
**User's
Manual**

**Model 701928/701929
PBC100/PBC050
Current Probe**

User Registration

YOKOGAWA provides registered users with useful information and services. Please allow us to serve you best by completing the user registration form accessible from our website.

<https://tmi.yokogawa.com/support/>



Contact Us

If you want to resolve a technical support issue or need to contact YOKOGAWA, please fill out the inquiry form on our website.

<https://tmi.yokogawa.com/contact/>



Thank you for purchasing the PBC series current probe.

This user's manual contains useful information about the functions and operating procedures of the PBC series current probe and lists the handling precautions of the instrument. To ensure correct use, please read this manual thoroughly before beginning operation. After reading this manual, keep it in a convenient location for quick reference in the event a question arises during operation.

List of Manuals

The following manuals are provided for the PBC series current probe.

Manual Title	Manual Number	Description
Model 701928/701929 PBC100/050 Current Probe User's Manual	IM 701928-01E	This manual
Model 701928/701929 PBC100/050 Current Probe	IM 701928-92	Document for China
Model 701928/701929 PBC100/050 Current Probe	IM 701928-93Z2	Document for Korea
Safety Instruction Manual	IM 00C01C01-01Z1	Safety manual (European languages)

The "E", "Z1" and "Z2" in the manual numbers are the language codes.

Contact information of Yokogawa offices worldwide is provided on the following sheet.

Document Number	Description
PIM 113-01Z2	List of worldwide contacts

Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the product's performance and functionality. The figures given in this manual may differ from those that actually appear on your product.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer.
- Copying or reproducing all or any part of the contents of this manual without the permission of YOKOGAWA is strictly prohibited.

Revisions

1st Edition: October 2007
2nd Edition: October 2013
3rd Edition: November 2015
4th Edition: January 2016
5th Edition: October 2017
6th Edition: June 2021
7th Edition: December 2021

Checking the Contents of the Package

If any of the contents are incorrect, missing, or appear to be abnormal, please contact your nearest YOKOGAWA dealer.

Current Probe (model 701928 or 701929) main body

Manuals 1 set

Carrying case

Safety Precautions

This instrument is designed to be used by a person with specialized knowledge.

This instrument meets the requirements of IEC-61010.

The general safety precautions described herein must be observed during all phases of operation. If the instrument is used in a manner not specified in this manual, the protection provided by the instrument may be impaired. YOKOGAWA assumes no liability for the customer's failure to comply with these requirements. In addition, before using the probe, read the manuals of the measuring instrument to thoroughly familiarize yourself with its specifications and operation.

The following symbols are used in this instrument.



Warning: Handle with care. Refer to the user's manual. This symbol appears on dangerous locations on the instrument which require special instructions for proper handling or use.

The same symbol appears in the corresponding place in the manual to identify those instructions.



Do not apply around or remove from HAZARDOUS LIVE conductors.

Notes about Usage



WARNING

- Do not clamp bare conductors to avoid short circuits or personal injury when the sensor head is open or measuring.
 - Be careful not to damage the insulation surface of the conductor under measurement.
 - To avoid electric shock, do not get the instrument wet or use it with wet hands.
 - Use a digital oscilloscope equipped with the YOKOGAWA probe interface to power the probe.
-

French



AVERTISSEMENT

- Ne serrez pas les conducteurs nus pour éviter les courts-circuits ou les blessures lorsque la tête du capteur est ouverte ou en mesure de mesurer.
 - Veillez à ne pas endommager la surface d'isolation du conducteur à mesurer.
 - Pour éviter les chocs électriques, ne mouillez pas l'instrument et ne l'utilisez pas avec les mains mouillées.
 - Utilisez un oscilloscope numérique équipé de l'interface de sonde YOKOGAWA pour alimenter la sonde.
-



