Altivar 11

Variateurs de vitesse pour
moteurs asynchrones,
Variable speed drives
for asynchronous motors,
Frequenzumrichter
für Drehstrom-Asynchronmotoren,
Variadores de velocidad
para motores asíncronos,
Variatori di velocità
per motori asincroni.

Telemecanique

Schneider Electric

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Altivar 11

FRANÇAIS

ENGLISH

DEUTSCH

ESPAÑOL

ITALIANO

When the drive is powered up, the power components and some of the control components are connected to the line supply. *It is extremely dangerous to touch them. The drive cover must be kept closed.*

In general, the drive power supply must be disconnected *before any operation on either the electrical or mechanical parts of the installation or machine.*

After the ALTIVAR has been switched off and the display has disappeared completely, *wait for 10 minutes before working on the equipment.* This is the time required for the capacitors to discharge.

The motor can be stopped during operation by inhibiting start commands or the speed reference while the drive remains powered up. If personnel safety requires prevention of sudden restarts, this electronic locking system is not sufficient: *fit a cut-off on the power circuit.*

The drive is fitted with safety devices which, in the event of a fault, can shut down the drive and consequently the motor. The motor itself may be stopped by a mechanical blockage. Finally, voltage variations, especially line supply failures, can also cause shutdowns.

If the cause of the shutdown disappears, there is a risk of restarting which may endanger certain machines or installations, especially those which must conform to safety regulations.

In this case the user must take precautions against the possibility of restarts, in particular by using a low-speed detector to cut off power to the drive if the motor performs an unprogrammed shutdown.

The drive must be installed and set up in accordance with both international and national standards. Bringing the device into conformity is the responsibility of the systems integrator who must observe the EMC directive among others within the European Union.

The specifications contained in this document must be applied in order to comply with the essential requirements of the EMC directive.

The Altivar 11 must be considered as a component: it is neither a machine nor a device ready for use in accordance with European directives (machinery directive and electromagnetic compatibility directive). It is the responsibility of the end user to ensure that the machine meets these standards.

The products and equipment described in this document may be changed or modified at any time, either from a technical point of view or in the way they are operated. Their description can in no way be considered contractual.

Contents

Steps for Setting Up the Drive

1 - Delivery of the drive

- Check that the drive reference printed on the label is the same as that on the delivery note corresponding to the purchase order.
- Remove the Altivar 11 from its packaging and check that it has not been damaged in transit.

2 - Fit the drive

3 - Connect the following to the drive:

- The line supply, ensuring that it is:
  - within the voltage range of the drive
  - voltage free
- The motor, ensuring that its coupling corresponds to the line voltage
- The control via the logic inputs
- The speed reference via the logic or analog inputs

4 - Switch on the drive, but do not give a run command

5 - Configure the following:

- The nominal frequency (bFr) of the motor, if it is other than 50 Hz for the E and A ranges or other than 60 Hz for the U range (only appears the first time the drive is switched on).
- The ACC (Acceleration) and dEC (Deceleration) parameters.
- The LSP (Low speed when the reference is zero) and HSP (High speed when the reference is maximum) parameters.
- The ItH parameter (Motor thermal protection).
- The preset speeds SP2-SP3-SP4.
- The speed reference if it is other than 0 - 5 V (0 -10V or 0 -20mA or 4 -20mA).

6 - Configure the following in the drC menu:

The motor parameters, only if the factory configuration of the drive is not suitable.

7 - Set the following in the FUn menu:

The application functions, only if the factory configuration of the drive is not suitable, for example the control mode: 3-wire, or 2-wire transitional, or 2-wire level detection, or 2-wire level detection with forward priority, or local control for the A range.

⚠ The user must ensure that the programmed functions are compatible with the wiring diagram used.

8 - Start the drive

Factory Configuration

Factory settings

The Altivar 11 is factory-set for the most common operating conditions:
- Display: drive ready (rdY) motor stopped, and motor frequency reference in running
- Motor frequency (bFr): 50 Hz for the E and A ranges, 60 Hz for the U range
- Motor voltage (UnS): 230 V
- Ramps (ACC, dEC): 3 seconds
- Low speed (LSP): 0 Hz
- High speed (HSP): 50 Hz for the E and A ranges, 60 Hz for the U range
- Frequency loop gain: standard
- Motor thermal current (ItH) = nominal motor current (value depending on drive rating)
- Standstill injection braking current = 0.7 x nominal drive current, for 0.5 seconds
- Automatic adaptation of the deceleration ramp in the event of overvoltage on braking
- No automatic restarting after a fault
- Switching frequency 4 kHz
- Logic inputs:
  - LI1, LI2 (2 directions of operation): 2-wire transitional control, LI1 = forward, LI2 = reverse, inactive for the Asia range
  - LI3, LI4: 4 preset speeds (speed 1 = speed reference or LSP, speed 2 = 10 Hz, speed 3 = 25 Hz, speed 4 = 50 Hz)
- Analog input:
  - AI1 (0 + 5 V): 5 V speed range, inactive for the Asia range.
- Relay R1: the contact opens in the event of a fault (or drive off)
- Analog/logic output DO: as an analog output, image of the motor frequency

Asia range

When they leave the factory, ATV 11●●●●●●A drives are supplied with local control activated: the RUN, STOP buttons and the drive potentiometer are active. Logic inputs LI1 and LI2 and analog input AI1 are inactive.

If the above values are compatible with the application, the drive can be used without changing the settings.

Drive References

Single-phase supply voltage: 200…240 V 50/60 Hz

3-phase motor 200...240 V

Motor	Mains		Altivar 11			
Power indicated on plate (1)	Max. line current (2)	Max. prospective line Isc	Nominal current	Max. transient current (3)	Power dissipated at nominal load	Reference (4)
kW/HP	A	kA	A	A	W	
Europe range						
0.18 / 0.25	2.9	1	1.1	1.6	12	**ATV11HU05M2E**
0.37 / 0.5	5.3	1	2.1	3.1	20.5	**ATV11●U09M2E**
0.55 / 0.75	6.3	1	3	4.5	29	**ATV11●U12M2E**
0.75 / 1	8.6	1	3.6	5.4	37	**ATV11●U18M2E**
1.5 / 2	14.8	1	6.8	10.2	72	**ATV11HU29M2E**
2.2 / 3	20.8	1	9.6	14.4	96	**ATV11HU41M2E**
Asia range						
0.18 / 0.25	3.3	1	1.4	2.1	14	**ATV11HU05M2A**
0.37 / 0.5	6	1	2.4	3.6	25	**ATV11●U09M2A**
0.75 / 1	9.9	1	4	6	40	**ATV11●U18M2A**
1.5 / 2	17.1	1	7.5	11.2	78	**ATV11HU29M2A**
2.2 / 3	24.1	1	10	15	97	**ATV11HU41M2A**
America range						
0.18 / 0.25	3.3	1	1.6	2.4	14.5	**ATV11HU05M2U**
0.37 / 0.5	6	1	2.4	3.6	23	**ATV11●U09M2U**
0.75 / 1	9.9	1	4.6	6.3	43	**ATV11●U18M2U**
1.5 / 2	17.1	1	7.5	11.2	77	**ATV11HU29M2U**
2.2 / 3	24.1	1	10.6	15	101	**ATV11HU41M2U**

Drive References

(1) These power ratings are for a switching frequency of 4 kHz, in continuous operation. The switching frequency is adjustable from 2 to 16 kHz.
Above 4 kHz, the drive will reduce the switching frequency if an excessive temperature rise occurs. The temperature rise is controlled by a PTC probe in the power module. Nonetheless, derating should be applied to the nominal drive current if operation above 4kHz needs to be continuous:
• 10% derating for 8 kHz
• 20% derating for 12 kHz
• 30% derating for 16 kHz

(2) Nominal voltage values: 230 V for the Europe range, 200 V for the Asia range and 208 V for the America range.

(3) For 60 seconds.

(4) Drives whose reference contains a ● are available in two versions:
• on heatsink, replace the ● with an H (ATV11HU09M2E for example)
• on base plate, replace the ● with a P (ATV11PU09M2E for example)

ENGLISH

Drive References

3-phase supply voltage: 200…230 V 50/60 Hz

3-phase motor 200...230 V

Motor	Mains		Altivar 11			
Power indicated on plate (1)	Max. line current (2)	Max. prospective line Isc	Nominal current	Max. transient current (3)	Power dissipated at nominal load	Reference (4)
kW/HP	A	kA	A	A	W	
Asia range						
0.18 / 0.25	1.8	5	1.4	2.1	13.5	**ATV11HU05M3A**
0.37 / 0.5	3.6	5	2.4	3.6	24	**ATV11●U09M3A**
0.75 / 1	6.3	5	4	6	38	**ATV11●U18M3A**
1.5 / 2	11	5	7.5	11.2	75	**ATV11HU29M3A**
2.2 / 3	15.2	5	10	15	94	**ATV11HU41M3A**
America range						
0.18 / 0.25	1.8	5	1.6	2.4	13.5	**ATV11HU05M3U**
0.37 / 0.5	3.6	5	2.4	3.6	24	**ATV11●U09M3U**
0.75 / 1	6.3	5	4.6	6.3	38	**ATV11●U18M3U**
1.5 / 2	11	5	7.5	11.2	75	**ATV11HU29M3U**
2.2 / 3	15.2	5	10.6	15	94	**ATV11HU41M3U**

(1) These power ratings are for a switching frequency of 4 kHz, in continuous operation. The switching frequency is adjustable from 2 to 16 kHz.
Above 4 kHz, the drive will reduce the switching frequency if an excessive temperature rise occurs. The temperature rise is controlled by a PTC probe in the power module. Nonetheless, derating should be applied to the nominal drive current if operation above 4kHz needs to be continuous:
• 10% derating for 8 kHz, 20% for 12 kHz, 30% for 16 kHz
(2) Nominal voltage values: 200 V for the Asia range and 208 V for the America range.
(3) For 60 seconds.
(4) Drives whose reference contains a ● are available in two versions:
• on heatsink, replace the ● with an H (ATV11HU09M3A for example)
• on base plate, replace the ● with a P (ATV11PU09M3A for example)

