The Altivar® 32 Drive

Selection Guide

Variable speed drives for synchronous
and asynchronous motors

Make the most of your energy℠

Schneider Electric

Altivar 32 AC drive selection

The Altivar 32 drive is intended for use with three phase asynchrounous and synchrounous motors. Select the Altivar 32 drive using the nameplate voltage and full load ampere rating of the motor and the table below. The horsepower ratings are for reference only.

Input voltage	Three-phase motor power		Continuous output current	Reference number	Dimensions inches (mm)			Frame size
	HP	kW	A		W	W	D	
200–240 Vac Single-phase input	¼	0.18	1.5	ATV32H018M2	1.77 (45)	12.8 (325)	9.65 (245)	A
	½	0.37	3.3	ATV32H037M2	1.77 (45)	12.8 (325)	9.65 (245)	A
	¾	0.55	3.7	ATV32H055M2	1.77 (45)	12.8 (325)	9.65 (245)	A
	1	0.75	4.8	ATV32H075M2	1.77 (45)	12.8 (325)	9.65 (245)	A
	1½	1.1	6.9	ATV32HU11M2	2.36 (60)	12.8 (325)	9.65 (245)	B
	2	1.5	8	ATV32HU15M2	2.36 (60)	12.8 (325)	9.65 (245)	B
	3	2.2	11	ATV32HU22M2	2.36 (60)	12.8 (325)	9.65 (245)	B

Input voltage	Three-phase motor power		Continuous output current	Reference number	Dimensions inches (mm)			Frame size
	HP	kW	A		W	W	D	
380–480 Vac Three-phase input	½	0.37	1.5	ATV32H037N4	1.77 (45)	12.8 (325)	9.65 (245)	A
	¾	0.55	1.9	ATV32H055N4	1.77 (45)	12.8 (325)	9.65 (245)	A
	1	0.75	2.3	ATV32H075N4	1.77 (45)	12.8 (325)	9.65 (245)	A
	1½	1.1	3	ATV32HU11N4	1.77 (45)	12.8 (325)	9.65 (245)	A
	2	1.5	4.1	ATV32HU15N4	1.77 (45)	12.8 (325)	9.65 (245)	A
	3	2.2	5.5	ATV32HU22N4	2.36 (60)	12.8 (325)	9.65 (245)	B
	4	3	7.1	ATV32HU30N4	2.36 (60)	12.8 (325)	9.65 (245)	B
	5	4	9.5	ATV32HU40N4	2.36 (60)	12.8 (325)	9.65 (245)	B
	7½	5.5	14.3	ATV32HU55N4	5.90 (150)	9.25 (235)	9.13 (232)	C
	10	7.5	17	ATV32HU75N4	5.90 (150)	9.25 (235)	9.13 (232)	C
	15	11	27.7	ATV32HD11N4	7.08 (180)	13 (330)	9.13 (232)	D
	20	15	33	ATV32HD15N4	7.08 (180)	13 (330)	9.13 (232)	D

Size A   Size B   Size C   Size D

Mounting accessories for the Altivar 32 drive

Description	For use on	Reference number	Quantity
Adaptor to mount the Altivar 32 drive control module rotated 90º • Use this adaptor to mount the Altivar 32 drive control module rotated 90º, allowing the Altivar 32 drive to be mounted in a shallow enclosure	ATV32H…M2 ATV32H037N4…U40N4	VW3A9920	1
Bracket for mounting GV2 manual protector on an Altivar 32 drive • Metal bracket mounts to the Altivar 32 drive and holds a GV2. Requires a GV2AF4 adaptor for electrical connections	ATV32H…M2 ATV32H037N4…U40N4	VW3A9921	10
Adaptor for use with mounting a GV2 on an Altivar 32 drive • Provides electrical power connections between GV2 and Altivar 32 drive. Requires a VW39921 bracket to mount the GV2	ATV32H…M2 ATV32H037N4…U40N4	GV2AF4	10

Network communication option cards

The Altivar 32 drive can accept one of the following network communication option cards. The card slides into the Altivar 32 drive without taking up addition panel space, CANopen from the embedded RJ45 port is disabled when an option card is installed. The I/O profile and the CiA402 profile are supported by the drive itself via the integrated Modbus port and by the CANopen, DeviceNet, Profibus and Ethernet communication option cards. The PROFI drive profile is supported by the Profibus communication option card.

