AC 890 Modular Systems Drives
AC Drives 0.55 – 1200kW (0.75 – 1500 HP)

Product Overview
The AC890 is a compact, modular systems drive engineered to control speed and position of open-loop and closed-loop AC motors or servo motors.

The AC890 meets the requirements of all variable speed applications, from simple motor speed control to the most sophisticated integrated multi-drive systems.

One Drive Fits All
The AC890 is compatible with any AC motor and virtually any speed/position feedback option. With this flexibility you may not even need to replace your existing AC motor to achieve high performance, saving you time and money.

Feedback Options
- Incremental encoder
- EnDat 21 (SinCos) encoder
- Resolver

Performance Level Options
Advanced Performance
Motion control firmware with added position loop, motion control function blocks, move incremental, move absolute, move home, line drive master ramp and section control, winder blocks (speed winder, current winder), full function PID, machine state, and others.

High Performance
All Advanced features plus; Library of pre-engineered application specific LINK VM function blocks such as: Shaftless Printing, cut-to-length, advanced winding, advanced traversing and others.

Stand Alone Version
The AC890 Series Stand Alone Drive provides a complete AC input to AC motor output, with power input and output terminals.

Other features of the Stand Alone Drive include:
- Power output to 900 kW (1200 HP) in 9 frame sizes
- Access to all feedback and networking options
- Built-in dynamic brake switch – provisions to add external braking resistor
- 24 VDC control board supply for programming without power
- USB programming port
- Torque and speed analogue outputs
- 208-500 VAC input supply

Common Bus Version
The AC890 is also available in a common bus platform, where individual motor output drives are easily connected to a common bus supply.

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Common Bus Supply Module (CS) Features:
- Built-in dynamic braking unit
- Diagnostic operator panel
- 208-500 VAC input supply
- Up to 162A output per module

Modular Design
Available in two styles

The AC890 can be user configured for 5 different operating modes

Open-Loop (volts/frequency) Control
This mode is ideal for basic motor speed control.

Sensorless Vector Control
With its ultra high performance sensorless vector algorithm, it delivers a combination of both high torque and close speed regulation without the need for any speed measuring transducer.

Closed-Loop Vector Control
Full closed-loop flux vector performance can be achieved with the AC890 by simply adding an encoder feedback ‘technology box.’ This provides 100% continuous full load standstill torque, plus a highly dynamic speed loop more than sufficient for the most demanding applications.

Servo Control
Designed for the most demanding servo systems. The ultra fast control loops and process bus make the AC890 ideal for single or multi axis applications.

4 Quadrant Active front-end power supply module
With this configuration, the energy is fed back into the mains supply with sinusoidal currents and unity power factor; a very low current harmonic content is achieved.
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**Features**

- High Speed feedback
  - Incremental encoder
  - EnDat® 2.1 (SinCos) encoder
  - Resolver
- Open FireWire IEEE 1394
  - 125µs cycle time
  - Real-time synchronization between drives
- Open Communications
  - EtherNet/IP
  - DeviceNet
  - CANopen

**Benefits**

- Minimal delay between the fieldbus setpoints and the control loops
  - Designed to integrate in existing automation systems, the AC890 features high performance ports linked directly to the fast control loops of the drive.
  - Minimum delay exists between your digital setpoint sent through a fieldbus and the control loops.
- Replacement of analogue solutions
  - Your existing analogue setpoint-based solutions can be replaced by a digital fieldbus-based solution with minimal bandwidth loss.
- Flexible feedback
  - The AC890 offers system designers complete flexibility in their choice of feedback technology.
- Open standards for protection of investment
  - The AC890 has been deliberately designed to integrate seamlessly into your automation network.
  - To connect to your PLC or fieldbus network you can simply choose from the wide range of communication technology boxes.

**Common Bus Version**

- Compact space saving
  - We have designed the AC890 with your panel space in mind: The AC890 benefits from the latest advances in semiconductor cooling technology which make it extremely compact.
  - The control terminal connectors are removable for easy servicing.
  - Common bus configuration can help you achieve a smaller systems design footprint.

**Options**

**Keypad Options**

- The AC890 features three user keypad options, which allow the user to read drive parameters on three screen sizes. Remote mounting is also available and is required on some drive frame sizes.

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<tr>
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</tr>
<tr>
<td>55x40mm Graphical</td>
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**TS8000 Operator Interface**

- The TS8000 operator interface is a web-enabled graphical interface available in 4 sizes. Pre-engineered templates assist system design.

**Bus Bars**

- Allow you to join common drives, common supplies and common adapter modules together. 140A max current rating and load sharing between units.

**Duct Components**

- Provides a means of ventilating air directly through the heat sinks and out of the cabinet.

