

RIGOL

User Guide



METAF

Electronic Solutions – since 1993

RP1003C/1004C/1005C/1006C Current Probe

**Sept. 2020
RIGOL TECHNOLOGIES CO., LTD.**

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Contact Us

If you have any problem or requirement when using our products or this manual, please contact **RIGOL**.

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Websites: www.rigol.com







General Safety Summary

CAUTION




This device is designed to comply with IEC 61010 Safety Standards, and has been thoroughly tested for safety prior to shipment. However, mishandling during use could result in injury or death, as well as damage to the device. Ensure that you understand the instructions and precautions in the manual before use.

Safety Terms and Symbols

Before using the device, be sure to carefully read the following safety notes.

	<p>The  symbol printed on the device indicates that the user should refer to a corresponding topic in the manual (marked with the  symbol) before using the relevant function.</p> <p>In the manual, the  symbol indicates particularly important information that the user should read before using the device.</p>
	<p>The  symbol printed on the device indicates that only insulated conductors suited to the voltage of the circuit under test can be measured.</p>

The following symbols in this manual indicate the importance of cautions and warnings.

 DANGER	<p>Indicates that incorrect operation presents an extreme hazard that could result in serious injury or death to the user.</p>
 WARNING	<p>Indicates that incorrect operation presents a significant hazard that could result in serious injury or death to the user.</p>
 CAUTION	<p>Indicates that incorrect operation presents a possibility of injury to the user or damage to the device.</p>
NOTE	<p>Indicates advisory items related to performance or correct operation of the device.</p>

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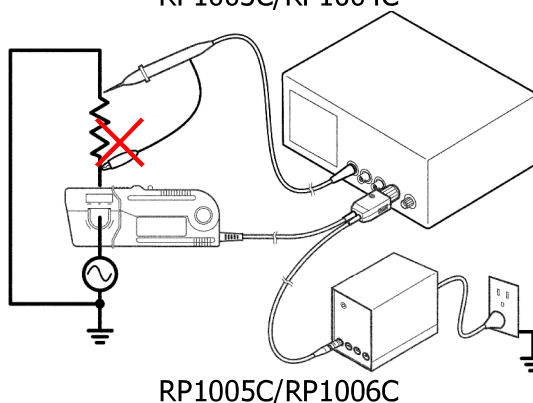
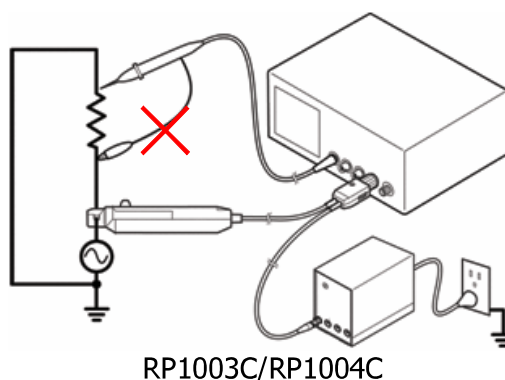
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Safety Precautions

DANGER

1. Do not measure around a bare conductor. Doing so may result in short-circuit or electric shock. Take measurements at a location on an insulated wire where there is sufficient insulation for the circuit voltage.
2. When measuring current that contains high-frequency components, refer to **Appendix 2 Relation between Max Input Current and Frequency**. Never measure any current that exceeds the rated current.
3. Using the probe in strong high-frequency magnetic fields may cause the device to become abnormally hot, resulting in fire, equipment damage, or burns (see **Specifications**).
4. Observe the following to avoid electric shock and short circuit.
 - 1) Connect the probe to the power adapter and waveform measurement instrument first, and then connect the probe to the active lines to be measured.
 - 2) When the sensor is opened, do not short circuit the conductor being measured.
 - 3) Be careful to avoid damaging the insulation surface while taking measurements.
 - 4) Before clamping the conductor being measured, make sure that the insulation on the conductor is undamaged. Also, take care not to damage the insulation when clamping the conductor. Any damage to the insulation could cause an electric shock.
 - 5) The probe is made for use with the RP1000P power adapter.
 - 6) To prevent fire, avoid damage or burns of the measurement object/device, pay attention to the following cautions when measuring high-frequency currents or currents that contain high-frequency components:
 - ✧ Eddy current loss may cause heating of the sensor head.
 - ✧ Dielectric heating may cause heating of cord insulation and other materials.
 - 7) The probe should only be connected to the secondary side of a breaker, so the breaker can prevent an accident if a short circuit occurs. Connections should never be made to the primary side of a breaker, because unrestricted current flow could cause a serious accident if a short circuit occurs.
 - 8) Be sure to observe all operating precautions for the waveform measurement instrument and other measurement instruments to which the probe is connected.
 - 9) When using a measurement instrument that does not provide isolation

between its input terminals, chassis, or other input terminals, please pay attention to the following points. If a signal is applied to an input terminal other than that to which the probe is connected, do not connect the ground-side terminal of the signal to any non-ground potential. Otherwise, short-circuit current will flow through the RP1000P or the current probe from the ground terminal, which could cause an electrical accident or damage to the current probe.



⚠ WARNING

1. Do not allow the device to get wet, and do not take measurements with wet hands. This may cause an electric shock.
2. Do not press the demagnetizing switch (DEMAG) to perform demagnetization while the conductor being measured is clamped. Doing so could damage the circuitry or cause an accident that might result in injury or death.
3. Ensure that the input does not exceed the maximum rated current to avoid device damage, short-circuiting and electric shock resulting from heat building.
4. To avoid electric shock when measuring live lines, wear appropriate protective gear, such as insulated rubber gloves, boots and a safety helmet.

⚠ CAUTION

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1. To avoid damage to the probe, protect it from vibration or shock during transport and handling, and be especially careful to avoid dropping.
2. This probe should be installed and operated indoors only, with temperature between 0°C and 40°C; relative humidity not greater than 80%.
3. Do not store or use the probe where it could be exposed to direct sunlight, high temperature, humidity, or condensation. Under such conditions, its performance specifications may be undermined as its insulation may deteriorate and even worse, the probe may be damaged.
4. This probe is not designed to be entirely water-proof or dust-proof. To avoid damage, do not use it in a wet or dusty environment.
5. The sensor head is a precision assembly that contains a molded component, a ferrite core, and a Hall effect element. It may be damaged if subjected to sudden changes at ambient temperature, or mechanical strain or shock, and therefore great care should be exercised in handling it.
6. The mating surfaces of the sensor head are precision ground, and should be treated with care. If these surfaces are scratched, performance may be impaired.
7. Measurements are degraded by dirt on the mating surfaces of the sensor head, so keep the surfaces clean by gently wiping with a soft cloth.
8. Foreign substances such as dust on the mating surfaces of the sensor head can cause acoustic resonance (refer to the introduction about **resonant sound**) and degrade measurement, so it should be cleaned by gently wiping with a soft cloth.
9. To avoid damaging the sensor cable and power supply cable, do not bend or pull the cables.
10. Do not apply a static electricity or other source of high voltage to the sensor. Doing so may damage its internal Hall elements and circuitry.
11. To clean the probe, wipe it gently with a soft cloth moistened with water or mild detergent. Never use solvents such as benzene, alcohol, acetone, ether, ketones, thinners or gasoline, as they can deform and discolor the case.
12. When the power is on, keep the sensor closed, except when clamping it onto the conductor to be measured. The mating surface of the core section can be scratched while it is open.

13. Keep the sensor head closed when not in use to avoid accumulating dust or dirt on the mating surfaces, as dust accumulation could undermine its clamp performance.
14. Avoid stepping on or pinching the cable to prevent damaging the cable insulation.
15. Keep the cables far away from heat sources, as bare conductors could be exposed if the insulation melts.

NOTE

Correct measurement may be impossible in the presence of strong magnetic fields, such as near transformers and high-current conductors, or in the presence of strong electromagnetic fields such as near radio transmitters.

Service

When sending the probe for repair, pack carefully to prevent damage during transportation. Keep the cushioning materials within the package to avoid the probe to be damaged. Be sure to include details of the problem. **RIGOL** shall not be responsible for damage that occurs during shipment.

A regular calibration is necessary in order to ensure the accuracy performance of the probe. If you need to calibrate the current probe, contact **RIGOL**.

Current Probe Overview

This current probe can be directly connected to a BNC input connector of a waveform measuring instrument. By clamping the sensor head onto a conductor to be measured, the probe can easily capture the current waveforms.

