Robot Palletizer

Innovation, Research and State of the Art Design result in a New, Highly Efficient and Reliable Robotic Palletizer

Standard speed and Ultra high speed models

**Ai1800**
- Capacity: 1720 cycles/hour
- Payload: 160kg

**Ai1800-W**
- Capacity: 500 cycles/hour
- Payload: 140kg
  - 160kg (with optional counter weight)

**Ai700**
- Capacity: 700 cycles/hour
- Payload: 140kg
  - 160kg (with optional counter weight)

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<table>
<thead>
<tr>
<th>Model</th>
<th>Ai1800</th>
<th>Ai1800-W</th>
<th>Ai700</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motion System</td>
<td>Multi-Articulated, Polar Coordinate System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Payload</td>
<td>160kg (352 lbs)</td>
<td>350kg (771 lbs)</td>
<td>140kg (308 lbs)</td>
</tr>
<tr>
<td>Controlled Axis</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Degree of Operation Range</td>
<td>R-axis: 360 degrees</td>
<td>D-axis: 2300mm, O-axis: 1518mm, T-axis: 440 degrees</td>
<td>R-axis: 360 degrees</td>
</tr>
<tr>
<td>Handling Rate</td>
<td>1720 cycles/hour</td>
<td>700 cycles/hour</td>
<td>700 cycles/hour</td>
</tr>
<tr>
<td>Repeatability</td>
<td>±1mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robot Weight</td>
<td>13295kg (2904 lbs)</td>
<td>1360kg (2998 lbs)</td>
<td>1335kg (2943 lbs)</td>
</tr>
<tr>
<td>Pneumatic Consumption</td>
<td>180L/min (ANR)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>0 ~ 40°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>35 ~ 85%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>6.5kVA</td>
<td>2.5kVA</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>Nittoke C25-80B (Japan Painting Industry)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Ultra high speed model

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Heavy payload model
The Gen VII Controller is Our Most Advanced Controller Ever!

The Okura Palletizing Software OXPA is integrated into the HMI of the controller. All screens for installation, operation and maintenance are user-friendly.

Built in OXPA

Stacking programs can be created and edited directly on the controller.

New stacking programs can be created or existing stacking programs can be edited.

The stacking positions, product dimensions, number of layers, change of the stacking pattern, etc. can be edited directly on the touch screen of the controller.

Internal PLC

The internal PLC of our robot controller has a range of 120 inputs and 96 outputs (3 I/O Boards) and has a maximum capacity of 4500 programming lines. It can be used to control peripheral equipment, exchange data with external control systems, etc.

Control for additional axis

2 additional axes can be controlled. The optional axes can be used as C-axis (hand) or External peripheral axis (elevator, track, filter table, shuttle etc.).

Palletizing Software

New OXPA-QmV Palletizing Software

Offline Teaching
The stacking programs can be downloaded to the controller from remote location.

User-friendly
3D drawings for user friendly and visual software.

Windows based standard items are used (such as pull down lists, Pop up windows, etc.)

Clear icons on buttons and selections.

Communication between laptop and controller via USB cable or Ethernet, providing a faster upload and download.

More Features
Backup and restore stacking programs, download and upload system files.

Password protection for operator, production manager and system administrator.

Can create special patterns manually and register them.

New pattern creator built in to OXPA-QmV.

Safe and Green Robot

CE, UL and RoHS compliant

The new A1800, A1800-W and A700 robots and controllers meet RoHS, CE and UL compliance. CE robots follow the Machinery Directive and the EMC Directive. Approved by TÜV.

Connection to Field Bus

Field Buses such as Profibus DP, Profinet and Ethernet IP can be used.

It is adaptable for interfacing with external control device through Profibus DP, Profinet and Ethernet IP as customized design.

PLC as a Standard Feature

Okura robot palletizer control panels are supplied with a built-in PLC as a standard feature.

More Features
The maximum of programming lines is extended up to 4500 lines, PLC program can be created for larger installations.

The communication words between internal PLC and POD screen are extended and free configurable.

The communication words and bits to an external network (Profibus, Profinet, Ethernet IP) are extended (up to 96 words and 512 bits) and are now free configurable.

The download area has been extended up to 2999 random used datawords.