CAUTION

- Do not subject the instrument to vibrations or shocks when transporting and handling it. Be especially careful to avoid dropping it.
 - Do not store or operate the instrument in an environment with direct sunlight, high temperature, high humidity, or condensation. The instrument may be deformed, or deteriorated in insulation, and it may not meet the specifications.
 - Before using the instrument, inspect and check the operation for malfunctions due to storage or transport conditions. If a malfunction is found, contact your dealer or YOKOGAWA representative.
 - The instrument is not dustproof or waterproof. Do not use it in a dusty or wet environment.
 - The sensor head is a precision assembly composed of a molded component, a ferrite core and a Hall effect element. Handle the instrument with care as it may be damaged by sudden changes in ambient temperature, mechanical stress or shock.
 - The matching surfaces of the sensor head are precision ground. Handle the instrument with care as scratches on the surfaces may impair performance.
 - Gently wipe off any dust or dirt on the matching surfaces of the sensor head with a soft cloth. It may generate resonance noise or impair performance.
 - Do not bend or pull the sensor cable or power cable to avoid damage due to disconnection.
 - Current sensors can be damaged by static electricity. Be careful not to apply static electricity to the instrument including the following cases.
 - Touching the sensor head with an object charged with static electricity
 - Touching the sensor head with an object with an electrical potential difference
 - A user charged with static electricity touching the core surface when cleaning the matching surfaces of the sensor head
(When cleaning the surfaces, take static electricity measures such as wearing an antistatic wrist strap.)
 - Gently wipe the instrument with a soft cloth moistened with a small amount of water or mild detergent. Do not use detergents containing organic solvents such as benzine, alcohol, acetone, ethers, ketones, thinners or gasoline. They may deform or discolor the instrument.
 - When the power is on, keep the sensor head closed, except when clamping the conductor under measurement. Leaving it open may damage the instrument.
-



ATTENTION

- Ne soumettez pas l'instrument à des vibrations ou à des chocs lors de son transport et de sa manipulation. Faites particulièrement attention à ne pas le laisser tomber.
- Ne stockez pas et n'utilisez pas l'instrument dans un environnement exposé à la lumière directe du soleil, à une température élevée, à une humidité élevée ou à la condensation. L'instrument peut être déformé ou détérioré au niveau de l'isolation, et il peut ne pas répondre aux spécifications.
- Avant d'utiliser l'instrument, inspectez et vérifiez que le fonctionnement ne présente pas de dysfonctionnements dus aux conditions de stockage ou de transport. En cas de dysfonctionnement, contactez votre revendeur ou représentant YOKOGAWA.
- Cet instrument n'est pas étanche à la poussière ou à l'eau. Ne l'utilisez pas dans un environnement poussiéreux ou humide.
- La tête de capteur est un assemblage de précision comprenant un composant moulé, un noyau de ferrite et un élément à effet Hall. Manipulez cet appareil avec précaution car il peut être endommagé par des changements brusques de température ambiante, des contraintes mécaniques ou des chocs.
- Les surfaces correspondantes de la tête du capteur sont rectifiées avec précision. Manipulez l'instrument avec précaution, car les rayures sur les surfaces peuvent altérer les performances.
- Essuyez délicatement la poussière ou la saleté sur les surfaces correspondantes de la tête du capteur avec un chiffon doux. Cela peut générer un bruit de résonance ou altérer les performances.
- Ne pliez pas et ne tirez pas sur le câble du capteur ou le câble d'alimentation pour éviter les dommages dus à la déconnexion.
- Les capteurs de courant peuvent être endommagés par l'électricité statique. Veillez à ne pas appliquer d'électricité statique à l'instrument, y compris dans les cas suivants.
 - Toucher la tête du capteur avec un objet chargé d'électricité statique
 - Toucher la tête du capteur avec un objet présentant une différence de potentiel électrique
 - Un utilisateur chargé d'électricité statique touchant la surface du noyau lors du nettoyage des surfaces correspondantes de la tête du capteur
(Lors du nettoyage des surfaces, prenez des mesures contre l'électricité statique telles que le port d'un bracelet antistatique.)

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- Essuyez doucement l'instrument avec un chiffon doux humidifié avec une petite quantité d'eau ou de détergent doux. N'utilisez pas de détergents contenant des solvants organiques tels que le benzène, l'alcool, l'acétone, les éthers, les cétones, les diluants ou l'essence. Ils peuvent déformer ou décolorer l'instrument.
 - Lorsque l'appareil est sous tension, maintenez la tête du capteur fermée, sauf lors du serrage du conducteur à mesurer. Le laisser ouvert peut endommager l'instrument.
-

Note

- Depending on the current frequency that is measured, oscillation may occur, but this has no effect on measurements.
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Regulations and Sales in Various Countries and Regions

Waste Electrical and Electronic Equipment (WEEE)



(EU WEEE Directive valid only in the EEA* and UK WEEE Regulation in the UK)

This product complies with the WEEE marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste. When disposing of products in the EEA or UK, contact your local Yokogawa office in the EEA or UK respectively.

* EEA: European Economic Area

Authorized Representative in the EEA (AR)

Yokogawa Europe B.V. is the authorized representative of Yokogawa Test & Measurement Corporation for this product in the EEA. To contact Yokogawa Europe B.V., see the separate list of worldwide contacts, PIM 113-01Z2.

Disposal

When disposing of YOKOGAWA products, follow the laws and ordinances of the country or region where the product will be disposed of.