**Modular function blocks for fast and easy project creation**

- DSE, the development environment for AC890 drives, has been designed to assist you in the creation and management of your project.
  - At the project creation stage, the project tree contains all the sections or axis of the machine.
- Function blocks reusability
  - DSE offers user-defined macros that can be reused. The LINK programming environment, with PLC-like function blocks, makes application programming simple and reduces the training needs of the technical staff.

**Built-in library of function blocks for advanced applications**

- DSE comes with a library of built-in function blocks for advanced applications at no extra cost:
  - Shaftless printing
  - Winder
  - Registration
  - Section control
  - The configuration of the most complex machines is fast and error-free.
  - Parameters setting and project creation
  - High bandwidth digital oscilloscope
  - Monitoring and online tuning
A High Performance Design

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Drive System Explorer
Configuration and Programming Software

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Mechanical line shafts are easily replaced with individual AC890 drives, capable of precise synchronization and printing registration adjustment to each section, guaranteeing perfect alignment of each colour. AC890 High Performance Level features a library of pre-engineered application specific LINK VM function blocks, including shaftless printing, cut-to-length, precise winding, traversing and others.

**The Complete Drive for converting and energy saving:**
The AC890 provides precise speed control in a variety of material converting environments, including cutting, coating and printing processes.

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**Specifications** (all ratings shown @ 400Vac)

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<th>Amperes</th>
<th>Frame</th>
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<tbody>
<tr>
<td>0.55 (0.75)</td>
<td>3 / 2</td>
<td>B</td>
</tr>
<tr>
<td>1.1</td>
<td>5.5 / 4</td>
<td>B</td>
</tr>
<tr>
<td>1.5 (3)</td>
<td>7 / 4</td>
<td>B</td>
</tr>
<tr>
<td>2.2 (3)</td>
<td>11 / 8</td>
<td>C</td>
</tr>
<tr>
<td>4</td>
<td>16.5 / 12</td>
<td>B</td>
</tr>
<tr>
<td>5.5 (7.5)</td>
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<td>C</td>
</tr>
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<td>7.5 (10)</td>
<td>30 / 30</td>
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*Horsepower ratings correspond to appropriate power ratings.*

**Overload Ratings**

- 0 - 1000 Hz: V/Hz mode
- 0 - 150 Hz: closed loop vector mode
- 0 - 120 Hz: sensorless vector mode
- 0 - 105 Hz: Servo

### Switching Frequency

- Frame size B - D: 3 x 8 KHz (Vector), 4 KHz (Servo)
- Frame size E - H: 3 x 6 KHz (Vector), 4 KHz (Servo)
- Frame size I - K: 2.5 x 6 KHz (Vector), 4 KHz (Servo)

### Dynamic Braking

Some exceptions apply. All with audible silent switching frequency.

**Dynamic Braking**
All drive modules have either regenerative braking or dynamic resistor options.

### Operating Temperatures

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Class 3K3, as defined by EN50178 (1998)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C to 40°C (32°F to 104°F)</td>
<td>for frames G-K</td>
</tr>
<tr>
<td>0°C to 45°C (32°F to 113°F)</td>
<td>for frames B-F</td>
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### Cubicle Rating
Cubicle to provide 1 dB attenuation to radiated emissions between 30-140MHz. Cubicle may also need to allow for opening or removing any door or panel.

### Humidity

- Minimum 85% relative humidity at 40°C non-condensing
- Maximum 85% relative humidity at 40°C non-condensing

### Atmospheric Conditions

- Climate N2, as defined by ENV50178 (1998)
- Non-flammable, non-corrosive and dust-free

### Vibration

- Test Per: IEC EN 60068-2-6

### Standards

- Pollution Degree
  - Pollution Degree E (non-conductive pollution, except for temporary condensation)
- Pollution Degree F (conductive pollution)

### North America

- Complies with US requirements (UL508C) and Canadian requirements (C22.2 No. 14).

### Globally Certified

- Low Voltage Directive 2006/95/EC

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**Dimensions**

- Dimensions are in millimeters (bracketed)
- Horsepower ratings correspond to appropriate power ratings.
- H-frame dimensions include NEMA 12 ventilated enclosures with flange disconnect option.
- *Y*-pulsing input (12 pulse option)
- **Y**-pulsing input (18 pulse option)

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Please refer to your local regional office for dimensional drawings for each frame.
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Specifications (all ratings shown @ 400Vac)

### kW (HP) - Amperes - Frame

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- **Horsepower ratings correspond to appropriate motor ratings.**
- **Frame dimensions include NEMA 12 ventilated enclosures with flange disconnect option.**
- **Horsepower input (2 hp option).**
- **Pulse input (10 pulse option).**

### AC890 Application Examples

- Paper or Metal Finishing
- Corrugated Cutting
- Laminating
- Other Applications

For further information, please contact your local regional office for dimensional drawings for each frame.
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