Altivar 1260
Medium Voltage Drive
(700 to 6,500 HP)
Altivar 1260
Technical Specifications

Introduction

The Altivar 1260 by Schneider Electric is composed of Medium-Voltage IGBT-based, air-cooled frequency converters. They are designed to control both synchronous and induction AC motors, in a wide range of applications.

Its modular design allows having a wide range of powers and voltages. Furthermore, its intuitive structure enhances and makes easier the use and maintenance of the converter, as well as the system operation diagnose and supervision.

Years of experience have enabled us to combine the progress in vector control strategies with the control of three level rectifiers and inverters based on the latest semiconductor technologies commanded via optic fibre.

Key competitive advantages include:
- Flexible, modular and scalable architecture
- Power grid and motor friendly
- Low component count
- High quality, conservatively rated components
- Front access with easy maintenance
- Door-in-door LV cabinet
- Separate or close-coupled rectifier transformer
- Integrated PLC and UPS
- Powerful user interfaces (HMI + Web Application)
- Flexible to a wide range of applications and configurations
- Single voltage auxiliary power source
- Standard sine wave output filter

The result is a safe and flexible solution with a user-friendly interface. The Frequency Converter offered comprises the following assembled modules: Rectifier, Inverter /Output filter, DC Bus, and Control Unit.

Operation:

The rectifier provides an intermediate Medium Voltage DC Bus from the main MV AC power supply. Subsequently, the inverter supplies the motor from the DC Bus with the required frequency and voltage values according to the torque and speed settings demanded by the application.

Additional features supplied from LV AC power supply (cooling system, DC Bus pre-charge and discharge systems, grounding switch, etc.) guarantee the precise and safer operation of the converter. The whole assembly is controlled by a parameterized control unit with a Human-Machine Interface by means of a full color 7.5” touch-screen.
# Altivar 1260

## Technical Specifications

### Technical Characteristics

#### Drive – General

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rated Output Power</strong></td>
<td>700-6,500 HP (3 configurations)</td>
</tr>
<tr>
<td><strong>Line Side Topology</strong></td>
<td>24/36 Pulse DFE (Press-pack diodes) *</td>
</tr>
<tr>
<td><strong>Motor Side Topology</strong></td>
<td>3 Level NPC Inverter (MV-IGBTs-6,500V)</td>
</tr>
<tr>
<td><strong>Cooling System</strong></td>
<td>Air Cooled</td>
</tr>
</tbody>
</table>

* 36 pulse DFE above 4,800 HP

#### Drive Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Line Supply Voltage</strong></td>
<td>2 x 2 x 2350 Vac ±10%</td>
</tr>
<tr>
<td><strong>Line Supply Frequency</strong></td>
<td>60 Hz ± 5%</td>
</tr>
<tr>
<td><strong>Input Power Factor</strong></td>
<td>0.96</td>
</tr>
<tr>
<td><strong>Output Voltage</strong></td>
<td>0 ÷ 4160 Vac</td>
</tr>
<tr>
<td><strong>Output Frequency</strong></td>
<td>0 ÷ 100 Hz</td>
</tr>
<tr>
<td><strong>Rated Output Current</strong></td>
<td>73 to 787 amps depending on rating</td>
</tr>
<tr>
<td><strong>Efficiency at 100% of the Rated Operating Point</strong></td>
<td>97.7% (converter only)</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td>S1</td>
</tr>
<tr>
<td><strong>dV/dt</strong></td>
<td>&lt; 50V / µs (standard sine wave filter)</td>
</tr>
<tr>
<td><strong>Harmonics</strong></td>
<td>THDi &lt; 2% (standard sine wave filter)</td>
</tr>
</tbody>
</table>

1 Basic parameters of the motor as efficiency and cos (phi) must be confirmed
2 Maximum transformer Ucc=6% to meet output rated voltage
4 For other options ask manufacturer

#### Transformer Electrical Characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Voltage</strong></td>
<td>4,160V Delta, 3 phase, 60 HZ, 60KV BIL, two 2.5% tabs above and below</td>
</tr>
<tr>
<td><strong>Low Voltage</strong></td>
<td>Multiple winding, 2350V Wye /1355V, 30 KV BIL, HV to LV electrostatic shield</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td>Forced air cooled, rectifier duty, VPI, AA/FA, 8% impedance, K-Factor rating, 150 degrees C rise, AL conductor, 55-71 dB(A) sound level depending on rating, 40 degrees C ambient, 3300 ft max altitude</td>
</tr>
</tbody>
</table>
## Technical Characteristics

