



GUARDIAN™
S E R I E S

VARIABLE SPEED PUMPING SYSTEMS



- + Fill Cars Faster & Smarter
- Maintain Consistent Flow Rates
- Increase Pumping System Uptime

VARIABLE SPEED PUMPING SYSTEMS

Since bringing variable speed pumping to the service station industry in 1996, Franklin Electric has provided customers with consistent fueling experiences and improved uptime. With the Guardian Series™ Variable Frequency Controllers, we continue to build on these key factors to fill cars faster and smarter while also delivering improved performance and an enhanced user interface.

By incorporating our industry leading Guardian Series™ feature set while building on the proven MagVFC technology, Guardian Series™ Variable Frequency Controllers drive variable speed pumping performance well beyond anything else in the marketplace.

Pairs with FE PETRO® 2 Hp & 4 Hp variable speed pumps

Automatically adjusts pump speed for optimal flow rates

Maintains faster flow rates during peak business

Provides consistent customer fueling experience

Maintains stable performance with fluctuating demand

Minimizes pressure spikes preventing system wear

Helps maximize profits with higher flow rates

System diagnostics maximize uptime

Advanced control via EVO™ Series Turbine Pump Interface™



HIGH PERFORMANCE FUELING

Variable speed systems adjust pump speeds dynamically via the Variable Frequency Controller to achieve higher flow rates and maintain constant flow, ensuring consistent fuel delivery compared to fixed speed systems.



ADVANCED UPTIME FEATURES

The Variable Frequency Controller features an LCD display that clearly presents detailed system running and fault information to improve uptime.



ADVANCED PUMP CONTROL

Turbine Pump Interface™ connects the Variable Frequency Controller with the EVO™ Series Fuel Management System, enabling pump automation and remote user interface.



FE PETRO® Variable Speed Submersible Pump



Guardian Series™ Variable Frequency Controller



THE BENEFITS OF VARIABLE SPEED



FASTER, SMARTER FUELING

With faster fill times during peak hours and power savings during non-peak hours, 2 Hp and 4 Hp variable speed submersible pumping systems allow operators to maximize profits while mitigating operating expenses.



CONSISTENT CUSTOMER EXPERIENCE

Variable speed ensures consistent flow rates, even during peak demand, providing customers with faster fueling and a smoother experience at the dispenser, reducing wait times and improving overall satisfaction.



INCREASED UPTIME

Advanced user interface features, combined with remote connectivity via Turbine Pump Interface™, enable rapid event detection and automated pump responses, minimizing downtime and ensuring swift site recovery to maintain uninterrupted fuel flow.



PREVENT EQUIPMENT WEAR

Minimize sudden pressure spikes, known as hydraulic hammer, that occur during sudden stoppages in flow. These spikes can be exaggerated in fixed speed systems and lead to accelerated equipment wear and damage.



The Guardian Series™ Variable Frequency Pump Controller brings advanced performance and efficiency to fueling operations. Designed to optimize flow rates, this intelligent controller adjusts pump motor speeds in real time to maintain consistent fuel flow, even during peak demand.



NEXT GENERATION

VARIABLE SPEED CONTROL

Guardian Series™ Variable Frequency Controllers redefine the standard of variable speed pump control. Built on the trusted FE PETRO® intelligent controllers, Guardian Series™ controllers deliver an improved user interface, streamlined design, and superior performance compared to any other pumping systems in the marketplace.

WHAT'S NEW

Clear Digital Display

3½ digit LCD shows running / fault status & last five faults for easier troubleshooting.

Dedicated Control Buttons

Separate Reset and Silence buttons simplify operator interaction.

Improved Cooling

Centralized heat sink / fan and temperature monitoring improve reliability in challenging applications.

Boosted Performance

Supports 4 Hp pumps with increased performance of about an additional nozzle versus legacy MagVFC™.

Bypass Mode

Added feature for startup / purging and system troubleshooting at fixed frequency.

Advanced Pump Protection

Improved over voltage protection and underload detection safeguard equipment.

POWERFUL NEW UPTIME FEATURES

Improved Diagnostics

Displays more in-depth fault readouts, motor phase issues, and last five faults for enhanced troubleshooting.

Enhanced Surge Protection

Upgraded incoming power circuit reliably handles more challenging power conditions.