Main Features:

- ◆ Highly accurate current detection
- ◆ Easy current measurement
- ◆ Broadband frequency characteristics
 - RP1003C: DC to 50 MHz
 - RP1004C: DC to 100 MHz
 - RP1005C: DC to 10 MHz
 - RP1006C: DC to 2 MHz
- ◆ RP1003C/RP1004C: Compact design, permits measurement of low current levels
- ◆ RP1005C/RP1006C: Large diameter allows high-current measurements
- ◆ Easy protect function at excessive input
- ◆ Unique thin film Hall effect element

RP1003C/RP1004C Parts Overview

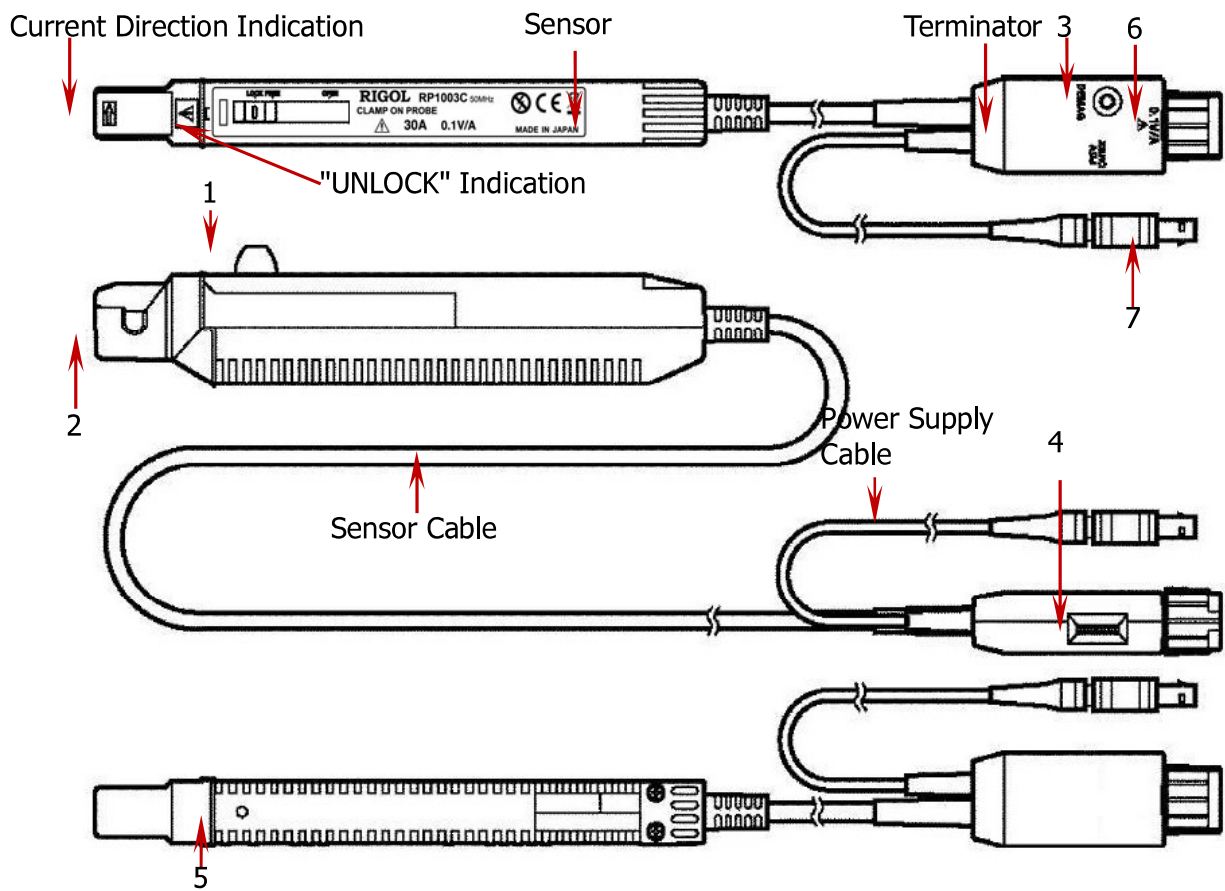


Figure 1 RP1003C/RP1004C Parts

For the parts from 1 to 7 noted in the above figure, please refer to **Parts Introductions**.

RP1005C/RP1006C Parts Overview

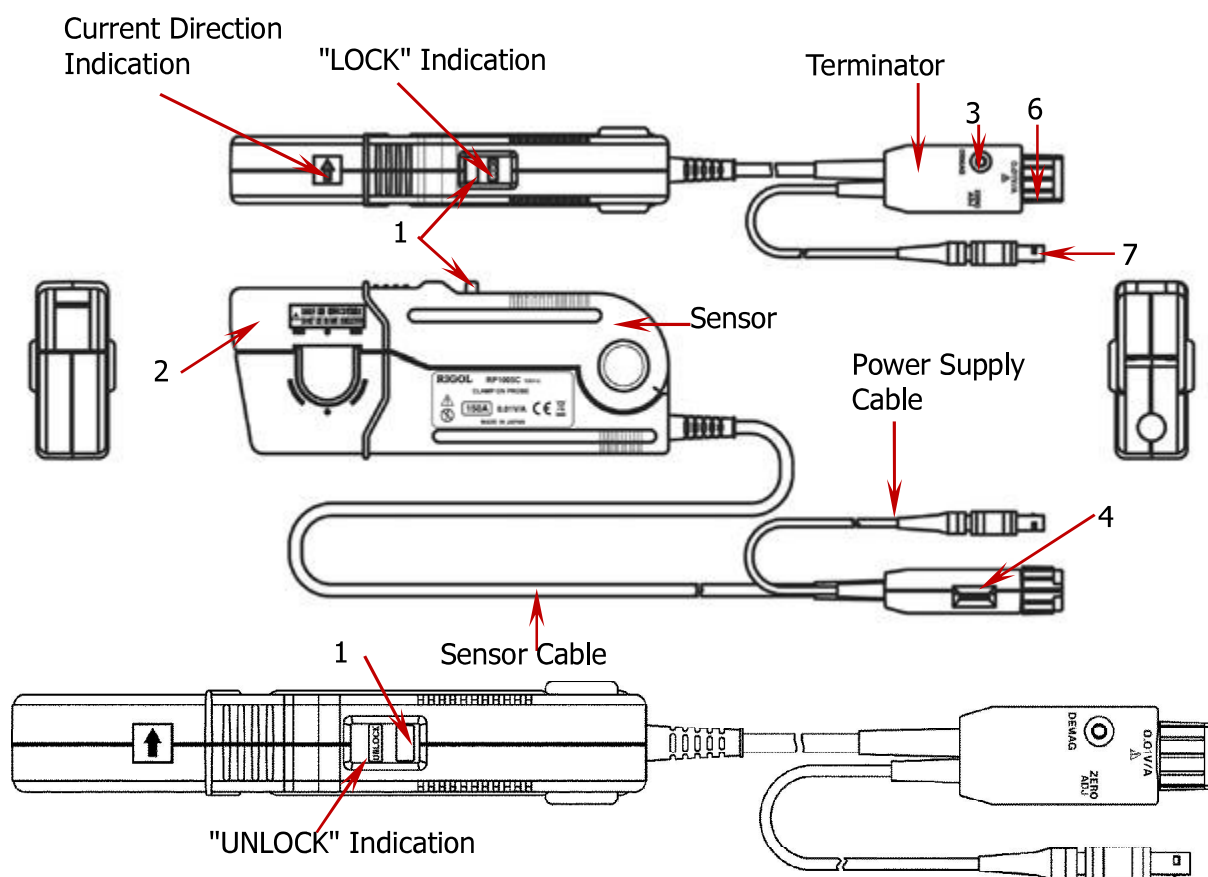


Figure 2 RP1005C/RP1006C Parts

For the parts from 1 to 7 noted in the above figure, please refer to **Parts Introductions**.

Parts Introductions

1. Opening lever

It is used to open and lock the current sensor. You are recommended to lock the current sensor when measuring the conductor to be measured to avoid danger. For RP1003C/RP1004C, there are OPEN, FREE and LOCK indications on one side of the slide switch. The on/off status of the current sensor is related to the position of the slide switch.

- ✧ When the slide switch is in the OPEN position, the current sensor is open and at this point, the conductor to be measured can be connected to the current sensor;
- ✧ When the slide switch is in the FREE position, the current sensor is closed but not locked;
- ✧ When the slide switch is in the LOCK position, the current sensor is locked and at this point, the UNLOCK indication is covered (cannot be seen).

For RP1005C/RP1006C, there are LOCK and UNLOCK indications on the slide switch. The current sensor is locked when the LOCK indication is displayed on the slide switch (the UNLOCK indication disappears).

2. Sensor head

This clamps the conductor being measured, and carries out the actual current measurement. It is a precision assembly that contains a molded component, a ferrite core, and a Hall effect element. It may be damaged if subjected to sudden changes at ambient temperature, or mechanical strain or shock, and therefore great care should be exercised in handling it.

3. Demagnetizing switch (DEMAG)

This demagnetizes the core if it has been magnetized by switching the power on and off, or by an excessive input. Always carry out demagnetizing before measurement.

The demagnetizing process takes about one second (RP1003C/RP1004C) or three seconds (RP1005C/RP1006C).

During demagnetizing, a demagnetizing waveform is output.

4. Zero adjustment dial (ZERO ADJ)

Use the zero adjustment dial to correct the voltage offset or temperature drift on the device. When beginning the measurement, always carry out zero adjustment after demagnetizing.

5. Coarse adjustment trimmer (Only for RP1003C/RP1004C)

Use this only when adjustment is not possible within the range of the zero adjustment dial. Use a nonconductive screwdriver (e.g. ceramic driver) for adjustment.

6. Output connector

The current waveform of the measured conductor is output at a constant rate. The output connector can be connected to the BNC input connector of the waveform measuring instrument.

NOTE

- Since the output resistance is 25 Ω (RP1003C/RP1004C) or 7 Ω (RP1005C/RP1006C), the probe must be used with a waveform measurement instrument that has an input impedance of at least 1 M Ω . Accurate measurement is not possible with the waveform measurement instrument whose input impedance is 50 Ω .
- If using BNC-banana plug adapters or similar to connect to input terminals other than BNC connectors, make sure the polarity is correct.
- Turn the collar until it clicks, and check that it is locked securely.

7. Power plug

Connect this to the power supply receptacle to supply power to the sensor terminator.

