

# Product data sheet

Specifications



variable speed drive, Altivar 12,  
0.75kW, 1hp, 100 to 120V, 1 phase,  
with heat sink

ATV12H075F1

## 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	100...120 V - 15...10 %
Nominal Output Current	4.2 A
Motor Power Hp	1 hp
Motor Power Kw	0.75 kW
Motor Power Hp	1 hp
Emc Filter	Without EMC filter
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	4.2 A at 4 kHz
Method Of Access	Server Modbus serial
Speed Drive Output Frequency	0.5...400 Hz
Speed Range	1...20
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

Disclaimer: This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications

<b>Transmission Rate</b>	9.6 kbit/s 19.2 kbit/s 38.4 kbit/s
<b>Transmission Frame</b>	RTU
<b>Number Of Addresses</b>	1...247
<b>Data Format</b>	8 bits, configurable odd, even or no parity
<b>Communication Service</b>	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)
<b>Type Of Polarization</b>	No impedance
<b>4 Quadrant Operation Possible</b>	False
<b>Asynchronous Motor Control Profile</b>	Voltage/frequency ratio (V/f) Quadratic voltage/frequency ratio Sensorless flux vector control
<b>Maximum Output Frequency</b>	4 kHz
<b>Transient Overtorque</b>	150...170 % of nominal motor torque depending on drive rating and type of motor
<b>Acceleration And Deceleration Ramps</b>	Linear from 0 to 999.9 s S U
<b>Motor Slip Compensation</b>	Preset in factory Adjustable
<b>Switching Frequency</b>	2...16 kHz adjustable 4...16 kHz with derating factor
<b>Nominal Switching Frequency</b>	4 kHz
<b>Braking To Standstill</b>	By DC injection
<b>Brake Chopper Integrated</b>	False
<b>Line Current</b>	18.9 A at 100 V (heavy duty) 15.7 A at 120 V (heavy duty)
<b>Maximum Input Current</b>	15.7 A
<b>Maximum Output Voltage</b>	240 V
<b>Apparent Power</b>	1.9 kVA at 240 V (heavy duty)
<b>Maximum Transient Current</b>	6.3 A during 60 s (heavy duty) 6.9 A during 2 s (heavy duty)
<b>Network Frequency</b>	50...60 Hz
<b>Relative Symmetric Network Frequency Tolerance</b>	5 %
<b>Prospective Line Isc</b>	1 kA
<b>Base Load Current At High Overload</b>	4.2 A
<b>Power Dissipation In W</b>	Forced cooling: 48.0 W
<b>With Safety Function Safely Limited Speed (Sls)</b>	False
<b>With Safety Function Safe Brake Management (Sbc/Sbt)</b>	False
<b>With Safety Function Safe Operating Stop (Sos)</b>	False
<b>With Safety Function Safe Position (Sp)</b>	False
<b>With Safety Function Safe Programmable Logic</b>	False
<b>With Safety Function Safe Speed Monitor (Ssm)</b>	False

<b>With Safety Function Safe Stop 1 (Ss1)</b>	False
<b>With Sft Fct Safe Stop 2 (Ss2)</b>	False
<b>With Safety Function Safe Torque Off (Sto)</b>	False
<b>With Safety Function Safely Limited Position (Slp)</b>	False
<b>With Safety Function Safe Direction (Sdi)</b>	False
<b>Protection Type</b>	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 I <sup>2</sup> t
<b>Tightening Torque</b>	1.2 N.m
<b>Insulation</b>	Electrical between power and control
<b>Quantity Per Set</b>	Set of 1
<b>Width</b>	105 mm
<b>Height</b>	142 mm
<b>Depth</b>	156.2 mm
<b>Net Weight</b>	1.3 kg

