

variable speed drive ATV12 - 2.2kW - 3hp - 200..240V - 1ph - with heat sink

ATV12HU22M2

Main

Range of product	Altivar 12	
Product or component type	Variable speed drive	
Product specific application	Simple machine	
Mounting mode	Cabinet mount	
communication port protocol	Modbus	
Supply frequency	50/60 Hz +/- 5 %	
[Us] rated supply voltage	200240 V - 1510 %	
nominal output current	10 A	
Motor power hp	3 hp	
Motor power kW	2.2 kW	
Motor power hp	3 hp	
EMC filter	Integrated	
IP degree of protection	IP20	

Complementary

Discrete input number	4	
Discrete output number	2	
Analogue input number	1	
Analogue output number	1	
Relay output number	1	
Physical interface	2-wire RS 485	
Connector type	1 RJ45	
Continuous output current	10 A at 4 kHz	
Method of access	Server Modbus serial	
Speed drive output frequency	0.5400 Hz	
Speed range	120	
Sampling duration	20 ms, tolerance +/- 1 ms for logic input 10 ms for analogue input	
Linearity error	+/- 0.3 % of maximum value for analogue input	
Frequency resolution	Analog input: converter A/D, 10 bits Display unit: 0.1 Hz	
Time constant	20 ms +/- 1 ms for reference change	

Price is "List Price" and may be subject to a trade discount – check with your local distributor or retailer for actual price.

Transmission rate	9.6 kbit/s 19.2 kbit/s 38.4 kbit/s	
Transmission frame	RTU	
Number of addresses	1247	
Data format	8 bits, configurable odd, even or no parity	
Communication service	Read holding registers (03) 29 words Write single register (06) 29 words Write multiple registers (16) 27 words Read/write multiple registers (23) 4/4 words Read device identification (43)	
Type of polarization	No impedance	
4 quadrant operation possible	False	
Asynchronous motor control profile	Sensorless flux vector control Quadratic voltage/frequency ratio Voltage/frequency ratio (V/f)	
Maximum output frequency	4 kHz	
Transient overtorque	150170 % of nominal motor torque depending on drive rating and type of motor	
Acceleration and deceleration ramps	Linear from 0 to 999.9 s U S	
Motor slip compensation	Adjustable Preset in factory	
Switching frequency	216 kHz adjustable 416 kHz with derating factor	
Nominal switching frequency	4 kHz	
Braking to standstill	By DC injection	
Brake chopper integrated	False	
Line current	24.0 A at 100 V (heavy duty) 20.2 A at 120 V (heavy duty)	
Maximum input current	20.2 A	
Maximum output voltage	240 V	
Apparent power	4.8 kVA at 240 V (heavy duty)	
Maximum transient current	15.0 A during 60 s (heavy duty) 16.5 A during 2 s (heavy duty)	
Network frequency	5060 Hz	
Relative symmetric network frequency tolerance	5 %	
Prospective line Isc	1 kA	
Base load current at high overload	10.0 A	
Power dissipation in W	Forced cooling: 93.0 W	
With safety function Safely Limited Speed (SLS)	False	
With safety function Safe brake management (SBC/SBT)	False	
With safety function Safe Operating Stop (SOS)	False	
With safety function Safe Position (SP)	False	
With safety function Safe programmable logic	False	
With safety function Safe Speed Monitor (SSM)	False	

With safety function Safe Stop 1 (SS1)	False	
With sft fct Safe Stop 2 (SS2)	False	
With safety function Safe torque off (STO)	False	
With safety function Safely Limited Position (SLP)	False	
With safety function Safe Direction (SDI)	False	
Protection type	Line supply overvoltage Line supply undervoltage Overcurrent between output phases and earth Overheating protection Short-circuit between motor phases Against input phase loss in three-phase Thermal motor protection via the drive by continuous calculation of I²t	
Tightening torque	1.2 N.m	
Insulation	Electrical between power and control	
Quantity per set	Set of 1	
Width	105 mm	
Height	142 mm	
Depth	156.2 mm	
Product weight	1.4 kg	

