

INSTRUCTION MANUAL

Preamplifier

UG-24



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Organization of This Manual

This manual describes the features and operation of Rion Preamplifier UG-24. Before using a preamplifier, be sure to carefully read the documentation to ensure proper operation and accurate results.

This manual contains the following sections.

Outline

Gives basic information on configuration and features of the unit and contains a block diagram.

Parts and Functions

Briefly identifies and explains all controls, switches, connectors and other parts of the unit.

Operation

Describes the basic procedures for operation.

Specifications

Lists the technical specifications of the unit.

Precautions

- Operate the unit only as described in this manual.
- Do not touch any parts of the unit other than necessary for operation.
- Do not use or store the unit in locations which
 - may be subject to high levels of dust or other contaminants, or
 - may be subject to air with high salt or sulphur content, or
 - may be subject to high temperature, humidity, splashes of water, or
 - may be subject to direct sunlight, or
 - may be subject to vibrations or shock, or
 - do not provide a firm, level, and stable support.
- Protect the unit from shocks during transport, installation, and use.
- Do not disassemble the unit or attempt internal alterations.
- In case of malfunction, do not attempt any repairs. Note the condition of the unit clearly and contact the supplier or an authorized service station.

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Outline

The UG-24 is a charge amplifier designed for transmitting the output of an accelerometer to a distance of up to 300 meters. The output of the UG-24 is connected to the vibration monitor UG-41 from which it also draws its power supply of 12 V DC.

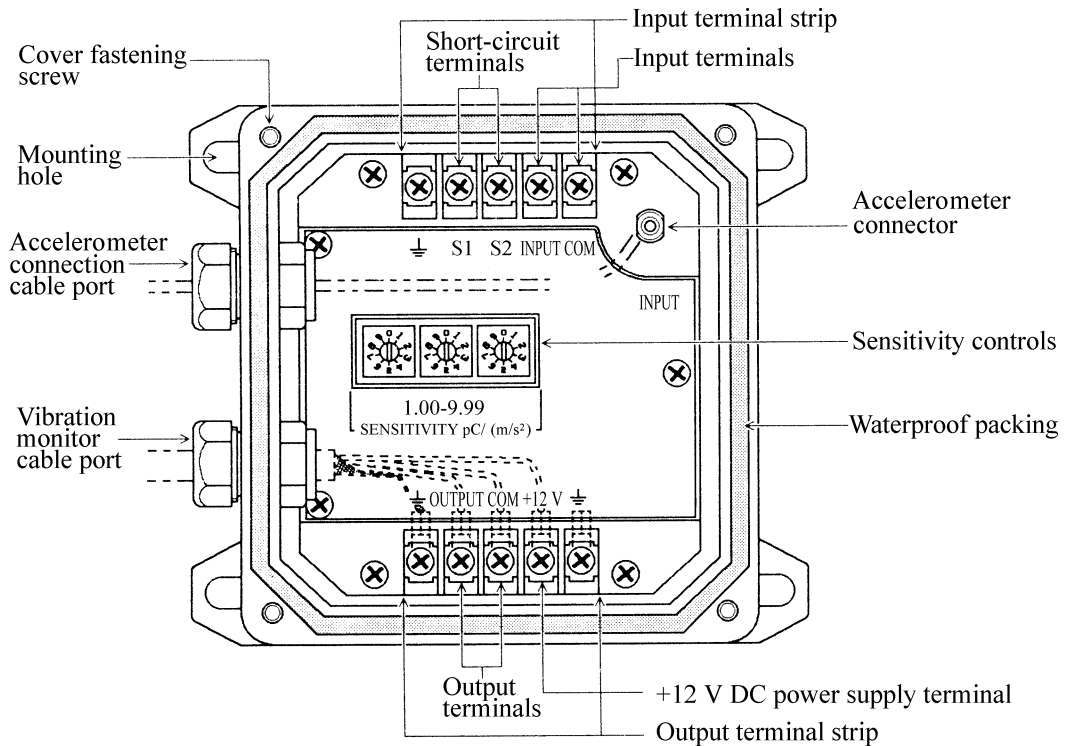
The unit is housed in a sturdy aluminum diecast enclosure rated to withstand high temperatures and moisture according to class 7 of the JIS standard C-0920 for waterproofing of electrical equipment and wiring.