To Use the Current Probe

Before using the current probe, make sure to refer to **Safety Precautions**.

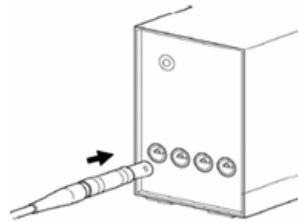
Preparations for Measurement

1. Prepare one RP1000P power supply and one waveform measurement instrument for waveform measurement.

CAUTION

Before turning the power supply on, make sure that the voltage matches that indicated on the rear panel of the RP1000P. Connection to an improper supply voltage may damage the RP1000P and present an electrical hazard.

2. Turn the power switch off and connect the power cord.
3. Connect the power plug of the current probe to the power receptacle of the RP1000P.

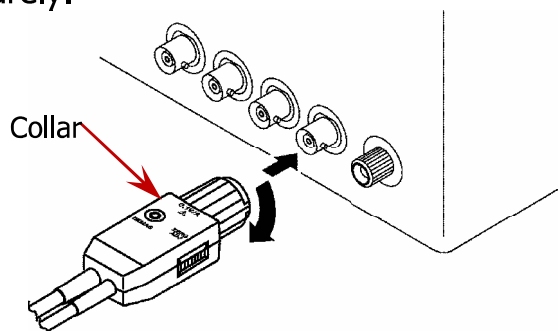


4. Turn the RP1000P power switch on, and check that the front panel power indicator lights on.
5. Wait at least 30 minutes after turning on the current probe. Immediately after power is supplied, offset drift may increase due to the effects of self-heating of the device and other factors. To ensure accurate measurement, wait at least 30 minutes after turning on the current probe before performing the measurement.

Demagnetizing and Zero Adjustment

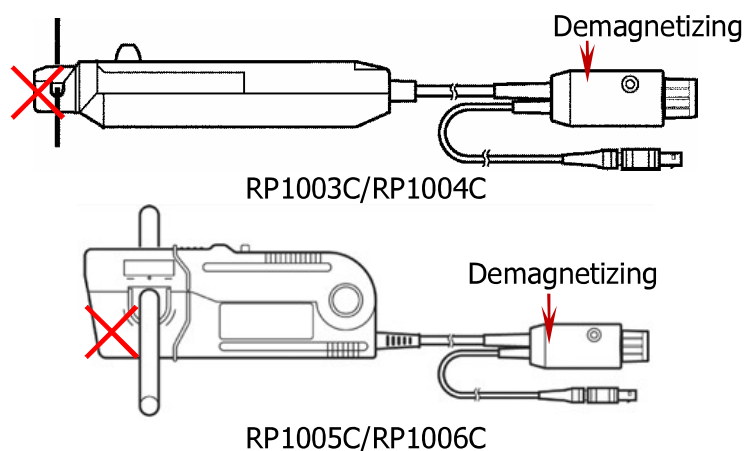
1. With the waveform measurement instrument input at ground, adjust the trace to the zero position.
2. Set the input coupling of the waveform measurement instrument to DC.
3. Connect the output connector of the current probe to the input connector of the

waveform measurement instrument. Turn the collar until it clicks, and check that it is locked securely.



⚠ CAUTION

- When disconnecting the output connector from the waveform measurement instrument, be sure to release the lock before pulling out the connector. Forcibly pulling out the connector without releasing the lock, or pulling the cable, can damage the terminator.
- If using BNC-banana plug adapters or similar to connect to input terminals other than BNC connectors, make sure the polarity is correct.
- Do not demagnetize while the current probe is clamping a conductor to be measured. Demagnetizing causes current to flow into the conductor, which may damage parts in the circuit to be measured.



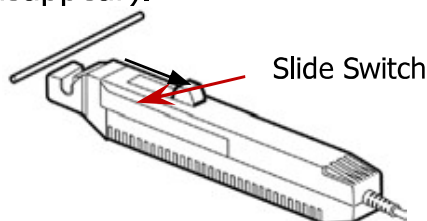
- Check that the conductor being measured is not clamped when supplying power to the current probe for the same reason. Demagnetized waveforms are generated when supplying electric power.
4. Make sure the current sensor is locked (for RP1003C and RP1004C, the slide switch should be in the LOCK position; for RP1005C/RP1006C, LOCK should be displayed on the slide switch and UNLOCK should disappear).
 5. Press the demagnetizing switch (DEMAG) on the terminator.
 6. Turn the zero adjustment dial on the terminator to adjust the trace to the zero position.

NOTE

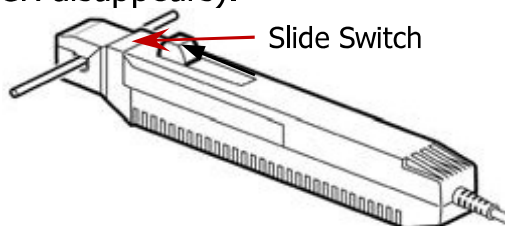
For RP1003C/RP1004C, if zero adjustment is not possible in Step 6, turn the coarse adjustment trimmer to bring the trace within the range of adjustment by the zero adjustment dial. While turning the coarse adjustment trimmer, do not subject it to a thrust. Doing so may cause the trimmer to come off. To turn the trimmer, use a screwdriver with the following flat blade made of non-conductive materials such as ceramic: 0.4 mm in thickness, 1.8 mm in width, and 10 mm in length or longer.

Measurement Procedure

1. Check that the system is safe, and that the preparations described in the preceding section have been carried out.
2. Open the current sensor by pushing the slide switch in the direction of the arrow as shown in the figure below (for RP1003C/RP1004C, the slide switch should be at the OPEN position; for RP1005C, UNLOCK should be displayed on the slide switch and LOCK should disappear).



3. Align the sensor so that the current direction indication corresponds to the direction of current flow through the conductor to be measured, and clamp so that the conductor is in the center of the sensor aperture.
4. Lock the current sensor by pushing the slide switch in the direction of the arrow as shown in the figure below (for RP1003C/RP1004C, the slide switch should be in the LOCK position; for RP1005C/RP1006C, you need to first press the current probe to close the current sensor and then push the slide switch until LOCK is displayed and UNLOCK disappears).

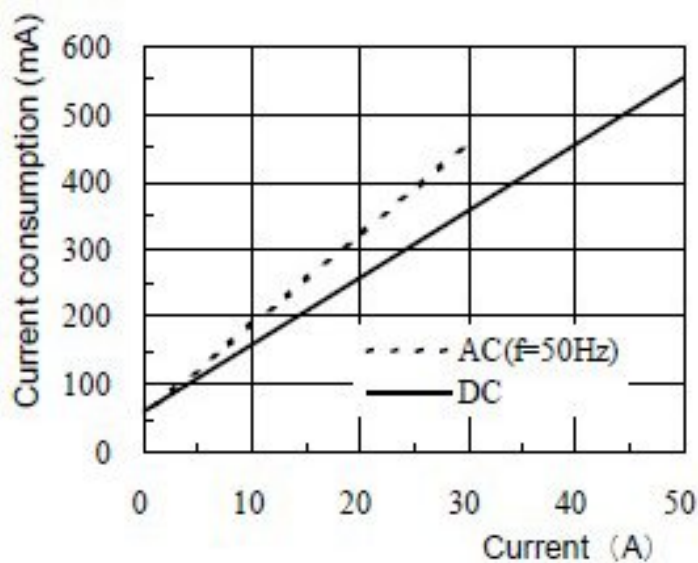


5. It is now possible to monitor the current waveform. The output rate is 0.1 V/A for RP1003C/RP1004C and 0.01 V/A for RP1005C/RP1006C. The current sensitivity can be derived from the voltage sensitivity of the waveform

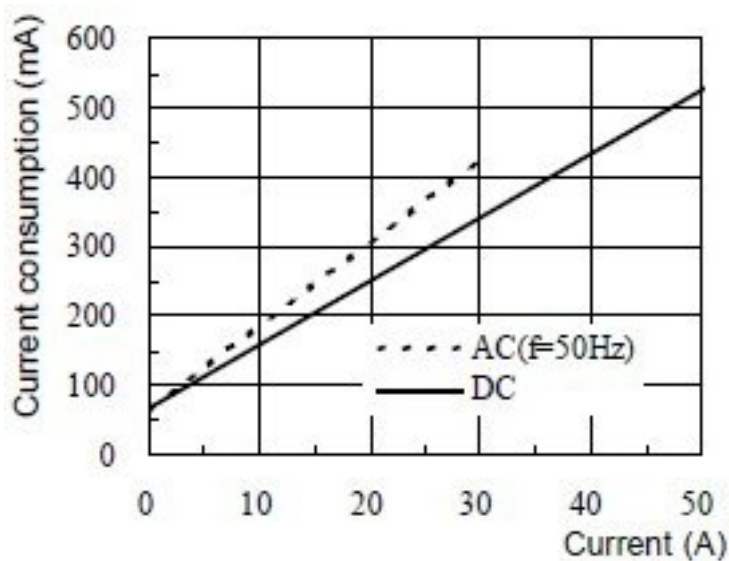
measurement instrument. For example, for RP1003C, if the voltage sensitivity is 10 mV/div, the current sensitivity is $(10 \text{ mV/div}) / (0.1 \text{ V/A}) = 100 \text{ mA/div}$.

