
**User's
Manual**

**Model 701925
PBDH0500 Differential Probe**

Product Registration

Thank you for purchasing YOKOGAWA products.

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Please allow us to serve you best by completing the product registration form accessible from our website.

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

Thank you for purchasing the Model 701925 PBDH0500 Differential Probe. This user's manual explains usage, specifications, and the handling precautions of the 701925. To ensure correct use, please read this manual thoroughly before beginning operation. After reading this manual, keep it in a safe place.

List of Manuals

The following manuals are provided for the 701925, including this manual.

Manual Title	Manual No.	Description
Model 701925 PBDH0500 Differential Probe User's Manual	IM 701925-01EN	This manual. Explains usage, specifications, and the handling precautions of the 701925.
701925 PBDH0500 Differential Probe	IM 701925-92Z1	Document for China

The "EN" and "Z1" in the manual numbers are the language codes.

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

Document No.	Description
PIM113-01Z2	Inquiry (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 instrument's performance and functions. The figures given in this manual may differ from those that actually appear on your screen.
- 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.

Trademarks

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Revisions

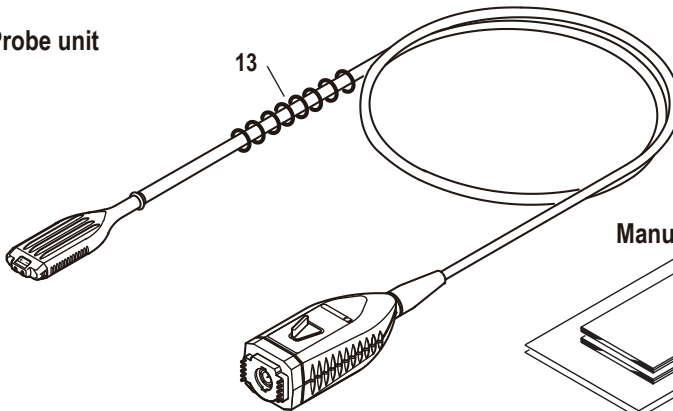
- 1st Edition: January 2021

Checking the Package Contents

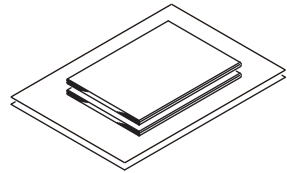
The following accessories are included. If some of the contents are not correct or missing or if there is physical damage, contact the dealer that you purchased them from.

- Probe unit: 1
- Attachments: 1 set (see below)
- Manuals: 1 set (see "List of Manuals," provided earlier)
- Carrying case: 1

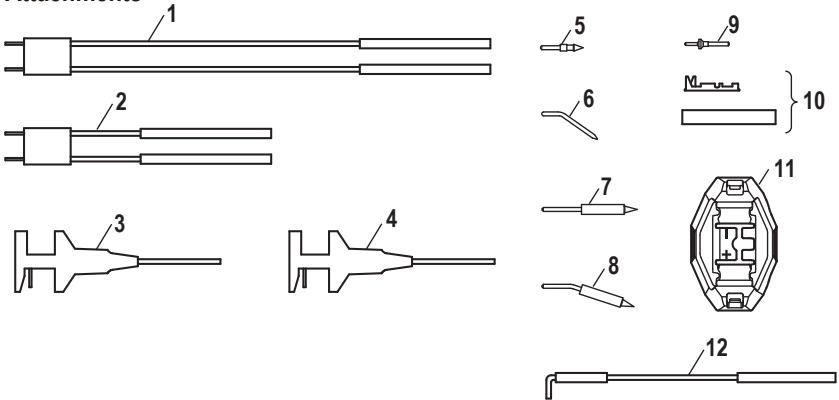
Probe unit



Manuals



Attachments



Checking the Package Contents

No.	Attachment Item	Quantity
1	10-cm pair leads	2
2	5-cm pair leads	2
3	Micro clip (red)	1
4	Micro clip (black)	2
5	Straight pin	4
6	Angled pin	4
7	Spring-type straight pin	4
8	Spring-type angled pin	4
9	Flanged pin	10
10	Contact, heat-shrink tube	10 each
11	Retaining cover	2
12	Ground extension lead	2
13	Marker tip*	8 colors x 1 each

* Attached to the probe unit.

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

Calls attention to actions or conditions that could cause serious or fatal injury to the user, and precautions that can be taken to prevent such occurrences.

CAUTION

Calls attention to actions or conditions that could cause light injury to the user or damage to the instrument or user's data, and precautions that can be taken to prevent such occurrences.

Note

Calls attention to information that is important for the proper operation of the instrument.

French



Une manipulation ou une utilisation incorrectes risquent de blesser l'utilisateur ou d'endommager l'instrument. Ce symbole apparaît sur l'instrument pour indiquer à l'utilisateur qu'il doit se reporter au manuel de l'utilisateur afin d'y lire les instructions spécifiques correspondantes. Ce même symbole apparaît à la section correspondante du manuel de l'utilisateur pour signaler lesdites instructions. Dans le manuel de l'utilisateur, ce symbole est accompagné des termes AVERTISSEMENT et ATTENTION.

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.

Safety Precautions

This product is designed to be used by a person with specialized knowledge. To use this product correctly and safely, make sure to observe the following safety precautions when handling the product. YOKOGAWA assumes no liability for the customer's failure to comply with these safety precautions.

This manual is part of the product and contains important information. Keep this manual in a safe place so that you can refer to it immediately when using the product until you dispose of the product. Also, before starting to use the probe, read the oscilloscope manual to thoroughly familiarize yourself with its specifications and handling.

The following symbols are used on this instrument.



Handle with care. Refer to the user's manual or service 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.

French



À manipuler délicatement. Toujours se reporter aux manuels d'utilisation et d'entretien. Ce symbole a été apposé aux endroits dangereux de l'instrument pour lesquels des consignes spéciales d'utilisation ou de manipulation ont été émises. Le même symbole apparaît à l'endroit correspondant du manuel pour identifier les consignes qui s'y rapportent.

