

YASKAWA

AC Drives

Product Range



At home. In any application.

Compact and powerful
V1000



Best textile solution
T1000A



For a smooth ride
L1000A



Energy recovery made easy
D1000



Performs wherever it is used
U1000



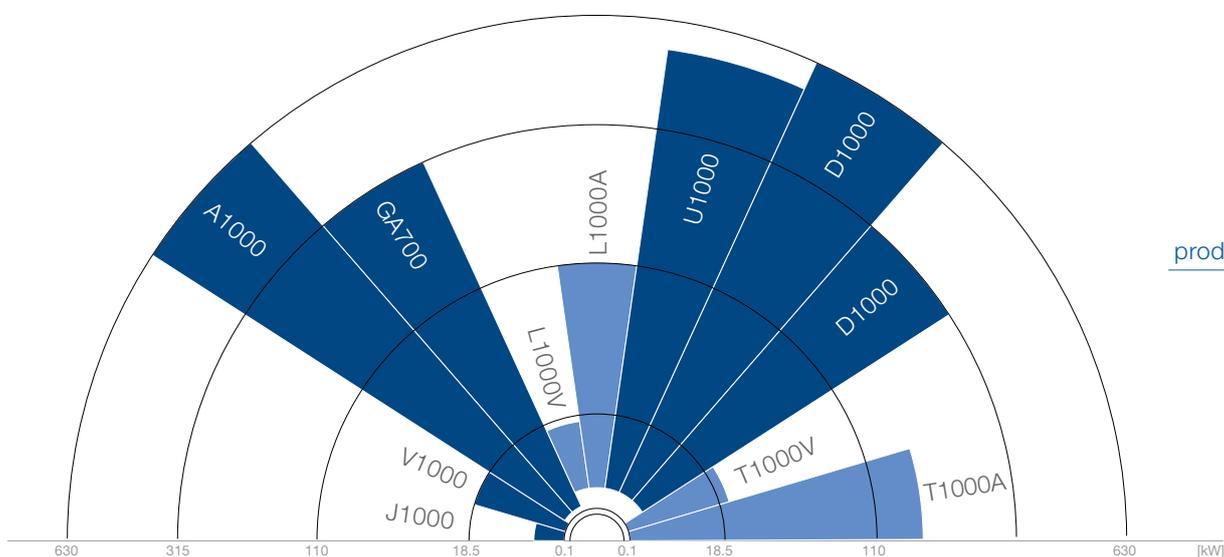
YASKAWA has extensive knowledge and many years of experience in automation with more than 22 million YASKAWA AC drives installed worldwide. Thanks to the high manufacturing quality and the design for long, maintenance-free operation, they perform their work discretely for many years.

22
mio
 AC drives
 in the field

Sustainable, flexible, easy
GA700



Power range & versatility



1.9
mio
 AC drives
 produced per year

GA700 Limitless possibilities

Incredibly reliable, easy to use and powerful!

Your time is valuable. That's why we've designed this variable speed drive to meet all your needs. Offering world class YASKAWA quality, along with intuitive interaction and high flexibility, our new GA700 is meant to easily handle nearly any application.

Discover the limitless possibilities of GA700!

Extensive possibilities with the latest technologies

The GA700, developed for the control of conventional and new motor technologies, is suitable for applications ranging from simple fans and pumps to powerful test benches requiring precise control, thanks to its power range of up to 355 kW. The GA700 offers a wide range of options, whether you need hard wired discrete, analog or advanced network control.

Wizards and apps for easy configuration

Just as impressive as its rugged, powerful and flexible design are the high-resolution display, configuration wizards and available mobile apps. All of this, along with advanced safety methods and a variety of environmental solutions, make the GA700 the optimum choice for variable speed control.





DriveWizard Mobile

The app to setup, monitor and operate the GA700.



YASKAWA Manuals

The app that always provides the latest technical information for the GA700.

