

Altivar IMC Drive controller

Altivar IMC integrated controller card for Altivar 61
and Altivar 71 variable speed drives

Catalog

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Altivar IMC integrated controller card

Presentation

The Altivar IMC integrated controller card forms a part of Flexible Machine Control approach, a key component of MachineStruxure™, which brings you maximum flexibility and ensures the most optimised control solution.

The Altivar IMC integrated controller card **VW3A3521** is a compact optimised solution developed for Altivar 61 and 71 variable speed drives. When equipped with the ATV IMC card, Altivar 61 and 71 drives become controllers capable of meeting the needs of machine manufacturers (OEMs) in applications such as textiles, hoisting, pumping or woodworking, etc.

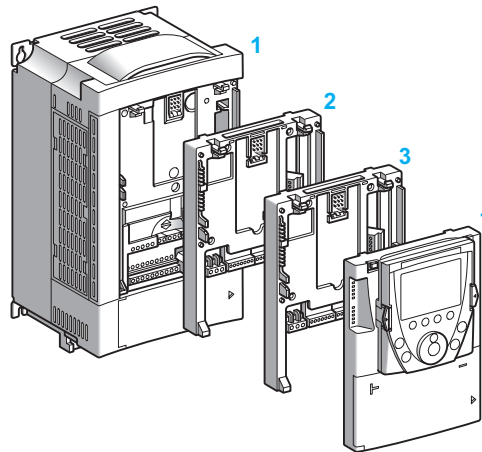
The Altivar IMC integrated controller card **VW3A3521** is configured and programmed using SoMachine software, [Please consult on our website www.schneider-electric.com](http://www.schneider-electric.com)

The expansion capability of the Altivar IMC card is based on Schneider Electric's "Flexible Machine Control" concept.

The Altivar IMC card boosts the expansion capability of machines and allows us to meet the OEM market's requirements in terms of performance, simplicity of use and openness.

Installation

The Altivar IMC card is designed for integration on Altivar 61 and 71 variable speed drives in conjunction with other Altivar 61 and 71-specific cards, such as I/O expansion cards and communication cards.



- 1 Altivar 61/Altivar 71 drive and graphic display terminal
- 2 Altivar IMC card **VW3A3521**
- 3 I/O expansion card **VW3A32** or communication card **VW3A33**

Note: Only one I/O expansion card or communication card can be mounted simultaneously with the Altivar IMC card on an Altivar 61 or 71 drive.

Special features

User memory	RAM	2 MB
	Flash	2 MB
Data storage memory FRAM (Ferroelectric RAM)		64 KB
Typical time (for 1000 Boolean instructions)		942 µs
User program size		1 MB
Power supply		24 V ~
Inputs	Digital	10 x 24 V ~ inputs, 4 of which can be used for 2 high-speed counter inputs (100 kHz) or 2 incremental encoders (A/B) (100 kHz)
	Analog	2 x 0...20 mA inputs
Outputs	Digital	6 transistor outputs (2 A) - source
	Analog	2 x 0...20 mA outputs
Built-in communication ports	RJ45 port	Ethernet Modbus TCP, Web/FTP Server
	SUB-D connector (male 9-way)	Master CANopen bus (16 slaves)
	USB Mini-B port	SoMachine software programming
Real-time clock		Integrated

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Performance

Reduce the time it takes to develop your machines

- The use of a single SoMachine programming software environment offers a number of advantages:
 - A single project file
 - A single software program
 - A single download for the whole application
- The ease of use of PLCopen function blocks significantly reduces the time needed to program motion control and independent axis control on machines.

A more powerful machine

The Altivar IMC integrated controller card has 8 tasks to suit different machine requirements (cyclic, event-triggered, free).

A task can be synchronized with the task of the drive in which it is embedded. This task manages the speed reference, the torque reference, the speed feedback, the torque feedback, the number of encoder pulses feedback in order to increase machine performance.

A more intelligent drive

- Performs more complex operations (2 MB memory)
- Reduces program loading time (Mini-B USB connectors)
- Communication with all the other system devices (built-in Ethernet and CANopen connection ports)

Transparency of your machines

Access to all the other devices in the system architecture via CANopen is totally transparent due to FDT/DTM technology.

Development and technology

The Altivar IMC integrated controller card has been developed with two criteria in mind: low cost and practicality.