Make sure to observe the following safety precautions. Failure to comply with the precautions could lead to injury or death or damage to the instrument.

WARNING

Purpose of the product

The product is used in combination with an oscilloscope to observe and measure electrical signals. Do not use for any other purpose.

Ground the measuring instrument

The protective grounding terminal of the oscilloscope must be connected to ground.

Check the grounding

Before connecting the probe input terminal to the device under measurement, ensure that the measuring instrument is grounded properly and that the probe's BNC connector is connected to the oscilloscope input.

Observe the maximum input voltage

Do not apply voltage exceeding ± 100 V instantaneously or ± 35 V (DC + AC_{peak}) continuously between an input lead and ground or between two input leads.

Be careful of electric shock

Never use the probe with wet hands or when the probe itself is wet. Doing so may cause electric shock. Be careful of electric shock when you connect the probe to the device under measurement.

Avoid exposed circuitry

To prevent electric shock, remove metal and jewelry such as watches and rings. Do not touch exposed connections or components when power is present on the device.

Precautions when connecting and disconnecting the probe

Do not disconnect the probe from the oscilloscope while the probe is connected to the device under measurement. Doing so may cause electric shock.

Do not operate in wet or damp conditions

To prevent electric shock, do not operate the probe in wet or damp conditions.

Do not operate in explosive atmosphere

To prevent injury or fire hazard, do not operate the probe in an atmosphere of flammable or explosive gases or vapors.

Do not operate with suspected failures

Stop using the probe if you suspect that the probe is damaged. Consult your nearest YOKOGAWA dealer.

Do not operate with a damaged signal cable

If the signal cable is torn and the inner metal is exposed or if a color different from the outer sheath appears, stop using the cable.

Do not disassemble or modify

Do not disassemble or modify the product. YOKOGAWA assumes no liability if you disassemble or modify the product.

CAUTION

Application and design of the product

The product has not been designed or manufactured for applications in which high reliability is required over a long period of time.

Protective structure

The product is not dust or water resistant. Do not use it in areas with a lot of dust or near water.

Usage and storage environment

Avoid using or storing the product in an environment that does not meet the specifications, such as direct sunlight, high temperature and humidity, or condensation. Deformation or insulation deterioration can occur resulting in failure to retain the product specifications.

Handling the probe

Avoid vibration, shock, and static electricity when handling the probe. Do not bend or pull the cables excessively. Doing so may damage or disconnect the probe.

French

AVERTISSEMENT

But du produit

Le produit est utilisé en association avec un oscilloscope pour observer et mesurer des signaux électriques. Ne l'utilisez pas à d'autres fins.

Mettez l'instrument de mesure à la terre

La borne de terre de protection de l'oscilloscope doit être connectée à la terre.

Vérifiez la mise à la terre

Avant de connecter la borne d'entrée de la sonde à l'appareil sous mesure, assurez-vous que l'instrument de mesure est correctement mis à la terre et que le connecteur BNC de la sonde est connecté à l'entrée de l'oscilloscope.

Respectez la tension d'entrée maximale

N'appliquez pas une tension supérieure à ± 100 V instantanément ou ± 35 V (DC + ACpeak) en continu entre un câble d'entrée et la terre ou entre deux câbles d'entrée.

Faites attention au choc électrique

N'utilisez jamais la sonde les mains mouillées ou lorsque la sonde elle-même est mouillée. Cela pourrait provoquer un choc électrique. Faites attention au choc électrique lorsque vous connectez la sonde à l'appareil à mesurer.

Évitez les circuits exposés

Pour éviter un choc électrique, retirez le métal et les bijoux tels que les montres et les bagues. Ne touchez pas les connexions ou composants exposés en présence de courant sur l'appareil.

Précautions lors de la connexion et de la déconnexion de la sonde

Ne déconnectez pas la sonde de l'oscilloscope lorsque la sonde est connectée à l'appareil en cours de mesure. Cela pourrait provoquer un choc électrique.

N'opérez pas dans des conditions mouillées ou humides

Pour éviter un choc électrique, ne faites pas fonctionner la sonde dans des conditions mouillées ou humides.

N'opérez pas dans une atmosphère explosive

Pour éviter les blessures et les risques d'incendie, n'utilisez pas la sonde dans une atmosphère de gaz ou des vapeurs inflammables ou explosifs.

N'opérez pas en cas de défaillances suspectées

Arrêtez d'utiliser la sonde si vous pensez qu'elle est endommagée. Consultez votre revendeur YOKOGAWA le plus proche.

N'opérez pas avec le câble de signal endommagé

Si le câble de signal est coupé et que le métal interne est exposé ou si une couleur différente de la gaine extérieure apparaît, arrêtez d'utiliser le câble.

Ne démontez ou modifiez pas

Ne démontez ou modifiez pas le produit. YOKOGAWA n'assume aucune responsabilité si vous démontez ou modifiez le produit.

ATTENTION

Application et conception du produit

Le produit n'a pas été conçu ou fabriqué pour des applications dans lesquelles une fiabilité élevée est requise sur une longue période.

Structure de protection

Le produit n'est pas résistant à la poussière ou à l'eau. Ne l'utilisez pas dans des zones très poussiéreuses ou près de l'eau.

Environnement d'utilisation et de stockage

Évitez d'utiliser ou de stocker le produit dans un environnement qui ne répond pas aux spécifications, comme la lumière directe du soleil, les températures et l'humidité élevées ou la condensation. Une déformation ou une détérioration de l'isolation peut se produire, entraînant le non-respect des spécifications du produit.

Manipulation de la sonde

Évitez les vibrations, les chocs et l'électricité statique lors de la manipulation du produit. Ne pliez pas et ne tirez pas les câbles de manière excessive. Cela pourrait endommager ou déconnecter la sonde.

Operating environmental limitations

Please note the following operating environmental limitations.