GA700 Benefits and Features:

Easy network integration

- Networking of up to five GA700 AC drives with only one network card
- Maintain network communication even in case of main power failure

One for all

- Precise control of asynchronous, permanent magnet or synchronous reluctance motors via a single AC drive without the need for motor auto-tuning

Quick and easy setup

- Reduce setup time with an intuitive keypad, navigation and start-up wizards

Powerful configuration tools

- DriveWizard® and DriveWorksEZ® are PC tools for drive management and logic programming

Convenient setup and monitoring

- Safe programming without main power connected
- Cloud-connected DriveWizard® Mobile app for drive management on smart phones and tablets
- Optional Bluetooth control panel allows full access to parameters even when the switch cabinet is closed

Integrated functional safety

- Increased safety and reliability with STO SIL3 functional safety

Meets global standards

- Local/global standards
- RoHS compliant

Flexible package design

- Designed with flexibility to simplify installation and cabinet design



200 V class: 0.55 – 110 kW
400 V class: 0.55 – 355 kW

A1000 High performance multi-purpose AC drive

The YASKAWA A1000 AC drive provides remarkable advantages through excellent motor drive performance, environmental benefits and energy savings as well as many user-friendly operating features.



A1000 Benefits and Features

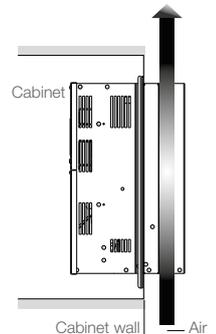
- Excellent motor drive performance
 - A1000 is a premium AC drive running induction motors and also PM motors in open and closed loop mode with full torque at zero speed
- Full text display (13 languages) and automatic motor tuning for easy and time-saving start-up
- Encoder interfaces and I/O interfaces for higher flexibility
- Dual rating (HD/ND)
- Functional Safety integrated (STO, SIL2, PL-d)
- Easy integration of PLC functionality with DriveWorksEZ engineering platform
- Outstanding reliability with long life design for 10 years of maintenance free operation
- Solutions for positioning, high output frequency applications, winder, electronic line shaft and cranes



A1000 IP54 Ready

The IP54 Ready drives are the optimal solution for small sized control panels with a high degree of ingress protection.

- Heatsink out of the back mounting with IP54 sealed mounting flange brings main heat loss out of the panel and allows smaller panel dimensions
- Easy out of the box installation of single and multiple drives in a single panel
- Low soiling of electronic components



The waste heat from the A1000 IP54 Ready is dissipated by natural air circulation outside the control cabinet.



A1000 IP54 Wall Mount

The IP54 Wall Mount drives are made for decentralized installation.

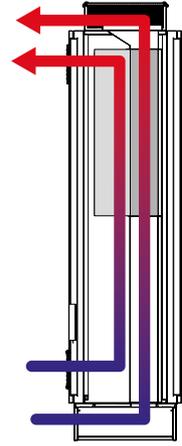
- A1000 in IP54 compliant panel with door mounted LCD keypad
- No extra panel needed, simple installation to machines or rooms
- Space for additional components allows customization
- Built-in EMC filter, optional IT grid filter
- Mains switch optionally built-in

A1000 IP23/IP54 Floor Standing Panel

Pre-configured according to customer requirements and installed in the control cabinet, the drive system is instantly ready for use.

- **Reliable**
Thermally, mechanically and electronically tested (LVD/EMC), no need for customer tests
- **Time saving**
Easy procurement, fully pre-assembled and ready for wiring, fast commissioning and setup

- **Flexible**
Easily adaptable to individual customer requirements
- **Simple**
Complete working system from one supplier, only one partner for service and support
- **Innovative**
Separate air ducts for power section and control section ensure optimal cooling and reduce contamination of electronic parts



The A1000 IP23/IP54 Floor Standing Panel is passively cooled using two separate air streams.



Applications for the A1000

The YASKAWA A1000 AC drives can be used in a broad range of applications - even in harshest environments.