Conventions Used in This Manual



Improper handling or use can lead to injury to the user or damage to the instrument. This symbol appears on the instrument to indicate that the user must refer to the user's manual for special instructions. The same symbol appears in the corresponding place in the user's manual to identify those instructions. In the manual, the symbol is used in conjunction with the word "WARNING" or "CAUTION."

WARNING

Describes precautions that should be observed to prevent serious injury or death to the user.

CAUTION

Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

French

AVERTISSEMENT

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures graves (voire mortelles), et sur les précautions de sécurité pouvant prévenir de tels accidents.

ATTENTION

Attire l'attention sur des gestes ou des conditions susceptibles de provoquer des blessures légères ou d'endommager l'instrument ou les données de l'utilisateur, et sur les précautions de sécurité susceptibles de prévenir de tels accidents.

Note

Provides important information for the proper operation of the instrument.

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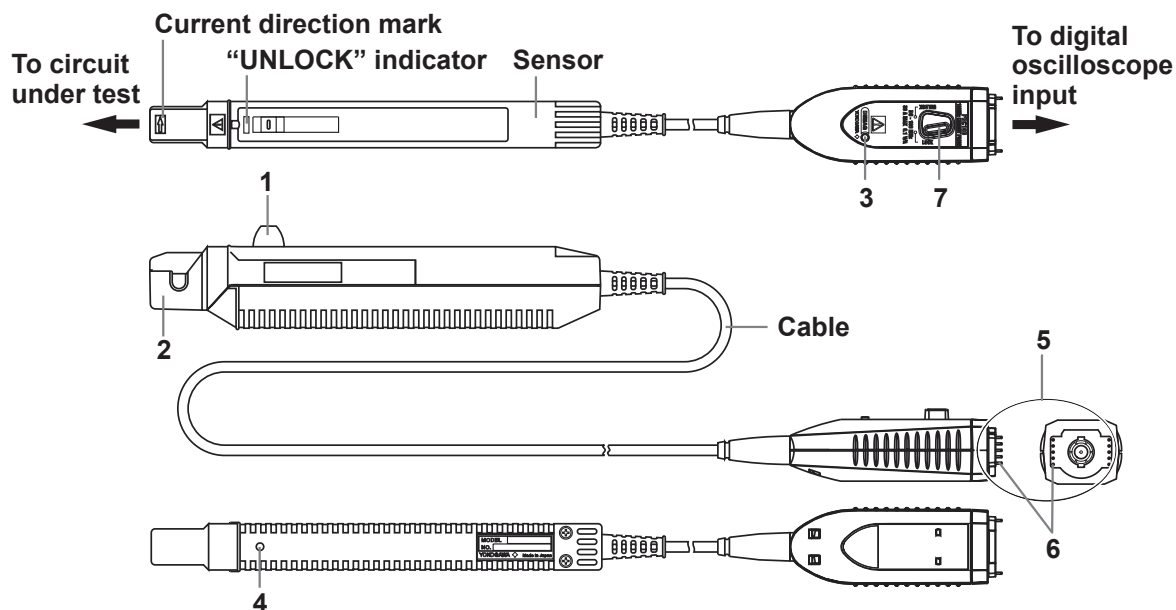
Product Overview

The PBC series of current probes are 100 MHz/50 MHz bandwidth active current probes that are used in combination with DLM series or other digital oscilloscopes equipped with the YOKOGAWA probe interface. The probe can be used simply by connecting it to the BNC input terminal on the DLM series or other digital oscilloscope equipped with the YOKOGAWA probe interface. The probe provides for easy current waveform observation simply by clamping it around the conductor under measurement.

Features

- Highly accurate current detection
- Easy current measurement
- Wide frequency bandwidth (DC to 100 MHz/50 MHz)
- Power can be supplied to the probe from DLM series and other digital oscilloscopes equipped with the YOKOGAWA probe interface.
- The probe is automatically recognized by the DLM series and other digital oscilloscopes equipped with the YOKOGAWA probe interface.
- Small size and light weight
- Enables measurement of low currents.
- Simple protection function for excessive input

Names of Parts



A description of each part is given on the following page.

Description of Parts

1. Open/Close Lever

This lever opens and closes the sensor head. Always use this lever when opening and closing the sensor head.

2. Sensor Head

The sensor head clamp is positioned around the conductor under measurement to detect current. It is a precision-assembled component consisting of various parts including plastic molded parts, a ferrite core, and a Hall element. Take proper care when handling the probe to avoid damage as a result of sudden sharp changes in ambient temperature, mechanical stress, or physical shocks.