Drive References

Single-phase supply voltage: 100…120 V 50/60 Hz

3-phase motor 200...230 V

Motor	Mains		Altivar 11			
Power indicated on plate (1)	Max. line current (2)	Max. prospective line Isc	Nominal current	Max. transient current (3)	Power dissipated at nominal load	Reference (4)
kW/HP	A	kA	A	A	W	
Asia range						
0.18 / 0.25	6	1	1.4	2.1	14	**ATV11HU05F1A**
0.37 / 0.5	9	1	2.4	3.6	25	**ATV11●U09F1A**
0.75 / 1	18	1	4	6	40	**ATV11HU18F1A**
America range						
0.18 / 0.25	6	1	1.6	2.4	14.5	**ATV11HU05F1U**
0.37 / 0.5	9	1	2.4	3.6	23	**ATV11●U09F1U**
0.75 / 1	18	1	4.6	6.3	43	**ATV11HU18F1U**

(1) These power ratings are for a switching frequency of 4 kHz, in continuous operation. The switching frequency is adjustable from 2 to 16 kHz.
Above 4 kHz, the drive will reduce the switching frequency if an excessive temperature rise occurs. The temperature rise is controlled by a PTC probe in the power module. Nonetheless, derating should be applied to the nominal drive current if operation above 4kHz needs to be continuous:
• 10% derating for 8 kHz, 20% for 12 kHz, 30% for 16 kHz
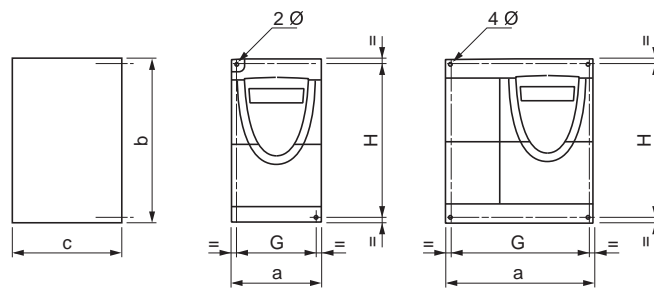
(2) Values for 100 V nominal voltage.

(3) For 60 seconds.

(4) Drives whose reference contains a ● are available in two versions:
• on heatsink, replace the ● with an H (ATV11HU09F1A for example)
• on base plate, replace the ● with a P (ATV11PU09F1A for example)

Mounting

Dimensions and weights

ATV 11H	a mm	b mm	c (1) mm	G mm	H mm	Ø mm	weight kg
U05●● E, A, U ranges	72	142	101	60±1	131±1	2 x 5	0.70
U09●● E range	72	142	125	60±1	120±1	2 x 5	0.85
U09●● A, U ranges	72	142	125	60±1	131±1	2 x 5	0.85
U12●● E range U18M● E range	72	142	138	60±1	120±1	2 x 5	0.92
U18M● A range	72	142	138	60±1	131±1	2 x 5	0.92
U18M● U range	72	147	138	60±1	131±1	2 x 5	0.95
U18F1 A, U ranges U29●● E, A, U ranges U41●● E, A, U ranges	117	142	156	106±0.5	131±1	4 x 5	1.6

ATV 11P	a mm	b mm	c (1) mm	G mm	H mm	Ø mm	weight kg
All ratings	72	142	101	60±1	131±1	2 x 5	0.67

(1) For drives in the A range (Asia), add 7 mm for the protruding potentiometer button.

Mounting

Mounting and temperature conditions
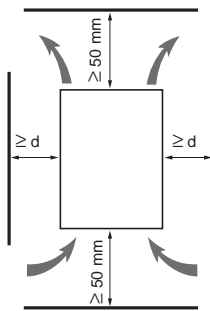
Install the unit vertically, at ± 10°.
Do not place it close to heating elements.
Leave sufficient free space to ensure that the air required for cooling purposes can circulate from the bottom to the top of the unit.

Free space in front of unit: 10 mm minimum.

When IP20 protection is adequate, we recommend that the protective cover on the top of the drive be removed, as shown below.

• From -10°C to 40°C: • d ≥ 50 mm: no special precautions.
                  • d = 0 (mounted side by side): remove the protective cover on the top of the drive, as shown below (the degree of protection becomes IP20).
• From 40°C to 50°C: • d ≥ 50 mm: remove the protective cover on the top of the drive, as shown below (the degree of protection becomes IP20).
               If the cover is left on, derate the nominal drive current by 2.2% for every °C above 40°C.
               • d = 0: remove the protective cover on the top of the drive, as shown below (the degree of protection becomes IP20), and derate the nominal drive current by 2.2% for every °C above 40°C.

• From 50°C to 60°C: • d ≥ 50 mm: remove the protective cover on the top of the drive, as shown below (the degree of protection becomes IP20), and derate the nominal drive current by 2.2% for every °C above 50°C.
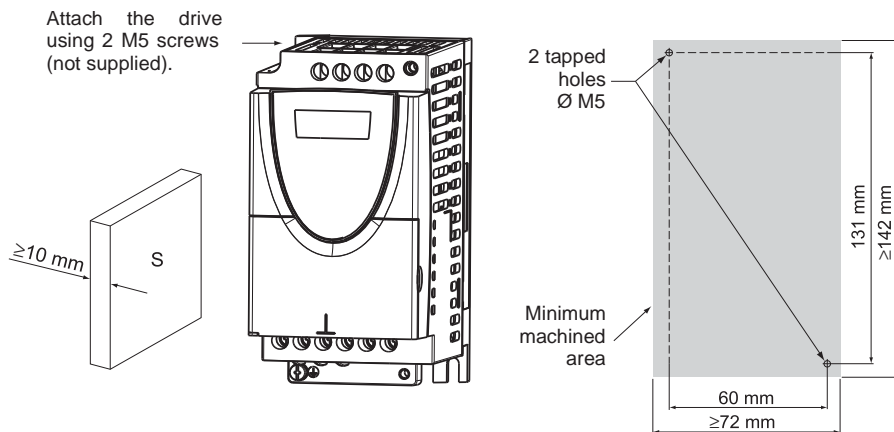.
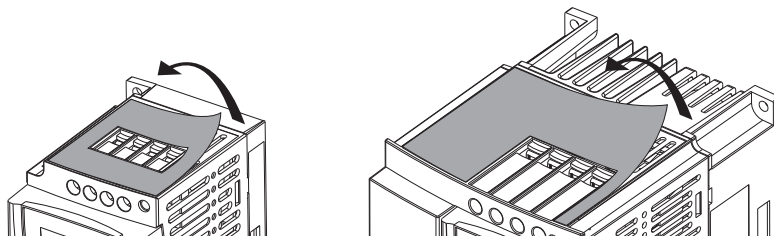
Mounting

Mounting the drives on machines

ATV 11P●●●●●● drives can be mounted on (or in) a steel or aluminium machine frame, observing the following conditions:
- Maximum ambient temperature: 40 °C
- Vertical mounting at ± 10°
- The drive must be fixed at the centre of a support (frame) which is a minimum of 10 mm thick and with a square cooling area (S) of 0.12 m² minimum for steel and 0.09 m² for aluminium, exposed to the open air.
- Support area for the drive (min 142 x 72) machined on the frame with a surface smoothness of 100 μm max and unevenness of 3.2 μm max.
- Mill the tapped holes lightly in order to remove any burrs.
- Coat the whole support surface of the drive with thermal contact grease (or equivalent).

Attach the drive using 2 M5 screws (not supplied).

≥10 mm   S

2 tapped holes Ø M5

Minimum machined area

131 mm
≥142 mm

60 mm
≥72 mm

Verify the thermal state of the drive by checking parameter tHd (SUP menu), to confirm that the drive has been mounted correctly.
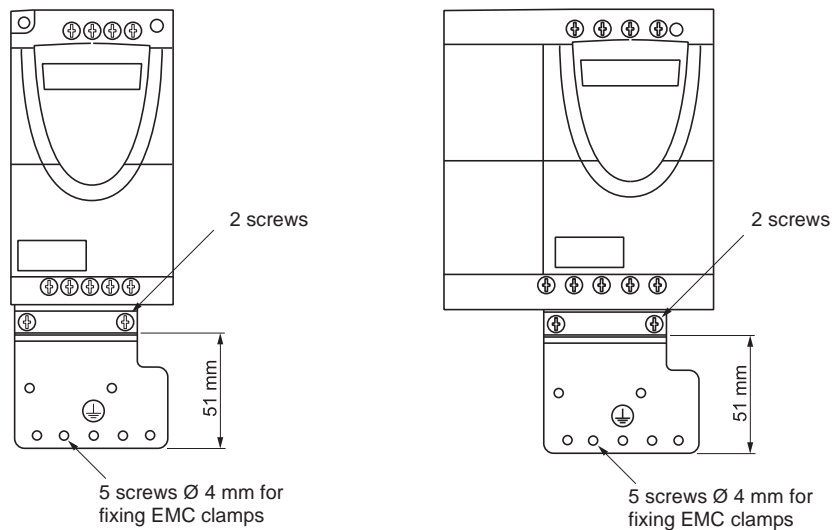
Mounting

Electromagnetic compatibility

EMC mounting plate: VW3 A11821 to be ordered separately

Fix the EMC equipotentiality mounting plate to the holes in the ATV 11 heatsink using the 2 screws supplied, as shown in the drawings below.

2 screws

51 mm

5 screws Ø 4 mm for fixing EMC clamps

2 screws

51 mm

5 screws Ø 4 mm for fixing EMC clamps

Wiring

Power terminals

The power terminals can be accessed without opening the cover. The drive has through wiring: line supply is at the top of the drive (R/L1-S/L2 in single-phase 230V, R/L1-S/L2-T/L3 in 3-phase 230V, R/L1-N in single-phase 120V), the motor power supply is at the bottom of the drive (U - V - W).