Reduced Electrical Noise

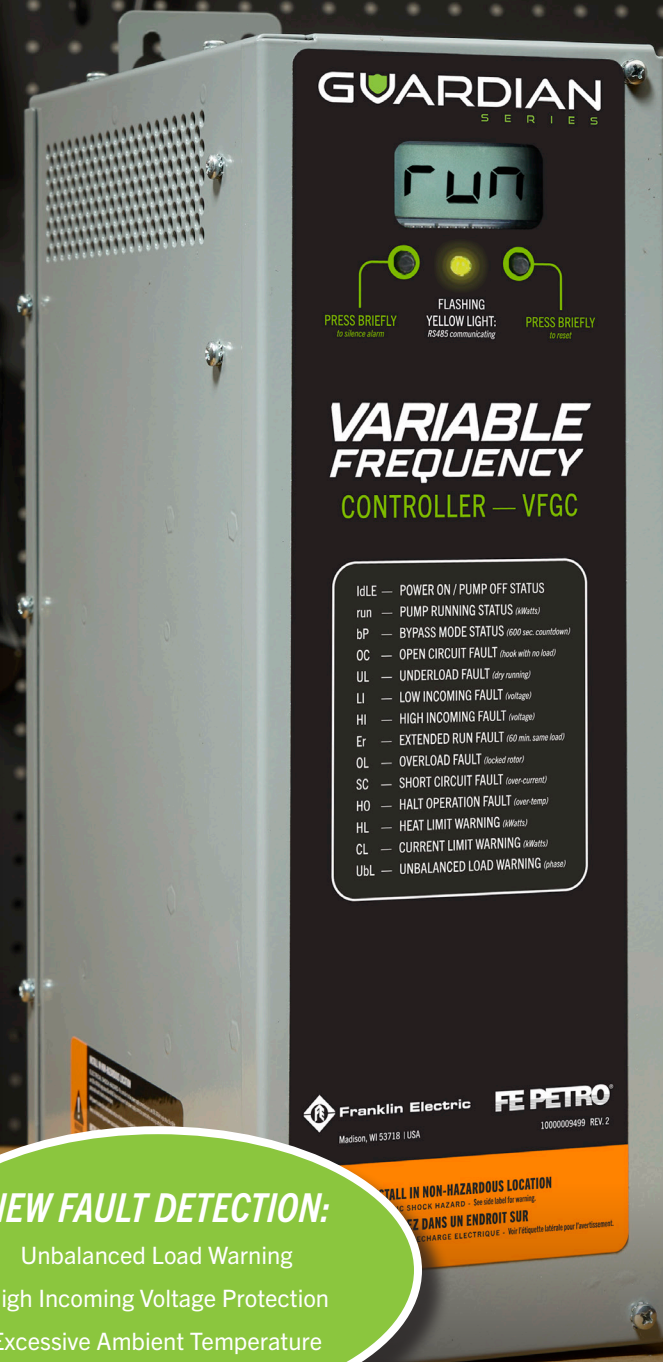
Enhanced output filter reduces output noise to lowest levels.

Superior Cooling

Improved thermal design allows for reliable performance in extended operating conditions.

NEW FAULT DETECTION:

Unbalanced Load Warning
High Incoming Voltage Protection
Excessive Ambient Temperature



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ENHANCED USER INTERFACE

The all-new Guardian Series™ user interface includes features designed to make setup, operation, and maintenance easier for every user.

DESIGN FEATURES

- | | |
|----------|---|
| A | A 3½ digit LCD display provides readable running and fault status for improved troubleshooting. |
| B | Readable output conditions are listed on the front panel for quick reference. |
| C | Separate Reset and Silence push buttons provide easy interaction with the controller. |
| D | A yellow LED provides a visual confirmation of communication between the controllers. |





FE PETRO® Variable Speed
Submersible Pump



FE PETRO® Advanced Protection
Variable Speed Submersible Pump
with Intake Filter Screen

VARIABLE SPEED SUBMERSIBLE PUMPS

Since hitting the market in 1988, FE PETRO® Submersible Turbine Pumps (STPs) have developed a reputation as the standard in performance, quality and dependability with innovative features only available from Franklin Electric. It is, and always will be about filling cars faster and smarter.

