

FREQROL
Frequency
Inverters

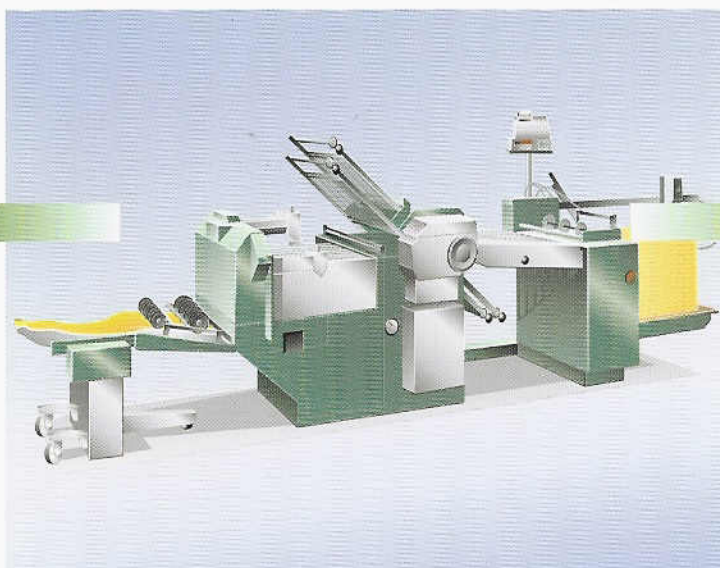
FREQROL
FR-A 024 S EC
FR-A 044 EC



**Vector Power
in the
Compact Class**

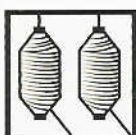


*Folding machines,
 binding machines,
 printing machines,
 feed belts*

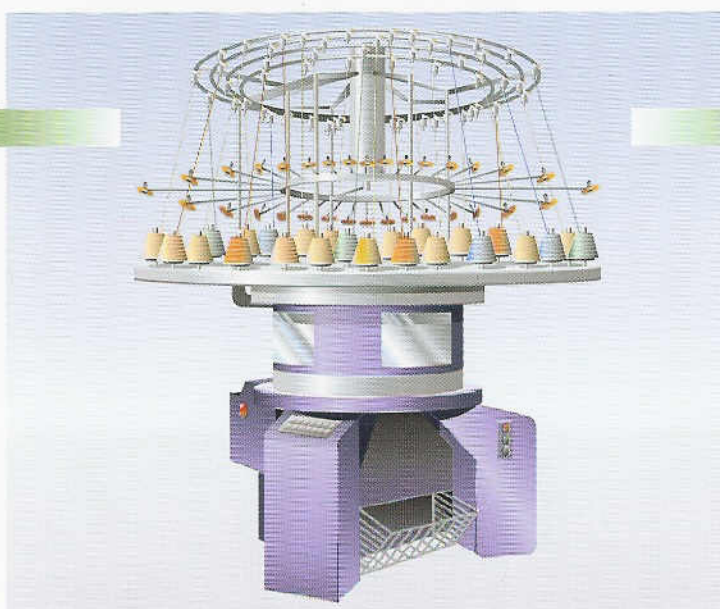


Compact frequency inverters with vector power for your individual applications:

- High PWM switching frequency for whisper-quiet motor running
- Compact design saves space in your switchgear cabinet
- Up to 15 user-definable preset speeds
- Gentle deceleration and acceleration with S ramp curve



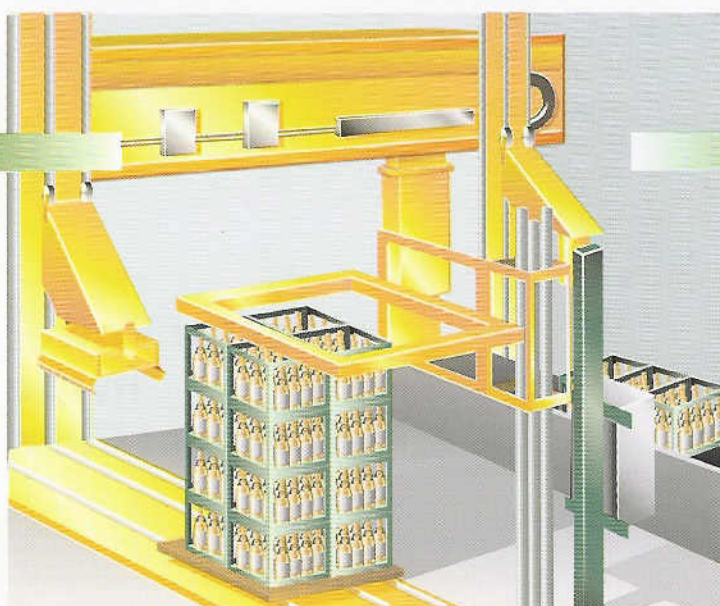
*Spinning machines,
 knitting machines,
 looms, textiles processing machines*