Faster PLC processing speed.
Gen VII Controller Has Standard ALC (Area Limit Control) Built-in for CE/UL Controllers

With a new ALC configtool software at robot parameters can be configured and it is possible to predetermine the overall robot operation area, and separate control areas can be set up to 8, in conjunction with safety devices (such as light-guards, doors, switches, buttons and pull switches). The monitoring of each zone can be activated or deactivated. With dual encoders, the device monitors the actual position of the robot at each moment. The ALC system has been proven and approved by TÜV for CE certification.

Compact Robot Installation Space.

After configuration, the data from the configuration software can be imported into the Oxpam program to check if all positions from all stacking programs are within the predefined robot operation area. If they are all OK, then the guarding fence can be moved closer to the robot to create a more compact robot installation.

Predefined Robot Zones in the Operation Area.

This example shows 3 predefined robot zone areas (pallet P1, pickup, pallet P2). When the robot has completed the pallet on P1 and moved out of this zone area, then this zone becomes deactivated and the operator can go into this zone to discharge the full-loaded pallet. At the same time the robot can continue palletizing on active zone pallet P2. Lightguard systems prevent the operator from going into the activated robot zones. Other possible examples to use predefined zones are “fill up pallet stack” or “fill up s-fold sheet stack” while the robot is operating.

Reference for System Configuration

- Box palletizing
- Bag palletizing
- Infeed conveyor
- Bag flattener
- Pallet conveyor
- Pallet dispenser
- Discharge conveyor
- Pallet accumulation conveyor
- Guarding fence

Standard Hand

- B type (For bags)
- S type (For cardboard cases)
- F type (For both cardboard cases and P boxes)
- C type (For cardboard cases)
- KP type (For both cardboard cases and P boxes)
- DA type (For less cardboard load)

Robot Palletizer References

- Chutes palletizing
- Palletizing
- With 6 palletizing positions
- Shrink package palletizing
- Palletizing

Signal tower

- The lamp indicates the operation status, either normal on or under any abnormality.

Infeed conveyor

- The conveyor keeps supply of work pieces to station conveyor with consistent gap.

Bag flattener

- Even uneven bag shape can be formed well-balanced and palletized nicely after coming through bag flattener.

Station conveyor

- Work accurately stops at stopper so that robot catch and pick up the work properly.

Discharge conveyor

- Loaded pallet is safely sent to the conveyor for discharge.
Robot Specifications

**Higher Payload**
The handling weight of the A1800 robot is 160kg, whilst the A700 can handle up to 140kg simply by adding some counter weights. The A1800-W is able to handle up to 380kg of payload.

**Large Operation Range**
Having 360 degrees of rotation angle (R-axis), the robot can accommodate it pallets in its operation range.

**R-axis Hollow Gear Reducer**
With new design in robot cable accessing through hollow shaft of R-axis reducer, replacement of inner harness becomes a lot easier. Due to the larger size of hollow shaft, ball bearing for R-axis table is not used and it results in less maintenance.

**Increased T-axis Inertia**
The maximum T-axis inertia is increased from 30kgm² to 50kgm².

**Harting Connector**
More industrial and easy to connect Harting connectors are used with the A-series.

**Grease Leak Chamber for D-axis and G-axis**
The chamber prevents grease penetration into servo motor.

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**Automatic Pallet Supply Layout**
- **One pallet layout**
  - No. P0111

**Floor Placement Layout**
- **One pallet layout**
  - No. P0110

**Two pallet layout**
- No. P0112
  - No. P01212

**Two pallet layout**
- No. P01221

**Standard Layout**

**Model**
- A: A1800
- B: A700

**Dimensions**
- A1800: 1500 x 1120 x 1900
- A700: 1250 x 1390 x 1900

**Operation Range**
- A1800: 1220 x 1120 x 1900
- A700: 1800 x 1900 x 1900

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**Dimension and Operating Range**

**A1800/A1800-W**
- Operation range (mm): 1220 x 1120 x 1900
- Unit: mm

**A700**
- Operation range (mm): 1800 x 1900 x 1900
- Unit: mm

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**Notes:**
- The specifications are subject to change without notice.
- The standard operation range of R-axis is ±75°. The R-axis can be increased operation range if the thaws limit switch is turned OFF.
- The floor space is shown compact operation range with a mechanical stopper only for AB versions.