Product Information

EBG 194-UK

MITSUBISHI ELECTRIC
FACTORY AUTOMATION

FR-A741

Frequency Inverter

With Power Regeneration

Conserves energy, cuts costs

POWER RE-GENERATION — Integrated power regeneration enhances energy efficiency

EASY INSTALLATION — Much lower installation overheads, more effective system planning, simpler switchgear cabinet layout

HIGH-END SOLUTION — High-end drive with a wealth of application functions

LOWER COSTS — Lower TCO than conventional solutions

High-end drive performance

The new FR-A741 can save a lot of power in applications suitable for regenerative braking

Complex conveyor systems have potential for significant energy savings

Integrated power regeneration

The FR-A741 is the latest addition to the high-performance FR-A700 series. It sets new standards with an integrated power regeneration function that also improves braking performance. Featuring a large number of innovative technologies, this compact frequency inverter delivers exceptional performance and is ideal for hoist drives and high-powered machines with torque that can be used for regenerative braking. This includes a wide range of applications with vertical and horizontal movements such as conveyor systems, centrifugal separators, testing machines, winding machines and so on.

The new FR-A741 both reduces your initial investment outlay and keeps operating costs low. The integrated power regeneration function makes it possible to use smaller and much less expensive drive systems and enables simpler and more compact switchgear cabinet layouts. The advantages over conventional frequency inverter technology are very significant:

- 100 % braking energy infeed
- No braking resistor required
- Lower engineering overheads
- Minimizes braking heat generation
- Low installation overheads
- High energy efficiency
- Integrated AC reactor

High power saving potential

Cutting energy consumption and protecting the environment are now key issues in mechanical and plant engineering. Drive motors usually account for most of the power used and they also take up lots of space and require special cooling facilities. The FR-A741's regenerative braking system makes it much more efficient than conventional drive systems, giving it the potential for significant energy savings.

Feeding the energy generated by braking back into the power grid generates much less heat than a braking resistor. In addition to cutting power consumption this also reduces installation space requirements by eliminating the need for cooling hardware.

But that's not all – the energy fed back into the grid can also be used for other purposes, reducing operating costs still further.

Simpler installation

The integration of the frequency inverter and power regeneration system in a single unit reduces space requirements, making installation in the switchgear cabinet much simpler.

Integration of three functions in a single unit significantly reduces space requirements

The combination of the integrated AC reactor and no need for an external braking unit eliminate a large amount of additional wiring. These inverters need up to 60 % less main circuit wiring and occupy up to 40 % less space than conventional solutions, depending on the output capacity. The result is significantly less overall cable lengths and switchgear cabinet space requirements.

Economical even at low outputs

An efficient drive solution can usually pay for itself within a few months. An FR-A741 inverter with power regeneration can even achieve this for applications with lower power requirements and standard motors.

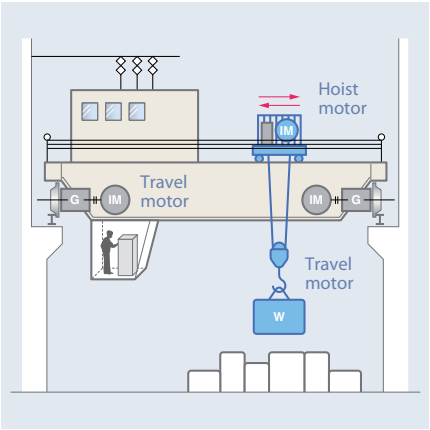
For example, in a shelf access system lifting drive application the hardware investment and energy costs of a conventional 22 kW inverter with a braking unit, braking resistor and AC reactor come to € 12,839 per year.

In comparison, the FR-A741 inverter with power regeneration costs just € 8,840 per year, including the purchase price of the inverter itself.

This is a saving of 32 % in the first year alone, which is further compounded by additional high savings in power costs in the following years.

Ideal for hoisting applications

The frequency inverters of the FR-A741 series are innovative and intelligent drive systems that can easily be integrated in complex applications. They are particularly well suited for tasks involving frequent cyclical acceleration and deceleration and in all applications where braking resistors are normally used.



The FR-A741 is ideal for cranes and other hoisting and conveyor applications

Special crane programming functions are supported for easy integration in hoisting applications, including a special external brake control sequence, functions for load-based speed switching and four independent torque thresholds for all four quadrants.