2 Hp & 4 Hp variable speed pump options

Biofuel compatibility handles ethanol / biodiesel blends

Advanced protection prevents corrosion / extends life

MagShell® increases flow area around motor for higher flow

Variable length adjustment ensures perfect onsite fit

Active air elimination for smooth fuel delivery

Safe and simple service disconnects and pressure relief

Intake filter screen keeps debris out / reduces wear



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HOW DOES VARIABLE SPEED WORK?

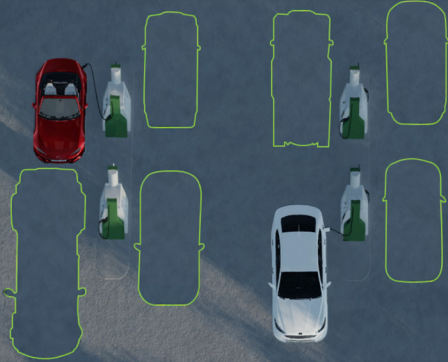
Variable speed pumping systems dynamically adjust pump speed based on demand, maintaining a consistent flow rate regardless of the number of active nozzles. Unlike fixed speed systems, which deliver excessive pressure that degrades as more nozzles are added, variable speed technology ensures optimal performance.



**INTERACTIVE
DEMO**

Click or Scan for Online
Interactive Demo

ACTIVE NOZZLES: 2

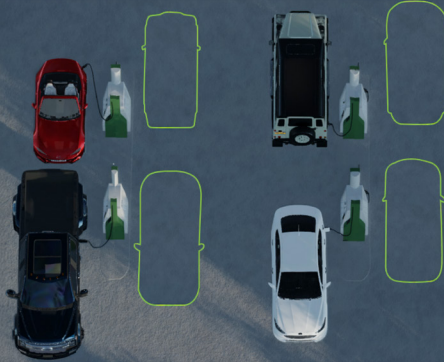


VARIABLE SPEED



Nozzle Flow:
10 GPM

ACTIVE NOZZLES: 4



Nozzle Flow:
10 GPM

ACTIVE NOZZLES: 6



Nozzle Flow:
10 GPM

ACTIVE NOZZLES: 8



Nozzle Flow:
9 GPM

FIXED SPEED



Nozzle Flow:
12 GPM



Nozzle Flow:
11 GPM



Nozzle Flow:
9 GPM



Nozzle Flow:
8 GPM



ADVANCED PUMP CONTROL

Turbine Pump Interface™ (TPI) is a powerful tool that creates a network between Guardian Series™ controllers and EVO™ Series fuel management system consoles. Through TPI, the EVO™ has access to the submersible pumping system status and the capability to react with intelligence that pump controllers alone cannot. The devices share data to provide enhanced system capabilities.



TURBINE PUMP INTERFACE CAPABILITIES

Remote access to pumps

Response automation

Pump in water prevention

Pump event history reporting

Clogged pump escalation

Overfill prevention automation

Primary / secondary pump management

Adjusted pump priority / leveling

- ✓ Detect and automatically react to offline systems for faster reset and avoided downtime.
- ✓ Provide remote troubleshooting, preventing maintenance calls and trip charges.
- ✓ Prevent fuel runouts, dry runs, tank overfills, and water being pumped into a vehicle.



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WALL MOUNT INSTALLATION

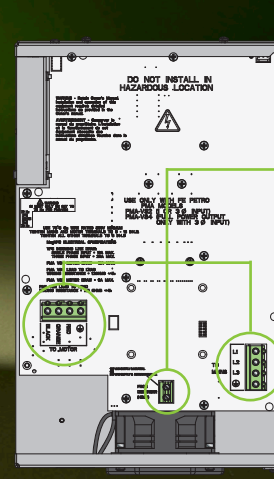
The Guardian Series™ Variable Frequency Controller maintains an installation envelope roughly the same size as the legacy MagVFC™, allowing seamless integration into existing wall setups without requiring modifications to infrastructure.



MAGVFC



GUARDIAN SERIES™



WIRING FOR RETROFIT APPLICATIONS

Wiring terminals for Incoming Hook, Motor Connections, and Incoming Power are located at the bottom of the controller interior, allowing easy access for retrofit installations and enabling the use of existing wiring with no need to pull new wiring.



VARIABLE FREQUENCY CONTROLLER

Power Requirements

2 Hp submersible pumps	Single-phase incoming power
2 Hp & 4 Hp submersible pumps	Three-phase incoming power
Output	Three-phase, variable frequency signal, for use with FE PETRO® variable speed pumps only

Environmental

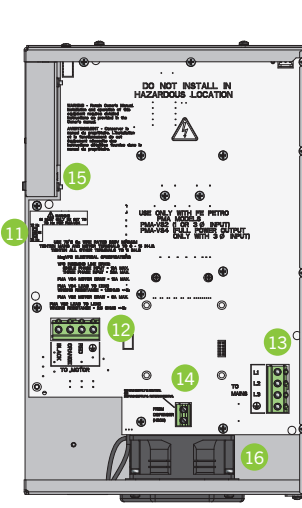
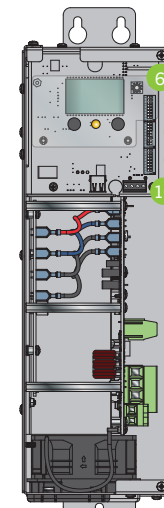
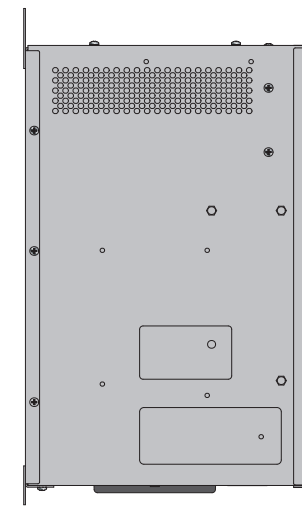
Dimensions	15.6" H x 5.3" W x 10.1" D
Minimum mounting clearance	24.6" H x 14.25" W
Weight	20.2 lbs.
Location	Non-hazardous environment, indoors, explosive / flammable vapors not present
Altitude	Up to 2,000 m
Temperature	40° F to 122° C (4° C to 50° C)
Humidity	0–95%, non-condensing
Overvoltage	UL 61800-5-1 CATEGORY III
Pollution	UL 61800-5-1 DEGREE 2
Enclosure type rating	UL Type 1
Approvals / certifications	UL / ULc listed, ISO 9001:2015 certified manufacturer

Power Ratings

Single-phase input rating	200 - 250 VAC, 50/60 Hz, 19 A, 1-phase
Three-phase input rating	200 - 250 VAC, 50/60 Hz, 18 A, 3-phase
2 Hp max output rating	190 VAC, 70 Hz, 9.5 FLA, 3-phase
4 Hp max output rating	190 VAC, 70 Hz, 16 FLA, 3-phase
Switch hook	120 - 240 VAC, 50 / 60 Hz, 16 mA
Supply / motor wiring	10 - 12 AWG (2.5 - 6.0 mm ²), 90° C, 300 V minimum
Supply hook wiring	10 - 18 AWG (0.75 - 6.0 mm ²), 90° C, 300 V minimum

Communication

User interface display	3½ digit LCD display
Activity indicator light	Yellow RS485 LED light
Communication terminal	RS485



Components

- | | |
|---------------------------------|-----------------------------------|
| 1. User interface display | 9. SW1 option select switch |
| 2. Alarm silence button | 10. RS485 communication terminals |
| 3. Controller reset button | 11. Frequency limit switch |
| 4. RS485 activity indicator LED | 12. Motor output terminal |
| 5. Fault codes | 13. Incoming power terminal |
| 6. Rotary select switch | 14. Incoming dispenser hook |
| 7. SW3 option select switch | 15. USB service port |
| 8. SW2 option select switch | 16. Cooling fan |



2 HP & 4 HP VARIABLE SPEED PUMPS

General

Variable length	Only available in variable lengths
Check valve	2¾" fluorocarbon seal constructed with cast aluminum body & steel backing washer
Pressure relief valve	Available in four pressure relief settings, integral to check valve, standard model relieves at 40 psi and resets above 35 psi
Syphon	Venturi-type syphon primer supplied with every submersible, syphon check valve and secondary syphon sold separately
Air eliminator	Every submersible includes a tank return path with one-way check valve to provide active air elimination
Electrical disconnect	Electrical yoke for positive contractor disconnect during service
Approvals / Certifications	cULus listed

