ALTIVAR® 11 AC Drives

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The ALTIVAR 11 AC drive incorporates sensorless flux vector control (SFV) for improved low-speed torque – and speed regulation over traditional volts per Hertz drives – while offering excellent drive reliability and performance.

ALTIVAR 11 drives additionally feature adjustable switching frequencies up to 16 kHz and can operate in ambient temperatures from -10° to +50°C without derating. Developed for small machine applications, the multi-functional ALTIVAR 11 drive can also be configured for use as a substitute for two-speed motor applications or as a replacement for DC speed control applications.

Ratings available for the ALTIVAR 11 AC drive include:

- *110/115 V 1-Phase – 1/4 to 1 hp*
- *200/230 V 1-Phase – 1/4 to 3 hp*
- *200/230 V 3-Phase – 1/4 to 3 hp*

Key Benefits

Flexibility

- Compact design in an IP20 enclosure available in three unit sizes ranging from 10 to 16.6 kmm².
- Mounting options include wall mount, DIN rail, heatsinkless and side-by-side (up to 40°C).

Reliability

- Designed to conform to the following standards: UL, CSA, NOM, CE and C-Tick.
- Features built-in drive and motor overload thermal protection.
- Operates in an ambient temperature range of -10° to 50°C without derating.

Ease of Use

- Small size allows for quick installation.
- Contactor style through wiring simplifies installation and saves space.
- Compact design and side-by-side mounting reduces panel space requirements.
- Built-in keypad with LED display.

Product Applications

- Conveyors/material handling
- Packaging machines
- Process machines
- Control panels
- HVAC/air handling equipment
- Pumps and fans

Options

- POWERSUITE™ products for easy commissioning and file transfer
- EMC filters and mounting plate
- DIN-rail kit
- Braking module
- Replacement fan kits

Details Make a Difference — ALTIVAR® 11 AC Drive

- Sensorless flux vector (SFV)
- More compact than ALTIVAR 28 drive
- POWERSUITE™ compatible to allow commissioning and file transfer
- Rated to 50°C
- CE compliant (with EMC filter options)
- Screw clamp terminals for easy wiring
- DIN-rail mount
- Analog output
- Internal radio frequency interference (RFI) filters
- Top and bottom style power wiring (contactor style)
- Adjustable switching frequency (2 to 16 kHz)
- Internal keypad display standard
- IP20 design

Selection Guide — ALTIVAR® 11 AC Drive*

Voltage +10%/-15% 50/60 Hz ±5%			Motor	Nominal Current Rating
Input	Output	Catalog Number	HP	Amp
115 V single phase	230 V three phase	ATV11HU05F1U	0.25	1.6
		ATV11HU09F1U	0.5	2.4
		ATV11HU18F1U	1	4.6
		ATV11PU09F1U	0.5	2.4
230 V single phase	230 V three phase	ATV11HU05M2U	0.25	1.6
		ATV11HU09M2U	0.5	2.4
		ATV11HU18M2U	1	4.6
		ATV11HU29M2U	2	7.5
		ATV11HU41M2U	3	10.6
		ATV11PU09M2U	0.5	2.4
		ATV11PU18M2U	1	4.6
230 V three phase	230 V three phase	ATV11HU05M3U	0.25	1.6
		ATV11HU09M3U	0.5	2.4
		ATV11HU18M3U	1	4.6
		ATV11HU29M3U	2	7.5
		ATV11HU41M3U	3	10.6
		ATV11PU09M3U	0.5	2.4
		ATV11PU18M3U	1	4.6

*for asynchronous motors from .25 to 3 hp (0.18 to 2.2 kW)

Environmental Specifications

Electromagnetic compatibility (EMC)	IEC/EN 61000-4-2 Level 3 IEC/EN 61000-4-3 Level 3 IEC/EN 61000-4-4 Level 4 IEC/EN 61000-4-5 Level 3 (POWER ACCESS) IEC/EN 61800-3, Environments 1 and 2
Conducted and radiated emissions for drive controllers	ATV11HU05••U: HU41••U and ATV11HU05••A; HU41••A: With additional EMC filter: EN 55011, En 55022 Class B, 2 to 16 kHz for motor cable ≤ 5 m and Class A (Group 1), 2 to 16 kHz for motor cables ≤ 20 m
CE markings/standards	The drive controllers are CE marked on the basis of European directives relating to low voltage (73/23/EEC and 93/68/EEC and EMC (89/336/EEC) UL, CSA, NOM 117 and C-TICK
Degree of protection	IP20
Vibration resistance[1]	Per IEC/EN 60068-2-6 • 1.5 mm peak from 3 to 13 Hz • 1 gn from 13 to 200 Hz
Shock resistance	15 gn for 11 ms per IEC/EN60068-2-27
Maximum relative humidity	5: 93% non-condensing and without dripping, per IEC 60068-2-3
Maximum ambient temperature	Storage -25: +65°C (-13 to +156°F) Operating: -10: +50°C (14 to +122°F) by removing the protective cover from the top of the drive controller. Up to +60°C, derate the current by 2.2% for every °C above 50°C
Maximum altitude	1000m (3280 ft.) without derating Above 1000m, derate the current by 1% for each additional 100m (328 ft.)