- Compressors
- Winders
- Cranes, hoists
- Extruders
- HVAC
- Conveyors



V1000 Compact and powerful AC drive

The YASKAWA V1000 is a general purpose AC drive covering the demands of a wide field of applications including Open-Loop-Vector functionality and the usage of PM motors without feedback.



V1000 Benefits and Features

- Drives induction motors and also permanent magnet motors in open loop control
- Overload of 150% / 1 minute for heavy duty applications. Operates one size larger motor in normal duty
- Functional Safety integrated (STO, SIL2, PL-d)
- Easy integration of PLC functionality with DriveWorksEZ engineering platform
- Energy-saving control and operation of highly efficient PM motors for optimized machine efficiency
- Auto-tuning function and simple parameter structure for easy and time-saving start-up
- Space saving and compact design - side-by-side mounting possible
- Outstanding reliability with long life design for 10 years of maintenance free operation

V1000 IP66

Decentralized solution for variable speed and simple positioning applications without cabinet with the proven reliability of the V1000 AC drive. Perfect for wet and dusty working environments that are cleaned with water streams.



Applications for the V1000

The compact and powerful design of the V1000 AC drives helps to reduce the overall size of the system while continuously delivering peak performance.

- Available in two enclosure versions
 1. Built-in LED operator panel for best readability and handling with gloves
 2. Blank face plate, RJ45 connector for external operator connection
- No need for costly enclosures against dust, water, oil or other environmental stress
- Easy installation and wiring
- Additional accessories find their place within the enclosure
- Integrated class C1 EMC filter

- Conveyors
- Fans
- Refrigeration compressors
- Pumps
- Washing machines
- HVAC
- Water treatment
- Ceramics industry

J1000 The easy AC drive

The J1000 meets all automation requirements for compact applications with variable speed operation and energy saving characteristics. It's just unpacking, plugging in and everything runs smooth.

J1000 Benefits and Features

- Ultra-compact size AC drive running induction motors
- Fast stop without braking resistor with overexcitation braking
- Boost function detects load and automatically adjusts torque
- Operates one size larger motor in normal duty
- Speed search function for smooth start-up of coasting motors
- Built-in braking resistor
- Space saving and compact design
- Easy and time-saving start-up
- Outstanding reliability
- Capacitors for 10 years of maintenance-free operation
- Ultra-compact AC drive for controlling asynchronous motors



Applications for the J1000

The J1000 AC drive is a user-friendly plug-and-play solution for energy-saving motor control in various application areas.

- Pumps
- Conveyors
- Fans

L1000 Solutions for the lift industry

The L1000 lift AC drives meet the latest requirements for elevator solutions and are equipped with intelligent high-performance functions especially for lift and elevator applications. Experience the characteristic YASKAWA reliability in combination with maximum ride comfort.

Lift packages with AC drives and motors

Together with the L1000A AC drive, the MSYP-160 and MSYP-200 motors are the ideal solution for lifts without machine room.



Up to 2500 kg with a speed of 2 m/s

- Perfect match for the chosen motor and lift application
- Reliable operation
- One supplier, one order, one shipment, one guarantee

- Integrated lift functions, such as brake control, motor contactor control, short floor ride
- Automatic evacuation in light direction allows smaller UPS or battery
- One motor contactor solution according to EN81 reduces cost and increases reliability
- High performance motor control for shock-free starts, smooth rides and accurate stops
- Simple I/Os allow connection to almost any other lift controller
- Motor data auto-tuning in standstill condition without removing ropes (L1000A: also supports PM motors)

L1000A

- Drives induction and PM motors, with and without speed feedback, geared and gearless
- Programming in lift terminology and 13 languages
- A3 brake monitoring and DCP3 interface
- Incremental, Endat, Hiperface, SinCos and Resolver feedback
- SIL3 STO for contactorless operation
- CANopen-Lift and DCP4 interface



L1000V

- Smallest lift drive available on the market saves space and cost on panel design
- Sensorless control of geared induction motors with precise slip compensation for best stop accuracy
- Programming in lift terminology and 8 languages with optional full text LCD keypad



T1000 Solutions for the textile industry

These AC drives with a wide power range from 0.1 kW to 185 kW are equipped with standard and special functions to meet all application requirements in the textile industry. The T1000 series has been specifically designed to provide reliable and cost-effective operation and ease of use.

