Variable speed drives Altivar 12

For 3-phase asynchronous motors
from 0.18 to 4 kW/0.25 to 5 HP

Catalog

January 2015

Schneider Electric

IP 20 or IP 21 variable speed drives for asynchronous and synchronous motors

Type of machine		Simple machines		Pumps and fans (building (HVAC)) *(1)*
				
Power range for 50…60 Hz (kW/*HP*) line supply		**0.18…*4/0.25...5***	**0.18…15/*0.25...20***	**0.75…75/*1...100***
	Single-phase 100…120 V (kW/*HP*)	0.18…0.75/*0.25…1*	–	–
	Single-phase 200…240 V (kW/*HP*)	0.18…2.2/*0.25...3*	0.18…2.2/*0.25...3*	–
	Three-phase 200…230 V (kW/*HP*)	–	–	–
	Three-phase 200…240 V (kW/*HP*)	0.18…*4/0.25...5*	0.18…15/*0.25...20*	0.75…30/*1...40*
	Three-phase 380…480 V (kW/*HP*)	–	–	0.75…75/*1...100*
	Three-phase 380…500 V (kW/*HP*)	–	0.37…7.5/*0.5...10*	–
	Three-phase 500…600 V (kW/*HP*)	–	–	–
	Three-phase 525…600 V (kW/*HP*)	–	0.75…15/*1...20*	–
	Three-phase 500…690 V (kW/*HP*)	–	–	–
Degree of protection		IP 20	IP 21	
Type of cooling *(2)*		Heatsink or base plate	Heatsink	
Drive	Output frequency	0.1…400 Hz	0.1…500 Hz	0.5…200 Hz
	Type of control – Asynchronous motor	Standard (voltage/frequency) Performance (sensorless flux vector control) Pump/fan (Kn^2 quadratic ratio)	Standard (voltage/frequency) Performance (sensorless flux vector control) Energy saving ratio	Sensorless flux vector control Voltage/frequency ratio (2 points) Energy saving ratio
	Type of control – Synchronous motor	–		
	Transient overtorque	150…170% of the nominal motor torque	170…200% of the nominal motor torque	120% of the nominal motor torque
Functions	Number of functions	40	50	50
	Number of preset speeds	8	16	7
Number of I/O	Analog inputs	1	3	2
	Logic inputs	4	6	3
	Analog outputs	1	1	1
	Logic outputs	1	–	–
	Relay outputs	1	2	2
Communication	Integrated	Modbus	Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet
	Available as an option	–	CANopen Daisy Chain, DeviceNet, PROFIBUS DP, Modbus TCP, Fipio	LonWorks
Cards (available as an option)		–		
Dialogue tools		IP 54 or IP 65 remote terminal	IP 54 or IP 65 remote terminal IP 54 remote graphic display terminal	IP 54 or IP 65 remote graphic display terminal
Configuration tools	Setup software	SoMove		PCSoft for ATV 212
	Configuration tools	Simple Loader, Multi-Loader		Multi-Loader
Standards and certifications		IEC 61800-5-1 IEC 61800-3 (environments 1 and 2, categories C1 to C3, cat. C1 with option for ATV 212)		
		CE, UL, CSA, C-Tick, NOM, GOST	CE, UL, CSA, DNV, C-Tick, NOM, GOST	EN 55011: Group 1, class A and class B with option card. CE, UL, CSA, C-Tick, NOM
References		**ATV 12**	**ATV 312**	**ATV 212**
Catalogues		"Altivar 12 variable speed drives"	"Altivar 312 variable speed drives"	"Altivar 212 variable speed drives"

(1) Heating, Ventilation and Air Conditioning

Pumps and fans (industrial)		Complex machines	
		 	
0.37…800/*0.5...900*		**0.37…630/*0.5...700***	
–		–	
0.37…5.5/*0.5...7.5*		0.37…5.5/*0.5...7.5*	
–		–	
0.75…90/*1...125*		0.75…90/*1...125*	
0.75…630/*1...900*		0.75…500/*1...700*	
–		–	
2.2…7.5/*3...10*		1.5…7.5/*2...10*	
–		–	
2.2…800/*3...800*		1.5…630/*2...700*	
IP 20			
Heatsink or water-cooled system		Heatsink, base plate or water-cooled system	
0.1…500 Hz for the entire range 0.1…599 Hz up to 37 kW/*50 HP* at 200…240 V ~ and 380…480 V ~		0.1…500 Hz for the entire range 0.1…599 Hz up to 37 kW/*50 HP* at 200…240 V ~ and 380…480 V ~	
Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) Energy saving ratio		Flux vector control with or without sensor Voltage/frequency ratio (2 or 5 points) ENA System	
Vector control without speed feedback		Vector control with or without speed feedback	
120% of the nominal motor torque for 60 seconds		220% of the nominal motor torque for 2 seconds 170% for 60 seconds	
> 100		> 150	
8		16	
2…4		2…4	
6…20		6…20	
1…3		1…3	
0…8		0…8	
2…4		2…4	
Modbus and CANopen			
Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, LonWorks, METASYS N2, APOGEE FLN, BACnet, Profinet, EtherCAT, POWERLINK		Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, Profinet, EtherCAT, POWERLINK	
I/O extension cards, "Controller Inside" programmable card, multi-pump cards, encoder interface cards		Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card	
IP 54 or IP 65 remote graphic display terminal			
SoMove			
Simple Loader, Multi-Loader			
IEC 61800-5-1 IEC 61800-3 (environments 1 and 2, categories C1 to C3), IEC 61000-4-2/4-3/4-4/4-5/4-6/4-11			
CE, UL, CSA, DNV, C-Tick, NOM, GOST			
ATV 61		**ATV 71**	
"Altivar 61 variable speed drives"		"Altivar 71 variable speed drives"	

