

# ATV12HU15M2

variable speed drive ATV12 - 1.5kW - 2hp -  
200..240V - 1ph - with heat sink



## Main

|                                    |                                                                                                      |
|------------------------------------|------------------------------------------------------------------------------------------------------|
| Range of product                   | Altivar 12                                                                                           |
| Product or component type          | Variable speed drive                                                                                 |
| Product destination                | Asynchronous motors                                                                                  |
| Product specific application       | Simple machine                                                                                       |
| Assembly style                     | With heat sink                                                                                       |
| Component name                     | ATV12                                                                                                |
| Quantity per set                   | Set of 1                                                                                             |
| EMC filter                         | Integrated                                                                                           |
| Built-in fan                       | With                                                                                                 |
| Network number of phases           | 1 phase                                                                                              |
| [Us] rated supply voltage          | 200...240 V - 15...10 %                                                                              |
| Motor power kW                     | 1.5 kW                                                                                               |
| Motor power hp                     | 2 hp                                                                                                 |
| Communication port protocol        | Modbus                                                                                               |
| Line current                       | 17.8 A 200 V<br>14.9 A 240 V                                                                         |
| Speed range                        | 1...20                                                                                               |
| Transient overtorque               | 150...170 % of nominal motor torque depending on drive rating and type of motor                      |
| Asynchronous motor control profile | Quadratic voltage/frequency ratio<br>Sensorless flux vector control<br>Voltage/Frequency ratio (V/f) |
| IP degree of protection            | IP20 without blanking plate on upper part                                                            |
| Noise level                        | 45 dB                                                                                                |

## Complementary

|                    |                             |
|--------------------|-----------------------------|
| Supply frequency   | 50/60 Hz +/- 5 %            |
| Type of connector  | 1 RJ45 Modbus on front face |
| Physical interface | 2-wire RS 485 Modbus        |

|                                     |                                                                                                                                                                                                                                                                                          |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transmission frame                  | RTU Modbus                                                                                                                                                                                                                                                                               |
| Transmission rate                   | 4800 bit/s<br>9600 bit/s<br>19200 bit/s<br>38400 bit/s                                                                                                                                                                                                                                   |
| Number of addresses                 | 1...247 Modbus                                                                                                                                                                                                                                                                           |
| Communication service               | Read holding registers (03) 29 words<br>Write single register (06) 29 words<br>Write multiple registers (16) 27 words<br>Read/Write multiple registers (23) 4/4 words<br>Read device identification (43)                                                                                 |
| Prospective line Isc                | ≤ 1 kA                                                                                                                                                                                                                                                                                   |
| Continuous output current           | 7.5 A 4 kHz                                                                                                                                                                                                                                                                              |
| Maximum transient current           | 11.2 A 60 s                                                                                                                                                                                                                                                                              |
| Speed drive output frequency        | 0.5...400 Hz                                                                                                                                                                                                                                                                             |
| Nominal switching frequency         | 4 kHz                                                                                                                                                                                                                                                                                    |
| Switching frequency                 | 2...16 kHz adjustable<br>4...16 kHz with derating factor                                                                                                                                                                                                                                 |
| Braking torque                      | Up to 70 % of nominal motor torque without braking resistor                                                                                                                                                                                                                              |
| Motor slip compensation             | Preset in factory<br>Adjustable                                                                                                                                                                                                                                                          |
| Output voltage                      | 200...240 V 1 phase                                                                                                                                                                                                                                                                      |
| Electrical connection               | Terminal 5.5 mm² AWG 10 L1, L2, L3, U, V, W, PA, PC                                                                                                                                                                                                                                      |
| Tightening torque                   | 1.2 N.m                                                                                                                                                                                                                                                                                  |
| Insulation                          | Electrical between power and control                                                                                                                                                                                                                                                     |
| Supply                              | Internal supply for reference potentiometer 5 V DC 4.75...5.25 V 10 mA overload and short-circuit protection<br>Internal supply for logic inputs 24 V DC 20.4...28.8 V 100 mA overload and short-circuit protection                                                                      |
| Analogue input number               | 1                                                                                                                                                                                                                                                                                        |
| Analogue input type                 | Configurable voltage AI1 0...10 V 30 kOhm<br>Configurable voltage AI1 0...5 V 30 kOhm<br>Configurable current AI1 0...20 mA 250 Ohm                                                                                                                                                      |
| Discrete input number               | 4                                                                                                                                                                                                                                                                                        |
| Discrete input type                 | Programmable LI1...LI4 24 V 18...30 V                                                                                                                                                                                                                                                    |
| Discrete input logic                | Negative logic (sink) > 16 V < 10 V 3.5 kOhm<br>Positive logic (source) 0...< 5 V > 11 V                                                                                                                                                                                                 |
| Sampling duration                   | < 20 ms +/- 1 ms logic input<br>< 10 ms analogue input                                                                                                                                                                                                                                   |
| Linearity error                     | +/- 0.3 % of maximum value analogue input                                                                                                                                                                                                                                                |
| Analogue output number              | 1                                                                                                                                                                                                                                                                                        |
| Analogue output type                | Software-configurable voltage AO1 0...10 V 470 Ohm 8 bits<br>Software-configurable current AO1 0...20 mA 800 Ohm 8 bits                                                                                                                                                                  |
| Discrete output number              | 2                                                                                                                                                                                                                                                                                        |
| Discrete output type                | Logic output LO+, LO-<br>Protected relay output R1A, R1B, R1C 1 C/O                                                                                                                                                                                                                      |
| Minimum switching current           | 5 mA 24 V DC logic relay                                                                                                                                                                                                                                                                 |
| Maximum switching current           | 2 A 250 V AC inductive cos phi = 0.4 L/R = 7 ms logic relay<br>2 A 30 V DC inductive cos phi = 0.4 L/R = 7 ms logic relay<br>3 A 250 V AC resistive cos phi = 1 L/R = 0 ms logic relay<br>4 A 30 V DC resistive cos phi = 1 L/R = 0 ms logic relay                                       |
| Acceleration and deceleration ramps | S<br>U<br>Linear from 0 to 999.9 s                                                                                                                                                                                                                                                       |
| Braking to standstill               | By DC injection 0.1...30 s                                                                                                                                                                                                                                                               |
| Protection type                     | Against input phase loss in three-phase<br>Thermal motor protection via the drive by continuous calculation of I²t<br>Line supply overvoltage<br>Line supply undervoltage<br>Overcurrent between output phases and earth<br>Overheating protection<br>Short-circuit between motor phases |

