Bidirectional Power Supply Device with Regeneration Capability

Digital PWM Control Power Supply

2kW to up to 120kW

KP series

The unit type facilitates extension!

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KP Tested

KP series

Bidirectional Power Supply Enables
Power Running and Regenerating Operation

- Wide Lineup
- High Reliability
- Redundancy

Summary

KP series is the sophisticated bidirectional power supply device with the regeneration capability*, optimal for evaluating not only in-car inverters for hybrid and electric vehicles but motors, generators, high-capacity vehicle batteries and capacitors as well as wind or solar power generation.

We make available the extensive lineup ranging from 2kW to 120kW so you can choose the optimal model according to various applications including development and production.

*The device is designed on the assumption that all regenerated power is consumed on the premises.

Features

- Extensive lineup of over 20 different models ranging from 2kW to 120kW.
- The regeneration capability achieves effective power use.
- Cooperation operation is also possible.
- KP also has the redundancy which can be operated without stopping the whole even if it stops one power supply unit. (Please consult for detail.)
- The unit configuration facilitates extension after introduction. (up to 120kW)
- Smooth switching between power running and regeneration.
- Reduced power consumption helps mitigate rise in ambient temperature.

Applications

The device is available as the regenerating electronic load and power supply device for:

- Evaluating the charge-discharge test on secondary cells or capacitors (optional)
- Evaluating in-car inverters or convertors
- Evaluating motors and generators

The model that may be used as a battery simulator will be available soon. Contact our sales staff for details.

* No model is designed to enable self-sustained operation. They stop when the system power supply is disconnected.
## Lineup

<table>
<thead>
<tr>
<th>Model</th>
<th>I/O power</th>
<th>Power supply mode (power running mode)</th>
<th>Load mode (regeneration mode)</th>
<th>Outline drawing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DC output voltage</td>
<td>DC output current</td>
<td>DC input voltage</td>
</tr>
<tr>
<td>KP80-32 (2kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>32A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP80-80 (5kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>80A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP80-160 (10kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>160A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP80-320 (20kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>320A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP400-50 (10kW)</td>
<td>NEW</td>
<td>0 to 400V</td>
<td>50A</td>
<td>40 to 400V</td>
</tr>
<tr>
<td>KP650-5 (2kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>5A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-12 (5kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>12A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-25 (10kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>25A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-50 (20kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>50A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-75 (30kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>75A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-100 (40kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>100A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-125 (50kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>125A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-150 (60kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>150A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-175 (70kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>175A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-200 (80kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>200A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-225 (90kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>225A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-250 (100kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>250A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-275 (110kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>275A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP650-300 (120kW)</td>
<td>NEW</td>
<td>0 to 80V</td>
<td>300A</td>
<td>0 to 80V</td>
</tr>
<tr>
<td>KP750-4 (2kW)</td>
<td>Coming soon</td>
<td>0 to 750V</td>
<td>4.5A</td>
<td>200 to 750V</td>
</tr>
<tr>
<td>KP750-10 (5kW)</td>
<td>Coming soon</td>
<td>0 to 750V</td>
<td>11A</td>
<td>200 to 750V</td>
</tr>
<tr>
<td>KP750-20 (10kW)</td>
<td>Coming soon</td>
<td>0 to 750V</td>
<td>22A</td>
<td>200 to 750V</td>
</tr>
</tbody>
</table>

*1: The models with no rack are followed by “A”.  
*2: For the external dimensions of these models, ask our sales staff.
2kW and 5kW models, and 10kW (400V and 650V) models with no rack

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>inch (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23 (585)</td>
<td>22.31 (566.8)</td>
</tr>
<tr>
<td>0.24 x 0.39</td>
<td>(6 x 10)</td>
</tr>
<tr>
<td>1.38 (35)</td>
<td>0.2 (5)</td>
</tr>
<tr>
<td>25.79 (655)</td>
<td></td>
</tr>
</tbody>
</table>

**Diagram:**

- Dimensions for the 2kW and 5kW models, and 10kW (400V and 650V) models with no rack are illustrated in the diagram.
For 2, 5 and 10kW models, a blank panel is mounted on the power supply portion at the second stage indicated in the drawing as these models have the single power supply mounted.

When the 23-inch rack is put away:

- 3.54-inch (90mm) for the types housing 1 or 2 units
Specifications

Additional specifications are required for battery applications. Contact our sales staff for details.

- **System power supply voltage**: 200V ± 10%, 60 / 50Hz must be designated, 3-phase
- **Load mode**: Controlled by CV
- **Power supply mode**: Controlled by CV
- **Protection circuit**: Over voltage protection, overcurrent protection, overpower protection and over temperature protection. Breaking with the emergency stop switch
- **Efficiency**: Approx. 80%
- **Display**: LCD display
- **Operating temperature**: 0 to +40 °C
- **Storage temperature**: –20 to +60 °C
- **Storage humidity**: 0 to 80% RH (no condensation)

When multiple KP units are used, we recommend that you use the earth leakage detector that may be used for inverters.

