Frequency Inverter (Drive) Wiring Diagram

Date: 29.10.2026 · Rev. 1

Article address: https://drgmotor.com/en/blog/electric-motors/frequency-inverter-wiring-diagram

Technical assumptions

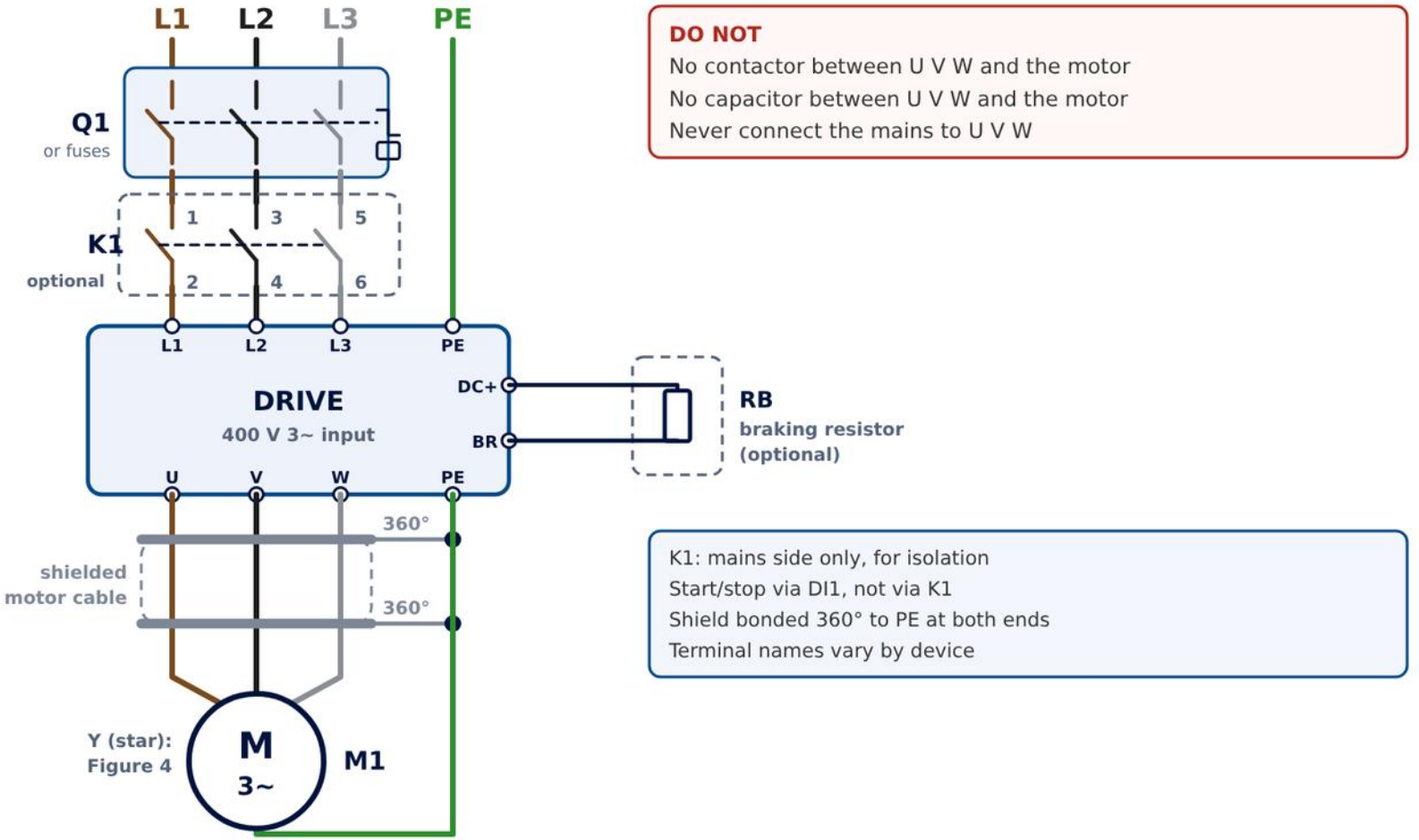
- Supply examples: 400 V 50 Hz three-phase and 230 V 50 Hz single-phase.
- Terminal names (L1 L2 L3 / L N, U V W, PE, DI1, DI2, COM, AI1, +10 V, 0 V, relay output, DC+/BR) are generic and vary by device; the device's own wiring diagram prevails.
- No contactor or capacitor is placed between the drive output (U V W) and the motor.
- I/O functions, ramps, current limit and motor data are set on the device from the motor nameplate; no setting values are given here.
- The braking resistor is optional; its value and wiring follow the device documentation.
- Values are examples; drive, fuses and cable are selected from the motor nameplate and installation conditions.

Safety notice

- This content is for technical information only. Wiring, measurement and commissioning must be carried out by qualified electrical personnel, following lock-out and verification of de-energised state, and in line with the motor and device manufacturer's documentation.

Suitable DRG motors and store

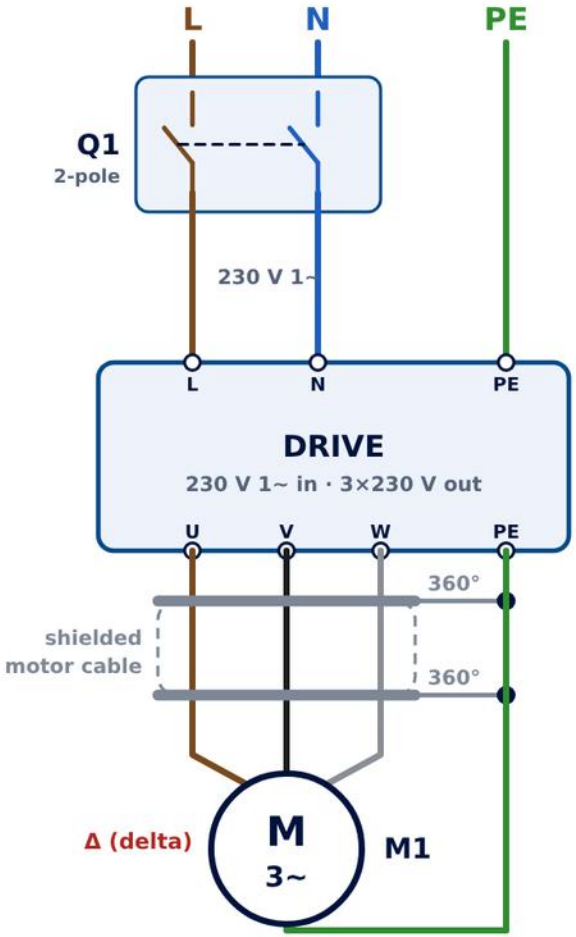
- DRG-90L-4: https://drgmotor.com/en/buy-electric-motors-online/1-5-kw-1500-rpm-three-phase-motor-aluminium-drg-90l-4
- DRG-100L1-4: https://drgmotor.com/en/buy-electric-motors-online/2-2-kw-1500-rpm-three-phase-motor-aluminium-drg-100l1-4
- DRG-100L2-4: https://drgmotor.com/en/buy-electric-motors-online/3-kw-1500-rpm-three-phase-motor-aluminium-drg-100l2-4
- DRG-112M-4: https://drgmotor.com/en/buy-electric-motors-online/4-kw-1500-rpm-three-phase-motor-aluminium-drg-112m-4
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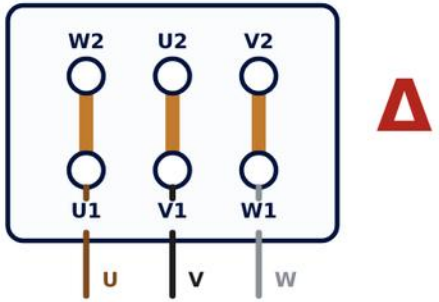
400 V three-phase input drive: mains – drive – motor

Q1 → K1 (optional) → L1 L2 L3 → U V W → M1 3~ · PE and shield earthed at both ends · values are examples

Figure 1



Motor terminal box: 230/400 V motor



3×230 V output → delta links

Why delta?

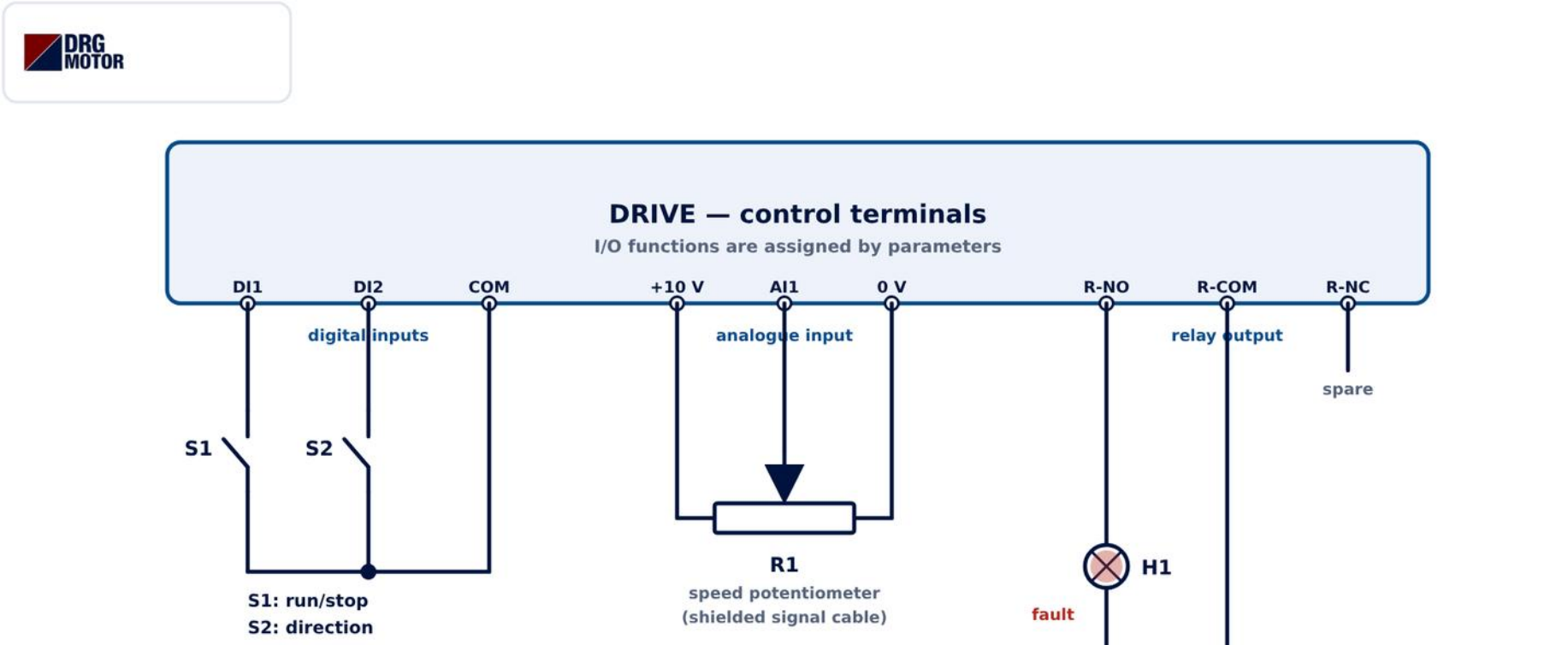
A 230/400 V motor in delta gets 230 V per winding
Left in star, the motor lacks torque
A 400/690 V motor cannot reach full power here
Drive output current ≥ motor 230 V current

No contactor / capacitor between U V W and motor
No single-phase motor capacitor here

220 V single-phase input drive with a three-phase motor

L N PE → Q1 → drive → U V W (3×230 V) → 230/400 V motor in delta · terminal names vary by device