■ Low cost because the standard equipment for the Altivar IMC card comprises:

- Sixteen discrete I/O
- A built-in Ethernet port
- Two analog inputs
- Two analog outputs
- And a CANopen master

■ Practicality because the Altivar IMC card is ideal for integration in Altivar 61 and 71 drives, and can therefore use:

- Their inputs/outputs
- Their communication cards
- Their parameters: speed, current, torque, etc.
- Their remote graphic display terminal
- And also the inputs/outputs in their I/O expansion cards
- Plus the speed feedback counter in the encoder interface cards

Software configuration

Configuration and programming of the Altivar IMC integrated controller card and equipment in Schneider Electric's "Flexible Machine Control" concept are both designed to cut costs and optimize your machine performance.

Schneider Electric's **SoMachine** software platform can be used to program Altivar IMC integrated controller card using:

- IEC 61131-3 programming languages: Instruction List (IL), Ladder Diagram (LD), Function Block Diagram (FBD), Sequential Function Chart/Grafset (SFC) and Structured Text (ST)

- CFC (Continuous Function Chart) language.

PLCopen function blocks are used for managing motion control and axis control on your machines.

Please consult on our website www.schneider-electric.com.

Integration in the Schneider Electric product offer

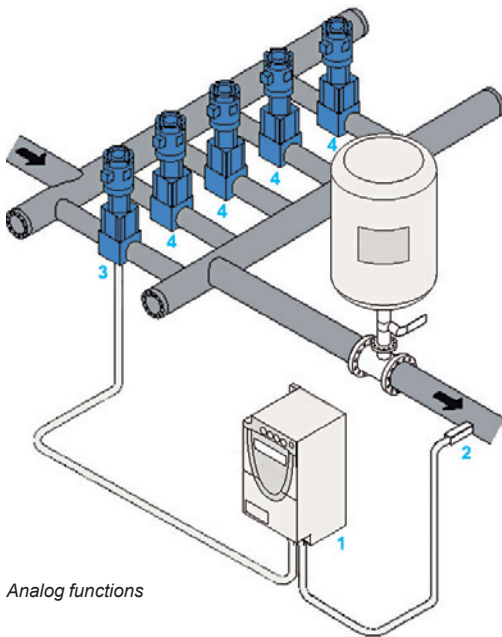
Combined with other dedicated OEM products in the Schneider Electric offer, such as Altivar variable speed drives, Lexium servo drives, Magelis HMI terminals, TeSys motor starters and contactors, the Altivar IMC integrated controller card can be integrated transparently in a number of architectures.



SoMachine software platform

Altivar IMC Drive controller

Altivar IMC integrated controller card for Altivar 61 and Altivar 71 variable speed drives



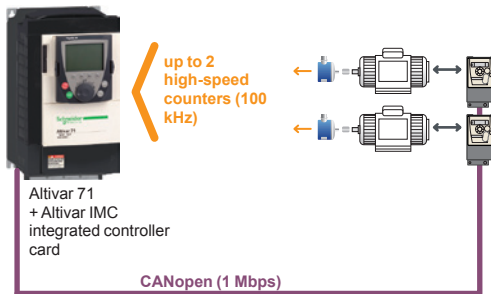
Analog functions

Functions

Analog functions

For machines that require functions to process data issued by analog sensors/ actuators (voltage or current), temperature sensors, pressure or PID control sensors, the Altivar IMC card has, as standard, 2 analog inputs (voltage or current) with 10-bit resolution and 2 analog outputs (current) with 10-bit resolution.

- 1 Altivar IMC integrated controller card installed on Altivar 61
- 2 Pressure sensor
- 3 Variable speed pump
- 4 Fixed speed pumps



High-speed counter function (one-phase or two-phase)

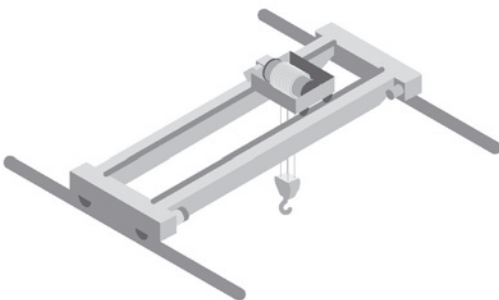
HSC high-speed counting and/or incremental encoder function

In order to meet requirements for machine productivity, the Altivar IMC has 2 embedded high-speed counters with a counting frequency of 100 kHz for each channel as well as 4 reflex outputs.