## Environment

<b>Operating Altitude</b>	> 1000...2000 m with current derating 1 % per 100 m <= 1000 m without derating
<b>Operating Position</b>	Vertical +/- 10 degree
<b>Product Certifications</b>	NOM CSA C-Tick UL GOST RCM KC
<b>Marking</b>	CE
<b>Standards</b>	UL 508C UL 618000-5-1 EN/IEC 61800-5-1 EN/IEC 61800-3
<b>Assembly Style</b>	With heat sink
<b>Electromagnetic Compatibility</b>	Electrical fast transient/burst immunity test level 4 conforming to EN/IEC 61000-4-4 Electrostatic discharge immunity test level 3 conforming to EN/IEC 61000-4-2 Immunity to conducted disturbances level 3 conforming to EN/IEC 61000-4-6 Radiated radio-frequency electromagnetic field immunity test level 3 conforming to EN/IEC 61000-4-3 Surge immunity test level 3 conforming to EN/IEC 61000-4-5 Voltage dips and interruptions immunity test conforming to EN/IEC 61000-4-11
<b>Environmental Class (During Operation)</b>	Class 3C3 according to IEC 60721-3-3 Class 3S2 according to IEC 60721-3-3
<b>Maximum Acceleration Under Shock Impact (During Operation)</b>	150 m/s² at 11 ms
<b>Maximum Acceleration Under Vibrational Stress (During Operation)</b>	10 m/s² at 13...200 Hz
<b>Maximum Deflection Under Vibratory Load (During Operation)</b>	1.5 mm at 2...13 Hz
<b>Volume Of Cooling Air</b>	16 m3/h
<b>Overvoltage Category</b>	Class III

Regulation Loop	Adjustable PID regulator
Electromagnetic Emission	Radiated emissions environment 1 category C2 conforming to EN/IEC 61800-3 2...16 kHz shielded motor cable Conducted emissions with additional EMC filter environment 1 category C1 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <5 m Conducted emissions with additional EMC filter environment 1 category C2 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <20 m Conducted emissions with additional EMC filter environment 2 category C3 conforming to EN/IEC 61800-3 4...12 kHz shielded motor cable <20 m
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) - drive unmounted on symmetrical DIN rail - conforming to EN/IEC 60068-2-6
Shock Resistance	15 gn conforming to EN/IEC 60068-2-27 for 11 ms
Relative Humidity	5...95 % without condensation conforming to IEC 60068-2-3 5...95 % without dripping water conforming to IEC 60068-2-3
Noise Level	45 dB
Pollution Degree	2
Ambient Air Transport Temperature	-25...70 °C
Ambient Air Temperature For Operation	-10...50 °C without derating 50...60 °C with current derating 2.2 % per °C
Ambient Air Temperature For Storage	-25...70 °C

## Packing Units

Unit Type Of Package 1	PCE
Number Of Units In Package 1	1
Package 1 Height	17.000 cm
Package 1 Width	19.500 cm
Package 1 Length	19.000 cm
Package 1 Weight	1.587 kg
Unit Type Of Package 2	P06
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	59.600 kg

## Contractual warranty

Warranty	18 months
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# Sustainability



**Green Premium™ label** is Schneider Electric’s commitment to delivering products with best-in-class environmental performance. Green Premium promises compliance with the latest regulations, transparency on environmental impacts, as well as circular and low-CO<sub>2</sub> products.

**Guide to assessing product sustainability** is a white paper that clarifies global eco-label standards and how to interpret environmental declarations.

[Learn more about Green Premium >](#)

[Guide to assess a product’s sustainability >](#)

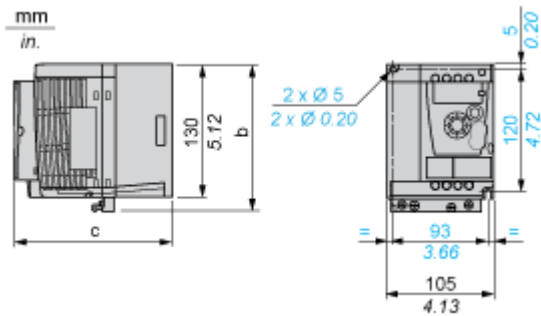
## Well-being performance

 Mercury Free	
 Rohs Exemption Information	<a href="#">Yes</a>
Reach Regulation	<a href="#">REACH Declaration</a>
Eu Rohs Directive	Pro-active compliance (Product out of EU RoHS legal scope)
China Rohs Regulation	<a href="#">China RoHS declaration</a>
Weee	The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins
California Proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to <a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>

Dimensions Drawings

Dimensions

Drive without EMC Conformity Kit



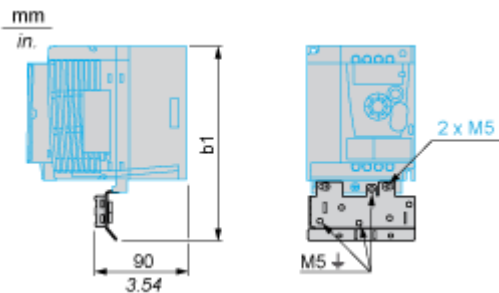
Dimensions in mm

b	c
142	156.2

Dimensions in in.