- Uncompromising reduction of dimensions for more space in the switchgear cabinet
- Communications capability with RS422/485 interface
- Supports motor operation at adjustable current limit
- Extended ambient temperature range up to +50 °C
- High-resolution analog input for the analog reference value
- Operation of special motor types



*Palletisers, material handling machines,
 door control systems*



- Tripless function for failure-free motor operation at the current limit
- High start-up torque and good speed constancy thanks to self-adjusting vector control
- Integrated DC brake and output to brake controller for good positioning accuracy

Impressive performance

Uncompromisingly compact design, power, flexibility, safety and reliability are the outstanding characteristics of the compact frequency inverters FR-A 024 S EC and FR-A 044 EC. Fully equipped with a wealth of advanced features, these units can handle even difficult drive tasks with ease.

Significantly reduced size

Only a unit with really small dimensions can rightfully be classed as a compact frequency inverter. Compared to the preceding generation the size of these models has been significantly reduced. In fact, the FR-A 044-3.7 k EC is one of the most compact frequency inverters available in this applications class.

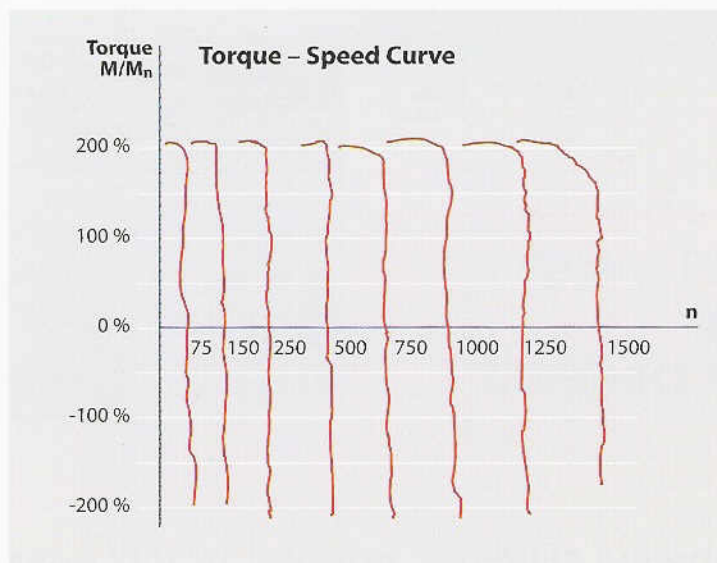


Vector control and slip compensation

The self-adaptive vector control system combines powerful torque with exemplary speed constancy. Two to threefold rated motor torque is possible,

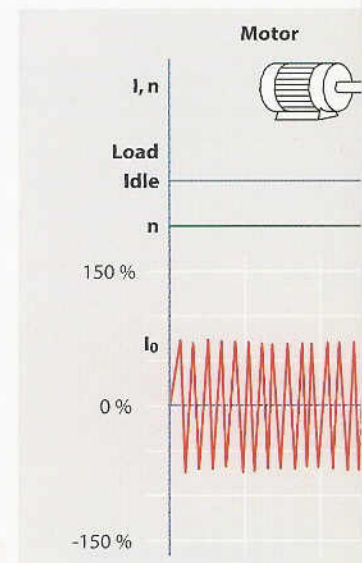
even in the start-up phase and at low speeds. Plus, the system also simultaneously monitors load-based motor slip and compensates it accordingly.

Vector control and slip compensation are an ideal combination, making it possible to handle even difficult applications. Complex setup procedures are a thing of the past: To activate this powerful function you just enter the motor's capacity. The automatic self-adaptive system takes care of the rest.



Triplex function

The triplex function enables you to handle even really tricky drive applications with confidence. Overcurrents are identified immediately





FR-A 044 EC
Power supply
3~380-460 V

The Technical Benefits:

- Self-adaptive vector control with slip compensation
- Tripless function
- High, adjustable PWM switching frequency
- Integrated brake transistor
- Programmable input and output terminals
- Signal output for motor current and output frequency
- Up to 15 preset speeds
- 16 self-protection functions
- Communication capability with serial interface
- Motor cable breakage monitoring

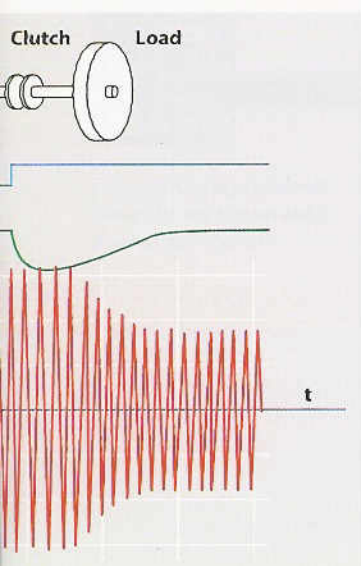
Universal FR-PU 03 E parameter unit

The FR-A 024 S EC and FR-A 044 EC both have identical control functions and parameter sets. This means that

the FR-PU 03 E parameter unit can be used for both inverters. The FR-ARW 03 E copying unit is also available for quick,

efficient transfer of parameter sets to other frequency inverters.

and limited with super-fast response times, so that the drive continues to operate at the current limit without tripping.