- Finless and fanless design - Heat sink and cold plate versions for water cooler mounting available and no built-in fans
- PCB coating suitable for textile production — for highest reliability in typical textile applications
- Traverse function — for optimized yarn winding
- Power loss ride-through function: safe operation status at all times, especially for synchronized drives with shared DC link
- Outstanding reliability with long life design for 10 years of maintenance free operation

Applications

The T1000 AC drive series is optimally protected from dust and other contaminants, making it ideal for use in the textile industry:

- Spinning
- Winding
- Washing
- Weaving
- Fiber preparation

T1000A

- Simple and effective speed synchronization within a production line with pulse train output and pulse train speed setpoint
- High-precision open and closed-loop control of asynchronous and permanent magnet motors
- No fans needed on Coldplate models
- Special software for the textile industry

T1000V

- Encoderless control of induction and permanent magnet motors
- Compact design with an output of up to 18.5 kW
- Single-phase model available
- Integrated textile know-how



Grid quality and energy recovery

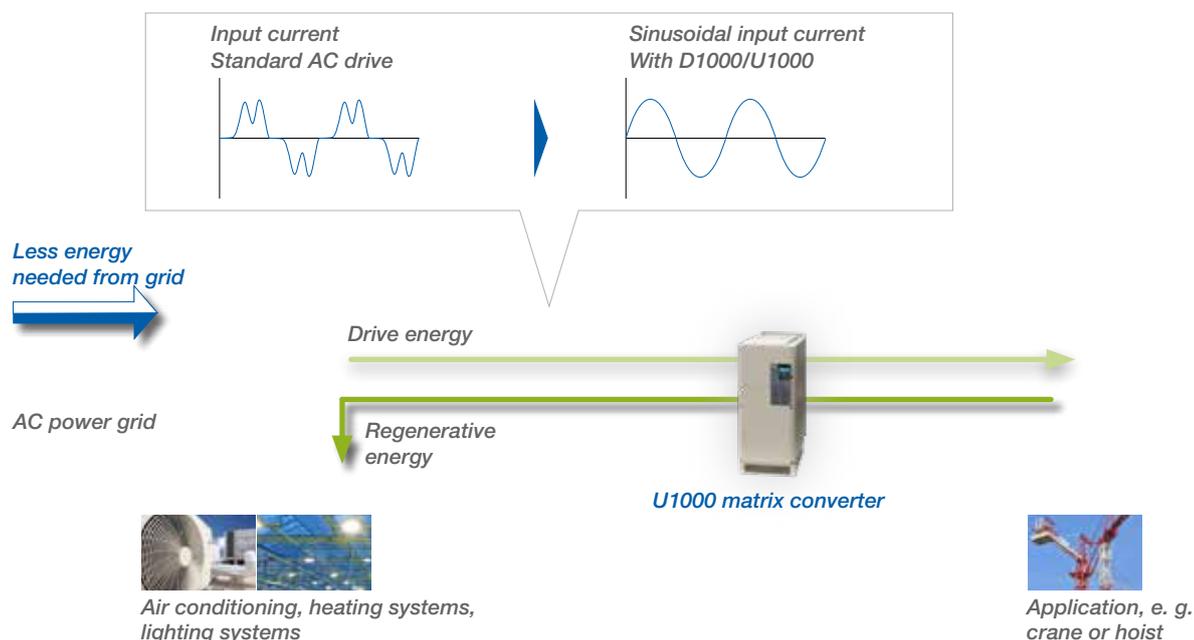
YASKAWA offers customer-friendly solutions with the U1000 matrix converter, the D1000 regenerative converter unit and the R1000 regenerative unit, which can make a significant contribution to reducing power consumption by feeding braking energy back into the power grid. This reduces costs and ensures efficient operation.