3. Demagnetization Switch (DEMAG)

This switch demagnetizes the core which can become magnetized when turning the power ON or OFF, or when applying excessive input. You must always use this switch prior to performing measurement. The time required for demagnetization is approximately one second. During demagnetization, a degaussing waveform is output.

4. Zero Adjust Trimmer

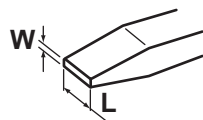
DLM series and other digital oscilloscopes utilize an automatic zero adjustment function. Normally, the zero adjustment trimmer is not used for the adjustment. However, if the residual offset exceeds the automatic adjustment range and automatic zero adjustment fails, you can turn the trimmer to carry out the zero adjustment. This compensates for the effects of the probe's offset voltage, temperature drift, and other phenomena. Before performing measurement, demagnetize the probe then carry out zero adjustment (see page 4).

- **Adjustment with the Zero Adjust Trimmer**

You can adjust the offset voltage using an appropriate driver as described below. Use a driver that fits the adjustment groove. Using a driver with a large grip or a small head, or applying excessive force can result in damage to the adjustment turn stop or grooves.

- **Example Driver Bit Dimensions (Reference value)**

Head thickness (W): 0.4 mm, head length (L): 1.8 mm (driver length: 10 mm or more), head shape: minus.



5. Probe Interface

The point of connection to the input of the digital oscilloscope. Outputs the measured current waveform at a constant rate (0.1 V/A, in combination with 1 M Ω impedance). The output terminal is a BNC connector. Connect to a digital oscilloscope that supports the YOKOGAWA probe interface.

6. Interface Spring Pins

When the probe interface is connected, it touches the pad on the interface board of the oscilloscope. The probe's power and offset voltage are supplied through this interface component. It also automatically recognizes the probe type.

7. Latch Release Lever

Release the lock when connecting the probe interface to the oscilloscope input.

Operating Procedures

Handling Precautions



WARNING

If the waveform measuring instrument to be connected to the output terminal (BNC) of this probe has other measuring terminals, the probe's connection terminals and internal circuits may become hazardous live depending on the types of devices that are connected to the instrument's measuring terminals.

To avoid this, note the following:

- Ensure that basic insulation equivalent to that of the circuit under measurement in terms of measurement category, operational voltage, and pollution degree is used between the measuring terminal to which the probe is connected and other measuring terminals.
- If the basic insulation across measuring terminals does not meet this requirement, do not apply an input exceeding the safety voltage level to any of the other measuring terminals.
- Always ground the measuring instrument.
- Take care to avoid electric shock whenever connecting the probe to a measuring terminal. Also, never disconnect the probe from the measuring instrument while the probe is connected to the circuit under measurement.
- Before connecting the probe to the circuit under measurement, confirm that the measuring instrument is correctly grounded, and that the probe interface is properly connected to the measuring instrument's input.
- Make sure to read all safety precautions and warnings such as information concerning electric shock for any instruments to which the probe will be connected.
- Do not short-circuit between the two measurement lines with the metal part of the sensor unit. It may lead to a serious accident such as the occurrence of an arc.

CAUTION

To clean the instrument, wipe using a soft cloth with a small amount of water or mild detergent. Never use detergents that contain benzene, alcohol, acetone, ethyl compounds, ketones, thinner, or gasoline as deformation or discoloration can result.

Preparing for Measurement



CAUTION

When using a 701928/701929 current probe, it may not be possible to use multiple active probes at the same time due to the current capacity limitation of the YOKOGAWA probe interface of a waveform measuring instrument. Make sure that the total current consumption of each active probe does not exceed the current capacity. The current consumption of the probe depends on the measured current.

See the following YOKOGAWA website for the usage limitations for each measuring instrument.

<https://tmi.yokogawa.com/solutions/products/oscilloscopes/current-probes/>

1. Set up the probe and a DLM series or another digital oscilloscope with the YOKOGAWA probe interface.
2. Before measurement, insert the probe interface completely into the input of the oscilloscope and confirm that a secure connection has been established between the BNC connector and interface pins. When inserted, you will hear a click as the latch closes, indicating that the connection has been made.

Warm Up

Immediately after connecting the probe, heat emitted from the probe itself causes the output offset voltage to drift. After applying power, the probe should nearly stabilize about 30 minutes after connecting it. Before using the probe, allow it to warm up for at least 30 minutes.