Comprehensive communications

The FR-A 024 S EC and FR-A 044 EC frequency inverters are ready for integration in a system network. Communications are effected with the

optional RS422/485 serial interface, which supports transfer of operating data, parameters and control commands.

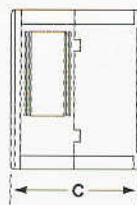
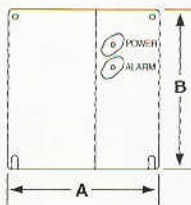


Specifications

Model		FR-A 024 S EC				FR-A 044 EC				
		0.4 k	0.75 k	1.5 k	2.2 k	0.4 k	0.75 k	1.5 k	2.2 k	3.7 k
Output ratings	Motor capacity (kW), constant torque	0.4	0.75	1.5	2.2	0.4	0.75	1.5	2.2	4.0
	Nominal output (A), constant torque	2.5	4	7	10	1.6 (1.4)	2.6 (2.2)	4.0 (3.8)	6.0 (5.4)	9.5 (8.7)*
	Overload capacity	200 % of output current for 0.5 s; 150 % for 1 min.								
	Overload protection	Tripless function								
	Output voltage	3~ 0 V - input voltage, programmable								
	Output frequency	0.2-400 Hz								
	Control method	V/f control or self-adaptive vector control for high torque at low speeds, slip compensation								
	Modulation method	Sinusoidal PWM								
	PWM switching frequency	0.7-14.5 kHz, programmable								
Brake unit	Brake transistor installed as standard equipment; the brake resistor is connected externally. It is also possible to connect an external brake unit when higher braking capacity is required.									
Power supply	Power supply voltage and frequency	1~ 220-240 V, ±10 %, 50/60 Hz				3~ 380-460 V, -15 %/+10 %, 50/60 Hz				
Control inputs	Reference values	0-5 V, 0-10 V, 4-20 mA, potentiometer								
	Preset speeds	15 speeds can be preset digitally								
	Start signal	Start forward, start reverse, controller inhibit								
	Setup command mode	Activated with the keyboard								
	Second parameter set	Activated by contact								
	Logic	Source logic, PC terminal for control with external 24 V signal								
Control outputs	Operation status messages with open collector output	Two programmable operating status indicators, "RUN" motor running, "SU" up to reference, "FU" frequency detection, "OL" overload								
	Signal output for operating values	FM pulse output for frequency and motor current								
Settings and controls (selection)	Voltage/frequency pattern	Programmable								
	Acceleration/deceleration times	0; 0.1-3,600 s; individually programmable								
	Current limit	0-200 %, programmable								
	Torque boost	Manual								
	Electronic motor protection breaker	Current rating programmable								
Protection	Protection functions	Overcurrent, overvoltage, overload, short-circuit protection, ground fault protection, brake transistor, temperature monitoring, CPU monitoring, motor protection, restart monitoring, memory error. Output: general fault alarm via relay contact.								
Options	External options	Connection of external options supported								
EMC	Emissions	EN 50081-2 when using the external SF/FR-LP compact filter in a configuration compatible with EMC requirements.								
	Immunity	EN 50082-2								
Environment	Protection class	IP 20								
	Ambient temperature	-10 °C – +50 °C								

* The current values in brackets are showing the rated output current for PWM switching frequencies >2 kHz.

Dimensions



Model	FR-A 024 S EC					FR-A 044 EC				
	0.4 k	0.75 k	1.5 k	2.2 k		0.4 k	0.75 k	1.5 k	2.2 k	3.7 k
Weight(kg)	1.2	1.5	2.2	2.3		1.7	1.7	2.3	2.6	2.7
A (mm)	140	140	200	200		140	140	200	200	200
B (mm)	150	150	150	150		150	150	150	150	150
C (mm)	116	116	126	126		116	116	136	136	136
Brake resistor	FR-ABR					FR-ABR-H				
	0.4 k	0.75 k	2.2 k	2.2 k		0.4 k	0.75 k	1.5 k	2.2 k	3.7 k