INSTRUCTION MANUAL

DISPLAY UNIT

UV-12A

RION CO., LTD.

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Organization of this manual

This manual describes the features and operation of the Display Unit UV-12A. The following pages contain important information on safety. Be sure to read this part.

This manual contains the following sections.

Outline

Gives basic information on the unit.

Controls and Features

Briefly identifies and explains all parts of the unit.

Connections and Startup

Explains system configuration, connection to other equipment, power supply connections and power-up procedure.
This section does not contain information on installation and connection of accelerometers or microphones. Please refer to the instruction manuals of the vibration meter unit UV-05A and the sound level meter unit UN-04A for information about these points.

Display Functions

Explains the level display functions of this unit.

Interface

Explains functions which are common to the RS-232-C interface and the GP-IB interface, such as remote mode / local mode switching and unit address selection.

RS-232-C Interface

Explains the RS-232-C interface functions.

GP-IB Interface

Explains the GP-IB interface functions.

Commands

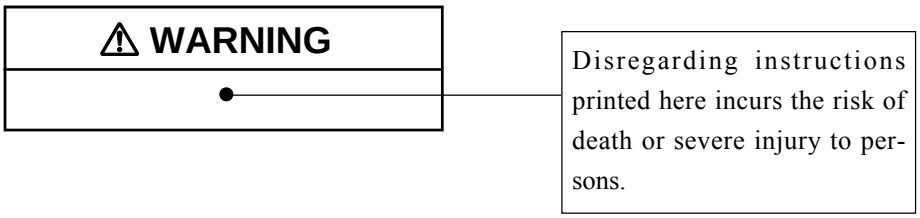
This section contains a list of GP-IB and RS-232-C interface commands and their format.

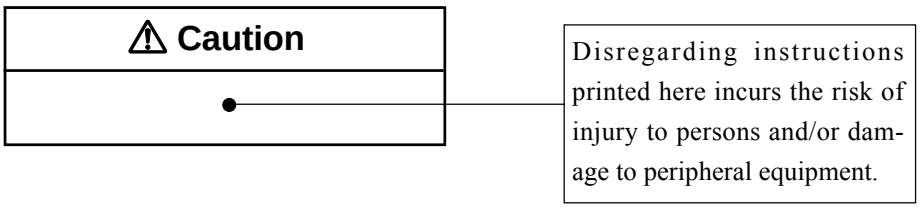
Specifications

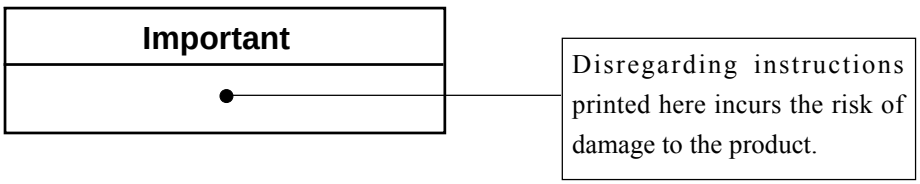
Lists the technical specifications of the unit.

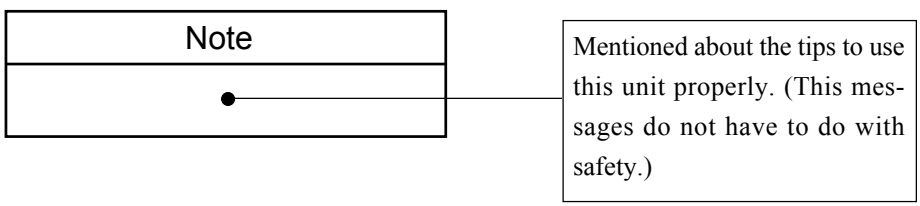
FOR SAFETY

In this manual, important safety instructions are specially marked as shown below. To prevent the risk of death or injury to persons and severe damage to the unit or peripheral equipment, make sure that all instructions are fully understood and observed.









Precautions

- Operate the unit only as described in this manual.
- 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.
- Observe the following precautions before using the unit:
  1) Make sure that all connections are properly established.
  2) Check the setting of all switches and controls, and make sure that the unit is operating normally.
- Power supply to the UV-12A must be 85 to 250 V AC, 47 to 440 Hz or +9 to +15 V DC (including battery unit BP-07).
- The permissible ambient temperature range for operation of the unit is -10 to +50°C. Relative humidity must be below 90%.
- Do not store the unit in locations which
  1) may be subject to strong magnetic fields or strong radiation, or
  2) may be subject to high levels of dust or splashes of water, or
  3) may be subject to gases or air with high salt or sulphur content, or are in the vicinity of stored chemicals, or
  4) may be subject to high temperature, humidity, or to direct sunlight, or
  5) may be subject to vibrations or shock.
- Always switch off the power after using the unit.
- When disconnecting cables, always hold the plug and do not pull the cable.

Contents

Outline

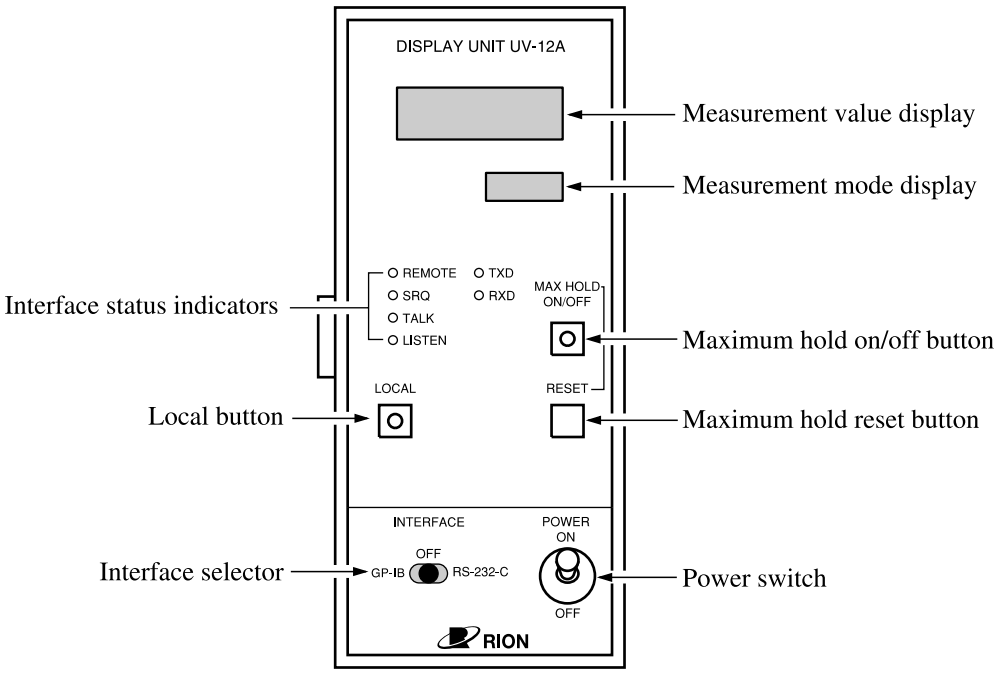
The UV-12A is a display unit designed for use with the vibration meter unit UV-05A / UV-05 and the sound level meter unit UN-04A / UN-04. Thanks to the built-in GP-IB (general purpose interface bus) and RS-232-C interfaces, a computer can be used to control the settings of connected UV-05A / UV-05 and UN-04A / UN-04 units and to collect measurement data.

Up to ten UV-05A / UV-05 and/or UN-04A / UN-04 units can be connected to one UV-12A, allowing the creation of a multichannel measurement system.

Important
When connected to the UV-12A, the I / O capabilities of the UV-05A / UV-05 and UN-04A / UN-04 are disabled, even if the interface selector of the UV-12A is set to OFF. Any connected printer DPU-414 / CP-11 / CP-10 therefore will also not operate.

Controls and Features

Front Panel



Interface status indicators

These indicators show the status of the GP-IB and the RS-232-C interface.

REMOTE: Lights up when the UV-12A is in the remote mode (GP-IB, RS-232-C).

SRQ: The UV-12A has no SRQ function.

TALK: Lights up when the UV-12A acts as talker (GP-IB).

LISTEN: Lights up when the UV-12A acts as listener (GP-IB).

TXD: Lights up when the UV-12A is transmitting data (RS-232-C).

RXD: Lights up when the UV-12A is receiving data (RS-232-C).

Measurement value display

The value measured by the unit whose select button is pressed is shown here.

