

VFD-Midi Inverters

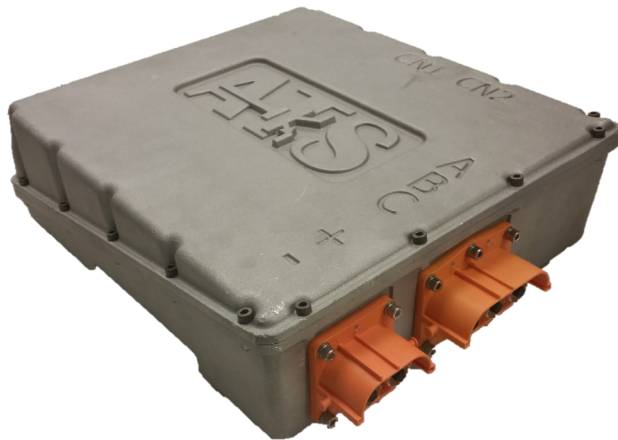
Permanent Magnet/AC Induction

Liquid-Cooled/Forced-Air

350, 750 & 1000 V Versions

115, 150, 225 & 300 A_{PK-RMS} Versions

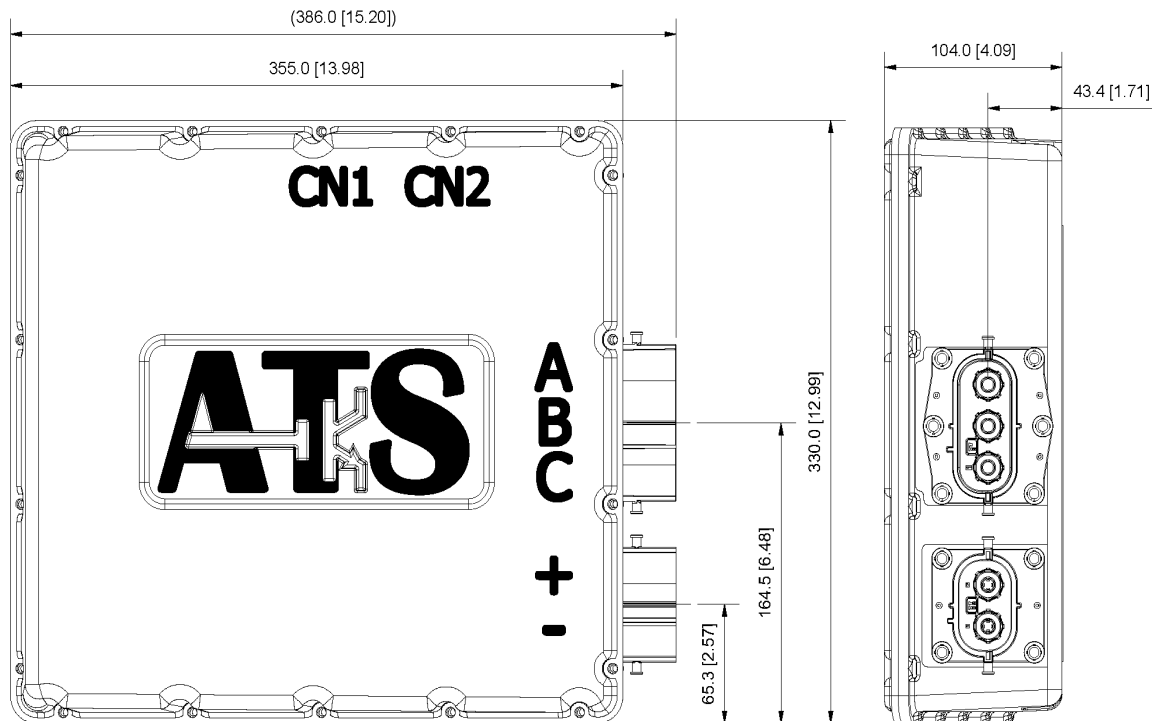
60 kVA — 250 kVA_{PK}



Features

- Permanent Magnet or Induction motor controller
- Suitable for propulsion, generator or auxiliary load applications
- Liquid-cooled
- Resolver or Encoder feedback
- Up to 1,400 Hz output
- Continuously Variable Switching Frequency
Increases with motor RPM
(2 to 14 kHz — Double-edge PWM)
- Smart OV, UV and Temperature Based Power Limiting
- Discontinuous Pulse Width Modulation (DPWM)
- Adaptive Torque Control — No look-up tables required
- Automatic Resolver Offset Calibration—Fwd and Rev
- Validated on motors with up to 20 poles
- CAN-bus Control and Diagnostics
- Up to four inverters per vehicle on one control bus
- IP67 rated cast aluminum enclosure (Optional)

| Mechanical Specifications | |
|---------------------------|---|
| Size | 15.2" (386 mm) x 13.0" (330 mm) x 4.1" (104 mm) |
| Weight | 33-36 lb (15 – 16 kg) |
| Cooling | 60°C @ 10 L/min - 50/50 WEG |

