

Variable speed drives

## **Altivar 71**

Make way for *evolution!*



For 3-phase asynchronous motors from 0.37 to 500 kW.

## *Simply Smart!*

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

# Altivar 71

## The *leading edge!*

With this new generation of drives, the expertise and know-how of Schneider Electric within the variable speed drive domain is truly highlighted.

Exceptional performance, advanced functions...whilst always keeping the emphasis on **simplicity**.

**Open** to all communication networks, applications, users...the **Altivar 71** provides **ingenious solutions** for all your particular requirements.

### A *powerful* fleet

- 0.75 to 500 kW  
3-phase 380 to 480 V
- 0.37 to 75 kW  
3-phase 200 to 240 V
- Integrated EMC level A filters.
- Worldwide offer:  
UL, CSA, CE, C-Tick, GOST...

### *Remarkable* performance

- Up to **220% overtorque**.
- Flux vector control with or without sensor for asynchronous motors.
- On-line auto-tuning (FVC).
- Speed or torque control.
- Output frequency up to 1000 Hz.
- Synchronous motor control without sensor.

### *Expandable* capabilities

Basic equipment with a wealth of features: application functions, inputs/outputs, communication networks... that can be further extended by:

- input/output extension cards.
- encoder interface cards.
- communication cards.
- a Controller Inside programmable card.



## Closely related *safety*

### Protection at all levels

- **of the motor:** thermal protection - PTC probe or integrated electronic thermal relay, surge limitation,
- **of the machine:** Power Removal safety function (no unintended motor starting), alarm management, external fault management,
- **of the environment:** drive developed in accordance with the Eco-Design principle,
- **of the drive:** protection in the event of overheating, current limitation using hardware and software.



## *Easy* to control...

- Graphic screen with customisable display.
- Plain text with 6 available languages (English, Chinese, German, Spanish, French and Italian) with possibility of adding other languages.
- Navigation button for easily “surfing” through the menus.
- «**Simply Start**» menu for quick start-up and immediate benefit of the full performance of the **Altivar 71**.
- Function keys for short-cuts, on-line help or configurable for some applications.
- Continuous display of the operating parameters of the motor.





# Altivar 71

## *Excellent freedom of movement*

The Altivar 71 incorporates a wide range of functions, from very simple to very sophisticated. Its performance is perfectly coordinated for very many applications. With Altivar 71, the performance of your machines will soar!



### Material handling: *dynamics* and *precision*

- Reaction time on logic command: 2 ms  $\pm$  0.5 ms.
- Reference by pulse input or differential analogue input.
- Control by main communication networks.
- Positioning on limit switches with optimisation of low speed operating time.
- Multiparametering by switching between parameter sets.



### Hoisting: *speed* and *safety*

- Brake control suited to travelling, hoisting and slewing movements.
- Weight measurement processing.
- High speed hoisting.
- Brake feedback control.
- Management of limit switches.



### Wood machines: *high speed* and *protection*

- Operation up to 1000 Hz.
- Fast controlled stop on supply failure.
- Control by integrated CANopen network.
- Motor surge limitation.



### Process machines: *precision* and *regulation*

- PID regulator dedicated to process.
- High resolution of the reference (1/32000).
- Speed or torque control.
- Connection to main communication networks.
- Separate 24 V DC control supply.
- Regenerative braking unit.
- Connection to common DC bus.



### Textile machines: *precision* and *speed*

- High resolution of speed reference.
- Precision of speed whatever the load by using synchronous motor.
- Up to 50Hz bandwidth.
- Traverse control function.
- Connection to DC bus.



### Packaging: *repetitiveness* and *quickness*

- High bandwidth.
- Response time on change of reference: 2 ms  $\pm$  0.5 ms
- Control via integrated CANopen network.
- Positioning on limit switches.



### Continuity of service assured irrespective of turbulence!

- Immunity to supply voltage drops of up to -50%.
- Protection against installation "noise" by integrated EMC filters.
- Operation up to 50°C without derating.
- Configurable behaviour on fault.
- Alarm management.
- Auto-adaptation of switching frequency.
- High immunity of the drive.