The availability of these embedded counters and also the presence of the master CANopen link makes it quick and easy to create low-cost, high-performance multi-axis functions that suit the machines limitations.

With the availability of "PLCopen" function blocks specific to the motion control functions in the SoMachine software, application development is sure to be quick and reliable.

In addition, these high-speed counting inputs can be used as an incremental encoder (A/B) with a frequency of 100 kHz in order to adapt to the machine's specific requirements.



Machine with CANopen architecture:

- Lifting motion: Altivar 71
- Translatory motion: Altivar 312
- Carriage motion: Altivar 312

Position control function

Several options are offered in terms of position control:

- Either creating a sequence in Lexium 32 servo drives, with communication with the Altivar IMC integrated controller card achieved by the use of discrete I/O
- Or creating an application in the Altivar IMC card and controlling the Lexium 32A/ Lexium 32M servo drives and/or SD3●● stepper motor drives via the master CANopen integrated link.

Functions (continued)

Communication function

Ethernet

The Altivar IMC integrated controller card has a built-in RJ45 Ethernet port (10/100 Mbps, MDI/MDIX) with Ethernet TCP Modbus, SoMachine on Ethernet, UDP, TCP and SNMP protocols.

In addition, the Altivar IMC card has an embedded Web Server and FTP Server. As well as the default address based on the MAC address, it is possible to assign a controller IP address via a DHCP server or via a BOOTP server.

CANopen

The Altivar IMC integrated controller card has an embedded CANopen master which can be used to control devices on a communication bus with ease.

The link can be configured between 20 kbps and 1 Mbps and supports up to 16 slaves.

Architectures based on CANopen can be used to distribute I/O modules as close to the sensors and actuators as possible, thus reducing wiring costs and times, and to communicate with different devices such as variable speed drives, servo drives, etc. The CANopen configurator is integrated in the SoMachine software and can also be used to import standard description files in EDS format.

Customization function on the graphic display terminal

Menu 1.14

The remote graphic display terminal on Altivar 61 or 71 drives includes a menu dedicated to the Altivar IMC integrated controller card.

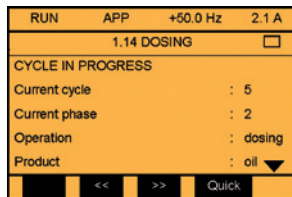
The user is offered a graphic display of 8 lines of 24 characters.

This menu can be customized simply and directly using the SoMachine software.

The user can define the language, name, unit, decimal point, and the type of parameter he wishes to customize for his own application. The user can also define alarms and error messages for his application.

Clock function

A time and date-stamping function combined with a clock backed up by a lithium battery makes it possible to keep a log of events that have occurred. When the Altivar IMC integrated controller card is installed in the drive, drive faults are automatically time and date-stamped without the need for any special programming.



Menu 1.14

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Communication

The Altivar IMC integrated controller card has the following built-in communication ports:

Communication ports	Use
1 x RJ45 (MDI/MDIX port)	<input type="checkbox"/> FTP server <input type="checkbox"/> Web server <input type="checkbox"/> Modbus TCP server <input type="checkbox"/> Modbus TCP client <input type="checkbox"/> Manager SoMachine <input type="checkbox"/> SNMP <input type="checkbox"/> Modbus device
1 x mini-USB	Programming port (480 Mbps)
1 x 9-way male SUB-D	Master CANopen connection

Embedded Ethernet

The Altivar IMC integrated controller card has an embedded Ethernet link via a direct connection to its RJ45 port.