(2) The type of cooling depends on the model. Please consult pages 16 to 17.

Communicate intuitively with all your applications

The Altivar 12 is immediately operational. It is configured using the notched wheel or from the SoMove software workshop. The file that is generated can be downloaded to the product even while it is still in its packaging, using the Multi-Loader console. You save commissioning time so that you can spend more time doing your job.

Save time on commissioning

- The drive can be configured before it is received (by the distributor), during storage (by the storekeeper) or during fitting before the electrical enclosure is powered up for the first time
- No adjustment is required and there is a quick start guide for immediate setup
- Work in the language of your choice with the SoMove software workshop that can be downloaded free of charge from www.schneider-electric.com
- Select the functions you need from the menu
- Bluetooth option for PC for greater ease of use

Save time on wiring

- Easy access to all the wiring and adjustment functions on the front panel via a sealable hinged door
- Integrated EMC filter in 240 V single-phase versions
- No need to remove the terminal cover to wire the power section
- Only one screwdriver needed for wiring both the control and power sections
- Less wiring due to the integrated Modbus communication

Save time on programming

- A navigation button for easy menu access: you can set the parameters of your application with just a few clicks
- A three-level tree structure

- Reference Mode: In local operation (On/Off buttons) and for speed adjustment and display
- Monitoring Mode: For displaying parameters
- Configuration Mode: For configuring your applications and settings

Use SoMove to customise your menus and save time during operation (possible for up to 25 parameters)

Fast

With the Multi-Loader console you can configure 10 drives in their packaging is less than 5 minutes, with no power supply!

Versatile

The Altivar 12 range is designed for 120 to 240 V power supplies. For your productivity requirements in the most varied applications, see the complete Altivar® range on our website: www.schneider-electric.com

IP 54 or IP 55 variable speed drives for asynchronous and synchronous motors

Type of machine		Simple machines	Pumps and fans (building (HVAC)) *(1)*	Pumps and fans (industrial)		Complex machines	
							
Power range for 50…60 Hz (kW/*HP*) line supply		**0.18…15/*0.25…20***	**0.75…75/*1…100***	**0.75…90/*1…125***		**0.75…75/*1…100***	
	Single-phase 200…240 V (kW/*HP*)	0.18…2.2/*0.25…3*	–	–			
	Three-phase 380…480 V (kW/*HP*)	–	0.75…75/*1…100*	0.75…90/*1…125*		0.75…75/*1…100*	
	Three-phase 380…500 V (kW/*HP*)	0.37…15/*0.5…20*	–	–			
Degree of protection		IP 55	IP 55	IP 54			
Variants		Enclosure user-definable up to 4 kW/*5 HP*: Vario switch disconnector, LEDs, selector switch, potentiometer	–	–	Equipped with a Vario switch disconnector	–	Equipped with a Vario switch disconnector
Drive	Output frequency	0.1…500 Hz	0.1…200 Hz	0.1…599 Hz from 0.75 to 45 kW/*1…60 HP* 0.1…500 Hz from 55…90 kW/*75…125 HP*		0.1…599 Hz from 0.75 to 37 kW/*1…50 HP* 0.1…500 Hz from 45 to 75 kW/*60…100 HP*	
	Type of control – Asynchronous motor	Sensorless flux vector control Voltage/frequency ratio	Sensorless flux vector control Voltage/frequency ratio (2 points) Energy saving ratio	Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) Energy saving ratio		Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) ENA System	
	– Synchronous motor	–	–	Vector control without speed feedback		Vector control with or without speed feedback	
	Transient overtorque	170…200% of the nominal motor torque	120% of the nominal motor torque for 60 seconds	110% of the nominal motor torque for 60 seconds		220% of the nominal motor torque for 2 seconds 170% for 60 seconds	
Functions Number of functions		50	50	>100		>150	
Number of preset speeds		16	7	8		16	
Number of I/O	Analog inputs	3	2	2…4		2…4	
	Logic inputs	6	3	6…20		6…20	
	Analog outputs	1	1	1…3		1…3	
	Logic outputs	–	–	0…8		0…8	
	Relay outputs	2	2	2…4		2…4	
Communication	Integrated	Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet	Modbus and CANopen			
	Available as an option	Modbus TCP, Fipio, PROFIBUS DP, DeviceNet	LonWorks	Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, LonWorks, METASYS N2, APOGEE FLN, BACnet, Profinet, EtherCAT, POWERLINK		Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, Profinet, EtherCAT, POWERLINK	
Cards (available as an option)		–	–	I/O extension cards, "Controller Inside" programmable card, multi-pump cards, encoder interface cards		Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card	
Dialogue tools		IP 65 remote terminal	IP 54 or IP 65 remote graphic display terminal	IP 54 or IP 65 remote graphic display terminal			
Configuration tools	Setup software	SoMove	PCSoft for ATV 212 drive	SoMove			
	Configuration tool	Simple Loader	Multi-Loader	Simple Loader, Multi-Loader			
Standards and certifications		IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3) CE, UL, CSA, C-Tick, GOST		IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3), IEC 61000-4-2/4-3/4-4/4-5/4-6/4-11 CE, UL, CSA, DNV, C-Tick, NOM, GOST			
References		**ATV 31C**	**ATV 212W**	**ATV 61W**	**ATV 61E5**	**ATV 71W**	**ATV 71E5**
Catalogues		"Altivar 31C variable speed drives"	"Altivar 212 variable speed drives"	"Altivar 61 variable speed drives"		"Altivar 71 variable speed drives"	

