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*We reserve the right to change the information in this catalogue without prior notice



VFD-EL

Multiple Functions/Micro Type Drive



VFD-EL



Features

- Standard MODBUS Protocol** Standard MODBUS Protocol via RS-485
- Built-in EMI Filter (230V 1-phase and 460V 3-phase)**
 The built-in EMI filter reduces electromagnetic interferences and complies with EN61800-3 standard.
- Compact Design**
 Space saving and easy DIN rail mounting with optional DIN rail adapter(Built in Frame B)
- Optional Fieldbus Modules**
 Provide connection to a variety of networks, including PROFIBUS, DeviceNet, LonWorks and CANopen.
- RFI-Switch for IT Mains**
 Removable "Y" capacitor to use with IT mains supplies.
- Easy DC BUS Sharing**
 Multiple VFD-EL can be connected in parallel to share the regenerative braking energy. In this way, over-voltage is prevented and the DC-bus voltage stabilized. This function is not for 115V models.
- Complete Protection Function**
 High precision current detection, full overload protection (oL, oL1 and oL2), over-voltage/over-current stall prevention, short-circuit protection, reset after fault, speed search function and motor overheat protection by PTC.
- Power Range**
 1-phase 115V series: 0.2~0.75kW (0.25~1hp) 3- phase 230V series: 0.2~3.7kW (0.25~5hp)
 1-phase 230V series: 0.2~2.2kW (0.25~3hp) 3- phase 460V series: 0.4~3.7kW (0.50~5hp)
- Side-by-side Installation(40°C)**
 High-efficiency cooling and flexible space
- Easy Maintenance**
 Removable cooling fan for easy maintenance



Application cases

Conveyor Belts

- Multi-step speed application: provides multi-step speed settings to meet the needs of conveyor belt.
- Side-by-side installation to save space.
- DC-bus sharing: connect multiple drives in parallel to share the regenerative energy and prevent over-voltage.



Winders

With auto acceleration/deceleration function, it can have a rapid start/stop to increase productivity and speed.

