

e-motional  
solution

**7** ultimate e-motional solutions  
On sale November 2013 !

AC Servo Drives



**MP3000** Machine Controller  
Series

# MP3300 machine controller and AC servo drive $\Sigma$ -7 series

## Inspired by Evolution

Motion technology, which is Yaskawa's strong point, has been a leading light on the world's industrial stage in terms of its contribution to ultra-high-speed and ultra-precise control. What we have held to be important is the basic spirit of "conceptualization and development rooted in the standpoint of user-oriented operation."

Our seven ultimate e-motional solutions offer an inspirational experience to customers in every part of the lifecycle of their systems.



### 2 Ultimately ease to use

No more hassles with adjustment procedures  
Significant reduction in startup time

- ★ Need for servo gain adjustments now obviated

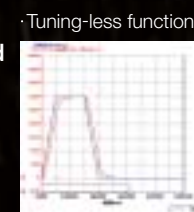
With Yaskawa's original "tuning-less functions," the system will work without generating oscillations for loads up to 30 times. Furthermore, even if the load changes during operation, it will work with stable operations.

- ★ Multi-axis tuning possible on one screen

Instead of opening an adjustment screen for each axis, adjustments of multi axes can be performed on just the one screen, dramatically reducing the setup time.



Multi-axis one-parameter tuning screen (Using MPE720 Ver.7)



Tuning-less function

### 3 Ultimate environmental performance

Our products meet overseas specifications and exacting operating conditions. And it's so easy to bring in energy-saving systems.

- ★ Overseas specs and exacting operating conditions satisfied

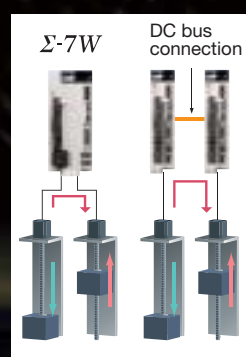
- 240 VAC supply voltage also supported
- High-altitude use increased to 2,000 meters above sea level\*
- Maximum ambient temperature raised to 60°C\*

\* : Derating required.



- ★ Even more energy saved

By replacing the existing amplifiers with the  $\Sigma$ -7W 2-axis SERVOPACKs or using a DC bus connection, the regenerative energy of multiple axes can be used as the drive energy. This means that the energy inside the system can be utilized more effectively.



$\Sigma$ -7W DC bus connection

- ★ Monitoring of the amount of energy used enabled



Monitoring display (image)

### 1 Ultimate system performance

The superlative performance of our existing products has reached newer heights. System performance is given another lift by utilizing new solutions.

#### MP3300

- ★ High-speed scanning setting: 125  $\mu$ s min. **Fastest speed in the industry**
- ★ 64-bit data types (double-precision real numbers, quadruple-length integers) supported
- ★ MECHATROLINK-III provided as a standard feature



#### $\Sigma$ -7S

- ★ 3.1 kHz response frequency **Fastest response in the world**
- ★ FT series to optimize applications (to be released)
- ★ Improved vibration suppression



#### $\Sigma$ -7W

- ★ 2-axis SERVOPACKs (200 W x 2 axes to 1 kW x 2 axes)
- ★ 1.6 kHz response frequency



#### $\Sigma$ -7 servomotors

- ★ Compact dimensions (approx.80% smaller than our earlier models.) **Smallest in the industry**
- ★ High-resolution 24-bit encoder incorporated (16,777,216 pulses/rev)
- ★ Maximum torque: 350% (small capacity) **Highest in the industry**



### 4 Ultimate safety and security

SIL3, the IEC safety standard, complied with. Even during operation, accidents are prevented from occurring by temperature monitoring.



- ★ The  $\Sigma$ -7S SERVOPACKs comply with SIL3, which is the IEC safety standard, as standard products. **First in Japan**
- ★ Protect system from temperature fluctuations

The MP3300,  $\Sigma$ -7 SERVOPACKs, and servomotors are equipped with temperature sensors that can directly monitor the temperatures of products. By monitoring temperatures, you can be confident that abnormalities can be caught promptly to prevent breakage.



Temperature monitoring display (image)



### 7 Ultimate compatibility

Our products are the same size as existing products so they can easily be swapped out.