|                                            |                                                                                               |
|--------------------------------------------|-----------------------------------------------------------------------------------------------|
| Frequency resolution                       | 0.1 Hz display unit<br>Converter A/D, 10 bits analog input                                    |
| Time constant                              | 20 ms +/- 1 ms for reference change                                                           |
| Marking                                    | CE                                                                                            |
| Operating position                         | Vertical +/- 10 degree                                                                        |
| Height                                     | 142 mm                                                                                        |
| Width                                      | 105 mm                                                                                        |
| Depth                                      | 156.2 mm                                                                                      |
| Product weight                             | 1.4 kg                                                                                        |
| Functionality                              | Basic                                                                                         |
| Specific application                       | Commercial equipment                                                                          |
| Variable speed drive application selection | Commercial equipment : mixer<br>Commercial equipment : other application<br>Textile : ironing |
| Motor power range AC-3                     | 1.1...2 kW at 200...240 V 1 phase                                                             |
| Motor starter type                         | Variable speed drive                                                                          |

## Environment

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electromagnetic compatibility         | Immunity to conducted disturbances level 3 EN/IEC 61000-4-6<br>Surge immunity test level 3 EN/IEC 61000-4-5<br>Voltage dips and interruptions immunity test EN/IEC 61000-4-11<br>Electrical fast transient/burst immunity test level 4 EN/IEC 61000-4-4<br>Electrostatic discharge immunity test level 3 EN/IEC 61000-4-2<br>Radiated radio-frequency electromagnetic field immunity test level 3 EN/IEC 61000-4-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Electromagnetic emission              | Radiated emissions environment 1 category C2 EN/IEC 61800-3 2...16 kHz shielded motor cable<br>Conducted emissions with integrated EMC filter environment 1 category C1 EN/IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <= 5 m<br>Conducted emissions with additional EMC filter environment 1 category C1 EN/IEC 61800-3 4...12 kHz shielded motor cable <= 20 m<br>Conducted emissions with additional EMC filter environment 1 category C2 EN/IEC 61800-3 4...12 kHz shielded motor cable <= 50 m<br>Conducted emissions with additional EMC filter environment 2 category C3 EN/IEC 61800-3 4...12 kHz shielded motor cable <= 50 m<br>Conducted emissions with integrated EMC filter environment 1 category C2 EN/IEC 61800-3 4...16 kHz shielded motor cable <= 5 m<br>Conducted emissions with integrated EMC filter environment 1 category C2 EN/IEC 61800-3 2, 4, 8, 12 and 16 kHz shielded motor cable <= 10 m |
| Product certifications                | C-Tick<br>CSA<br>GOST<br>UL<br>NOM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Vibration resistance                  | 1 gn EN/IEC 60068-2-6 13...200 Hz<br>1.5 mm peak to peak EN/IEC 60068-2-6 3...13 Hz drive unmounted on symmetrical DIN rail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Shock resistance                      | 15 gn EN/IEC 60068-2-27 11 ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Relative humidity                     | 5...95 % without condensation IEC 60068-2-3<br>5...95 % without dripping water IEC 60068-2-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Ambient air temperature for storage   | -25...70 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Ambient air temperature for operation | -10...50 °C protective cover from the top of the drive removed<br>50...60 °C with current derating 2.2 % per °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Operating altitude                    | > 1000...2000 m with current derating 1 % per 100 m<br><= 1000 m without derating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Offer Sustainability