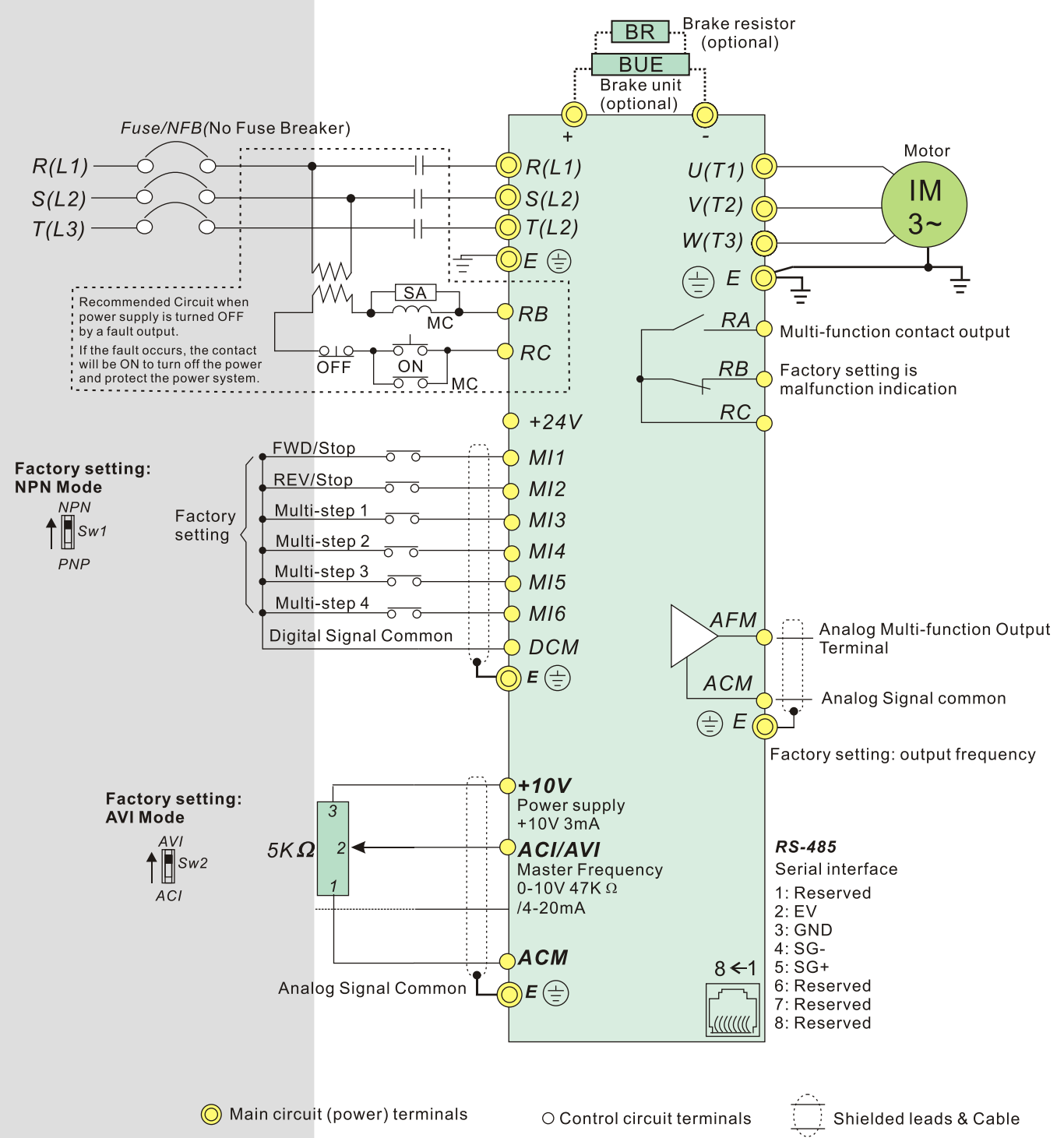


Constant Pressure Control of Water Pumps

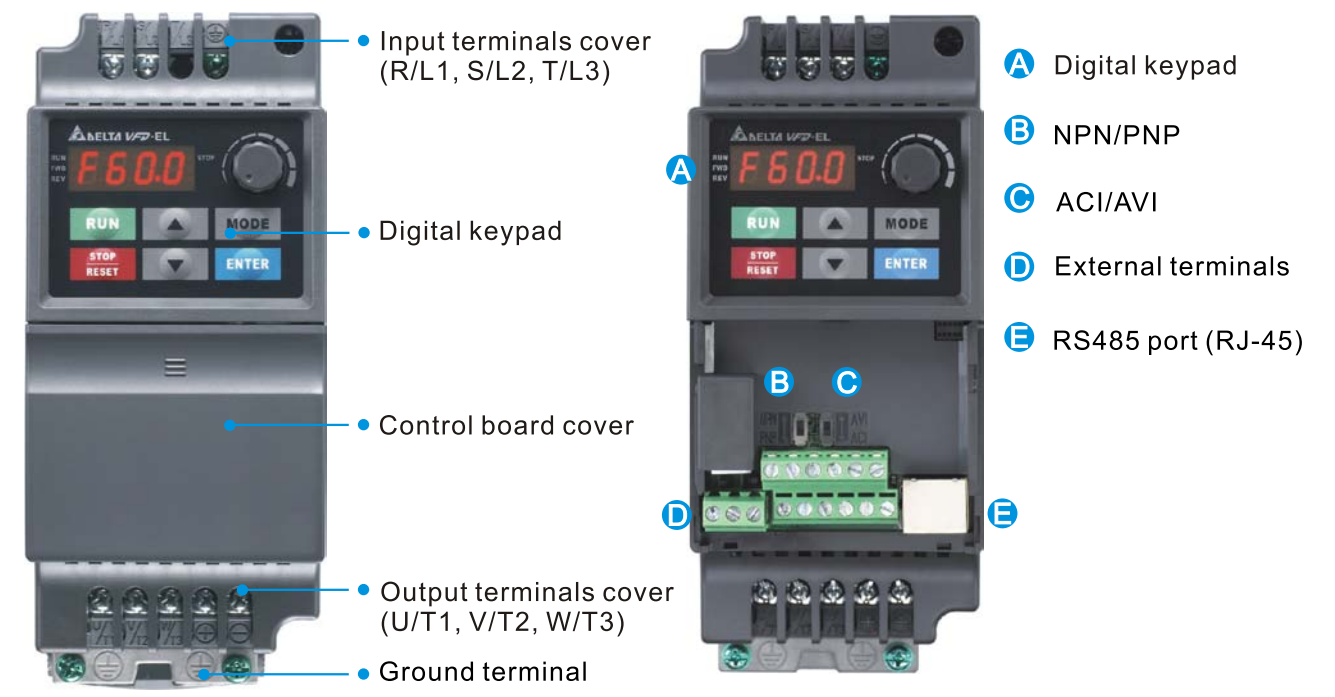
- Built-in smart PID controller to save the cost of specific external PID meter.
- Built-in auto detection of water suspension and auto power-on to save the cost of external PLC controller and relay.
- A wide range of input voltages, including 1-phase 110V/230V and 3-phase 230V/460V, for various pump applications and different countries.