Maximum hold on / off button [MAX HOLD ON / OFF]

This button determines whether the instantaneous value or the maximum value is shown on the measurement value display. Each push of the button toggles between the two settings. In the maximum value mode, the indicator of the button is lit.

Maximum hold reset button [MAX HOLD RESET]

Pressing this button resets the current maximum value.

Power switch [POWER]

Serves to turn the unit on and off.

Interface selector [INTERFACE]

Set this selector to the desired interface standard, either GP-IB or RS-232-C. When the interface is not required, set the selector to OFF.

Note
When GP-IB is selected, the current consumption of the UV-12A becomes twice. If the unit is not powered from an AC outlet, you should select GP-IB only when actually required.

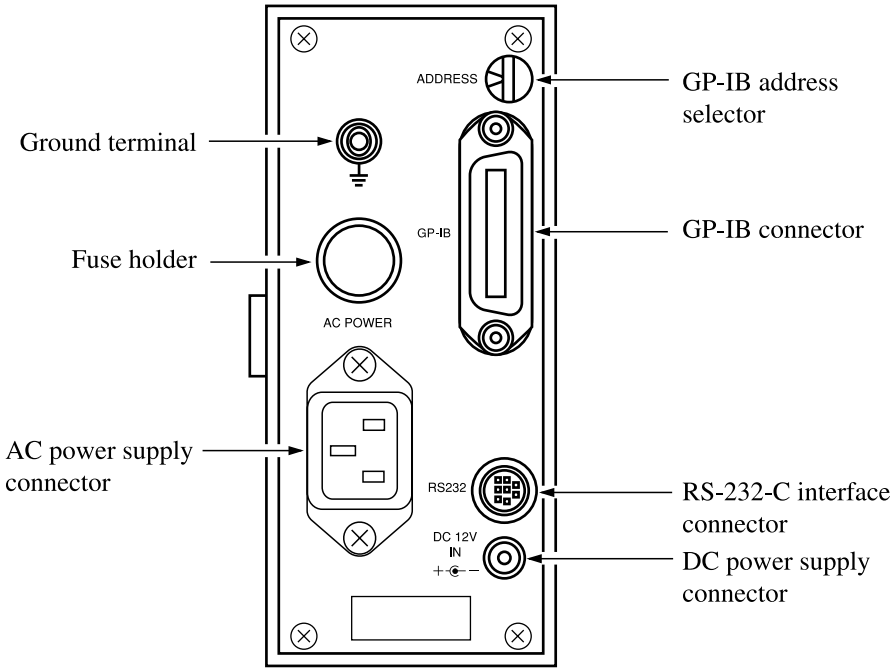
Local button [LOCAL]

When the UV-12A is in the remote mode, this button serves to return the unit to the local mode. In local mode, the indicator of the button is lit.

Measurement mode display

The measurement mode of the unit whose select button is pressed is shown here (as the unit of measurement).

Rear Panel



GP-IB address selector [ADDRESS]

Serves to set the address for the GP-IB interface. The setting range is 0 to 9 and A to F. When the GP-IB interface is not used, there is no need to set the GP-IB address, and the GP-IB address selector may be left at any position.

The function of the GP-IB address selector is totally unrelated to the unit address selector located on the inner panel of the UV-05A / UV-05, UN-04A / UN-04. The two types of address selectors may be set to the same position.

GP-IB connector [GP-IB]

Serves to connect the UV-12A to a computer via a GP-IB cable. Use this connector when wishing to utilize the GP-IB.

RS-232-C interface connector [RS232]

Serves for data communication with a computer using the RS-232-C interface standard.

DC power supply connector [DC 12 V IN]

Serves for connection to an external DC source. The allowable voltage range is +9 to +15 V. It is also possible to connect the AC adapter NC-95, NC-97, NC-79 or NC-79U (option) here. (Please refer to pages 9 and 11 for details.)

AC power supply connector [AC POWER]

Serves for connection of the unit to an AC outlet.

The allowable voltage range is 85 to 250 V, and the allowable line frequency is 47 to 440 Hz. (Please refer to page 9 for details.)

Fuse holder

Contains a 1-ampere fuse.

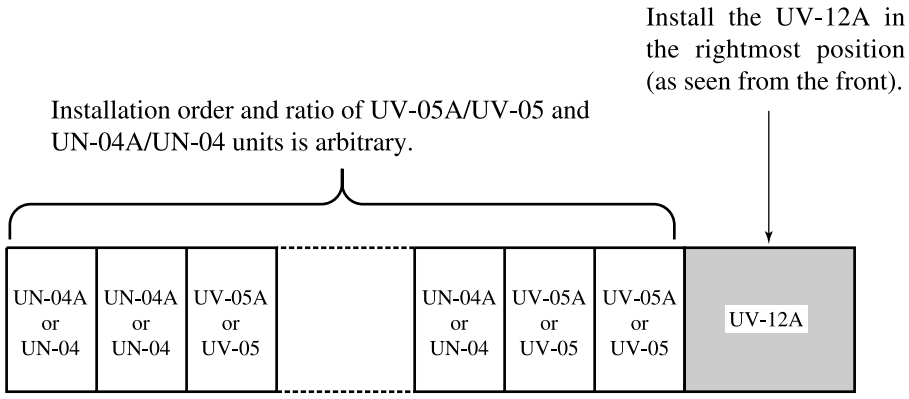
Ground terminal

Serves to ground the unit.

Connections and Startup

System Configuration

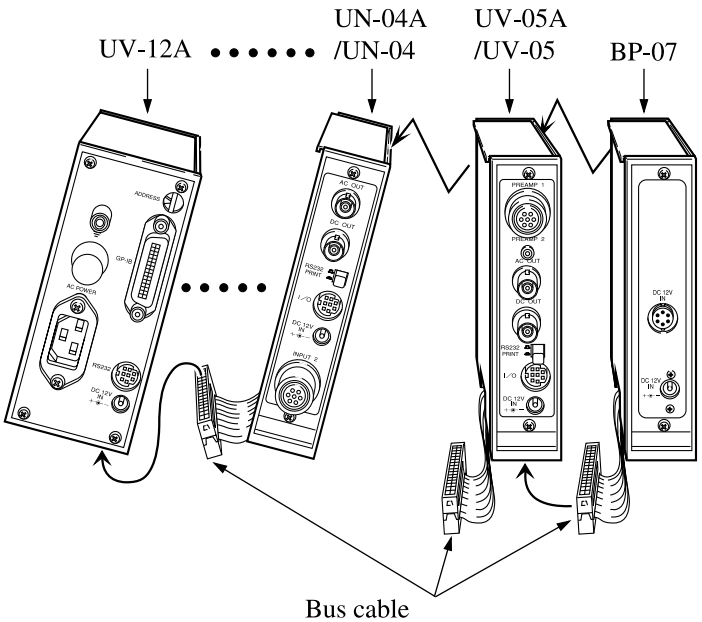
The UV-12A is designed for connection of the vibration meter unit UV-05A / UV-05 and/or the sound level meter unit UN-04A / UN-04. Any combination of up to ten units can be connected.

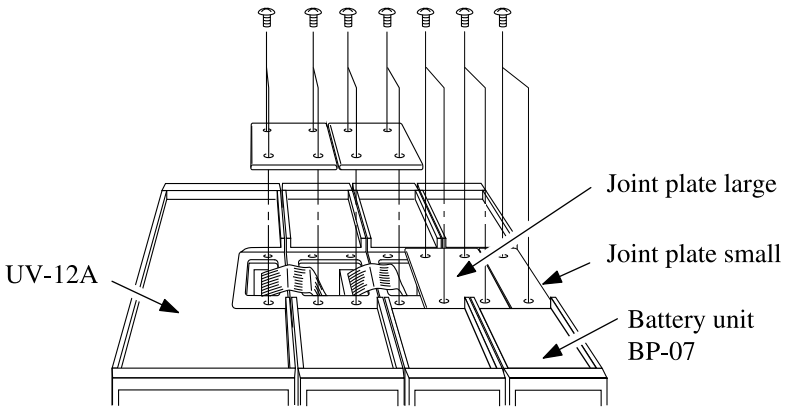


Unit Connections

Connect the UV-05A / UV-05 and/or UN-04A / UN-04 units to the UV-12A / UV-12 as follows.

1. Remove the connector cover on the bottom of each unit (including the UV-12A).
   The cover of the UV-05A and UN-04A serves as joint plate (large), and the cover of the UV-12A serves as joint plate (small).
2. Pull out the bus cable (ribbon cable with bus connector).
3. Engage the top edges of the units, connect the bus cables, and secure the units with the joint plates (large), as shown in the illustration below.
4. At the far end from the display unit UV-12A, install the joint plate (small).