# Altivar 71

## *Evolutionary* equipment

### *Unrivalled* basic equipment

With the many functions already integrated in the **Altivar 71**, you **reduce the cost of solutions** for your machine. The most economical solution is offered without compromise!

**With more than 150 functions available**, you benefit from:

- considerably increased flexibility,
- possibilities for reducing the machine cycle time,
- improved performance by processing as close as possible to the control motor,
- a high level of integration.



### **Integrated Modbus and CANopen**

With these two standard networks, you achieve:

- savings in cabling,
- a high data exchange transfer rate,
- direct connection to industrial automation systems.

### **Dialogue**

The graphic terminal can be multipoint connected to several drives. Economical, the **Altivar 71** is also available with a 7-segment display for ratings up to 15 kW.

### **EMC mastered**

Incorporating level A conducted and radiated EMC filters, the **Altivar 71** simplifies installation and establishes conformity of the machines for CE marking, without additional costs.

### **“Power Removal” safety 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:

- machine certification without difficulty,
- elimination of electromechanical redundancies,
- reduced cabling and installation times,
- savings in space in enclosures.





## *Modular* configuration

You require additional inputs/outputs, a particular communication network....

All you have to do is select up to 3 cards from those available. By sizing the **Altivar 71**, yourself, you benefit from both **simplified integration** in your automation system and **optimised costs**.



### ■ **Input/output extension** cards:

logic inputs, open collector outputs, relay, PTC probe input, analogue inputs, analogue outputs, pulse input.

### ■ **Communication** cards:

Fipio, Ethernet, Modbus Plus, Profibus DP, DeviceNet, Uni-Telway, INTERBUS, for connection to the main communication networks available on the market.



### ■ **Controller Inside** programmable card:

Integration of programmes in the drive for decentralisation of the machine automation systems.



### ■ **Interface cards for incremental encoder**

- RS422, open collector, Push-Pull, for:
- obtaining **full torque** even at zero speed,
- increasing **speed and torque precision**,
- increasing dynamic **performance**.

# Altivar 71

## The *Ace* at piloting

The **Altivar 71** easily adapts its drive performance... Whatever your choice of automation system solution, it always provides excellent efficiency for **improved productivity...** Access to the means of command, information or to actuators is direct, with complete **transparency**.

### *Automatic* piloting

The **Controller Inside** programmable card transforms the **Altivar 71** into a true **automation island**.

- It incorporates **automation functions** appropriate to your profession.
- With its processing as close as possible to the control motor, the movements gain in **speed**.
- Its CANopen master network enables **control of other drives** (Altivar 31 or **Altivar 71**) and the exchange of any data.
- This card has **its own inputs/outputs** and access to those of the **Altivar 71**.
- The display functions of the graphic terminal are kept for **information and configuration**.
- **Supervision** is available via Ethernet, Modbus (or an alternative communication network).

### *Semi-automatic* piloting

One group of commands is issued by a **programmable controller**, the other by the **operator**.

- The source of commands such as start/stop instructions, references, etc. can be separated. You benefit from **quick reaction times** due to direct processing of information by the drive.
- The switching of these channels enables **adaptation of the piloting to the operating phase**: setting-up, operation or maintenance.
- The control of the drive conforms to the protocol standards in use.
- Using the I/O mode, the networks are accessible to all: the **Altivar 71** is controlled in the same way as cabled logic.
- The possibility to supply the control with an external 24 V DC makes **diagnostics always available**.



## Manual piloting

Commands are issued directly by the **operator** via a joystick, pushbuttons, switches or using the **graphic terminal**.

- The numerous **inputs/outputs** enable all the commands and information to be received.
- Commands can also be issued via the **graphic terminal**: start/stop instruction, speed reference, torque reference, PID reference, etc.
- The function keys of the terminal can be **assigned** to the preset speeds or PID references, +speed / -speed, channel switching, etc.
- On a channel switching, the instructions can be duplicated so as not to disturb the operation of the **Altivar 71**.



*The 3 piloting modes can be combined*



## All locations

### In enclosure

- Savings in space assured, with an IP20 degree of protection: reduced width of drive, side by side mounting...
- Reduction of heat dissipation inside the enclosure by installing the heatsink outside (degree of protection IP54).