NOTE

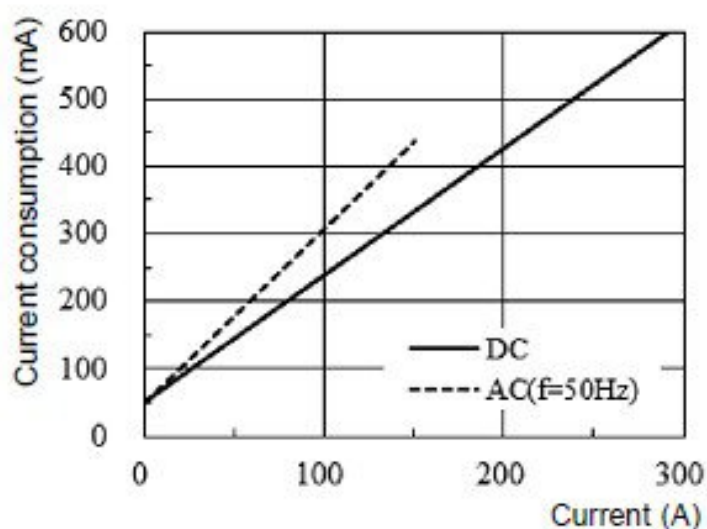
- When using the current probe, note that two clamp-on probes may not be used simultaneously with the RP1000P, depending on the current to be measured.
- The current consumption of the current probe depends on the current to be measured. Make sure that the total current consumption of the current probes does not exceed the rated output current of the power supply when multiple current probes are connected to the same power supply. The figure below is the relation curve between the output current and current consumption.



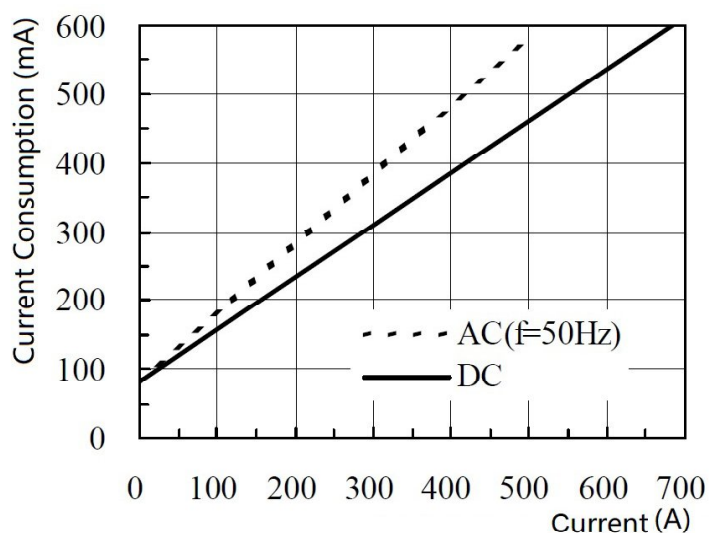
RP1003C



RP1004C



RP1005C



RP1006C

Note: The current consumption is the algebraic sum of the positive and negative current consumption.

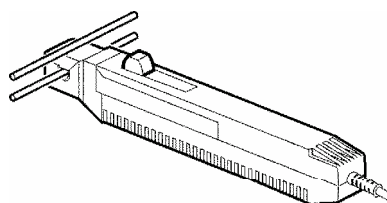
Precautions for Measurement

⚠ CAUTION

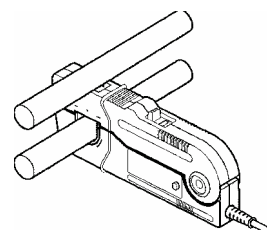
1. The maximum continuous input range is based on the heat that is internally generated during the measurement. Never input current in excess of this level. Exceeding the rated level may result in damage to the probe.
2. The device may sustain damage from self-heating even at current levels that are lower than the maximum current value defined by the maximum rated current.
The maximum rated current is a recommended value that assumes sine-wave

input under standard conditions. Self-heating may increase if the ambient temperature increases or the measurement current waveform contains other frequency components. Refer to **Appendix 2 Relation between Max Input Current and Frequency**.

3. If excess current is input, generated heat activates a built-in safety function that blocks normal output. If this happens, remove the input immediately (remove the sensor from the conductor being measured, or reduce the input current to zero). Wait until the sensor has had sufficient time to cool before resuming operation.
4. Heating generated during measurement of the current with a frequency of 1 kHz or higher is mainly attributed to the self-heating of the sensor head. In this case, the built-in safety function will not be activated. Be careful to avoid accidents, such as a burn by heat, short-circuit, and damage to the sensor.
5. Even if the input current does not exceed the rated continuous input range, continuous input for an extended period of time may result in activation of the safety circuit to prevent damage resulting from heating of the sensor.
6. At high ambient temperature, the built-in safety circuit may activate at current input levels below the rated continuous input range.
7. Continuous input of current exceeding the continuous input range or repeated activation of the safety function may result in damage to the device.
8. The maximum input range is indicated by the **Maximum Continuous Input Range**. It is also indicated by another product specification **Maximum Peak Current Value**. Make sure that the input does not exceed the continuous maximum input range in rms.
9. Do not place any unclamped conductor with an electric current of a frequency of 10 kHz or higher near the sensor head. Current flowing in the conductor nearby may heat up the sensor head and cause its temperature to rise, leading to damage to the sensor.



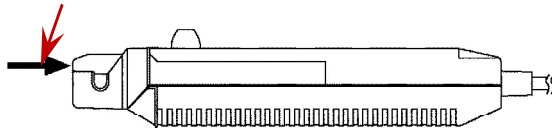
RP1003C/RP1004C



RP1005C/RP1006C

10. When opening the sensor head of the probe, be sure to operate with the

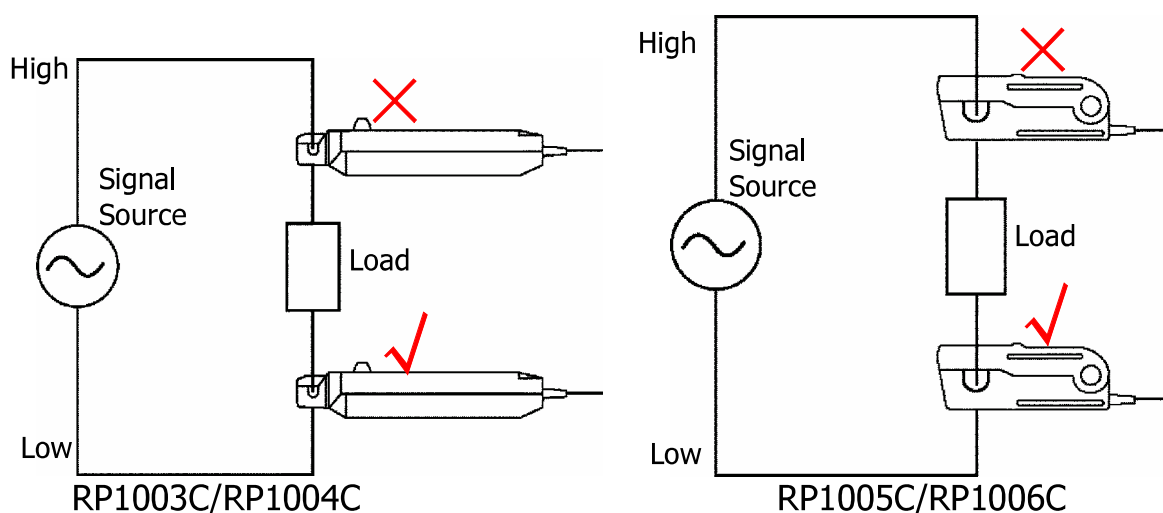
opening lever. For RP1003C/RP1004C, if an upper core is forced to open, when the sensor head is locked, the open-close mechanism can be damaged.

**NOTE**

1. Immediately after being powered on, the probe may be subject to an appreciable offset drift due to self-heating. To counteract this, allow the probe to warm up for about 30 minutes before carrying out measurement.
2. When performing continuous measurements, it is necessary to be aware that the offset voltage drifts, depending on factors such as the ambient temperature.
3. Under certain circumstances, oscillation may occur if the probe is connected to the power supply while the power supply is on. This does not indicate a malfunction. Oscillation can be stopped and operation restored to normal by opening and closing the clamp.
4. Depending on the amplitude and frequency of the current being measured, the sensor head may emit a resonant sound. This sound may also occur during demagnetizing operation, but it does not represent a malfunction (device failure).
5. If foreign matter becomes adhered to the mating surfaces on the sensor head so that a slight gap exists between the upper and lower sensors, the sensor head may emit a resonant sound. Any foreign matter should be removed using the cleaning method described in this manual.
6. An increase in the volume of the resonant sound during use may indicate that the gap between the upper and lower sensors has increased in size. Since the sensor characteristics may change, it is recommended to calibrate the device.
7. Pressing the demagnetizing switch (DEMAG) will cause a demagnetized waveform to be output from the instrument. Although it may be asymmetry with respect to the zero-volt line, the instrument has no malfunction.
8. The reading may be affected by the position within the clamp aperture of the conductor being measured. The conductor should be in the center of the clamp aperture.
9. When carrying out measurement, make sure the sensor head is locked (for RP1003C/RP1004C, the slide switch should be in the LOCK position; for

RP1005C/RP1006C, press the slider on the sensor head until the "UNLOCK" indication disappears, and hold it until LOCK appears). If the sensor head is not properly closed, accurate measurement will not be possible.