Pump Motor

Motor type	Variable speed, two-stage centrifugal type pump motor with integral, automatic, thermal overload protection
Max. pressure	Selectable operating pressure on Guardian Series™ Variable Frequency Controller between approximately 24 psi to 45 psi deadhead
MagShell®	Available with MagShell® which results in 45% increased flow area around motor

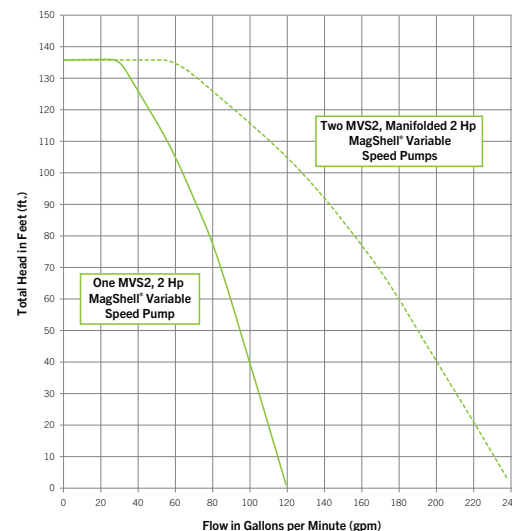
Liquid Compatibility

Max. liquid viscosity	70 SSU at 60° F (15° C)
STP variable speed	STP variable speed models are UL listed for fuel mixtures containing up to 10% ethanol, and 20% MTBE, 20% ETBE or 17% TAME with gasoline
IST / ISTAP variable speed	IST/ISTAP variable speed models are UL and cUL listed for fuel mixtures containing diesel fuel with up to 20% Biodiesel, 100% Biodiesel, up to 85% ethanol with gasoline, and 20% MTBE, 20% ETBE or 17% TAME with gasoline
Variable speed models	All variable speed models can also be used with diesel fuels, fuel oils, kerosene, Avgas and jet fuels in a non-gelled pourable state
Wetted elastomers	All wetted elastomers are made of a high grade, fluorocarbon compound

Variable Speed Submersible Pump Basic Model Designations

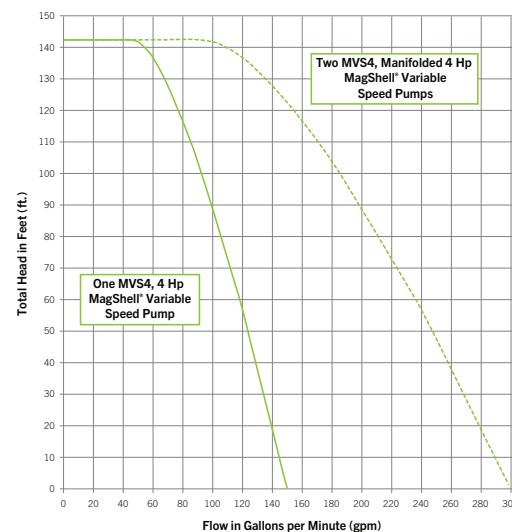
STPMVS2	2 Hp, standard, variable speed, with MagShell®
ISTM	2 Hp, alcohol-gas, variable speed, with MagShell®
ISTAPM	2 Hp, Advanced Protection, variable speed, with MagShell®
STPMVS4	4 Hp, standard, variable speed, with MagShell®
ISTMVS4	4 Hp, alcohol-gas, variable speed, with MagShell®
ISTAPMVS4	4 Hp, Advanced Protection, variable speed, with MagShell®

2 Hp Variable Speed Pump Performance Chart



Performance based on pumping gasoline (0.72 specific gravity). Pressure is taken at the manifold discharge outlet. ISTM and STPMVS2 turbines can only be powered by a Guardian Series™ VFC with single or three phase incoming power.

4 Hp Variable Speed Pump Performance Chart



Performance based on pumping gasoline (0.72 specific gravity). Pressure is taken at the manifold discharge outlet. ISTMVS4 and STPMVS4 turbines can only be powered by a Guardian Series™ VFC with three phase incoming power.

POWERING FORWARD

ENERGY SOLUTIONS FOR FUELING, POWER, & INDUSTRIAL RELIABILITY



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ENERGY SYSTEMS

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FFS-1049 10-26