You too can benefit from a solution that meets the requirements of the most diverse applications.

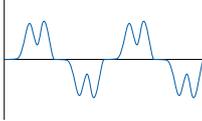
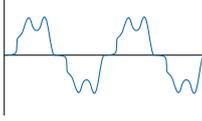
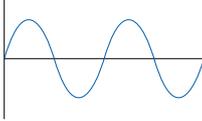
Model	D1000	R1000	U1000
Energy saving by power regeneration	●	●	●
Motor drive	-	-	●
Improve power factor	●	-	●
Suppress input current harmonics	●	-	●
DC voltage boost	●	-	-
Multiple drives	●	-	-
Simple wiring	○	○	●
Downsize panel	○	○	●
50 Hz bypass integrated circuit	-	-	●

* An additional AC drive is required for the D1000.

The ideal energy-saving solution for your application with U1000 matrix converter



The ideal energy-saving solution for your application with D1000 regenerative converter unit

		88% Current distortion	0.75 Power factor
		33% Current distortion	0.9 Power factor
		5% Current distortion	0.98 Power factor



Energy-saving solutions

D1000 regenerative converter unit

The D1000 regenerative unit saves both power and space. It is suitable for individual regenerative AC drives as well as for systems of AC drives, servo axes or robots.

It feeds excess braking energy back into the power grid instead of converting it to heat. The DC voltage amplification function increases the reliability of the system even when variable or fluctuating input voltages are present.

- Constant sinusoidal input and feedback
- No distortion of the input voltage
- Stable intermediate circuit voltage
- DC gain
- Very low harmonics
- Common DC bus for several AC drives

Areas of application

- Motor test benches
- Robots
- Winders
- Elevators and escalators
- Fans
- Pumps
- Compressors



R1000 regenerative unit

The R1000 regenerative unit with block circuit is an environmentally friendly, sustainable alternative for braking resistors.

Compared to conventional solutions, the R1000 regenerative unit saves space and reduces maintenance work. The energy fed back into the grid also contributes to cost savings and at the same time protects the environment!

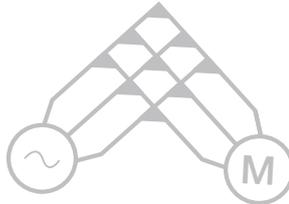
- Regenerative unit with a wide power range:
 - 200 .. 240 VAC 3.5 to 110 kW
 - 380 .. 480 VAC 3.5 to 300 kW
- Suitable for 4-quadrant operation without braking resistors
- Eliminating braking resistors saves space and simplifies installation
- Less cooling required for the control cabinet because no heat is generated by resistors

- Recovered energy can be made available to other consumers in the plant, thus reducing the total energy consumption of buildings or factories
- Quick amortization of initial costs
- Proven YASKAWA quality

Areas of application

- Test benches
- Fans
- Transportation systems
- Cranes and hoists
- Elevators
- Blowers





Key features

Efficient operation with minimal power loss

- Sinusoidal input current with power factor one
- Reduces loss in transformer (mains) and lines
- Reduces possible interferences with other components

Requires less maintenance than systems with braking resistors

Energy recovery for more efficient use of electricity

- No heat dissipation in braking resistors
- Less cooling required in the control cabinet
- Reduces energy consumption to a minimum and thus reduces costs

High reliability: 10 years of maintenance-free operation

U1000 Matrix converter

The matrix converter is an energy-efficient AC drive without DC link. It feeds regenerative braking energy back into the power grid, while the sinusoidal input voltage reduces power loss and enables efficient operation.

