30-50	1326.39	52.22"	770.13	30.32"	415.04	16.34"	96.8	213
30-50	60-100	1681.99	66.22"	897.13	35.32"	415.04	16.34"	112.3	247



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Manufactured for CES by Schneider Electric
 Schneider Electric has been providing Adjustable Frequency Drive solutions for Pumping Applications for over 30 years under the SquareD and Telemecanique brands. Schneider Electric has made a significant investment in research and development to design a new generation of products to serve the HVAC and pumping marketplace.