### Drive Auxiliary Power

<table>
<thead>
<tr>
<th>Auxiliary Power Requirements</th>
<th>3 Phase 400 ÷ 480 V, ± 10% ± 15kVA (Fans, Heaters, auxiliaries and control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>60 Hz +/- 5%</td>
</tr>
</tbody>
</table>

### Drive Control

<table>
<thead>
<tr>
<th>Motor Control Type&lt;sup&gt;4&lt;/sup&gt;</th>
<th>Vector Control</th>
</tr>
</thead>
</table>
| Static Speed Accuracy in Closed Loop| Constant Flux: < 0.01%   
Field Weakening: < 0.01%                      |
| Static Torque Accuracy in Closed Loop   | Constant Flux: < 1%   
Field Weakening: < 1%                      |
| Shaft Torque Ripple                  | Constant Flux: < 1%   
Field Weakening: < 1%                      |
| Torque Response Time                 | < 6 ms                                                                  |
| Drive Protections                    | Over current, Ground Fault, Output Short-circuit, Over / Low Voltage on DC Bus, Semiconductor Fault, Cooling fault, Motor Phases Unbalance |
| Motor Protections                    | Overload, Over-speed                                                      |

### Drive Ambient Conditions

<table>
<thead>
<tr>
<th>Permissible Operation Ambient Temperature&lt;sup&gt;3&lt;/sup&gt;</th>
<th>0 to +40ºC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permissible Storage Temperature</td>
<td>-15 to +75 ºC</td>
</tr>
<tr>
<td>Permissible Relative Air Humidity</td>
<td>5 to 98 % (non-condensing)</td>
</tr>
<tr>
<td>Altitude&lt;sup&gt;3&lt;/sup&gt;</td>
<td>&lt; 1000 m</td>
</tr>
<tr>
<td>Noise Level</td>
<td>&lt; 80 dB(A) (1m from cubicle line-up)</td>
</tr>
</tbody>
</table>

<sup>3</sup> See derating tables  
<sup>4</sup> For other options ask manufacturer

### Drive Cooling

<table>
<thead>
<tr>
<th>Cooling System</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Losses in Air</td>
<td>10 to 112 KW (depending on HP rating)</td>
</tr>
</tbody>
</table>
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Technical Characteristics

Drive Construction

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree Of Protection  ²</td>
<td>IP21 (UL Type 1), Front access</td>
</tr>
<tr>
<td>Paint Finish</td>
<td>RAL 7035</td>
</tr>
<tr>
<td>Dimension W / H / D</td>
<td>See tables for widths: Drive H = 90&quot; (110&quot; w/ fans), Drive D = 43&quot;; (Switch 37&quot; deep)</td>
</tr>
<tr>
<td>Approximate Weight</td>
<td>See tables</td>
</tr>
<tr>
<td>Cables Connection Access</td>
<td>Bottom (top access is optional)</td>
</tr>
<tr>
<td>Cable Connection</td>
<td>Defined on Technical Guideline</td>
</tr>
</tbody>
</table>

² See derating tables
³ For other options ask manufacturer

700 to 2,400 HP (24 pulse DFE with standard sine wave filter)

<table>
<thead>
<tr>
<th>Width* (inches)</th>
<th>Weight (Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>79&quot;</td>
</tr>
<tr>
<td>Transformer *</td>
<td>67 to 87</td>
</tr>
<tr>
<td>Switch (optional)</td>
<td>20</td>
</tr>
</tbody>
</table>

* Depending on KVA rating
+ Based on motor pf of .89 and efficiency of .96, 4160V

2,500 to 4,800 HP (24 pulse DFE with standard sine wave filter)

<table>
<thead>
<tr>
<th>Width* (inches)</th>
<th>Weight (Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>158&quot;</td>
</tr>
<tr>
<td>Transformer *</td>
<td>87 to 120</td>
</tr>
<tr>
<td>Switch (optional)</td>
<td>20</td>
</tr>
</tbody>
</table>

