

# Altivar® 61

Variable speed AC drives  
Power over the *elements!*



For 3-phase asynchronous motors from 1 to 900 HP.





# Altivar® 61 Drives

## *Manage* and *monitor* your building

The Altivar® 61 drive defines **ease of use** for variable speed drives used in centrifugal pump and fan applications offering the **highest level of features, functions and flexibility**. Its evolutionary design will **reduce installation** and **start-up time** while offering **reliable operation, simple diagnostics** and **energy efficiency**.

The Altivar 61 drive enables you to:

- Reduce **energy costs** by reducing motor speed
- Reduce **installation costs** by eliminating throttling valves or inlet guide vanes typically used to control flow, offering internal connection to major building networks and with quick and simple installation
- Improve **up-time** by providing superior **voltage dip ride through**
- Reduce **life cycle costs** of the installation by eliminating mechanical shock to belts and motors
- Improve indoor **air quality** and **occupant comfort** through accurate flow control



### Supply fans for heating and air conditioning:

- Adjustment of flow rates on the basis of actual need
- Enhance comfort by reducing noise pollution caused by the motor with unique random switching frequency modulation
- Detection of broken fan belt
- Automatic restart after most faults



### Ventilation fans exhaust/smoke extraction

- Forced start function with fault inhibition and fireman's override
- For high inertia applications, braking possible using resistors
- Run permissive damper input
- Catch on the fly by speed search regardless of the direction of rotation to start wind milling fans



### Cooling tower fans

- Suppression of mechanical resonance using skip/jump frequencies
- Loss of follower with alarm management
- External fault input
- Adjustments to eliminate gear box backlash and cogging



## Multipump: water distribution

- With the multipump option card, the **Altivar 61 drive** provides **flexibility, user-friendliness and adaptability** for the management of multiple pump installations
- The multipump option card contains a variety of pre-programmed function and features to manage multipump installations, such as **monitor and fully control the installation** by switching and managing the wear and tear between pumps



## Municipal water pumps

- **Safety and protection of pump:** Detection of current threshold
- Limitation of operating time at low speed
- PTC probe management
- Auto-restart function with configurable response
- Underload and overload detection



## Hot water and chilled water pumps

- Underload and overload detection with alarm
- Low flow detection
- Sleep/wake function
- Power used, power on time, motor run time

## The Altivar 61 drive offers the following values:

- For **OEMs**, it offers **customizable** capability that allows the OEM to add value and provide a **unique** solution.
- For **System Integrators**, it offers **flexibility, functionality** and wide product range to adapt to a wide variety of job requirements
- For **End User** installations, it offers **quick** installation, **simple** start-up, and on-board diagnostics for **uncomplicated** maintenance.

# Altivar® 61 Drives

## The *leading edge!*

This new generation of AC drives demonstrates the expertise and know-how of Schneider Electric with respect to AC drives. Exceptional flexibility, advanced functions and a high level of customization...while always keeping the emphasis on **simplicity**. Open to many communication networks, the Altivar 61 drive provides **ingenious solutions** for all your HVAC fan and pump requirements.

### A *powerful* fleet

- 1 to 900 HP  
3-phase 380 to 480V
- 1 to 125 HP  
3-phase 200 to 240V
- Integrated EMC level A filters
- Worldwide offer:  
UL, CSA, CE, C-Tick, GOST,  
UL1995 Plenum rated, SEMI-F47

### *Remarkable* performance for fan and pump applications

- Under voltage ride-thru qualified to SEMI-F47 standard
- Catch on the fly restart
- Up to **110% overcurrent**
- Energy economizer motor algorithm to maximize energy savings, or select two point or five point Volts/Hz profile
- Three skip frequency bands
- Bump-less transfer from automatic to hand control

### *Expandable* capabilities

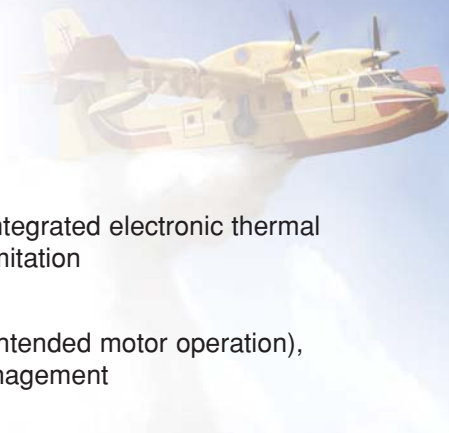
The drive is equipped with a wealth of features, application functions, inputs/outputs and communication capabilities. These can be further extended by:

- input/output extension cards
- communication cards
- a Controller Inside programmable card
- a Multipump application card



### *Simply Smart!*

Leverage **ingenuity**  
and intelligence  
for **ease** of use



## Protection at all levels

- **Of the Motor:**  
Thermal protection by PTC probe or integrated electronic thermal overload, voltage and current surge limitation
- **Of the Machine:**  
Power removal safety function (no unintended motor operation), alarm management, external fault management
- **Of the Drive:**  
Protection in the event of overheating, current limitation using hardware and software, protection against corrosive environments
- **Of the Installation:**  
The intelligent design of the Altivar 61 drive power system architecture optimizes the balance between inductance and capacitance to achieve effective harmonic mitigation with 3% equivalent impedance without requiring additional panel space. This unique design minimizes dc bus ripple, reduces input currents and lowers harmonic currents. This eliminates the need to oversize power wiring, disconnect means, and short circuit protection devices. This also improves the efficiency of the drive and allows operation at higher ambient temperature than other AC drives.
- **Of the Environment:**  
Developed in accordance with the Eco-Design principle. Materials used have been selected for their minimal impact on the environment and conform to the RoHS directive (Restriction of Hazardous Substances) that prohibits certain levels of materials. Also, 88% of the parts used for the Altivar 61 drive are recyclable, conforming to the directive WEEE (Waste Electrical & Electronic Equipment).



