

P-SERIES VFD (VARIABLE FREQUENCY DRIVE)

VARIABLE SPEED CONTROL IS JUST THE BEGINNING

Everyone knows variable frequency drives save you money by varying motor speed to match demand. Our automatic energy savings mode minimizes losses by optimizing the output power for higher efficiency. Under low load conditions, Sleep Mode deactivates the drive and its output – then awakens and reactivates output when demand rises to unlock additional savings. It also extends the life of the equipment.

STANDARD FEATURES (ENCLOSED DRIVES)

- Selectable V/F, sensorless vector control
- For outdoor and/or wash down applications
- Rainproof NEMA 3R enclosure reduces thermal absorption with white, solar reflective finish and filtered cooling fans
- Standard VFD package is rated for 110 °F ambient temperature in non-direct sunlight.
- Additional application-specific protective devices included (i.e. line reactors, load reactors, and dV/dT filter)
- Franklin FastApp™ Firmware
 - Quick and easy set-up for submersible and centrifugal packages
 - Display uses pump specific terminology
- Pump Specific Protection and Features
 - Broken pipe detection
 - Dry-well/Underload detection with well refill timer
 - Pipe fill (Pre-PID) - VFD ramps up to Pre-PID frequency and fills pipes without pressurizing system and hydraulic surges
 - Sleep mode and wake up functions with pressure boost
 - Automatic energy savings mode
 - Flying start protection prevents trips, rough starts, and drive damage from regenerative power due to heavy inertia rotation
- Custom Packages Available
 - Alternative enclosure options (NEMA 1, NEMA 12, NEMA 4X)
 - Multi-motor/pump packages
 - Customizable control options



NO NEED FOR
ROTO-PHASE CONVERTERS!

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EASY START-UP WITH FASTAPP PROGRAMMING

Franklin Control Systems drive packages come pre-programmed for submersible or surface motors with pre-set parameters based on your specific application. To watch a start-up video of the basic wiring and programming of a P-Series VFD for a submersible application, scan the QR code below or go to www.franklin-controls.com.

ANY JOB, ANY ENVIRONMENT

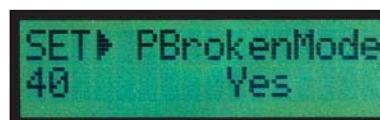
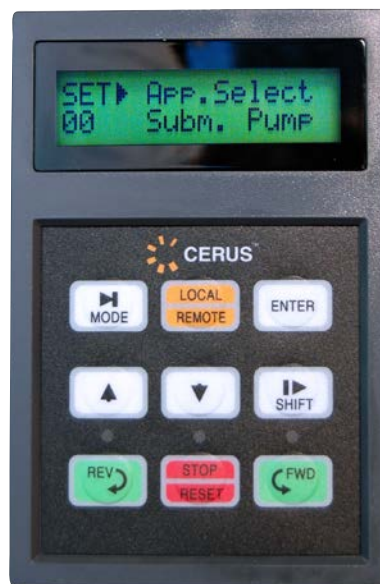
From corrosive environments to long motor leads to soaring temperatures, we can engineer a panel to fit nearly any application in any location. Our standard packages usually fit the bill, but if your job poses unique challenges, our engineers are up to the task.

1- TO 3-PHASE CONVERSION

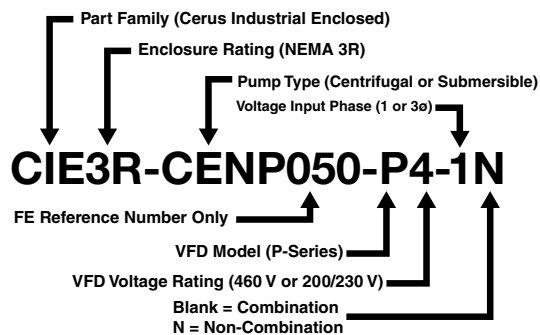
Franklin has solutions for 230 V or 460 V, 1Ø to 3Ø conversion - no need for a roto-phase converter and pump starter combo. By doubling the hp of your motor to size your VFD (20 hp motor = 40 hp VFD), the conversion is complete. All you need is one Franklin VFD.