b	c
5.59	6.15

Drive with EMC Conformity Kit



Dimensions in mm

b1
188.2

Dimensions in in.

b1
7.41

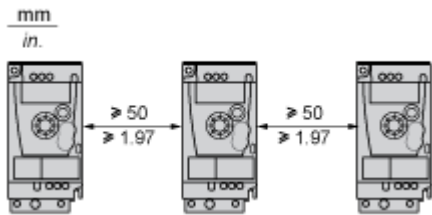
Mounting and Clearance

Mounting Recommendations

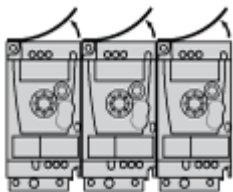
Clearance for Vertical Mounting



Mounting Type A

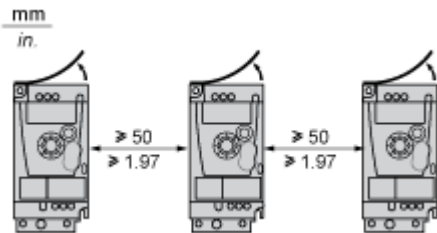


Mounting Type B



Remove the protective cover from the top of the drive.

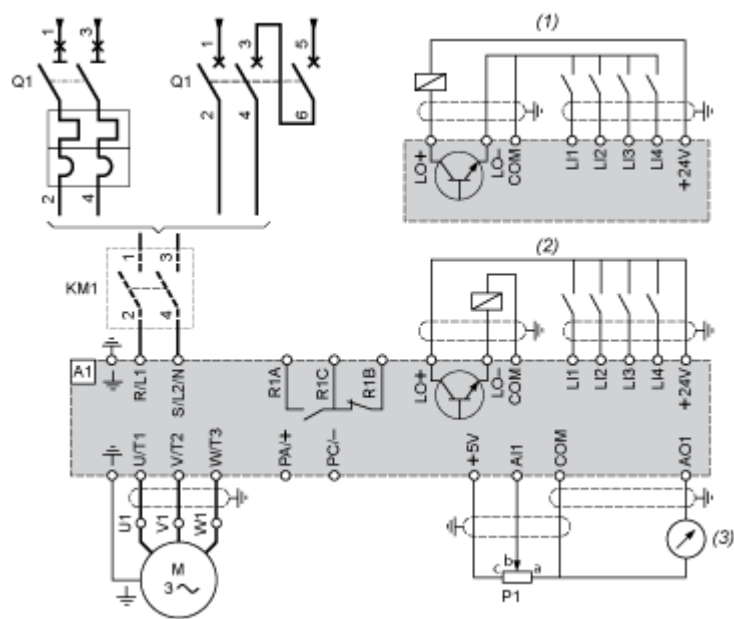
Mounting Type C



Remove the protective cover from the top of the drive.

Connections and Schema

Single-Phase Power Supply Wiring Diagram

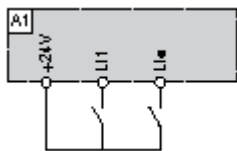


- A1 Drive
- KM1 Contactor (only if a control circuit is needed)
- P1 2.2 kΩ reference potentiometer. This can be replaced by a 10 kΩ potentiometer (maximum).
- Q1 Circuit breaker
- (1) Negative logic (Sink)
- (2) Positive logic (Source) (factory set configuration)
- (3) 0...10 V or 0...20 mA



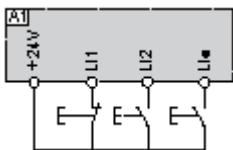
Recommended Schemes

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



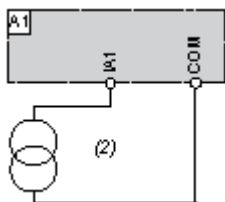
- LI1 : Stop
- LI2 : Forward
- LI• : Reverse
- A1 : Drive

Analog Input Configured for Voltage with Internal Power Supply



- (1) 2.2 kΩ...10 kΩ 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

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 ≤ 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.