## Easy to control...

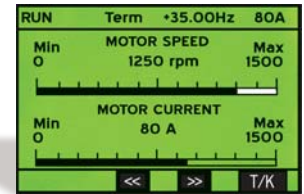
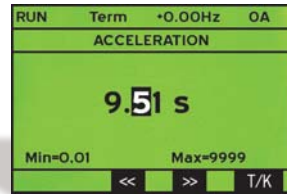
- Graphic screen with customizable display
- Plain text with six languages (English, Chinese, German, Spanish, French and Italian)
- Navigation wheel for easily “surfing” through the menus
- “Simply Start” menu for quick start-up and immediate benefit of the full performance of the Altivar 61 drive
- Function keys for short-cuts, on-line help or configurable for some applications
- Continuous display of the operating parameters of the motor
- Hand/auto function key provides one button bumpless transfer between terminal strip control and control with the keypad, or between communication network control and control with the keypad



# Altivar® 61 Drives

## Message received: *all clear...*

The Altivar 61 drive is a professional at communication: its messages are clear, precise, illustrated and intuitive to use.



### Flexibility

with its remote mounting alternatives:

- on the door of an enclosure, with an IP54 or IP65 degree of protection
- for multipoint connection to several drives

Stores four configurations for transfer to other drives.

### Protection

Multi level password protected, for allowing access to parameters or configurations with complete security.

### Refine

select filtering and scaling values to analog inputs and analog outputs

### Ergonomic

with its navigation button. With just one finger, freely and quickly "surf" the drop-down menu.

### Clarity

of the display comprising eight lines of text and graphics. Legibility from 16 ft. Six languages available: English, Chinese, German, French, Spanish and Italian.

### Simplicity

using function keys for short-cuts, direct access and on-line help, display of the minimum and maximum values of the parameters.



### Customization

of parameters, display screens, on-line monitoring, creation of "user" menu.

### Adaptability

add timing delays to logic inputs, logic outputs and relay output.

### Modify

configure the active state on the relay and logic outputs.

## Configure for your application

- Integrated **macro-configurations** are designed for a wide variety of applications and uses: pump and fan, connection to communication networks and PID regulation. They can easily be customized
- The architecture of the menus, hierarchical parameter system and short-cut functions enable **simple and quick programming**, even for the most sophisticated functions

RUN	Term	+60.00Hz	5.4A
1.1-SIMPLY START			
2/3 wire control	:	2 wire	
Macro-configuration	:	Pumps, Fans	
Standard mot. freq.	:	60Hz NEMA	
Rated motor power	:	10HP	
Rated motor volt.	:	460V	
Code	<<	>>	406V

The "Simply Start" menu provides easy access to the most common parameters to reduce start-up time of the Altivar 61 drive.

RDY	Term	+0.00Hz	0.0A
1. DRIVE MENU			
1.1 SIMPLY START			
1.2. MONITORING			
1.3. SETTINGS			
1.4. MOTOR CONTROL			
1.5. INPUTS / OUTPUTS CFG			
Code	<<	>>	T/K

RDY	Term	+0.00Hz	0.0A
QUICK NAVIGATION			
RETURN TO MAIN MENU			
DIRECT ACCESS TO...			
10 LAST MODIFICATIONS			
Code	<<	>>	

## More on-board *diagnostics*

Ample diagnostics available via the graphic terminal **simplify setting-up** and **maintaining** your equipment.

The state of the drive is recorded at moment of a fault to assist with diagnostics

- Elapsed time
- Line voltage
- Motor current
- and more...



With PowerSuite™ software workshop you **stay in control, even from a distance!**

For configuring, adjusting and monitoring your Altivar drive...keep an eye on your installations via Bluetooth®...

**Oscilloscope function** incorporated in the Altivar 61 drive: display multiple channels using PowerSuite.

RUN	Mod.	+50.00Hz	5.4A
COMMUNICATION MAP			
Cmd channel	:	Modbus	
Cmd value	:	ABCD Hex	
Active ref. ch	:	RUN	
Frequency re	:	+50.00Hz	
ETA status w	:	5.4A	
Code	<<	>>	T/K

LOGIC INPUT MAP						
PR	LI1	LI2	LI3	LI4	LI5	LI6
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LI7	LI8	LI9	LI10			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
MOT LI: 010101010101B						
			<<	>>	T/K	

Display of inputs/outputs, communication, etc.

RDY	Term	+0.00Hz	0.0A
TEST IGBT			
IGBT 1		OK	
IGBT 2		Open	
IGBT 3		OK	
Code	<<	>>	

Test functions for drive, motor, components, inputs/outputs, etc.

RUN	Term	+50.00Hz	5.4A
SERVICE MESSAGE			
For technical support, dial 123-45			
Code	<<	>>	T/K

**Service messages** of all types of information on the display: a telephone number, a specific instruction... stored in the drive.

RUN	Term	+50.00Hz	5.4A
1.11 IDENTIFICATION			
ATV61HU22N4			
2.2kW/ 3HP			
380 / 480 V			
Appl. Software V1.0 IE 01			
MC Software V1.0 IE 01			
Code	<<	>>	T/K

Identity incorporated in the drive simplifies **installed base management.**

# Altivar® 61 Drives

## *Evolutionary* design

### *Unrivalled* basic equipment

With the many functions already integrated in the Altivar 61 drive, you **reduce the cost of solutions** for your installation. The most economical solution is offered without compromise!

Interface with the typical HVAC and Pump I/O requirements such as:

- run command: Input to VFD by remote dry contact from the BAS
- speed command: Input to VFD from the BAS
- run status: Output contact from VFD to the BAS
- speed feedback: Analog output from VFD to the BAS
- fault output: Form-C contact from VFD to the BAS
- fire/safety interlock: 24Vdc supplied by VFD, Use N.C. contacts

### Fans optimized for long life and serviceability

The cooling fans on the Altivar 61 drive are designed to be easily removed for cleaning and servicing. These fans can be removed without removing the drive from the wall or its enclosure and are intelligently cycled on only when required to cool the drive, maximizing the life of the fan.