CAUTION

This product is a Class A (for industrial environments) product. Operation of this product in a residential area may cause radio interference in which case the user will be required to correct the interference.

French

ATTENTION

Ce produit est un produit de classe A (pour les environnements industriels). Le fonctionnement de ce produit dans une zone résidentielle peut provoquer des interférences radio, auquel cas l'utilisateur devra corriger les interférences.

Regulations and Sales in Each Country or Region

Waste Electrical and Electronic Equipment (WEEE) Directive



(This directive is valid only in the EU.)

This product complies with the WEEE directive marking requirement. This marking indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category

With reference to the equipment types in the WEEE directive, this product is classified as a “Monitoring and control instruments” product.

Do not dispose in domestic household waste. When disposing products in the EU, contact your local Yokogawa office in Europe.

Authorized Representative in the EEA

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

Disposal

When disposing of this product, follow the laws and ordinances of your country or region.

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1. Product Overview

Overview of 701925

Model 701925 PBDH0500 Differential Probe is a differential input active probe with a wide bandwidth from DC to 500 MHz, used in combination with an oscilloscope that has a YOKOGAWA dedicated probe interface (hereinafter abbreviated as oscilloscope with probe interface).* The probe features excellent common mode rejection capability and allows direct observation of differential signals. Also, the probe is automatically detected and receives power simply by connecting it to a BNC terminal of an oscilloscope with probe interface. In addition, the probe comes with various standard accessories that can be exchanged according to the device under measurement.

- * For information about oscilloscopes with YOKOGAWA dedicated probe interface, contact your nearest YOKOGAWA dealer.

2. Configuration and Functions

List of Standard Accessories

The 701925 consists of the standard accessories listed below. The numbers correspond to the accessories shown on the next page.

No.	Standard Accessories	Quantity
1	10-cm pair leads ¹	2
2	5-cm pair leads ¹	2
3	Micro clip (red)	1
4	Micro clip (black)	2
5	Straight pin	4
6	Angled pin	4
7	Spring-type straight pin	4
8	Spring-type angled pin	4
9	Flanged pin ²	10
10	Contact, heat-shrink tube ^{1, 2}	10 each
11	Retaining cover ²	2
12	Ground extension lead ¹	2
13	Marker tip ³	8 colors x 1 each

1 Connectable to a 0.64-mm square pin or a Φ 0.65-mm pin.

2 A kit for constructing your own extension leads

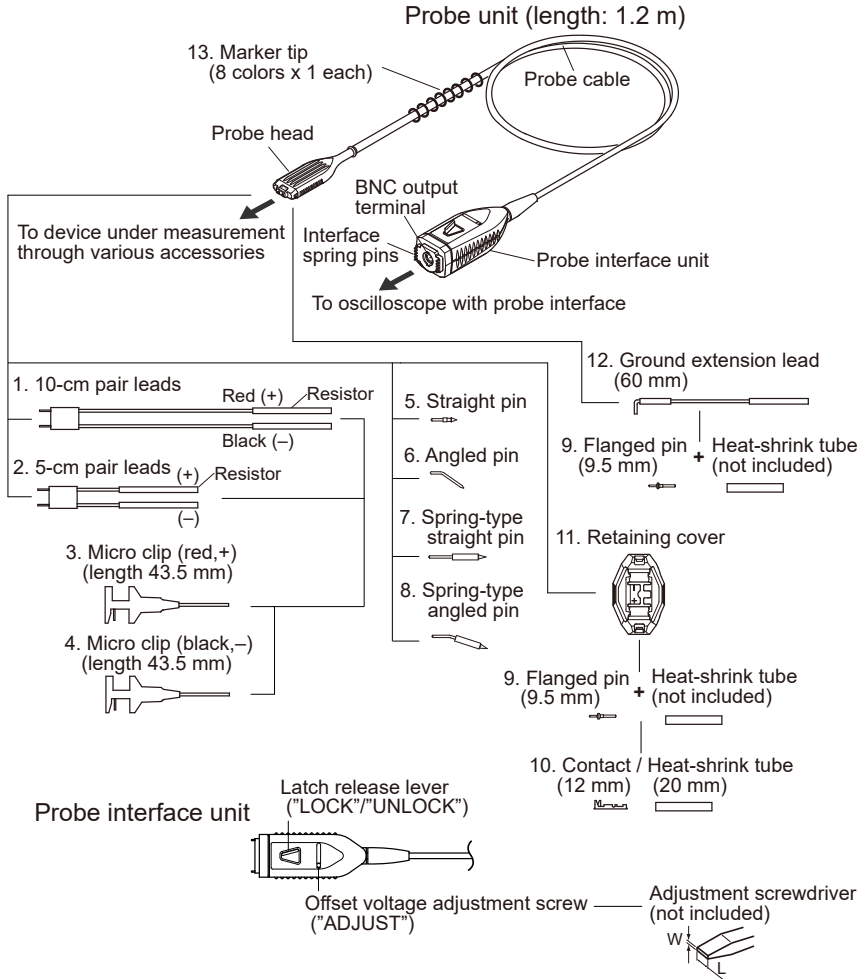
3 Attached to the probe unit.

List of Optional Accessories (Sold Separately)

If additional accessories are needed, they can be purchased separately.

No.	Standard Accessories	Part Number	Packaging Quantity
1	10-cm pair leads	B8099KU	5
2	5-cm pair leads	B8099KV	5
3	Micro clip (red)	B8099KP	8
4	Micro clip (black)	B8099KH	10
5	Straight pin	B8099DL	10
6	Angled pin	B8099DM	10
7	Spring-type straight pin	B8099DJ	5
8	Spring-type angled pin	B8099DK	5
9	Flanged pin	B8099KX	5
10	Contact, heat-shrink tube	B8099KW	10 each
11	Retaining cover	B8099KY	2
12	Ground extension lead	B8099KQ	5

Combinations of Accessories and Component Names



Functions of Components

Probe head

Various accessories are connected to the signal input terminals, and the probe head is connected to the device under measurement.