⚠ **Connect the power terminals before connecting the control terminals.**

Specifications of power terminals

Altivar ATV 11●	Maximum connection capacity		Tightening torque in Nm
	AWG	mm^2	
U05●●●, U09●●● U18M●●	AWG 14	1.5	0.75
U18F1● U29●●●, U41●●●	AWG 10	4	1

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Wiring

Functions of power terminals

| Terminals	Function	For Altivar ATV 11
⏚	Earth terminal	All ratings
R/L1 S/L2	Power supply	ATV11●●●●M2●
R/L1 S/L2 T/L3		ATV11●●●●M3●
R/L1 N		ATV11●●●●F1●
PA/+	+ output (⎓) to the braking module	All ratings
PC/-	- output (⎓) to the braking module	All ratings
U V W	Outputs to the motor	All ratings
⏚	Earth terminal	All ratings

Arrangement of the power terminals
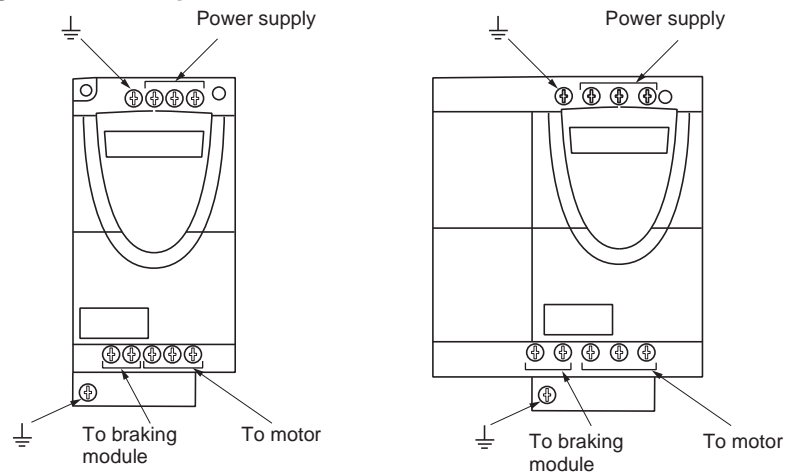
Wiring

Control terminals

To access the control terminals, open the cover as shown below.
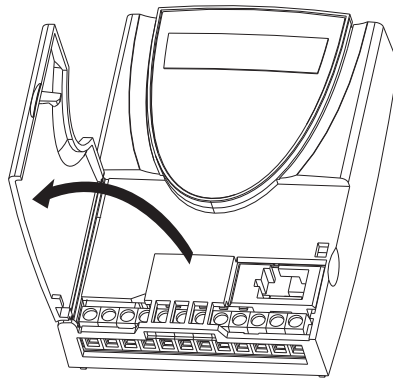
Arrangement, specifications and functions of the control terminals

RC RA Not used 0V AI 1 +5V DO LI 1 LI 2 LI 3 LI 4 +15V

- Maximum connection capacity
1.5 mm2 - AWG 16
- Max. tightening torque:
0.5 Nm.

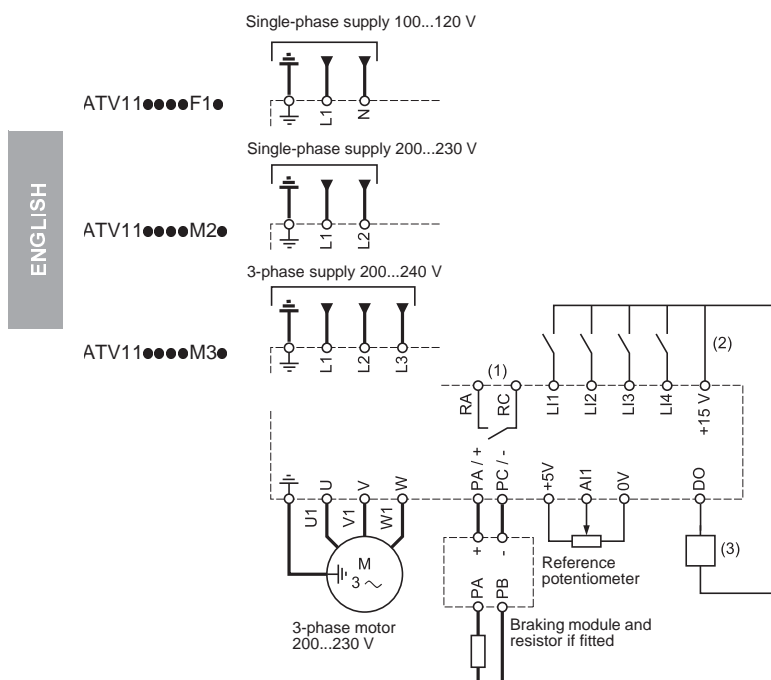| Terminal	Function	Electrical characteristics
RC RA	Fault relay contact (open if there is a fault or the drive is disconnected)	Min. switching capacity: • 10 mA for 24 V ⎓ Max. switching capacity: • 2 A for 250 V ∿ and 30 V ⎓ on inductive load (cos φ = 0.4 and L/R = 7 ms) • 5 A for 250 V ∿ and 30 V ⎓ on resistive load (cos φ = 1 and L/R = 0) • sampling time 20 ms max.

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Wiring

Arrangement, specifications and functions of the control terminals (continued)

Terminal	Function	Electrical characteristics
0V	I/O common	0 V
AI1	Voltage or current analog input	Analog input 0 + 5 V or 0 + 10 V (max. voltage 30 V) • impedance 40 kΩ • resolution 0.4% • precision, linearity: ± 5% • sampling time 20 ms max. Analog input 0 - 20 mA or 4 - 20 mA • impedance 250 Ω (with no additional resistor) • resolution 0.4% • precision, linearity: ± 5% • sampling time 20 ms max.
+5V	Power supply for reference potentiometer 2.2 to 10 kΩ	• precision: - 0 + 5% • max. current available: 10 mA
DO	Output which can be configured as analog or logic output	PWM open collector analog output at 2 kHZ: • voltage 30 V max. • impedance 1 kΩ, 10 mA max. • linearity ± 1% • sampling time 20 ms max. Open collector logic output: • voltage 30 V max. • impedance 100 Ω, 50 mA max. • sampling time 20 ms max.
LI1 LI2 LI3 LI4	Logic inputs	Programmable logic inputs • +15 V power supply (max. 30 V) • impedance 5 kΩ • state 0 if < 5 V, state 1 if > 11 V in positive logic • state 1 if < 5 V, state 0 if > 11 V or switched off (not connected) in negative logic • sampling time 20 ms max.
+15V	Logic input power supply	+ 15 V ± 15% protected against short-circuits and overloads. Max. customer current available 100 mA

Wiring

Wiring diagram for factory settings

Single-phase supply 100...120 V

ATV11●●●●F1●

Single-phase supply 200...230 V

ATV11●●●●M2●

3-phase supply 200...240 V

ATV11●●●●M3●

3-phase motor
200...230 V

Reference
potentiometer

Braking module and
resistor if fitted

(1) Fault relay contacts, for remote indication of the drive status.
(2) Internal + 15 V. If an external source is used (+ 24 V max.), connect the 0 V of the source to the 0V
terminal, and do not use the + 15 V terminal on the drive.
(3) Galvanometer or low level relay.

Note: Fit interference suppressors to all inductive circuits near the drive or coupled to the same circuit
(relays, contactors, solenoid valves, etc)

Choice of associated components:
See the Altivar 11 catalog.

Wiring

Wiring recommendations

Power

Observe the cable cross-sectional areas recommended in the standards.

The drive must be earthed to conform with the regulations concerning high leakage currents (over 3.5 mA).
When upstream protection by means of a "residual current device" is required by the installation standards, a type A device should be used for single-phase drives and type B for 3-phase drives. Choose a suitable model incorporating:
• HF current filtering
• a time delay which prevents tripping caused by the load from stray capacitance on power-up. The time delay is not possible for 30 mA devices. In this case, choose devices with immunity against accidental tripping, for example RCDs with reinforced immunity from the **s.i** range (Merlin Gerin brand).
If the installation includes several drives, provide one "residual current device" per drive.

Keep the power cables separate from circuits in the installation with low-level signals (detectors, PLCs, measuring apparatus, video, telephone).

Control

Keep the control circuits away from the power cables. For control and speed reference circuits, we recommend using shielded twisted cables with a pitch of between 25 and 50 mm, connecting the shielding to ground at each end.
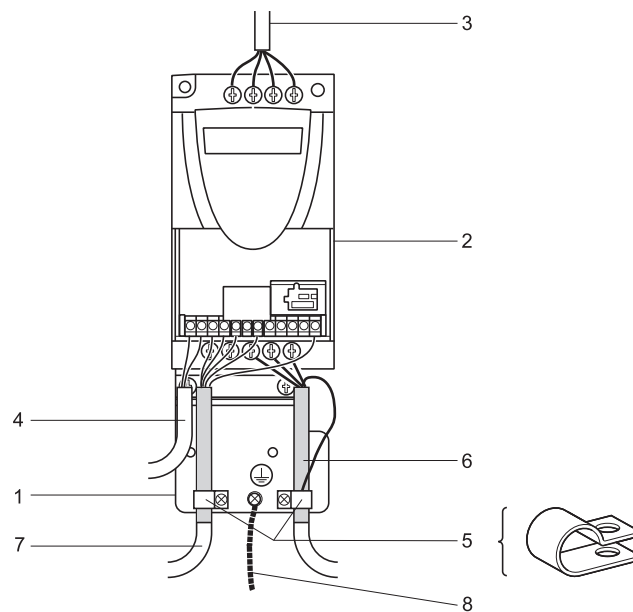
Wiring

Electromagnetic compatibility

Principle

- Grounds between drive, motor and cable shielding must have "high frequency" equipotentiality.
- Use shielded cables with shielding connected to ground at 360° at both ends for the motor cable, braking resistor (if used) and control-signalling cables. Conduit or metal ducting can be used for part of the shielding length provided that there is no break in continuity.
- Ensure maximum separation between the power supply cable (line supply) and the motor cable.

Installation diagram (example)

Wiring

1 Sheet steel grounded casing not supplied with the drive (VW3A11831), to be fitted as indicated on the diagram.

2 Altivar 11

3 Non-shielded power supply wires or cable.

4 Non-shielded wires for the output of the fault relay contacts.

5 Fix and ground the shielding of cables 6 and 7 as close as possible to the drive:
  - strip the shielding
  - use cable clamps of an appropriate size on the parts from which the shielding has been stripped, to attach them to the casing 1.
  The shielding must be clamped tightly enough to the metal plate to ensure correct contact.
  - types of clamp: stainless steel.

6 Shielded cable for motor connection with shielding connected to ground at both ends.
  This shielding must be continuous, and if there are any intermediate terminals, these must be in an EMC shielded metal box. The motor cable PE protective conductor (green-yellow) must be connected to the grounded casing, for example under the metal clamp.