|                               |                                                                                                                                                                                                                           |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status      | Green Premium product                                                                                                                                                                                                     |
| RoHS (date code: YYWW)        | Compliant - since 0901 - Schneider Electric declaration of conformity<br> <a href="#">Schneider Electric declaration of conformity</a> |
| REACH                         | Reference not containing SVHC above the threshold<br><a href="#">Reference not containing SVHC above the threshold</a>                                                                                                    |
| Product environmental profile | Available                                                                                                                                                                                                                 |

 Product environmental

Product end of life instructions

Available

 End of life manual

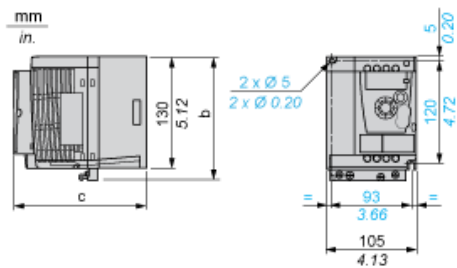
## Contractual warranty

Warranty period

18 months

Dimensions

Drive without EMC Conformity Kit



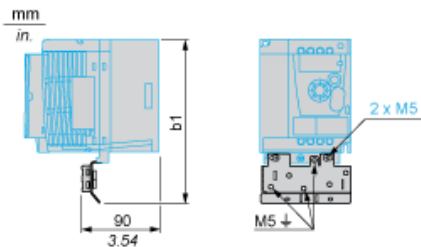
Dimensions in mm

| b   | c     |
|-----|-------|
| 142 | 156.2 |

Dimensions in in.

| b    | c    |
|------|------|
| 5.59 | 6.15 |

Drive with EMC Conformity Kit



Dimensions in mm

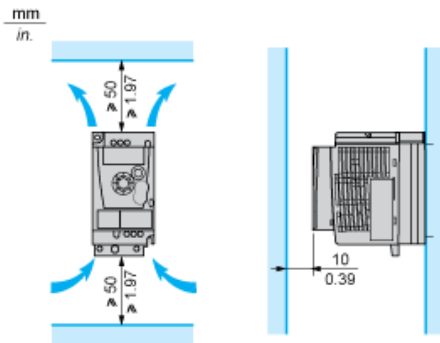
| b1    |
|-------|
| 188.2 |

Dimensions in in.

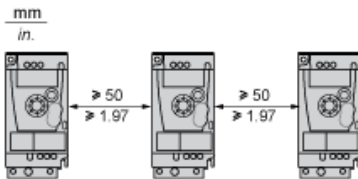
| b1   |
|------|
| 7.41 |

## Mounting Recommendations

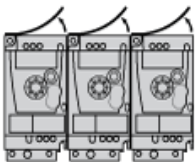
### Clearance for Vertical Mounting



### Mounting Type A

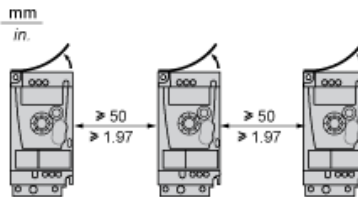


### Mounting Type B



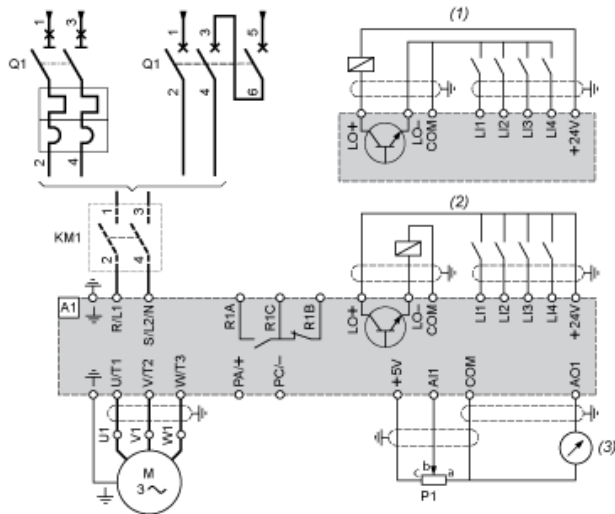
Remove the protective cover from the top of the drive.