### On a wall

- Simple installation using mounting kit (protection degree IP21 or Nema type 1).
- **Altivar 71** in IP54 version \*

### In severe environments

- Resistance assured with the **Altivar 71** reinforced version, conforming to category 3C2 of IEC 721-3-3.

\* availability: end of 2005.



# Altivar 71

## Messages *received 10/10...*

The Altivar 71 is a professional at communication: its messages are clear, precise, illustrated... and the dialogue is also performed according to the requirements of the interlocutor.

### Clarity

of the display comprising 8 lines of text and graphics. Legibility from 5 m. 6 languages available: English, Chinese, German, French, Spanish and Italian... with the possibility of simply downloading other languages.

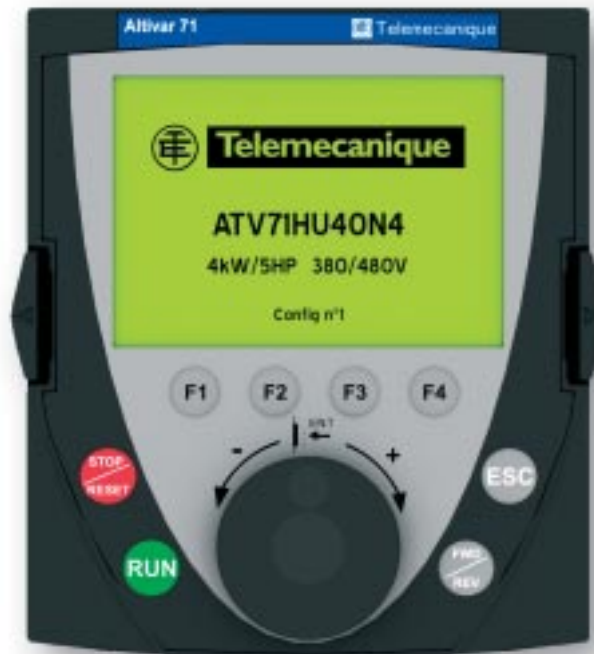


### Flexibility

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.

Storage of 4 configurations for transfer to other drives.



### Simplicity

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

### Protection

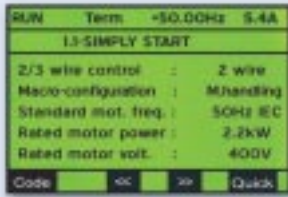
of parameters, control of their display, password protected, for simplified access to configurations with complete security.

### Ergonomic

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

### Customisation

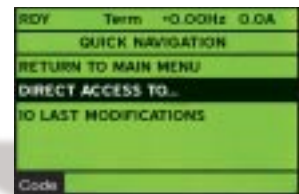
of parameters, display screens, monitoring line, creation of "user" menu, etc.



The “Simply Start” menu provides you with assistance for obtaining the best from the Altivar 71 and for protecting your motor.

## Configure without being aware of it!

- Many **macro-configurations** are already integrated that are designed for a wide variety of applications and uses: materials handling, hoisting, general use, connection to communication networks, PID regulation, master / slave, etc. They can easily be modified.
- The architecture of the menus, hierarchical parameter system and short-cut functions enable **simple and quick programming**, even for the most sophisticated functions.



## More on board *services*

Ample and varied, the services available via the graphic terminal **simplify setting-up** and **diagnostics** of your machines.



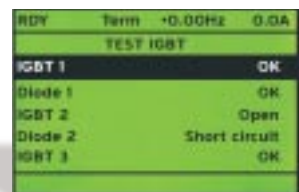
With **PowerSuite**, software workshop **stay in control, even from a distance!**

For configuring, adjusting and setting-up your Altivar drive... by always keeping an eye on your installations via Modbus, Ethernet, a modem, Bluetooth®...

