One drive – two performance levels

Special needs require special features and performance

	FC 301 (A1-Enclosure)	FC 301	FC 302
Power range 200 – 240 V [kW]	0.25 – 1.5	0.25 – 37	0.25 – 37
Power range 380 – (480) 500 V [kW]	0.37 – 1.5	0.37 – 75	0.37 – 1100
Power range 525 – 600 V [kW]	–	–	0.75 – 7.5
Power range 525 – 690 V [kW]	–	–	11 – 1000
IP 00	–	√	√
IP 20/21 (NEMA1)	√	√	√
IP 54/IP 55 (NEMA12)	–	√	√
IP 66	–	√	√
Ambient temperature °C Avg. 24 hours (IP 21) w/o de-rating	50° C	50° C	50° C
VVC+ vector control	√	√	√
Flux vector control	-	-	√
Cable length – screened/unscreened	25/50 m	50/75 m	150/300 m
Permanent magnet motor operation (w/wo feedback)	–	–	√
KTY-monitoring of temperature	√	√	√
Monitoring of over-voltage	√	√	√
Smart Logic Control	√	√	√
Safety function Safe Torque Off (STO – EN 61800-5-2)	Option	–	√
Galvanic isolation PELV	√	√	√
Conformal coated PCBs (IEC 721-3-3)	Standard	Standard	Standard
Removable fan	√	√	√
RS 485 and USB-interface	√	√	√
Graphical/numerical control panel (LCP 102/101)	Option	Option	Option
Up/download of settings from LCP (LCP 102)	√	√	√
Info/Help function (LCP 102)	√	√	√
28 languages built-in	√	√	√
Password protection	√	√	√
Personal menu (macro)	√	√	√
Pluggable control terminals	√	√	√
Analogue input (changeable)	0 ... +10 V	0 ... +10 V	-10 ... +10 V
Analogue output resolution	12 bit	12 bit	12 bit
Programmable digital input	5(4)	5 (4)	6 (4)
Programmable digital output changeable	1	1	2
Programmable Relay Output	1	1	2
Process PID control	√	√	√
Flying start – catch spinning motor	√	√	√
Automatic Energy Optimization (AEO)	√	√	√
Precise Start/Stop	√	√	√
Number of fixed parameter sets	8/32	8/32	8/32
Digital motor potentiometer	√	√	√
Integrated motor database	√	√	√
Programmable power drop procedure	√	√	√
Options:			
Profibus, DeviceNet, CANopen, EtherNet/IP, PROFInet	√	√	√
MCB 101 – Extended input/outputs	√	√	√
MCB 102 – Encoder option	√	√	√
MCB 103 – Resolver option	√	√	√
MCB 105 – Relay option	√	√	√
MCB 108 – Safe PLC interface	√	√	√
MCB 112 – ATEX- PTC-monitoring	–	–	√
MCO 305 – Motion Control Option	–	√	√
MCB 107 – External 24 V supply	–	√	√

Specifications
(Basic unit without extensions)

Main supply (L1, L2, L3)	FC 301	FC 302
Supply voltage	200 – 240 V ±10%	
Supply voltage	380 – 480 V ±10%	380 – 500 V ±10%
Supply voltage		525 – 600 V ±10%
Supply voltage		525 – 690 V ±10%
Supply frequency	50/60 Hz	
Displacement power factor (cos ϕ) near unity	> 0.98	
Harmonic disturbance	Meets EN 61000-3-12	

Output data (U, V, W)	FC 301	FC 302
Output voltage	0 – 100% of supply voltage	
Output frequency	0.2-1000 Hz	0-1000 Hz
Switching on output	Unlimited	
Ramp times	0.02-3600 sec.	