* Depending on KVA rating
+ Based on motor pf of .89 and efficiency of .96, 4160V

4,900 to 6,500 HP (36 pulse DFE with standard sine wave filter)

<table>
<thead>
<tr>
<th>Width* (inches)</th>
<th>Weight (Lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive</td>
<td>236&quot;</td>
</tr>
<tr>
<td>Transformer *</td>
<td>120 to 132</td>
</tr>
<tr>
<td>Switch (optional)</td>
<td>49.5</td>
</tr>
</tbody>
</table>

* Depending on KVA rating
+ Based on motor pf of .89 and efficiency of .96, 4160V
# Altivar 1260 Technical Specifications

## Drive Standard Features
- Integrated UPS
- Integrated PLC (inside Control Converter Unit)
- HMI and Web Application User Interfaces
- Close-coupled or separate transformer arrangement
- Analog Inputs Available: 4
- Analog Outputs Available: 4
- Digital Inputs Available: 20
- Digital Outputs Available: 20
- Drive Grounding System
- Emergency stop (button in cabinet door)
- Isolation Meter
- Operation Touch Screen (with SCADA)
- Output sine wave filter (LCR Filter)
- Internal Pre-charge and Discharge System
- Security Interlock System
- Fan Heaters to Avoid Condensation in Enclosures
- Varnished Boards
- Flying Restart Function
- Voltage Drop Functionality

### Other options available upon request

* For other options ask manufacturer

## Drive Standard Options
- Profibus DP or CAN Open Communications
- Sensorless Control (for quadratic torque applications)
- Black Out Prevention Security System
- Redundant Encoder
- Vibration Dampers
- Dynamic Braking Chopper
- Input / Output Isolation Switch
- Motor Grounding Switch
- Input Filter for Transformerless Application
- Dv/dt Filter
- Special Degree of Protection up to IP42
- Lighting and socket in control cabinet
- Special RAL Painting
- Multi-motor Drive Configuration
- Multi-winding Motor Drive Configuration
- Redundant Drive Configuration
- Control Cabinets Indications (placed on door)
- Motor and Transformer Supervision I / Os.
- F.O. Adaptation Module for Digital Signals (Long Distances)
- Standard Certifications (ABS, DNV, ATEX and others)
- Top Cables Connection Access
- Outdoor NEMA 3R or liquid filled rectifier transformer

* For other options ask manufacturer

Other options available upon request
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Base configuration (x1) drive cabinet layout (typical)

BPM = Basic Power Module
PMM = Power Management Module
DFE = Diode Front End
Altivar 1260
Technical Specifications

Mechanical Outline Drawings

700 to 2,400 HP

Transformer
Drive (x1)
Switch (optional)

2,400 to 4,800 HP

Transformer
Drive (x2)
Switch (optional)

4,900 to 6,500 HP

Transformer
Drive (x3)
Switch (optional)
Altivar 1260
Technical Specifications

Base (x1) drive configuration drive top & bottom view

Electric Diagrams

Base drive configuration (x1) to 2,400 HP
Altivar 1260
Technical Specifications

Base drive configuration standard output sine wave filter (typical diagram)

(X 1)
3-phase inductor

(X 3)
resistors

(X 2)
capacitor modules

Electrical diagram of the sine wave filter

Drive (x2) configuration to 4,800 HP
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Technical Specifications

Drive (x3) configuration to 6,500 HP
The HMI electronics operator panels communicate with the CCU (Converter Control Unit) of the frequency converter through the Modbus RTU communications protocol or Modbus TCP communications protocol. It presents a series of panels that are used to monitor and control the most common features of the converter.

The most important panels, such as those that display the trips, alarms and warnings of the converter, are accessible from any level of the application. In addition, there are pop-up panels for information and confirmation purposes.

A tool for the entire life cycle is an easy to use software tool designed to support the drive’s life cycle during: start-up, monitoring, backup, configuration, diagnostics, control, data recording, setting parameters, alarm history & commissioning—either locally or remotely.

The system runs as a web application with no need for any special software on your PC. Instead, once connected via the Ethernet link, the drive will supply your PC with the necessary software. Different security levels are available.
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Drive Derating Tables

Ambient Temperature: 1%/1 degree C

Altitude: 1%/100 M
Notes: