

YASKAWA



YASKAWA AC DRIVES
Application Solution

Extruder



YASKAWA AC Drive
GA700



YASKAWA Matrix Converter
U1000

YASKAWA provides the answers to your extruder needs.

YASKAWA ELECTRIC always stands in the shoes of our customers and delivers the AC drive with the most uncompromising quality and performance ahead of others in the industry. Decades of certain application experiences allow us to provide AC drive features that is prompt and flexible solutions to your desire. Our loyal commitment to quality and ease of use make Yaskawa AC drive the best choice for all of your drive applications.



Application Benefit

- Optimal cost performance that best fits your system
- Used with PM motors, it minimizes the total system volume and save energy
- Applicable in all environments
- Embedded EMC filter reduces the noise effect on the peripheral devices
- No need for a control panel while realizing the system minimization by improving the system design flexibility
- Realizing $K_5 = 0$ by using Matrix Converter

Product Lineup



YASKAWA AC Drive High Performance Type **GA700**

We have allowed for control of high efficiency motors, while keeping costs down to provide added value for all of your industrial applications.

[Applicable Motor Capacities]

200 V Class 0.4 to 110 kW
400 V Class 0.4 to 630 kW



YASKAWA Matrix Converter **U1000**

The U1000 is a compact and total all-in-one solution with ultra-low harmonics and full regenerations. The ultimate choice for power quality and energy savings.

[Applicable Motor Capacities]

200 V Class 5.5 to 55 kW
400 V Class 2.2 to 500 kW

Note: The kW capacity range serves as a guide.



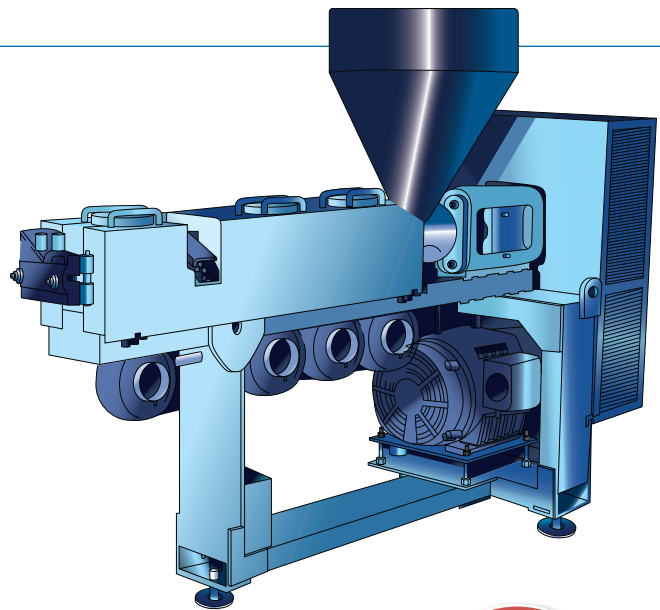
Recommended AC drives

■ Single Screw Extruders

GA700

U1000

Single Screw

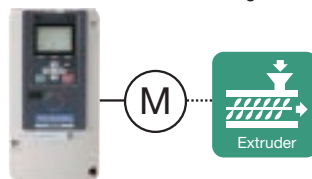


Answer 1 Optimal cost performance that best fits your system

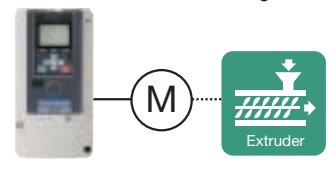


AC drives have two ratings based on the load type, Heavy Duty rating (HD) for Constant Torque loads and Normal Duty rating (ND) for Variable Torque loads. Previously, the AC drives for extruders were usually sized at the HD rating so one size larger AC drive were commonly used. However, some extruders can be driven by AC drives sized at the ND rating, so sizing AC drives accordingly to the extruder type can lower the total system cost and save installation space.

■ Catalog code: GA70A2070 (HD rating: 15 kW)



■ Catalog code: GA70A2056 (ND rating: 15 kW)

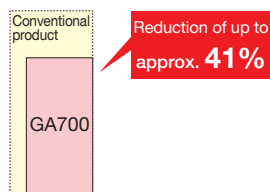


Answer 2 Used with PM motors, it minimizes the total system volume and save energy

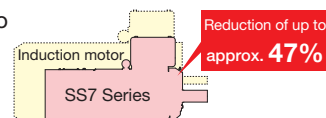


The combination of GA700 and a light, small PM motor will reduce the total system volume. GA700 has maximum 41% less installation area than that of the previous products. SS7 series PM motor has maximum 47% smaller volume than the counterpart IM motor.

■ AC drive installation space
400 V and 75 kW Example



■ Motor volume ratio
137 kW and 1,750 min⁻¹ Example



Answer 3 Applicable in all environments



All the PCBs have varnish coating as standard. In addition, there are options for harsh environments such as: high humidity, dust and vibration. Resolver option provides higher environmental durability than an encoder.

Dust resistance

Humidity resistance



Gas resistance

Vibration resistance

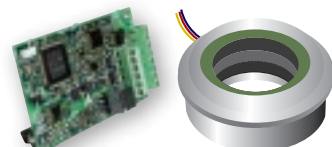
■ Varnish-coated PCBs

All the PCBs have varnish coating as standard. This increases the reliability in your system.



■ Supporting resolvers

Resolvers with higher environmental resistance than encoders are supported.



Note: An additional option card is necessary.

Answer 4

Embedded EMC filter reduces the noise effect on the peripheral devices

Recommended Product
GA700
U1000

In the previous AC drives, the EMC filter for reducing noise interference needed to be connected separately. GA700 has the embedded EMC filter to save space and reduce the interference to the peripheral devices.



Answer 5

No need for control panel and realizing the system minimization by improving the system design flexibility

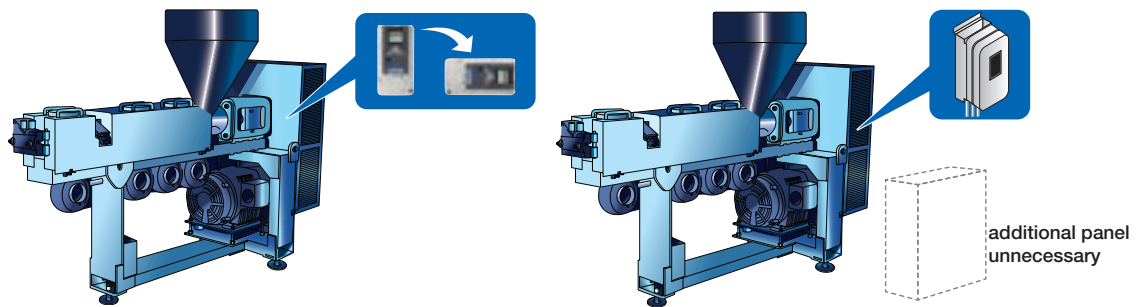
Recommended Product
GA700

GA700 can be mounted both vertically and horizontally to best fit the system design and save space. (up to 75 kW*1, airflow and de-rating are needed)

With the additional protection configuration, the GA700 can meet an IP55 rating without an additional panel*2.

*1: Horizontal installation is supported up to 75 kW.

*2: Under preparation.



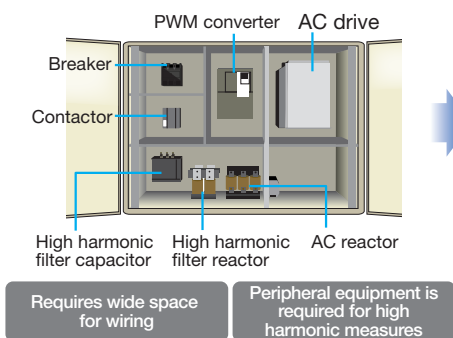
Answer 6

Realizing $K_s = 0$ by using Matrix Converter

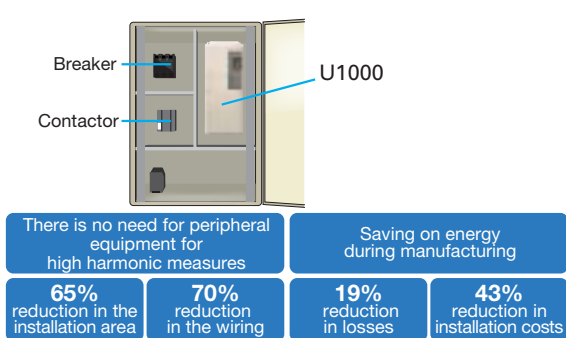
Recommended Product
U1000

It is possible to achieve high harmonic suppression ($K_s = 0$) without using additional peripheral equipment (e.g. PWM converter, reactor and high harmonic filter) that was necessary conventionally by implementing the U1000 matrix converter. This reduces the control panel housing space and the number of wires to contribute to space saving. Furthermore, it is possible to reduce the surrounding facility power generator and power capacity in addition to reducing the control panel. This achieves a reduction in total costs.

[Conventional Configuration]



[U1000 Matrix Converter Configuration]



Note: Wiring and area: 400 V and 30 kW example / Efficiency: 400 V and 15 kW example / Cost: 400 V and 45 kW example

Extruder

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In the event that the end user of this product is to be the military and said product is to be employed in any weapons systems or the manufacture thereof, the export will fall under the relevant regulations as stipulated in the Foreign Exchange and Foreign Trade Regulations. Therefore, be sure to follow all procedures and submit all relevant documentation according to any and all rules, regulations and laws that may apply. Specifications are subject to change without notice for ongoing product modifications and improvements.

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