AC servo motor controls hydraulic pump speed and direction. Generate pressure and flow to match the operating cycle of machinery and to stop during idle times.

Incredible energy savings by only operating when necessary. Also, position, speed, and pressure are controlled with great precision by using a high-speed digital processing servo controller.

Features

High power with 30MPa maximum pressure. Designed so pump operates only when necessary for energy savings and low noise. Great energy savings compared to conventional hydraulic systems. High-speed processing of the servo controller makes positioning on the order of \( \mu \text{m} \) possible. Compact all-in-one design saves space. (select either vertical or horizontal set-up)

Principle of operation

Rotating the motor forward brings hydraulic fluid to the head side of the cylinder which lifts the cylinder. Reversing the motor pushes hydraulic fluid to the rod side and pushes the cylinder down. The direction the pump rotates controls the direction of the cylinder, and the speed of rotation controls the speed.

System Configuration (Standard Configuration)

Signals to operate the cylinder (position, speed, and pressure) are sent from the control equipment to the servo controller and the hydraulic unit responds according to the signals. The servo controller receives feedback from sensors and accurately controls the cylinder so the deviation from the signals is 0. A feedback system using position and pressure sensors makes it possible to accurately control position, speed, and thrust (pressure).

About Power Meister

1. Hydraulic unit (UPS)
2. Servo controller (EPD)
3. Servo amp (compatible with motor mounted on item 1)
4. Motor cable (select from 3, 5, or 10 meters)
5. Encoder cable (select from 3, 5, or 10 meters)
6. Fan cable (select from 3, 5, or 10 meters) ...For 11kW motor
7. Cable to computer (3 m)

It becomes offers.

Note: Customers must provide piping, wiring, hydraulic cylinder, sensors, control panel, and other equipment.

(Contact us for information about cylinders and sensors.)
The Power Meister is a hydraulic system that directly drives the hydraulic cylinder by accelerating, decelerating, or stopping a motor. Because torque, separate from the motor torque needed to generate pressure, is needed to accelerate and decelerate, the maximum flow rate and maximum pressure may be lower than in the above table due to restrictions caused by the machinery’s operating conditions.

When you select a product, you first need to clarify the operating cycle and load of your machinery (the hydraulic cylinders that the Power Meister will drive) in advance and then consult with us.

(Note 1) There is a limit to the operating pressure at maximum RPMs due to the low torque that is characteristic of this motor’s output at high RPMs.

(Note 2) Theoretical flow under no load. Actual flow varies according to load pressure.

(Note 3) Rated pressure is rated torque of the motor, maximum operating pressure is pressure output at 150% torque. However, if this pressure exceeds 30 MPa, the maximum operating pressure of the hydraulic unit is below 30 MPa. Also, the maximum RPM and operating pressure may be limited depending on the acceleration, deceleration, and load conditions. Clarify your machinery’s operating conditions first, and contact us for more information.

(Note 4) If the fluctuation in oil volume is greater than the allowed values an auxiliary tank can be connected to resolve this. Contact us for more information.

(Note 5) If your selection does not include a tank, then a separate oil tank is required. We can also manufacture oil tanks, so contact us for more information if you are interested.

(Note 6) The temperature of the hydraulic fluid is affected by many factors, such as the hydraulic unit’s operating environment, operating methods, and load conditions. The customer must confirm the unit’s actual continuous operating conditions. Also, long-term, continuous operation under pressure or high-frequency reciprocal operation may result in increased oil temperatures. Therefore, operating pressure limits or installation of a cooling system may be necessary. Contact us for more information.