Description	Reference number	Quantity
CANopen daisy chain option card, two RJ45 ports	VW3A3608	—
0.3 meter CANopen cable with two RJ45 connectors	VW3CANCARR03	—
1 meter CANopen cable with two RJ45 connectors	VW3CANCARR1	—
CANopen end of line terminator with RJ45 connetor	TCSCAR013M120	2
IP20 CANopen junction box with: • 2 screw terminal blocks for trunk cable tap connection • 2 RJ45 connectors for connection to drives • 1 RJ45 connector for connecting a PC	VW3CANTAP2	—
CANopen single-port option card, 9-pin male SUB-D connector	VW3A3618	—
CANopen single-port option card, removable 5-position screw connector	VW3A3628	—
Profibus DP V1 single port option card, 9 pin male SUB-D connector	VW3A3607	—
DeviceNet single port option card, removable 5-position screw connector	VW3A3609	—
Ethernet IP – Modbus TCP/IP daisy chain option card, two RJ45 ports • 10/100 Mbps, half duplex or full duplex, embedded web server	VW3A3616	—
EtherCAT daisy chain option card, two RJ45 ports*	VW3A3601	—

*Availbility planned for early 2011.

GV mounted using VW3A9921 and GV2AF4   Mounted using VW3A9920   VW3 A3 608   VW3 A3 628   VW3 A3 616

Altivar 32 AC drive options and accessories selection

For use with high-intertia motor loads, generating motor mode loads and machines with fast cycle times. See Altivar 32 drive installation manual for sizing information.

Description*		For use on	Minimum resistor value to connect to the drive: ohms	Reference number	Cable length: meters (m)
ohms	watts				
IP 65-rated dynamic braking resistors for the Altivar 32					
100	100	ATV32H018M2…H075M2	40	VW3A7608R07	0.75
		ATV32H037N4…H075N4	80	—	—
		ATV32HU11N4…HU22N4	54	VW3A7608R30	3
72	100	ATV32HU11M2…HU15M2	27	VW3A7605R07	0.75
				VW3A7605R30	3
27	200	ATV32HU22M2	25	VW3A7603R07	0.75
				VW3A7603R30	3
72	200	ATV32HU30N4	54	VW3A7606R07	0.75
		ATV32HU40N4	36	VW3A7606R30	3
27	400	ATV32HU55N4…HU75N4	27	VW3A7604R07	0.75
				VW3A7604R30	3
IP 20-rated dynamic braking resistors for the Altivar 32					
100	50	ATV32H018M2…H075M2	40	VW3A7701	—
		ATV32HU11M2…HU15M2	27		
		ATV32H037N4…H075N4	80		
		ATV32HU11N4…HU30N4	54		
		ATV32HU40N4	36		
60	100	ATV32HU22M2	25	VW3A7702	
		ATV32HU55N4…HU75N4	27		
28	200	ATV32HD11N4…HD15N4	6	VW3A7703	

*Ohmic value: average power available at 50° C

DC Bus connectors for the Altivar 32 drive

Use these connectors to daisy chain multiple Altivar 32 or Lexium™ 32 drives together to balance acceleration and decelerating loads. (Use in addition to dynamic braking resistors in this type of application.) Or use these connectors when the drives are powered at the DC bus only.

