

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
	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 Configuration tools	SoMove Simple Loader, Multi-Loader	PCSoft for ATV 212 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	0.37...75/0.5...100	
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	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 120% of the nominal motor torque for 60 seconds	Vector control with or without speed feedback 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	
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.

IP 54 or IP 55 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...15/0.25...20	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
Three-phase 380...500 V (kW/HP)	0.37...15/0.5...20	–
Degree of protection	IP 55	IP 55
Variants	Enclosure user-definable up to 4 kW/5 HP: Vario switch disconnecter, LEDs, selector switch, potentiometer	–
Drive		
Output frequency	0.1...500 Hz	0.1...200 Hz
Type of control	Asynchronous motor	Synchronous motor
Transient overtorque	170...200% of the nominal motor torque	120% of the nominal motor torque for 60 seconds
Functions		
Number of functions	50	50
Number of preset speeds	16	7
Number of I/O		
Analog inputs	3	2
Logic inputs	6	3
Analog outputs	1	1
Logic outputs	–	–
Relay outputs	2	2
Communication		
Integrated	Modbus and CANopen	Modbus, METASYS N2, APOGEE FLN, BACnet
Available as an option	Modbus TCP, Fipio, PROFIBUS DP, DeviceNet	LONWORKS
Cards (available as an option)	–	–
Dialogue tools	IP 65 remote terminal	IP 54 or IP 65 remote graphic display terminal
Configuration tools	SoMove Simple Loader	PCSoft for ATV 212 drive 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) CE, UL, CSA, DNV, C-Tick, NOM, GOST
References	ATV 31C	ATV 212W
Catalogues	"Altivar 31C variable speed drives"	"Altivar 212 variable speed drives"

(1) Heating, Ventilation and Air Conditioning

Pumps and fans (industrial)	Complex machines
	
0.75...90/1...125	0.75...75/1...100
–	–
0.75...90/1...125	0.75...75/1...100
–	–
IP 54	IP 54
–	–
Equipped with a Vario switch disconnecter	Equipped with a Vario switch disconnecter
Drive	Drive
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
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
Vector control without speed feedback 110% of the nominal motor torque for 60 seconds	Vector control with or without speed feedback 220% of the nominal motor torque for 2 seconds 170% for 60 seconds
Functions	Functions
>100	>150
8	16
2...4	2...4
6...20	6...20
1...3	1...3
0...8	0...8
2...4	2...4
Communication	Communication
Modbus and CANopen	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
Dialogue tools	Dialogue tools
IP 54 or IP 65 remote graphic display terminal	IP 54 or IP 65 remote graphic display terminal
Configuration tools	Configuration tools
SoMove Simple Loader, Multi-Loader	SoMove Simple Loader, Multi-Loader
Standards and certifications	Standards and certifications
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	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	References
ATV 61W	ATV 61E5
ATV 71W	ATV 71E5
"Altivar 61 variable speed drives"	"Altivar 71 variable speed drives"

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	Sensorless flux vector control Voltage/frequency ratio 2 or 5 points Energy saving ratio		
		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)				
				
Power range for 50...60 Hz (kW/HP) line supply		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	
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, for power regeneration to the mains supply, only for ATV 71 Plus - LH	
Drive	Output frequency	0.1...500 Hz		
	Type of control	Flux vector control with or without sensor Voltage/frequency ratio (2 or 5 points) ENA System		
		Vector control with or without speed feedback		
	Transient overtorque	220% of the nominal motor torque for 2 seconds 170% 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		
Cards (available as an option)		"Controller Inside" programmable card		
Degree of protection		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)
Type of drive		ATV 71 Plus	ATV 71 Plus / ATV 71 Plus - LH	
Catalogues		"Altivar 71 and Altivar 71 Plus variable speed drives"		

Variable speed drives

Altivar 12

Drives with heatsink



ATV12H018M2



ATV12H075M2



ATV12HU40M3



ATV12HU15M2TQ (8)