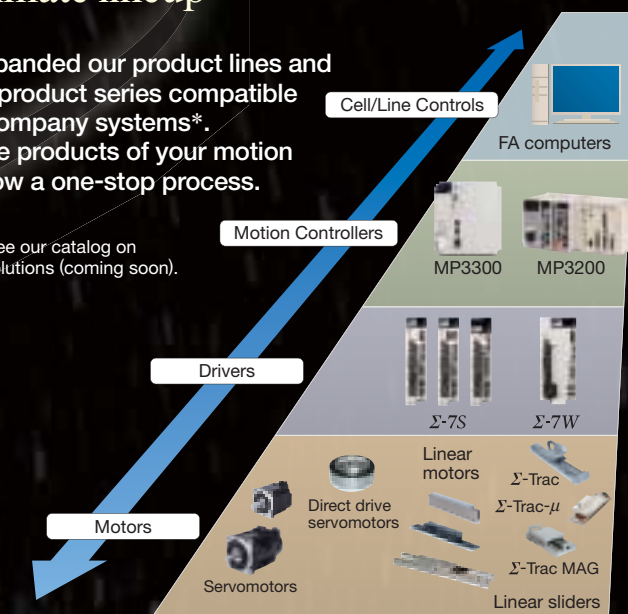
The compatibility of programs and parameters is also preserved. By replacing products, you can easily improve the performance of your system.



### 6 Ultimate lineup

We have expanded our product lines and built up our product series compatible with other company systems\*. Selecting the products of your motion system is now a one-stop process.

\* : For details, see our catalog on e-motional solutions (coming soon).



### 5 Ultimate support

We support our customers every step of the way from product selection to product maintenance. We also offer support solutions that are one step ahead of our competitors.

- ★ Single or multiple orders possible after specifying parameters

Customers can now place single or multiple orders for SERVOPACKs in the  $\Sigma$ -7 series after specifying parameters at the factory shipment stage. No longer is it necessary to write the parameters at the system assembly site, which means that production lead times can be reduced.

- ★ Product management and maintenance service

- Simply by using Yaskawa's smartphone app, product traceability (manufacturing information) can easily be checked.
- It's also easy to register the serial numbers of the products installed in the system with the smartphone app. The information can be managed for each system in the cloud.
- SigmaWin+ is also supported with MechatroCloud. On completion of a product's adjustments, the parameters, trace data, etc. can be deposited for each system in the cloud.

- ★ Improve troubleshooting

- If you have a smartphone, troubleshooting information can be accessed by reading a product's QR code.
- Automatic tracing is possible when a SERVOPACK alarm occurs. This allows you to detect and solve problems promptly.

- ★ Planned maintenance now available by monitoring the operational status

The service life of the maintenance can be estimated, and the users are notified when the parts should be replaced. System failure can be prevented because parts can be replaced before products break.



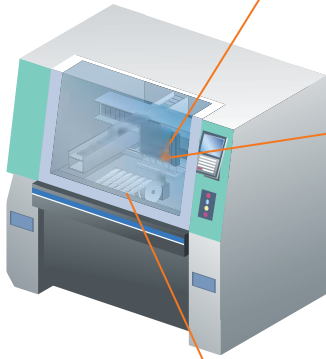
The industry's first smartphone app!

An industry first! Linked to the cloud

<Feature> Bring your smartphone close to MechatroTouch and make contact with MechatroCloud on-site! It's so easy!  
What happens when the smartphone with the app is held over the QR code on the product:  
The customer can access the management information stored in the cloud. A manual of the product concerned is displayed.

## Examples of system solutions

Whatever issues you have, the superlative performance of our products and the broad spectrum of their functions will resolve them for you.



### ◎ Pick and Place Solutions

**Issue** A customer wants to improve the positioning accuracy to accommodate the increasingly microscopic sizes of the components to be mounted.

**Solution** Achieve high-precision positioning. (Refer to case 1.)

**Issue** Vibration results when the operating speed is increased to improve the takt time.

**Solution** Dramatically improve the vibration suppression.

### ◎ Pressure Mounting Solutions

**Issue** A customer cannot control the precise mounting pressure using motor torque control alone.

**Solution** Precise pressure control and complex pressure techniques can be accommodated by combining the  $\Sigma$ -7S-FT SERVOPACK with pressure feedback control and MP3000 machine controller series.

### ◎ Alignment Solutions

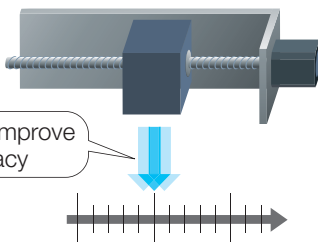
**Issue** A customer wants to speed up the alignment operation that uses image processing.