10. Accurate measurement may be impossible in locations subject to strong external magnetic fields, such as transformers and high current conductors, or in locations subject to strong external electric fields, such as radio transmission equipment.
11. At high frequencies, common mode noise may affect measurements taken on the high voltage side of circuits. If this occurs, reduce the frequency range of the waveform measuring instrument, or clamp onto the low-voltage side of the circuit, as appropriate.



Specifications

When the probe works for at least 30 minutes at $23^{\circ}\text{C}\pm 5^{\circ}\text{C}$, the following specifications can be guaranteed.

RP1003C/RP1004C

Bandwidth	RP1003C: DC to 50 MHz (-3 dB), refer to Appendix 1 Amplitude-frequency Characteristics (RP1003C) RP1004C: DC to 100 MHz (-3 dB), refer to Appendix 1 Amplitude-frequency Characteristics (RP1004C)
Rise Time	RP1003C: ≤ 7 ns RP1004C: ≤ 3.5 ns
Maximum Continuous Input Range	30 Arms, refer to Appendix 2 Relation between Max Input Current and Frequency (RP1003C/RP1004C)
Maximum Peak Current Value	Non-continuous 50 A peak
Gain	0.1 V/A
Amplitude Accuracy	$\pm 1.0\%$ rdg ± 1 mV, ≤ 30 Arms $\pm 2.0\%$ rdg, ≤ 50 A peak (DC, 45 Hz to 66 Hz, input within continuous maximum input range)
Noise	≤ 2.5 mArms (for BW 20 MHz waveform measuring instrument)
Input Impedance	Refer to Appendix 3 Input Impedance (Typical) (RP1003C/RP1004C)
Temperature Coefficient for Sensitivity	$\leq \pm 2\%$ (during input of 50 Hz, 30 Arms within range of 0°C to 40°C)
Maximum Rated Power	5.3 VA
Rated Supply Voltage	+12 V ± 0.5 V
Operating Temperature and Humidity Range	0°C to 40°C , $\leq 80\%$ RH (no condensation)
Storage Temperature and Humidity Range	-10°C to $+50^{\circ}\text{C}$, $\leq 80\%$ RH (no condensation)

Location for Use	Indoor, altitude up to 2,000 m, Pollution Degree 2
Effect of External Magnetic Fields	RP1003C: ≤ 20 mA (DC and 60 Hz, magnetic field of 400 A/m) RP1004C: ≤ 5 mA (DC and 60 Hz, magnetic field of 400 A/m)
Diameter of Measurable Conductor	5 mm
Measurable Conductor	Insulated conductor
Guaranteed Accuracy Period	1 year (opening/closing up to 10,000 times)
Cable Length	Sensor cable: approx. 1.5 m Power supply cable: approx. 1 m
External Dimension	Sensor: approx. 175W \times 18H \times 40D (mm) (excluding protrusions) Terminator: approx. 27H \times 55W \times 18D (mm)
Mass	RP1003C: approx. 230g RP1004C: approx. 240g
Accessories	User Guide, Probe Case
Safety	EN61010
EMC	EN61326

RP1005C

Bandwidth	DC to 10 MHz (-3 dB), refer to Appendix 1 Amplitude-frequency Characteristics (RP1005C)
Rise Time	≤ 35 ns
Maximum Continuous Input Range	150 Arms, refer to Appendix 2 Relation between Max Input Current and Frequency (RP1005C)
Maximum Peak Current Value	300A peak, non-continuous 500A peak, pulse width $\leq 30\mu$ s
Gain	0.01 V/A
Amplitude Accuracy	$\pm 1.0\%$ rdg ± 1 mV, ≤ 150 Arms $\pm 2.0\%$ rdg, 150 A to 300 A peak (DC, 45 Hz to 66 Hz)
Noise	≤ 25 mArms (for BW 20MHz waveform measuring instrument)
Input Impedance	Refer to Appendix 3 Input Impedance (Typical) (RP1005C)
Temperature	$\leq \pm 2\%$ (during input of 55 Hz, 150 Arms within

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Coefficient for Sensitivity	range of 0°C to 40°C)
Maximum Rated Power	5.5 VA (within maximum continuous input range)
Rated Supply Voltage	+12 V±1 V
Operating Temperature and Humidity Range	0°C to 40°C, ≤80% RH (no condensation)
Storage Temperature and Humidity Range	-10°C to +50°C, ≤80% RH (no condensation)
Location for Use	Indoor, altitude up to 2,000 m, Pollution Degree 2
Period of Guaranteed Accuracy	1 year (opening/closing up to 10,000 times)
Effect of External Magnetic Fields	≤150 mA (in a DC or 60 Hz, 400 A/m magnetic field)
Diameter of Measurable Conductor	20 mm
Measurable Conductor	Insulated conductor
Cable Length	Sensor cable: approx. 2 m Power supply cable: approx. 1 m
External Dimension	Sensor: approx. 176W X 69H X 27D (mm) Terminator: approx. 27H X 55W X 18D (mm)
Mass	Approx. 500g
Accessories	User Guide, Probe Case
Safety	EN61010
EMC	EN61326

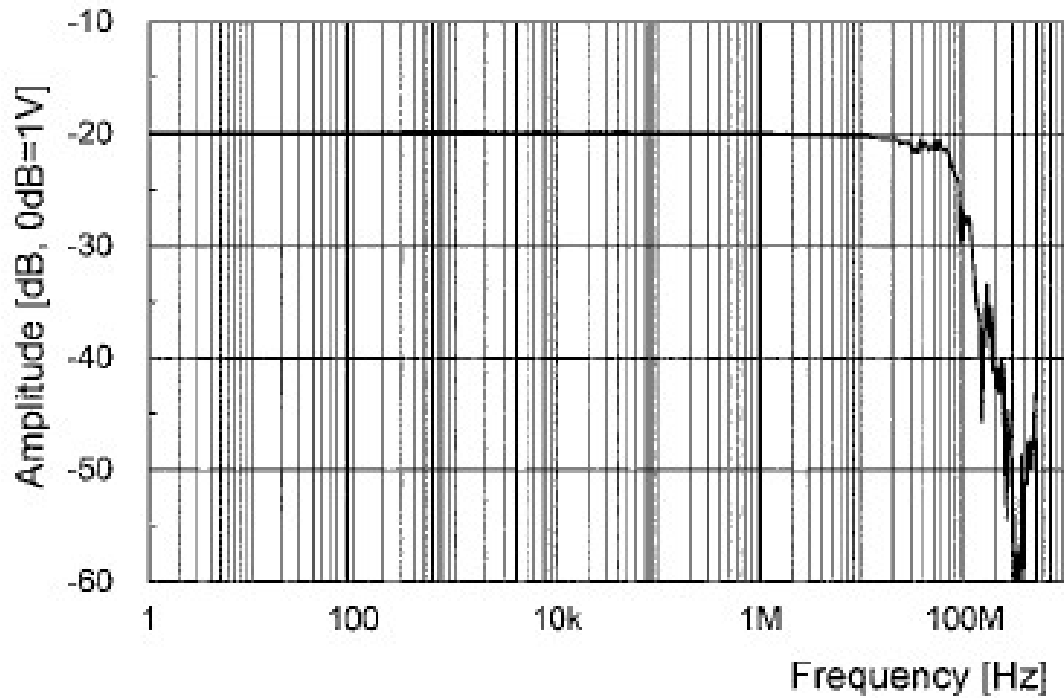
RP1006C

Bandwidth	DC to 2 MHz (-3 dB), refer to Appendix 1 Amplitude-frequency Characteristics (RP1006C)
Rise Time	≤175 ns
Maximum Continuous Input Range	500 Arms, refer to Appendix 2 Relation between Max Input Current and Frequency (RP1006C)