Demagnetization and Zero Adjustment



CAUTION

- When removing the probe from the oscilloscope, be sure to release the lock first, then pull out the probe by the connector. The probe interface can be damaged if you pull forcibly without releasing the lock, or if you pull by the cable.
 - Do not demagnetize the probe while the clamp is positioned around the conductor under measurement. The demagnetization procedure can inject current into the conductor under measurement, possibly resulting in damage to connected components. For the same reason, make sure that the probe clamp is not positioned around a conductor under measurement when connecting this probe to the oscilloscope. A demagnetizing waveform can be generated when power is supplied.
-

-
1. Connect the probe's output terminal to the input terminal of the digital oscilloscope.
 2. Without positioning the probe clamp around the conductor under measurement, press the open/close lever until the unlocked indicator goes out, then confirm that the sensor head is securely closed.

Demagnetization

3. Press the demagnetization switch (DEMAG) on the probe interface.

Note

- Oscillation may occur when you execute DEMAG, but this has no effect on measurements.
 - The positive side of the waveform that is generated when you execute DEMAG may not be symmetrical to the negative side, but this has no effect on measurements.
-

Zero Adjustment (Residual Offset Adjustment)

4. Confirm the input coupling of the digital oscilloscope to DC. For instructions on selecting the input coupling, see the user's manual of the digital oscilloscope.
5. Select the menu on the digital oscilloscope for performing automatic zero adjustment on the current probe to adjust the residual offset. For instructions on performing automatic zero adjustment, see the user's manual of the digital oscilloscope.
6. If an error message appears during step 5 and you are unable to adjust the trace to the GND level, turn the zero adjustment trimmer so that the trace approaches the GND level, then repeat step 5.

Note

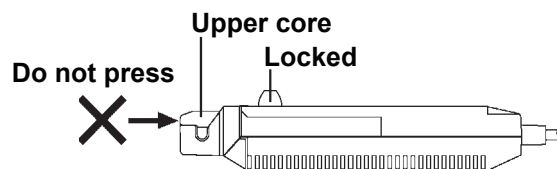
If the digital oscilloscope supports the current probe's automatic adjustment function*, perform automatic zero adjustment on the digital oscilloscope. However, if the residual offset exceeds the automatic adjustment range and automatic zero adjustment fails, turn the trimmer to carry out the zero adjustment. Upon shipment from the factory, the zero adjustment trimmer is adjusted so that it can be used for automatic zero adjustment in a 23°C environment after a 30 minute warm-up.

Performing Measurement



CAUTION

- The maximum continuous input range is determined from the rise in temperature resulting from self-heating during measurement. Do not input currents exceeding this range. Doing so can cause damage.
- The maximum continuous input range differs depending on the frequency of the measured current (see page 9, “Product Specifications”).
- If a current exceeding the maximum continuous input range, heat from the input the sensor will trigger the probe’s internal protection function which will interfere with normal output. If this occurs, immediately remove the sensor from the conductor under measurement, or set the input current to zero. A sufficient cooling off period must be given until normal operation is restored.
- Heat generated by an input current whose frequency is 1 kHz or higher is mainly due to self-heating of the sensor head. In this case, the protection function is not activated. Therefore, be careful of burns, short circuits, and other accidents or sensor damage and the like caused by the temperature increase.
- The overcurrent protection function may activate under high temperatures, resulting in measured currents at or below the maximum continuous input range.
- Continuous input exceeding the maximum continuous input range, or continual activation of the protection function can damage the probe.
- Product specifications showing the maximum continuous input range also indicate a maximum peak current value of 50 A_{peak}, non-continuous. This shows that the upper limit of the waveform response is 50 A_{peak}. Ensure that the current (RMS) does not exceed the maximum continuous input range.
- When opening the sensor head, always use the open/close lever. If you press the upper core while the sensor head is locked, the open/close mechanism can be damaged.
- Do not apply force to the sensor head in the direction indicated in the figure below.



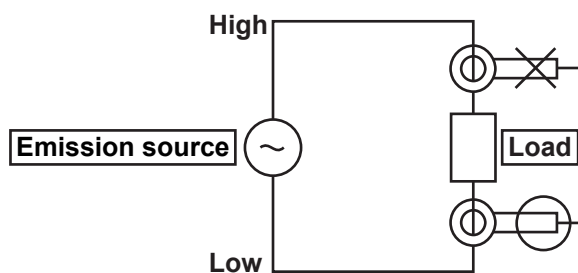
- To maintain the probe accuracy within the specifications and to verify that correct measurement results are being obtained, periodic calibration is necessary. The calibration period varies depending on your operating environment and the frequency of use. We recommend that you set a calibration period according to the frequency of use and ask us to calibrate it periodically.