### With more than 100 fan and pump functions available, you benefit from:

- increased flexibility
- high level of customization
- high level of integration

### Integrated Modbus® and CANopen Port

With these two standard networks, you achieve:

- simplified installation
- savings in panel space
- direct connection to building network systems

### Dialogue

The graphic terminal can be multipoint connected to several drives. The Altivar 61 drive is also available with a 7-segment display for ratings up to and including 20 HP @230Vac and 100 HP @460Vac for the most economical solution.

### EMC mastered

Incorporating level A conducted and radiated EMC filters, the Altivar 61 drive simplifies installation and establishes conformity of the machine for CE marking, without additional costs.



### “Power Removal” function

Conforming to the machine standard EN 954-1 category 3 and the standard for electrical installations IEC/EN 61508-1 SIL2, and certified by a competent body (INERIS), it enables:

- easier machine certification
- elimination of electromechanical relays
- reduced wiring and installation times
- space savings in enclosures



## For any *Mounting* requirement:

### On a wall

- Simple compact installation use the Type 1 conduit kit

### Reduce enclosure size

- side by side mounting reduces panel space
- industry leading 50° C rating
- externally mounting the heat sink with kit

### In severe environments

- resistance to corrosive environments conforming to class 3C2 of IEC 60721-3-3
- Exposed copper is tinned, circuit boards are conformal coated in critical areas, and plastics are treated to better withstand the corrosive nature of certain oils. (This protection is standard on products 75 HP and higher @ 230 VAC and on 125 HP and higher @ 460 VAC. Add S337 to the end of the catalog number to receive this protection on smaller horsepower products)

## *Modular* configuration

When you require additional inputs or outputs, a communication network connection or desire decentralized equipment control, you can select up to two option cards that snap in without requiring additional panel space

### ■ *Input/output extension* cards:

Logic inputs, open collector outputs, relay, PTC probe input, analog inputs, analog outputs, pulse input

### ■ *Communication* cards:

for connection to the main communication networks available on the market

#### *For building networks:*

Lonworks, BACnet, Metasys N2, Apogee FLN P1

#### *For industrial networks:*

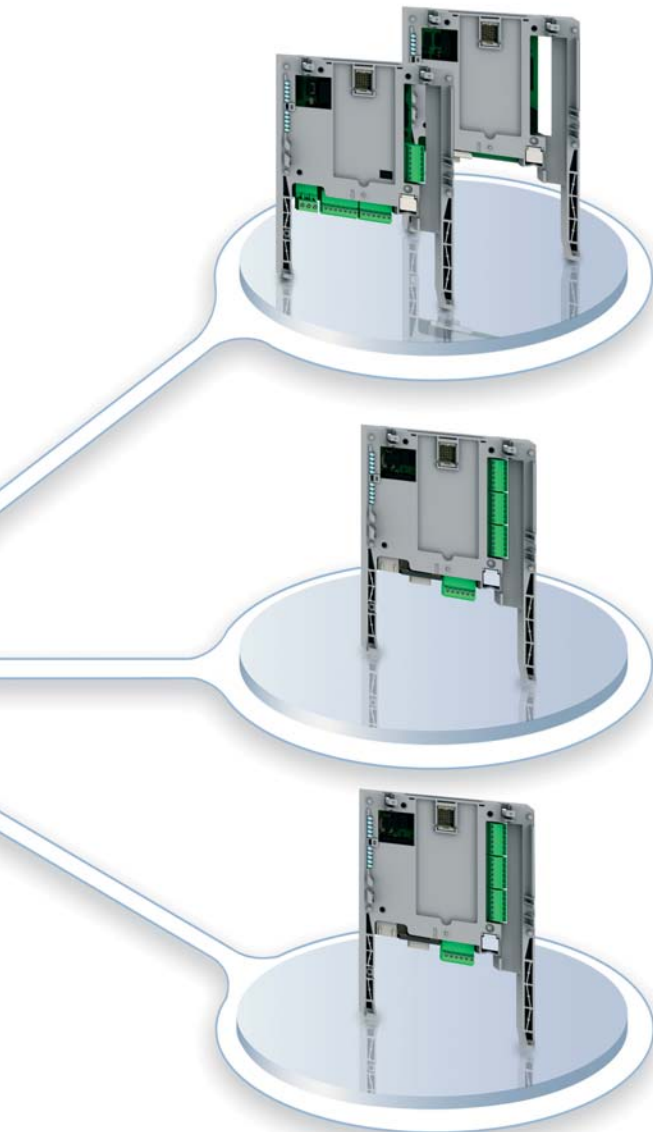
Fipio, Ethernet, Modbus Plus, Profibus DP, DeviceNet, Uni-Telway, InterBus

### ■ *Controller Inside* programmable card:

Allows integration of simple programs in the drive for an OEM or integrator to provide a unique solutions

### ■ *The pump application* option card incorporates application functions for managing pumps

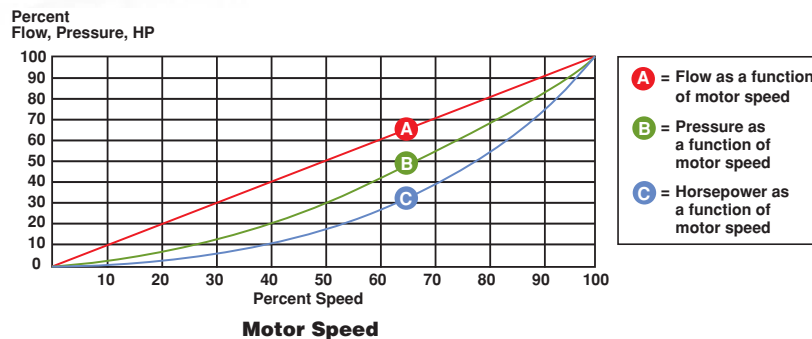
- Single pump or multiple pump management with up to four pump motors with variable speed and fixed speed motors
- Management of relative operating time
- Set-up screens minimize start-up
- Activate only the functions your system requires
- Instrumentation scaling
- Real time clock
- System status and fault messaging



# Go *green* with the Altivar® 61 Drive!

Let the Altivar 61 drive operate your buildings with greater efficiency. Using the Altivar 61 drive on fans and pumps can significantly reduce your energy costs. In many instances, the payback period for using an adjustable frequency drive in place of other flow control methods is less than 18 months.

