



FD3.x

Stepper motor driver

MAIN CHARACTERISTICS

FD3 belongs to FD family micro-stepper drives.

Supply voltage	24 – 115 V _{AC} 30 – 165 V _{DC}
Motor current	Up to 12 A _{ph} per phase
Motor type	Bipolar, 4 wires
IP	20
Inputs	6 Digital opto-insulated 1 Analog input
Outputs	2 Digital pnp-type
Field-bus interfaces	Modbus (RS-232, RS-485) CANopen
Encoder	External encoder
Dimensions	150 x 44 x 99 mm

FEATURES

- Automatic and configurable current reduction in idle
- External encoder interface for step-loss detection
- Step / dir or quadrature steps inputs
- 32 programmable cycles, 10 cycles sequences

Predefined movements can be selected, started, stopped using digital inputs. Configurable speed, acceleration, deceleration, target position with linear and parabolic motion profiles.

Complex cycles as homing, delta stop, delay or sequence of cycles are also selectable and started.

- Configurable μ steps per revolution (400 – 208 400 μ steps/rev)
- Over temperature (100 °C), over voltage and short circuit alarms
- Fully re-programmable
- CANopen CiA DS301, DSP402

Profile position mode, profile velocity mode, homing mode, custom modes.

- DIP switch to set the CAN and RS-485 node address or motor current and resolution
- Automatic brake when powered off for position retention (motor winding short-circuit relays)

FD drives are all controlled by 72 MHz ARM-based microcontroller. They are equipped with very low RDS-on MOSFETs and Hall Effect current sensors to optimize power efficiency.

The drive can be interfaced with external encoder, which can be used to verify the correct execution of the ordered steps and other functions which are described in detail on firmware manuals.

To avoid unwanted heat dissipation FD3 implements automatic current reduction, which reduce the current when the motor is at zero speed.

Model	Power supply	Dig. IN Dig. OUT	RS-232	RS-485	An. IN
FD3.1	24 – 115 V _{AC}	✓	✓	✓	✓
FD3.2	30 – 165 V _{DC}	✓	S		

A = CANopen (only available on FD3.1)

D = DC/DC (only available on FD3.1)

R = Automatic brake

S = RS-232

E = External encoder input (only available on FD3.1)

C = Enable current input

G = DIN rail mounting clip

FD3.1 is the hardware code of the models equipped with field-buses: they implement 6 DIN, 2 DOUT, 1 AIN, CANopen (suffix A), Modbus on RS-232 and RS-485. CAN and RS-485 are opto-insulated from power circuitry. Versions with suffix E are equipped with external incremental encoder (it can be supplied from 5V internally generated, RS-422 standard inputs). Versions with suffix D are equipped with DC/DC to supply the logic and the field-buses when power is off.

FD3.2 is the hardware code of the models with only digital inputs and outputs for step / dir or quadrature mode and start / stop, cycle selection mode. Versions with suffix S, i.e. FD3.2S, have also RS-232 for re-programming the parameters and drive communication.

Suffix R versions are equipped with automatic brake, available in FD3.1 and FD3.2.



Fig. 1 FD3.2RS.