**Oscilloscope function** incorporated in the Altivar 71: display of channels using **PowerSuite**



**Display** of inputs/outputs, communication, etc.



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



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



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

# Altivar 71

## *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 optimise 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".*

The new generation of **Altivar 71** 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 71 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



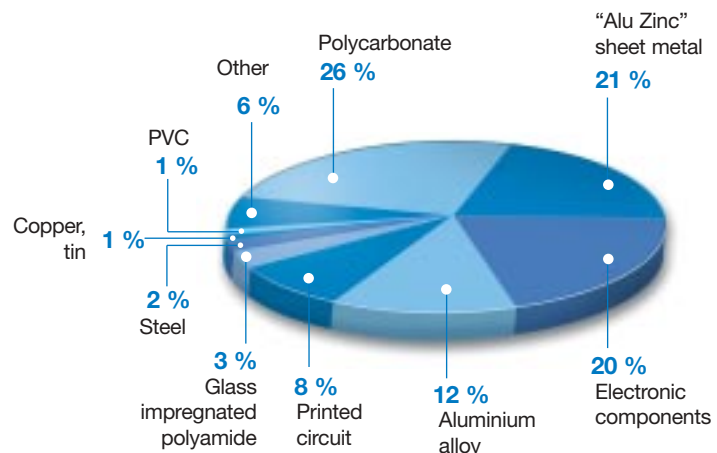
#### Without Eco-Design



**70 %**  
Recovery rate imposed by the European directive WEEE.

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

Materials used for the **Altivar 71** 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, chromium 6...



ISO 14 001 certified sites for their manufacturing operations since 1997:

- Pacy-sur-Eure / France
- Mie / Japan and certified for their Eco-Design cycles since 2002.

\*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.

# Selection guide

## Altivar 71

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

Motor		Drive	
kW	HP	References	Dimensions W x H x D (mm)
0.37	0.5	ATV 71H037M3 <sup>(1)</sup>	130 x 230 x 172
0.75	1	ATV 71H075M3 <sup>(1)</sup>	130 x 230 x 172
1.5	2	ATV 71HU15M3 <sup>(1)</sup>	130 x 230 x 172
2.2	3	ATV 71HU22M3 <sup>(1)</sup>	155 x 260 x 184
3	-	ATV 71HU30M3 <sup>(1)</sup>	155 x 260 x 184
4	5	ATV 71HU40M3 <sup>(2)</sup>	155 x 260 x 184
5.5	7.5	ATV 71HU55M3 <sup>(2)</sup>	175 x 295 x 184
7.5	10	ATV 71HU75M3 <sup>(2)</sup>	210 x 295 x 210
11	15	ATV 71HD11M3X <sup>(3)</sup>	230 x 400 x 210
15	20	ATV 71HD15M3X <sup>(3)</sup>	230 x 400 x 210
18.5	25	ATV 71HD18M3X <sup>(3)</sup>	246 x 420 x 210
22	30	ATV 71HD22M3X <sup>(3)</sup>	246 x 420 x 210
30	40	ATV 71HD30M3X <sup>(3)</sup>	326 x 550 x 240
37	50	ATV 71HD37M3X <sup>(3)</sup>	326 x 550 x 240
45	60	ATV 71HD45M3X <sup>(3)</sup>	326 x 550 x 240
55	75	ATV 71HD55M3X <sup>(3)</sup>	310 x 920 x 375
75	100	ATV 71HD75M3X <sup>(3)</sup>	350 x 1020 x 375

(1) For single-phase 0.37 to 5.5 kW range, select the next rating up  
(Example: 2.2 kW - reference = ATV 71HU30M3).

(2) For single-phase operation, select the next rating up and add a line choke.

(3) Without EMC filter.

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

Motor		Drive	
kW	HP	References	Dimensions W x H x D (mm)
0.75	1	ATV 71H075N4	130 x 230 x 172
1.5	2	ATV 71HU15N4	130 x 230 x 172
2.2	3	ATV 71HU22N4	130 x 230 x 172
3	-	ATV 71HU30N4	155 x 260 x 184
4	5	ATV 71HU40N4	155 x 260 x 184
5.5	7.5	ATV 71HU55N4	175 x 295 x 184
7.5	10	ATV 71HU75N4	175 x 295 x 184
11	15	ATV 71HD11N4	210 x 295 x 210
15	20	ATV 71HD15N4	230 x 400 x 210
18.5	25	ATV 71HD18N4	230 x 400 x 210
22	30	ATV 71HD22N4	246 x 420 x 210
30	40	ATV 71HD30N4	246 x 550 x 240
37	50	ATV 71HD37N4	246 x 550 x 240
45	60	ATV 71HD45N4	326 x 630 x 290
55	75	ATV 71HD55N4	326 x 630 x 290
75	100	ATV 71HD75N4	326 x 630 x 290
90	125	ATV 71HD90N4	310 x 920 x 375
110	150	ATV 71HC11N4	350 x 1 020 x 375
132	200	ATV 71HC13N4	300 x 1 190 x 375
160	250	ATV 71HC16N4	440 x 1 190 x 375
200	300	ATV 71HC20N4	590 x 1 190 x 375
220	350	ATV 71HC25N4	590 x 1 190 x 375
250	400	ATV 71HC25N4	590 x 1 190 x 375
280	450	ATV 71HC28N4	590 x 1 190 x 375
315	500	ATV 71HC31N4	890 x 1 390 x 375
355	-	ATV 71HC40N4	890 x 1 390 x 375
400	600	ATV 71HC40N4	890 x 1 390 x 375
500	700	ATV 71HC50N4	1 110 x 1 390 x 375

