Standard VFD features:
- FastApp™ Start up Firmware – Application Based Commissioning (preset for common HVAC applications)
- Space Vector Pulse Width Modulation for cleaner sine wave – Motor runs cooler and lasts longer
- Advanced PID Control (Pre-PID, Dual PID)
- Selectable Units (PSI, °C, °F, inWC, inM, Bar, mBar, Pa, kPa)
- Automatic Energy Savings Mode
- Advanced Motor Protection (Broken Pipe, Belt Loss, Flying Start)
- Damper Control Relay
- Integrated ModBus RTU (additional comms available)

Redundant drive package features:
- PLC with easily adjustable embedded options for alternation and control
- True system redundancy with continuous, efficient equipment operation
- Single point input, and main circuit breaker disconnect
- Fireman’s override/smoke purge ready
- Mechanical latching units on output contactors for power loss ride through protection
- Isolated input contactors to protect backup VFD in the event of a surge
- Hand/Off/Auto & VFD-1, VFD-2 switches

Wide range of design options:
- NEMA 1 12, 3R and 4X available
- Door mounted control options
- Add-ons for multi-motor control (branch protection for each motor)
## Specifications

### General
- **Output Frequency**: .01~120 Hz
- **Input Frequency**: 50/60 Hz (± 5%)
- **Output Voltage**: P2 Models: 200VAC~230VAC  
  P4 Models: 380VAC~480VAC
- **Input Voltage**: P2 Models: 200VAC (-15%)~230VAC (+10%)  
  P4 Models: 380VAC (-15%)~480VAC (+10%)
- **Cooling Method**: Forced air cooling by internal fans
- **Short Circuit Rating**: 100 kA, suitable for use on a circuit capable of delivering not more than 65,000 RMS symmetrical Short Circuit Amperes
- **Agency Approvals**: UL and cUL listed, CE marked

### Control
- **Control Method**: V/F, Slip Compensation, Sensorless Vector w/ auto tune (no encoder required)
- **Frequency Setting Resolution**: Digital Reference: 0.01 Hz (Below 100 Hz), 0.1 Hz (Over 100 Hz)  
  Analog Reference: 0.01 Hz / 60 Hz
- **Frequency Accuracy**: Digital: 0.01 % of Max. Output Frequency  
  Analog: 0.1 % of Max. Output Frequency
- **V/F Control Curve**: Linear, S-Pattern, User Defined Pattern
- **Overload Capacity**: 110 % per 1 min variable torque  
  150% per 1 min constant torque (20% de-rated VFD)
- **Torque Boost**: Manual Torque Boost Adjustment (0 ~ 15 %), Auto Torque Boost

### Operation
- **Operation Method**: Keypad / Terminals / Communication
- **Operation Setting**: Analog: 0 ~ 10VDC, ±10VDC, 4 ~ 20mA / Pulse Frequency / Ext-PID  
  Digital: Keypad
- **Start Signal**: Forward or Reverse
- **Multi-Step**: Up to 18 Speeds can be set including Jog (Use binary coded combinations of Programmable Digital Inputs)
- **Multi-Step Accel/Decel Time**: 0.1~6,000 sec, Max 4 types can be set via Multi-Function Terminals. Accel/Decel Pattern: Linear, U-Curve or S-Curve
- **Emergency Stop**: Immediately Interrupts the VFD Output in any control method
- **Fault Reset**: Resets VFD. Some critical faults can only be reset by recycling the VFD power.
- **Four Multifunction Relays**: Each relay can be set to Frequency Detection Level, Overload Alarm, Stalling, Over Voltage, VFD Overheating/Running/Stopping/At Speed, VFD By-Pass, Speed Search etc.
- **Fault Output**: Each relay can be set to Frequency Detection Level, Overload Alarm, Stalling, Over Voltage, VFD Overheating/Running/Stopping/At Speed, VFD By-Pass, Speed Search etc.
- **Two Analog Outputs**: Double Throw Relay Contact (3A, 3C, 3B) – 1A up to 250VAC or 30VDC
- **Operation Functions**: Selections: Output Frequency, Output Current, Output Voltage, Output kW, DC Link Voltage. Both outputs are 0-10VDC scalable from 10 to 200%.
- **VFD Fault Trips**: Over Voltage, Low Voltage, Over Current, Overload Protection, Short Circuit Protection, Ground Fault, VFD Overheat, Motor Overheat, Output Phase Open, External Trip, CPU Communication Error, Loss of Speed Command, Hardware Fault, etc.
- **Fault History**: The VFD stores 5 last faults with Hz, A, VFD mode and trip time for each fault.