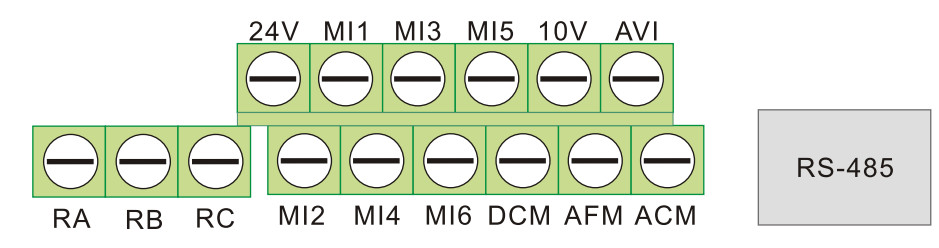
Standard Wiring Diagram



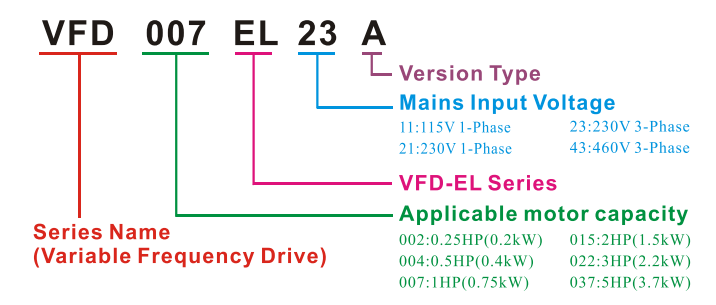
External Parts



Control Terminals



Model Explanation





Application Fields

Conveyor and Transportation Machinery

- Conveyor belt
- Automatic doors
- Roller door
- Small elevator
- Escalator
- Parking device
- X-Y axis of traveling crane