7 Shielded cable for connecting the control/signalling wiring.
  For applications requiring several conductors, use small cross-sections (0.5 mm^2).
  The shielding must be connected to ground at both ends. The shielding must be continuous and intermediate terminals must be in EMC shielded metal boxes.

8 Protective conductor, cross-section 10 mm^2.

Note:
- If using an additional input filter, it should be mounted under the drive and connected directly to the line supply via an unshielded cable. Link 3 on the drive is then via the filter output cable.
- The HF equipotential ground connection between the drive, motor and cable shielding does not remove the need to connect the PE protective conductors (green-yellow) to the appropriate terminals on each unit.

Basic Functions

Fault relay, unlocking

The fault relay is closed when the drive is switched on and is not faulty. It opens in the event of a fault or when the drive is disconnected.

The drive is unlocked after a fault by:
• switching off the drive until the display disappears completely, then switching on again
• automatically in the cases described in the "automatic restart" function (FUn menu, Atr = YES)
• via a logic input when this input is assigned to the "fault reset" function
  (FUn menu, rSF = LI●)

Drive thermal protection

Thermal protection via a built-in PTC probe in the power module.

Drive ventilation

Certain drive ratings include forced ventilation: ATV 11HU18F1A, ATV 11HU18F1U, ATV 11●U18M2U, ATV 11●U18M3U, ATV 11HU29●●●, ATV 11HU41●●●
The fan is supplied with power automatically as soon as the drive is switched on.

Motor thermal protection

Function:

Thermal protection by calculating the I^2t.

⚠ **The memory of the motor thermal state returns to zero when the drive is disconnected.**

Configurable I/O Application Functions

Logic input application functions

Each of the following functions can be assigned to one of the logic inputs. A single logic input can activate several functions at the same time (reverse and 2nd ramp for example), and the user must therefore ensure that these functions are compatible.

2-wire control:

Fun menu, tCC, ACt = 2C.
Run (forward or reverse) and stop are controlled by the same logic input.
Types of 2-wire control:
- tCt = LEL: state 0 or 1 is taken into account for run or stop.
- tCt = trn: a change of state (transition or edge) is necessary to initiate operation, in order to prevent accidental restarts after a power supply interruption.
- tCt = PFO: state 0 or 1 is taken into account for run or stop, but the "forward" input always takes priority over the "reverse" input.

3-wire control:

FUn menu, tCC, ACt = 3C.
Run (forward or reverse) and stop are controlled by 2 different logic inputs.
LI1 is always assigned to the stop function. A stop on ramp is obtained on opening (state 0).
The pulse on the run input is stored until the stop input opens.
When the drive is switched on, or at a manual fault reset, or after a stop command, the motor can only be supplied with power once the "forward" and "reverse" commands have been reset.

Operating direction: forward / reverse

With 2-wire control, forward operation cannot be reassigned to any logic input other than logic input LI1. With 3-wire control, forward operation cannot be reassigned to any logic input other than logic input LI2. Reverse operation can be disabled for applications with a single direction of motor rotation by not assigning any logic input to reverse operation: (FUn menu, rrS = nO).

Configurable I/O Application Functions

Preset speeds

2 or 4 speeds can be preset, requiring 1 or 2 logic inputs respectively.

The following assignment order must be observed: LIA (LIx), then LIb (LIy).

2 preset speeds		4 preset speeds		
Assign: LIx to LIA		Assign: LIx to LIA, then LIy to LIb		
LIx	speed reference	LIy	LIx	speed reference
0	reference (min. = LSP)	0	0	reference (min. = LSP)
1	SP2	0	1	SP2
		1	0	SP3
		1	1	SP4

The preset speeds take priority over the reference given by the analog input or by the drive potentiometer (A range).

Fault reset:

Clears the memorized fault and resets the drive if the cause of the fault has disappeared, except for OCF (overcurrent), SCF (motor short-circuit), and InF (internal fault) faults, which require the drive to be disconnected.
The fault is cleared when the logic input assigned to this function changes from 0 to 1.

2nd ramp:

1st ramp: ACC, dEC; 2nd ramp: AC2, DE2
Activation by logic input LIx.

Configurable I/O Application Functions

DO output application functions

The DO output can be used as an analog output or a logic output depending on the function chosen:

Current in the motor (analog output)
The full signal corresponds to 200% of the nominal drive current.

Motor frequency (analog output)
The full signal corresponds to 100% HSP.

Frequency threshold reached (logic output)
Output closed if the motor frequency exceeds an adjustable threshold.

Reference reached (logic output):
Output closed if the motor frequency reaches the reference.

Current threshold reached (logic output):
Output closed if the motor current exceeds the adjustable threshold.
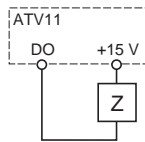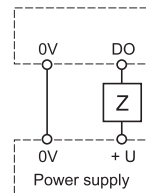
Diagram with internal power supply:

Diagram with external power supply:

If it is a logic output: Z = low-voltage relay or input.
If it is an analog output: Z = galvanometer for example. For a resistance galvanometer R,

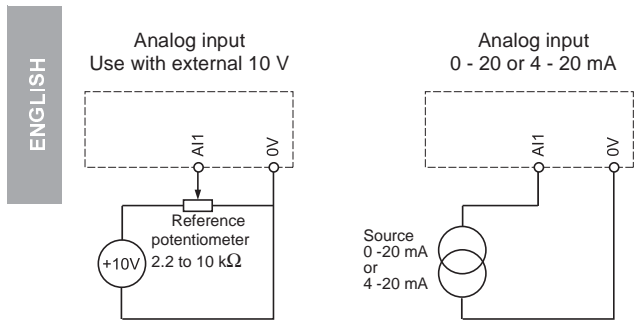the maximum voltage delivered will be: $U \times \dfrac{R\,(\Omega)}{R\,(\Omega) + 1000\,(\Omega)}$

Configurable I/O Application Functions

Configuration of the analog input

The analog input can be configured as
- 0 -5 V
- 0 -10 V
- 0 - 20 mA
- 4 - 20 mA

Analog input
Use with external 10 V

Reference
potentiometer
+10V 2.2 to 10 kΩ

Analog input
0 - 20 or 4 - 20 mA

Source
0 -20 mA
or
4 -20 mA

Setup - Preliminary Recommendations

Prior to switching on and configuring the drive

⚠ - Ensure the logic inputs are open circuit (state 0) to prevent an accidental startup. Otherwise, an input assigned to the run command may cause the motor to start immediately on exiting the configuration menus.

With power switching via line contactor

⚠ - Avoid operating the contactor frequently (premature ageing of the filter capacitors). Use inputs LI1 to LI4 to control the drive.
- These instructions are vital for cycles < 5 minutes, otherwise the load resistor may be damaged.

## User adjustment and extension of functions

If necessary, the display and the buttons can be used to modify the settings and to extend the functions described in the following pages. It is very easy to return to the factory settings.

⚠ Check that changes to the current operating settings do not present any danger. Changes should preferably be made with the drive stopped.

Programming

Functions of the display and the keys
E and U ranges:
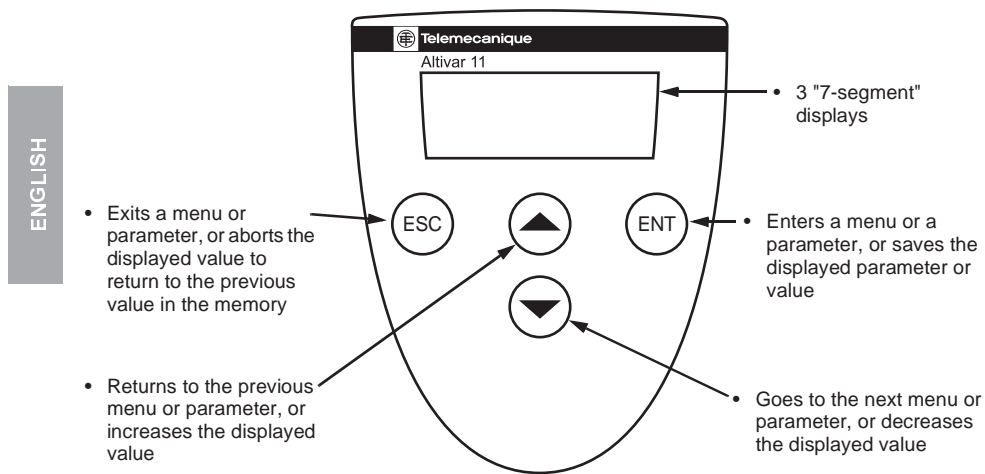
- 3 "7-segment" displays

- Exits a menu or parameter, or aborts the displayed value to return to the previous value in the memory

ESC   ▲   ENT

- Enters a menu or a parameter, or saves the displayed parameter or value

- Returns to the previous menu or parameter, or increases the displayed value

- Goes to the next menu or parameter, or decreases the displayed value

⚠ **Pressing ▲ or ▼ does not store the selection.**

Save the selection: ENT

The display flashes when a value is stored.

Normal display, with no fault present and no startup:

- rdY: Drive ready
- 43.0: Display of the parameter selected in the SUP menu (default selection: frequency reference).
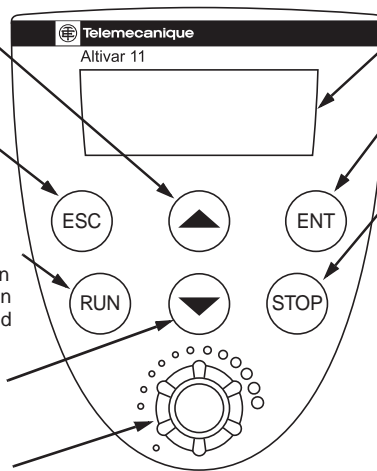- dcb: DC injection braking in progress
- nSt: Freewheel stop

If there is a fault, it is shown with a flashing display.

Programming

Functions of the display and the keys
A range:

- Returns to the previous menu or parameter, or increases the displayed value

- Exits a menu or parameter, or aborts the displayed value to return to the previous value in the memory

- RUN button: controls the switching on of the motor in forward, if parameter tCC in the FUn menu is configured as LOC

- Goes to the next menu or parameter, or decreases the displayed value

- Reference potentiometer: active if parameter LSr in the FUn menu is configured as LOC

- 3 "7-segment" displays

- Enters a menu or a parameter, or saves the displayed parameter or value

- STOP button: always controls the stopping of the motor.
  - If tCC (FUn menu) is not configured as LOC, it is a freewheel stop.
  - If tCC (FUn menu) is configured as LOC, the stop is on a ramp, but if injection braking is in progress, a freewheel stop takes place.