- Precise control of asynchronous and permanent magnet motors with or without encoder
- Highly efficient direct AC/AC conversion
- Extremely compact design
- Very low harmonics (THDi < 5%)
- Simple connection and user-friendly auto-tuning function for fast and smooth commissioning
- Integrated functional safety (STO, SIL3)
- Integrated EMC filter, external components such as chokes are not required
- Integrated bypass circuit at 50 Hz
- Low heat generation due to no DC link
- Four quadrant AC drives for regenerative and motor applications in one unit



Applications

- Escalators
- Cranes, hoists
- Conveyors
- Lifts
- Centrifugal separators
- Ship winches
- Test benches
- Presses
- Limitation of network harmonics



AC drives comparison

Type	GA700	A1000	V1000	J1000
				
Max. motor output				
1-phase AC	–	–	230 V AC 0.1 - 4.0 kW	230 V AC 0.1 - 2.2 kW
3-phase AC	200 V AC 0.55 - 110 kW 400 V AC 0.55 - 355 kW	200 V AC 0.55 - 110 kW 400 V AC 0.55 - 630 kW	200 V AC 0.1 - 18.5 kW 400 V AC 0.2 - 18.5 kW	200 V AC 0.1 - 5.5 kW 400 V AC 0.2 - 5.5 kW
Applicable motor				
Induction motor w/o encoder	●●	●●	–/●	–/●
Permanent magnet motor w/o encoder	●●	●●	–/●	–/–
Synchronous reluctance motor w/o encoder	●●	–/–	–/–	–/–
Cooling method				
Air cooling	●	●	●	●
Coldplate	○	○	○	○
Torque control	●	●	–	–
Braking chopper built-in	●	●	●	●
Max. output frequency	590 Hz	400 Hz / ○ 1000 Hz	400 Hz / ○ 1000 Hz	400 Hz
I/O built-in				
Analog input/output	3/2	3/2	2/1	1/1
Digital input/output	8/4	8/4	6/3	5/1
Motor thermal protection	●	●	●	●
Fieldbus				
RS-422/485 (Memobus/Modbus)	●	●	●	○
RS-232C	●	●	●	○
MECHATROLINK-I/MECHATROLINK-II	○	○	○	–
Ethernet/IP	○	○	○	–
EtherCAT	○	○	○	–
Modbus TCP	○	○	○	–
Profinet	○	○	○	–
CC-Link	○	○	○	–
DeviceNet	○	○	○	–
Profibus-DP	○	○	○	–
CANopen	○	○	○	–
Powerlink	○	○	○	–
Functions				
Energy saving	●	●	●	–
Double Rating (ND/HD)	●	●	●	●
Low harmonics (THDi < 5 %)	–	–	–	–
Four quadrant operation	–	–	–	–
Speed search	●	●	●	–
PID control (with sleep function)	●	●	●	–
Momentary power loss ride-thru	●	●	●	●
Application parameter presets	●	●	●	–
Predictive maintenance functions	●	●	●	●
USB interface	●	●	–	–
Coated PCB	●	○	○	–
Battery rescue operation/UPS	–	–	–	–
External 24 V power supply unit	○	○	○	–
DriveWorksEZ (PLC SW)	●	●	●	–
Functional safety options				
Safety	SIL3/PL e	SIL2/PL d	SIL2/PL d	–
Standards				
CE/RoHS	●●	●●	●●	●●
UL/cUL/UL508C	●	●	●	●
Marine (GL)	–	●	–	–