Trouble-free mains operation

The FR-A741 has no special requirements as regards power supply perturbations – it is no more demanding in this respect than a standard frequency inverter.

Harmonic mains interference is efficiently suppressed by an integrated AC reactor. An additional harmonics suppression option is also available to further minimise network interference.

Proven high-end operation

The FR-A741 was developed on the basis of the reliable FR-A700 and has all the features you would expect from a high-end drive, including operating time monitoring, network support, long-life components, eco-friendliness and simple operation and maintenance.

Mitsubishi Electric frequency inverters are famous for their longevity. The FR-A741 is specified for a 10-year service life. Among other things, this is made possible by high-performance heat-resistant capacitors and cooling fans with sealed bearings.

The full output capacity of the inverter is available without restrictions up to an operating frequency of 14.5 kHz.

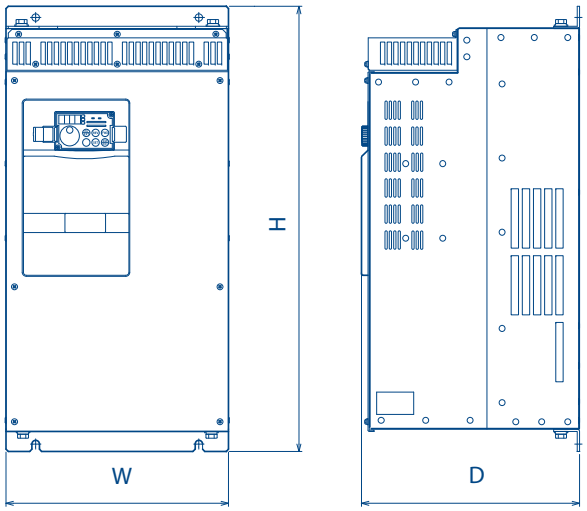
Conforms to international standards

Mitsubishi Electric frequency inverters meet all the requirements of the EU's 73/23/EEC Low Voltage Directive and 98/37/EC Machinery Directive. All inverters bear the CE mark and have UL, cUL and GOST certifications.

Specifications ///

Overload rating	ND (normal duty)
60 seconds overload	150 %
3 seconds overload	200 %
Ambient temperature	50 °C

Model	Rated current [A]*	Motor capacity [kW] *	W x H x D (mm)
FR-A741-5.5k	12	5.5	250 x 470 x 270
FR-A741-7.5k	17	7.5	250 x 470 x 270
FR-A741-11k	23	11	300 x 600 x 294
FR-A741-15k	31	15	300 x 600 x 294
FR-A741-18.5k	38	18.5	360 x 600 x 320
FR-A741-22k	44	22	390 x 600 x 320
FR-A741-30k	57	30	450 x 700 x 340
FR-A741-37k	71	37	470 x 700 x 368
FR-A741-45k	86	45	470 x 700 x 368
FR-A741-55k	110	55	600 x 900 x 405



Operation	Data
Power supply	3-phase, 380-480 V (-15 %, +10 %)
Output frequency range	0 – 400 Hz
Regenerative braking torque	100 % continuous, 150 % for 60 s
Cooling	Fan
Protection rating	IP00
Certifications	CE/UL/cUL/GOST

Environment	Data
Ambient temperature	-10 °C – +50 °C (non-condensing)
Storage temperature	-20 °C – +65 °C
Relative humidity	Max. 90 % (non-condensing)
Installation altitude	Max. 1000 m above sea level
Vibration	Max. 0.6 G
Physical shock	10 G

Available options		Designation	Description
Digital input		FR-A7AX	Additional user-configurable inputs
Digital output		FR-A7AY	Enables selectable frequency inverter output signals to be directed to open collector outputs.
Additional analog output			Enables output of additional analog signals as voltage or current values.
Relay output		FR-A7AR	Enables output of frequency inverter output signals to relay contacts.
Communications	Profibus/DP	FR-A7NP	Connect frequency inverter to a Profibus/DP network.
	DeviceNet	FR-A7ND	Connect frequency inverter to a DeviceNet network.
	CC-Link	FR-A7NC	Connect frequency inverter to a CC-Link network.
	LonWorks	FR-A7NL	Connect frequency inverter to a LonWorks network.
	CANopen	FR-A7NCA	Connect frequency inverter to a CANopen network.
	Ethernet	FR-A7N-ETH	Connect frequency inverter to an Ethernet network.

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