1. Perform all safety checks, and ensure that the preparations for measurement (see page 4) have been taken.
2. Pull the open/close lever to open the sensor head.
3. Orient the probe so that the current direction arrow on the tip of the sensor points in the same direction as the flow of current in the conductor under measurement. Position the probe clamp around the conductor under measurement so that the conductor is centered in the clamp hole.
4. Press the open/close lever until the unlocked indicator goes out, then confirm that the open/close lever is securely locked and that the sensor head is securely closed.
5. The current waveform can now be observed on the digital oscilloscope.
The output voltage rate of this probe is 0.1 V/A. For example, if the digital oscilloscope's voltage sensitivity is 10 mV/DIV, the current sensitivity would be 100 mA/DIV.

Digital oscilloscopes that support the YOKOGAWA probe interface automatically detect the probe and convert the display unit to current sensitivity.

Note

- When the probe is used with a DLM series or another digital oscilloscope equipped with the YOKOGAWA probe interface, the probe sensitivity is automatically detected by the digital oscilloscope. If not automatically detected by the digital oscilloscope, set the input impedance to 1 MΩ.
- If the probe is connected to the digital oscilloscope while the power is ON, oscillations may occur occasionally but this does not indicate a malfunction. If this occurs, opening and closing the sensor head with the open/close lever will stop the oscillations and restore normal functioning.
- Resonant sound can be generated depending on the frequency of the measured current. This will not affect measurement.
- The positive side of the waveform that is generated when you execute DEMAG may not be symmetrical to the negative side, but this has no effect on measurements.
- The position of the conductor under measurement within the clamp hole can affect measurement. Keep the conductor in the center of the clamp hole.
- During measurement, press the open/close lever until the unlocked indicator goes out, then confirm that the lever is securely locked and that the sensor head is securely closed. Accurate measurements cannot be obtained if the sensor head is not securely closed.
- In the high frequency domain, positioning the probe clamp on the high side of the circuit can introduce common mode noise. As necessary, limit the bandwidth of the waveform observation instrument, or position the probe clamp on the low side.



- Accurate measurements may not be possible if operated within close proximity to strong magnetic fields such as those produced by transformers, circuits with large currents, and wireless devices.

Malfunction? First, Investigate.

If you are unable to correct problems using the troubleshooting information in this section, servicing is required and you should contact the dealer from whom you purchased the instrument.

Description	Possible Problem	Corrective Action
Cannot measure direct current (or low frequencies of up to several hundred Hz), or the amplitude at that bandwidth is small.	Power is not ON.	Turn ON the power.
	The oscilloscope or other measuring instrument is set for AC coupling	Set the instrument to DC coupling.
	The sensor is not locked (the closing mechanism is not properly aligned).	Lock the sensor.
Cannot adjust to the zero point.	The sensor is magnetized.	Demagnetize the sensor, and try the adjustment again.
	The zero adjust is out of range (due to drift or other causes).	Use the probe's zero adjust trimmer.
The amplitudes across all frequencies are small.	Input of the digital oscilloscope is 50 Ω	Set for 1 M Ω .

Specifications

Product Specifications

Accuracy of 23 ±3 °C, 30 minutes after turning ON the power.

Model	PBC100 (701928)	PBC050 (701929)
Frequency band*	DC to 100 MHz (–3 dB) (See the typical characteristics shown on page 11)	DC to 50 MHz (–3 dB) (See the typical characteristics shown on page 11)
Rise time*	3.5 ns or less	7.0 ns or less
Propagation delay	13 ns (Typical)	13 ns (Typical)
Maximum continuous input	30 Arms (AC and DC components) (See pages 11 and 12, Derating according to frequency)	
Maximum peak current	50 Apeak, non-continuous	
Output voltage rate*	0.1 V/A	
Amplitude accuracy*	0 to 30 Arms: ±1.0% of reading ±1 mV 30 Arms to 50 Apeak: ±2.0% of reading (DC, 45 to 66 Hz)	
Noise*	Equivalent to 2.5 mArms or less (with 20 MHz bandwidth measuring instrument)	
Insertion impedance	(See typical characteristics on page 12)	
Compatible interface	YOKOGAWA probe interface	
Temperature coefficient for sensitivity*	±2% (with 50 Hz, 30 Arms input in a range of 0 to 40 °C)	
Maximum rated power	5.5 VA (within maximum input)	5.9 VA (within maximum input)
Rated supply voltage	±12.3 V ±0.3 V (supplied from the YOKOGAWA probe interface)	
Operating temperature and humidity	0 to 40 °C 80% RH or less (no condensation)	
Storage temperature and humidity	–10 to 50 °C, 80% RH or less (no condensation)	
Operating location	Indoor use, altitude up to 2000 m	
Effect of external magnetic fields	Equivalent to a maximum of 5 mA (in a DC or 60 Hz, 400 A/m magnetic field)	
Measurable conductors	Insulated conductors	
Diameter of measurable conductors	φ 5 mm or less	
Guaranteed accuracy period	1 year (up to 10000 open and close operations)	
Cable lengths	Approx. 1.5 m (full length: approx. 1.755 m)	
External dimensions	Sensor: approx. 175 (W) x 18 (H) x 40 (D) mm Probe interface: approx. 80 (W) x 30 (H) x 28 (D) mm	
Weight	Approx. 190 g	
Accessories	User's manual, carrying case	