Digital inputs	FC 301	FC 302
Programmable digital inputs	4(5) > 5	4(6) > 6
Changeable to digital output	1 (terminal 27)	2 (terminal 27, 29)
Logic	PNP or NPN	
Voltage level	0 – 24 V DC	
Maximum voltage on input	28 V DC	
Input resistance, Ri	Approx. 4 kΩ	
Scan interval	5 ms	1 ms

Analogue inputs	FC 301	FC 302
Analogue inputs	2	
Modes	Voltage or current	
Voltage level	0 to +10 V (scaleable)	-10 to +10 V (scaleable)
Current level	0/4 to 20 mA (scaleable)	
Accuracy of analogue inputs	Max. error: 0.5% of full scale	

Pulse/encoder inputs	FC 301	FC 302
Programmable pulse/encoder inputs	2/1	
Voltage level	0 – 24 V DC (PNP positive logic)	
Pulse input accuracy (0.1 - 1 kHz)	Max. error: 0.1% of full scale	
Encoder input accuracy (1 – 110 kHz)	Max. error: 0.05% of full scale 32 (A), 33 (B) and 18 (Z)	

Digital output	FC 301	FC 302
Programmable digital/pulse outputs	1	2
Voltage level at digital/frequency output	0 – 24 V DC	
Max. output current (sink or source)	40 mA	
Maximum output frequency at frequency output	0 to 32 kHz	
Accuracy on frequency output	Max. error: 0.1% of full scale	

Analogue output	FC 301	FC 302
Programmable analogue outputs	1	
Current range at analogue output	0/4 – 20 mA	
Max. load to common at analogue output (clamp 30)	500 Ω	
Accuracy on analogue output	Max. error: 1% of full scale	

Control card	FC 301	FC 302
USB interface	1.1 (Full Speed)	
USB plug	Type "B"	
RS485 interface	Up to 115 kBaud	
Max. load (10 V)	15 mA	
Max. load (24 V)	130 mA	200 mA

Relay output	FC 301	FC 302
Programmable relay outputs	1	2
Max. terminal load (AC) on 1-3 (break), 1-2 (make), 4-6 (break) power card	240 V AC, 2 A	
Max. terminal load (AC) on 4-5 (make) power card	400 V AC, 2 A	
Min. terminal load on 1-3 (break), 1-2 (make), 4-6 (break), 4-5 (make) power card	24 V DC 10 mA, 24 V AC 20 mA	

Surroundings/external	FC 301	FC 302
Enclosure	IP00, IP20, IP21, IP54, IP55, IP66	
Vibration test	1.0 g (D-enclosure: 0.7 g)	
Max. relative humidity	5% – 95% (IEC 721-3-3; Class 3C3 (non-condensing) during operation	
Aggressive environment (IEC 721-3-3)	Uncoated class 3C2, optional coated class 3C3	
Ambient temperature	Max. 50° C	
Galvanic isolation of all	I/O supplies according to PELV	

Protection mode for longest possible up-time

- Electronic thermal motor protection against overload
- Temperature monitoring of the heat sink ensures that the FC 300 cuts out if the temperature reaches 100 °C
- The FC 300 is protected against short-circuits on motor terminals U, V, W
- The FC 300 is protected against earth fault on motor terminals U, V, W
- Protection against mains phase loss

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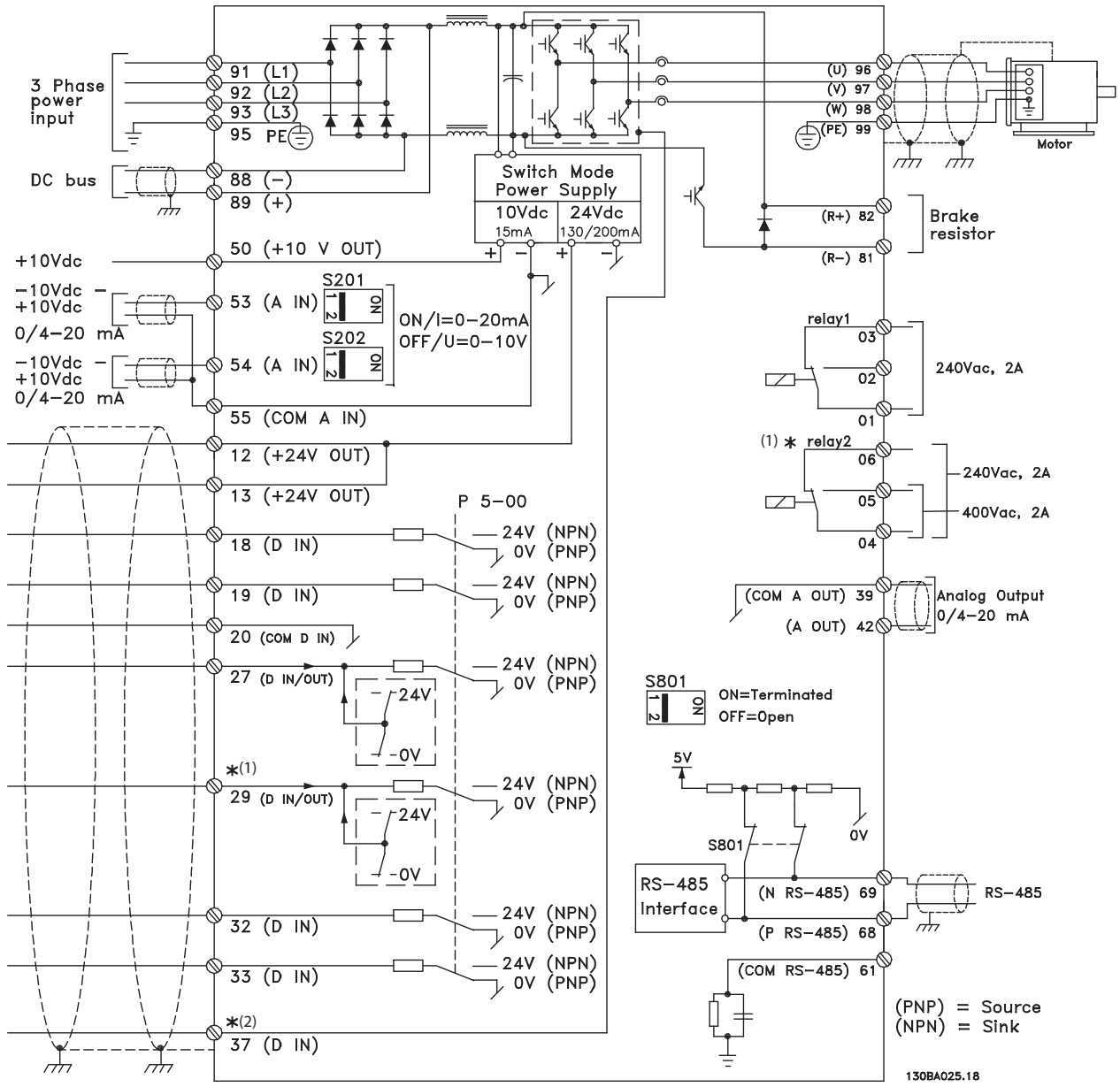
Connection examples

The numbers represent the terminals on the drive.



*(1) Not FC 301
*(2) Standard for FC 302 – and for FC 301, when delivered in A1 enclosure.

The diagram shows the port terminals of the FC 301 and FC 302. Additional options will expand the number of terminals.

The numbers indicated refer to the terminal numbers of the drives. Brake resistance (terminals 81 and 82) and intermediate circuit connection (terminals 88 and 89) must be specified when configuring/ordering. Users can set the mode of the analogue inputs 53 and 54 using the S201 and S202 switches.

All FC 301/302 have an RS485 and a USB interface as standard. The RS485 terminations are integrated in the drive (S801). The drive can be equipped with a fieldbus option if necessary.

To switch from NPN to PNP logic for the digital signals, use parameter 5-00.