Figure 2



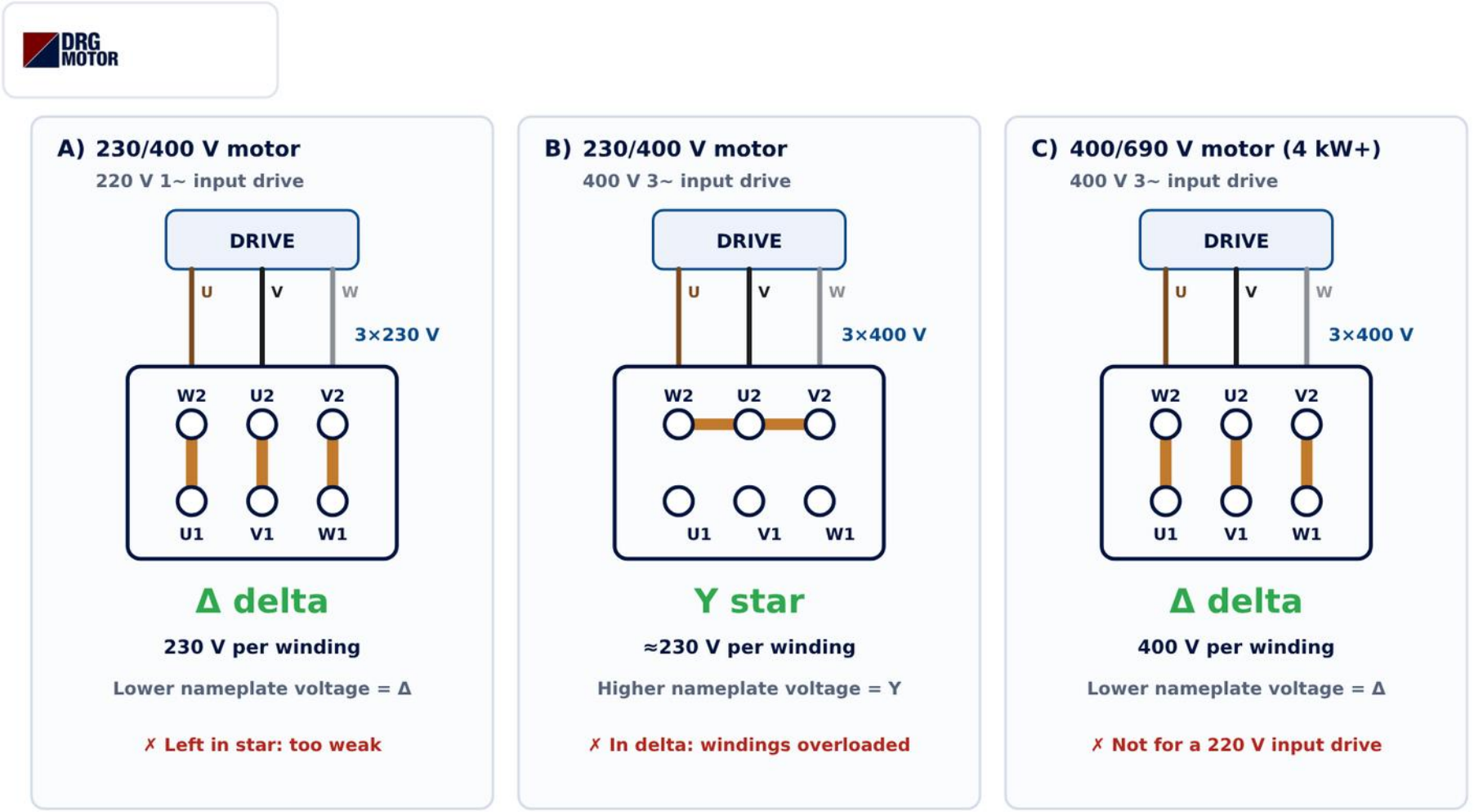
S1 / DI1	S2 / DI2	Motor
open	–	stops
closed	open	forward
closed	closed	reverse

2-wire control example; assignment depends on device

Drive control terminals: start, direction, speed and fault

DI1 run · DI2 direction · COM common · +10 V / AI1 / 0 V potentiometer · relay output fault lamp