* In conjunction with a waveform measuring instrument having an input impedance of 1 MΩ ±1%

Compliant Standards

Model		PBC100 (701928)/PBC050 (701929)
Safety standards		EN 61010-1
		EN 61010-2-032 Type D
		Pollution degree 2 * ¹
EMC standards	Emissions	EN 61326-1 Class B
		EN 55011 Class B Group 1
		EMC Regulatory Arrangement in Australia and New Zealand
		EN 55011 Class B Group 1
	Immunity	EN 61326-1 Table 1 (Basic immunity requirement)
Environmental standards* ²		EU RoHS Directive compliant

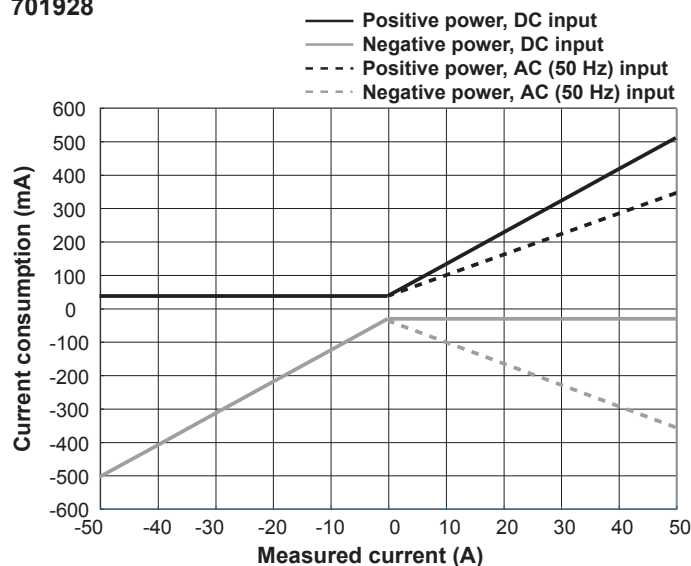
*1 Pollution degree applies to the degree of adhesion of a solid, liquid, or gas which deteriorates withstand voltage or surface resistivity. Pollution degree 2 applies to normal indoor atmospheres (usually with only non-conductive pollution).

*2 For conformity to environmental regulations and/or standards other than EU, contact your local Yokogawa office (PIM 113-01Z2).

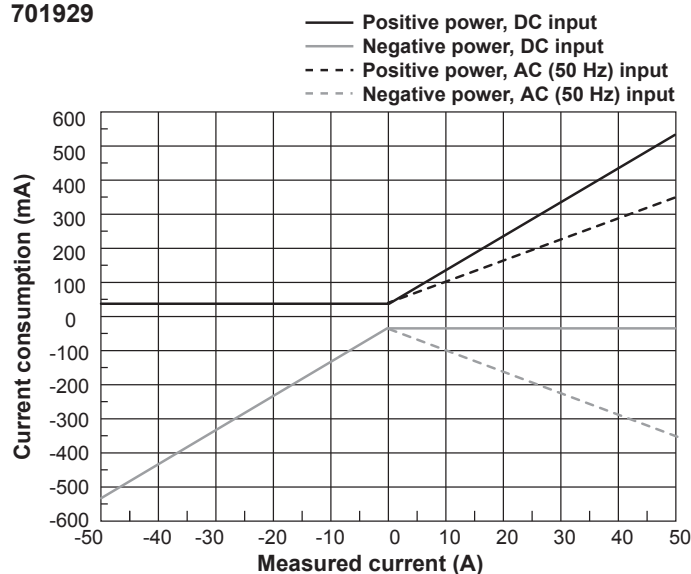
Typical Characteristics

Measured Current Values and Current Consumption (Typical)

