NEW PRODUCTS
High Performance AC Servo Systems

SANMOTION
AC SERVO SYSTEMS

3E Model
High-performance servo amplifier series that achieved 3E's. The series lineup is enriched with new models:

- EtherCAT
- Safety

Applications: semiconductor manufacturing equipment, machine tools, general industrial machinery

SANYO DENKI
Servo Amplifier Specifications

Control function: Position, Speed, Torque control (switched with parameters)

Control method: Sine PWM drive with IGBT

Main circuit power supply:
- 100 VAC input model: Single-phase 100 to 120 VAC (+10, -15%), 50/60 Hz (±3%)
- 200 VAC input model: Single-phase 200 to 240 VAC (+10, -15%), 50/60 Hz (±3%)
- 400 VAC input model: 3-Phase 380 to 480 VAC (+10, -15%), 50/60 Hz (±3%)

Control circuit power supply:
- 100 VAC input model: Single-phase 100 to 120 VAC (+10, -15%), 50/60 Hz (±3%)
- 200 VAC input model: Single-phase 200 to 240 VAC (+10, -15%), 50/60 Hz (±3%)
- 400 VAC input model: 24 VDC (±10%)

Functions / properties:
- Vibration suppression control, model-following control
- High gain control
- Real-time switching between trajectory control and positioning control
- Micro-vibration control of motors at standstill
- Adaptive notch filter
- Power consumption monitoring

Support for startup & servo tuning:
- Virtual motor operation function to simulate operation of motor and amplifier
- Assist function to navigate on servo tuning
- Drive recorder function for recording motor and amplifier operating status

EtherCAT Interface Specifications

Physical layer: IEC 61158-2, IEEE802.3u, 100BASE-TX
Data link layer: IEC 61158-3/4 Type 12
Application layer: IEC 61158-5/6 Type 12

Device profile: IEC 61800-7 Profile Type 1 (CiA 402), CoE (CANopen over EtherCAT), FoE (File access over EtherCAT)

Communication port: RJ45 connector (2 ports)
Baud rate: 100 Mbps (Full duplex)
Maximum number of nodes: 65535
Transmission distance / Topology: 100 m max. / Daisy-chain
Communication cable: Cat5e twisted pair cable (straight or cross cable)
Communication objects: SDO (Service Data Object), PDO (Process Data Object)
Minimum transmission cycle: 62.5 μs (at velocity/torque control)
Max. possible number of PDO-mapped objects:
  - Output: Up to 31 objects
  - Input: Up to 31 objects
  - Total: Up to 62 objects
Synchronization mode: SYNC0/SYNC1 synchronization, non-synchronized (asynchronous FreeRun mode), SM2 event synchronization
Operation mode:
- Profile Position mode, Profile Velocity mode, Profile Torque mode, Homing mode, Cyclic Synchronous Position mode, Cyclic Synchronous Velocity mode, Cyclic Synchronous Torque mode
LED indicator: Link status (ports 0 and 1), running status, error status
General-purpose I/O: Input x 7, Output x 2 (9 in total)

Functional Safety Specifications

<table>
<thead>
<tr>
<th>Servo amplifier type</th>
<th>Functions</th>
<th>Safety level</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC/EN 61800-5-2:2016</td>
<td>Safe Torque Off</td>
<td>SIL3, SILCL3, Cat.3 PL=e</td>
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</table>

<table>
<thead>
<tr>
<th>Safety model</th>
<th>Functions</th>
<th>Safety level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe Torque Off model, Safety model</td>
<td>SS1, Safe Stop 1</td>
<td>SIL3, SILCL3, Cat.3 PL=e</td>
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<tr>
<td>Safety model</td>
<td>SS2, Safe Stop 2</td>
<td>SIL3, SILCL3</td>
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<tr>
<td></td>
<td>SOS, Safe Operating Stop</td>
<td>Cat.3 PL=e</td>
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<tr>
<td></td>
<td>SLS, Safely-Limited Speed</td>
<td></td>
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<td></td>
<td>SBC, Safe Brake Control</td>
<td></td>
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<tr>
<td></td>
<td>SSM, Safe Speed Monitor</td>
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</tbody>
</table>

Note: Safety model has the Safe Torque Off function just as Safe Torque Off model does.
### Product Lineup

<table>
<thead>
<tr>
<th>Appearance</th>
<th>3E Model Safety</th>
<th>3E Model Safe Torque Off model</th>
<th>3E Model Safety</th>
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<tbody>
<tr>
<td>Interface</td>
<td>Analog/Pulse</td>
<td>EtherCAT</td>
<td>EtherCAT</td>
</tr>
<tr>
<td>Servo amplifier type</td>
<td>3E Model Safety</td>
<td>3E Model Safe Torque Off model</td>
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<tr>
<td>Servo amplifier capacity</td>
<td>Main circuit power supply</td>
<td>Model no.</td>
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<tr>
<td>10 A</td>
<td>RS3E01 C H 4</td>
<td>RS3E01 C H 4</td>
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<td>RS3A03 C H E</td>
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<tr>
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<tr>
<td>100 A</td>
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<td>RS3C10 C H 4</td>
<td>RS3C10 C H E</td>
</tr>
</tbody>
</table>

Characters to replace ‘s vary with models. Contact us for details.

### Safety Standards

- **North American standards (UL, cUL)**: UL 61800-5-1
- **EU Directive**:
  - **Low Voltage Directive**: IEC/EN 61800-5-1
  - **EMC directive**: EN 55011 Group 1, Class A
  - IEC/EN 61800-3
  - IEC/EN 61326-1
  - IEC/EN 61000-6-4
  - IEC/EN 61000-6-2
  - IEC 61000-6-7
- **KC (Korea Certification) mark**: KN 61000-6-2, KN 61000-6-4

### Application Examples of SANMOTION R 3E Model Safety

- **Industrial robot**
  - Can detect workers nearby and stop motors immediately, ensuring safety.

- **Conveyor system**
  - Motors can be stopped for maintenance without shutting down the whole system for increased efficiency.
NEW PRODUCTS
High Performance AC Servo Systems
Safety EtherCAT
Evolved
Eco-efficient
Easy to use
Applications: semiconductor manufacturing equipment, machine tools, general industrial machinery
High-performance servo amplifier series that achieved 3's.
The series lineup is enriched with new models:

Precautions For Adoption

Cautions

Failure to follow the precautions on the right may cause moderate injury and property damage, or in some circumstances, could lead to a serious accident. Always follow all listed precautions.

Cautions

1. Read the accompanying Instruction Manual carefully prior to using the product.
2. If applying to medical devices and other equipment affecting people's lives, please contact us beforehand and take appropriate safety measures.
3. If applying to equipment that can have significant effects on society and the general public, please contact us beforehand.
4. Do not use this product in an environment where vibration is present, such as in a moving vehicle or shipping vessel.
5. Do not perform any retrofitting, re-engineering, or modification to this equipment.
6. The products presented in this catalog are meant to be used for general industrial applications. If using for special applications related to aviation and space, nuclear power, electric power, submarine repeaters, etc., please contact us beforehand.

For any question or inquiry regarding the above, contact our Sales Department.

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