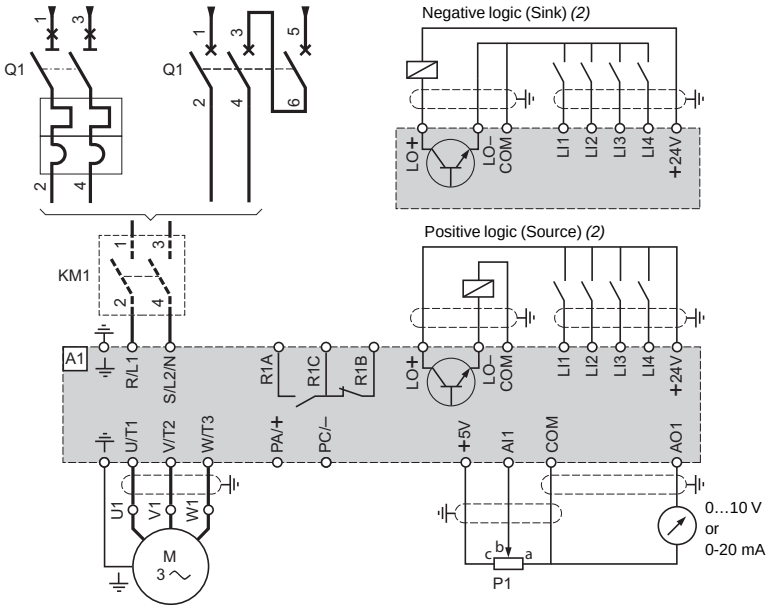
Variable speed drives
Altivar 12
Drives

Recommended schemes

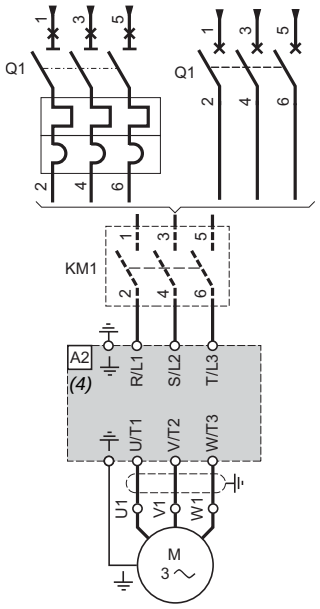
Typical scheme for ATV 12●●●●F1, ATV 12●●●●M2

Single-phase power supply



Typical scheme for ATV 12●●●●M3

Three-phase power supply (power section) *(1)*



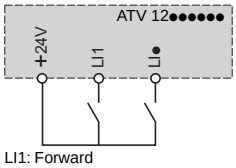
***Note**: Install interference suppressors on all inductive circuits near the drive or connected on the same circuit, such as relays, contactors, solenoid valves, fluorescent lighting, etc.*

Compatible components (for a complete list of references, please refer to the "Motor starter solutions - Control and protection components" and "Motor starters up to 150 A" catalogues or visit "www.schneider-electric.com")

Item no.	Description
A1	ATV 12●●●●F1 or ATV 12●●●●M2 drive (see page 60402/2)
A2	ATV 12●●●●M3 drive (see page 60402/2)
KM1	Contactor (only if a control circuit is needed; see page 60406/2)
P1	2.2 kΩ reference potentiometer, SZ1 RV1202. This can be replaced by a 10 kΩ potentiometer (maximum).
Q1	Circuit breaker (see page 60406/2)

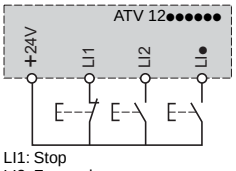
Examples of recommended schemes for logic and analog I/O

2-wire control



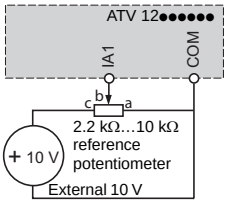
LI1: Forward
LI●: Reverse

3-wire control

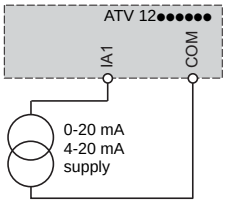


LI1: Stop
LI2: Forward
LI●: Reverse

Analog input configured for voltage

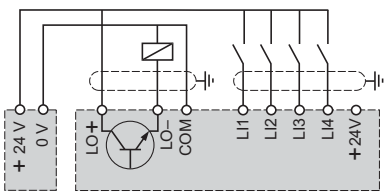


Analog input configured for current



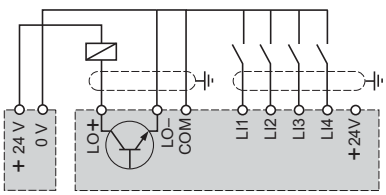
Examples of recommended schemes for logic I/O powered by an external 24 V ⎓ supply *(5)*