### Specifications

#### Hydraulic Unit

- **Motor**
  - AC servo motor (0.75 to 11kW (servo amp drive))
  - Power supply 3-phase 200 to 230VAC, 50/60Hz (servo amp power supply)
  - For 11kW only: Fan motor power supply Single-phase 200 to 230VAC 50/60Hz is required
- **Pump**
  - Piston pump (2.0 to 15.8cm³/rev)
- **Operating Ambient Temperature/Humidity**
  - 0 to +40°C/20 to 90%RH (non-condensation)
- **Temperature Range of Hydraulic Fluid [°C]**
  - 5 to 60°C (Note 7)
- **Recommended Hydraulic Fluid**
  - Wear resistant hydraulic fluid ISO VG32 to 68 (VG46 recommended)
- **Operating Viscosity Range**
  - 20 to 200mm²/s {cSt}
- **Degree of Contamination**
  - NAS 10 or better
- **Safety Valve Pressure Adjustment Range**
  - UPS-0A/1A: 3.5 to 32MPa
  - UPS-0A/1A: 3.5 to 30MPa

#### Color of Paint
- Black

#### Maximum Working Pressure
- 30MPa (for hydraulic pump)

#### Recommended Hydraulic Fluid
- ISO VG 32 to 68 (VG 46 is recommended)

### UPS-0A Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Motor Output kW</th>
<th>Pump Capacity cm³/rev</th>
<th>Maximum RPM min⁻¹ (Note 1)</th>
<th>Maximum Flow Rate l/min (Note 2)</th>
<th>Pressure Rating MPa (Continuous, note 3)</th>
<th>Maximum Working Pressure MPa (Short term, note 3)</th>
<th>Tank Size Lit. (nominal)</th>
<th>Hydraulic Fluid Level Range Lit.</th>
<th>Estimate (note 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-0A-2*10</td>
<td>0.75</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>6.4</td>
<td>9.6</td>
<td>V0.75</td>
<td>H0.65</td>
<td>L/No tanks (Note 5)</td>
</tr>
<tr>
<td>UPS-0A-3*10</td>
<td>1.0</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>8.5</td>
<td>12.7</td>
<td>V0.3</td>
<td>H0.2</td>
<td></td>
</tr>
<tr>
<td>UPS-0A-4*15</td>
<td>1.5</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>19.2</td>
<td>28.8</td>
<td>V0.3</td>
<td>H0.2</td>
<td></td>
</tr>
</tbody>
</table>

### UPS-1A Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Motor Output kW</th>
<th>Pump Capacity cm³/rev</th>
<th>Maximum RPM min⁻¹ (Note 1)</th>
<th>Maximum Flow Rate l/min (Note 2)</th>
<th>Pressure Rating MPa (Continuous, note 3)</th>
<th>Maximum Working Pressure MPa (Short term, note 3)</th>
<th>Tank Size Lit. (nominal)</th>
<th>Hydraulic Fluid Level Range Lit.</th>
<th>Estimate (note 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-1A-2*12</td>
<td>1.2</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>12.0</td>
<td>22.8</td>
<td>V1.9</td>
<td>H1.5</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-3*12</td>
<td>1.2</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>25.4</td>
<td>30.0</td>
<td>V0.6</td>
<td>H0.3</td>
<td></td>
</tr>
</tbody>
</table>

### UPS-0A-20 Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Motor Output kW</th>
<th>Pump Capacity cm³/rev</th>
<th>Maximum RPM min⁻¹ (Note 1)</th>
<th>Maximum Flow Rate l/min (Note 2)</th>
<th>Pressure Rating MPa (Continuous, note 3)</th>
<th>Maximum Working Pressure MPa (Short term, note 3)</th>
<th>Tank Size Lit. (nominal)</th>
<th>Hydraulic Fluid Level Range Lit.</th>
<th>Estimate (note 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-0A-2*20</td>
<td>2.0</td>
<td>2.0</td>
<td>3000</td>
<td>6.0</td>
<td>12.7</td>
<td>19.0</td>
<td>V0.6</td>
<td>H0.3</td>
<td></td>
</tr>
</tbody>
</table>

### Tank Capacity
- No symbol: 4.5
- Tank capacity/C: V1.2, H0.6
- Tank capacity/B: V2.8, H0.8
## Servo Controller

<table>
<thead>
<tr>
<th>Power Supply/Consumption</th>
<th>24VDC ±15%/less than 10W</th>
<th>Separate power supply for sensor is needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature/Humidity</td>
<td>0 to +55%/90% RH or less (no condensation)</td>
<td></td>
</tr>
<tr>
<td>Controlled Parameters</td>
<td>Cylinder position, speed, pressure</td>
<td>Control mode automatic switching function available</td>
</tr>
</tbody>
</table>

### Command Input

- **Speed Command**: Analog voltage DC ±10V/maximum cylinder speed (*1); cylinder extended by positive voltage, cylinder retracted by negative voltage
- **Pressure Command**: Analog voltage DC ±10V/maximum control pressure (*1); positive voltage adds pressure to head side, negative voltage adds pressure to rod side
- **Position Command**: Position selection contact signal (4 contacts), target position selected by bit pattern of 4 contacts, acceleration function generated in controller moves cylinder to target position

### Input Signals (Contact Signals)

- Servo on, alarm reset, control mode external switching, start point search start, start point retraction end point LS, start point proximity LS

### Output Signals

- Alarm, servo ready, control mode monitor, start point search end/in position (also output), pressure consistency

### Pressure Sensor Input

- Analog voltage 0.5 to 4.5V, or 1 to 5V (2ch)
- Uses pressure sensor with response time of 1 ms or less.

### Position Sensor Input

- 90° phase difference biphase pulse, start point pulse (line receiver input) or analog voltage 0 to 10V (only with -A option)
- If using pulse output position sensor, start point search is necessary once after turning on the power.
- Pulse output positioning sensor: Uses sensor with resolution of 1 μm or less.
- Analog voltage output positioning sensor: Uses sensor with response time of 2 ms or less.

### Servo Amp I/F

- Output: Motor revolve command (analog voltage ±10VDC), servo amp, servo alarm reset
- Input: Servo alarm, servo ready

### Control Panel

- 5 digits with symbol, 4 key input, selector switch
- Data setting/display, test run function

---

**Notes**

- Connector for controller, pins are attached.
- When you use the spacer for the servo controller (Option:FZV-8676-02A-01), the installation dimension becomes the same as the old design [EPD-PD2-10(A)-D2-10] and the height from the mounting surface to the connector becomes almost the same.

---

### Servo Amp

<table>
<thead>
<tr>
<th>Hydraulic Unit Model (UPS Series)</th>
<th>Motor Output kW</th>
<th>Compatible Servo Amp Model</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-00A-**07</td>
<td>0.75</td>
<td>EPA-PD1-10-R075-20</td>
<td></td>
</tr>
<tr>
<td>UPS-00A-**10</td>
<td>1.0</td>
<td>EPA-PD1-10-R100-20</td>
<td></td>
</tr>
<tr>
<td>UPS-00A-**15</td>
<td>1.5</td>
<td>EPA-PD1-10-R150-20</td>
<td></td>
</tr>
<tr>
<td>UPS-00A-**12</td>
<td>1.2</td>
<td>EPA-PD1-10-R120-20</td>
<td></td>
</tr>
<tr>
<td>UPS-00A-**20</td>
<td>2.0</td>
<td>EPA-PD1-10-R200-20</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-***35</td>
<td>3.5</td>
<td>EPA-PD1-10-R350-20</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-***45</td>
<td>4.5</td>
<td>EPA-PD1-10-R450-20</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-***55</td>
<td>5.5</td>
<td>EPA-PD1-10-R550-20</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-***75</td>
<td>7.5</td>
<td>EPA-PD1-10-R750-20</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-***11K</td>
<td>11.0</td>
<td>EPA-PD1-10-R11K-20</td>
<td></td>
</tr>
</tbody>
</table>

- Regenerative resistor built in
- External regenerative resistor included

---

**Note 1)** Power: 3-phase 200 to 230VAC, 50/60Hz

**Note 2)** Separate motor cable and encoder cable are needed to connect the servo motor on the hydraulic unit.

**Note 3)** An auxiliary external regenerative resistor may need to be added in some operating conditions if the built-in or external regenerative resistor is not sufficient.