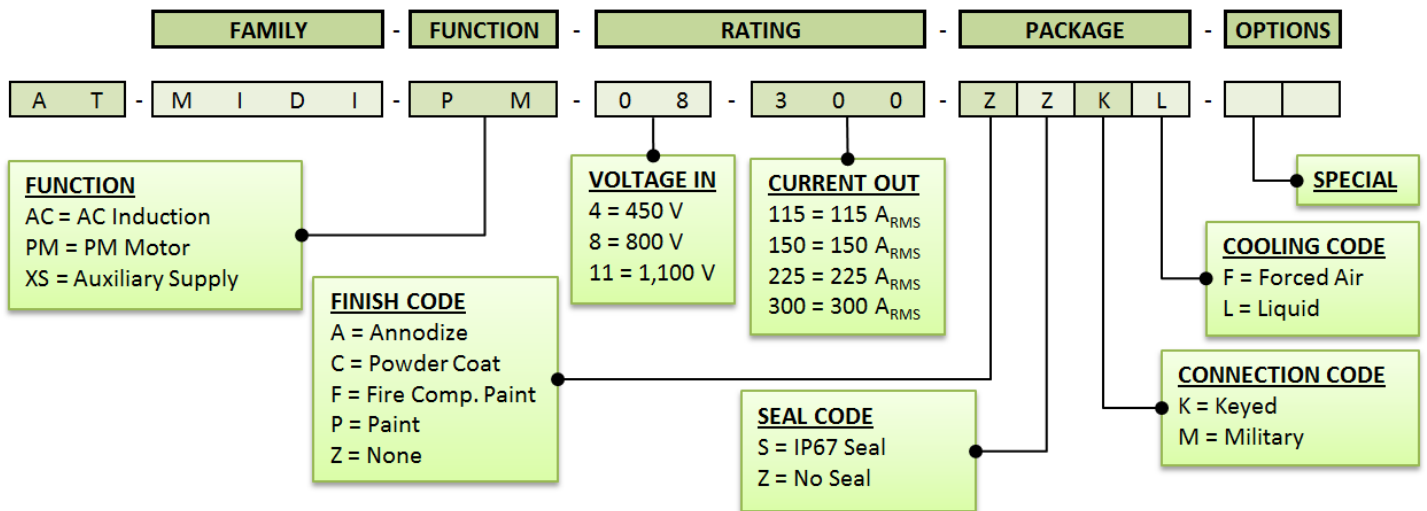


VFD-Midi Inverters

Controller Description

The VFD-Midi Inverters are designed to control Permanent Magnet or AC Induction motors at DC bus levels ranging from 300 to 1100 V and is suitable for propulsion or auxiliary motor applications. The motor control algorithm, Adaptive Torque Control™, uses models based on the physics of the motor and not lookup tables to control the PM or AC motor. ATC™ is an advanced Field-Oriented Control scheme that optimizes torque by accounting for varying supply voltages, motor inductances, motor resistances, motor temperature, speed, and slip. The algorithm monitors the system for over voltage, under voltage, IGBT temperature, motor temperature and over speed conditions to operate the motor more efficiently. In induction motors, this enables operation at or near the breakdown torque of the motor and in PM motors, it utilizes the synchronous reluctance effect to maximize torque.

Model Number & Description



| Model Number | DC Bus Voltage [V] | | Output Current [A _{RMS}] | | DC Bus Capacitance [μF] |
|------------------------|--------------------|------|------------------------------------|-------------------|-------------------------|
| | Typ. | Max | Continuous | Peak (60 seconds) | |
| AT-MIDI-xx-04-115-xxxx | 300 | 450 | 96 | 115 | 930 |
| AT-MIDI-xx-04-150-xxxx | 300 | 450 | 125 | 150 | 930 |
| AT-MIDI-xx-04-225-xxxx | 300 | 450 | 187 | 225 | 930 |
| AT-MIDI-xx-04-300-xxxx | 300 | 450 | 250 | 300 | 930 |
| AT-MIDI-xx-08-115-xxxx | 700 | 800 | 86 | 115 | 720 |
| AT-MIDI-xx-08-150-xxxx | 700 | 800 | 113 | 150 | 720 |
| AT-MIDI-xx-08-225-xxxx | 700 | 800 | 169 | 225 | 720 |
| AT-MIDI-xx-08-300-xxxx | 700 | 800 | 225 | 300 | 720 |
| AT-MIDI-xx-11-115-xxxx | 900 | 1100 | 67 | 115 | 450 |
| AT-MIDI-xx-11-150-xxxx | 900 | 1100 | 87 | 150 | 450 |
| AT-MIDI-xx-11-225-xxxx | 900 | 1100 | 131 | 225 | 450 |
| AT-MIDI-xx-11-300-xxxx | 900 | 1100 | 175 | 300 | 450 |

Output Voltage = 0 - 0.7 x DC Input Voltage, coolant temperature 60°C
 The values above are typical and are dependent on the motor and application