The output voltage of the unit can be switched to either 10.2 mV/ (m/s²) or 1.02 mV/ (m/s²). The maximum input charge is 10000 pC or 100000 pC respectively. The sensitivity of the UG-41 must be set accordingly.

On the input side, the unit provides a terminal strip and a microdot connector. Accelerometers with a charge sensitivity of 1.00 to 9.99 pC/ (m/s²) are supported.

Parts and Functions

Remove the screws in the four corners on top of the unit to gain access to the interior panel. The parts and their functions are listed below.



Internal view (with cover removed)

Mounting hole (4 locations)

Serve for fastening the unit at the installation location.

Cover fastening screw (4 locations)

Serve for fastening the unit cover.

Accelerometer connection cable port

Waterproof type port for the connection cable to the accelerometer.

Vibration monitor connection cable port

Waterproof type port for the connection cable to the vibration monitor.

Input terminal strip

Serves for connection of the accelerometer (INPUT, COM, ground) using a cable with crimp-on lugs (see page 5).

The short-circuit terminals (S1, S2) allow connection of a shorting bar to set the maximum input charge for the unit (see page 6).

Accelerometer connector

Serves for connection of the accelerometer, using a cable with a microdot connector. Connected in parallel to the INPUT and COM terminals of the terminal strip.

Sensitivity controls (SENSITIVITY) pC/ (m/s²)

Allow matching the unit to the sensitivity of the accelerometer (see page 8).

Output terminal strip

Serves for connection to the vibration monitor UG-41, according to the markings on the terminals (see page 7).

Operation

Installation of Accelerometer and UG-24

Select a suitable accelerometer according to the intensity of the vibrations to be measured and the measurement conditions, and securely mount the accelerometer on the measurement object.

Install the UG-24 in a suitable location, taking into consideration the length of the accelerometer output cable and the environmental conditions at the measurement site. Use the four mounting holes on the lower part of the unit to secure the UG-24. The dimensions for the mounting holes are 108×80 mm.

Wiring

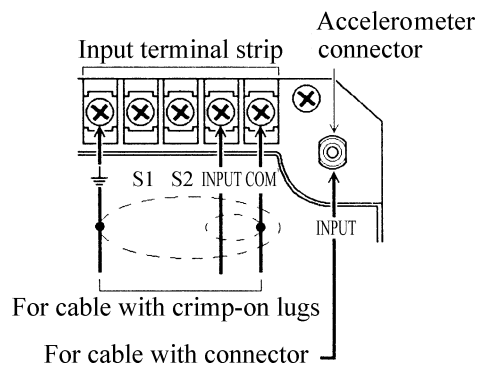
Remove the four fastening screws on top of the unit and take off the cover to gain access to the various connectors.

Input Connections

1. Rotate the cover of the accelerometer connection cable port to remove it. Mount a rubber packing on the cable and pass a suitable length of cable through the port into the unit. Then replace the cover by turning it until it is tight.
2. When using a accelerometer cable terminated with crimp-on lugs, connect the lugs to the INPUT and COM terminals respectively and tighten the screws to secure the lugs.

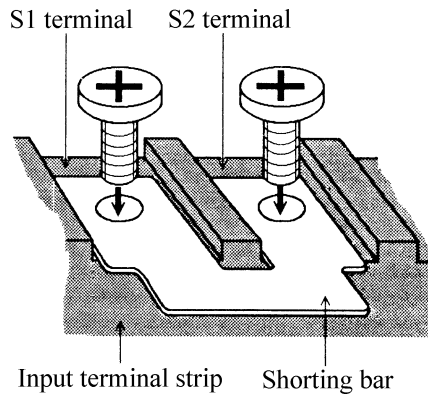
When using a accelerometer cable terminated with a connector, plug the connector into the microdot connector marked INPUT.

The INPUT terminal and INPUT connector are internally wired in parallel.



3. Set the sensitivity of the UG-24 using the S1 and S2 terminals as described below, depending on the expected input charge.

Estimate the expected input charge from the charge sensitivity of the accelerometer and the intensity of the vibrations to be measured.