(1) Heating, Ventilation and Air Conditioning

IP 54 or IP 55 variable speed drives for asynchronous and synchronous motors

Type of machine		Simple machines	Pumps and fans (building (HVAC)) *(1)*	Pumps and fans (industrial)		Complex machines	
							
Power range for 50…60 Hz (kW/*HP*) line supply		**0.18…15/*0.25…20***	**0.75…75/*1…100***	**0.75…90/*1…125***		**0.75…75/*1…100***	
	Single-phase 200…240 V (kW/*HP*)	0.18…2.2/*0.25…3*	–	–			
	Three-phase 380…480 V (kW/*HP*)	–	0.75…75/*1…100*	0.75…90/*1…125*		0.75…75/*1…100*	
	Three-phase 380…500 V (kW/*HP*)	0.37…15/*0.5…20*	–	–			
Degree of protection		IP 55	IP 55	IP 54			
Variants		Enclosure user-definable up to 4 kW/*5 HP*: Vario switch disconnector, LEDs, selector switch, potentiometer	–	–	Equipped with a Vario switch disconnector	–	Equipped with a Vario switch disconnector
Drive	Output frequency	0.1…500 Hz	0.1…200 Hz	0.1…599 Hz from 0.75 to 45 kW/*1…60 HP* 0.1…500 Hz from 55…90 kW/*75…125 HP*		0.1…599 Hz from 0.75 to 37 kW/*1…50 HP* 0.1…500 Hz from 45 to 75 kW/*60…100 HP*	
	Type of control – Asynchronous motor	Sensorless flux vector control Voltage/frequency ratio	Sensorless flux vector control Voltage/frequency ratio (2 points) Energy saving ratio	Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) Energy saving ratio		Sensorless flux vector control Voltage/frequency ratio (2 or 5 points) ENA System	
	– Synchronous motor	–	–	Vector control without speed feedback		Vector control with or without speed feedback	
	Transient overtorque	170…200% of the nominal motor torque	120% of the nominal motor torque for 60 seconds	110% of the nominal motor torque for 60 seconds		220% of the nominal motor torque for 2 seconds 170% for 60 seconds	
Functions Number of functions		50	50	>100		>150	
Number of preset speeds		16	7	8		16	
Number of I/O	Analog inputs	3	2	2…4		2…4	
	Logic inputs	6	3	6…20		6…20	
	Analog outputs	1	1	1…3		1…3	
	Logic outputs	–	–	0…8		0…8	
	Relay outputs	2	2	2…4		2…4	
Communication	Integrated	Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet	Modbus and CANopen			
	Available as an option	Modbus TCP, Fipio, PROFIBUS DP, DeviceNet	LonWorks	Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, LonWorks, METASYS N2, APOGEE FLN, BACnet, Profinet, EtherCAT, POWERLINK		Modbus TCP Daisy Chain, Modbus/Uni-Telway, EtherNet/IP (RSTP), DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link, Profinet, EtherCAT, POWERLINK	
Cards (available as an option)		–	–	I/O extension cards, "Controller Inside" programmable card, multi-pump cards, encoder interface cards		Interface cards for incremental, resolver, SinCos, SinCos Hiperface®, EnDat® or SSI encoders, I/O extension cards, Controller Inside programmable card	
Dialogue tools		IP 65 remote terminal	IP 54 or IP 65 remote graphic display terminal	IP 54 or IP 65 remote graphic display terminal			
Configuration tools	Setup software	SoMove	PCSoft for ATV 212 drive	SoMove			
	Configuration tool	Simple Loader	Multi-Loader	Simple Loader, Multi-Loader			
Standards and certifications		IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3) CE, UL, CSA, C-Tick, GOST		IEC 61800-5-1, IEC 61800-3 (environments 1 and 2, categories C1 to C3), IEC 61000-4-2/4-3/4-4/4-5/4-6/4-11 CE, UL, CSA, DNV, C-Tick, NOM, GOST			
References		**ATV 31C**	**ATV 212W**	**ATV 61W**	**ATV 61E5**	**ATV 71W**	**ATV 71E5**
Catalogues		"Altivar 31C variable speed drives"	"Altivar 212 variable speed drives"	"Altivar 61 variable speed drives"		"Altivar 71 variable speed drives"	