Electrical Characteristics

Output frequency		0: 200 Hz
Switching frequency		2: 16 kHz
Speed range		1: 20
Transient overtorque		150% of rated motor torque
Braking torque		• 20% of nominal motor torque without dynamic breaking (typical value). Up to 150% with optional dynamic braking resistor.
Maximum transient current		150% of rated drive controller current for 60 seconds
Input	Frequency (Hz)	50 ±5% or 60 ±5%
	Voltage (V)	ATV 11••U••F1•, 1-phase: 110 -15% 120 +10% ATV 11•U••M2•, 1-phase: 200 -15% 240 +10% ATV11•U••M3•, 3-phase: 200 -15% 230 +15%
	Fault withstand (A)	≤ 1000 (prospective short-circuit current at connecting point) for 1-phase power supply ≤ 5000 (prospective short-circuit current at connecting point) for 3-phase power supply
Output voltage		Maximum 3-phase voltage equal to: the supply network voltage for ATV11•U••M2• twice the supply network voltage for ATV11•U••F1•
Galvanic isolation		Galvanic isolation between power and control (inputs, outputs, power supplies)
Protection		Protected against short circuits and overloads: +5 V (0/_5%) for speed reference potentiometer (2.2 at 10 k ohms, max. 10 mA +15 V (±15%) for control inputs, max. 100 mA
Analog input, AI1		1 programmable analog input Max. sampling time: 20 ms, resolution 0.4%, linearity ±5% • voltage 0 to 5 V or 0 to 10 V, impedance 40 k ohms • current 0 to 20 mA or 4 to 20 mA (without added resistance), impedance 250 ohms

[1] Pulse with modification

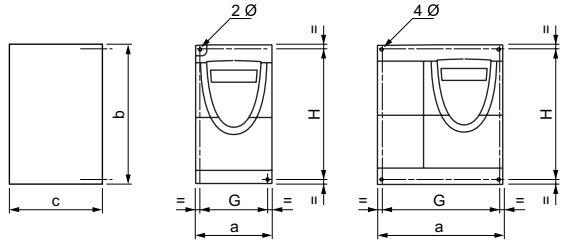
continued

Electrical Characteristics, continued

Logic inputs, LI	Four programmable logic inputs, impedance 5 k ohms Power supply: + internal 15 V or external 24 V (min. 11V, max. 30 V) With multiple assignments, several functions can be combined on a single input (example: LI1 assigned to forward and preset speed 2, LI3 assigned to reverse and preset speed 3)
Output, DO/AO	Factory set as an analog output: • PWM-type (1) open collector output at 2 kHz. Can be used on a meter • maximum current 10 mA • impedance 1 k ohm, linearity)/-1% max. sampling time, 20 ms Can be configured as logic output: • open collector logic output: impedance 100 ohms, max. 50 mA, • internal voltage (see available internal supplies above) • external voltage max. 30 V: 50 mA
Relay outputs, RA-RC	One relay (contact open if there is a fault) Min. switching capacity: 10mA for 24 V, ----- Max. switching capacity: B on resistive load (power factor = 1 and L/R = 0 ms): 5 A for 250 V or 30 V B on inductive load (power factor = 0.4 and L/R = 7 ms): 2 A for 250 V or 30 V
Drive controller protection	Thermal protection against overheating Short circuit protection between output phases Overcurrent protection between output and ground phases at power-up only Overvoltage and undervoltage protection Single-phasing protection, in 3-phase
Motor protection	Thermal protection integrated in the drive controller by I^2t calculation Thermal memory erased at power-up
Frequency resolution	Display: 0.1 Hz Analog inputs: 0.1 Hz for max. 200 Hz

Dimensions and Weights — ALTIVAR® 11 AC Drive

Frame		Width a		Height b		Depth C		Weight	
	ATV11H••••••	in.	mm	in.	mm	In.	mm	kg	lbs.
1	U05••U U09••U	2.8	72	5.6	142	4.0 5.0	101 125	0.70 0.85	1.55 1.88
2	U18M•U	2.8	72	5.8	147	5.4	138	0.95	2.10
3	U18F1U U29••U U41••U	4.6	117	5.6	142	6.1	156	1.6	3.54
1	**ATV11P** All ratings	2.8	72	5.6	142	4.0	101	0.67	1.48



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