Description	Use to connect	Reference number	Quantity
Daisy chain DC bus cord with two connectors	ATV32H…M2 ATV32H037N4…U40N4	VW3M7101R01	5
Daisy chain DC bus cord with one connector and flying leads at one end	ATV32H037N4…U40N4 to ATV32HU55N4…D15N4	VW3M7102R15	—
Daisy chain DC bus cord with two connectors	ATV32H…M2 to LEX32…M2 ATV32H..N4 to LEX32…N4	VW3M7101R06	—

VW3 A7 701   VW3 A7 608 R••

Altivar 32 drive with
VW3M7101R01

Altivar drive – options and accessories

Description	For use on	Reference number
Software		
SoMove™ PC software enables the user to configure, set, diagnose and maintain the Altivar 32 drive.	The Altivar Logic and Safety functions embedded in the Altivar 32 drive must be configured with this software. The software can also be used to customized the integrated display terminal menus and with a direct connection or via Bluetooth.	Free download www.schneider-electric.us
Cable to connect PC to Altivar drives		
USB/RS485 cord set (equipped with RJ45 connetor)	Altivar and Altistart™	TCSMCNAM3M002P
Remote LED display keypad and cables		
• Remote LED Display Keypad (4 digit, 8 keys, 50° C rated)		
IP54 keypad also select remote keypad cable below	Altivar 12 and Altivar 32 drives	VW3A1006
IP65 keypad also select remote keypad cable below	Altivar 12 and Altivar 32 drives	VW3A1007
• Remote keypad cables (Equipped with 2 RJ45 Connectors)		
1 meter length	Altivar and Altistart	VW3A1104R10
3 meter length	Altivar and Altistart	VW3A1104R30
Remote LCD graphic display keypad, cables and accessories		
• Remote LCD graphical display keypad		
8 line, 24 characters per line, plain text, 8 keys, rotary wheel, 60° C IP54 rated	Altivar 312, 32, 61 and 71 drives	VW3A1101
• Remote LCD graphical keypad mounting accessories		
IP54 rated kit for remote mounting LCD Graphical keypad on enclosure door	VW3A1101	VW3A1102
Clear plastic door for use with kit VW3A1102 for IP65 rating and tamper resistance	VW3A1102	VW3A1103
Female/female right angle RJ45 adaptor, to connect cable and keypad (not required if using VW3A1102)	VW3A1101	VW3A1105
• Remote keypad cables (equipped with 2 RJ45 Connectors)		
1 meter length	VW3A1101, VW3A1006 and VW3A1007	VW3A1104R10
3 meter length	VW3A1101, VW3A1006 and VW3A1007	VW3A1104R30
5 meter length	VW3A1101, VW3A1006 and VW3A1007	VW3A1104R50
10 meter length	VW3A1101, VW3A1006 and VW3A1007	VW3A1104R100
Configuration loaders (use to upload download and store drive configuration settings)		
• Simple loader		
Using RJ45 port on product, one product configuration can be downloaded from a product, stored and uploaded to similar products; Cable included	Altivar 12, 312, 32, 61 and 71 drives	VW3A8120
• Multi-loader		
Multiple product configurations can be downloaded from a PC or drive, stored on an SD card and uploaded to similar products	Altivar 12, 312, 32, 61 and 71 drives Altistart 22	VW3A8121
• Multi-loader cable		
Fitted with non-locking RJ45 connector and handle to reach into Altivar 12 and Altivar 32 drive packaging	VW3A8121	VW3A8126

VW3A1006 VW3A1101 Multi-loader VW3A8121 VW3A1102 and VW3A1103 Simple-loader VW3A8120