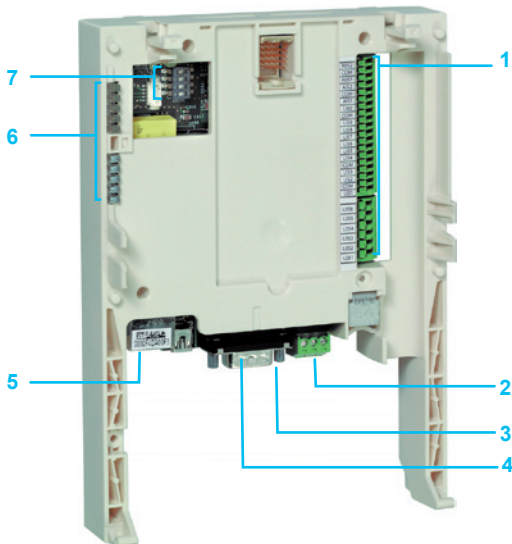
- Speed: "10 BaseT" and "100 BaseTX" with auto-negotiation
- RJ45 port (MDI/MDIX): automatic adaptation to a straight or crossed cable

Protocols	Number of connections
Modbus server	8
Modbus device	2
FTP server	4
Web server	10

Description

The Altivar IMC integrated controller card comprises:

- 1 Three spring connectors for:
 - 10 digital inputs
 - 6 digital outputs
 - 2 analog inputs
 - 2 analog outputs
 - 2 commons
- 2 A connector with removable screw terminals, 3 contacts at intervals of 3.81 for the 24 V $\bar{\text{---}}$ power supply
- 3 A mini USB-B connector for programming using SoMachine software
- 4 A 9-way SUB-D connector for connection to the CANopen machine bus
- 5 An RJ45 connector for connection of the SoMachine software workshop and/or connection to an Ethernet Modbus TCP network
- 6 Five LEDs:
 - 1 green/yellow ETH LED for Ethernet activity
 - 1 green/red NS (Network status) LED
 - 1 green/red MS (Module status) LED
 - 1 green/red CAN (CANopen activity) LED
 - 1 green/red LED programmable by the user
- 7 Four configuration selector switches



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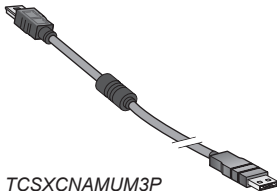
Altivar 71 variable speed drives



VW3A3521



VW3A3202



TCSXCNAMUM3P

Variable speed drives

Designation	Reference
Altivar 61 variable speed drives	Refer to the "Altivar 61 variable speed drives" catalogue or visit our website www.schneider-electric.com
Altivar 71 variable speed drives	Refer to the "Altivar 71 variable speed drives" catalogue or visit our website www.schneider-electric.com

Cards for Altivar 61 and 71 variable speed drives

Altivar IMC integrated controller card			
Designation	Voltage	Reference	Weight kg
Altivar IMC integrated controller card	24 V \square	VW3A3521	0.185

I/O expansion cards (1)

Designation	Type of I/O						Reference	Weight kg
	Logic input	Logic output	Analog input	Analog output	PTC probe input (2)	Frequency control input		
I/O expansion cards (2)	4	3	–	–	1	–	VW3A3201	0.300
	4	3	2	2	1	1	VW3A3202	0.300

For more information about digital I/O cards, visit our website www.schneider-electric.com.

Communication cards

Designation	Protocols available (depending on model)	Reference
VW3A33●● communication cards	<input type="checkbox"/> Modbus Plus <input type="checkbox"/> Uni-Telway <input type="checkbox"/> InterBus-S <input type="checkbox"/> Profibus DP <input type="checkbox"/> DeviceNet <input type="checkbox"/> Ethernet Modbus TCP <input type="checkbox"/> Flp10 <input type="checkbox"/> EtherNet IP <input type="checkbox"/> CC-Link <input type="checkbox"/> Lonworks (ATV 61) <input type="checkbox"/> METASYS N2 (ATV 61) <input type="checkbox"/> APOGEE FLN (ATV 61) <input type="checkbox"/> BACnet (ATV 61)	Refer to "Altivar 61 variable speed drives" or "Altivar 71 variable speed drives" catalogue, or visit our website www.schneider-electric.com

Connection cable

Designation	Use	Length	Reference	Weight kg
Programming cable	From the mini USB-B port on the Altivar IMC integrated controller card to the type A USB port on the PC terminal for programming and updating firmware	3 m	TCSXCNAMUM3P	0.065

(1) Altivar 61 and 71 variable speed drives can only take one I/O expansion card with the same reference.

(2) This PTC probe input must never be used to protect an ATEX motor in applications in explosive atmospheres. Please refer to the ATEX guide which is available on our website "www.schneider-electric.com".

T	
TCSXCNAMUM3P	7

V	
VW3A3201	7
VW3A3202	7
VW3A3521	7

The Next Generation



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