Power Supply Connections

A measuring system consisting of one UV-12A and connected units can be powered in one of three different ways:

- From an AC outlet (⇒ p. 9)
- From the battery unit BP-07 (⇒ p. 10)

Important
When using the battery unit BP-07, power supply capacity is limited. For extended measurements or systems with many channels (many connected UV-05A / UN-04A units), the battery unit should not be used.

- From an external DC source such as a car battery (⇒ p. 11)

AC Power Supply

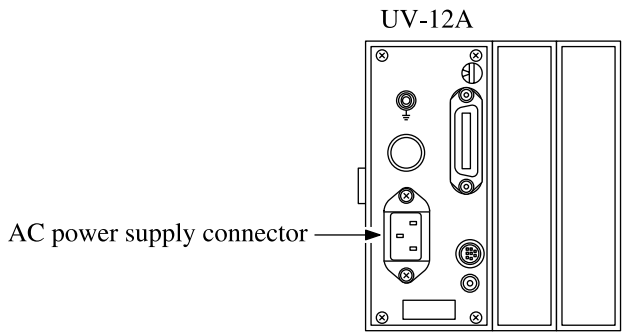
Use the supplied power cord to connect the AC power supply connector to an AC outlet. The allowable voltage range is 85 to 250 V, and the allowable line frequency is 47 to 440 Hz.

Important
Use a power cord with the plug shape and voltage rating which are suitable to your local AC power line.

Use of an AC Adapter

It is also possible to use the optional AC adapter NC-79 (100 to 250 V), NC-95 (100 to 240 V) , NC-97 (100 to 240 V) to supply DC power to the UV-12A. In this case, plug in the cable from the adapter only after all other connections are completed, and observe the precautions regarding DC power supply listed on page 11.

Do not connect anything to the power supply connector of the UV-05A / UV-05 or UN-04A / UN-04. Since these units have no power switch, they should be powered via the bus cable and thus switched on and off in conjunction with the UV-12A. If the units are directly connected to a power supply, coordinated switching is not possible, and the system may not start correctly.



Battery Unit

The system can be powered from the battery unit BP-07. Install the battery unit at the leftmost end, as seen from the front.

Batteries required by the BP-07

Eight IEC R14 (size "C") alkaline batteries

Battery life

When powering the UV-12A plus one connected UV-05A / UV-05 and UN-04A / UN-04, one set of batteries will last for about eight hours of operation. If the GP-IB interface is used, this time is shortened to about six hours. When the voltage meter on the battery unit enters the red zone, replace all batteries as soon as possible.

The rated current consumption of the various units is as follows.

UV-12A: Approx. 100 mA
(approx. 200 mA when using GP-IB interface)
UV-05A: Approx. 100 mA
UN-04A: Approx. 100 mA

Important
The UV-05A / UV-05, UN-04A / UN-04 does not have a power switch. When using the BP-07, leave the power switch of the BP-07 in the OFF position until all system connections (accelerometer, microphone, other equipment) are completed.

External Battery

An external DC power source such as a 12 V car battery can be connected to the DC power supply connector on the UV-12A or to the AC adapter connector on the battery unit BP-07. The allowable voltage range is +9 to +15 V.

Important
Make sure that the connected voltage does not exceed +15 V. Never connect for example a +24 V car battery, since this involves a safety risk.

DC power supply precautions

Because the UV-05A / UV-05, UN-04A / UN-04 has no power switch, connected units should be powered via the bus cable and thus switched on and off in conjunction with the UV-12A. If a power source is directly connected to these units, coordinated switching is not possible, and the system may not start correctly. This may also lead to electrical malfunction. You should therefore not connect anything to the power supply connector of the UV-05A / UV-05 or UN-04A / UN-04.

Before connecting the DC power source to the UV-12A, make sure that

- all equipment connections including accelerometers, microphones, and other equipment are complete.
- the power switch of the UV-12A is set to OFF.

DC power supply cable

The following cables are available as options:

- Car battery cable BP-03
  For connection of the AC adapter connector (DC 12 V IN, 6-pin jack) on the battery unit BP-07 to the cigarette lighter socket in a car
- Car battery cable BP-04
  For direct connection of the AC adapter connector (DC 12 V IN, 6-pin jack) on the battery unit BP-07 to a car battery

Address Selection for Connected Units

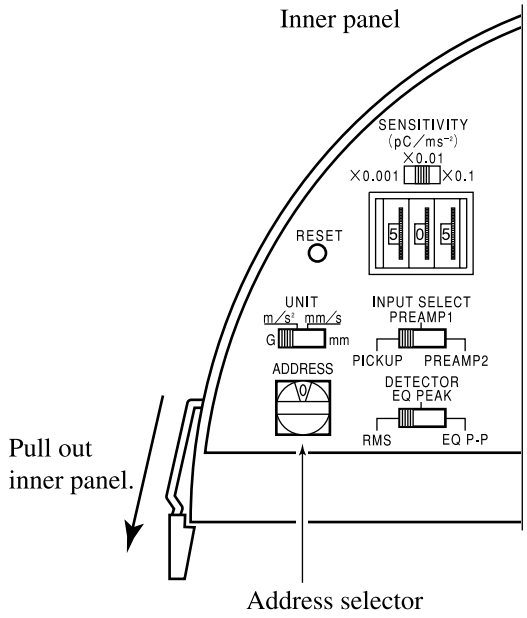
When all connections are established, select a separate address for each connected UV-05A / UV-05 and UN-04A / UN-04 unit, and mark the address with a sticker on the front panel.

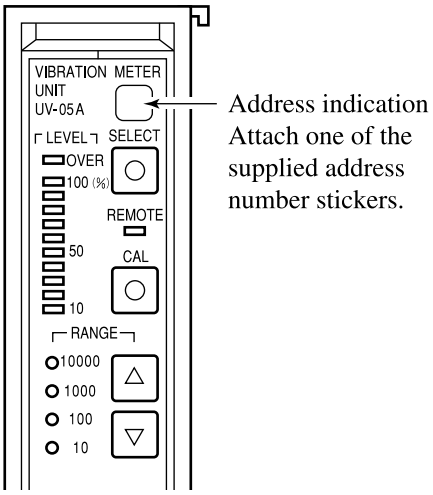
The address is necessary to distinguish between connected units. It is also required to control connected units from a computer via the interface of the UV-12A.

Note
The address setting explained in this section is totally unrelated to the GP-IB address setting determined by the GP-IB address selector on the rear panel of the UV-12A. The GP-IB address selector may be set to the same position as one of the unit addresses.

To set the unit address, use the address selector located on the inner panel of the UV-05A / UV-05 or UN-04A / UN-04 unit. Make this setting before supplying power, when you are setting the other measurement conditions (⇒ p. 15).
The setting range for the unit address is 0 to 9 and A to F. A unique address must be chosen for each connected unit.

Note
For quick reference when operating the UV-12A or when writing a computer program for system control, it is advisable to make a table listing the unit addresses along with accelerometer and microphone locations and measurement settings for each unit.

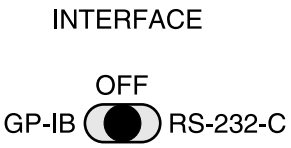




Front panel (top)

Interface Selection

Set the interface selector of the UV-12A to the desired position, depending on which interface standard you wish to use.



Interface selector

GP-IB: GP-IB interface ⇒ p. 30
RS-232-C: RS-232-C interface ⇒ p. 24
OFF: Interface not used (when using only the display function and power supply function of the UV-12A)

Note
Do not operate the interface selector while the UV-12A is switched on, because this can lead to malfunction.
When selecting the GP-IB interface, the GP-IB address must also be set. Make this setting with the GP-IB address selector on the rear panel of the UV-12A, before turning on the unit.

Startup

When all connections and selector settings (address and interface) are completed, start the system according to the following procedure.