Most HVAC systems are designed to keep the building cool on the hottest days and warm on the coldest days. Therefore, the HVAC system only needs to work at full capacity on the 10 or so hottest days and the 10 or so coldest days of the year. On the other 345 days, the HVAC system may operate at a reduced capacity. This is where a variable air volume system with variable frequency drives (VFDs) can be used to match air flow to actual heating and cooling demands. The VFD can reduce the motor speed when full flow is not required, thereby reducing the power required and the electrical energy used.



## An Example of an Energy Saving Calculation\*

A fan with a 20 horsepower motor supplies air 10 hours a day for 260 days a year and the energy cost is \$0.10 cents per kilowatt-hour. Cost of running full speed:

$$20 \text{ hp} \times 0.746 \text{ kW/hp} \times 2600 \text{ hours} \times \$0.10/\text{kWhr} = \mathbf{\$3879.20}$$

Assuming the fan does not need to run at full speed all of the time, let's use an example of:

- Running full speed (100%) for 25% of the time
- 80% speed for 50% of the time
- 60% speed for the remaining 25% of the time

Cost of running with an AC drive controlling the motor:

$$20 \text{ hp} \times (1) \times 0.746 \text{ kW/hp} \times 650 \text{ hours} \times \$0.10/\text{kWhr} = \$969.80$$

$$20 \text{ hp} \times (0.8)^3 \times 0.746 \text{ kW/hp} \times 1300 \text{ hours} \times \$0.10/\text{kWhr} = \$993.08$$

$$20 \text{ hp} \times (0.6)^3 \times 0.746 \text{ kW/hp} \times 650 \text{ hours} \times \$0.10/\text{kWhr} = \$209.48$$

$$\mathbf{Total = \$2172.36}$$

$$\mathbf{Annual savings: \$3879.20 - \$2172.36 = \$1706.84}$$

*Actual results may vary for closed loop pumping and variable air volume systems.*

## Conserving Earth's *Energy*

A variable air/water/refrigerant volume HVAC system controlled by VFDs can go a long way in helping a new or existing building achieve greater energy efficiency. Not only will HVAC systems run by VFDs save money, but they also will increase the comfort of the building and reduce equipment maintenance costs and downtime. Plus, meeting the requirements of the Energy Policy Act of 2005 and achieving a more "green" system through LEED certification can offer more money-saving opportunities if the building is eligible for state and local government incentives. Ultimately, more efficient HVAC systems create more energy efficient buildings, which in turn conserves energy resources across the U.S. and the world.

# Altivar® 61 Drives *Eco-Design:* thinking of the future

Within its sustainable development policy, Schneider Electric is committed to environmental friendliness:

*“Our products safeguard life, make goods safer and optimize the consumption of energy and natural resources. We are actively involved in design, production, distribution and recycling processes that are environmentally friendly. Protection of the environment forms an integral part of our strategic decision making.”*

ISO 14 001 certified sites for their manufacturing operations:

- Pacy-sur-Eure/France
  - Houston TX/USA
  - Mie/Japan
- and certified for their Eco-Design cycles

The new generation of **Altivar 61 drives** benefits from an **Eco-Design** approach. The same importance has been given to the “environment” criterion as that for other criteria, such as: performance, quality, ergonomics...and this applies to each stage of the **life cycle of the product\*** (manufacture, distribution, usage and end of life).

## Exemplary end of life recovery ...

**88%** of the parts used for the Altivar 61 drive are recyclable. They enable the recuperation of energy (incineration with energy recuperation) or of material (recycling, composting) conforming to the European directive WEEE (Waste Electrical & Electronic Equipment).

### With Eco-Design



### Without Eco-Design



**70 %**

Recovery rate imposed by the European directive WEEE.

## ... due to a strict selection and ideal combination of materials

Materials used for the **Altivar 61 drive** have been selected for their minimal impact on the environment. Conformity to the European directive ROHS (Restriction Of Hazardous Substances) that prohibits the use of materials such as lead, cadmium, mercury and hexavalent chromium.

\*For the complete “Product Environmental Profile” document relating to the entire range, please contact Schneider Electric.

Analysis carried out using EIME (Environmental Information and Management Explorer) software and based on international averages.

## The *green building* movement is on!

The Altivar 61 drive can help create green buildings. The U.S. Green Building Council® (USGBC) developed and administered the LEED® (Leadership in Energy and Environmental Design) Green Building Rating System™, to define green buildings. One of the prerequisites of the LEED-NC Energy and Atmosphere component is meeting both the mandatory provisions and prescriptive/performance requirements of ASHRAE 90.1-2004. This standard sets minimum requirements to promote the principles of effective, energy-conserving

design for buildings and building systems. More specifically, the ASHRAE prescriptive strongly recommends that HVAC systems with total fan power greater than 5 hp have variable air volume fan control and that individual variable air volume fans with motors greater than or equal to 15 hp have variable speed drives.