Ground extension lead

The ground lead is usually not used when measuring differential signals.

Probe cable

The probe cable connects the probe head and the probe interface unit.

Marker tips

All the 8-color tips are attached to the probe cable. The marker tips can be identified according to the channel display color of the connected oscilloscope. Cut and remove unnecessary color tips before use.

Probe interface

The probe interface unit is connected to an oscilloscope with probe interface.

Output terminal

The output terminal is a BNC connector. It is connected to an input terminal of the oscilloscope.

Interface spring pins

When the output terminal is connected, interface spring pins touch the pad on the oscilloscope interface board and the probe is automatically detected. The interface pins are also used to supply the probe's power and a offset voltage.

Latch release lever

When disconnecting the probe from the oscilloscope, use the latch release lever to unlock the probe output terminal connected to the oscilloscope input terminal. The lock can be released while pushing the lever to the UNLOCK side.

Offset voltage adjustment screw

This screw adjusts the internal variable resistor. The residual offset voltage can be adjusted using a screwdriver described below.

Adjustment screwdriver

Use an appropriate screwdriver that fits the adjustment screw. Using a screwdriver with a large grip or an extremely small tip may damage the probe.

Recommended screwdriver bit dimensions are:

Head thickness (W): 0.2 to 0.35 mm, head width (L): 1.3 to 1.5 mm, head shape: flat or Phillips.

3. Operating Procedure

Operating Precautions



WARNING

- Use this probe only with YOKOGAWA's oscilloscopes with probe interface. Even with YOKOGAWA's oscilloscopes, this probe can be used only when specified as a connectable accessory. Also, use this probe only with standard or optional accessories sold separately.
 - Do not instantaneously or continuously apply a voltage exceeding the following maximum voltage values between the input and ground. Failure to follow this precaution may cause accidents, such as electric shock or damage to the instruments.
Instantaneous voltage: ± 100 V
Continuous voltage: ± 35 V (DC + ACpeak)
 - To use the probe, first connect to the oscilloscope and then to the device under measurement. After use, turn off the power to the device under measurement, disconnect the probe from the device under measurement first, and then disconnect from the oscilloscope.
-
-

CAUTION

- This probe is designed to measure the voltage difference between two points on the device under measurement. It does not electrically isolate the device under measurement from the measuring instrument.
 - When cleaning the probe, wipe with a piece of soft cloth to prevent damaging the probe. Do not immerse the probe body in liquid. Do not use abrasive cleaners or volatile solvents such as benzene on the probe.
-

French



AVERTISSEMENT

- Utilisez la sonde uniquement avec les oscilloscopes de YOKOGAWA avec interface de sonde. Même avec les oscilloscopes de YOKOGAWA, la sonde ne peut être utilisée que si spécifiée comme accessoire connectable. Et utilisez la sonde uniquement avec des accessoires standard ou des accessoires en option vendus séparément.
- N'appliquez pas instantanément ou en continu une tension dépassant les valeurs de tension maximales suivantes entre l'entrée et la masse. Si cette précaution n'est pas prise, des accidents tels qu'un choc électrique ou un dégât matériel peuvent se produire.
Tension instantanée: ± 100 V
Tension continue: ± 35 V (DC + ACpeak)
- Pour utiliser la sonde, connectez-la d'abord à l'oscilloscope, puis à l'appareil en cours de mesure. Après utilisation, coupez l'alimentation de l'appareil sous mesure, débranchez d'abord l'appareil sous mesure, puis déconnectez-la de l'oscilloscope.

ATTENTION

- Le produit n'est pas étanche à la poussière ni à l'eau. N'utilisez pas le produit dans des zones très poussiéreuses ou dans lesquelles de l'eau pourrait être renversée.
- Lors du nettoyage de la sonde, essayez avec un morceau de chiffon doux pour éviter d'endommager la sonde. Ne plongez pas le corps de la sonde dans un liquide. N'utilisez pas de nettoyeurs abrasifs ni de solvants volatils tels que la benzine sur la sonde.

Preparation before Measurement

1. Have the probe and an oscilloscope with probe interface ready.
2. Insert the probe interface unit completely into the oscilloscope input, and confirm that the BNC connector and the interface spring pins are securely fastened. The latch click will be heard when the connectors lock into place.
3. When the probe is connected to an oscilloscope with probe interface, the probe interface is automatically detected, and the probe's attenuation ratio and the input coupling of the oscilloscope are set automatically.
4. Attach any of the provided attachments or self-made attachments to the signal input terminals of the probe head.

Note

Accurate measurements may not be possible near objects with strong electromagnetic fields such as transformers, large current circuits, or wireless equipment.

Handling the Attachments

Select an attachment suitable for the device under measurement according to the following table, and connect it to the signal input terminals of the probe head illustrated below. See also "Example of Connecting the Attachments" illustrated below. See the Appendix 1 for frequency characteristics of each attachment.

Pair leads

5-cm and 10-cm pair leads can be connected directly to the device under measurement, such as a pin header, or be used in combination with micro clips. The pair leads contain the following damping resistors, which take the connection and combination into consideration. The 10-cm pair leads are especially suitable for measuring relatively low-frequency signals.

- 5-cm pair leads 100 Ω , 1/4 W, 1 %
- 10-cm pair leads 150 Ω , 1/4 W, 1 %.

The pair leads can be connected to a 0.64-mm square pin or a Φ 0.65-mm pin.

Pins

The following four types of pins are available. They are suitable for measuring relatively high-frequency signals. Select the pin according to the position and the status of the device under measurement.

- Straight pin
 - Angled pin
 - Spring-type straight pin
 - Spring-type angled pin
-

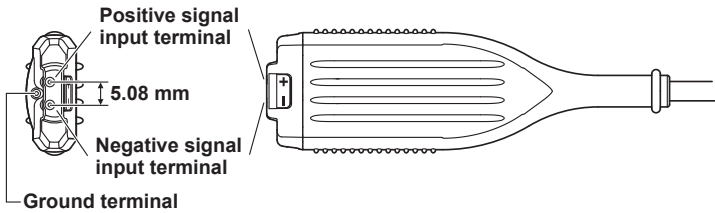
Self-made extension lead

An extension lead can be made with the self-made kit if a lead longer than the accessories is needed or when using a retaining cover to prevent the lead from coming out of the probe head. See “Creating an Extension Lead” for details.