Telemecanique
Altivar 11

ESC ▲ ENT
RUN ▼ STOP

⚠ **Pressing ▲ or ▼ does not store the selection.**

Save the selection: ENT
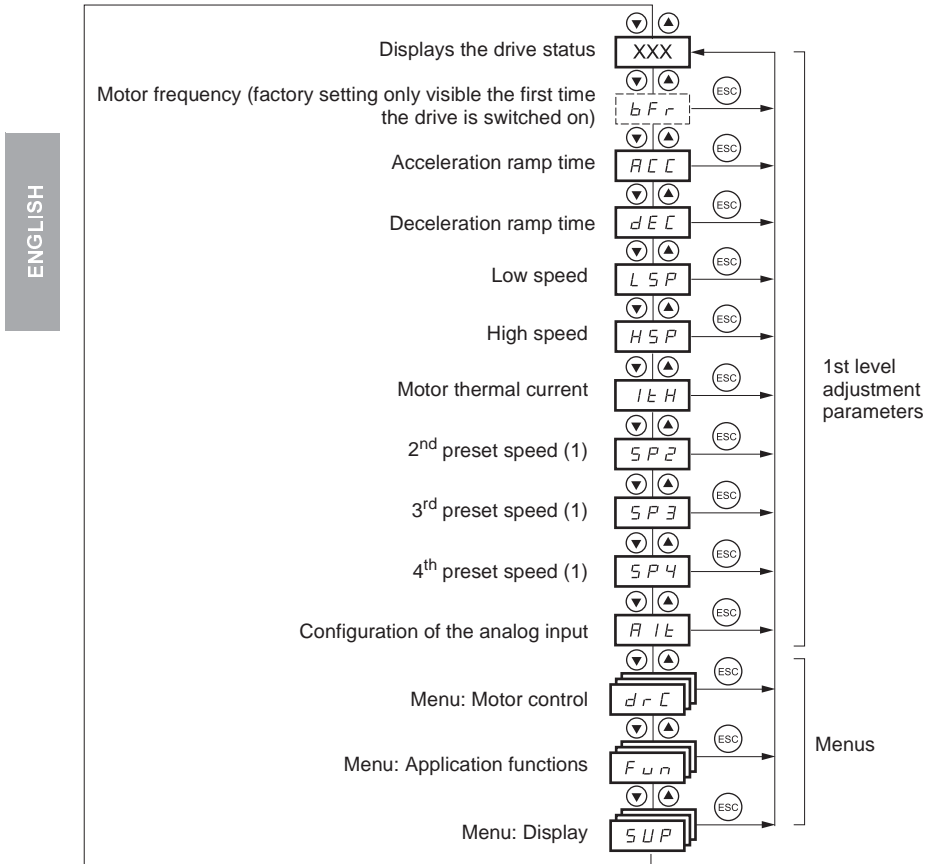
The display flashes when a value is stored.

Normal display, with no fault present and no startup:
- rdY: Drive ready
- 43.0: Display of the parameter selected in the SUP menu (default selection: frequency reference).
- dcb: DC injection braking in progress
- nSt: Freewheel stop

If there is a fault, it is shown with a flashing display.

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Programming

Access to menus

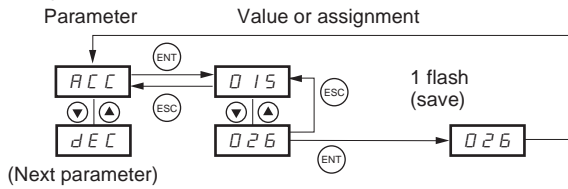|	
Displays the drive status	XXX
Motor frequency (factory setting only visible the first time the drive is switched on)	*b F r*
Acceleration ramp time	*A C C*
Deceleration ramp time	*d E C*
Low speed	*L S P*
High speed	*H S P*
Motor thermal current	*I t H*
2nd preset speed (1)	*S P 2*
3rd preset speed (1)	*S P 3*
4th preset speed (1)	*S P 4*
Configuration of the analog input	*A I t*
Menu: Motor control	*d r C*
Menu: Application functions	*F u n*
Menu: Display	*S U P*

1st level adjustment parameters

Menus

(1) The preset speeds only appear if the corresponding function has remained at the factory setting or has been reconfigured in the FUn menu.

1st Level Adjustment Parameters

Access to parameters

Save the selection : (ENT)

The display flashes when a value is stored.

Example:

Parameter   Value or assignment

(Next parameter)

☐ The parameters in clear boxes can only be modified when the drive is stopped and locked.

▨ Parameters in shaded boxes can be modified with the drive operating or stopped.

Code	Description	Adjustment range	Factory setting
bFr	Motor frequency	50 Hz or 60 Hz	50 (E and A ranges) or 60 (U range)
	This parameter is only visible the first time the drive is switched on. It can be modified at any time in the FUn menu.		
ACC	Acceleration ramp time	0.1 s to 99.9 s	3
	Range: 0 Hz to motor nominal frequency FrS (parameter in drC menu).		
dEC	Deceleration ramp time	0.1 s to 99.9 s	3
	Range: motor nominal frequency FrS (parameter in drC menu) to 0 Hz.		
LSP	Low speed	0 Hz to HSP	0
	Motor frequency to 0.		
HSP	High speed	LSP to 200 Hz	= bFr
	Motor frequency to max. reference. Check that this setting is appropriate for the motor and the application.		

1st Level Adjustment Parameters

The parameters in clear boxes can only be modified when the drive is stopped and locked.

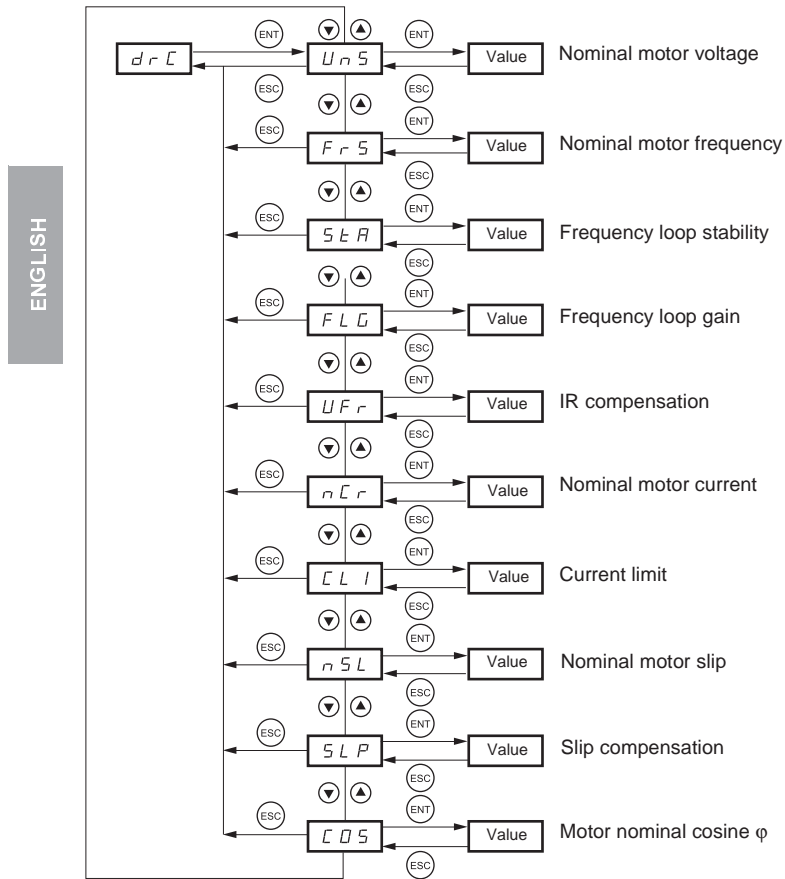Parameters in shaded boxes can be modified with the drive operating or stopped.

Code	Description	Adjustment range	Factory setting
ItH	Motor thermal current	0 to 1.5 In (1)	According to drive rating
	Current used for the motor thermal protection. Set ItH to the nominal current on the motor rating plate.		
SP2	2nd preset speed (2)	0.0 to 200 Hz	10
SP3	3rd preset speed (2)	0.0 to 200 Hz	25
SP4	4th preset speed (2)	0.0 to 200 Hz	50
AIt	Configuration of the analog input	5U, 10U, 0A, 4A	5U
	- *5U*: voltage 0 - 5 volts (internal power supply) - *10U*: voltage 0 - 10 volts (external power supply) - *0A*: current 0 - 20 mA - *4A*: current 4 - 20 mA		

(1) In = nominal drive current
(2) The preset speeds only appear if the corresponding function has remained at the factory setting or has been reconfigured in the FUn menu.

drC Motor Control Menu

Display	Description
U n S	Nominal motor voltage
F r S	Nominal motor frequency
S t A	Frequency loop stability
F L G	Frequency loop gain
U F r	IR compensation
n C r	Nominal motor current
C L I	Current limit
n S L	Nominal motor slip
S L P	Slip compensation
C O S	Motor nominal cosine φ

drC Motor Control Menu

	The parameters in clear boxes can only be modified when the drive is stopped and locked.

	Parameters in shaded boxes can be modified with the drive operating or stopped.

Drive performance can be optimized by entering the values marked on the motor rating plate.

Code	Description	Adjustment range	Factory setting
U_nS	Nominal motor voltage given on the rating plate.	100 to 500 V	Acc. to rating
F_rS	Nominal motor frequency given on the rating plate	40 to 200 Hz	50 / 60Hz dep. on bFr
StA	Frequency loop stability Too high a value causes an extended response time. Too low a value causes an overspeed, or even instability.	0 to 100% when stopped 1 to 100% when running	20
FLG	Frequency loop gain Too high a value causes an overspeed, or even instability. Too low a value causes an extended response time.	0 to 100% when stopped 1 to 100% when running	20
UF_r	IR compensation Used to optimise the torque at very low speed, or to adapt to special cases (example: for motors connected in parallel, lower UFr).	0 to 200%	50
nC_r	Nominal motor current given on the rating plate.	0.25 to 1.5 In (1)	Acc. to rating
$CL1$	Limiting current	0.5 to 1.5 In (1)	1.5 In

(1) In = nominal drive current

drC Motor Control Menu

☐ The parameters in clear boxes can only be modified when the drive is stopped and locked.