For government buildings, government regulations such as the Energy Policy Act of 2005 (EPAAct) mandate energy monitoring and energy efficiency improvements. LEED certification alone has its benefits. In addition to saving energy costs, it also allows the building owner to take advantage of state and local government incentives and makes the building project more marketable to tenants who are seeking more energy-efficient/sustainable facilities.

The Altivar 61 drive can help create green buildings by providing gains in energy efficiency, easier commissioning and monitoring of the building, and by its Eco-Design.

# Altivar® 61 Drives Electrical Specifications

Input Voltage	200 -15% to 240 +10%, 380 -15% to 480 +10%
Displacement Power Factor	98% through speed range
Input Frequency	50 Hz -5% to 60 Hz +5%
Drive Input Section	Six pulse bridge rectifier
Drive Output Section	Three Phase, IGBT Inverter with Pulse Width Modulated (PWM) output Maximum voltage equal to input voltage
Galvanic Isolation	Galvanic isolation between power and control (inputs, outputs and power supplies)
Frequency Range of Power Converter	0.5 to 500 Hz
Torque/overtorque	110% of nominal motor torque for 60 s, minimum
Current (transient)	110% of controller rated current for 60 s, minimum
Switching Frequency	Selectable from 1 to 16 kHz, 12 kHz nominal rating for 1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V. Selectable: 2.5 to 8 kHz, 2.5 kHz nominal rating for 75-125 hp @ 200/240 V 125-900 hp @ 380/480 V.
Speed Reference Inputs	AI: 0 to +10 V, Impedance = 30 kOhms Used for Speed potentiometer, 1-10 kOhms AI2: Factory setting = 4 to 20mA, software configurable for current, (0-20mA, X-Y) or voltage
Analog Reference Resolution	0.1 for 100 Hz (11 bits)
I/O Sampling Time	2 ms +/- 0.5 ms on analog inputs & outputs, & logic inputs, 7 ms +/- 0.5 ms on relay outputs
Power Removal/Run Permissive Input	24Vdc input, for use to prohibit unintended equipment operation
Efficiency	98% at full load typical
Acceleration and Deceleration Ramps	0.1 to 999.9 seconds (definition in 0.1 s increments)
Skip Frequencies	Three configurable skip frequency/jump frequency bands
Motor Control Profiles	Energy economizer (flux optimization) motor algorithm to maximize energy savings. (Automatically optimizes voltage based on load.) or select from 2 point or 5 point volts/hertz profile or SLFV (sensorless flux vector)
Speed Range	1 to 100, open loop
Motor Protection	Class 10 electronic overload protection or PTC probe
Graphic Display Terminal	Simply Start menu, PID set-up menu, network set-up menu, Logic I/O & Analog I/O mapping and status, Monitoring and self diagnostics with fault messages and status such as; Power on time, elapsed time, motor run time, line voltage, motor current, ready to run, running, motor speed
Compliance	RoHS and WEEE (Waste Electrical & Electronic Equipment compliant)
Codes and Standards	UL, CSA, NOM 117, DNV, CE, C-Tick, GOST, UL 1995 Plenum rated, SEMI-F47 certified for voltage dip ride-through

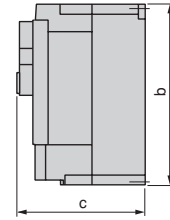
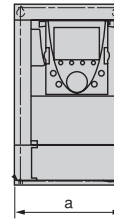
# Altivar® 61 Drives Environmental Specifications

Temperature	Operation:+14 to + 122° F (-10 to +50° C) Storage:-13 to +158° F (-25 to +70° C)
Humidity	95% with no condensation or dripping water, conforming to IEC 600068-2-3.
Altitude	3,300 ft. (1,000 m) without derating; 3,300- 9850 ft (1,000-3,000 m) derate output current by 1% for each additional 330 ft. (100 m). 6560 ft (2000m) maximum for corner grounded distribution system.
Enclosure Rating	<i>1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V:</i> IP 41 on top IP21 on all other surfaces, Type 1 with optional conduit kit. <i>75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V:</i> IP 41 on top, IP30 sides & front IP00 on bottom, Type 1 w/ optional conduit kit. 600 -900 hp @ 380/480 V. IP 41 on top, IP30 sides and front, IP00 on bottom
Pollution Degree	<i>1-20 hp @ 200/240 V, 1-25 hp @ 380/480 V:</i> Pollution degree 2 per IEC/EN 61800-5-1, Option S337 provides protection per IEC 60721-3-3 Class 3C2 <i>25-60 hp @ 200/240 V, 30-100 hp @ 380/480V:</i> Pollution degree 3 per IEC/EN 61800-5-1, Option S337 provides protection per IEC 60721-3-3 Class 3C2 <i>60-125hp @ 200/240 V, 125-900 hp @ 380/480V:</i> Pollution degree 3 per IEC/EN 61800-5-1 and protection per IEC 60721-3-3 Class 3C2
Vibration Resistance	1-60hp @ 200/240V 1-100 hp @ 380/480 V Conforming to IEC/EN 60068-2-6 1.5mm peak to peak from 3 to 13 Hz, 1gn from 13 to 200 Hz. 75-125 hp @ 200/240V, 125-900 hp @ 380/480V: Conforming to IEC/EN 60068-2-6 1.5mm peak to peak from 3 to 10 Hz, 0.6gn from 10 to 200 Hz.
Shock Resistance	1-60 hp @ 200/240 V, 1-100 hp @ 380/480 V: 15gn for 11ms conforming to IEC/EN 600068-2-27 75-125 hp @ 200/240 V, 125-500 hp @ 380/480 V: 7gn for 11ms conforming to IEC/EN 600068-2-27 600-900 hp @ 380/480 V. 4gn for 11ms conforming to IEC/EN 600068-2-27