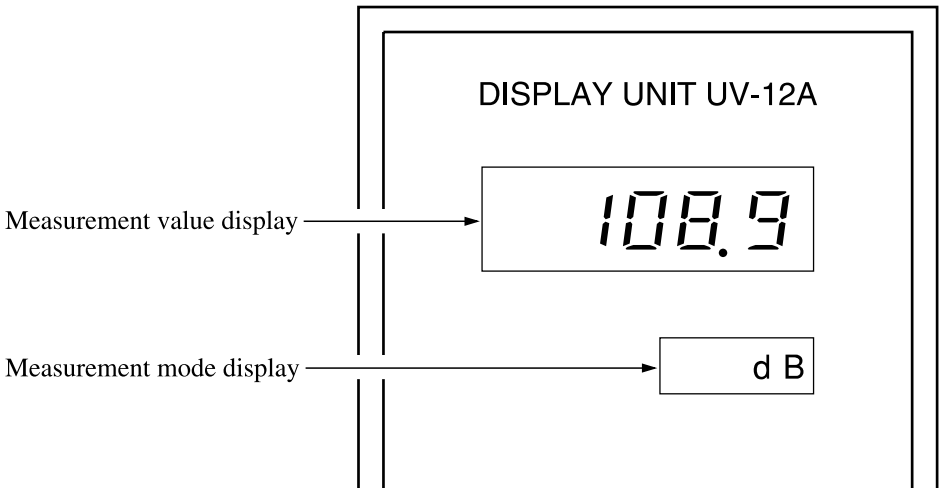
1. Make sure that power to all units is off.
   Set the power switch on the UV-12A and the power switch on the battery unit BP-07 (if connected) to OFF. Verify that nothing is connected to the power supply connectors of the UV-05A / UV-05 and UN-04A / UN-04 units.
2. Pull out the inner panel of the UV-05A / UV-05, UN-04A / UN-04 and set the address selector (set each selector to a unique position). This setting is read only once, when the system is turned on. The settings of other selectors on the inner panel (measurement mode etc.) may be changed after the system is turned on.
   When connected to the UV-12A, the I / O connector of the UV-05A / UV-05, UN-04A / UN-04 is disabled. The setting of the I / O function selector therefore has no effect.
3. Set the power switch of the UV-12A to ON. If an AC or DC power source is connected to the UV-12A, the unit itself as well as connected UV-05A / UV-05 and UN-04A / UN-04 units will be powered at this point.
4. If the battery unit BP-07 is connected, set the power switch of the battery unit to ON.

This completes the startup procedure.

Note
Be sure to follow the above sequence. If power to the UV-05A / UV-05 and UN-04A / UN-04 is not supplied at the same time as to the UV-12A, the UV-12A will not start up properly.

Display Functions

Measurement Value and Measurement Mode Display



The measurement value and measurement mode of the UV-05A / UV-05 or UN-04A / UN-04 unit whose select button indicator is lit are displayed by the UV-12A. The displayed measurement value can be either the instantaneous or the maximum value (⇒ p. 18). In both cases, the display is updated every second.

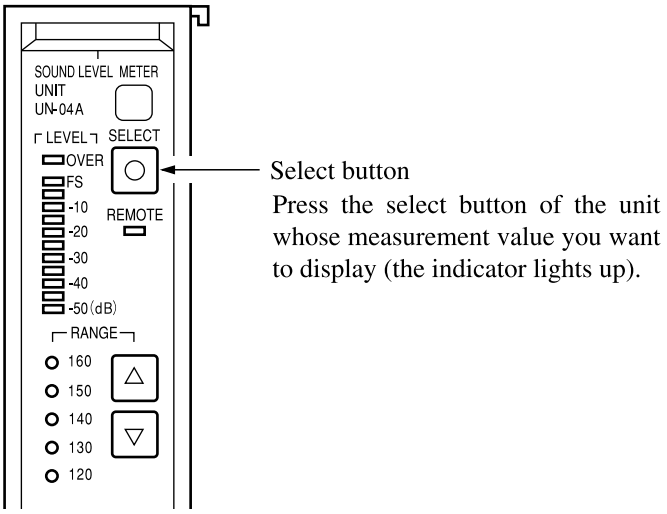
Measurement value: Numeric display of up to five digits (four effective digits) The unit is shown on the measurement mode display.

Measurement mode: The measurement mode is indicated by the unit of measurement, as follows.

Connected unit	Unit of measurement	Measurement mode
UN-04A/UN-04	dB	Sound pressure level
UV-05A/UV-05	m/s^2	Acceleration
	mm/s	Velocity
	mm	Displacement

Selecting the Display Channel

To change the channel (connected unit) whose values are displayed by the UV-12A, press the select button on the front panel of the desired unit. The indicator of that button lights up, and the measurement value and measurement mode of that unit are shown on the front panel of the UV-12A. The select button indicator of the previously selected unit goes out.



Front panel (top)

Maximum Value Hold / Release

The UV-12A can display either the instantaneous value or the maximum value of a measurement. The maximum hold on / off button serves to switch between the two modes. In both cases, the display is updated every second. During maximum value display, the indicator of the maximum hold on / off button is lit.

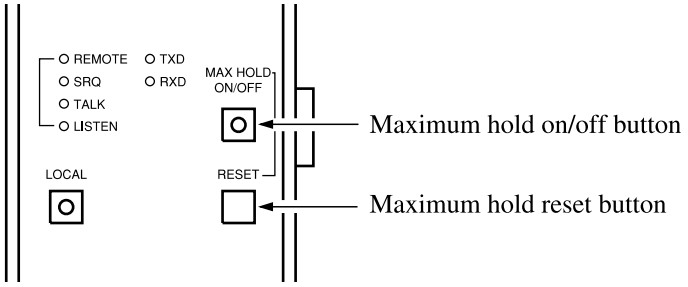
Maximum value reset

The maximum value is stored for each connected unit separately. The stored value is reset in the following cases.

- When a control button or switch of a connected unit other than the address selector and the select button is operated, the maximum value for that unit is reset.

Note
To eliminate the possible effects of switching noise, wait until the level has stabilized and then press the maximum hold reset button of the UV-12A.

- When the maximum hold on / off button or the maximum hold reset button of the UV-12A is operated, the stored maximum value for the currently displayed connected unit is reset.



Front panel (center)

- When the MRS command (maximum hold reset) is received via the RS-232-C or GP-IB interface, the stored maximum value for the connected unit whose address was specified before by the ADD command is reset.
- When the RES command (maximum hold reset) is received via the RS-232-C or GP-IB interface, the stored maximum value for the connected unit whose measurement value is currently displayed is reset.

Interface

The UV-12A incorporates two types of interfaces:

- RS-232-C
- GP-IB (general purpose interface bus)

These interfaces make it possible to control measurement settings of connected UV-05A / UV-05 and UN-04A / UN-04 units from a computer and to transfer measurement setting data and measurement result data to a computer. This section covers the following items.

- Interface (⇒ p. 20)
  Explains functions which are common to the RS-232-C interface and the GP-IB interface, such as remote mode / local mode switching and unit address selection.

- RS-232-C Interface (⇒ p. 24)
  Explains the RS-232-C interface transfer protocol and the steps for sending commands and data. RS-232-C interface connections to a computer are also explained.

- GP-IB Interface (⇒ p. 30)
  Explains the GP-IB interface functions and GP-IB address setting. GP-IB interface connections to a computer are also explained.

- Commands (⇒ p. 33)
  Contains a list of all interface commands and their format. The format of output data is also explained.

Remote Mode / Local Mode

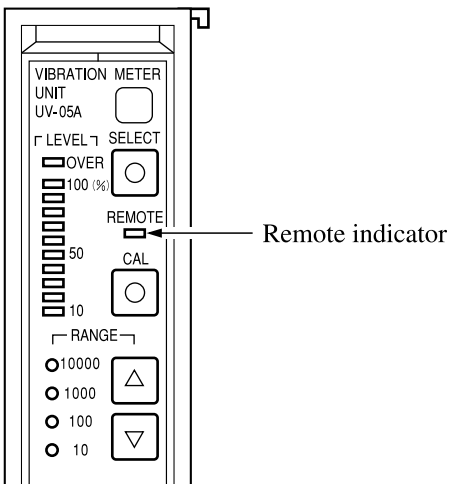
The UV-05A / UV-05 and UN-04A / UN-04 units have two operation modes: remote mode and local mode. The mode can be switched for each connected unit independently.

- Remote mode

  In this mode, all controls on the unit are inactive (except for the local button on the UV-12A). The unit only operates under control of commands sent from a computer. In remote mode, the remote indicator on the front panel of the respective unit is lit, and the indicator of the local button on the UV-12A is out.

- Local mode

  In local mode, the unit can be operated with its panel controls and with commands from the computer. In local mode, the remote indicator on the front panel of the respective unit is out, and the indicator of the local button on the UV-12A is lit.