Note

Because the probe input has high impedance, the inductance from the probe head to the device under measurement has a large effect on the measured results of high frequency signal components. When measuring signals with frequency components of 100 MHz or higher, it is recommended to use as short attachments as possible for both the positive and negative signal input terminals.

Probe head

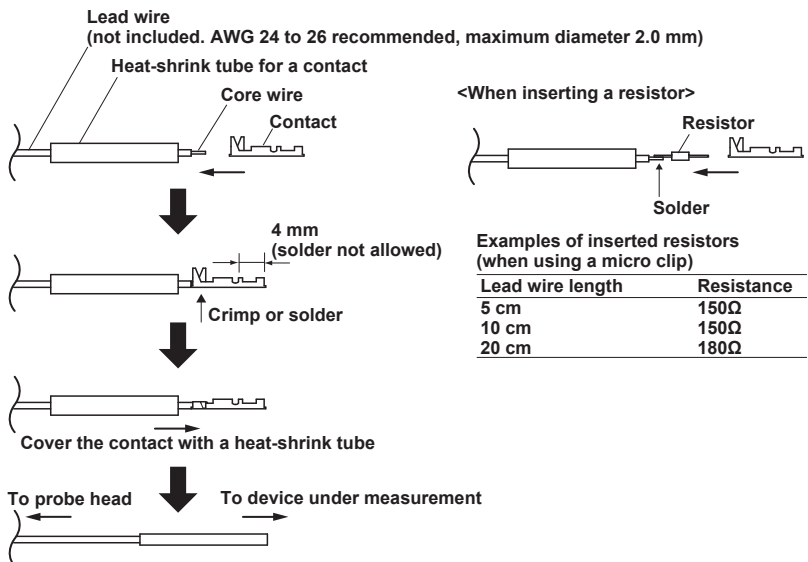


Creating an Extension Lead

Create an extension lead using the standard accessory kit.

Device-under-Measurement End

1. Pass a lead wire through a heat-shrink tube for a contact. The lead wire is not included. AWG 24 to 26 is recommended. The maximum diameter is 2.0 mm. Here, a damping resistor can be inserted between the lead wire and the contact as shown in the illustration below.
2. Crimp or solder the core of the lead wire to the contact. A dedicated crimping tool is needed to crimp the lead wires.
3. Cover the contact with the heat-shrink tube, and then apply heat with a drier to fix the tube in place.

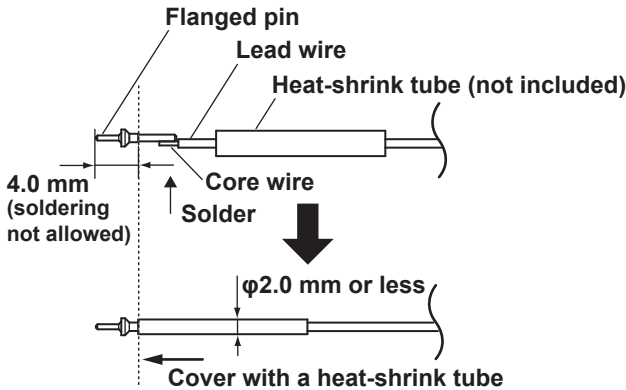


Note

If solder gets into the soldering-not-allowed part (4 mm from the tip of the contact), the contact or the device under measurement may be damaged.

Probe Head End

4. Pass the lead wire through the heat-shrink tube. The heat-shrink tube for the probe-head end is not included. It must be obtained separately.
5. Solder the core wire of the lead wire to the flanged pin.
6. Cover the flanged pin with a heat-shrink tube, and then apply heat with a drier to fix the tube in place.

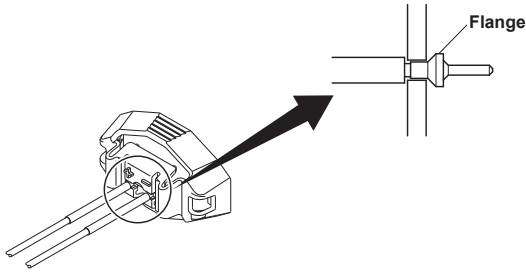


Note

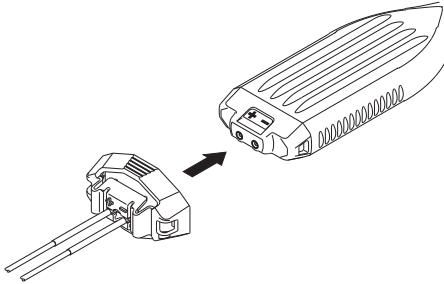
- If solder gets into the soldering-not-allowed part (4 mm from the tip of the flanged pin), the probe may be damaged. Also, do not cover the part with the heat-shrink tube.
 - Make sure that the diameter of the tube after shrinking is 2.0 mm or less. If the maximum diameter exceeds 2.0 mm, the lead wire cannot pass through the retaining cover.
-

Attaching the Retaining Cover

7. Pass the flanged sections of the two input pins through the center retaining-cover holes, and place the input pins on the holders on either side.

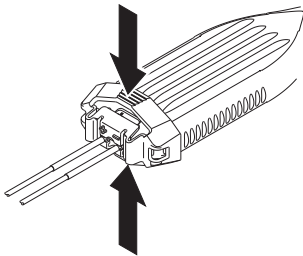


8. Align the + and - markings on the retaining cover to those on the probe head, and attach the retaining cover to the probe head. Check that the retaining cover's left and right latches are securely locked.