Environment

Operating altitude	> 10002000 m with current derating 1 % per 100 m <= 1000 m without derating	
Operating position	Vertical +/- 10 degree	
Product certifications	NOM CSA C-Tick UL GOST RCM KC	
Marking	CE	
Standards	UL 508C UL 618000-5-1 IEC 61800-5-1 IEC 61800-3	
Assembly style	With heat sink	
Electromagnetic compatibility	Electrical fast transient/burst immunity test level 4 conforming to IEC 61000-4-4 Electrostatic discharge immunity test level 3 conforming to IEC 61000-4-2 Immunity to conducted disturbances level 3 conforming to IEC 61000-4-6 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to IEC 61000-4-3 Surge immunity test level 3 conforming to IEC 61000-4-5 Voltage dips and interruptions immunity test conforming to IEC 61000-4-11	
Environmental class (during operation)	Class 3C3 according to IEC 60721-3-3 Class 3S2 according to IEC 60721-3-3	
Maximum acceleration under shock impact (during operation)	150 m/s² at 11 ms	
Maximum acceleration under vibrational stress (during operation)	10 m/s² at 13200 Hz	
Maximum deflection under vibratory load (during operation)	1.5 mm at 213 Hz	
Volume of cooling air	16 m3/h	
overvoltage category	Class III	

Regulation loop Adjustable PID regulator		
Electromagnetic emission	Radiated emissions environment 1 category C2 conforming to IEC 61800-3 216 kHz shielded motor cable Conducted emissions with integrated EMC filter environment 1 category C1 conforming to IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <5 m Conducted emissions with additional EMC filter environment 1 category C1 conforming to IEC 61800-3 412 kHz shielded motor cable <20 m Conducted emissions with additional EMC filter environment 1 category C2 conforming to IEC 61800-3 412 kHz shielded motor cable <50 m Conducted emissions with additional EMC filter environment 2 category C3 conforming to IEC 61800-3 412 kHz shielded motor cable <50 m Conducted emissions with integrated EMC filter environment 1 category C2 conforming to IEC 61800-3 416 kHz shielded motor cable <5 m Conducted emissions with integrated EMC filter environment 1 category C2 conforming to IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <10 m	
Vibration resistance	1 gn (f = 13200 Hz) conforming to IEC 60068-2-6 1.5 mm peak to peak (f = 313 Hz) - drive unmounted on symmetrical DIN rail - conforming to IEC 60068-2-6	
Shock resistance	15 gn conforming to IEC 60068-2-27 for 11 ms	
Relative humidity	595 % without condensation conforming to IEC 60068-2-3 595 % without dripping water conforming to IEC 60068-2-3	
Noise level	45 dB	
pollution degree	2	
Ambient air transport temperature	-2570 °C	
Ambient air temperature for operation	-1050 °C without derating 5060 °C with current derating 2.2 % per °C	
Ambient air temperature for storage	-2570 °C	
Packing Units		
Unit Type of Package 1	PCE	
Number of Units in Package 1	1	

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	18.000 cm
Package 1 Width	18.500 cm
Package 1 Length	18.500 cm
Package 1 Weight	1.767 kg
Unit Type of Package 2	S06
Number of Units in Package 2	30
Package 2 Height	75.000 cm
Package 2 Width	60.000 cm
Package 2 Length	80.000 cm
Package 2 Weight	65.950 kg

Contractual warranty

Warranty 18 months



Schneider Electric aims to achieve Net Zero status by 2050 through supply chain partnerships, lower impact materials, and circularity via our ongoing "Use Better, Use Longer, Use Again" campaign to extend product lifetimes and recyclability.

Environmental Data explained >

How we assess product sustainability >

Use Better

Packaging made with recycled cardboard	Yes
Packaging without single use plastic	Yes
SCIP Number	4a84ec00-b29e-4a08-82b9-8e16a72fb187
China RoHS Regulation	China RoHS declaration
[☼] Energy efficiency	
Product contributes to saved and avoided emissions	Yes

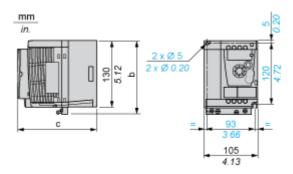
Use Again

○ Repack and remanufacture	
WEEE	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
Take-back	No

Dimensions Drawings

Dimensions

Drive without EMC Conformity Kit



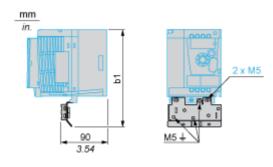
Dimensions in mm

b	С
142	156.2

Dimensions in in.

b	С
5.59	6.15

Drive with EMC Conformity Kit



Dimensions in mm

Dimensions in in.