Food Processing

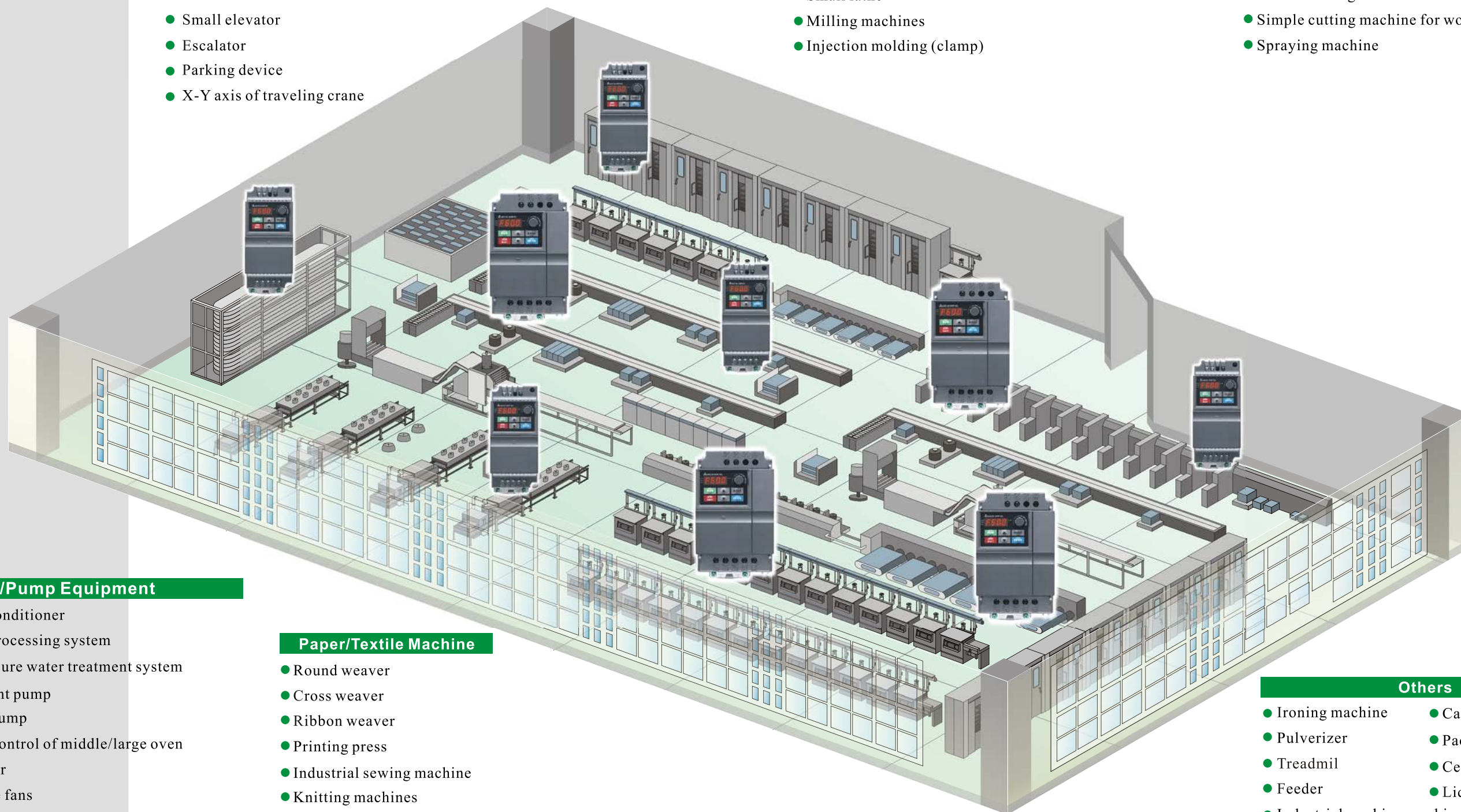
- Dumpling maker
- Food stirrer
- Noodle maker

Machine Tool/Metal Processing Machinery

- Grinder
- Drill
- Small lathe
- Milling machines
- Injection molding (clamp)

Wood Working Machinery

- 4 side planer
- Wood carver
- Wood working machine
- Simple cutting machine for wood working
- Spraying machine



Fan/Pump Equipment

- Building air conditioner
- Waste water processing system
- Constant pressure water treatment system
- Water treatment pump
- Agricultural pump
- Temperature control of middle/large oven
- Air compressor
- Heat exchange fans
- Building water dispenser system
- Dryer's windmill

Paper/Textile Machine

- Round weaver
- Cross weaver
- Ribbon weaver
- Printing press
- Industrial sewing machine
- Knitting machines

Others

- Ironing machine
- Pulverizer
- Treadmil
- Feeder
- Industrial washing machine
- Car washing machine
- Packing machine
- Centrifuge
- Liquid mixer