NEW & IMPROVED FEATURES

- Alternating Lead-Lag Control - Two motors, no external PLC needed
- Dual Demand Control - Drive senses when to switch to second set point on applications feeding two systems
- Adaptive Dry Well Protection - Automatic determination of well recovery time
- Water Lubrication Timer
- Auxiliary Timer
- No Flow Protection
- Screen Cleaning
- Backspin Timer
- Pipe Leak (Cycling Protection)
- Speed Limit by VFD Temperature (to avoid overheat nuisance trips)
- Motor Overheat Protection
- Relay Activated by Analog Level
- Speed Limit by Well Water Level
- Two-transducer redundancy



PART NUMBER ANATOMY



Scan for start-up video

P-SERIES VFD STAND ALONE - ORDERING & SIZING INFORMATION

STAND ALONE DRIVE (200-230 V)

Single-Phase & Three-Phase

MODEL NO.	OUTPUT MAX AMPS		3% LINE REACTOR **
	1Ø	3Ø	MODEL NO.
CI-007-P2	12	24	KDRULB23LE01
CI-010-P2	16	32	KDRULD25LE01
CI-015-P2	24	46	KDRULD24LE01
CI-020-P2	32	60	KDRULD26LE01
CI-025-P2	37	74	KDRULC22LE01
CI-030-P2	46	88	KDRULF24LE01
CI-040-P2	60	115	KDRULF25LE01

NOTES: Phase refers to incoming power, not motor.

The drive **MUST BE** sized according to the motor manufacturer's maximum amperage draw. Upsize VFD for ambient temperature compensation (see VFD specs for temperature rating).

** 3% Line Reactors are sold separately from stand alone drives.

STAND ALONE DRIVE (480 V)

Single-Phase & Three-Phase

MODEL NO.	OUTPUT MAX AMPS		3% LINE REACTOR**
	1Ø	3Ø	MODEL NO.
CI-007-P4	6	12	KDRULA4LE01
CI-010-P4	8	16	KDRULASLE01
CI-015-P4	12	24	KDRULB2LE01
CI-020-P4	16	30	KDRULB1LE01
CI-025-P4	19	39	KDRULD1LE01
CI-030-P4	24	45	KDRULD2LE01
CI-040-P4	30	61	KDRULC1LE01
CI-050-P4	39	75	KDRULF2LE01
CI-060-P4	45	91	KDRULF4LE01
CI-075-P4	55	110	KDRULF3LE01
CI-100-P4	75	152	KDRULH3LE01
CI-125-P4	91	183	KDRULH2LE01
CI-150-P4	110	223	KDRULH1LE01
CI-200-P4	152	264	KDRULG3LE01
CI-250-P4	183	325	KDRULG1LE01
CI-350-P4	223	432	KDRULJ2LE01
CI-400-P4	264	547	KDRULJ1LE01

NOTES: Phase refers to incoming power, not motor.

The drive **MUST BE** sized according to the motor manufacturer's maximum amperage draw. Upsize VFD for ambient temperature compensation (see VFD specs for temperature rating).

** 3% Line Reactors are sold separately from stand alone drives.

P-SERIES VFD STAND ALONE - ORDERING & SIZING INFORMATION

STAND ALONE DRIVE (600 V, 3Ø)

MODEL NO.	OUTPUT MAX AMPS	3% LINE REACTOR **
	3Ø	MODEL NO.
CI-007-P6	9	KDRULA48LE01
CI-010-P6	12	KDRULA49LE01
CI-015-P6	17	KDRULA45LE01
CI-020-P6	23	KDRULB44LE01
CI-025-P6	27	KDRULB43LE01
CI-030-P6	34	KDRULD42LE01
CI-040-P6	43	KDRULC43LE01
CI-050-P6	55	KDRULC44LE01
CI-060-P6	64	KDRULF46LE01
CI-075-P6	80	KDRULF47LE01
CI-100-P6	104	KDRULF45LE01
CI-125-P6	128	KDRULH43LE01

*Phase refers to incoming power, not motor.