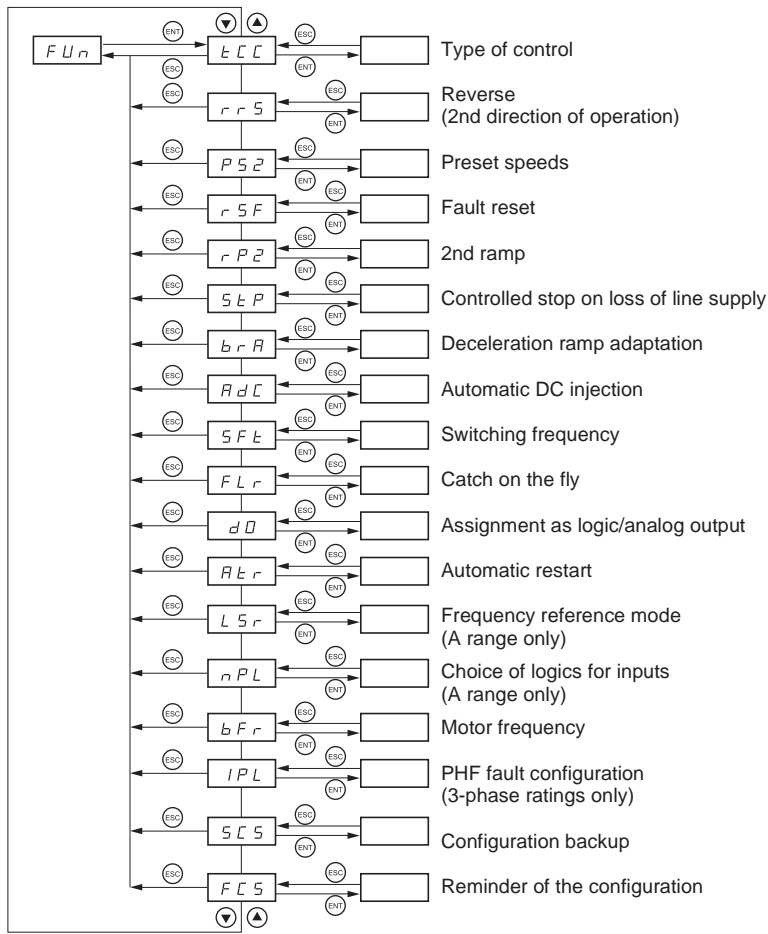▨ Parameters in shaded boxes can be modified with the drive operating or stopped.

Code	Description	Adjustment range	Factory setting
nSL	Nominal motor slip Calculate using the formula: $nSL = \text{parameter FrS} \times \dfrac{Ns - Nn}{Ns}$ Nn = nominal motor speed given on the rating plate Ns = motor synchronous speed	0 to 10.0 Hz	Acc. to rating
SLP	Slip compensation Used to adjust the slip compensation around the value set by the nominal motor slip nSL, or to adapt to special cases (example: for motors connected in parallel, lower SLP).	0 to 150% (of nSL)	100
COS	Nominal motor cosine φ given on the rating plate	0.50 to 1.00	Acc. to rating

FUn Application Functions Menu

The diagram shows the FUn menu structure with ENT/ESC navigation:

Code	Description
tCC	Type of control
rrS	Reverse (2nd direction of operation)
PS2	Preset speeds
rSF	Fault reset
rP2	2nd ramp
StP	Controlled stop on loss of line supply
brA	Deceleration ramp adaptation
AdC	Automatic DC injection
SFt	Switching frequency
FLr	Catch on the fly
dO	Assignment as logic/analog output
Atr	Automatic restart
LSr	Frequency reference mode (A range only)
nPL	Choice of logics for inputs (A range only)
bFr	Motor frequency
IPL	PHF fault configuration (3-phase ratings only)
SCS	Configuration backup
FCS	Reminder of the configuration

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FUn Application Functions Menu

Incompatible functions

The following functions will be inaccessible or deactivated in the cases described below:

Automatic restart

This is only possible for 2-wire control (tCC = 2C and tCt = LEL or PFO). A change in the type of control after configuring automatic restarts deactivates the function.

Catch on the fly

This is only possible for 2-wire control (tCC = 2C and tCt = LEL or PFO). A change in the type of control after configuring flying restarts deactivates the function.
This function is locked if automatic injection on stopping is configured as DC (AdC = Ct).
Switching to Ct after configuring flying restarts deactivates the function.

Reverse

On the A range only, this function is locked if local control is active (tCC = LOC).

FUn Application Functions Menu
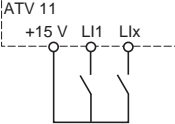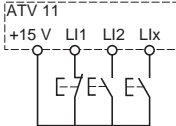
Type of control

☐ The parameters in clear boxes can only be modified when the drive is stopped and locked.

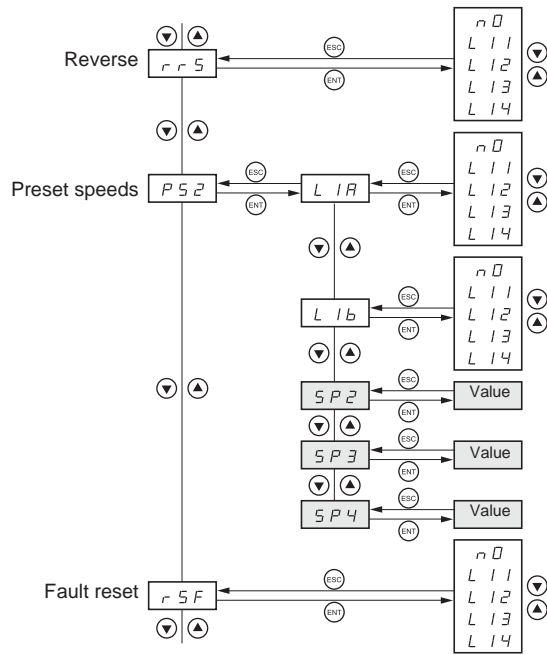▨ Parameters in shaded boxes can be modified with the drive operating or stopped.

FUn Application Functions Menu

Function code		Description	Factory setting
tCC		**Type of control**	
	ACt	Configuration of control:	E and U ranges:
		2C = 2-wire control	2C
		3C = 3-wire control	A range:
		LOC = local control (drive RUN / STOP) for the A range only.	LOC
		2-wire control: The open or closed state of the input controls the running or stopping.	
		Wiring example:	
		LI1: forward	
		LIx: reverse	
		ATV 11 +15 V LI1 LIx	
		3-wire control (pulse control): a "forward" or "reverse" pulse is sufficient to command starting, a "stop" pulse is sufficient to command stopping.	
		Example of wiring:	
		LI1: stop	
		LI2: forward	
		LIx: reverse	
		ATV 11 +15 V LI1 LI2 LIx	
		⚠ To change the assignment of tCC press the "ENT" key for 2 s. This causes the following functions to return to their factory setting: rrS, tCt, Atr, PS2 (LIA, LIb).	
	tCt	2-wire type control	trn
		(parameter can only be accessed if tCC = 2C):	
		LEL : state 0 or 1 is taken into account for run or stop.	
		trn : a change of state (transition or edge) is necessary to initiate operation, in order to prevent accidental restarts after a power supply interruption.	
		PFO : state 0 or 1 is taken into account for run or stop, but the "forward" input always takes priority over the "reverse" input.	

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FUn Application Functions Menu

The parameters in clear boxes can only be modified when the drive is stopped and locked.

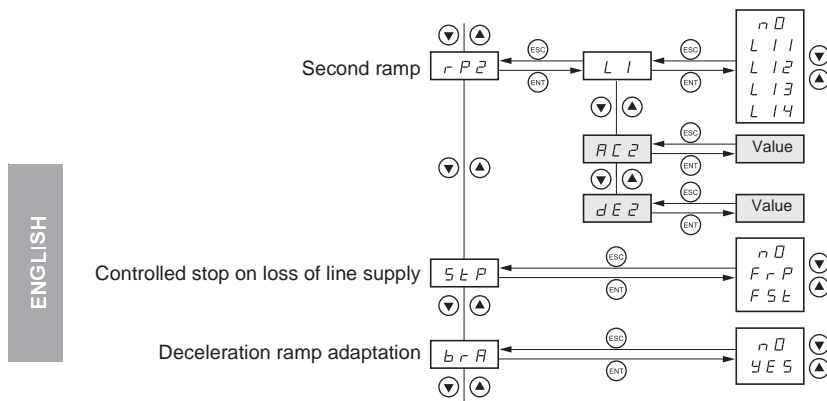Parameters in shaded boxes can be modified with the drive operating or stopped.

FUn Application Functions Menu

Function code	Description	Factory setting
r r 5	**Reverse** *n O*: function inactive *L I I* to *L I 4*: choice of the input assigned to the reverse command If tCC = LOC, this parameter is inaccessible.	if tCC = 2C: LI2 if tCC = 3C: LI3
P 5 2	**Preset speeds** If LIA and LIb = 0: speed = reference If LIA = 1 and LIb = 0: speed = SP2 If LIA = 0 and LIb = 1: speed = SP3 If LIA = 1 and LIb = 1: speed = SP4 The preset speeds remain active on the A range **even in local control mode** (tCC and/or LSr = LOC).	
L I A	Assignment of input LIA - *n O*: function inactive - *L I I* to *L I 4*: choice of the input assigned to LIA	if tCC = 2C: LI3 if tCC = 3C: LI4 if tCC = LOC: LI3
L I b	Assignment of input LIb - *n O*: function inactive - *L I I* to *L I 4*: choice of the input assigned to LIb SP2 is only accessible if LIA is assigned, SP3 and SP4 if LIA and LIb are assigned.	if tCC = 2C: LI4 if tCC = 3C: nO if tCC = LOC: LI4

5 P 2
    5 P 3
    5 P 4
	2nd preset speed, adjustable from 0.0 to 200 Hz (1)
	3rd preset speed, adjustable from 0.0 to 200 Hz (1)
	4th preset speed, adjustable from 0.0 to 200 Hz (1)
		10
		25
		50

r 5 F	**Fault reset** - *n O*: function inactive - *L I I* to *L I 4*: choice of the input assigned to this function The reset occurs on the input transition (rising edge 0 to 1). Resetting is only authorized if the fault has disappeared.	nO

(1) The preset speed settings can also be accessed in the 1st level adjustment parameters.