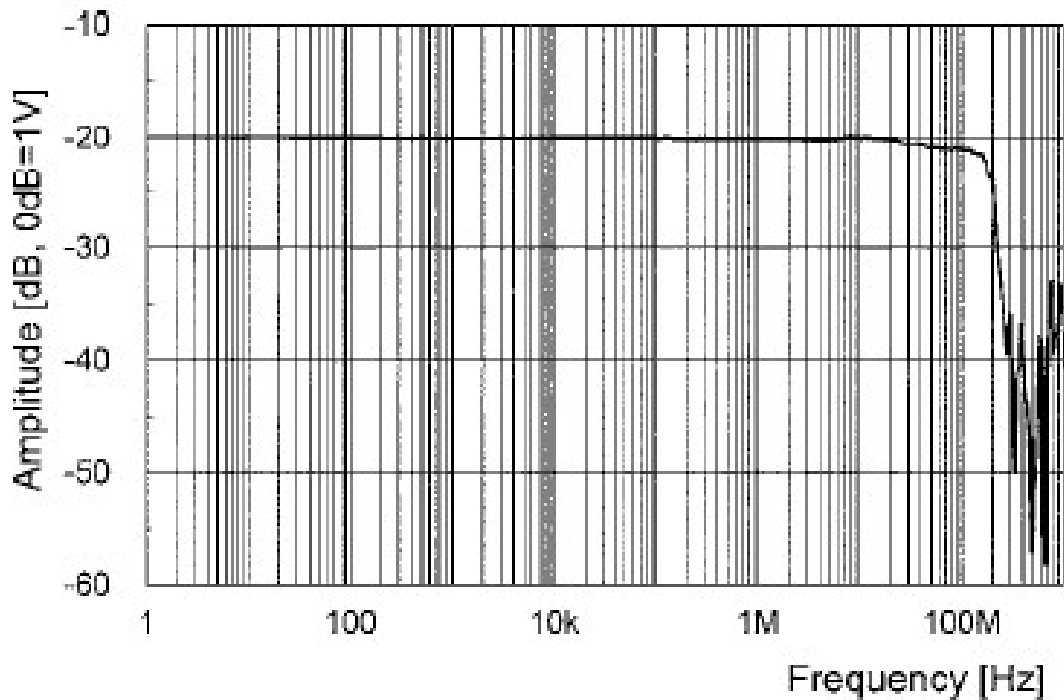
Maximum Peak Current Value	700A peak, non-continuous
Gain	0.01 V/A
Amplitude Accuracy	$\pm 1.0\%$ rdg ± 5 mV, ≤ 500 Arms $\pm 2.0\%$ rdg, ≤ 700 A peak (DC, 45 Hz to 66 Hz)
Noise	≤ 25 mArms (for BW 20MHz waveform measuring instrument)
Input Impedance	Refer to Appendix 3 Input Impedance (Typical) (RP1006C)
Temperature Coefficient for Sensitivity	$\leq \pm 2\%$ (during input of 50 Hz, 500 Arms within range of 0°C to 40°C)
Maximum Rated Power	7.2 VA (within maximum continuous input range)
Rated Supply Voltage	+12 V ± 0.5 V
Operating Temperature and Humidity Range	0°C to 40°C, $\leq 80\%$ RH (no condensation)
Storage Temperature and Humidity Range	-10°C to +50°C, $\leq 80\%$ RH (no condensation)
Location for Use	Indoor, altitude up to 2,000 m, Pollution Degree 2
Period of Guaranteed Accuracy	1 year (opening/closing up to 10,000 times)
Effect of External Magnetic Fields	≤ 800 mA (in a DC or 60 Hz, 400 A/m magnetic field)
Diameter of Measurable Conductor	20 mm
Measurable Conductor	Insulated conductor
Cable Length	Sensor cable: approx. 2 m Power supply cable: approx. 1 m
External Dimension	Sensor: approx. 176W X 69H X 27D (mm) Terminator: approx. 27H X 55W X 18D (mm)
Mass	Approx. 520g
Accessories	Probe Case
Safety	EN61010
EMC	EN61326

Appendix

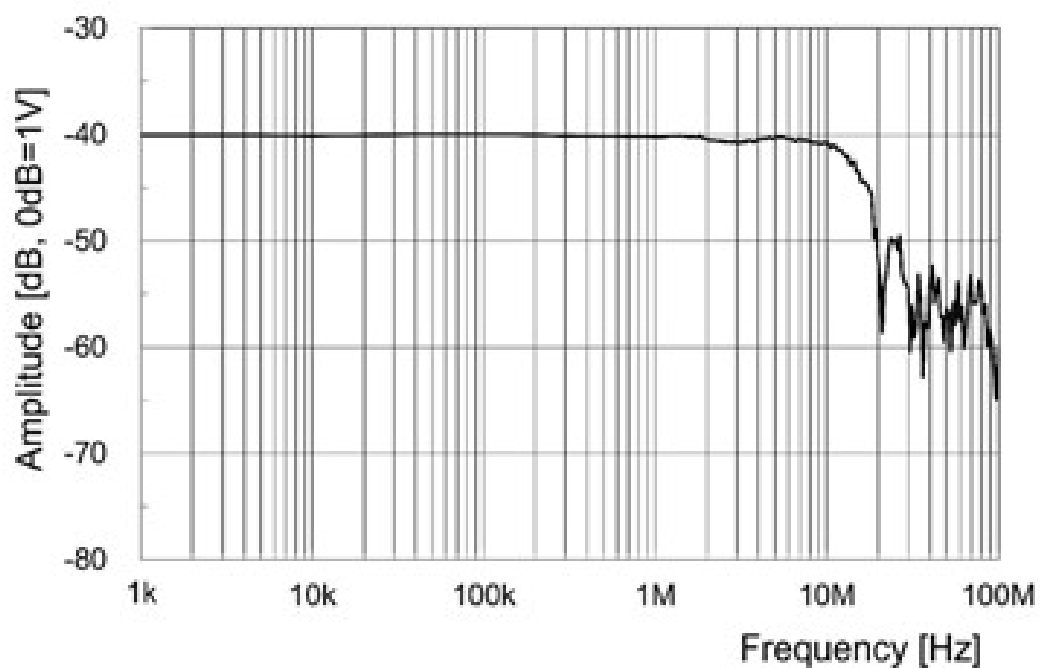
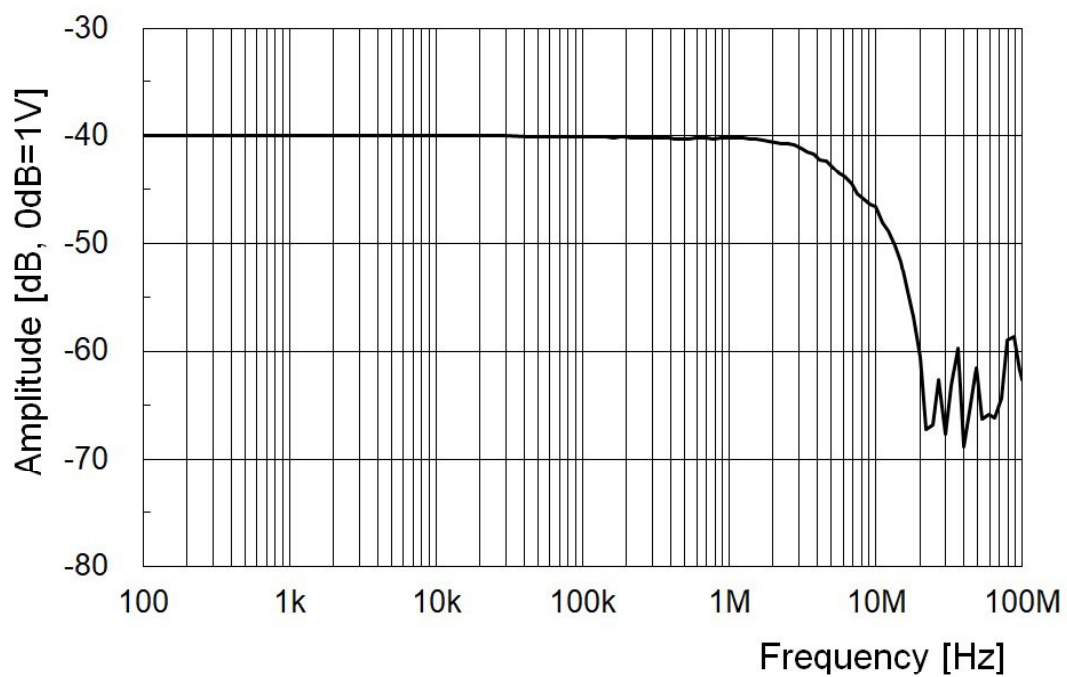
Appendix 1 Amplitude-frequency Characteristics