UV-05A/UV-05 or
UN-04A/UN-04
front panel (top)

Remote Mode / Local Mode Switching

To switch between remote mode and local mode for each unit, perform one of the following steps.

- When the RS-232-C interface is used, or when the GP-IB interface is used to operate the UV-05A / UV-05 or UN-04A / UN-04:
  Send the SLK command (⇒ p. 36).

- When the GP-IB interface is used to operate the UV-12A:
  Send the command in the REN (Remote Enable) mode.
  Send the GTL (Go To Local) message.

- When the system is operated with the front-panel controls of the UV-12A:
  Press the local button.
  This only sets the UV-12A to the local mode. (Refer to the "Local Lockout" section below.)

Local Lockout

When the LLO (Local Lockout) message is sent via the GP-IB interface, the local button of the UV-12A becomes inactive. In this case, a GTL (Go To Local) message must be sent by the computer to re-enable the local mode.
When the RS-232-C interface is used, the local lockout function is not available.

Unit Address Selection

When wishing to control connected units with commands from a computer, the unit or units to be controlled must be specified first. This is performed with the unit address command. The command differs for the RS-232-C and the GP-IB interface (see next page).

Unit Address Range

Send one of the following one-byte ASCII codes.

- To control a single specific UN-04A / UN-04 or UV-05A / UV-05 unit:
  "0" through "9", "A" through "F"

- To control all connected UN-04A / UN-04 and UV-05A / UV-05 units:
  "U"

Note
Do not use "U" prior to commands STS, DOD, and MOD. The data requested by STS, DOD, or MOD cannot be sent and data transfer error may occur.

- To control the UV-12A:
  "P"

RS-232-C Interface

To specify the unit address, use the following format.

<SOH>n<STX>(command, command, ...)<ETX><CR><LF>

n:	Unit address (see previous page)
<SOH>:	Control code 01H
<STX>:	Control code 02H
<ETX>:	Control code 03H
<CR>:	Control code 0DH
<LF>:	Control code 0AH

For information on the transfer protocol and transfer procedure, please refer to page 26 and 27.

The unit address can be specified only once, at the beginning of a transfer string. If the address is specified somewhere else in a transfer string, an error occurs and the entire string is disregarded.

GP-IB Interface

Use the ADD command to specify the unit address. Within one transfer string, the unit address may be specified only once (at any position). If the address is specified twice in a transfer string, an error occurs and the entire string is disregarded.

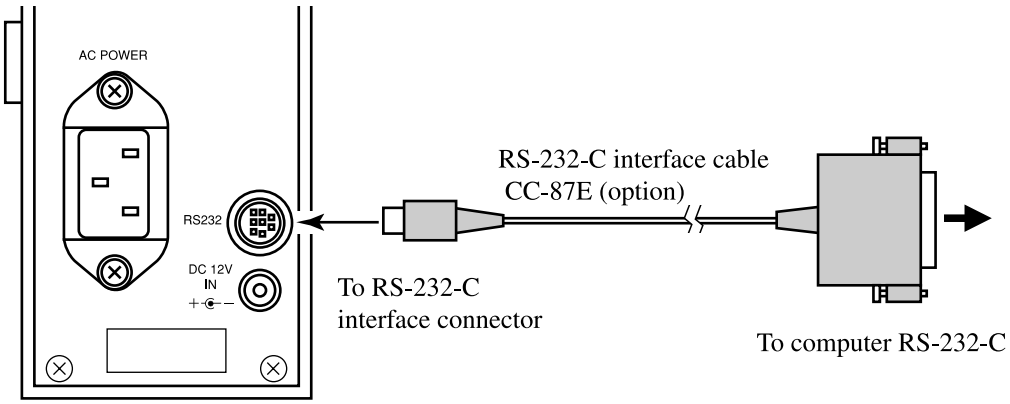
Note
For information on remote mode / local mode switching of the UV-12A, please refer to page 20.

RS-232-C Interface

Connection to a Computer

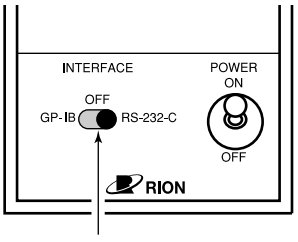
When wishing to use the RS-232-C interface, connect the UV-12A to the computer as shown below, and set the interface selector on the UV-12A to "RS-232-C".

Note
Make this connection before turning the unit on.



UV-12A rear panel (bottom)

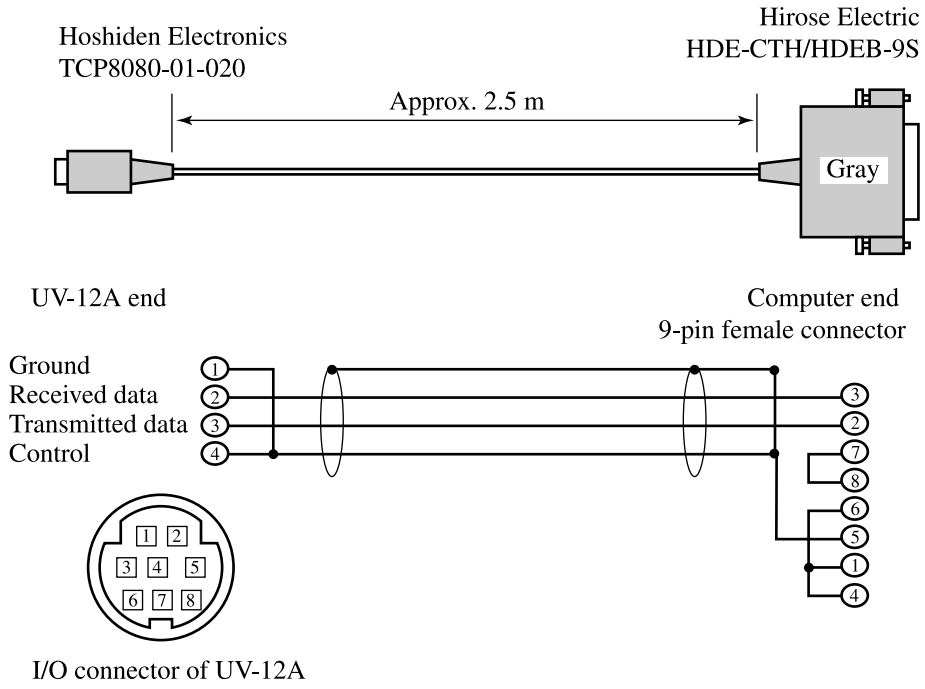
UV-12A front panel (bottom)



Set interface selector to "RS-232-C".

RS-232-C Interface Cable Wiring

RS-232-C interface cable CC-87E (option)



Transfer Protocol

Flow control:	Yes
Transmission:	Asynchronous, half-duplex
Data word length:	8 bit
Stop bits:	2 bit
Parity:	None
Baud rate:	4800 bps

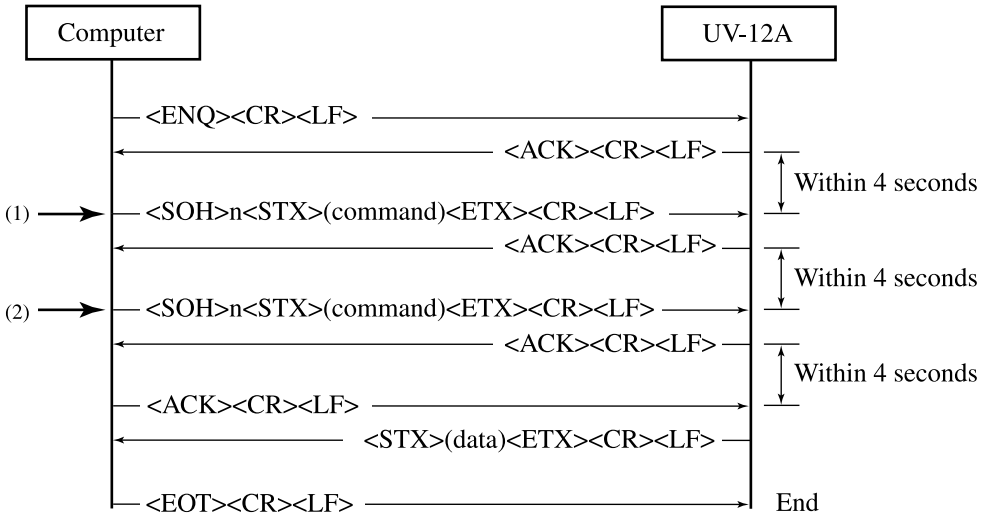
Transfer Procedure

In order to control the units connected to the UV-12A from a computer or to retrieve measurement data, certain commands must be sent to the UV-12A. The data exchange must be performed according to certain rules, to ensure that both the UV-12A and the computer recognize the commands and data properly.