For up to 15 kW, add the letter "Z" to the end of the reference for an Altivar 71 incorporating a 7-segment terminal.

### PowerSuite software workshop

PowerSuite CD-ROM for PC or Pocket PC  
(English, French, German, Chinese, Spanish and Italian) \_\_\_\_\_ VW3 A8104

### Connection kit

for PC \_\_\_\_\_ VW3 A8106

for Pocket PC \_\_\_\_\_ VW3 A8111

### Adaptor for wireless link

Modbus-Bluetooth® \_\_\_\_\_ VW3 A8114

USB-Bluetooth® \_\_\_\_\_ VW3 A8115

### Input/output cards

#### Logic inputs/outputs

1 voltage output, 24 V

1 voltage output, -10 V

1 logic output, relay

4 programmable logic inputs

2 assignable logic outputs with open collector

1 input for 6 PTC probes max.

\_\_\_\_\_ VW3 A3201

#### Extended inputs/outputs

Same as logic inputs/outputs card +

2 analogue inputs

2 analogue outputs

1 pulse input

\_\_\_\_\_ VW3 A3202

### Interface cards for

#### incremental encoders

with RS 422 outputs, 5 V \_\_\_\_\_ VW3 A3401

with RS 422 outputs, 15 V \_\_\_\_\_ VW3 A3402

with open collector outputs, 12 V \_\_\_\_\_ VW3 A3403

with open collector outputs, 15 V \_\_\_\_\_ VW3 A3404

with push-pull outputs, 12 V \_\_\_\_\_ VW3 A3405

with push-pull outputs, 15 V \_\_\_\_\_ VW3 A3406

with push-pull outputs, 24 V \_\_\_\_\_ VW3 A3407

### Controller Inside programmable card

\_\_\_\_\_ VW3 A3501

### Communication cards

Fipio \_\_\_\_\_ VW3 A3311

Ethernet \_\_\_\_\_ VW3 A3310

Modbus Plus \_\_\_\_\_ VW3 A3302

Profibus DP \_\_\_\_\_ VW3 A3307

DeviceNet \_\_\_\_\_ VW3 A3309

Uni-Telway \_\_\_\_\_ VW3 A3303

INTERBUS \_\_\_\_\_ VW3 A3304

*For full and detailed information on the Altivar 71 offer, please refer to our catalogue.*

# The efficiency of Telemecanique branded *solutions*

Used in combination, Telemecanique products provide quality solutions, meeting all your **Automation** and **Control** applications requirements.



## Simple machines

**Altistart 01:** 0.37 to 75 kW

**Altivar 11:** 0.18 to 2,2 kW

**Altivar 31:** 0.18 to 15 kW



## Complex, high power machines

**Altivar 71:** 0.37 to 500 kW



## Pumping and ventilation machines

**Altistart 48:** 4 to 1 200 kW

**Altivar 38:** 0.75 to 315 kW

## A worldwide presence

### Constantly available

- More than 5 000 points of sale in 130 countries.
- You can be sure to find the range of products that are right for you and which complies fully with the standards in the country where they are used.

### Technical assistance wherever you are

- Our technicians are at your disposal to assist you in finding the optimum solution for your particular needs.
- Schneider Electric provides you with all necessary technical assistance, throughout the world.



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*Simply Smart !*