Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.

**Features**

- Provided with quick-connect socket
- Can be extended up to 5 m through extension cable (option)
- The CPU enables the following various functions:
  1. Digital setting of revolving speeds
  2. Instantaneous conversion of gear head speed and conveyor speed
  3. Digital display of actual speed
  4. Soft-start, soft-down
  5. Backup of setting conditions
  6. Set locking

**Specifications**

<table>
<thead>
<tr>
<th>Capacity</th>
<th>Voltage</th>
<th>UX series</th>
<th>US series</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 W</td>
<td>100 V</td>
<td>DVUS606L</td>
<td>DVUS606L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUS606Y</td>
<td>DVUS606Y</td>
</tr>
<tr>
<td>15 W</td>
<td>100 V</td>
<td>DVUX715L</td>
<td>DVUS715L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUS715Y</td>
<td>DVUS715Y</td>
</tr>
<tr>
<td>25 W</td>
<td>100 V</td>
<td>DVUX825L</td>
<td>DVUS825L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUS825Y</td>
<td>DVUS825Y</td>
</tr>
<tr>
<td>40 W</td>
<td>100 V</td>
<td>DVUX940L</td>
<td>DVUS940L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUS940Y</td>
<td>DVUS940Y</td>
</tr>
<tr>
<td>60 W</td>
<td>100 V</td>
<td>DVUX960L</td>
<td>DVUS960L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUS960Y</td>
<td>DVUS960Y</td>
</tr>
<tr>
<td>90 W</td>
<td>100 V</td>
<td>DVUX990L</td>
<td>DVUS990L</td>
</tr>
<tr>
<td>200 V</td>
<td></td>
<td>DVUX990Y</td>
<td>DVUS990Y</td>
</tr>
</tbody>
</table>

**Part No.**

- Please refer to pages B-324 to B-340 to check the specification and combination of motor and speed controller.
- When ordering the motor and speed controller as a set, place an order using the unit model number.

**Outline drawing**

- UX series
- US series

**Unit type**

- Speed controller
- Industry's first digital speed controller
- Quick conversion of gear head speed and conveyor speed
- Soft-start, soft-down
- Set locking function

* Please read your User's manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.
Speed controller

• Names and functions

UX series

Example: 200 V
  • Stop
  Select from RUN/STOP
  • Run
  Select from RUN/STOP
  • Indication magnification
  (Select from MODE key)
  Factory setting 1.000
  • Revolution speed
  (Select from MODE key)
  Factory setting 90
  • Revolution speed
  (Select from MODE key)
  • RUN/STOP key
  • MODE key
  • ADJ key
  Increases the set value.
  ADJ control
  Use this trimmer potentiometer if discrepancy is found between the preset and the actual revolution speed.
  • Power-on state changeover switch
  • Motor connector
  • Normal/reverse switch
  Normal: White, Black: Power cable
  Green: Frame ground
  Capacitor for motor
  <“SET” or “REAL” reading = motor revolving speed divided by gear reduction settings>
  1. When using a gear head, check the direction of rotation of its output shaft. The direction is not common to all models.
  2. The fan of a fan-cooled motor starts to run as the controller is turned on.
  [Note] Readings are based on the reading magnification setting in RATIO mode and gear reduction ratio setting. Desired value can be selected among the values shown below, by using [ ] and [ ] keys.
  [With reading magnification 1.000] Value can be set in unit of 10 r/min.
  Selection unit is 10 x 0.500. The reading rounds off fraction.

US series

• Power indicator
• RUN/STOP switch
• ADJ
  With the speed setting knob turned fully clockwise, adjust the trimpot (normally covered with the front panel) for the revolutions shown below:
  50 Hz: 1400 r/min
  60 Hz: 1700 r/min
  • Speed setting knob
  • Front panel (removable)

Wiring diagram

Capacitor cap
  * In the case of models with a model number to which “A” is suffixed, the capacitor cap is optional.
  The models with a model number to which “A” is suffixed (not equipped with a capacitor cap) are not sold or available in Japan.
  Capacitor
  (supplied with the motor)
  For connection to the capacitor, see the motor instruction manual.

Unit type

• Modes of operation (UX series)

RATIO mode
By setting the speed in unit of motor revolving speed multiplied by the factor or by displaying the actual speed, gear head output shaft speed or belt conveyor travel speed can be converted. The RATIO mode is used to set the factor. Selection of indication magnification can be made from [ ] and [ ] keys.

Reduction gear ratio setting value (to display the settings in terms of gear head output shaft speed):
<“SET” or “REAL” reading = motor revolving speed divided by gear reduction settings>

<Example> Reduction gear ratio = 3
Selection unit is 1/3 r/min. The reading rounds off fraction.
  • Power frequency 50 Hz:
    29.9 → 33.3 → 36.6 → 466.6 r/min
  • Power frequency 60 Hz:
    29.9 → 33.3 → 36.6 → 466.6 → 566.6 r/min

<Example> Magnification = 0.500
Selection unit is 10 x 0.500. The reading rounds off fraction.
  • Power frequency 50 Hz:
    45.0 → 50.0 → 55.0 → 700.0
  • Power frequency 60 Hz:
    45.0 → 50.0 → 55.0 → 700.0 → 850.0
  [Note] Exception: reading magnification 1.000
  “MOTOR SPEED r/min” is displayed. Only “r/min” is displayed when the value exceeds 1.000. Otherwise, nothing is displayed.