Figure 3

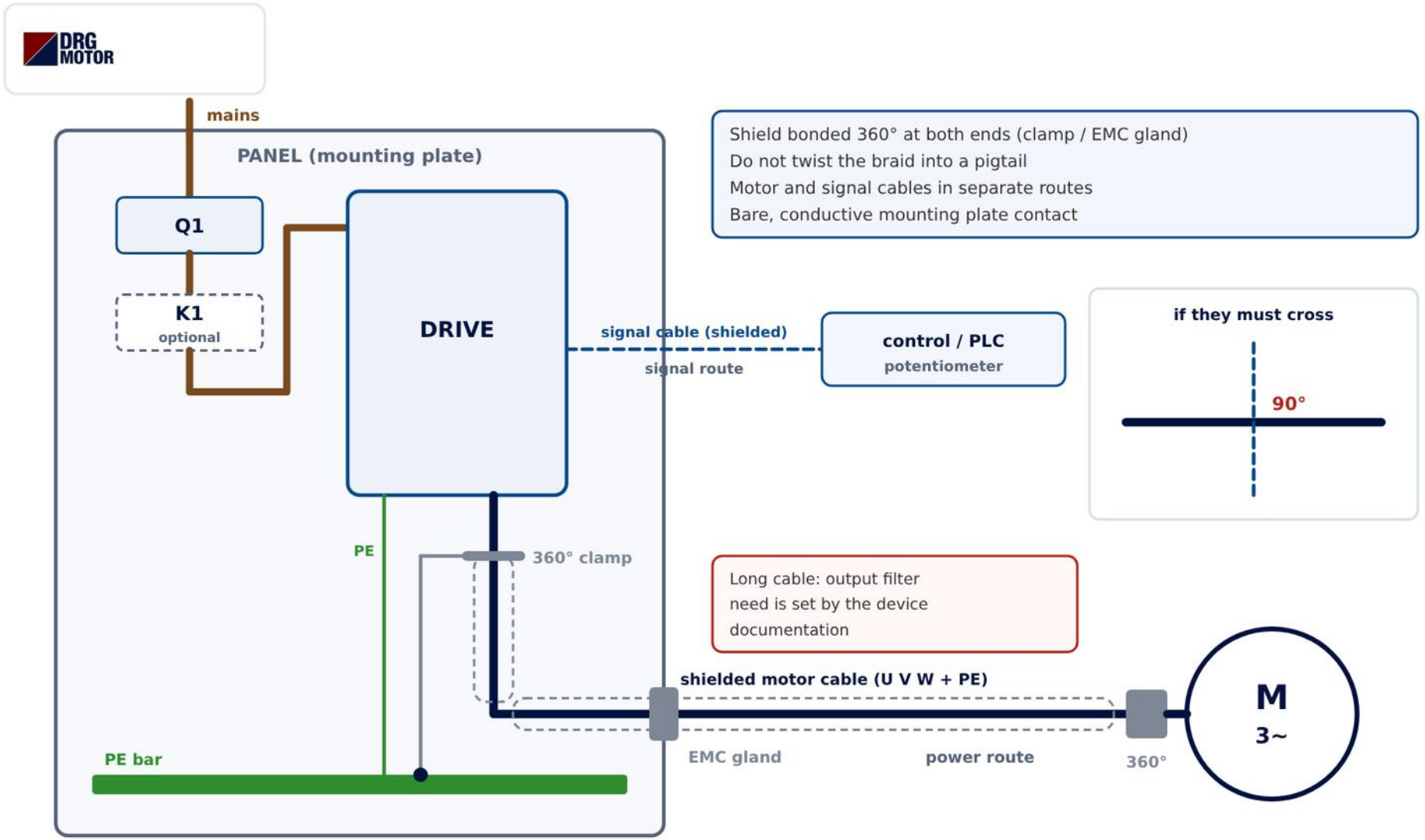


Rule: the drive output voltage must equal the nameplate voltage for that connection.

Motor connection for the drive: star or delta?

Terminal box: top row W2 U2 V2 · bottom row U1 V1 W1 · copper links

Figure 4



Drive cable routing and shielding

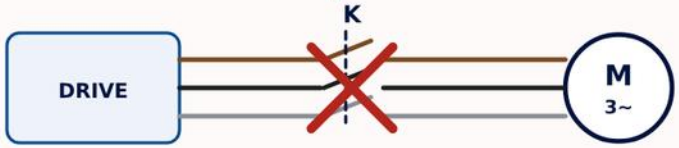
Shield 360° at drive and motor · motor PE conductor inside the cable · power and signal routed apart

Figure 5

DRG MOTOR

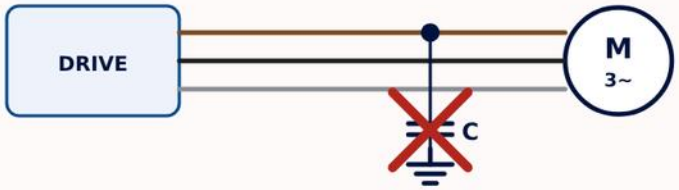
Correct way: Figures 1 and 5

✗ Contactor on the output



Switching while running can trip or damage the drive output stage

✗ Capacitor at motor terminals



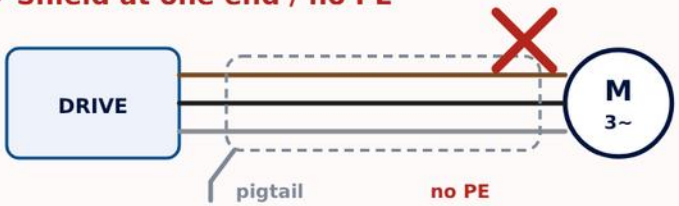
A power-factor or run capacitor loads the pulsed output like a short circuit

✗ Mains wired to U V W



Swapping input and output can destroy the drive at power-up

✗ Shield at one end / no PE



Interference, leakage current, false signals; missing PE is a safety hazard

Four mistakes to avoid when wiring a drive

Output contactor · capacitor · input/output swap · missing shield and PE

Figure 6