Characteristics and functions of the control terminals

Terminal	Function	Type	Electrical characteristics
STO	STO (Safe Torque Off) safety function input	I	24 Vdc • Impedance: 1.5 kΩ
P24	External power supply for control circuit/internal power supply for STO	I/O	+24 Vdc • Tolerance: -15...+20% • Current: 1.1 A max.
+24	Logic input power supply	O	+24 Vdc • Tolerance: -15...+20% • Current: 100 mA
LI1 LI2 LI3 LI4	Logic inputs	I	Four programmable logic inputs configurable as sink or source using SW1 switch • + 24 V power supply (max. 30 V) • State 0 if < 5 V, state 1 if > 11 V (in source mode) • State 0 if > 19 V, state 1 if < 13 V (in sink mode) • Response time: 8 ms at stop
LI5 LI6	Logic inputs	I	If programmed as logic inputs, same characteristics as LI1 to LI4 • LI5 can be programmed as pulse input 20 kpps (pulse per second) • LI6 can be used as PTC using SW2 switch • Trip threshold 3 kΩ, reset threshold 1.8 kΩ • Short-circuit detection threshold < 50 Ω
COM	Analog I/O common	I/O	0 V
AI1	Analog input voltage	I	Analog input: 0 + 10 V • Impedance: 30 kΩ • Resolution: 10 bits converter • Precision: ±0.5% in 50/60 Hz for 25° C, ±0.2% in 50/60 Hz for -10 to +60° C at Δθ = 60° C • Linearity: ± 0.2% (max. ± 0.5%), of max. value • Sampling time: 2 ms
10 V	Power supply for reference potentiometer	O	+10 Vdc • Tolerance: 0...+10% • Current: 10 mA max
AI2	Analog input voltage	I	Bipolar analog input 0 ± 10 V (maximum voltage ± 30 V) The + or - polarity of the voltage on AI2 affects the direction of the setpoint and therefore the direction of operation. • Impedance: 30 kΩ • Resolution: 10 bits • Precision: ±0.5% in 50/60 Hz for 25° C, ±0.2% in 50/60 Hz for -10 to +60° C at Δθ = 60° C • Linearity: ± 0.2% (max. ± 0.5%), of max. value • Sampling time: 2 ms
AI3	Analog input current	I	Analog input 0–20 mA (or 4–20 mA, X–20 mA, 20–Y mA). X and Y can be programmed from 0 mA to 20 mA • Impedance: 250 Ω • Resolution: 10 bits • Precision: ±0.5% in 50/60 Hz for 25 °C, ±0.2% in 50/60 Hz for -10 to +60° C at Δθ = 60° C • Linearity: ± 0.2% (max. ± 0.5%), of max. value • Sampling time: 2 ms
COM	Analog I/O common	I/O	0 V
COM	Analog I/O common	I/O	0 V
COM	Analog I/O common	I/O	0 V
AO1	Voltage or current analog output (collector)	O	Analog output 0 to 10 V, min. load impedance 470 Ω or Analog output 0 to 20 mA, max. load impedance 800 Ω • Resolution 10 bits • Precision ± 1% in 50/60Hz for 25° C ±10° C, ± 2% in 50/60Hz for -10 to +60° C • Linearity ± 0.3% • Sampling time 2 ms
LO+ LO-	Logic output	O	Open collector output configurable as sink or source using SW1 switch • Refresh time: 2 ms • Maximum current: 100 mA • Maximum voltage: 30 V

Terminal	Function	Type	Electrical characteristics
R1A	N.O. contact of the relay	O	• Min. switching capacity: 5 mA for 24 V ⎓
R1B	N.C. contact of the relay	O	• Max. switching capacity on resistive load: (cos φ = 1) 3 A for 250 V ∼ and 4 A for 30 V ⎓
R1C	Common point contact of programmable relay R1	O	• Max. switching capacity on inductive load: (cos φ = 0.4 and L/R =7 ms): 2 A for 250 V ∼ and 30 V ⎓ • Refresh time: 2 ms • Service life: 100,000 operations at max. switching power

R2A
R2C
	NO contact of programmable relay R2	O	• Min. switching capacity: 5 mA for 24 V ⎓
			• Max. switching capacity on resistive load: (cos φ = 1) 5 A for 250 V ∼ and 30 V ⎓
			• Max. switching capacity on inductive load: (cos φ = 0.4 and L/R = 7 ms): 2 A for 250 V ∼ and 30 V ⎓
			• Refresh time: 2 ms
			• Service life:
			  – 100,000 operations at max. switching power
			  – 1,000,000 operations with 500 mA current to inductive load 58 Vac or 30 Vdc