REAL mode
In the REAL mode, the motor’s real revolutions multiplied by the reading magnification is displayed. [Reading magnification 1.000]

The speed is displayed in unit of 5 r/min.

<Example> Reduction gear ratio = 3
Selection unit is 1/3 r/min. The reading rounds off fraction.
  0 → 1.6 → 2.5 → 3.3 → 3.6 → 466.6 → 566.6 r/min

<Example> Magnification = 0.500
Selection unit is 10 x 0.500. The reading rounds off fraction.
  0 → 1.6 → 2.5 → 3.3 → 3.6 → 466.6 → 566.6 r/min

<Note> Exception: reading magnification 1.000
  “MOTOR SPEED r/min” is displayed. Only “r/min” is displayed when the value exceeds 1.000. Otherwise, nothing is displayed.

RATIO mode
The soft-start time is set in this mode from [ ] and [ ] keys in unit of 0.1 sec, up to 30 sec.
  0 → 0.1 → 0.2 → 0.3 → 0.4 → 0.5 → 0.6 → 0.7 → 0.8 → 0.9 → 1.0 sec
  1.0 → 2.0 → 2.5 → 3.0 → 3.5 → 4.0 → 4.5 → 5.0 → 5.5 → 6.0 → 6.5 → 7.0 → 7.5 → 8.0 → 8.5 → 9.0 → 9.5 → 10.0 sec
  * Please read your User’s manual carefully so that you will understand the operation and safety precautions before attempting to operate the system.
Speed controller

**SD setting mode**

The soft-start/down time is set in this mode from 
and 
keys in unit of 0.1 sec, up to 30 sec.

- **Note 1** Soft-start/down

![Diagram of SD setting mode](image)

The soft-start/down time is defined as the time required to change revolving speed between 0 rpm and 1500 rpm.

**Example**

When the soft-start time is set to 10 seconds and “SET” revolving speed is 750 rpm, then:

$10 \times \frac{750}{750} = 5$

This means that 5 seconds are required to change from 0 rpm to 750 rpm. The same applies to “SD”.

**Note 2**

In the practical application, speed change time will be longer than the set soft-start/down time if the load inertia is large.

**Power-on state setting**

The state of the unit upon power-up can be preset from the power-on state setting switch.

- **(1) “YES”**
  - Upon power-on, the unit reproduces the state as it was turned off.

- **(2) “NO”**
  - Upon power-on, the unit is in stop mode regardless of the state at the previous power off.

<table>
<thead>
<tr>
<th>Previous state</th>
<th>Upon power-on</th>
</tr>
</thead>
<tbody>
<tr>
<td>“RUN”</td>
<td>Startup (after approx. 1 sec)</td>
</tr>
<tr>
<td>“STOP”</td>
<td>Stop</td>
</tr>
</tbody>
</table>

**Operating method (US series)**

1. Connect the “motor connector”.
2. Make sure that the RUN/STOP switch is in “STOP” position. Connect the power cable to the AC source.
3. Turn on power. “Power” indicator will light.
4. Place the RUN/STOP switch in “RUN” position, and the motor starts.

**CAUTION:** Do not place the switch lever in between RUN and STOP.

5. To stop the motor, move the lever to “STOP” position.

**Note:** The motor does not turn off if power supply is not used for a long period, turn off the main power switch.

6. The electric fan, if used with the motor, rotates as the power to the speed controller is turned on and stops as the controller power source is turned off.

**Changing direction of rotation (US series)**

- **Unidirectional rotation**
  - Terminal “CW” or “CCW” on the controller rear panel should be left open.

- **Note**
  - When a gear head is connected, the direction of its output shaft may or may not be the same as that of motor shaft depending on the reduction ratio.

- **Normal/reverse rotation**
  - When it is necessary to select the rotating direction, connect the switch as shown in the figure.

**Caution**

Wall thickness of the equipment where the controller is to be mounted should be 2 mm or less.

**Mounting method (UX series, US series)**

**<Mounting through square holes>**

**UX series, US series**

- 1. Drill 2 square holes in the object.
- 2. Secure the controller and front panel with 2 M4 screws.

**<Mounting without using square hole>**

**US series only**

- 1. Drill 2 square holes in the wall of the object.
- 2. Secure the controller body with M3 flat-head screws and nuts.
- 3. Place the front panel on the wall and secure the panel with M4 screws and nuts.

**To install controller and motor separately**

When installing the speed controller at a distance more than 1 m from the motor, use optional “extension cord” that is supplied as standard accessory (allowable distance 5 m). Refer to page D-4 (Option).

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