Connected as positive logic (Source)



24 V ⎓ supply

Connected as negative logic (Sink)



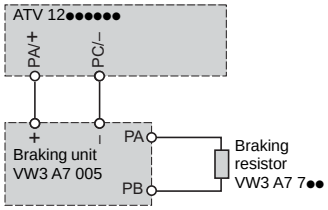
24 V ⎓ supply

(1) The control section is connected in exactly the same way as for the ATV 12●●●●F1 and ATV 12●●●●M2 drives.
(2) Connection as positive logic (Source) or negative logic (Sink) is configured via parameters; the factory-set configuration is positive logic (Source).
(3) Fault relay contacts for remote signalling of the drive status.
(4) The R/L1, S/L2/N and T/L3 terminals are connected at the top of the drive. The other terminals are connected on the underside of the drive.
(5) Please refer to the "Phaseo power supplies and transformers" catalogue.

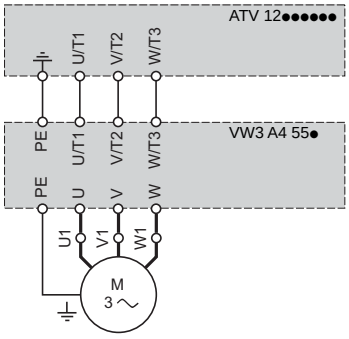
Presentation: page 60400/2 | Characteristics: page 60401/2 | References: page 60402/2 | Dimensions: page 60403/2 | Functions: page 60407/2

Recommended schemes (continued)

Braking unit VW3 A7 005 used with braking resistors VW3 A7 701, 702, 723, 724

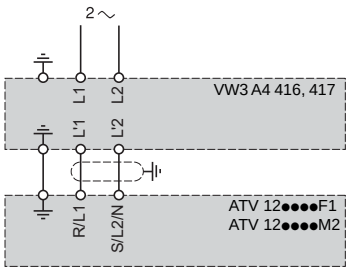


Motor chokes VW3 A4 551…554

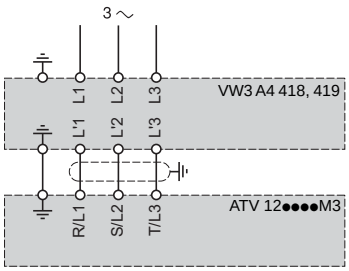


Additional EMC input filters VW3 A4 416…419

Single-phase power supply



Three-phase power supply



Connections for ensuring conformity to EMC standards

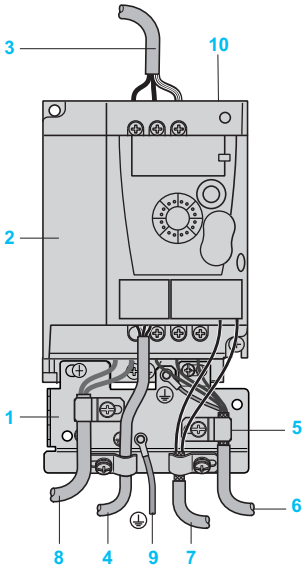
Principle

- Earths between the drive, motor and cable shielding must have "high frequency" equipotentiality.
- Use shielded cables with shielding connected to earth throughout 360° at both ends for the motor cable and the control-signalling cables.

Conduit or metal ducting can be used for part of the shielding length provided that there is no break in the continuity of the earth connection.

- Ensure maximum separation between the line supply cable and the motor cable.

Installation diagram



1 Metal plate to be mounted on the drive (earthed casing).
2 ATV 12●●●●●● drives
3 Unshielded power supply wires or cable
4 Unshielded wires or cable for the output of the fault relay contacts
5 Shielding of cables 6 and 7 attached and earthed as close as possible to the drive:
- Strip the cable to expose the shielding.
- Attach the cable to the plate 1 by tightening the clamp on the stripped part of the shielding.

The shielding must be clamped tightly enough to the metal surface to ensure good contact.
For cables 6 and 7, the shielding must be connected to earth at both ends.
The shielding must be continuous, and if intermediate terminals are used, they must be placed in EMC shielded metal boxes.
6 Shielded cable for connecting the motor
7 Shielded cable for connecting the control-signalling cables. For applications requiring several conductors, use cables with a small cross-section (0.5 mm^2)
8 Unshielded cable for connecting the braking unit
9 PE cable (green-yellow)
10 Selector switch for disconnecting the integrated EMC filter on ATV 12●●●●M2 drives

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

Use on an IT system (isolated or impedance earthed neutral)

Use a permanent insulation monitor, such as Schneider Electric's XM200, which is compatible with non-linear loads. ATV 12●●●●M2 drives have integrated EMC filters.
For use on an IT system, these filters can easily be disconnected by means of a selector switch 10 which can be accessed without removing the drive.