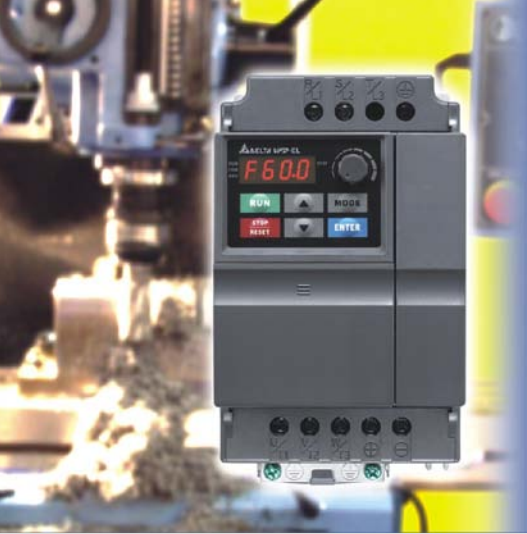
Specifications

| | | | | |
|-----------------------------------|-----------------------------|-------------------------------------------------|------|-----|
| Voltage Class | | 115V | | |
| Model Number VFD-___ EL | 002 | 004 | 007 | |
| Max. Applicable Motor Output (kW) | 0.2 | 0.4 | 0.75 | |
| Max. Applicable Motor Output (HP) | 0.25 | 0.5 | 1.0 | |
| Output Rating | Rated Output Capacity (kVA) | 0.6 | 1.0 | 1.6 |
| | Rated Output Current (A) | 1.6 | 2.5 | 4.2 |
| | Maximum Output Voltage (V) | 3-Phase Proportional to Twice the Input Voltage | | |
| | Output Frequency (Hz) | 0.1~600 Hz | | |
| Carrier Frequency (kHz) | 2-12 | | | |
| Input Rating | Rated Input Current (A) | Single-phase | | |
| | | 6.4 | 9 | 18 |
| | Rated Voltage/Frequency | Single phase, 100-120V, 50/60Hz | | |
| | Voltage Tolerance | ± 10%(90~132 V) | | |
| Frequency Tolerance | ± 5%(47~63 Hz) | | | |
| Cooling Method | Natural Cooling | | | |
| Weight (kg) | 1.1 | 1.1 | 1.4 | |

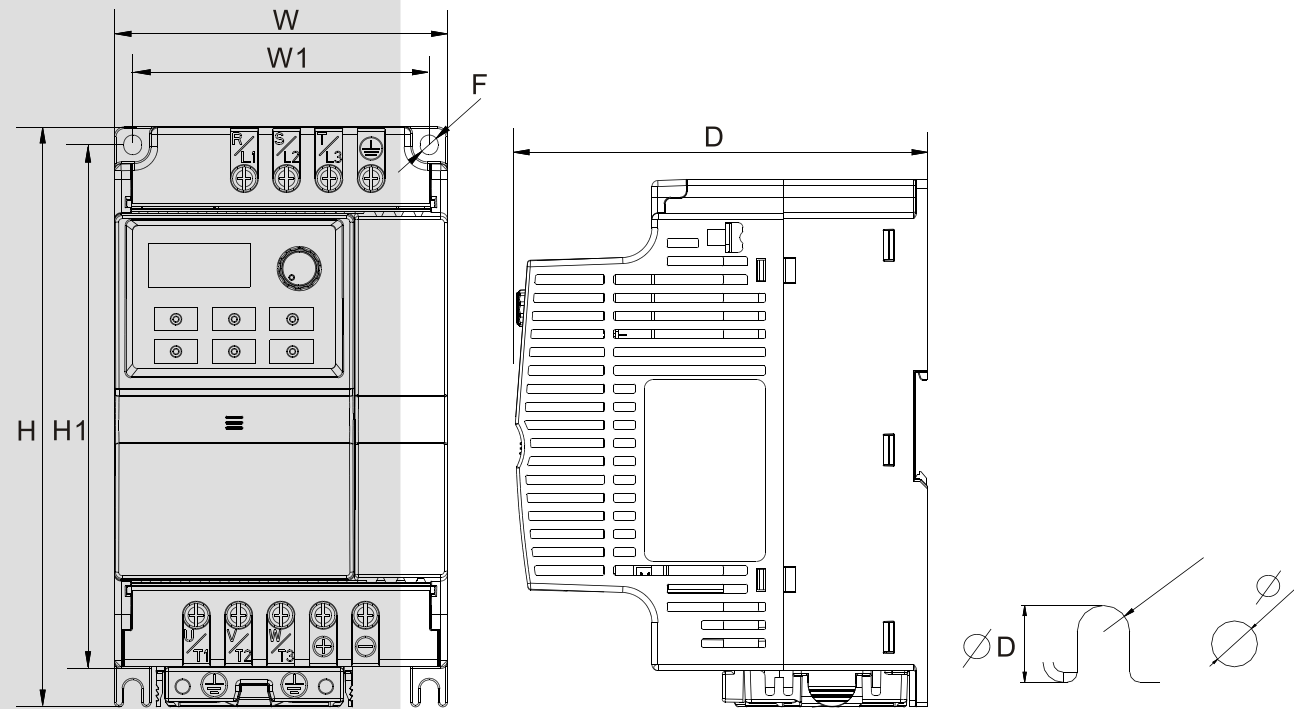
| | | | | | | | |
|-----------------------------------|------------------------------|---------------------------------------|------|-------------|------|------|------|
| Voltage Class | | 230V | | | | | |
| Model Number VFD-___ EL | 002 | 004 | 007 | 015 | 022 | 037 | |
| Max. Applicable Motor Output (kW) | 0.2 | 0.4 | 0.75 | 1.5 | 2.2 | 3.7 | |
| Max. Applicable Motor Output (HP) | 0.25 | 0.5 | 1.0 | 2.0 | 3.0 | 5.0 | |
| Output Rating | Rated Output Capacity (kVA) | 0.6 | 1.0 | 1.6 | 2.9 | 4.2 | 6.5 |
| | Rated Output Current (A) | 1.6 | 2.5 | 4.2 | 7.5 | 11.0 | 17.0 |
| | Maximum Output Voltage (V) | 3-Phase Proportional to Input Voltage | | | | | |
| | Output Frequency (Hz) | 0.1~600 Hz | | | | | |
| Carrier Frequency (kHz) | 2-12 | | | | | | |
| Input Rating | Rated Input Current (A) | 4.9 | 6.5 | 9.5 | 15.7 | 24 | -- |
| | L21A Rated Voltage/Frequency | 1-phase, 200-240V, 50/60Hz | | | | | |
| | Rated Input Current (A) | 1.9 | 2.7 | 4.9 | 9 | 15 | 20.6 |
| | L23A Rated Voltage/Frequency | 3-phase, 200-240V, 50/60Hz | | | | | |
| Voltage Tolerance | ± 10%(180-264V) | | | | | | |
| Frequency Tolerance | ± 5%(47-63Hz) | | | | | | |
| Cooling Method | Natural Cooling | | | Fan Cooling | | | |
| Weight (kg) | 1.2 | 1.2 | 1.2 | 1.7 | 1.7 | 1.7 | |