### Mounting Type C



Remove the protective cover from the top of the drive.

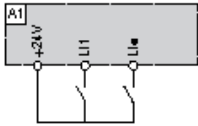
## Single-Phase Power Supply Wiring Diagram



- 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

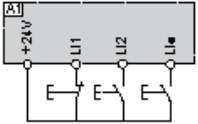
## Recommended Schemes

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



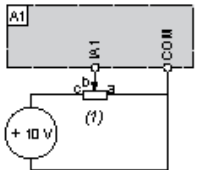
LI1 : Forward  
LI• : Reverse  
A1 : Drive

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



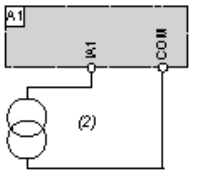
LI1 : Stop  
LI2 : Forward  
LI• : Reverse  
A1 : Drive

### Analog Input Configured for Voltage with Internal Power Supply



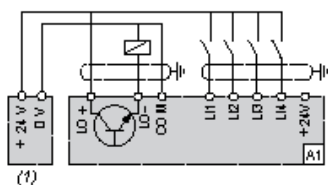
(1) 2.2 kΩ...10 kΩ reference potentiometer  
A1 : Drive

### Analog Input Configured for Current with Internal Power Supply



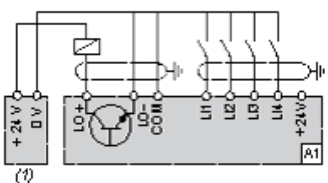
(2) 0-20 mA 4-20 mA supply  
A1 : Drive

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



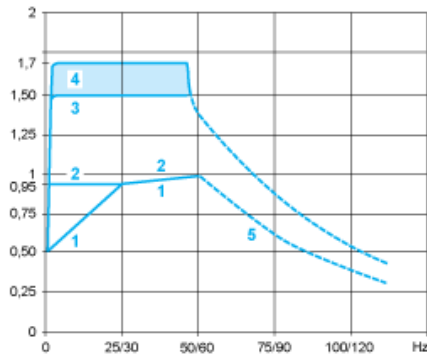
(1) 24 vdc supply  
A1 : Drive

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



(1) 24 vdc supply  
A1 : Drive

## 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

<!-- File : MPC-ATV12HU15M2-BOM.xml , Range ID : 2253, Reference ID : ATV12HU15M2 -->

Our Proposal: Circuit Breaker + Contactor + Drive for Motor Power 1,5 kW and 200 VAC

<!-- DataBOM 1 Template BEGIN -->

| Motor Power<br>(kW) | Icu<br>(kA) | Breaker                                                                                      | Contactor (*)                                                                                 | Motor Starter                                                                                      |
|---------------------|-------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1.5                 | 15          | <br>GV2ME21 | <br>LC1D18P7 | <br>ATV12HU15M2 |

Non contractual pictures.

<!-- DataBOM 1 Template END --> <!-- Templates For Variants BEGIN -->

(\*) You can select the contactor proposed or variants. Please consider examples hereafter or follow the link to the complete offer.

<!-- VARIANT 1 -->

| Motor Power<br>kW | Coil voltage<br>VAC - 50/60 Hz | 24 | 48 | 110 | 115 | 220 | 230 | 400 | Other        |
|-------------------|--------------------------------|----|----|-----|-----|-----|-----|-----|--------------|
| 1.5               | LC1D18 ..                      | B7 | E7 | F7  | FE7 | M7  | P7  | V7  | Complete Off |

<!-- VARIANT 1 END --> <!-- VARIANT 2 -->

| Motor Power<br>kW | Coil voltage<br>VDC - U 0.75...1.25 Uc | 24 | 48 | Other          |
|-------------------|----------------------------------------|----|----|----------------|
| 1.5               | LC1D18 ..                              | BD | ED | Complete Offer |

<!-- VARIANT 2 END --> <!-- VARIANT 3 -->

| Motor Power<br>kW | Coil voltage<br>Low Consumption<br>VDC - U 0.8...1.25 Uc | 24 | 110 | Other          |
|-------------------|----------------------------------------------------------|----|-----|----------------|
| 1.5               | LC1D18 ..                                                | BL | FL  | Complete Offer |

<!-- VARIANT 3 END --> <!-- Templates For Variants END -->