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FUn Application Functions Menu

Second ramp — rP2 — LI — nO / LI1 / LI2 / LI3 / LI4

AC2 — Value

dE2 — Value

Controlled stop on loss of line supply — StP — nO / FrP / FSt

Deceleration ramp adaptation — brA — nO / YES

The parameters in clear boxes can only be modified when the drive is stopped and locked.

Parameters in shaded boxes can be modified with the drive operating or stopped.
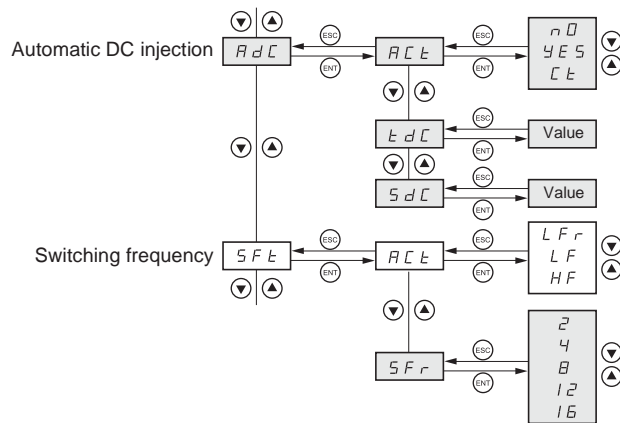
FUn Application Functions Menu

Function code		Description	Factory setting
_rP2_		**Second ramp**	nO
	_LI_	Assignment of the 2nd ramp control input - _nO_: function inactive - _LI1_ to _LI4_: choice of assigned input AC2 and dE2 are only accessible if LI is assigned.	
	_AC2_ _dE2_	2nd acceleration ramp time, adjustable from 0.1 to 99.9 s 2nd deceleration ramp time, adjustable from 0.1 to 99.9 s	5.0 5.0
StP		**Controlled stop on loss of line supply** - _nO_: locking of the drive and freewheel stopping of the motor - _FrP_: stop according to the valid ramp (dEC or dE2) - _FSt_: fast stop, the stopping time depends on the inertia and the braking ability of the drive.	nO
brA		**Deceleration ramp adaptation** - _nO_: function inactive - _YES_: This function can be used to increase the deceleration time automatically, if this has been set at too low a value for the inertia of the load, thus avoiding the drive developing an overvoltage fault. This function may be incompatible with positioning on a ramp. It should only be deactivated when an appropriate braking resistor and module are being used.	YES

FUn Application Functions Menu

The parameters in clear boxes can only be modified when the drive is stopped and locked.

Parameters in shaded boxes can be modified with the drive operating or stopped.
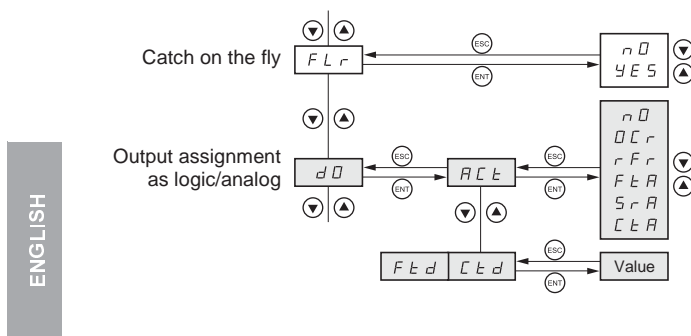
FUn Application Functions Menu

Function code		Description	Factory setting
AdC		**Automatic DC injection**	
	ACt	Operating mode	YES
		- _nO_: function inactive	
		- _YES_: automatic DC injection on stopping, duration adjustable via tdC, when operation is no longer controlled and the motor speed is zero. The value of this current can be adjusted via SdC.	
		- _Ct_: Continuous DC injection on stopping, when operation is no longer controlled and the motor speed is zero. The value of this current can be adjusted via SdC.	
		With 3-wire control, injection is only active when LI1 is at 1.	
		tdC is only accessible if ACt = YES, SdC if ACt = YES or Ct.	
	tdC	Injection time on stopping, adjustable from 0.1 to 30.0 s	0.5
	SdC	Injection current, adjustable from 0 to 1.2 In (In = nominal drive current)	0.7 In
SFt		**Switching frequency**	
	ACt	Frequency range	LF
		- _LFr_: random frequency around 2 or 4 kHz according to SFr	
		- _LF_: fixed frequency of 2 or 4 kHz according to SFr	
		- _HF_: fixed frequency of 8, 12 or 16 kHz according to SFr	
	SFr	Switching frequency:	4 (if ACt = LF or LFr)
		- _2_: 2 kHz (if ACt = LF or LFr)	12 (if ACt = HF)
		- _4_: 4 kHz (if ACt = LF or LFr)	
		- _8_: 8 kHz (if ACt = HF)	
		- _12_: 12 kHz (if ACt = HF)	
		- _16_: 16 kHz (if ACt = HF)	
		When SFr = 2 kHz, the frequency automatically changes to 4 kHz at high speed	
		When SFt = HF, the selected frequency automatically changes to the lower frequency if the thermal state of the drive is too high. It automatically returns to the SFr frequency as soon as the thermal state permits.	

FUn Application Functions Menu

Catch on the fly — F L r

Output assignment as logic/analog — d O

ACt

Ftd — Ctd — Value

▢ The parameters in clear boxes can only be modified when the drive is stopped and locked.

▨ Parameters in shaded boxes can be modified with the drive operating or stopped.
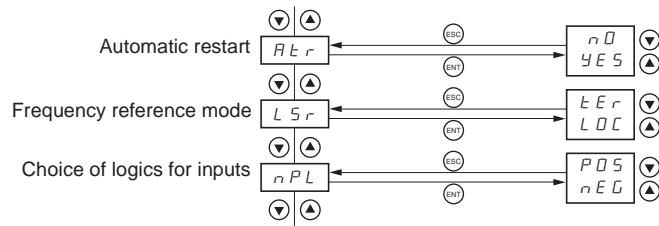
FUn Application Functions Menu

Function code		Description	Factory setting
FLr		**Catch on the fly** Used to enable a smooth restart if the run command is maintained after the following events: - loss of line supply or disconnection - fault reset or automatic restart - freewheel stop The speed given by the drive resumes from the estimated speed of the motor at the time of the restart, then follows the ramp to the reference speed. This function requires 2-wire control (tCC = 2C) with tCt = LEL or PFO. nO: function inactive YES: function active When the function is operational, it activates at each run command, resulting in a slight delay (1 second max.). If continuous automatic injection braking has been configured (Ct) this function cannot be activated.	nO
dO	ACt	**Analog/logic output DO** Assignment - nO: not assigned - OCr: analog output = current in the motor. The full signal corresponds to 200% of the nominal drive current. - rFr: analog output = motor frequency. The full signal corresponds to 100% HSP. - FtA: logic output = frequency threshold reached, closed (state 1) if the motor frequency exceeds the adjustable threshold Ftd. - SrA: logic output = reference reached, closed (state 1) if the motor frequency is equal to the reference. - CtA: logic output = current threshold reached, closed (state 1) if the motor current exceeds the adjustable threshold Ctd. Ftd is only accessible if ACt = FtA, Ctd is only accessible if ACt = CtA.	rFr
	Ftd	frequency threshold, adjustable from 0 to 200 Hz	= bFr
	Ctd	current threshold, adjustable from 0 to 1.5 In (In = nominal drive current)	In

FUn Application Functions Menu

Automatic restart — $A t r$ / $n O$ $Y E S$

Frequency reference mode — $L S r$ / $t E r$ $L O C$

Choice of logics for inputs — $n P L$ / $P O S$ $n E G$

The parameters in clear boxes can only be modified when the drive is stopped and locked.

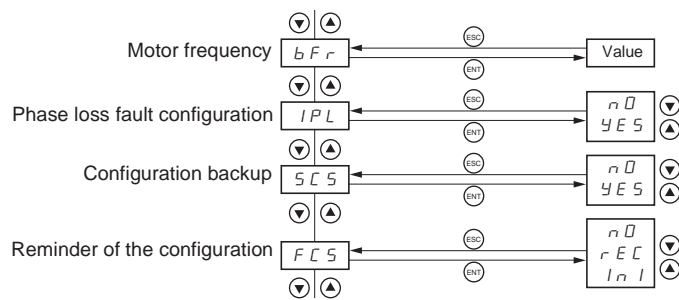Parameters in shaded boxes can be modified with the drive operating or stopped.

FUn Application Functions Menu

Function code	Description	Factory setting
Atr	**Automatic restart** - nO: function inactive - YES: Automatic restart, after locking on a fault, if the fault has disappeared and the other operating conditions permit the restart. The restart is performed by a series of automatic attempts separated by increasingly longer waiting periods: 1 s, 5 s, 10 s, then 1 min for the following periods. If the restart has not taken place after 6 min, the procedure is aborted and the drive remains locked until it is disconnected and then reconnected. The following faults permit this function: OHF, OLF, ObF, OSF, PHF. The drive fault relay remains energized if this function is active. The speed reference and the operating direction must be maintained. This function is only accessible with 2-wire control (tCC = 2C) with tCt = LEL or PFO. ⚠ Check that an accidental start does not present any danger to personnel or equipment.	nO
LSr	**Frequency reference mode** This parameter is only accessible on drives in the Asia range, ATV 11●●●●●●●●A - LOC: the speed reference is given by the potentiometer on the front of the drive. - tEr: The speed reference is given by analog input AI1. ⚠ For LOC and tEr to be taken into account the ENT key must be held down for 2 s.	LOC
nPL	**Choice of logic for inputs** This parameter is only accessible on drives in the Asia range, ATV 11●●●●●●●●A - POS: the inputs are active (state 1) at a voltage of 11 V or more (for example + 15 V terminal) and inactive (state 0) when the drive is disconnected or at a voltage of less than 5 V. - nEG: the inputs are active (state 1) at a voltage of less than 5 V (for example 0V terminal) and inactive (state 0) at a voltage of 11 V or more, or when the drive is disconnected. ⚠ For POS and nEG to be taken into account the ENT key must be held down for 2 s.	POS

FUn Application Functions Menu

Motor frequency — $b F r$ — ESC / ENT — Value

Phase loss fault configuration — $I P L$ — ESC / ENT — $n 0$ / $Y E S$

Configuration backup — $S C S$ — ESC / ENT — $n 0$ / $Y E S$

Reminder of the configuration — $F C S$ — ESC / ENT — $n 0$ / $r E C$ / $I n I$

The parameters in clear boxes can only be modified when the drive is stopped and locked.