Removing the Retaining Cover

9. While pinching the retaining cover at the top and bottom, remove the cover from the probe head.



Note

- The retaining cover can only be used with a flanged pin that is included in the package.
- The probe's ground terminal cannot be used if you are using the retaining cover.

Using the Ground Extension Lead

CAUTION

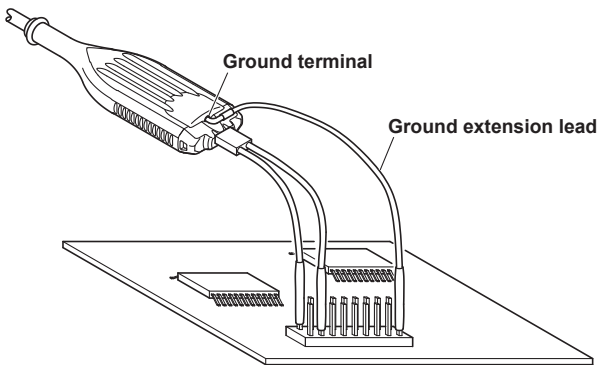
Connect the ground extension lead only to the common ground. If measuring a floating circuit, do not use the ground terminal. Doing so may damage the measuring system or the device under measurement.

French

ATTENTION

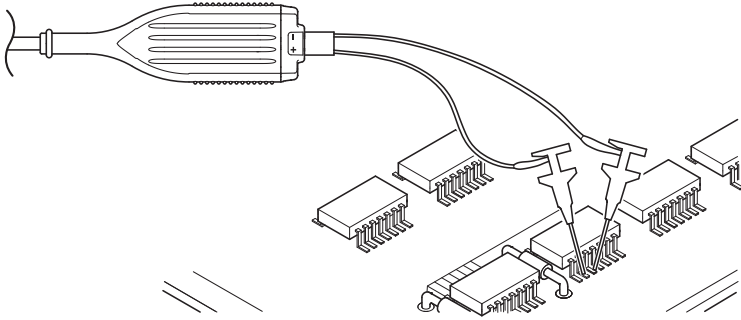
Connectez le câble d'extension de terre uniquement à la terre commune. N'utilisez pas la borne de terre si vous mesurez un circuit flottant. Cela pourrait endommager le système de mesure ou l'appareil sous mesure.

Connecting the probe ground terminal to the common ground on the device under measurement using the ground extension lead may reduce noise when measuring low-frequency signals.

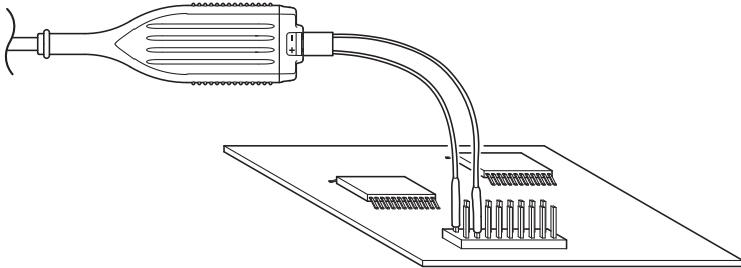


Example of Connecting the Attachments

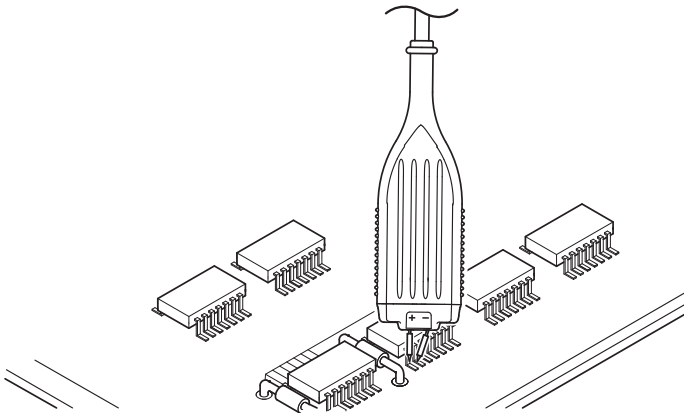
Using 10-cm Pair Leads with Micro Clips



Using 5-cm Pair Leads



Using Pins (Straight, Angled, Spring-type Straight or Angled)



Warm-up and Offset Voltage Adjustment

Warm-up

Immediately after connecting the probe, the heat emitted by the probe itself causes the offset voltage to drift. After turning on the power, warm up the probe for at least 30 minutes to stabilize it.

Offset Voltage Adjustment

CAUTION

Do not apply excessive force to the offset voltage adjustment screw. Doing so may damage the internal variable resistor.

French

ATTENTION

N'appliquez pas une force excessive sur la vis de réglage de la tension de décalage. Cela pourrait endommager le résistance variable interne.

Adjust the residual offset voltage that remains even after warm-up. Turn the offset voltage adjustment screw on the probe interface unit by using an appropriate adjustment screwdriver (see the description provided earlier).

Note

- The offset voltage drifts depending on the ambient temperature. Pay attention to changes in the ambient temperature when making continuous measurements.
 - Only use the offset voltage adjustment screw to adjust the residual offset voltage. If you deliberately change the offset voltage for some other purpose, the probe may no longer meet the specifications.
-

4. Product Specifications

Electrical Specifications

The electrical specifications are those after 30 minutes of warm-up in the standard operating environment.¹

Item	Specifications
Frequency band	DC to 500 MHz (–3 dB)
Attenuation ratio	50:1
DC voltage accuracy ²	±2 % of differential input voltage ³ (at 50 Ω load)
Input capacitance	1.1 pF (relative to ground, typical) ⁴
Input resistance	1 MΩ ±3 % (relative to ground)
Output impedance	50 Ω (typical) ⁴
Maximum differential input voltage ⁵	±25 V (DC + ACpeak)
Maximum operating input voltage ^{5, 6}	±35 V (DC + ACpeak)
Maximum non-destructive input voltage ⁷	±100 V (instantaneous)
Residual noise	300 μVrms (at probe output, typical) ⁴
Residual offset voltage	±10 mV (at probe output, after ADJUST)
Common mode rejection ratio (CMRR)	–35 dB (DC to 1 MHz) –30 dB (1 MHz to 10 MHz) –26 dB (10 MHz to 100 MHz) –20 dB (100 MHz to 300 MHz)

- 1 See the table of General Specifications, provided later, for the standard operating environment.
- 2 Excluding the residual offset voltage. See Appendix 2 for details.
- 3 Excluding the common-mode voltage and the oscilloscope errors.
- 4 “Typical” values are typical or average values and are not strictly guaranteed.
- 5 See the following figure for the input voltage range based on the relationship between the differential input voltages and the operating input voltages.
- 6 Depending on the frequency. See the following figure for input voltage derating by frequency.
- 7 The value is an instantaneous voltage that does not damage the probe. For continuous use, comply with the maximum operating input voltage.