For more details contact us with information about your operating conditions (load motion diagram).

**Note 4)** A cable connector is included.
Installation Dimension Drawings

● UPS-00A Series Integrated Unit

UP-00A-*H****(Horizontal Installation)

![Horizontal Setup Diagram]

<table>
<thead>
<tr>
<th>UPS Model No.</th>
<th>LA</th>
<th>LB</th>
<th>LC</th>
<th>Approximate Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-00A-*L07</td>
<td>111</td>
<td>469</td>
<td>491</td>
<td>16kg</td>
</tr>
<tr>
<td>UPS-00A-*L10</td>
<td>128</td>
<td>486</td>
<td>508</td>
<td>17kg</td>
</tr>
<tr>
<td>UPS-00A-*L15</td>
<td>224</td>
<td>582</td>
<td>604</td>
<td>20kg</td>
</tr>
</tbody>
</table>

Note 1) Dimensions in parentheses and two-dot chain lines are for circuit options C.

Note 2) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.

Note 4) The B port side pressure detection output port can only be used when there are no "C" circuit options.

UP-00A-*L****(No tanks)

![No Tank Diagram]

<table>
<thead>
<tr>
<th>UPS Model No.</th>
<th>LA</th>
<th>LD</th>
<th>Approximate Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-00A-*L07</td>
<td>111</td>
<td>377</td>
<td>14kg</td>
</tr>
<tr>
<td>UPS-00A-*L10</td>
<td>128</td>
<td>394</td>
<td>15kg</td>
</tr>
<tr>
<td>UPS-00A-*L15</td>
<td>224</td>
<td>490</td>
<td>18kg</td>
</tr>
</tbody>
</table>

Note 1) Dimensions in parentheses and two-dot chain lines are for circuit options C.

Note 2) An Oil tank will be required separately. We can also produce oil tanks. Contact us for requests for oil tanks.

Note 4) When installing the oil tank horizontally, make sure the lowest fluid level position during the cylinder operation is always 120mm or greater from the bottom of the unit. (See illustration on the upper right: Mounting layout for the oil tank)

Note 5) The B port side pressure detection output port can only be used when there are no "C" circuit options.
UPS-0A Series Integrated Unit

Circuit options: S (shut off valve) none

**UPS-0A-*H****(Horizontal Installation)**

UPS-0A-*H****S4(Horizontal Installation)

**UPS-0A-*V****(Vertical Installation)**

UPS-0A-*V****S4(Vertical Installation)

**Note 1)** Dimensions in (parentheses) and two-dot chain lines are for circuit options C and alarm switch options H and S.

**Note 2)** Does not include circuit or alarm switch options or weight of hydraulic fluid.

**Note 3)** The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.

**Note 4)** Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)

Circuit options: S (shut off valve) attached

**UPS-0A-*H****S4(Horizontal Installation)**

**UPS-0A-*V****S4(Vertical Installation)**

*The dimension table and Notes 1 to 4 are in common with when there is no circuit option:S (Shut off valve)
Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C and S and alarm switch options H and S.

Note 2) Does not include circuit or alarm switch options or weight of hydraulic fluid.

Note 3) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.

Note 4) For 11kW motor output only, the fan motor is provided. When installing the unit, provide space of 50mm or greater for air intake of the fan motor.