RJ45 port	Communication port	—	It is used to connect: • a PC using SoMove software • a graphic or LED keypad • Modbus or CANopen network • Configuration loader tools

Control terminal connections

ATV32H control terminals	Wire size		Tightening torque
	Minimum[(1)]	Maximum	
	mm² (AWG)	mm² (AWG)	N·m (lb. in)
R1A, R1B, R1C, R2A, R2C	0.75 (18)	1.5 (16)	0.5 (4.4)
All other terminals	0.5 (20)	1.5 (16)	0.5 (4.4)

Embedded functions

Bluetooth communication	Allows wireless connection to SoMove PC software and SoMobile smart phone application. Selectable On/Off
ATV Logic	Perform various Boolean logic, arithmetical operations, timing counting and comparison logic. Configure with SoMove PC software
Safety functions	Safe Torque Off, Safety Limited Speed, Safe Stop 1 Configure with SoMove PC software

Altivar 32 drive technical characteristics

Electrical specifications	
Voltage and hp range	200 -15% to 240 +10%, single-phase input, three-phase output, ¼ HP to 3 HP 380 -15% to 480 +15%, three-phase input, three-phase output, ½ HP to 20 HP
Frequency input range	47.5 hz to 63 hz
Frequency output range	0.1 hz to 599 hz
Switching frequency range	2 khz to 16 khz adjustable
Speed range	1 to 100 for asynchronous motors
Motor protection	Class 10 electronic overload protection
Motor control profiles	For asynchronous motors: sensorless flux vector, volts/hertz, 5 point volts/hertz, quadratic volts/hertz motor control For synchronous motors in open loop: permananent magnet motor control
Transient over current	150% nominal for 60 s, 200% nominal for 2 s
Embedded functions	150 functions, safety functionality, Altivar logic functions
EMC filter	Integrated Class 2 EMC filter for radiated and conducted emissions, IEC 61800-3 (environments 1 and 2, category C2)
Communication	Embedded Bluetooth for SoMove PC software and SoMobile™ smart phone connection Embedded RJ45 port for Modbus, CANopen, Simple loader, Multi-loader, SoMove PC software or remote keypad connection
User interface	On board 4 digit, 7 segment LED display with naviagation wheel and ESC key. Option for remote keypads
Compliance	RoHS, WEEE (Waste Electrical and Electronic Equipment)
Certifications	UL 508C, CSA, C-Tick, NOM, GOST, CE EN 954-1 category 1 and IEC/EN 61508 SIL 1 stopping category 0 per IEC/EN 60204-1 without additional components EN 954-1 category 3 and IEC/EN 61508 SIL 2 stopping category 0 per IEC/EN 60204-1 with Preventa safety module
Environmental specifications	
Temperature ratings	-10° C to + 50° C operational without de-rating, up to 60° C with de-rating
Altitude ratings	Up to 3300 ft (1000 meters) without de-rating, de-rate nominal current by 1% for each additional 330 ft (100 m) up to 10,000 ft (3000 m)
Humidity	up to 95% non-condensing, IEC 60068-2-3
Pollution degree	2 conforming to EN/IEC 61800-5-1. Conformal coating per IEC 60721-3-3 classes 3C2 and 3S2.
Degree of protection	IP20 conforming to EN/IEC 61800-5-1
Vibration resistance	1 gn (f=13...200 hz) conforming to EN/IEC 60068-2-6 1.5 mm peak to peak (f=3...13 hz) conforming to EN/IEC 60068-2-6
Shock resistance	15 gn for 11 ms conforming to EN/IEC 60068-2-27
Noise level	43 db conforming to 86/188/EEC