# Altivar® 61 Drives Dimensions and Weights

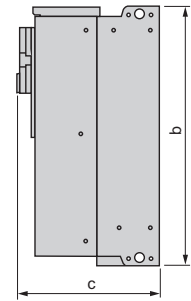
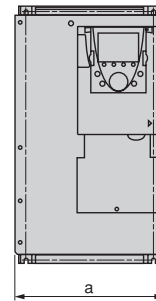
With LCD Graphic Display Terminal

Frame Size	a Width		b Height		c Depth		Weight		b Height with Type 1 Kit	
	mm	In.	mm	In.	mm	In.	kg.	lbs.	mm	In.
1	130	5.12	230	9.06	175	6.89	3	6.61	357	14.05
2	155	6.10	260	10.24	187	7.36	4	8.82	387	15.23
3	175	6.89	295	11.61	187	7.36	5.5	12.13	422	16.61
4	210	8.27	295	11.61	213	8.39	7	15.43	396	15.61
5	230	9.06	400	15.75	213	8.39	9	19.84	502	19.75



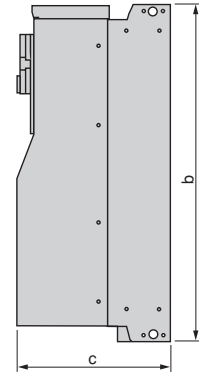
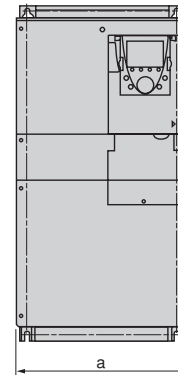
For a drive without a graphic display terminal, the depth is reduced by 26mm (1.02 in)  
 For a drive with one option card installed, the depth is increases 23mm (0.91 in)  
 For a drive with two option cards installed, the depth is increases 46mm (1.81 in)

Frame Size	a Width		b Height		c Depth		Weight		b Height with Type 1 Kit	
	mm	In.	mm	In.	mm	In.	kg.	lbs.	mm	In.
6	240	9.45	420	16.54	236	9.29	30	66.14	547	21.54
7	240	9.45	550	21.65	266	10.47	37	81.57	677	26.65
8	320	12.60	550	21.65	266	10.47	37	81.87	753	29.65
9	320	12.60	630	24.80	290	11.42	45	99.21	833	32.80



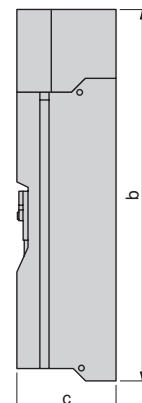
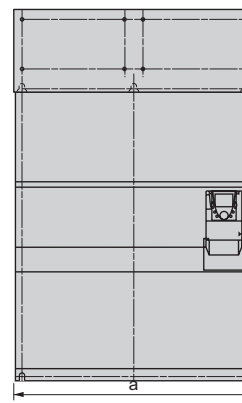
For a drive without a graphic display terminal, the depth is reduced by 26mm (1.02 in)  
 For a drive with one option card installed, the depth is increases 23mm (0.91 in)  
 For a drive with two option cards installed, the depth is increases 46mm (1.81 in)

Frame Size	a Width		b Height		c Depth		Weight		b Height with Type 1 Kit	
	mm	In.	mm	In.	mm	In.	kg.	lbs.	mm	In.
10	320	12.60	920	36.22	377	14.84	74	163	985	38.77
11	360	14.17	1022	40.24	377	14.84	80	176	1188	46.79
12	340	13.39	1190	46.85	377	14.84	110	242	1471	57.90
13	440	17.32	1190	46.85	377	14.84	140	309	1407	55.40
14	595	23.43	1190	46.85	377	14.84	215	474	1458	57.40



For a drive with one option card installed, the depth remains the same  
 For a drive with two option cards installed, the depth is increases 15mm (0.59 in)

Frame Size	a Width		b Height		c Depth		Weight	
	mm	In.	mm	In.	mm	In.	kg.	lbs.
15	890	35.04	1390	54.72	377	14.84	225	496
16	1120	44.09	1390	54.72	377	14.84	300	661



For a drive with one option card installed, the depth remains the same  
 For a drive with two option cards installed, the depth is increases 15mm (0.59 in)

# Altivar® 61 Drives Selection guide

## Supply voltage: 3-phase 200...240V

Motor		Drive		Frame size
kW	HP	Amps	References (LCD keypad included)	
0.75	1	4.8	ATV61H075M3 <sup>(1)</sup>	1
1.5	2	8	ATV61HU15M3 <sup>(1)</sup>	1
2.2	3	11	ATV61HU22M3 <sup>(1)</sup>	2
3	–	13.7	ATV61HU30M3 <sup>(1)</sup>	2
4	5	17.5	ATV61HU40M3 <sup>(2)</sup>	2
5.5	7.5	27.5	ATV61HU55M3 <sup>(2)</sup>	3
7.5	10	33	ATV61HU75M3 <sup>(2)</sup>	4
11	15	54	ATV61HD11M3X <sup>(3)</sup>	5
15	20	66	ATV61HD15M3X <sup>(3)</sup>	5
18.5	25	75	ATV61HD18M3X <sup>(3)</sup>	6
22	30	88	ATV61HD22M3X <sup>(3)</sup>	6
30	40	120	ATV61HD30M3X <sup>(3)</sup>	8
37	50	144	ATV61HD37M3X <sup>(3)</sup>	8
45	60	176	ATV61HD45M3X <sup>(3)</sup>	8
55	75	221	ATV61HD55M3X <sup>(3)(4)</sup>	10
75	100	285	ATV61HD75M3X <sup>(3)(4)</sup>	10
90	125	359	ATV61HD90M3X <sup>(3)(4)</sup>	11

For 20 HP and smaller, add the letter "Z" to the end of the reference for an Altivar 61 to receive the drive with an LED keypad in place of the LCD keypad.