Note 5) Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)

---

### UPS-1A Series Integrated Unit

#### UPS-1A-**H****(Horizontal Installation)

<table>
<thead>
<tr>
<th>UPS Model No.</th>
<th>LA</th>
<th>LB</th>
<th>LC</th>
<th>LD</th>
<th>LF</th>
<th>LG</th>
<th>Approximate Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>UPS-1A-<strong>35</strong>**-A</td>
<td>159</td>
<td>120</td>
<td>254</td>
<td>686</td>
<td>627</td>
<td>645</td>
<td>60kg</td>
</tr>
<tr>
<td>UPS-1A-<strong>35</strong>**-B</td>
<td>195</td>
<td>275</td>
<td>763</td>
<td>792</td>
<td>809</td>
<td>800</td>
<td>63kg</td>
</tr>
<tr>
<td>UPS-1A-<strong>40</strong>**-A</td>
<td>120</td>
<td>625</td>
<td>644</td>
<td>671</td>
<td>662</td>
<td>64kg</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-<strong>40</strong>**-B</td>
<td>195</td>
<td>176</td>
<td>254</td>
<td>700</td>
<td>719</td>
<td>746</td>
<td>737</td>
</tr>
<tr>
<td>UPS-1A-<strong>50</strong>**-A</td>
<td>120</td>
<td>780</td>
<td>799</td>
<td>826</td>
<td>817</td>
<td>67kg</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-<strong>50</strong>**-B</td>
<td>195</td>
<td>228</td>
<td>276</td>
<td>752</td>
<td>771</td>
<td>798</td>
<td>798</td>
</tr>
<tr>
<td>UPS-1A-<strong>70</strong>**-A</td>
<td>120</td>
<td>832</td>
<td>895</td>
<td>916</td>
<td>957</td>
<td>83kg</td>
<td></td>
</tr>
<tr>
<td>UPS-1A-<strong>70</strong>**-B</td>
<td>195</td>
<td>273</td>
<td>276</td>
<td>732</td>
<td>741</td>
<td>756</td>
<td>79kg</td>
</tr>
<tr>
<td>UPS-1A-<strong>11K</strong>**-A</td>
<td>120</td>
<td>275</td>
<td>395</td>
<td>844</td>
<td>863</td>
<td>890</td>
<td>81kg</td>
</tr>
<tr>
<td>UPS-1A-<strong>11K</strong>**-B</td>
<td>195</td>
<td>395</td>
<td>276</td>
<td>919</td>
<td>938</td>
<td>965</td>
<td>86kg</td>
</tr>
</tbody>
</table>

Note 1) Dimensions in (parentheses) and two-dot chain lines are for circuit options C and S and alarm switch options H and S.

Note 2) Does not include circuit or alarm switch options or weight of hydraulic fluid.

Note 3) The air breather is included in the unit as a separate item. After filling the tank with oil, install the air breather.

Note 4) For 11kW motor output only, the fan motor is provided. When installing the unit, provide space of 50mm or greater for air intake of the fan motor.

Note 5) Install the unit in a mounting orientation prescribed by Model No. (H: Horizontal installation, V: Vertical installation)
When maintaining the position of the cylinder during servo off is required (for example when preventing the cylinder from self-weight falling), additional circuits (for example shut-off valve) will be required. Contact us for more information.

**Servo Controller**

EPD-PD3-10-D2-20

Approximate Weight: 0.5kg

**Servo Amp**

0.75kW Motor

Approximate Weight: 1.0kg

1.2kW Motor

Approximate Weight: 1.7kg

2.0kW Motor

Approximate Weight: 5.0kg

3.5kW Motor

Approximate Weight: 5.3kg

7.5kW Motor

Approximate Weight: 9.6kg

Regenerative resistor

Approximate Weight: 3.0kg
Performance Characteristics

- **Pressure Command Voltage - Pressure Characteristics (0 to 100%)**

- **Speed Command Voltage - Speed Characteristics (0 to 100%)**

- **Pressure Sine Wave Response**

- **Speed Sine Wave Response**

- **Dwelling Pressure - Power Consumption Characteristics**

  - **Control equipment:** Unipump 2.2kW (variable piston pump)
  - **Full cut off power consumption (N=1800min⁻¹):**
  - **Energy savings:** 0.9kW (Approximately 65%) at 21 MPa dwelling pressure

  (Note) Characteristics vary depending on operating conditions.