Parameters in shaded boxes can be modified with the drive operating or stopped.

FUn Application Functions Menu

Function code	Description	Factory setting
bFr	**Motor frequency** (Same as bFr 1st level adjustment parameter) Set to 50 Hz or 60 Hz, taken from the motor rating plate.	50 (E and A ranges) or 60 (U range)
IPL	**Line phase loss fault configuration** This parameter is only accessible on 3-phase drives. - _nO_: inhibition of the line phase loss fault - _YES_: monitoring of the line phase loss fault	YES
SCS	**Configuration backup** - _nO_: function inactive - _YES_: saves the current configuration to the EEPROM memory. SCS automatically switches to nO as soon as save has been performed. This function is used to keep another configuration in reserve, in addition to the current configuration. When drives leave the factory the current configuration and the backup configuration are both initialized with the factory configuration.	nO
FCS	**Reminder of the configuration** - _nO_: function inactive - _rEC_: the current configuration becomes identical to the backup configuration previously saved by SCS. rEC is only visible if the backup has been carried out. FCS automatically switches to nO as soon as this action has been performed. - _InI_: the current configuration becomes identical to the factory setting. FCS automatically switches to nO as soon as this action has been performed. ⚠️ For rEC and InI to be taken into account the ENT key must be held down for 2 s.	nO

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SUP Display Menu
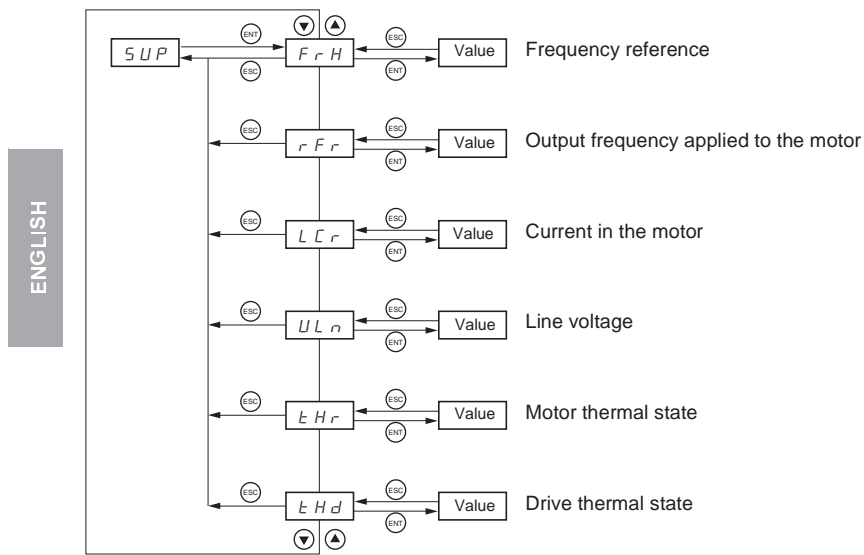
When the drive is running, the value displayed is that of one of the monitoring parameters. The default value which is displayed is the motor reference (parameter FrH).

While the value of the desired new monitoring parameter is being displayed,

press a second time on the (ENT) button to confirm the change of monitoring parameter and store this. From now on, the value of this parameter will be displayed while the drive is running (even after it has been disconnected).
If the new selection is not confirmed by this second press on (ENT), it will return to the previous parameter after the drive is disconnected.

SUP Display Menu

The following parameters can be accessed, with the drive stopped or running.

Code	Parameter	Unit
_F r H_	Display of the frequency reference (factory configuration)	Hz
_r F r_	Display of the output frequency applied to the motor	Hz
_L C r_	Display of the motor current	A
_U L n_	Display of the line voltage	V
_t H r_	Display of the motor thermal state: 100% corresponds to the nominal thermal state. Above 118%, the drive trips on an OLF fault (motor overload). It can be reset below 100%.	%
_t H d_	Display of the drive thermal state: 100% corresponds to the nominal thermal state. Above 118%, the drive triggers an OHF fault (drive overheating). It can be reset below 80%.	%

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Maintenance

Servicing

The Altivar 11 does not require any preventative maintenance. It is nevertheless advisable to perform the following regularly:
• Check the condition and tightness of connections.
• Ensure that the temperature around the unit remains at an acceptable level and that ventilation is effective (average service life of fans: 3 to 5 years depending on the operating conditions).
• Remove any dust from the drive.

Assistance with maintenance, fault display

If a problem arises during setup or operation, ensure that the recommendations relating to the environment, mounting and connections have been observed.

The first fault detected is stored and displayed, flashing, on the screen: the drive locks and the fault relay (RA - RC) contact opens.

Clearing the fault

Cut the power supply to the drive in the event of a non-resettable fault.
Wait for the display to go off completely.
Find the cause of the fault in order to correct it.
Restore the power supply: this clears the fault if it has disappeared.

In some cases there may be an automatic restart after the fault has disappeared, if this function has been programmed.

Display menu:

This is used to prevent and find the causes of faults by displaying the drive status and its current values.

Spares and repairs:

Consult Schneider Electric product support.

Faults - Causes - Remedies

Starter does not start, no fault displayed

- Check that the run command input(s) have been actuated in accordance with the chosen control mode (tCC parameter in the FUn menu).
- When the drive is switched on, or at a manual fault reset, or after a stop command, the motor can only be supplied with power once the "forward" and "reverse" commands have been reset. Otherwise, the drive will display "rdY" or "nSt" but will not start. If the automatic restart function has been configured (parameter Atr in the FUn menu), these commands are taken into account without a reset being necessary.

Faults which cannot be reset automatically

The cause of the fault must be removed before resetting by switching off and then on again.
The SOF fault can also be reset via a logic input (rSF parameter in the FUn menu).

Fault	Probable cause	Remedy
OCF overcurrent	• ramp too short • inertia or load too high • mechanical locking	• Check the settings. • Check the size of the motor/drive/load. • Check the state of the mechanism.
SCF motor short-circuit	• insulation fault or short-circuit at the drive output	• Check the cables connecting the drive to the motor, and the motor insulation.
InF internal fault	• internal fault	• Check the environment (electromagnetic compatibility). • Send the drive to be checked/repaired.
CFF configuration fault	• The current configuration is inconsistent	• Return to factory settings or call up the backup configuration, if it is valid. See parameter FCS in the FUn menu.
SOF overspeed	• instability or • driving load too high	• Check the motor, gain and stability parameters. • Add a braking resistor and module. • Check the size of the motor/drive/load.
CrF capacitor charging circuit	• load relay control fault or damaged load resistor	• Replace the drive.

Faults - Causes - Remedies

Faults which can be reset with the automatic restart function, after the cause has disappeared

These faults can also be reset by switching the drive off and on again or via a logic input (rSF parameter in the FUn menu)

Fault	Probable cause	Remedy
OHF drive overload	• drive temperature too high	• Check the motor load, the drive ventilation and the environment. Wait for the drive to cool down before restarting.
OLF motor overload	• triggered by motor current too high	• Check the setting of the motor thermal protection, check the motor load. Wait for the drive to cool down before restarting.
OSF overvoltage	• line voltage too high • disturbed line supply	• Check the line voltage. The overvoltage threshold is 415 V ⎓ on the DC bus.
ObF overvoltage during deceleration	• braking too sudden or driving load	• Increase the deceleration time. • Install a braking module and a braking resistor if necessary. • Activate the brA function if it is compatible with the application.
PHF line phase failure	• drive incorrectly supplied or a fuse blown • failure of one phase • 3-phase ATV11 used on a single-phase line supply • unbalanced load This protection only operates with the drive on load.	• Check the power connection and the fuses. • Reset. • Use a 3-phase line supply. • disable the fault by setting IPL = nO (FUn menu)

Fault which can be reset as soon as its cause disappears

Fault	Probable cause	Remedy
USF undervoltage	• line supply too low • transient voltage dip • damaged load resistor	• Check the voltage and the voltage parameter. The undervoltage threshold is 230 V ⎓ on the DC bus. • Replace the drive.

Configuration/Settings Tables

Drive ATV11...
Optional customer identification no.:...

1st level adjustment parameters

Code	Factory setting		Customer setting	Code	Factory setting		Customer setting
b F r	50 / 60	Hz	Hz	L S P	0	Hz	Hz
A C C	3	s	s	H S P	50 /60	Hz	Hz
d E C	3	s	s	I t H		A	A

Motor control menu d r C

Code	Factory setting		Customer setting	Code	Factory setting		Customer setting
U n S		V	V	n C r		A	A
F r S	50 / 60	Hz	Hz	C L I		A	A
S t A	20	%	%	n S L		Hz	Hz
F L G	20	%	%	S L P	100	%	%
U F r	50	%	%	C O S			

Configuration/Settings Tables

Application functions menu $F\,U\,n$

Code	Factory setting		Customer setting	Code	Factory setting		Customer setting
tCC				AdC			
ACt	2C			ACt	YES		
tCt	trn			tdC	0.5	s	s
rrS	LI2			SdC		A	A
$PS2$				SFt			
$L\,IA$	LI3			ACt	LF		
$L\,Ib$	LI4			SFr	4	kHz	kHz
$SP2$	10	Hz	Hz	FLr	nO		
$SP3$	25	Hz	Hz	dO			
$SP4$	50	Hz	Hz	ACt	rFr		
rSF	nO			Ftd	50 / 60	Hz	Hz
$rP2$				Ctd		A	A
$L\,I$	nO			$A\,It$	5U		
$AC2$	5	s	s	Atr	nO		
$dE2$	5	s	s	LSr (1)	LOC		
StP	nO			nPL (1)	POS		
brA	YES			bFr	50 / 60	Hz	Hz
				IPL	YES		

(1) A range only

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