### Protection
- **Display**: Operation Information
  - **Operation Information**: Output Frequency, Output Current, Output Voltage, Frequency Set Value, Operating Speed, DC Voltage, kWattmeter, Runtime, Last Trip Time
- **Keypad**: Fault History
- **Environment**: Ambient Temperature
  - 14°F~ 104°C, De-rate VFD by 20% to increase rating up to 122°C
- **Storage Temperature**: -4°F~ 149°C
- **Ambient Humidity**: Up to 95% RH, (Non-Condensing)
- **Altitude**: Max. 3,300ft (1,000m), De-rate VFD 20% for every additional 1000ft.
- **Vibration**: Max. 0.6g (5.9m/sec²)
- **Environmental Conditions**: Pollution degree 2, No Corrosive Gas, Combustible Gas, Oil Mist or Dust
### 3-PHASE, 200–230V P-Series RDP

<table>
<thead>
<tr>
<th>Standard duty (VT)</th>
<th>RDPass with Drive Isolation (3-Contactor EM-Bypass Equivalent)</th>
<th>Disconnect</th>
<th>Contactor</th>
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### 3-PHASE, 380–480V P-Series RDP

<table>
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<th>Standard duty (VT)</th>
<th>EM-Bypass with Drive Isolation (3-Contactor EM-Bypass Equivalent)</th>
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<td>MRC-65LA</td>
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</tbody>
</table>

*See next page for Disconnect & Contactor Specifications
*Contact factory for higher HP applications
P-Drive Wiring Schematic

Main Power Circuit

DC Bus Choke (Optional)

3φ
AC Input
50/60 Hz

R(L1)
S(L2)
T(L3)
G

P1(+)
P2(+)
N(-)

U
V
W

MOTOR

DB Unit (Optional)
DB Resistor

Dynamic Braking Unit (Optional)
DB Resistor

MCCB (Optional)

Control Circuit

Programmable Digital Input 1 (Speed L)
Programmable Digital Input 2 (Speed M)
Programmable Digital Input 3 (Speed H)
Fault Reset (RST)
Inverter Disable (BX)
Jog Frequency Reference (JOG)
Forward Run command (FX)
Reverse Run command (RX)
Common Terminal

Programmable Digital Output

A1
C1
A2
C2
A3
C3
A4
C4
C-
C+
CM

Fault Contact Output
less than AC25V (DC30V), 1A

Frequency Reference (Pulse: 0 ~ 100Hz)
Common for Frequency Reference (Pulse)

NT/ET

External motor thermal detection

Note: 1) 5G is Common Ground for Analog Input/Output for 7.5-40HP
2) 5G is Common Ground for Analog Meter Output (S0, S1) and External motor thermal detection (ET).
3) Use terminal V1 for V1, V1S (0~12V, -12~12V) input.
P-SERIES UL TYPE 1 RDP DIMENSIONS

*ALL MEASUREMENTS IN INCHES

<table>
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<tr>
<th>UL Type 1 RDP</th>
<th>H x W x D (A x B x C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIE1-RDP001-P2 ~ CIE1-RDP007-P2</td>
<td>40 3/4&quot; x 18&quot; x 10 3/32&quot;</td>
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<tr>
<td>CIE1-RDP001-P4 ~ CIE1-RDP015-P4</td>
<td>49 7/8&quot; x 22&quot; x 10 19/32&quot;</td>
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<tr>
<td>CIE1-RDP010-P2 ~ CIE1-RDP020-P2</td>
<td>57 7/8&quot; x 26&quot; x 11 25/32&quot;</td>
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