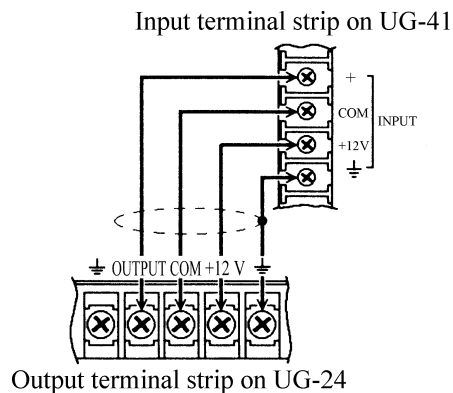
- When the input charge will be 10000 pC or more, connect the S1 and S2 terminals using the supplied shorting bar, as shown in the illustration at right.
- When the input charge will be less than 10000 pC, leave the S1 and S2 terminals open.

| Note |
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| Depending on the above setting, the measurement range of the vibration monitor UG-41 will be different. (For details, please refer to the instruction manual of the UG- 41.) |

Output Connections

1. Rotate the cover of the vibration monitor connection cable port to remove it. Mount a rubber packing on the cable and pass a suitable length of cable through the port into the unit. Then replace the cover by turning it until it is tight.
2. Connect the leads of the cable to the correct terminals, following the markings. The leads should be terminated with crimp-on lugs. Tighten the screws of the terminals to secure the lugs.

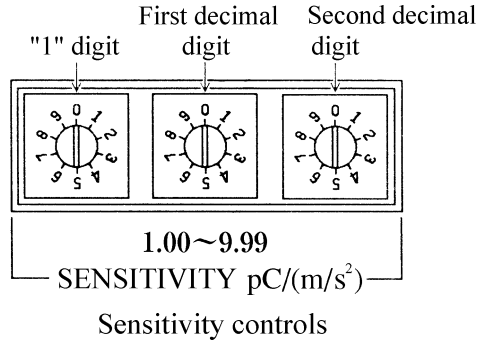
On the vibration monitor UG-41, connect the leads of the cable to the INPUT terminal strip on the rear of the unit, as shown in the illustration at right.



Sensitivity Adjustment

Refer to the sensitivity calibration chart of the accelerometer being used and set the SENSITIVITY controls of the UG-24 to an appropriate setting.

The setting range is 1.00 to 9.99 pC/ (m/s²).



Installing the Cover

When connections and sensitivity adjustment are completed, replace the cover on the unit and secure it by tightening the fastening screws in the four corners.

Specifications

| | |
|--|--|
| Construction | Compliant to class 7 of JIS standard C-0920 for waterproofing of electrical equipment and wiring |
| Compatible accelerometer type | Piezoelectric acceleration pickup |
| Input configuration | Terminal strip and microdot connector |
| Maximum input charge | 100000 pC (S1, S2 terminals shorted) |
| | 10000 pC (S1, S2 terminals open) |
| Vibration frequency range | 0.5 Hz to 30 kHz ($\pm 10\%$) |
| | 1 Hz to 15 kHz ($\pm 5\%$) |
| Allowable pickup sensitivity range | 1.00 to 9.99 pC/ (m/s ²) |
| Sensitivity setting | By 3-digit digital switch |
| Output | |
| Output configuration | Terminal strip |
| *Output voltage | 1.02 mV/ (m/s ²) $\pm 2\%$ (S1, S2 terminals shorted) |
| | 10.2 mV/ (m/s ²) $\pm 2\%$ (S1, S2 terminals open) |
| | * G conversion as follows 1 G = 9.81 m/s ² , therefore 10.2 mV/ (m/s ²) → 100 mV/G 1.02 mV/ (m/s ²) → 100 mV/G |
| Maximum output voltage | ± 12 V peak |
| Power requirements | |
| Power supply voltage | 12 V DC ± 2 V |
| Current consumption | max. 50 mA (at 12 V) |
| Power consumption | approx. 0.6 VA |
| Operating temperature and humidity range | -10 to +70°C, 20 to 90% RH |
| Dimensions | 100 (W) × 120 (H) × 60 (D) mm (without protruding parts) |
| Weight | Approx. 600 g |

Supplied accessories

Shorting bar 1

Instruction manual 1