To send commands to the UV-12A, the following procedure must be observed.

1. The computer sends <ENQ><CR><LF> to the UV-12A.
2. When <ENQ><CR><LF> has been received, the UV-12A returns <ACK><CR><LF> to the computer.
3. The computer verifies receipt of <ACK><CR><LF> and sends a command within 4 seconds.
4. When a valid command is received by the UV-12A, it carries out the command. If it is a command which controls measurement settings, the appropriate setting is established, and an <ACK><CR><LF> is returned to the computer. If it is a command which requests data, the UV-12A returns <ACK><CR><LF> to the computer and waits for <ACK><CR><LF> from the computer. If, within 4 seconds, <ACK><CR><LF> is received by the UV-12A, it sends the appropriate data to the computer.
5. Within 4 seconds of sending the <ACK><CR><LF> or the data to the computer, the UV-12A can accept the next command. It is therefore possible to repeat steps 3 and 4, for continuous interaction with the computer. If no further commands are received within 4 seconds, time-out occurs. In this case, the procedure must be restarted from step 1.
6. When the computer sends an <EOT><CR><LF> to the UV-12A, data transfer is completed. To send new commands, the procedure must then be restarted from step 1.

Normal transfer sequence



(1): Command which controls measurement setting
(2): Command which requests data

<ENQ>: Control code 05H (enquire)
<ACK>: Control code 06H (acknowledge)
<NAK>: Control code 15H (not acknowledge)
<SOH>: Control code 01H (start of transfer)
<EOT>: Control code 04H (end of transfer)
<STX>: Control code 02H (start text)
<ETX>: Control code 03H (end text)
<CR>: Control code 0DH (carriage return)
<LF>: Control code 0AH (line feed)
n: ASCII character 0 to 9, A to F (unit address)
(command): ASCII string (command and parameters for UV-12A)
(data): ASCII string (requested data from UV-12A)

Error Handling

In order to ensure correct data exchange between the UV-12A and the computer, the rules described P. 28, 29 must be observed. If an error occurs, the following steps should be taken.

- The computer has sent <ENQ><CR><LF> but no response is received from the UV-12A.
  Send <ENQ><CR><LF> again after about 2 seconds. Repeat this several times. If there is still no response from the UV-12A, one of the following conditions may exist:
  Transfer parameters do not match.
  Interface cable is defective or not properly connected.
  UV-12A is not powered.
  Interface selector on UV-12A is not set to "RS-232-C".

- <ACK><CR><LF> from the UV-12A was received, but the computer has not completed the sending of commands within 4 seconds.
  The UV-12A terminates the data transfer condition.

- A wrong command was sent.
  When the computer has sent a wrong command (invalid string or parameter out of range), the UV-12A returns <NAK><CR><LF>. This can be repeated up to three times, but if the command is still invalid at the fourth try, the UV-12A sends <EOT><CR><LF> and terminates the data transfer condition.

- Data from UV-12A were not received properly.
  When the computer returns a <NAK><CR><LF>, the UV-12A sends the immediately preceding data (including <ACK><CR><LF> and <NAK><CR><LF>) again. This can be repeated up to three times, but if the data are still not received at the fourth try, the UV-12A sends <EOT><CR><LF> and terminates the data transfer condition.

GP-IB Interface

Interface Functions

Applicable standard:	IEEE 488	
Interface functions:	Source handshake	SH1
	Acceptor handshake	AH1
	Basic talker	T8
	Talker release by MLA	
	No serial poll and talk only mode	
	Basic listener	L4
	Listener release by MTA	
	No listen only mode	
	No controller function	C0
	No service request mode	SR0
	Remote / local	RL1
	Local lockout	
	No parallel poll	PP0
	No device clear	DC0
	No device trigger	DT0

Delimiter

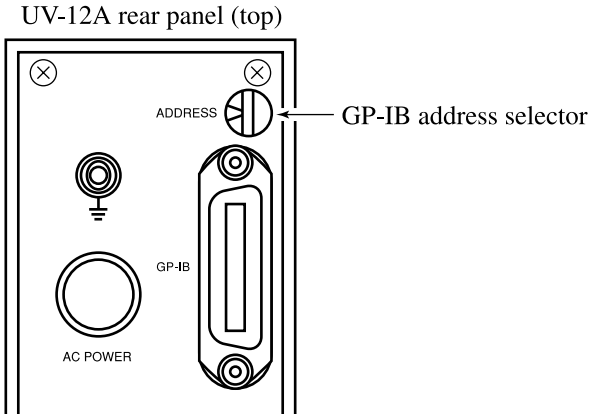
Delimiter:	<CR><LF>
<CR>:	Control code 0D$_H$ (carriage return)
<LF>:	Control code 0A$_H$ (line feed)

Address Selection

To use the GP-IB interface, the GP-IB address must be set with the GP-IB address selector.

Setting range: 1 to 15 (10 through 15 are set as A through F)

Note
The GP-IB address setting is totally unrelated to the unit address setting of the connected units. The GP-IB address selector may be set to the same position as one of the unit addresses.

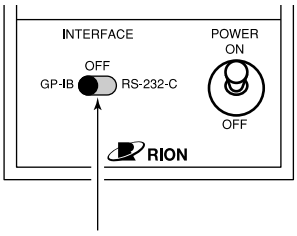


Connection to a Computer

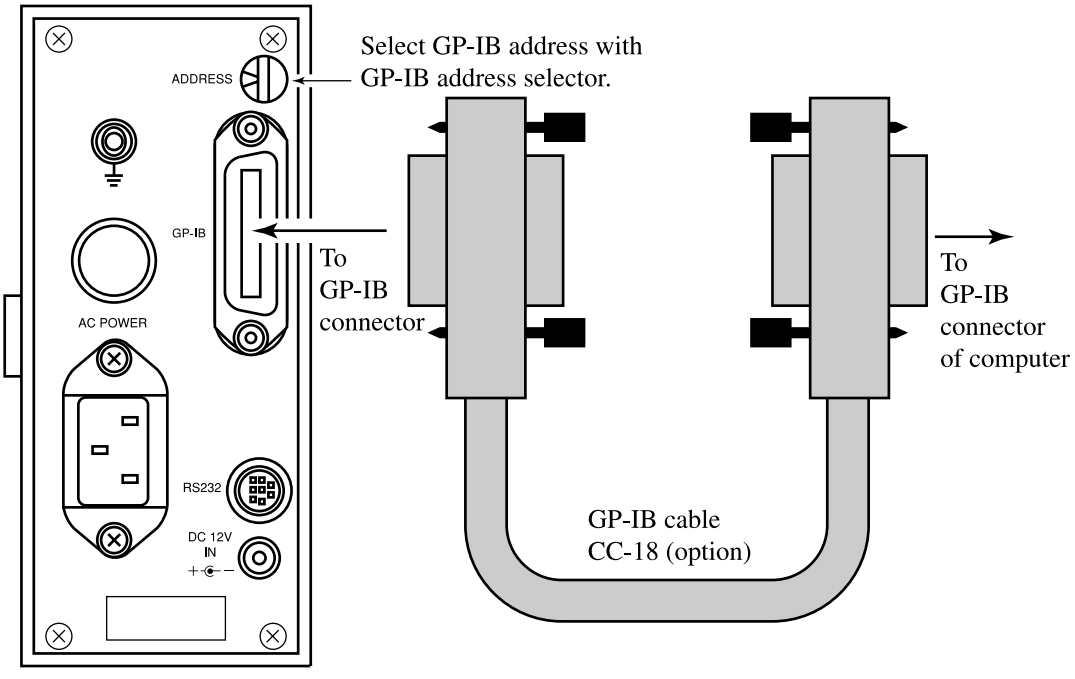
When wishing to use the GP-IB interface, connect the UV-12A to the computer as shown below, and set the interface selector on the UV-12A to "GP-IB". Select the GP-IB address with the GP-IB address selector on the UV-12A. This setting is not related to the unit address settings.

Important
Use a GP-IB cable that conforms to the IEEE-488 standard, and make the connection before supplying power.