Input Voltage Derating by Frequency



WARNING

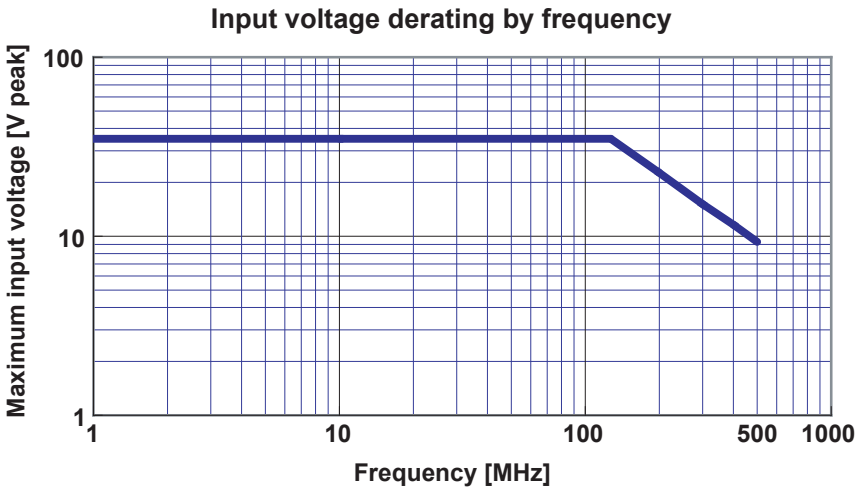
As the frequency of the input signal increases, the maximum input voltage of the probe decreases.

French

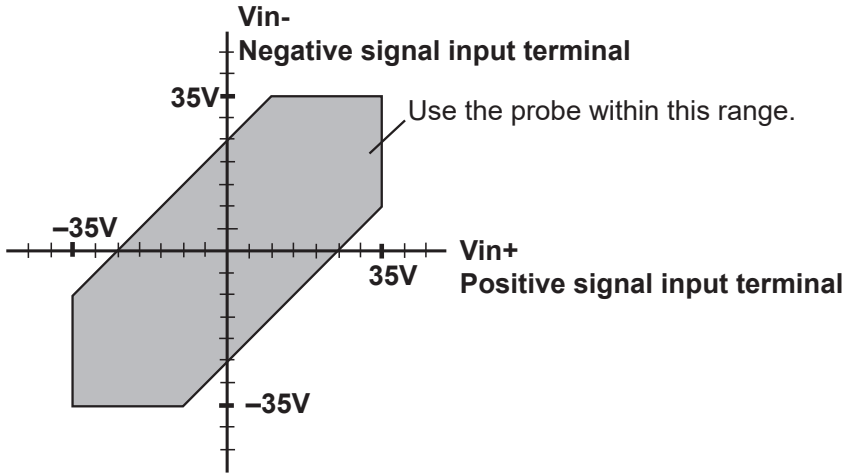


AVERTISSEMENT

Lorsque la fréquence du signal d'entrée augmente, la tension d'entrée maximale de la sonde diminue.



Input Voltage Range



General Specifications

Item		Specifications
Probe length		Approx. 1.2 m
Weight		Approx. 90 g
Standard power supply voltage*		$\pm 5 \text{ V} \pm 5 \%$
Power consumption		120 mA (at $\pm 5 \text{ V}$)
Connector type		BNC
Standard operating environment	Temperature	$23 \text{ }^\circ\text{C} \pm 5 \text{ }^\circ\text{C}$
	Humidity	55% $\pm 10 \%$ RH (no condensation)
Operating environment	Temperature	$5 \text{ }^\circ\text{C}$ to $40 \text{ }^\circ\text{C}$
	Humidity	20% to 80% RH (no condensation)
	Altitude	2000 m or less
Storage environment	Temperature	$-20 \text{ }^\circ\text{C}$ to $+60 \text{ }^\circ\text{C}$
	Humidity	20% to 80% RH (no condensation)
	Altitude	3000 m or less
Warm-up time		30 minutes or more
Calibration period		1 year recommended

* Supplied through the interface pins from the oscilloscope with probe interface.

Compliant Standards

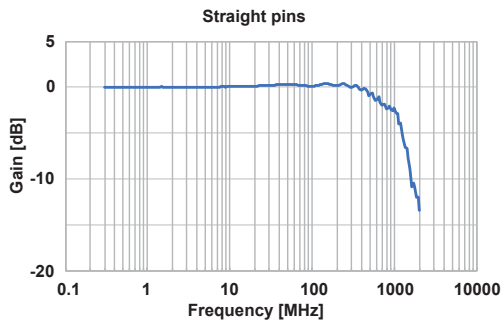
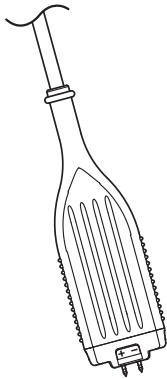
Item		Specifications
EMC	Emission	EN61326-1 Class A EN55011 Class A, Group 1
	Immunity	EN61326-1 Table 2 (for use in industrial locations) Influence in immunity test environment Noise increase 2 V or less
Environmental (RoHS directive)		EN50581 Monitoring and control instruments