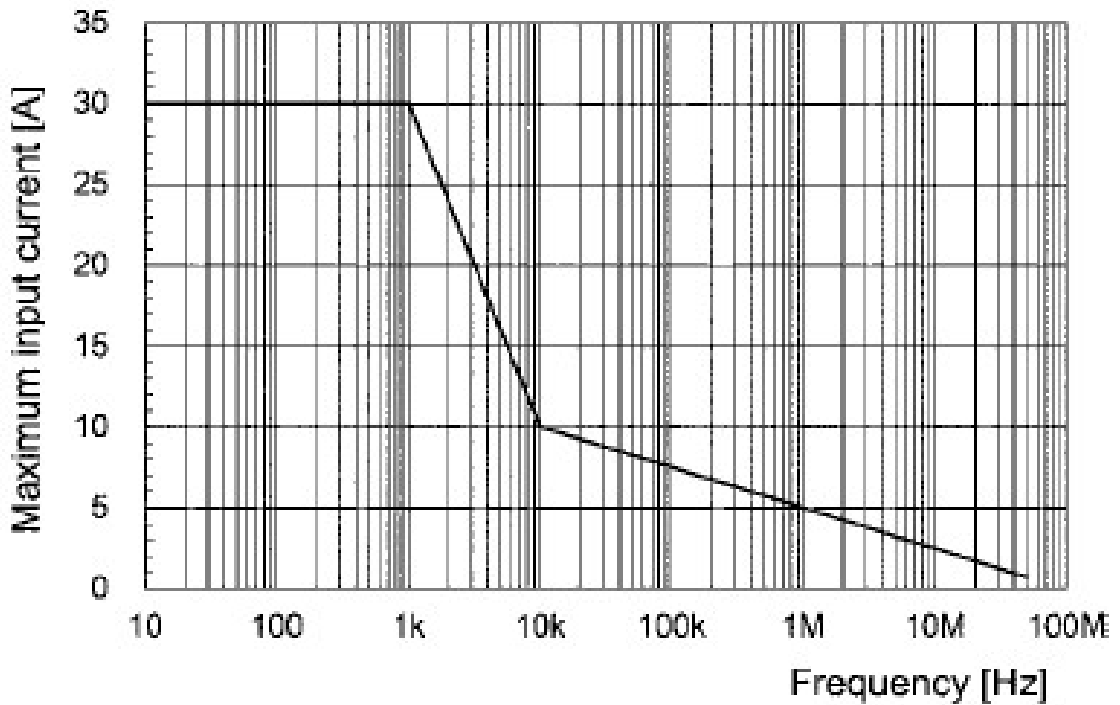
RP1003C



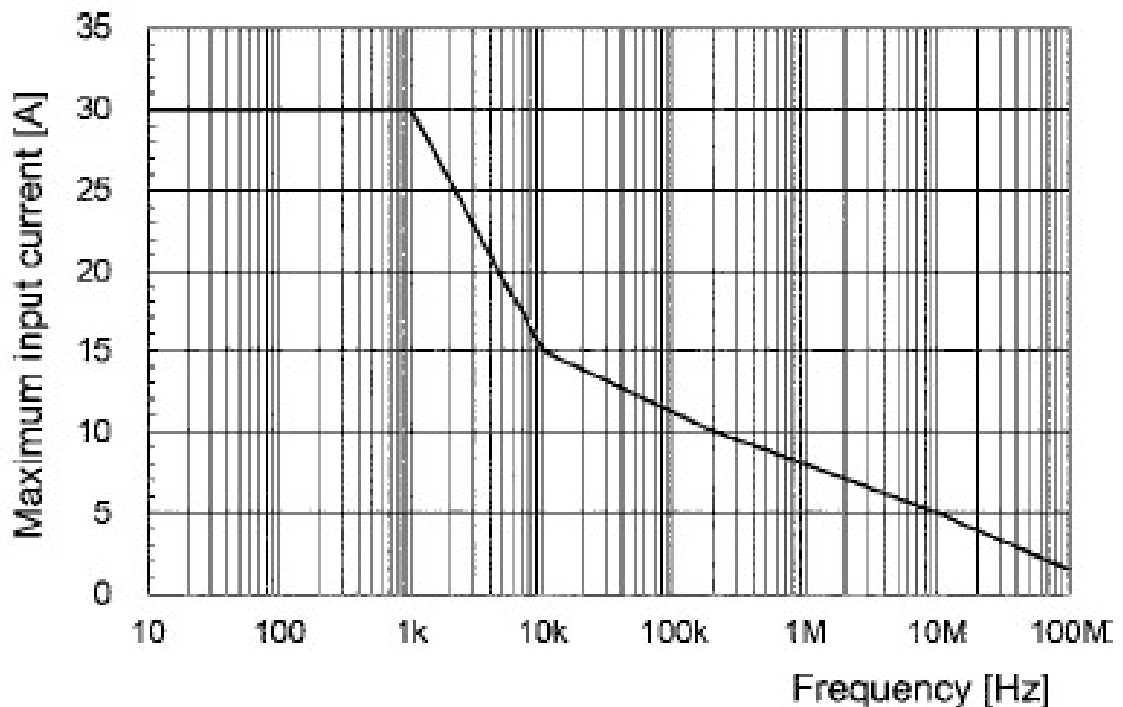
RP1004C

**RP1005C****RP1006C**

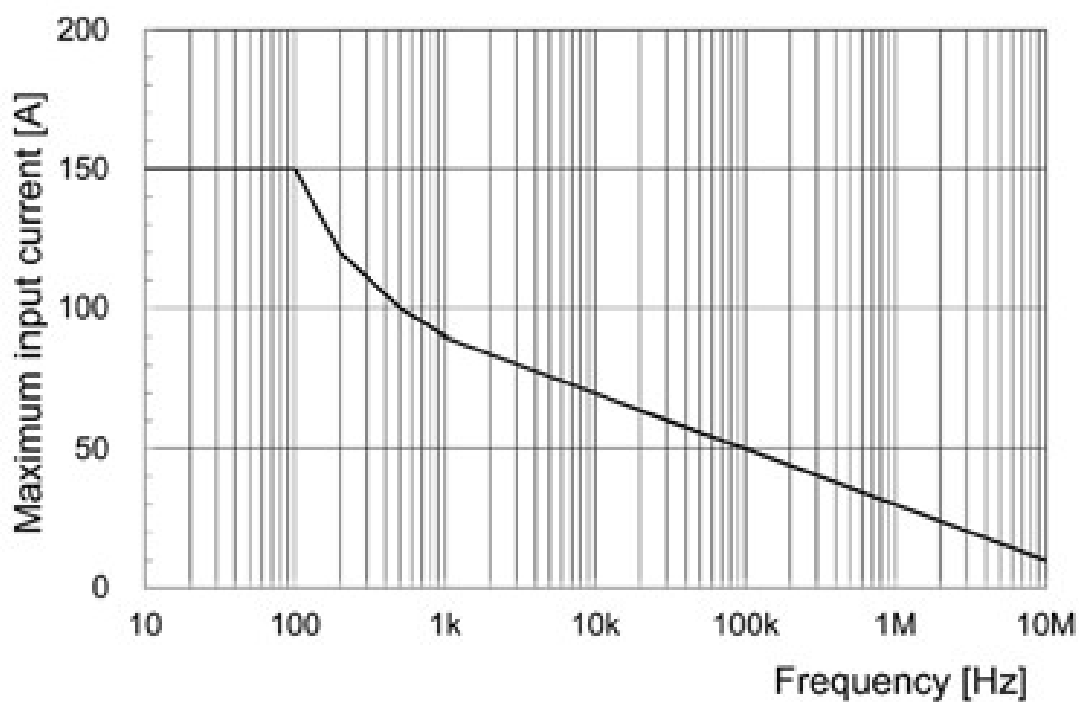
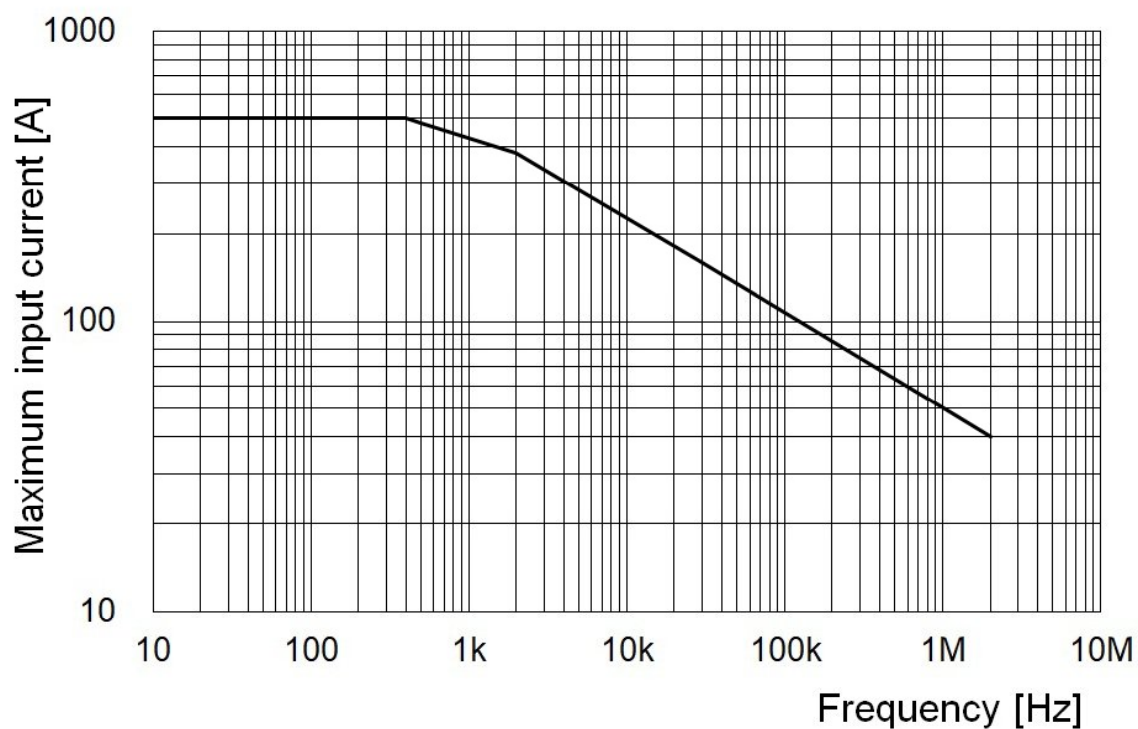
Appendix 2 Relation between Max Input Current and Frequency