Options

- **LA1** Enables the following remote control and monitor output:
  - **External control of output voltage**: Controls output voltage with the external control voltage (Vcon-in) between 0 and 10V.
  - **External control of output current**: Controls output current with the external control voltage (Vcon-in) between 0 and 10V.
  - **Output voltage monitor**: 0 to +10V (±3% FS.), output impedance of 1kΩ
  - **Output current monitor**: 0 to +10V (max. negative current to max. positive current) (±3% FS.), output impedance of 1kΩ
  - **Remote switch ON/OFF** (TTL or external relay)

- **LBt** This option is required if the load is comprised of a battery. Contact our sales staff for details.
  (This option is available only for the 80V I/O model.)
High-Capacity Charge-Discharge Power Supply

Equipped with the convenient function that facilitates the single cell evaluation of Large-capacity battery

The ECPU series is the DC charge-discharge power supply that enables charge-discharge as high in capacity as 1250 W on its own. Equipped with the function that facilitates the single cell evaluation testing on rechargeable batteries for HEVs, PHVs, EVs and PEV, the device is optimal for the charge-discharge evaluation testing on rechargeable batteries including Li-ion batteries or electric double layer capacitors.

**Features**
- The single unit enables charge-discharge as high in capacity as 1250 W
- The function to detect battery temperature by a thermistor comes as a standard function
- The dedicated software can collectively control charge-discharge operation and various measurements

High-Capacity DC Power Supply

The high power device with the maximum 120 kW is suitable for the evaluation testing on power conditioners

The PRM series is the DC variable power supply that may safely and stably output power as high as 120kW. The power supply extendable to the maximum 360kW is sufficient for cases requiring larger output.

**Features**
- Contains the high-power DC power supply unit and the power supply controller in a single 19-inch rack
- Equipped with the LCD display that can display the sum of output current
- Various interfaces including the USB and LAN may also be installed (optional)

X-ray inspection systems for non-destructive inspection on the inner batteries or capacitors!

Horizontally Irradiating X-Ray Microview Microscope

Achieves the highest 700-power images of the class

Both models above may be equipped with the CT functions.

CT functions

- Display arbitrary cross sections of 3D images
- Separate arbitrary object
- Output CAD data

- Displays an arbitrary cross section of the volume rendered 3D image.
- Extracts an arbitrary portion in the image to color or separate the portion.
- Outputs the surface shape of a 3D image polygonally approximated as a point-group file (STL format).
Customer Inquiry Sheet (KP series)

Please copy this page and above fax number after filling out form below.

- I would like
  - A quotation  
  - An explanation of product
  - A demonstration
  - To purchase
  - Other ( )

- Give us your requirement / comment

- Please fill in below.
  - Address:
  - Company:
  - Dept.: Title:
  - Name:
  - Tel:
  - Fax:
  - E-mail:

Manufacturers warranty
We warrant the specification, unless otherwise specified, at max. rated output after warm up, and scope of application is between 10% and 100% of max. rated output. We warrant that products contained in this catalog (hereinafter, the “Products”) are free from defects in material and workmanship under normal use for a period of one (1) year from the date of shipment thereof. However, the warranty period for X-ray detectors and X-ray source shall be either one (1) year from the date of shipment or 1,000 hours, whichever shorter. The above warranty shall not apply to any Product which, at our sole judgment, has been: i) Repaired or altered by persons unauthorized by us; or ii) Connected, installed, adjusted or used otherwise than in accordance with the instructions furnished by us (including being used in an inappropriate installation environment, such as in corrosive gas, high temperature and humidity). We are not liable for any loss, damage or failure of the Products after the shipment thereof caused by external factors such as disasters. We will not inspect, adjust or repair any of our power supply products in the field or at any customer site. If you suspect that there has been a power supply failure in the field, please inspect your whole unit by yourself in an effort to determine that the problem is, in fact, arising out of our power supply products. If it is found that the problem is arising out of such power supply product after inspection, please contact your local sales office for additional troubleshooting. A “Return Merchandise Authorization” is required in case the power supply must be sent back to the factory in Japan for inspection and repair. We, at our sole discretion repair or replace such defective products at no cost to the purchaser. We assume no liability to the purchaser or any third party for special, incidental, consequential, or other damages resulting from a breach of the foregoing warranty. This warranty excludes any and all other warranties not set forth herein, express or implied, including without limitation the implied warranties of merchantability or fitness for a particular purpose. The Products are not designed and produced for such applications as requiring extremely high reliability and safety, or involving human lives (such as nuclear power, aerospace, social infrastructure facility, medical equipment, etc.). The use under such environment is not covered by this warranty and may require additional design and manufacturing processes. No modification or supplement of this warranty shall be binding unless in writing and signed by a duly authorized officer of Matsusada. Matsusada reserves the right to make any changes in the contents of catalogs or specifications at any time without advance notice. Due to compelling reason such as unavailability of components used, products might be un available or unable to repair. The products specified in catalogs or specifications are designed for use by the person who has enough expertise or under the control of such person, and not for general consumers. Schematics of products shall not be submitted to users. Test result or test data for the products shall be available upon request with charge.

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