UV-12A front panel (bottom)



Set Interface selector to "GP-IB"

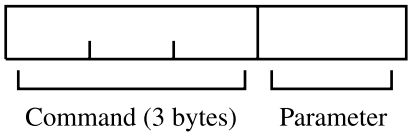


UV-12A rear panel

Commands

Command Format

Commands that can be used by the UV-12A consist of 3 characters (3 bytes), usually followed by a parameter which specifies the action range of the command. Some commands do not have parameters.



In the following command description, parameters are denoted by "n".

Several commands can be sent together in a string, using a comma as delimiter.

Example: DET0, ISL2, RNG1

Command List

Specifying Unit Control

ADDn Specifies the address of the unit to be controlled.
This command is only valid when the GP-IB interface is used (⇒ p. 22, 23).

To specify a single connected UV-05A / UV-05 or UN-04A / UN-04 unit whose address selector is set to this address:

n = 0 to 9, A to F

To specify all connected UV-05A / UV-05 and UN-04A / UN-04 units:

n = U

Note
Do not use ADDU prior to commands STS, DOD, and MOD. The data requested by STS, DOD, or MOD cannot be sent and data transfer error may occur.

To specify the UV-12A:

n = P

UV-05A / UV-05, UN-04A / UN-04 Control Commands

AMPn Specifies the range setting for the selected unit. This command is only valid for the UN-04A / UN-04 (for the UV-05A / UV-05, the RNG command is used). The range specified by n depends on the microphone sensitivity setting.

Sensitivity (dB)	Parameter n and specified range (unit: dB)					
	n = 0	n = 1	n = 2	n = 3	n = 4	n = 5
-20.0 to -29.9	80	90	100	110	120	130
-30.0 to -39.9	90	100	110	120	130	140
-40.0 to -49.9	100	110	120	130	140	150
-50.0 to -59.9	110	120	130	140	150	160

CALn Enables or disables the calibration mode for the specified unit.
The action of this command corresponds to the calibration button.

n = 0: Calibration mode disabled
n = 1: Calibration mode enabled

DETn Selects the detection characteristics or time weighting of the specified unit.
The action of this command corresponds to the detection characteristics selector (UV-05A) or the time weighting selector (UN-04A).

UV-05A (detection characteristics)

n = 0: RMS (RMS value)
n = 1: EQ PEAK (equivalent peak value)
n = 2: EQ P-P (equivalent peak-to-peak value)

UN-04A (time weighting)

n = 3: FAST
n = 4: SLOW
n = 5: 10 ms

FLTn Controls the filter setting of the specified unit.
This command is valid only for the UN-04A. The action of this command corresponds to the filter control switches.

n = 0: All filters off
n = 1: Internal 20 kHz LPF on
n = 2: Internal 20 Hz HPF on
n = 3: Internal 20 kHz LPF and 20 Hz HPF on
n = 4: HPF of filter unit NX-06 on
n = 5: LPF of filter unit NX-06 on
n = 6: HPF and LPF of filter unit NX-06 on

Filter frequency of the NX-06 is set with the HPF / LPF switch of the NX-06. When the switch is set to off, n = 4, 5, and 6 are treated as n = 0.
When the NX-06 is not installed, n = 4, 5, and 6 are treated as n = 0.

ISLn Selects the input signal for the specified unit.

The action of this command corresponds to the input selector.

UV-05A / UV-05

n = 0: Accelerometer connector (PICKUP)

n = 1: Preamplifier 1 connector (PREAMP 1)

n = 2: Preamplifier 2 connector (PREAMP 2)

UN-04A / UN-04

n = 3: Front-panel input 1 (INPUT 1)

n = 4: Rear-panel input 2 (INPUT 2)

MRS Resets the maximum value for the specified unit. (This command has no parameters.)

RNGn Selects the range for the specified unit.

This command is only valid for the UV-05A / UV-05 (for the UN-04A / UN-04, the AMP command is used).

The range specified by the parameter n depends on the sensitivity setting and the measurement mode setting, as shown below.

Sensitivity	Measurement mode	Parameter n and specified range						
		n = 0	n = 1	n = 2	n = 3	n = 4	n = 5	n = 6
0.100 to 0.999	Acceleration (m/s^2)	10	31.6	100	316	1000	3160	10000
	Velocity (mm/s)	10	31.6	100	316	1000	3160	10000
	Displacement (mm)	1	3.16	10	31.6	100	316	1000
1.00 to 9.99	Acceleration (m/s^2)	1	3.16	10	31.6	100	316	1000
	Velocity (mm/s)	1	3.16	10	31.6	100	316	1000
	Displacement (mm)	0.1	0.316	1	3.16	10	31.6	100
10.0 to 99.9	Acceleration (m/s^2)	0.1	0.316	1	3.16	10	31.6	100
	Velocity (mm/s)	0.1	0.316	1	3.16	10	31.6	100
	Displacement (mm)	0.01	0.0316	0.1	0.316	1	3.16	10

SLKn Enables remote mode or local mode for the specified unit.

n = 0: Local mode

n = 1: Remote mode

Note
When using the GP-IB interface, the SLK command cannot be applied to the UV-12A (⇒ p. 21).

SNMn Selects the sensitivity multiplication factor for the specified unit.
This command is only valid for the UV-05A / UV-05. The action of this command corresponds to the slide switch of the sensitivity selector.

n = 0: × 0.001
n = 1: × 0.01
n = 2: × 0.1

SNSn Selects the sensitivity numeric value for the specified unit.
The action of this command corresponds to the digital switch of the sensitivity selector.

UV-05A / UV-05

n = 100 to 999

When parameter n is a value between 000 and 099, the sensitivity of the UV-05A / UV-05 is set as specified by n (command error does not occur). The measurement data, however, will not be reliable.

UN-04A / UN-04

n = 200 to 599 (corresponding to -20.0 to -59.9 dB)

When n is set to 000 to 199, it is treated as n = 200; 600 to 999, treated as n = 599.

UNTn Selects the measurement mode for the specified unit.
This command is only valid for the UV-05A / UV-05.
The action of this command corresponds to the measurement mode selector.

n = 1: Acceleration (m / s^2)
n = 2: Velocity (mm / s)
n = 3: Displacement (mm)

WGTn Selects the frequency weighting for the specified unit.
This command is only valid for the UN-04A / UN-04.
The action of this command corresponds to the frequency weighting selector.

n = 0: A weighting
n = 1: C weighting
n = 2: Flat response (F)

UV-12A Control Commands

DISn Specifies the source unit whose measurement value is to be displayed by the UV-12A, using the unit address.
The action of this command corresponds to the address selector of the unit.

n = 0 to 9, A to F

MAXn Specifies whether to use the instantaneous value or maximum hold display mode.
This command does not reset the maximum value.

n = 0: Instantaneous value display
n = 1: Maximum value display

RES Resets the maximum value of the currently displayed unit. (This command has no parameters.)

Data Request Commands

DOD Requests the current measurement data for the specified unit. (This command has no parameters.)
The format of the data output in response to this command is described on page 40.

MOD Requests the maximum value of the current measurement data for the specified unit. (This command has no parameters.)
The maximum value is defined as the maximum value encountered since the unit was turned on or since the last maximum value reset. For information on maximum value reset, please refer to page 18.
The format of the data output in response to this command is described on page 40.

STS Requests the current measurement settings for the specified unit. (This command has no parameters.)
The format of the data output in response to this command is described on page 41.

UNO Requests the unit address and type of unit connected (UV-05A / UV-05, UN-04A / UN-04). (This command has no parameters.)
The format of the data output in response to this command is described on page 44.

Note
Do not use commands STS, DOD, and MOD after specifying unit address "U". The data requested by STS, DOD, or MOD cannot be sent and data transfer error may occur.

Output Data Format

This section describes the format of the output data in response to the DOD, MOD, and STS commands.

Output Data in Response to DOD and MOD

The DOD command requests the current measurement value, and the MOD command the maximum measurement value. The output data format is as follows. An underline (_) represents a space.

UV-05A / UV-05

<STX>nn. nnE ±m, xx<ETX><CR><LF>

nn. nn	Real number of measurement value (00.00 to 31.62)	Actual measurement value is nn.nn × $10^{\pm m}$.
±m	Exponent of measurement value (-2 to +4)	
xx	Overload indication __: No overload OV: Overload has occurred	

UN-04A / UN-04

<STX>nnn. n ___, xx<ETX><CR><LF>

nnn. n	Measurement value
xx	Overload indication __: No overload OV: Overload has occurred

Output Data in Response to STS

The current measurement settings are output by the UV-12A in the following format.