Drives with heatsink										
Motor	Line supply			Altivar 12						
Power indicated on rating plate (1)	Max. line current (2)		Apparent power	Max. prospective line lsc	Maximum continuous output current (In) (1)	Maximum transient current for 60 s	Dissipated power at maximum output current (In) (1)	Reference	Weight (3)	
	at U1	at U2	at U2							at U2
kW	HP	A	A	kVA	kA	A	A	W	kg	
Single-phase supply voltage: 100...120 V 50/60 Hz (4)										
0.18	0.25	6	5	0.6	1	1.4	2.1	18	ATV12H018F1 (5)	0.700
0.37	0.5	11.4	9.3	1.1	1	2.4	3.6	29	ATV12H037F1	0.800
0.75	1	18.9	15.7	1.9	1	4.2	6.3	48	ATV12H075F1	1.300
Single-phase supply voltage: 200...240 V 50/60 Hz (4) (6)										
0.18	0.25	3.4	2.8	0.7	1	1.4	2.1	18	ATV12H018M2 (5) (7) (10)	0.700
0.37	0.55	5.9	4.9	1.2	1	2.4	3.6	27	ATV12H037M2 (7) (10)	0.700
0.55	0.75	8	6.7	1.6	1	3.5	5.3	34	ATV12H055M2 (7) (10)	0.800
0.75	1	10.2	8.5	2	1	4.2	6.3	44	ATV12H075M2 (7) (10)	0.800
1.5	2	17.8	14.9	3.6	1	7.5	11.2	72	ATV12HU15M2 (8) (9)	1.400
2.2	3	24	20.2	4.8	1	10	15	93	ATV12HU22M2 (8) (9)	1.400
Three-phase supply voltage: 200...240 V 50/60 Hz (4)										
0.18	0.25	2	1.7	0.7	5	1.4	2.1	16	ATV12H018M3 (5)	0.700
0.37	0.55	3.6	3	1.2	5	2.4	3.6	24	ATV12H037M3	0.800
0.75	1	6.3	5.3	2.2	5	4.2	6.3	41	ATV12H075M3	0.800
1.5	2	11.1	9.3	3.9	5	7.5	11.2	73	ATV12HU15M3	1.200
2.2	3	14.9	12.5	5	5	10	15	85	ATV12HU22M3	1.200
3	–	19	15.9	6.6	5	12.2	18.3	94	ATV12HU30M3	2.000
4	5	23.8	19.9	8.3	5	16.7	25	128	ATV12HU40M3	2.000
Dimensions (overall)										
Drives with heatsinks					W x H x D					
					EMC plate fixed			EMC plate not fixed		
					mm			mm		
ATV12H018F1, H018M2, H018M3					72 x 189.5 x 102.2			72 x 143 x 102.2		
ATV12H037F1, H037M2, H037M3					72 x 189.5 x 121.2			72 x 143 x 121.2		
ATV12H055M2, H075M2, H075M3					72 x 189.5 x 131.2			72 x 143 x 131.2		
ATV12H075F1, HU15M2, HU22M2					105 x 188.2 x 156.2			105 x 142 x 156.2		
ATV12HU15M3, HU22M3					105 x 189.3 x 131.2			105 x 143 x 131.2		
ATV12HU30M3, HU40M3					140 x 230.6 x 141.2			140 x 184 x 141.2		

(1) These values are given for a nominal switching frequency of 4 kHz, for use in continuous operation. If operation above 4 kHz needs to be continuous, the nominal drive current should be derated by 10% for 8 kHz, 20% for 12 kHz and 30% for 16 kHz.
The switching frequency can be set between 2 and 16 kHz for all ratings.
Above 4 kHz, the drive will reduce the switching frequency automatically in the event of an excessive temperature rise. See the derating curves in the User Manual, available on our website at "www.schneider-electric.com".

(2) Typical value for the indicated motor power and for the maximum prospective line lsc.

(3) Weight of product without packaging.

(4) Min. (U1) and max. (U2) nominal supply voltage: 100 (U1)...120 V (U2), 200 (U1)...240 V (U2).

(5) Due to the poor heat dissipation, the ATV12H018●● drive is only supplied as a base plate version.

(6) This drive is delivered with a disconnectable category C1 EMC filter. This drive complies with the IEC/EN 61800-3 standard, Environment 1 (public network), category C1, at 2, 4, 8, 12 and 16 kHz for a shielded motor cable length inferior or equal to 5 m.

(7) Complies with the IEC/EN 61800-3 standard, Environment 1 (public network), category C2, from 2 to 12 kHz for a shielded motor cable length inferior or equal to 5 m; and at 2, 4, 8, 12 and 16 kHz for a shielded motor cable length inferior or equal to 10 m.

(8) Complies with the IEC/EN 61800-3 standard, Environment 1 (public network), category C2, from 4 to 16 kHz for a shielded motor cable length inferior or equal to 5 m; and at 2, 4 and 16 kHz for a shielded motor cable length inferior or equal to 10 m.

(9) Available in lots of 7: add **TQ** at the end of the reference. ATV12HU22M2 becomes **ATV12HU22M2TQ**.

(10) Available in lots of 14: add **TQ** at the end of the reference. For example, ATV12H018M2 becomes **ATV12H018M2TQ**.