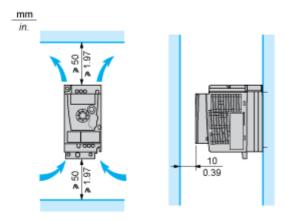
b1	
7.41	

ATV12HU22M2

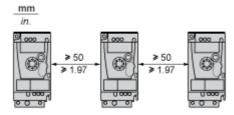
Mounting and Clearance

Mounting Recommendations

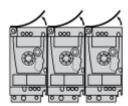
Clearance for Vertical Mounting



Mounting Type A

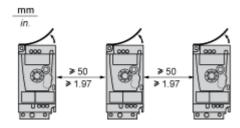


Mounting Type B



Remove the protective cover from the top of the drive.

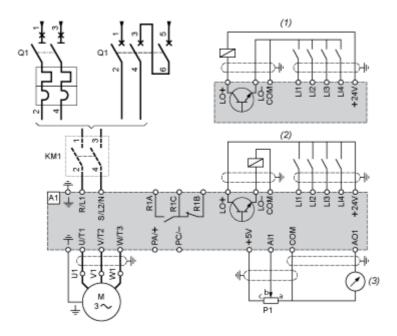
Mounting Type C



Remove the protective cover from the top of the drive.

Connections and Schema

Single-Phase Power Supply Wiring Diagram



A1 Drive

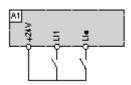
KM1 Contactor (only if a control circuit is needed)

P1 2.2 k Ω reference potentiometer. This can be replaced by a 10 k Ω potentiometer (maximum).

- Q1 Circuit breaker
- (1) Negative logic (Sink)
- (2) Positive logic (Source) (factory set configuration)
- (3) 0...10 V or 0...20 mA

Recommended Schemes

2-Wire Control for Logic I/O with Internal Power Supply

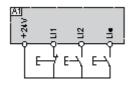


LI1: Forward

LI•: Reverse

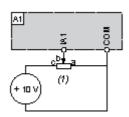
A1: Drive

3-Wire Control for Logic I/O with Internal Power Supply



LI1: Stop
LI2: Forward
LI•: Reverse
A1: Drive

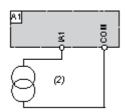
Analog Input Configured for Voltage with Internal Power Supply



(1) 2.2 k Ω ...10 k Ω reference potentiometer

A1: Drive

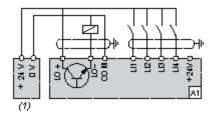
Analog Input Configured for Current with Internal Power Supply



(2) 0-20 mA 4-20 mA supply

A1: Drive

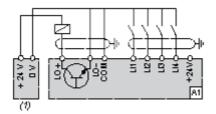
Connected as Positive Logic (Source) with External 24 vdc Supply



(1) 24 vdc supply

A1: Drive

Connected as Negative Logic (Sink) with External 24 vdc supply



(1) 24 vdc supply

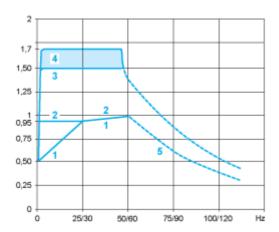
A1: Drive

Product datasheet

ATV12HU22M2

Performance Curves

Torque Curves



- 1: Self-cooled motor: continuous useful torque (1)
- 2: Force-cooled motor: continuous useful torque
- 3: Transient overtorque for 60 s
- 4: Transient overtorque for 2 s
- 5: Torque in overspeed at constant power (2)
- (1) For power ratings \leq 250 W, derating is 20% instead of 50% at very low frequencies.
- (2) The nominal motor frequency and the maximum output frequency can be adjusted from 0.5 to 400 Hz. The mechanical overspeed capability of the selected motor must be checked with the manufacturer.