| | | | | | | |
|-----------------------------------|-----------------------------|---------------------------------------|-----|-------------|-----|-----|
| Voltage Class | | 460V Class | | | | |
| Model Number VFD-___ EL | 004 | 007 | 015 | 022 | 037 | |
| Max. Applicable Motor Output (kW) | 0.4 | 0.75 | 1.5 | 2.2 | 3.7 | |
| Max. Applicable Motor Output (HP) | 0.5 | 1.0 | 2.0 | 3.0 | 5.0 | |
| Output Rating | Rated Output Capacity (kVA) | 1.2 | 2.0 | 3.3 | 4.4 | 6.8 |
| | Rated Output Current (A) | 1.5 | 2.5 | 4.2 | 5.5 | 8.2 |
| | Maximum Output Voltage (V) | 3-Phase Proportional to Input Voltage | | | | |
| | Output Frequency (Hz) | 0.1~600 Hz | | | | |
| Carrier Frequency (kHz) | 2-12 | | | | | |
| Input Rating | Rated Input Current (A) | 3-phase | | | | |
| | | 1.8 | 3.2 | 4.3 | 7.1 | 9.0 |
| | Rated Voltage/Frequency | 3-phase, 380-480V, 50/60Hz | | | | |
| | Voltage Tolerance | ± 10%(342~528V) | | | | |
| Frequency Tolerance | ± 5%(47~63Hz) | | | | | |
| Cooling Method | Natural Cooling | | | Fan Cooling | | |
| Weight (kg) | 1.2 | 1.2 | 1.2 | 1.7 | 1.7 | |