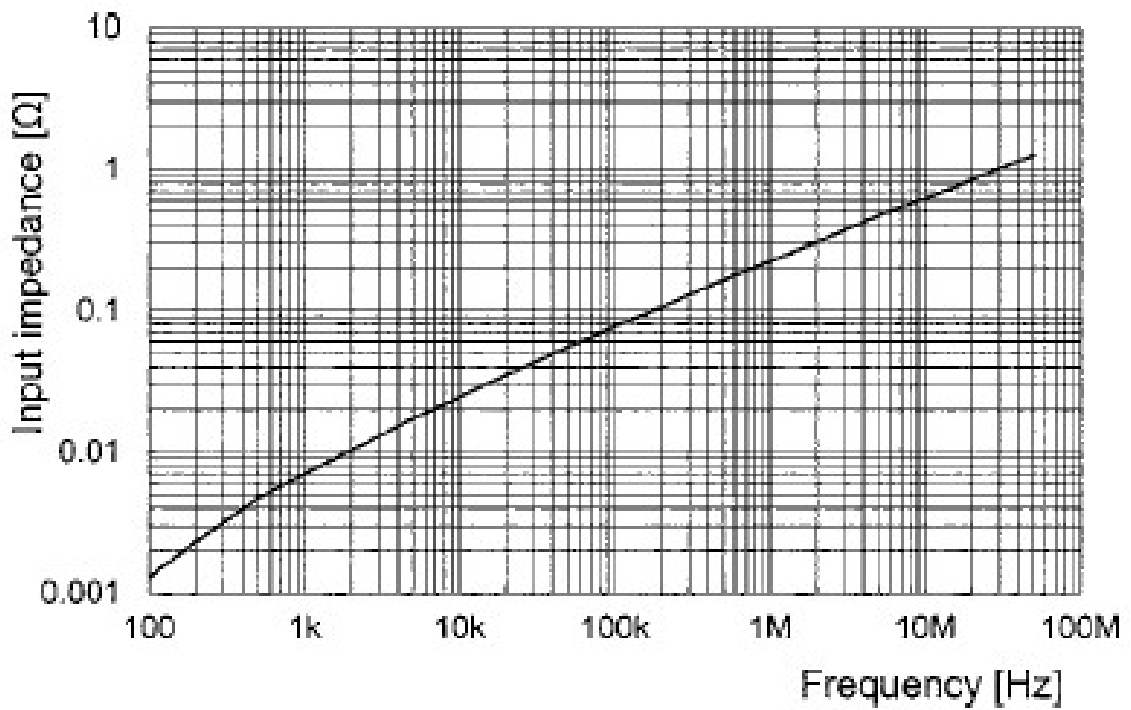
RP1003C



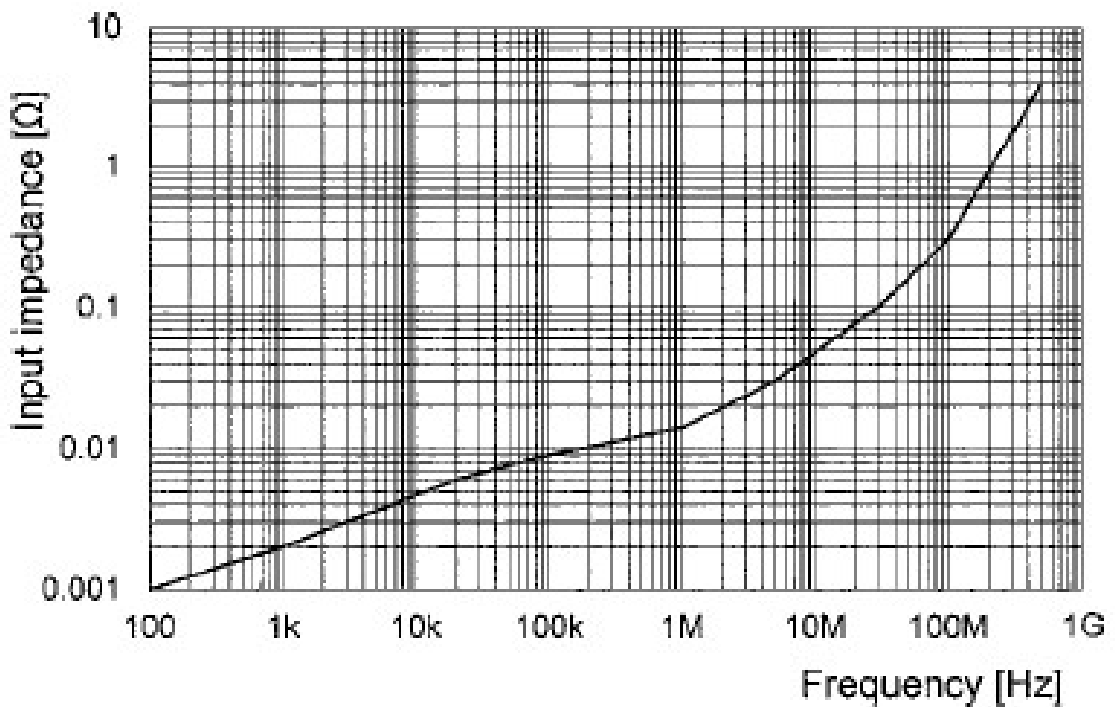
RP1004C

**RP1005C****RP1006C**

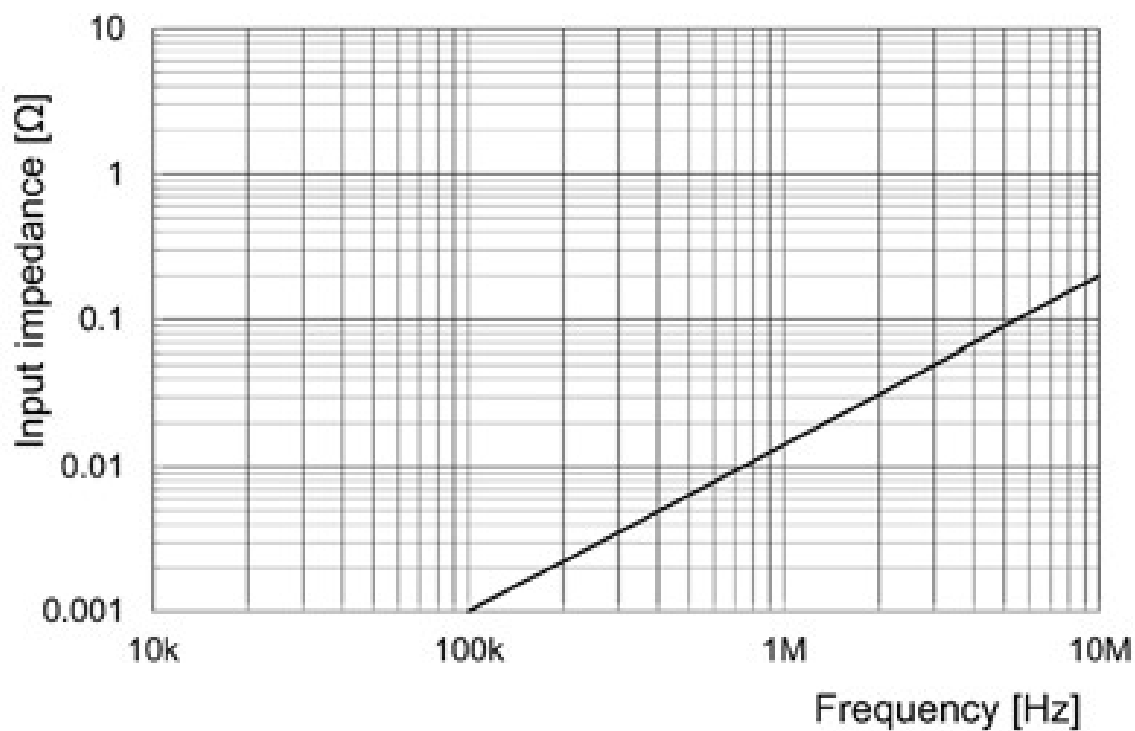
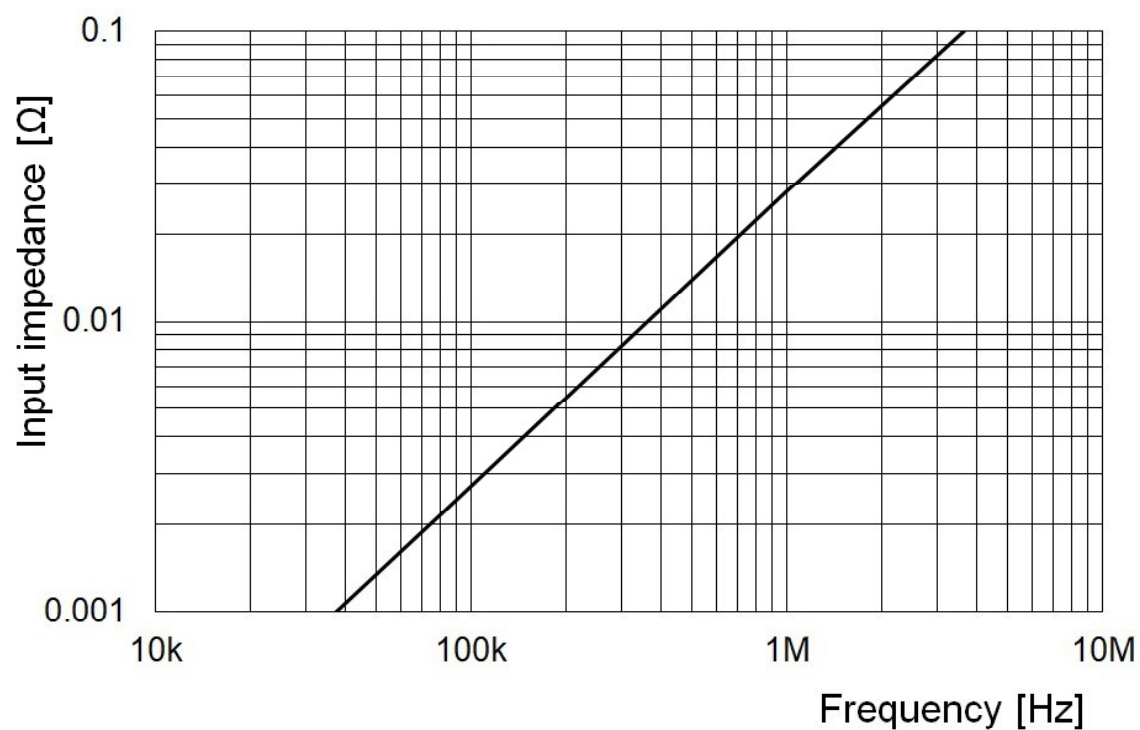
Appendix 3 Input Impedance (Typical)



RP1003C



RP1004C

**RP1005C****RP1006C**