- (1) For single-phase 0.75 to 7.5 kW range, select the next rating up (example: 2.2 kW - reference = ATV61HU30M3).
- (2) For single-phase operation, select the next rating up and add a line choke.
- (3) Without EMC filter.
- (4) With integrated DC bus inductance.

## Supply voltage: 3-phase 380...480V

Motor		Drive		Frame size
kW	HP	Amps	References (LCD keypad included)	
0.75	1	2.3	ATV61H075N4 <sup>(4)</sup>	1
1.5	2	4.1	ATV61HU15N4 <sup>(4)</sup>	1
2.2	3	5.8	ATV61HU22N4 <sup>(4)</sup>	1
3	–	7.8	ATV61HU30N4 <sup>(4)</sup>	2
4	5	10.5	ATV61HU40N4 <sup>(4)</sup>	2
5.5	7.5	14.3	ATV61HU55N4 <sup>(4)</sup>	3
7.5	10	17.6	ATV61HU75N4 <sup>(4)</sup>	3
11	15	27.7	ATV61HD11N4 <sup>(4)</sup>	4
15	20	33	ATV61HD15N4 <sup>(4)</sup>	5
18.5	25	41	ATV61HD18N4	5
22	30	48	ATV61HD22N4	6
30	40	66	ATV61HD30N4	7
37	50	79	ATV61HD37N4	7
45	60	94	ATV61HD45N4	9
55	75	116	ATV61HD55N4	9
75	100	160	ATV61HD75N4	9
90	125	179	ATV61HD90N4 <sup>(5)</sup>	10
110	150	215	ATV61HC11N4 <sup>(5)</sup>	10
132	200	259	ATV61HC13N4 <sup>(5)</sup>	11
160	250	314	ATV61HC16N4 <sup>(5)</sup>	12
220	350	427	ATV61HC22N4 <sup>(5)</sup>	13
250	400	481	ATV61HC25N4 <sup>(5)</sup>	14
315	500	616	ATV61HC31N4 <sup>(5)</sup>	14
400	600	759	ATV61HC40N4 <sup>(5)</sup>	15
500	700	941	ATV61HC50N4 <sup>(5)</sup>	15
630	900	1188	ATV61HC63N4 <sup>(5)</sup>	16

- (4) For 100 HP and smaller, add the letter "Z" to the end of the reference for an Altivar 61 to receive the drive with an LED keypad in place of the LCD keypad.
- (5) With integrated DC bus inductance.

## Inputs/outputs on board

- Analog input #1: +/- 10Vdc bipolar input, 1 bits + 1 sign resolution, 2ms +/- .5ms sample time
- Analog input #2: software selectable for 1-10Vdc or x-y mA  
x-y selectable from 0-20mA, 11 bits resolution, 2ms +/- .5ms sample time
- Analog output #1: software selectable for 1-10Vdc or x-y mA  
x-y selectable from 0-20mA, 10 bits resolution, 2ms +/- .5ms sample time
- Relay output #1: one NO (normally open) one NC (normally closed)
- Relay output #2: one NO (normally open)
- 6 logic inputs 24Vdc, 2ms +/- .5ms sample time  
Multiple function assignment possible  
Positive logic (source) or Negative logic (sink) choice LI6 offers PTC probe assignment
- Power Removal input: 1 input for interlocking function (run permissive)
- RJ45 port Modbus or CANopen (selectable)

## PowerSuite software workshop

- PowerSuite CD-ROM for PC \_\_\_\_\_ VW3 A 8104
- Connection kit for PC \_\_\_\_\_ VW3 A 8106
- Adaptor for wireless link Modbus-Bluetooth® \_\_\_\_\_ VW3 A 8114

## Input/output cards

- Logic inputs/outputs  
1 voltage output, 24V  
1 voltage output, -10V  
1 logic output, relay  
4 programmable logic inputs  
2 assignable logic outputs with open collector  
1 input for 6 PTC probes max. \_\_\_\_\_ VW3 A 3201

## Extended inputs/outputs

- Same as logic inputs/outputs card +  
2 analog inputs  
2 analog outputs  
1 pulse input \_\_\_\_\_ VW3 A 3202

## Communication cards

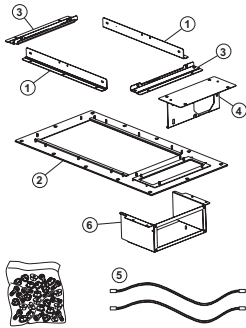
- Modbus Plus \_\_\_\_\_ VW3 A 3302
- Uni-Telway \_\_\_\_\_ VW3 A 3303
- InterBus \_\_\_\_\_ VW3 A 3304
- Profibus DP \_\_\_\_\_ VW3 A 3307
- DeviceNet \_\_\_\_\_ VW3 A 3309
- Ethernet \_\_\_\_\_ VW3 A 3310
- Fipio \_\_\_\_\_ VW3 A 3311
- LonWorks \_\_\_\_\_ VW3 A 3312
- METASYS N2 \_\_\_\_\_ VW3 A 3313
- APOGEE FLN \_\_\_\_\_ VW3 A 3314
- BACnet \_\_\_\_\_ VW3 A 3315

## Controller Inside programmable card

- \_\_\_\_\_ VW3 A 3501

- Pump application card \_\_\_\_\_ VW3 A 3503

# Altivar® 61 Drives Accessories Selection guide



**Heatsink Mounting Kit VW3A9506**

## Control Fan Kit

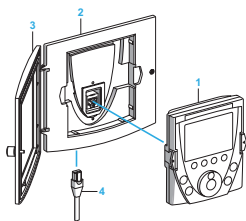
Installation of kit enables the drive to operate in higher ambient temperature. Fan mounts on top of drive and is powered from the drive.