**Solution** By applying the  $\Sigma$ -7S-FT SERVOPACK with triggers at pre-set positions, high-speed non-stop alignment is achieved. (Refer to case 2.)

## Case 1 Improved machining quality of precision workpieces

### Issue

It is necessary to improve positioning accuracy for precision workpieces due to microscopic vibrations when suspending movement of a chip mounter head unit.

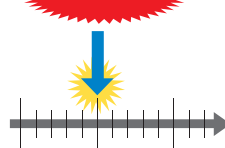


### Solution

High-precision positioning becomes possible for precision workpieces by replacing the existing drive with the  $\Sigma$ -7 servo drive.

Highest performance in the industry

Just the trick!



Vibration when stopped  $\pm 10\text{nm}$  level also possible

Note: This will depend on the installation conditions.

### ◎ $\Sigma$ -7S SERVOPACKS

- 3.1 kHz response frequency
- Improved vibration suppression

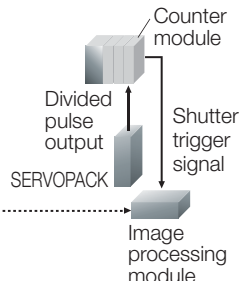
### ◎ $\Sigma$ -7 servomotors (High-resolution encoders)

24 bits = 16,777,216 pulses/rev.  
For 20 mm lead ball screws  
1.2 nm resolution

## Case 2 Reductions in system takt time

### Issue

There are limits to the drive speed due to reference pulse and counter restrictions. Delays in counter module processing also occur, and the speed of the system cannot be increased.

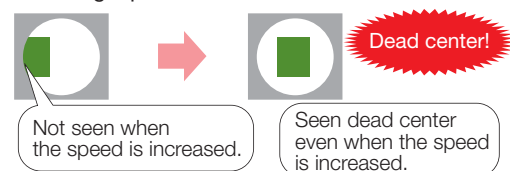


### Solution







Use  $\Sigma$ -7S-FT SERVOPACK that can trigger the camera's shutter. This eliminates output delays. Application and commands can be processed at higher speeds by connecting the  $\Sigma$ -7S-FT SERVOPACK with one of the controllers in the MP3000 series. This makes it possible to increase the speed of the system and also improves the takt time.



Camera image (previous)  $\Sigma$ -7S-FT servomotors



**New product lineup**

<p>Machine Controller MP3000 Series</p> 	<p>MP3300</p> 	<p>Module Type 【CPU】 CPU-301 【Base Unit】 1 slot or 3 slots</p>
<p>AC Servo Drives Σ-7 Series</p> 	<p>Σ-7S</p> 	<p>Single-axis SERVOPACKs 【Capacity】 200 VAC : 50 W to 15 kW* 【Reference I/F】 Analog voltage/pulse train MECHATROLINK-II MECHATROLINK-III</p>
	<p>Σ-7W</p> 	<p>2-axis SERVOPACKs 【Capacity】 200 VAC: 200 W × 2 axes to 1 kW × 2 axes 【Reference I/F】 MECHATROLINK-III</p>
	<p>Σ-7 Servomotors</p> 	<p>【Low inertia】 SGM7A series : 50 W to 7 kW* 【Medium inertia】 SGM7J series : 50 W to 750 W 【Medium inertia, flat type】 SGM7P series : 100 W to 1.5 kW 【Medium inertia】 SGM7G series : 300 W to 15 kW*</p>

\* : 3 kW and above to be released in spring 2014.

Coming soon!

**Welcoming the start of a new cloud service:  
MechatroCloud**

An industry first

MechatroCloud is a new cloud service provided by the Yaskawa Electric.

Details of service

- ◎ **Build To Order service**  
Customers can place orders after specifying the parameters they want when their SERVOPACKs are shipped from the factory.
- ◎ **Product management and maintenance service**  
The product information used specifically by each customer can easily be saved and displayed at any time.
  - Product manufacturing information management
  - Product serial number management
  - Data depositing (parameters, trace data, etc.)

How to use the service

Register as a corporate member of our customer Web services.  
After you have registered, and then you can use MechatroCloud.



YASKAWA ELECTRIC CORPORATION

<http://www.yaskawa.co.jp/en/>

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.

© 2013 YASKAWA ELECTRIC CORPORATION. All rights reserved.

LITERATURE NO. CHEP S800001 22A

Published in Japan November 2013 13-11