** 3% Line Reactors are sold separately from stand alone drives.

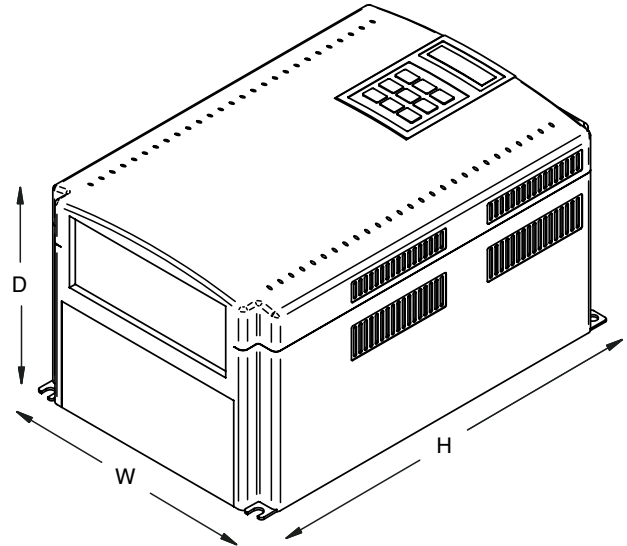
NOTE: The drive MUST BE sized according to the motor manufacturer's maximum amperage draw. Upsize VFD for ambient temperature compensation (see VFD specs for temperature rating).

P-SERIES VFD STAND ALONE - DIMENSIONS

SUBMERSIBLES

P-SERIES DRIVE	H	W	D
CI-007-P2	11.18	5.91	6.16
CI-007-P4			
CI-007-P6	13.98	7.87	7.19
CI-010-P2	11.18	7.87	7.16
CI-010-P4			
CI-010-P6	13.98	7.87	7.19
CI-015-P2	11.18	7.87	7.16
CI-015-P4			
CI-015-P6	13.98	7.87	7.19
CI-020-P2	15.16	9.84	7.91
CI-020-P4			
CI-020-P6	15.16	9.84	7.91
CI-025-P2	15.16	9.84	7.91
CI-025-P4			
CI-025-P6	15.16	9.84	7.91
CI-030-P2	18.11	11.97	9.21
CI-030-P4			
CI-030-P6	18.11	11.97	9.21
CI-040-P2	18.11	11.97	9.21
CI-040-P4			
CI-040-P6	18.11	11.97	9.21
CI-050-P4	25.28	11.81	10.46
CI-050-P6	25.28	11.81	11.52
CI-060-P4	25.28	11.81	10.46
CI-060-P6	25.28	11.81	11.52
CI-075-P4	25.28	11.81	11.52
CI-075-P6	25.28	11.81	11.52
CI-100-P4	30.22	14.57	13.29
CI-100-P6	30.22	14.57	13.29
CI-125-P4	30.22	14.57	13.29
CI-125-P6	30.22	14.57	13.29
CI-150-P4	30.87	20.08	16.64
CI-150-P6	30.87	20.08	16.64
CI-200-P4	30.87	20.08	16.64
CI-250-P4	33.9	20.08	16.64
CI-350-P4	42.44	27.17	17.70
CI-400-P4			
CI-500-P4	44.9	30.4	17.4
CI-600-P4			
CI-700-P4	51.3	36.3	19.5