For Drives	Catalog Number
ATV 61H037M3...HU55M3	VW3 A9 401
ATV 61H075N4...HU75N4	
ATV 61HU75M3...HD15M3	VW3 A9 402
ATV 61HD11N4...HD18N4	
ATV 61HD18M3X...HD22M3X	VW3 A9 404
ATV 61HD22N4	
ATV 61HD30N4...HD37N4	VW3 A9 405
ATV 61HD30M3X...HD45M3X	VW3 A9 406
ATV 61HD45N4...HD75N4	VW3 A9 407

## Type 1 Conduit Kit

Kit includes: a metal box, with conduit knockouts. Kit provides conduit landing when wall mounting the drive.

For Drives	Catalog Number
ATV 61H037M3...HU15M3	VW3 A9 201
ATV 61H075N4...HU22N4	
ATV 61HU22M3...HU40M3	VW3 A9 202
ATV 61HU30N4, HU40N4	
ATV 61HU55M3	VW3 A9 203
ATV 61HU55N4, HU75N4	
ATV 61HU75M3	VW3 A9 204
ATV 61HD11N4	
ATV 61HD11M3X, HD15M3X	VW3 A9 205
ATV 61HD15N4, HD18N4	
ATV 61HD18M3X, HD22M3X	VW3 A9 206
ATV 61HD22N4	
ATV 61HD30N4, HD37N4	VW3 A9 207
ATV 61HD30M3X...HD45M3X	VW3 A9 217
ATV 61HD45N4...HD75N4	VW3 A9 208
ATV 61HD55M3X, HD75M3X	VW3 A9 209
ATV 61HD90N4, HC11N4	
ATV 61HD90M3X	VW3 A9 210
ATV 61HC13N4	
ATV 61HC16N4	VW3 A9 211
ATV 61HC22N4	VW3 A9 212
ATV 61HC25N4...HC31N4	VW3 A9 213
Without braking unit	
With braking unit VW347101	VW3 A9 214



**LCD Keypad Mounting Kit**

## Kit for Mounting Heatsink thru Back of Enclosure

Kit used to mount the heatsink of the drive outside of an enclosure. Kit includes: a metal frame, seals, mounting hardware, bracket to mount fan kit so fan can be accessed from the front of the drive.

For Drives	Catalog Number
ATV 61H037M3...HU15M3	VW3 A9 501
ATV 61H075N4...HU22N4	
ATV 61HU22M3...HU40M3	VW3 A9 502
ATV 61HU30N4, HU40N4	
ATV 61HU55M3	VW3 A9 503
ATV 61HU55N4, HU75N4	
ATV 61HU75M3	VW3 A9 504
ATV 61HD11N4	
ATV 61HD11M3X, HD15M3X	VW3 A9 505
ATV 61HD15N4, HD18N4	
ATV 61HD18M3X, HD22M3X	VW3 A9 506
ATV 61HD22N4	
ATV 61HD30N4, HD37N4	VW3 A9 507
ATV 61HD30M3X...HD45M3X	VW3 A9 508
ATV 61HD45N4...HD75N4	VW3 A9 509
ATV 61HD55M3X, HD75M3X	VW3 A9 510
ATV 61HD90N4, HC11N4	
ATV 61HD75M3X	VW3 A9 511
ATV 61HC11N4	
ATV 61HC16N4	VW3 A9 512
ATV 61HC16N4	VW3 A9 513
ATV 61HC25N4...HC31N4	VW3 A9 514
Without braking unit	
With braking unit VW3A7101	VW3 A9 515

## LCD Keypad Mounting Kit

Use the remote mounting kit to mount the LCD keypad in an enclosure door.

Add the clear plastic door to improve to an IP65 rating and view the LCD screen.

Refer to diagram for item number	Catalog Number
1 LCD graphic keypad: IP54 rating	VW3A 1101
2 Remote mounting kit: includes bezel and mounting hardware	VW3A 1102
3 Door for use with remote mount kit for IP65 rating	VW3A 1103
4 Cable for remote mounting LCD graphic keypad RJ45 connector on each end	
	1 meter VW3A1104 R10
	3 meters VW3A1104 R30
	5 meters VW3A1104 R50
	10 meters VW3A1104 R100
RJ 45 female female adaptor to connect LCD keypad and cable. Not required if using VW3A1102	VW3A1105

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## Simple machines

**Altistart 01:** 0.25 to 75 HP  
**Altivar 11:** 0.25 to 3 HP  
**Altivar 31:** 0.25 to 20 HP



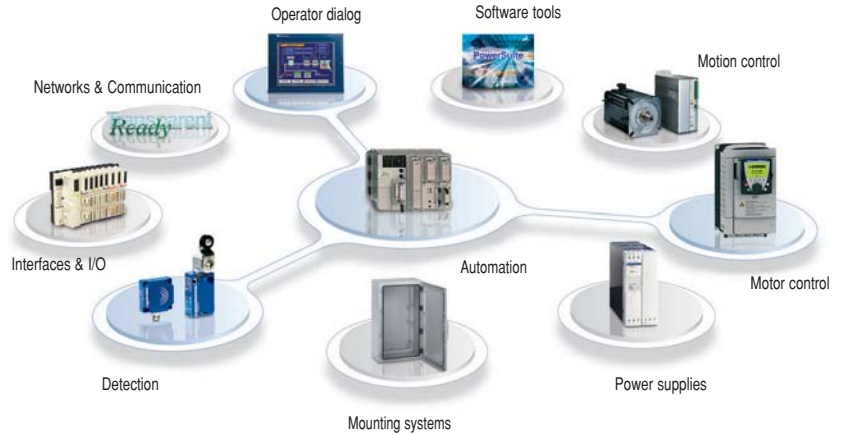
## Complex, high power machines

**Altivar 71:** 0.5 to 700 HP



## Pumping and ventilation machines

**Altistart 48:** 3 to 1200 HP  
**Altivar 21:** 1 to 100 HP  
**Altivar 61:** 1 to 900 HP



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