Appendix 1. Frequency Characteristics

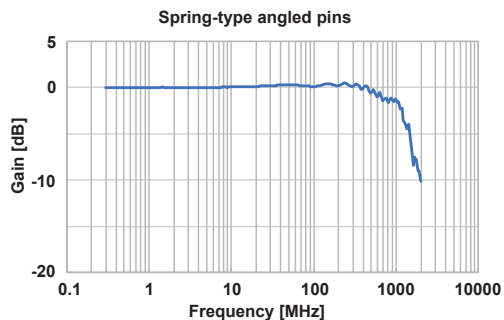
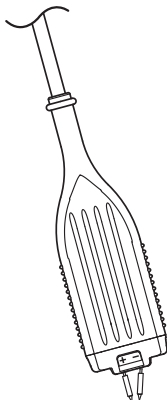
Frequency Characteristics

The probe's frequency characteristics vary depending on the attachment that is used and how the lead wires are connected. The measured frequency characteristics when using typical attachments are shown below. The frequency characteristics when using pair leads and pair leads with micro clips have been measured with two lead wires running in parallel.

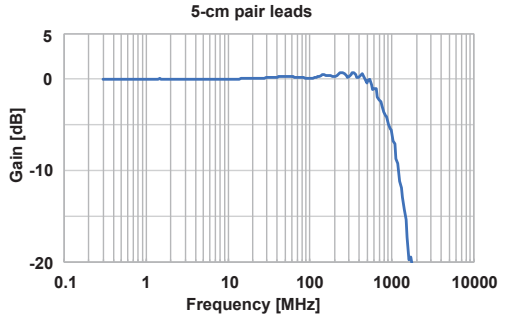
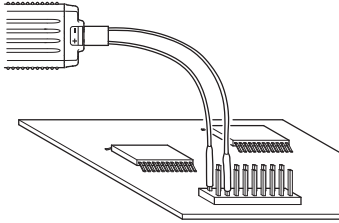
Using Straight Pins



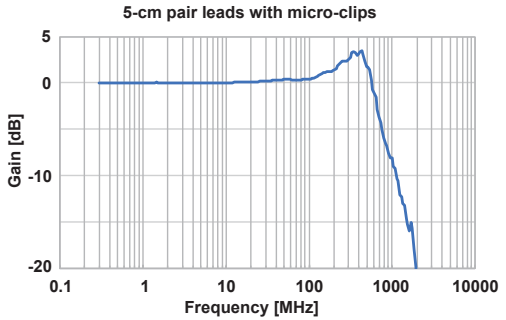
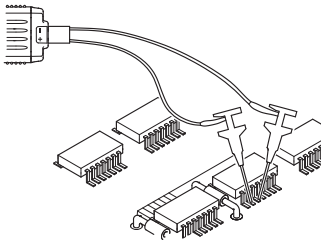
Using Spring-type Angled Pins



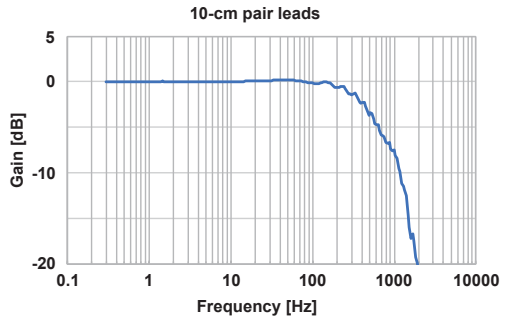
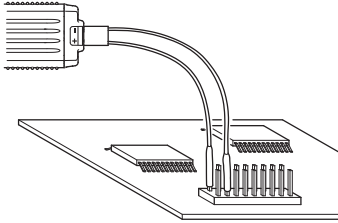
Using 5-cm Pair Leads



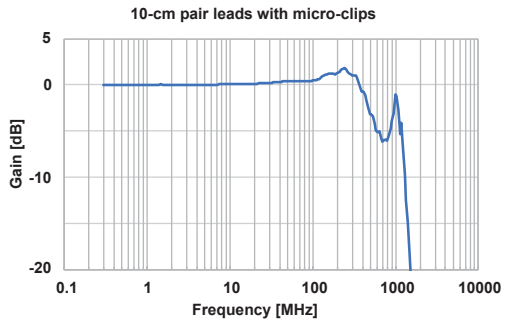
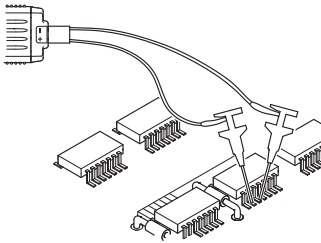
Using 5-cm Pair Leads with Micro-Clips



Using 10-cm Pair Leads

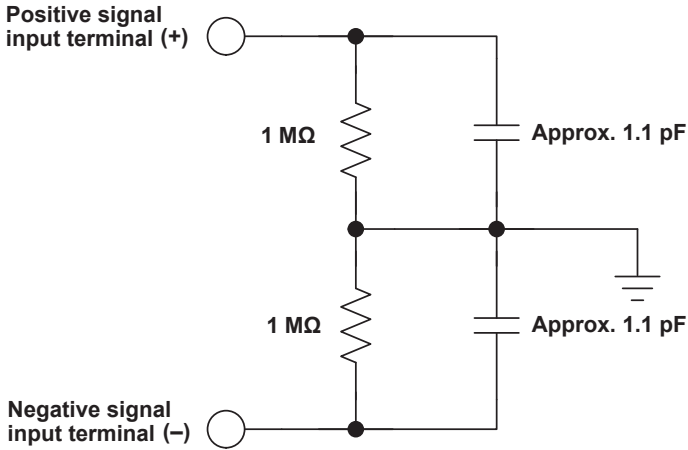


Using 10-cm Pair Leads with Micro-Clips



Appendix 2. Input Circuit and Accuracy

Input Equivalent Circuit



Concept of DC Voltage Accuracy