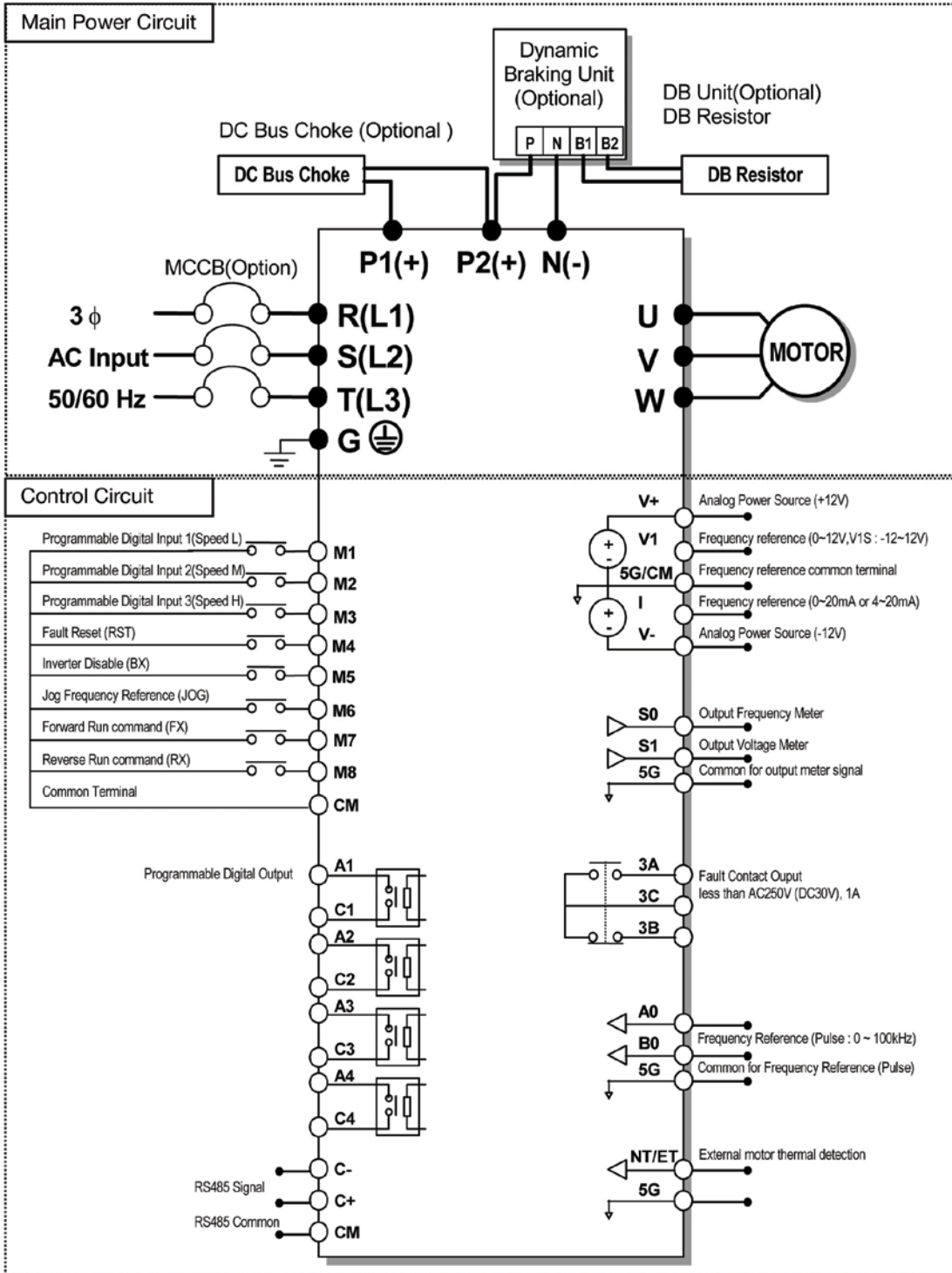
NOTE: All measurements in inches



* Line Reactors housed in separate UL/NEMA 1 Type Enclosure

P-SERIES VFD STAND ALONE - WIRING DIAGRAM

5.5~90 KW (7.5~125 HP)



NOTES: 5G is common ground for analog input/output for 7.5~40 hp.
 5G is common ground for analog meter output (S0, S1) and external motor thermal detection (ET).
 Use terminal V1 for V1, V1S (0-12 V -12-12 V) input.
 * For general reference only, not field wiring. Consult installation instructions.