(1) Heating, Ventilation and Air Conditioning

Variable speed drives
Altivar 61 Plus and Altivar 71 Plus
Integrated solutions

Type of machine			Pumps and fans (industrial)		
					
Power range for 50…60 Hz (kW/*HP*) line supply			**90…630/*125...900***	**90…800/*125...900***	**630…2400/*800...2500***
	Three-phase 380…415 V (kW)		90...630	90...630	630...1400
	Three-phase 480 V *(HP)*		*125...900*	*125...900*	*900...2000*
	Three-phase 500 V (kW)		–	90...630	630...1800
	Three-phase 600 V *(HP)*		–	*125...800*	*800...2500*
	Three-phase 690 V (kW)		–	110...800	800...2400
Main characteristics			With enhanced protection		With enhanced protection and integrated cooling circuit
Variants			Ready to use	Standard offer Modular with integrated options User-definable on request	
Low Harmonic			–	Yes, only for ATV 61 Plus - LH	
Drive	Output frequency		0.1...500 Hz		
	Type of control	Asynchronous motor	Sensorless flux vector control Voltage/frequency ratio 2 or 5 points Energy saving ratio		
		Synchronous motor	Flux vector control without speed feedback		
	Transient overtorque		120% of the nominal motor torque for 60 seconds		
Communication	Embedded		Modbus and CANopen		
	As an option		Modbus TCP, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link LonWorks, METASYS N2, APOGEE FLN, BACnet		
Cards (available as an option)			"Controller Inside" programmable card Multi-pump cards		
Degree of protection			IP 54 with separate air flows, **ATV61ES5**	IP 23 compact version, **ATV61EXC2** IP 54 compact version, **ATV61EXC5** IP 54 with separate air flows, **ATV61EXS5**	With integrated air-cooled circuit: IP 23: **ATV61EXA2** IP 54: **ATV61EXA5** With external water-cooled system: IP 55, on request
Type of drive			**ATV 61 Plus**	**ATV 61 Plus / ATV 61 Plus - LH**	
Catalogues			"Altivar 61 and Altivar 61 Plus variable speed drives"		

Complex machines (industrial and infrastructure)		
		
90…500/*125...700*	**90…630/*125...700***	**500…2000/*550...2100***
90…500	90…500	500…1300
125...700	*125...700*	*550...1800*
–	90…500	500…1500
–	*125...700*	*700...2100*
–	110…630	630…2000
With enhanced protection		With enhanced protection and integrated cooling circuit
Ready to use	Standard offer Modular with integrated options User-definable on request	
–	Yes, for power regeneration to the mains supply, only for ATV 71 Plus - LH	
0.1…500 Hz		
Flux vector control with or without sensor Voltage/frequency ratio (2 or 5 points) ENA System		
Vector control with or without speed feedback		
220% of the nominal motor torque for 2 seconds 170% of the nominal motor torque for 60 seconds		
Modbus and CANopen		
Modbus TCP, Modbus/Uni-Telway, EtherNet/IP, DeviceNet, PROFIBUS DP V0 and V1, InterBus, CC-Link		
"Controller Inside" programmable card		
IP 54 with separate air flows, **ATV71ES5**	IP 23 compact version, **ATV71EXC2** IP 54 compact version, **ATV71EXC5** IP 54 with separate air flows, **ATV71EXS5**	IP 23, with integrated air-cooled circuit, **ATV71EXA2** IP 54, with integrated air-cooled circuit, **ATV71EXA5** IP 55, with external water-cooled system (on request)
ATV 71 Plus	**ATV 71 Plus / ATV 71 Plus - LH**	
"Altivar 71 and Altivar 71 Plus variable speed drives"		