Lift solutions

Type	L1000A	L1000V
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Max. motor output	200 V AC 1.5 - 110 kW 400 V AC 1.5 - 110 kW	200 V AC 4.0 - 15 kW 400 V AC 4.0 - 15 kW
Motor		
Induction motor w/o encoder	●●	-/●
Permanent magnet motor w/o encoder	●/-	-/-
Cooling method		
Air cooling	●	●
Braking chopper built-in		
	●	●
Max. output frequency		
	200 Hz	120 Hz
I/O built-in		
Analog input/output	2/2	-/1
Digital input/output	8/6	7/3
Motor thermal protection	●	●
Fieldbus		
RS-422/485 (Memobus/Modbus)	● Modbus TCP4	-
RS-232C	●	●
MECHATROLINK-I/MECHATROLINK-II	-	●
CANopen	○ CANopen-Lift	-
Functions		
Energy saving	●	-
Predictive maintenance functions	●	●
USB interface	●	-
Battery rescue operation/UPS	●	●
External 24 V power supply unit	○	○
Functional safety options		
Safe Torque Off	● SIL2/PL d / ○ SIL3/PL e	SIL2/PL d
Standards		
CE/RoHS	●●	●●
UL/cUL/UL508C	●	●

Type	MSYP-160	MSYP-225
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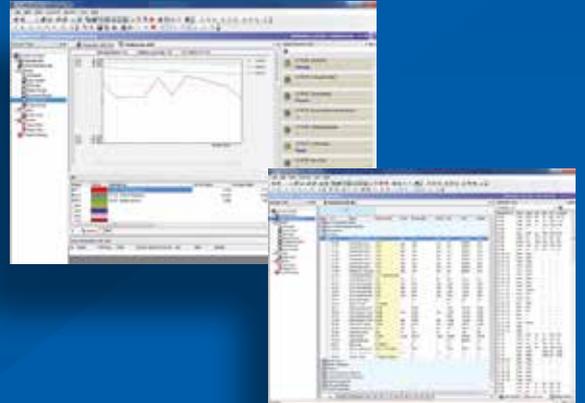


Motor	●	●
Synchronous motor	●	●
Performance data		
Max. motor output	2 - 9.8 kW	4.4 - 28 kW
Speed	60 - 255 rpm at 1 m/s	60 - 191 rpm at 1 m/s
Load	320 - 1,000 kg	630 - 2,500 kg
Max. speed	2 m/s	2 m/s
Max. axle load	3,100 kg	10,050 kg



DriveWizard Plus for easy engineering

Manage the unique settings for all your drives right on your PC. An indispensable tool for drive setup and maintenance. Edit application parameters, access all monitoring parameters, generate customized process flows and monitor the performance of the AC drives using the oscilloscope function.



- Convenient PC-based drive-setup, monitoring and diagnostic functions
- Built-in oscilloscope function
- Automatic parameter conversion from older series drives
- Online and offline parameter editing

DriveWorksEZ for programming

DriveWorksEZ® provides users with programmable functions to customize GA700, V1000 and A1000 series AC drives to their specific applications without the need for external control systems such as PLCs. This allows users to easily access the drives via a symbol-based graphical programming environment.

- PLC or other controllers not necessary
- Easy to use
- Fast and constant scan cycles
- Flexible
- On-line monitoring
- Process control
- Protected application know-how

Examples

Economically optimized water skiing facility

- No additional I/Os necessary
- No PLC required - reduced the system cost to less than 50% of the initial estimate

Highly precise positioning

- Direct access to encoder pulses
- User-defined units and monitors

Further examples

- Efficient Brake Sequence
- Unbalance Detection in Washing Machines

Options and accessories

The YASKAWA AC drives can be connected to all major bus systems. By default RS-232C and RS-422/485 (Memobus/Modbus) is supported. Additional option cards allow easy connection to almost any network or PLC.



Customizable with Options and Accessories

YASKAWA provides a wide range of accessories and options. In addition to drives, YASKAWA provides all major options and accessories needed in systems, be it for standards compliance, connectivity or protective design.

- AC input reactors
- EMC filters - standard versions and IT grid filters
- Chokes for applications such as lifts and escalators
- Harmonic filters
- Sine wave output filters
- Control panels as LED version (7-segment display) or LCD plain text display for 13 languages, or with Bluetooth function
- 24 V control power supplies
- USB copy units
- Communication option cards
- I/O option cards
- Speed feedback option cards
- Mechanical options for improved drive protection
- Braking options
- Motor reactors

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