P-SERIES VFD STAND ALONE - SPECIFICATIONS

SPECIFICATIONS

OUTPUT RATINGS	
Voltage (V)	Three-phase, 200-230 V, Three-phase, 380-480 V, Three-phase 525-600 V
Frequency (Hz)	0-120 Hz
INPUT RATINGS	
Voltage (V)	Single- and three-phase, 200-230 V (-15%, +10%), single- and three-phase, 380-480 V (-15%, +10%), Three-phase 525-600 V (-15%, +10%)
Frequency (Hz)	50-60 Hz (±5%)
Input Power Factor	> .95 from no load to full load
OPERATION	
Drive Efficiency	> 96%
Control Method	V/F control, sensorless vector control
Frequency Setting Resolution	Digital reference: 0.01 Hz (below 99 Hz) & 0.1 Hz (100 Hz and over); Analog reference: 0.06 Hz at 60 Hz
Frequency Setting Accuracy	Digital: 0.01% of maximum output frequency; Analog: 0.1% of maximum output frequency
V/F Ratio	Linear, Square, User V/F
Overload Capacity	1 minute at 120%, 10 seconds at 150% (with inverse characteristic proportional to time)
Torque Boost	Auto, manual (0-15%)
Multi-Function Input Terminals	Total 8 inputs (programmable)
Analog Output	0-10 V linear
INPUT SIGNAL	
Operator Control	32-character LCD keypad, Terminals, ModBus-RTU communication Optional, ProfiBus-DP, DeviceNet, F-Net, BACnet, LonWorks
Frequency Setting	Analog: 0-10 V, 4-20mA, additional port for Sub-Board (0-10 V); Digital: Keypad, Communication
Start Signal	Forward, reverse
Multi-Step Operation	Setting up to 17 speeds (using multi-function terminal)
Multi-Step Accel/Decel Time	0.1-6000 seconds. Maximum 8 pre-defined steps using multi-function terminals
Operational Functions	DC braking, frequency limit, frequency jump, second motor function, slip compensation, reverse rotation prevention, auto restart, inverter bypass, auto-tuning, dual PID control
Emergency Stop	Stops output from inverter
Auto Operation	Operates from internal sequence by setting multi-function terminal (5 way x 8 step)
Jog	Jog operation
Fault Reset	Resets fault signal when protective function is active
OUTPUT SIGNAL	
Operational Status	Frequency detection, overload alarm, stall, overvoltage, undervoltage, inverter overheat, run, stop, constant speed, speed search, fault output, inverter bypass, auto-operation sequence
Indicator	Output frequency, output current, output voltage, DC voltage, output torque (output voltage: 0-10 V)
PROTECTIVE FUNCTIONS	
Trip	Overvoltage, undervoltage, overcurrent, inverter overheat, motor overheat, i/o-phase loss, fuse open, ground fault, external fault 1, 2, option fault, overload, speed command loss, hardware fault, communication error, etc.
Alarm	Stall, overload temperature sensor fault
OPERATING ENVIRONMENT	
Ambient Temperature	-10-40 °C (50 °C when derated 20%) or 14-104 °F (122 °F when derated 20%)
Storage Temperature	-20 -65 °C or -4-149.5 °F
Humidity	Less than 95% relative humidity maximum (non-condensing)
Vibration	Below 5.9m ² /sec (=0.6g)
Altitude	Max. 3,300 ft (1000 m): derate 1% for every additional 330 ft. Derating 20% allows for installation up to 10,000 ft
Application Site	Pollution degree 2. no corrosive gas, combustible gas, oil mist or dust