701928

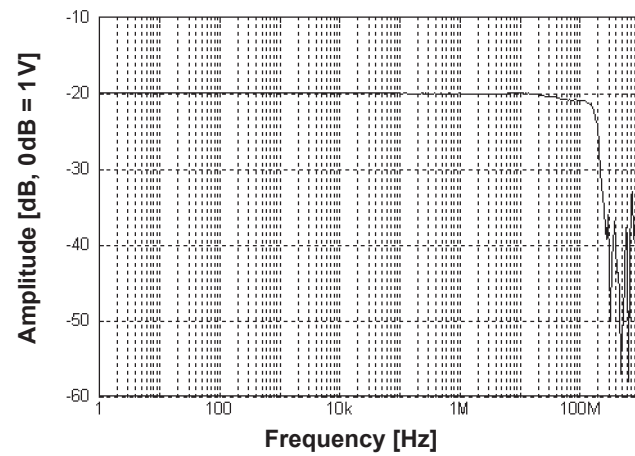


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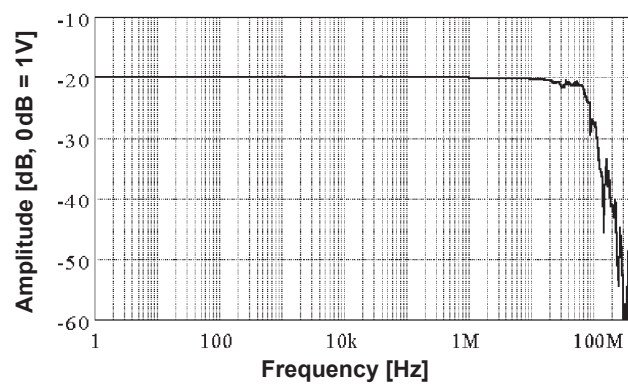


Frequency Characteristics (Typical)

701928

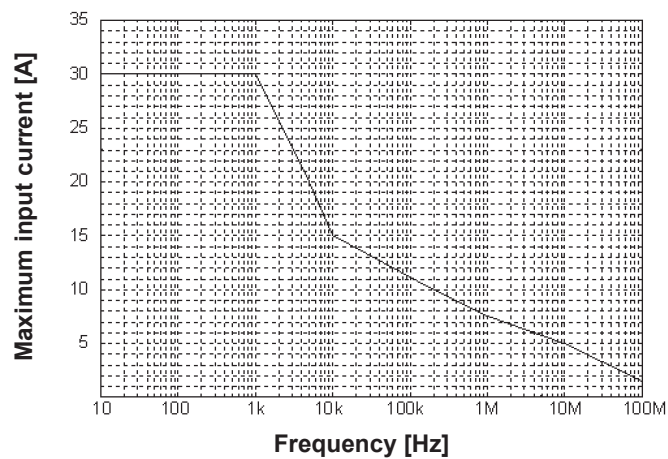


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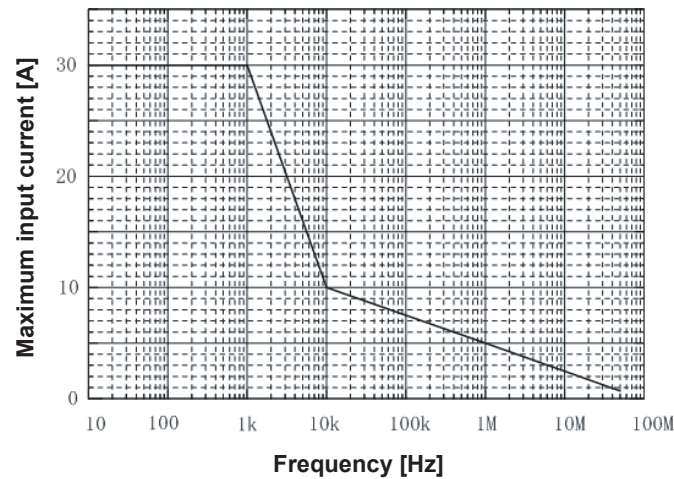


Derating According to Frequency

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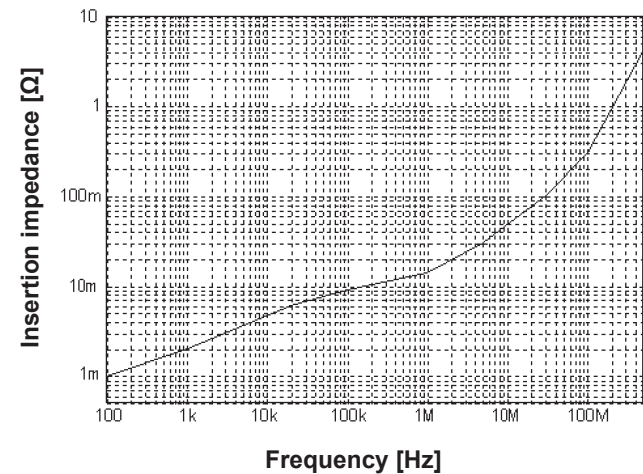


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Insertion Impedance (Typical)

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