<STX>n1n2n2n2n3n4n5n6n7n8<ETX><CR><LF>

n1 Input signal

UV-05A / UV-05

- n1 = 0: Accelerometer connector (PICKUP)
- n1 = 1: Preamplifier 1 connector (PREAMP 1)
- n1 = 2: Preamplifier 2 connector (PREAMP 2)

UN-04A / UN-04

- n1 = 3: Input connector 1
- n1 = 4: Input connector 2

n2n2n2 Sensitivity numeric value

UV-05A / UV-05: 100 to 999

UN-04A / UN-04: 200 to 599

(corresponding to -20.0 to -59.9 dB)

n3 Sensitivity multiplication factor for UV-05A / UV-05 or filter type for UN-04A / UN-04

UV-05A / UV-05 (sensitivity multiplication factor)

- n3 = 0: × 0.001
- n3 = 1: × 0.01
- n3 = 2: × 0.1

UN-04A / UN-04 (filter type)

- n3 = 0: All filters off
- n3 = 1: Internal 20 kHz LPF on
- n3 = 2: Internal 20 Hz HPF on
- n3 = 3: Internal 20 kHz LPF and 20 Hz HPF on
- n3 = 4: HPF of filter unit NX-06 on
- n3 = 5: LPF of filter unit NX-06 on
- n3 = 6: HPF and LPF of filter unit NX-06 on

n4 Measurement mode for UV-05A / UV-05 or frequency weighting for UN-04A / UN-04

UV-05A / UV-05 (measurement mode)

n4 = 1: Acceleration (m / s^2)

n4 = 2: Velocity (mm / s)

n4 = 3: Displacement (mm)

UN-04A / UN-04 (frequency weighting)

n4 = 0: A weighting

n4 = 1: C weighting

n4 = 2: Flat response (F)

n5 Detection characteristics for UV-05A / UV-05 or time weighting for UN-04A / UN-04

UV-05A / UV-05 (detection characteristics)

n5 = 0: RMS (RMS value)

n5 = 1: EQ PEAK (equivalent peak value)

n5 = 2: EQ P-P (equivalent peak-to-peak value)

UN-04A / UN-04 (time weighting)

n5 = 3: FAST

n5 = 4: SLOW

n5 = 5: 10 ms

n6 Range

The range specified by n6 depends on the sensitivity setting and the measurement mode setting for the accelerometer or microphone, as shown below.

UV-05A / UV-05

Sensitivity	Measurement mode	n6 and specified range						
		n6 = 0	n6 = 1	n6 = 2	n6 = 3	n6 = 4	n6 = 5	n6 = 6
0.100 to 0.999	Acceleration (m/s^2)	10	31.6	100	316	1000	3160	10000
	Velocity (mm/s)	10	31.6	100	316	1000	3160	10000
	Displacement (mm)	1	3.16	10	31.6	100	316	1000
1.00 to 9.99	Acceleration (m/s^2)	1	3.16	10	31.6	100	316	1000
	Velocity (mm/s)	1	3.16	10	31.6	100	316	1000
	Displacement (mm)	0.1	0.316	1	3.16	10	31.6	100
10.0 to 99.9	Acceleration (m/s^2)	0.1	0.316	1	3.16	10	31.6	100
	Velocity (mm/s)	0.1	0.316	1	3.16	10	31.6	100
	Displacement (mm)	0.01	0.0316	0.1	0.316	1	3.16	10

UN-04A / UN-04

Sensitivity (dB)	n6 and specified range (unit: dB)					
	n6 = 0	n6 = 1	n6 = 2	n6 = 3	n6 = 4	n6 = 5
-20.0 to -29.9	80	90	100	110	120	130
-30.0 to -39.9	90	100	110	120	130	140
-40.0 to -49.9	100	110	120	130	140	150
-50.0 to -59.9	110	120	130	140	150	160

n7 Remote mode / local mode setting

n7 = 0: Local mode

n7 = 1: Remote mode

n8 Calibration mode on / off setting

n8 = 0: Calibration mode disabled

n8 = 1: Calibration mode enabled

Output Data in Response to UNO

The unit address and type data are output by the UV-12A in the following format.

<STX>n11n12, n21n22, n31n32, ... nm1, nm2<ETX><CR><LF>

m: Number of connected units

ni1 Unit type
ni1 = N: UN-04A or UN-04
ni1 = V: UV-05A or UV-05

ni2 Unit address
ni2 = 0 to 9, A to F

i: 1 to m

Specifications

Display

Measurement value (max. 5 digits, instantaneous value or maximum value, updated every second)

Measurement unit

GP-IB interface

Applicable standard:

IEEE 488

GP-IB address range:

0 to 9, A to F, selectable

Interface cable: CC-18 (option)

Interface functions:		
	Source handshake	SH1
	Acceptor handshake	AH1
	Basic talker	T8
	Talker release by MLA	
	No serial poll and talk only mode	
	Basic listener	L4
	Listener release by MTA	
	No listen only mode	
	No controller function	C0
	No service request mode	SR0
	Remote / local	RL1
	Local lockout	
	No parallel poll	PP0
	No device clear	DC0
	No device trigger	DT0

RS-232-C interface

Applicable standard: EIA RS-232-C
Flow control: Yes
Transmission: Asynchronous, half-duplex
Data word length: 8 bit
Stop bits: 2
Parity: None
Baud rate: 4800 bps
Interface cable: CC-87E (option)

Power requirements

+9 to +15 V DC
85 to 250 V AC, 47 to 440 Hz
Current consumption when a total of ten UV-05A / UV-05 and UN-04A / UN-04 units are connected: 0.3 A at 100 V AC
Suitable battery unit: BP-07 (option)

Ambient conditions for operation

-10 to +50°C, 90% RH or less

Dimensions

66 (W) × 149 (H) × 210 (D) mm (without protruding parts)

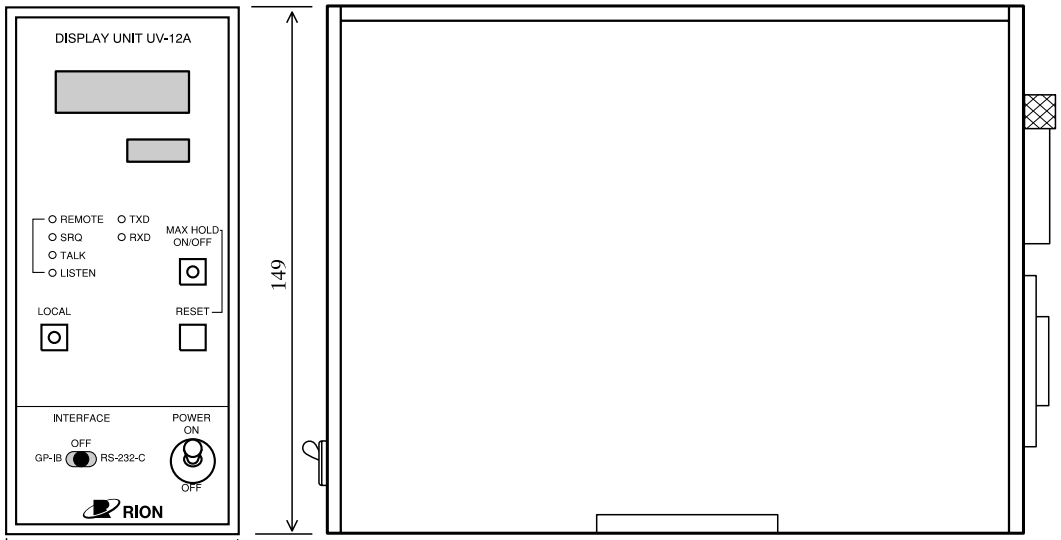
Weight

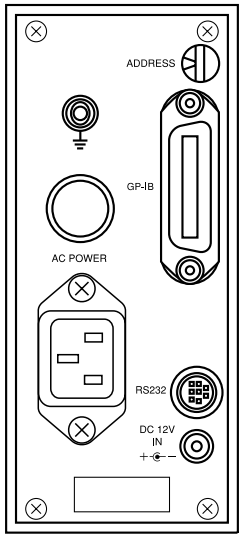
Approx. 1.3 kg

Supplied Accessories

Instruction manual	1
Inspection certificate	1
AC power cord	1
Address number sticker	1 set

Display unit UV-12A





Rear view

Unit: mm

Dimensional drawing

No. 35300 03-12