| | | | |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Control Characteristics | Control System | SPWM(Sinusoidal Pulse Width Modulation) control (V/f control) | |
| | Frequency Setting Resolution | 0.01Hz | |
| | Output Frequency Resolution | 0.01Hz | |
| | Torque Characteristics | Including the auto-torque/auto-slip compensation; starting torque can be 150% at 5.0Hz | |
| | Overload Endurance | 150% of rated current for 1 minute | |
| | Skip Frequency | Three zones, setting range 0.1-600Hz | |
| | Accel/Decel Time | 0.1 to 600 seconds (2 Independent settings for Accel/Decel time) | |
| | Stall Prevention Level | Setting 20 to 250% of rated current | |
| | DC Braking | Operation frequency 0.1-600.0Hz, output 0-100% rated current Start time 0-60 seconds, stop time 0-60 seconds | |
| | Regenerated Braking Torque | Approx. 20% (up to 125% possible with optional brake resistor or externally mounted brake unit, 1-15hp (0.75-11kW) models have brake chopper built-in) | |
| V/F Pattern | Adjustable V/f pattern | | |
| Operating Characteristics | Frequency Setting | Keypad | Setting by ▲ ▼ |
| | | External Signal | Potentiometer-5k/0.5W, 0 to +10VDC, 4 to 20mA, RS-485 interface; Multi-function Inputs 3 to 6 (15 steps, Jog, up/down) |
| | Operation Setting Signal | Keypad | Set by RUN and STOP |
| | | External Signal | 2 wires/3 wires ((MI1, MI2, MI3)), JOG operation, RS-485 serial interface (MODBUS), programmable logic controller |
| | Multi-function Input Signal | Multi-step selection 0 to 15, Jog, accel/decel inhibit, 2 accel/decel switches, counter, external Base Block, ACI/AVI selections, driver reset, UP/DOWN key settings, NPN/PNP input selection | |
| | Multi-function Output Indication | AC drive operating, frequency attained, counter attained, zero speed, Base Block, fault indication, overheat alarm, emergency stop and status selections of input terminals | |
| | Analog Output Signal | Output frequency/current | |
| Alarm Output Contact | Contact will be ON when drive malfunctions (1 Form C/change-over contact or 1 open collector output) | | |
| Operation Functions | AVR, accel/decel S-Curve, over-voltage/over-current stall prevention, 5 fault records, reverse inhibition, momentary power loss restart, DC braking, auto torque/slip compensation, adjustable carrier frequency, output frequency limits, parameter lock/reset, PID control, external counter, MODBUS communication, abnormal reset, abnormal re-start, power-saving, fan control, sleep/wake frequency, 1st/2nd frequency source selections, 1st/2nd frequency source combination, NPN/PNP selection, constant pressure function | | |
| Protection Functions | Over voltage, over current, under voltage, external fault, overload, ground fault, overheating, electronic thermal, IGBT short circuit, PTC | | |
| Display Keypad | 6-key, 7-segment LED with 4-digit, 4 status LEDs, master frequency, output frequency, output current, custom units, parameter values for setup and lock, faults, RUN, STOP, RESET, FWD/REV | | |
| Built-in EMI Filter | For 230V 1-phase and 460V 3-phase models. | | |
| Environmental Conditions | Enclosure Rating | IP20 | |
| | Pollution Degree | 2 | |
| | Installation Location | Altitude 1,000 m or lower, keep from corrosive gasses, liquid and dust | |
| | Ambient Temperature | -10°C to 50°C (40°C for side-by-side mounting) Non-Condensing and not frozen | |
| | Storage/Transportation Temperature | -20°C to 60°C | |
| | Ambient Humidity | Below 90% RH (non-condensing) | |
| Vibration | 9.80665m/s ² (1G) less than 20Hz, 5.88m/s ² (0.6G) at 20 to 50Hz | | |
| Approvals |    | | |



Dimensions



Unit: mm(inch)

| Model | W | W1 | H | H1 | D | F |
|-------------|--------|--------|--------|--------|--------|--------|
| VFD002EL11A | | | | | | |
| VFD002EL21A | | | | | | |
| VFD002EL23A | | | | | | |
| VFD004EL11A | | | | | | |
| VFD004EL21A | 72.0 | 59.0 | 174.0 | 151.6 | 136.0 | 5.4 |
| VFD004EL23A | (2.83) | (2.32) | (6.86) | (5.97) | (5.35) | (0.21) |
| VFD004EL43A | | | | | | |
| VFD007EL21A | | | | | | |
| VFD007EL23A | | | | | | |
| VFD007EL43A | | | | | | |
| VFD015EL23A | | | | | | |
| VFD015EL43A | | | | | | |
| VFD007EL11A | | | | | | |
| VFD015EL21A | | | | | | |
| VFD022EL21A | 100.0 | 89.0 | 174.0 | 162.9 | 136.0 | 5.4 |
| VFD022EL23A | (3.94) | (3.50) | (6.85) | (6.42) | (5.35) | (0.21) |
| VFD022EL43A | | | | | | |
| VFD037EL23A | | | | | | |
| VFD037EL43A | | | | | | |

Fieldbus Modules

● DeviceNet
CME-DN01



● Profibus
CME-PD01



● LonWorks
CME-LW01



● CANopen
CME-COP01



Accessories

● Zero phase reactor
RF220X00A



● Keypad for communication
VFD-PU06



● DIN Rail (Width 35mm)

MKEL-DRA



(Frame A is optional)

MKEL-DRB



(Frame B is built-in)

● Grounding plate
MKE-EP



● Brake resistor



● Brake unit

BUE-20015 BUE-40015
BUE-20037 BUE-40037

